Altivar Process ATV6000
Variable Speed Drives

Programming Manual For
Operator and Advanced Operator

02/2019

Schneider Electric

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

Table of Contents

Safety Information

ⓘ

Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

> The addition of this symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

> This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Qualification Of Personnel

Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and with this product. In addition, these persons must have received safety training to recognize and avoid hazards involved. These persons must have sufficient technical training, knowledge and experience and be able to foresee and detect potential hazards that may be caused by using the product, by changing the settings and by the mechanical, electrical and electronic equipment of the entire system in which the product is used. All persons working on and with the product must be fully familiar with all applicable standards, directives, and accident prevention regulations when performing such work.

Intended Use

This product is a drive for three-phase synchronous, asynchronous motors and intended for industrial use according to this manual. The product may only be used in compliance with all applicable safety standard and local regulations and directives, the specified requirements and the technical data. The product must be installed outside the hazardous ATEX zone. Prior to using the product, you must perform a risk assessment in view of the planned application. Based on the results, the appropriate safety measures must be implemented. Since the product is used as a component in an entire system, you must ensure the safety of persons by means of the design of this entire system (for example, machine design). Any use other than the use explicitly permitted is prohibited and can result in hazards.

Product Related Information

Read and understand these instructions before performing any procedure with this drive.

⚡ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation and who have received safety training to recognize and avoid hazards involved are authorized to work on and with this drive system.
  Installation, adjustment, repair and maintenance must be performed by qualified personnel.
- Before performing work on the drive system, follow the instructions given in the section "Complete drive system power Off procedure":
- Before applying voltage to the drive system:
  - ❍ Verify that the work has been completed and that the entire installation cannot cause hazards.
  - ❍ Remove the ground and the short circuits on the mains input terminals and the motor output terminals.
  - ❍ Verify proper grounding of all equipment.
  - ❍ Verify that all protective equipment such as covers, doors, grids is installed and/or closed.

Failure to follow these instructions will result in death or serious injury.

Many components of the equipment, including the printed circuit board, operate with mains voltage, or present transformed high currents, and/or high voltages.

The motor itself generates voltage when the motor shaft is rotated.

AC voltage can couple voltage to unused conductors in the motor cable.

⚡ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Verify compliance with all safety information, different electrical requirements, and standards that apply to your machine or process in the use of this equipment.
- Verify compliance with all applicable standards and regulations with respect to grounding of all equipment.
- Only use properly rated, electrically insulated tools and measuring equipment.
- Do not touch unshielded components or terminals with voltage present.
- Prior to performing any type of work on the drive system, block the motor shaft to prevent rotation.
- Do not create short circuits across the DC bus terminals or the DC bus capacitors or the braking resistor terminals, if present.

Failure to follow these instructions will result in death or serious injury.

Drive systems may perform unexpected movements because of incorrect wiring, incorrect settings, incorrect data or other errors.

⚠ WARNING

UNANTICIPATED EQUIPMENT OPERATION

- Carefully install the wiring in accordance with the EMC requirements.
- Do not operate the product with unknown or unsuitable settings or data.
- Perform a comprehensive commissioning test.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Damaged products or accessories may cause electric shock or unanticipated equipment operation.

⚠ ⚠ DANGER
ELECTRIC SHOCK OR UNANTICIPATED EQUIPMENT OPERATION
Do not use damaged products or accessories.
Failure to follow these instructions will result in death or serious injury.

Contact your local Schneider Electric sales office if you detect any damage whatsoever.

⚠ WARNING
LOSS OF CONTROL
● The designer of any control scheme must consider the potential failure modes of control paths and, for critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop, overtravel stop, power outage and restart.   ● Separate or redundant control paths must be provided for critical control functions.   ● System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.   ● Observe all accident prevention regulations and local safety guidelines (1).   ● Each implementation of the product must be individually and thoroughly tested for proper operation before being placed into service.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

(1) For USA: Additional information, refer to NEMA ICS 1.1 (latest edition), Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control and to NEMA ICS 7.1 (latest edition), Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems.

NOTICE
DESTRUCTION DUE TO INCORRECT MAINS VOLTAGE
Before switching on and configuring the product, verify that it is approved for the mains voltage.
Failure to follow these instructions can result in equipment damage.

This equipment has been designed to operate outside of any hazardous location. Only install this equipment in zones known to be free of a hazardous atmosphere.

⚠ DANGER
POTENTIAL FOR EXPLOSION
Install and use this equipment in non-hazardous locations only.
Failure to follow these instructions will result in death or serious injury.

Machines, controllers, and related equipment are usually integrated into networks. Unauthorized persons and malware may gain access to the machine as well as to other devices on the network/fieldbus of the machine and connected networks via insufficiently secure access to software and networks.

⚠ WARNING

UNAUTHORIZED ACCESS TO THE MACHINE VIA SOFTWARE AND NETWORKS

- In your hazard and risk analysis, consider all hazards that result from access to and operation on the network/fieldbus and develop an appropriate cyber security concept.
- Verify that the hardware infrastructure and the software infrastructure into which the machine is integrated as well as all organizational measures and rules covering access to this infrastructure consider the results of the hazard and risk analysis and are implemented according to best practices and standards covering IT security and cyber security (such as: ISO/IEC 27000 series, Common Criteria for Information Technology Security Evaluation, ISO/ IEC 15408, IEC 62351, ISA/IEC 62443, NIST Cybersecurity Framework, Information Security Forum - Standard of Good Practice for Information Security).
- Verify the effectiveness of your IT security and cyber security systems using appropriate, proven methods.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

LOSS OF CONTROL

Perform a comprehensive commissioning test to verify that communication monitoring properly detects communication interruptions

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Complete Drive System Power Off Procedure

Perform the following actions

Step	Description
1	Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation and who have received safety training to recognize and avoid hazards involved are authorized to work on and with this drive system. Installation, adjustment, repair, and maintenance must be performed by qualified personnel.
2	Wear appropriate personal protective equipment (PPE). e.g. Arc flash protection, helmet & visor, Insulation gloves.
3	Before disconnecting mains voltage, verify that the red LEDs of all power cells are ON by checking the LED state via the openings in the cabinet doors. If one or more of the red LEDs of the power cells are OFF, do not perform any further work, but contact your local Schneider Electric representative.
4	Switch OFF all main power supply and ground the mains breaker. Switch OFF all external auxiliary power supply (230 V / 400 V) and lock it in off position.
5	Lock the grounding switch of the mains breaker with your personal lock and place a "Do Not Turn On" label on the medium voltage circuit breaker.
6	Wait 20 minutes to allow the DC bus capacitors to discharge. The DC bus LEDs located on each power cell are not an indicator of the absence of DC bus voltage.
7	Verify that the red LEDs on all power cells are OFF. If one or more of the red LEDs of the power cells remain ON for 20 minutes after the mains voltage has been disconnected, do not perform any further work, but contact your local Schneider Electric representative
8	Remove K0 from the medium voltage circuit breaker of the drive system and release the keys for opening the cabinet doors.
9	Open the transformer cabinet doors and verify the absence of voltage with a properly rated voltage sensing device on the mains terminals and motor terminals.
10	If there is no voltage detected on the mains terminals, short circuit the input terminals to ground using a properly rated grounding equipment.
11	If there is no voltage detected on the motor terminals, short circuit the terminal to ground using a properly rated grounding equipment.
12	Verify that no other voltage is present in the drive system.

About the Book

At a Glance

Document Scope

The purpose of this document is to:
- show you the different menus, modes, and parameters based on HMI Panel with restricted access,
- show you the different menus, modes, and parameters based on DTM with restricted access,
- show you the different functions and parameters displayed ,
- show you how to program the drive,
- help you in maintenance and diagnostics.

Validity Note

Original instructions and information given in this manual have been written in English (before optional translation).

This documentation is valid for the Altivar Process ATV6000 drives.

The technical characteristics of the devices described in the present document also appear online. To access the information online:

Step	Action
1	Go to the Schneider Electric home page *www.schneider-electric.com*.
2	In the **Search** box type the reference of a product or the name of a product range. ● Do not include blank spaces in the reference or product range. ● To get information on grouping similar modules, use asterisks (*).
3	If you entered a reference, go to the **Product Datasheets** search results and click on the reference that interests you. If you entered the name of a product range, go to the **Product Ranges** search results and click on the product range that interests you.
4	If more than one reference appears in the **Products** search results, click on the reference that interests you.
5	Depending on the size of your screen, you may need to scroll down to see the data sheet.
6	To save or print a data sheet as a .pdf file, click **Download XXX product datasheet**.

The characteristics that are presented in the present document should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the document and online information, use the online information as your reference.

Related Documents

Use your tablet or your PC to quickly access detailed and comprehensive information on all our products on www.schneider-electric.com.

The internet site provides the information you need for products and solutions:
- The Handbook for detailed characteristics and selection guides,
- The CAD files to help design your installation,
- All software and firmware to maintain your installation up to date,
- Additional documents for better understanding of drive systems and applications
- And finally all the User Guides related to your drive, listed below:

(Other option manuals and Instruction sheets are available on www.schneider-electric.com)

Title of Documentation	Catalog Number
ATV6000 Brochure	*QGH83256* (English)
ATV6000 Handbook	*QGH83255* (English)
ATV6000 Installation Manual	*QGH83258* (English)
ATV6000 Programming Manual for Operator and Advanced Operator	*QGH83265* (English)
ATV6000 Embedded Ethernet Manual	*PHA30472* (English)
ATV6000 Modbus SL Manual	*MFR24213* (English)
SoMove: FDT	*SoMove_FDT* (English, French, German, Spanish, Italian, Chinese)
Altivar Process ATV6000: DTM	*ATV6000_DTM_Library_EN* (English)

You can download these technical publications and other technical information from our website at *http://www.schneider-electric.com/en/download*

Terminology

The technical terms, terminology, and the corresponding descriptions in this manual normally use the terms or definitions in the relevant standards.

In the area of drive systems this includes, but is not limited to, terms such as **error, error message, failure, fault, fault reset, protection, safe state, safety function, warning, warning message**, and so on.

Among others, these standards include:
- IEC 61800 series: Adjustable speed electrical power drive systems
- IEC 61508 Ed.2 series: Functional safety of electrical/electronic/programmable electronic safety-related
- EN 954-1 Safety of machinery - Safety related parts of control systems
- ISO 13849-1 & 2 Safety of machinery - Safety related parts of control systems
- IEC 61158 series: Industrial communication networks - Fieldbus specifications
- IEC 61784 series: Industrial communication networks - Profiles
- IEC 60204-1: Safety of machinery - Electrical equipment of machines – Part 1: General requirements

In addition, the term **zone of operation** is used in conjunction with the description of specific hazards, and is defined as it is for a **hazard zone** or **danger zone** in the EC Machinery Directive (2006/42/EC) and in ISO 12100-1.

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Part I
Introduction

Chapter 1
Overview

This chapter contains the following topics:

Application Functions

Introduction

ATV6000 is designed to fit a variety of applications in different segments. The following list shows some typical applications which are possible to be operated by ATV6000.

The functions in the tables below relate to the following applications:
- Mining, Mineral, and Metal (MMM):
  - Long-distance conveyor
  - Slurry pump
  - SAG/ball mill
  - HPGR
  - ID/FD fans

- Water and Wastewater:
  - Raw water pump
  - Lifting station
  - Blower/compressor
  - Booster pump
  - High-pressure pumps

- Oil & Gas:
  - ESP
  - Crude oil transfer pump
  - Pipeline compressor
  - ID/FD fans
  - FPSO
  - Mixer

- Power plants:
  - Feed water pump
  - ID/FD fans
  - Coal mill
  - Cooling water circulation pump
  - Fuel gas compressor

Each application has its own special features, which will be set during commissioning.

⚠ WARNING
UNANTICIPATED EQUIPMENT OPERATION
Multiple functions can be assigned to and simultaneously activated via a single input. ● Verify that assigning multiple functions to a single input does not result in unsafe conditions.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

Interface

Introduction

Functions and parameters described in this document are based on the ATV6000 HMI and ATV6000 DTM for operator and advanced operator.

HMI Panel

The HMI Panel is a local control unit which is mounted on the front door of the product. The HMI Panel embeds a real time clock used for the time stamping of logged data and all other functions which require time information.
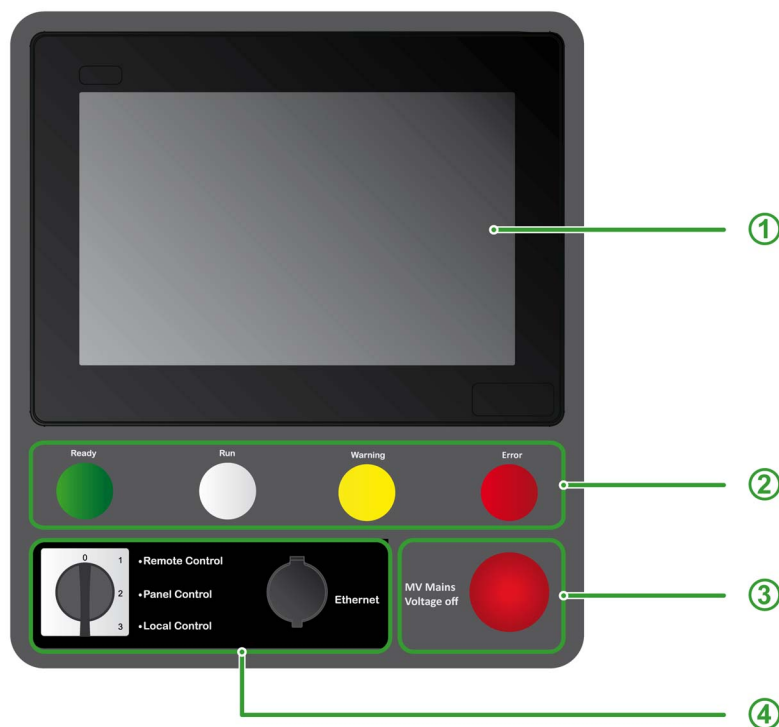
The HMI Panel is divided into 4 zones
1 **Interface display:** 10" Touch advanced display
2 **Drive status pilots light:**
   ❍ **Ready:** Indicates that the drive is not running, ready to start.
   ❍ **Run:** Indicates that the drive is running.
   ❍ **Warning:** Indicates a drive detected warning.
   ❍ **Error:** Indicates a drive detected error.

3 **MV Mains Voltage Off:**
   Pushing the button will disable the output and open the user's MV switch.
4 **Front HMI options:**
   ❍ **Local/Remote/Panel Switch:** Used to switch between local, remote and panel control of the drive. See Command Status Menu
   ❍ **Ethernet Socket:** RJ45 port for Ethernet IP or Modbus TCP.
     Allows access to the frequency inverter without opening the enclosure door, the plug must be covered by the dust protection cap when the port is not used.

NOTE: In this manual, the terms HMI Panel and Graphic display terminal can be used interchangeably when referring to the HMI Magelis terminal.

SoMove Software

The use of SoMove FDT and Altivar DTM is required to perform the actions described in this Manual.

Use the links below to download these files:

File	Links
SoMove: FDT	*SoMove_FDT* (English, French, German, Spanish, Italian, Chinese)
Altivar Process ATV6000: DTM	*ATV6000_DTM_Library_EN* (English)

NOTE: The working space description is available and described on ATV6000 DTM.

Structure of the Parameter Table

General Legend

Pictogram	Description
★	These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.
( )	Setting of this parameter can be done during operation or when stopped. **NOTE:** It is advisable to stop the motor before modifying any of the settings.
⧗	To modify the assignment of the parameter, reinforced validation is required.

Parameter Presentation

Below is an example of a parameter presentation:

[Sample Menu] *C o d E* **– Menu**

Access
Parameters described below can be accessed by:

 [Path] ➡ [Sub-path]

About this menu
Description of the menu or function

[Parameter1] *C o d E 1*
Description of the parameter

Example of a table with a setting range:

Setting ( )	Description
0.0… 10,000.0	Setting range Factory setting: 50.0

[Parameter2] *C o d E 2*
Description of the parameter

Example of a table with a list of choices:

Setting ( )	Code / Value	Description
[50 Hz IEC]	*S 0*	IEC **Factory setting**
[60 Hz NEMA]	*6 0*	NEMA

Finding a Parameter in This Document

With the Manual

It is possible to use either the parameter name or the parameter code to search in the manual the page giving details about the selected parameter.

Difference Between Menu and Parameter

A dash after menu and submenu codes is used to differentiate menu commands from parameter codes.

Example:

Level	Name	Code
Menu	**[Ramp]**	*r A П P -*
Parameter	**[Acceleration]**	*A C C*

NOTE: The code shown in this manual, is used to be consistent with the Altivar process platform, it is also more convenient for multi languages support.

Part II
Description of the Main HMI Screens

Chapter 2
Working Area

What Is in This Chapter?

This chapter contains the following sections:

Section 2.1
Presentation

What Is in This Section?

This section contains the following topics:

Topic	Page
Before you begin	25
General	26

Before you begin

Before Powering up the Drive

⚠ WARNING
UNANTICIPATED EQUIPMENT OPERATION
Before switching on the device, verify that no unintended signals can be applied to the digital inputs that could cause unintended movements.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

General Information

⚠ WARNING
UNANTICIPATED EQUIPMENT OPERATION
Drive systems may perform unexpected movements because of incorrect wiring, incorrect settings, incorrect data or other errors.
● Only appropriately trained persons who are familiar with and understand the contents of all pertinent product documentation and who have received safety training to recognize and avoid hazards involved are authorized to work on and with this drive system.
● Only use this software for setup and commissioning tasks and to display status information.
● Verify that other applications on your computer such as, but not limited to, screensavers, cannot interfere with the proper operation of this software.
● Very that an integrated and functioning emergency stop push-button is within reach.
● Verify that all parameter settings are suitable for the application.
● Do not operate the product with unknown and unsuitable settings or data.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

User Log-in

Click on **Settings → My preferences** tab, then select the user type and the password:
● Operator
● Advanced Operator

Login			
Parameter	**Label**		**Value**
User	Login / Username		
Password	Password		***
			Login

You can login to the system to set the corresponding parameters. *(see page 70)*

These access levels are defined during the commissioning.

Basic
● Users: Operator
● Access Rights:
  ○ Monitoring data only (Diagnostics, Settings, Configuration panels are not accessible).
  ○ Control and Command panel

Advanced
● Users: Operator advanced, Maintenance engineer / technician, Support.
● Access Rights:
  ○ Settings and monitoring with limitation.
  ○ Device Name
  ○ Control and Command panel
  ○ No Firmware update.

General

Working Space Description
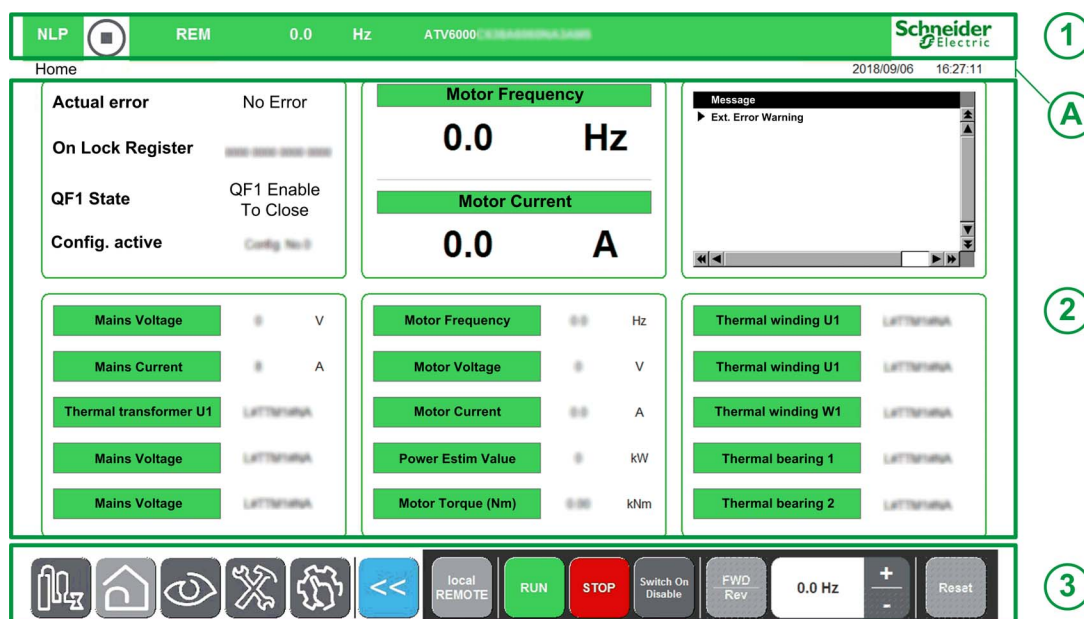
The main works area is divided into 3 main zones:

1. A **Status bar** at the top
   For details, refer to **Status Bar** *(see page 28)*.
2. **Screens** area
   For details, refer to:
   - ❍ **Home Panel.** *(see page 30)*
   - ❍ **Display Panel.** *(see page 33)*
   - ❍ **Diagnostics Panel.** *(see page 34)*
   - ❍ **Settings Panel.** *(see page 35)*
3. A **Toolbar** at the bottom of the working area.
   For details, refer to **Toolbar** *(see page 29)*.

General current information

A Display the current Menu Path
Display the current User profile. *(see page 70)*
Display the actual date and times. *(see page 69)*

Keyboard

The keyboard is available on various dialogs and screens by pressing the touch Screen.

(Numeric or Alphanumeric Keyboard)
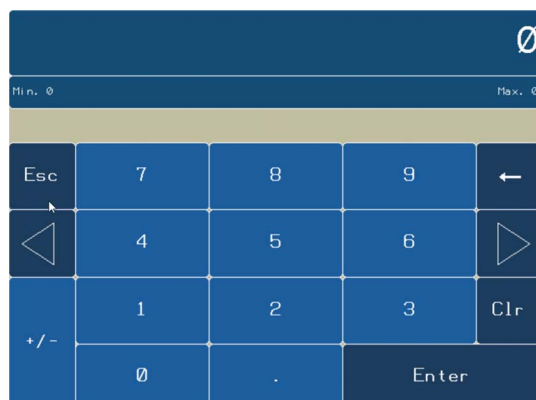
Section 2.2
Toolbars and Status Bar

What Is in This Section?

This section contains the following topics:

Status Bar
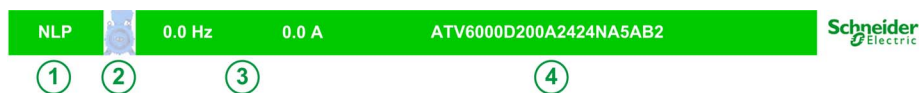
Description

The status bar, located at the top of the working area, is divided in 4 zones:

Items	Description
①	Indicates the drive status: ● TUN: Autotuning ● RDY: Drive Ready ● NST: Freewheel stop control ● RUN: Motor in steady state ● ACC: Acceleration ● ... For more status and details, see [Drive State] *HПıS* *(see page 86)*
②	Indicates whether the motor is stopped or running.
③	Indicates your actual values: ● Motor frequency ● Motor current ● ...
④	Indicates your drive part number
⑤	Indicates your application name. For more details *(see page 69)*

Status of Color Bar

The color bar displays the actual state of the product.

State	Description
Standard mode	● In standard mode with no error detected a green banner is displayed. NLP REM 0.0 Hz ATV6000... Schneider Electric
Error detected	● A red banner is displayed over the header to indicate a detected error. FLT REM 0.0 Hz ATV6000... Schneider Electric
Communication interruption	● An orange banner is displayed over the header to indicate a communication interruption (Modbus SL / Ethernet). - Ethernet Communication Interrupted - Schneider Electric
Simulation	● In simulation mode with no error detected a blue banner is displayed. RUN REM 50.0 Hz ATV6000... Schneider Electric

Toolbar

Description

This first bar, located at the bottom of the working area, can be used to access the device-specific Menu and functions. This bar is divided in 2 zones:
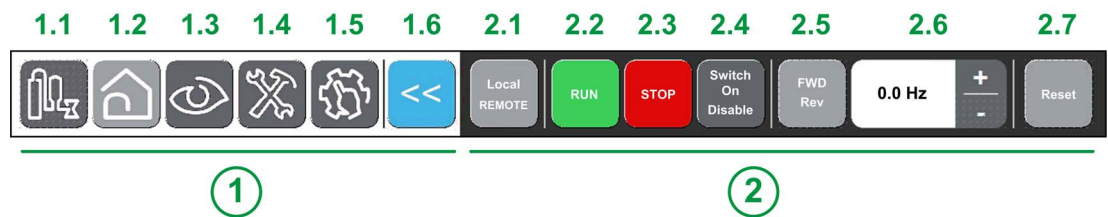
① Navigation area: Allow the user to navigate among the main pages.

Items	Description
1.1	**Application:** used to access directly the application page. Dedicated for your application, this panel is only available if customized applications are programmed.
1.2	**Home:** used to access directly the home page. For details, refer to **Home** *(see page 30)* Tab.
1.3	**Display:** used to access directly the display page. For details, refer to **Display** *(see page 33)* Tab.
1.4	**Diagnostics:** used to access directly the diagnostics page. For details, refer to **Diagnostics** *(see page 34)* Tab.
1.5	**Settings:** used to access directly the settings page. For details, refer to **Settings** *(see page 35)* Tab.
1.6	**Back:** used to quit a menu/parameter or remove the currently displayed value. Used to go back to the previous Screen.

② Control/Command Panel: Allows the user to control/command the motor.

Items	Description
2.1	**Local/Remote:** used to switch between local and remote control of the drive. (Optional, for more details see Command Status *(see page 196)* Menu.) **Local:** Control system drive receives inputs via HMI Panel. **Remote:** Control system drive receives start/stop inputs via IO or fieldbus.
2.2	**Run:** run command.
2.3	**Stop:** stop command.
2.4	**Switch On Disable/Switch On Disabled:** used to stop the motor in freewheel. The stop command is sent when the button is pressed, the drive locks into NST, until the button is pressed again. When the button is released, a new Run order is needed to start the motor. **NOTE:** This button is only available if **[Stop Key Enable]** *P S E* is set to **[Yes]** *Y E S*.
2.5	**Forward/Reverse:** used to reverse the direction of the motor. Active if **[Reverse Disable]** *r i n* is set to **[No]** *n o*
2.6	Button "+" and "-" with scaling to 0.1 or 1 Hz
2.7	**Reset:** apply a Fault Reset.
NOTE: Depending on operating condition and settings, some buttons can be unavailable.	

Section 2.3
Home Menu Panel

Overview

Description
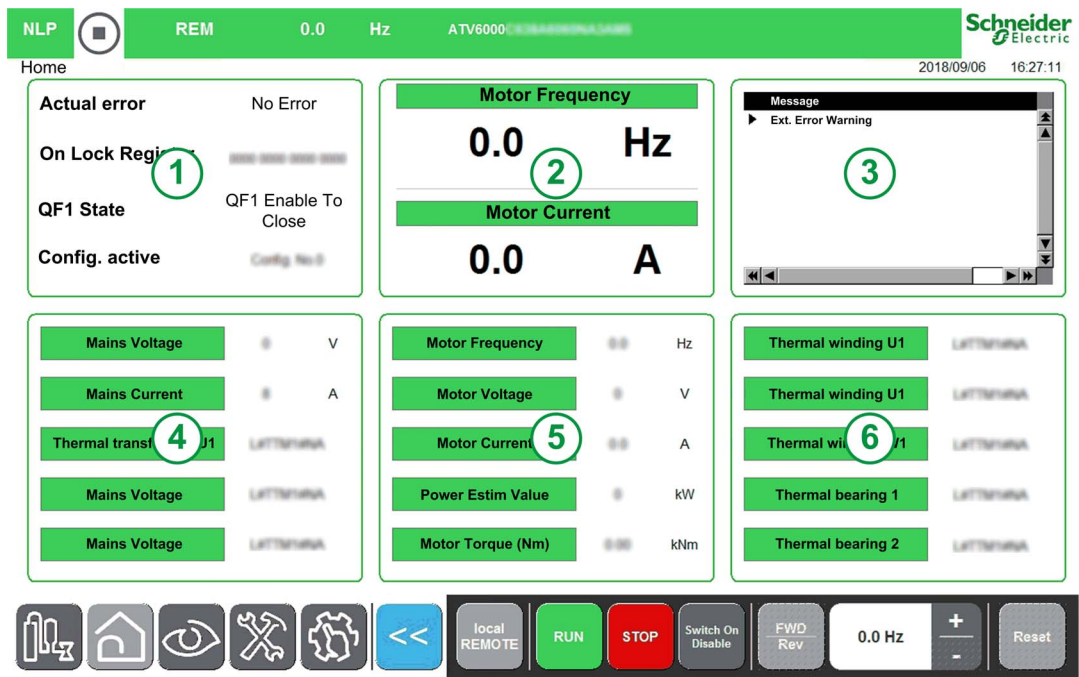
The **Home page** area is divided into 6 zones:

1. Displays the real-time value of the drive status related parameters.

2. Displays two real-time value of parameters selected.

3. Displays all active warnings, error codes and Onlock status.

4. Displays the real-time value of the supply-related parameters [1].

5. Displays the real-time value of the drive-related parameters [1].

6. Displays the real-time value of the motor-related parameters [1].

NOTE: (1) These parameters can be customized from predefined elements (see procedure below).

Display Customized Monitoring Parameters

The following table details the procedure to add or change Elements to this Home page:

Step	Action
1	Click on the actual element to be changed. **Result:** New page is opened with all Elements available.
2	Select the new element needed. **Result:** Home page is updated with your Element.

Selectable List of Elements.

This table describes the predefined list which could be used to select actual values to be displayed.

Menu	Code	Label	Units
Mains Data *(see page 76)*	⊔L⊓	[Mains Voltage]	V
	⊔L1	[Mains Voltage phase 1-2]	V
	⊔L2	[Mains Voltage phase 2-3]	V
	⊔L3	[Mains Voltage phase 3-1]	V
	ıL⊓	[Mains Current]	A
	ıL1	[Mains Current L1]	A
	ıL2	[Mains Current L2]	A
	ıL3	[Mains Current L3]	A
	FAC	[Mains Frequency]	Hz
	ıPrW	[Active Input Power]	kW
	ıqrW	[Input Reactive Power]	kW
	ıSrW	[Apparent Input Power]	kW
	PWF	[Input Power Factor]	%
	⊔⊓V	[Mains Unbalance Ratio]	%
Power stage Data *(see page 79)*	tt1⊓	[Transfo Cab Temp 1]	°C
	tP1⊔	[Thermal transformer U1]	°C
	tP1V	[Thermal transformer V1]	°C
	tP1W	[Thermal transformer W1]	°C
	tt2⊓	[Transfo Cab Temp 2]	°C
	tP2⊔	[Thermal transformer U2]	°C
	tP2V	[Thermal transformer V2]	°C
	tP2W	[Thermal transformer W2]	°C
Motor data *(see page 93)*	⊔oP	[Motor Voltage]	V
	LCr	[Motor Current]	A
	rFr	[Motor Frequency]	Hz
	SPd	[Motor Speed]	rpm
	oPr	[Motor Power]	%
	oPrW	[Power Estim Value]	kW
	EPr	[Active Electrical output power estimation]	%
	EPrW	[Acv Elc out pwr estm]	kW
	otr⊓	[Motor Torque (Nm)]	Nm
	FrH	[Pre-Ramp Ref Freq]]	Hz
	Fro	[Ramp output frequency (signed)]	
	SPd⊓	[Motor Mechanical speed]	rpm
	otr	[Motor Torque]	%
	otq⊓	[Motor Torque (Nm)]	Nm
Motor Thermal *(see page 79)*	tH⊓1	[Thermal winding U1]	°C
	tH⊓2	[Thermal winding V1]	°C
	tH⊓3	[Thermal winding W1]	°C
	tH⊓5	[Thermal winding U2]	°C
	tH⊓6	[Thermal winding V2]	°C
	tH⊓7	[Thermal winding W2]	°C
	tH⊓4	[Thermal bearing 1]	°C
	tH⊓8	[Thermal bearing 2]	°C
	tH⊓9	[Thermal bearing 3]	°C
	tH⊓A	[Thermal bearing 4]	°C

Menu	Code	Label	Units
Drive Data *(see page 83)*	L F r A	[Ref Frequency]	Hz
	L F r d	[DRIVECOM : Nominal speed value]	-
	L t r A	[Torque ref.]]	%
	C n F S	[Config. active]	-
	r F C C	[Ref Freq Channel]	-
	C M d C	[Command Channel]	-
	C M d S	[Cabinet Switch Status]	-
	q F 0 S	[QF1 Command State]	-
	P L o 1	[On Lock Register]	Bit
	t L S 1	[Overload State 1]	%
	t L S 2	[Overload State 2]	%

Section 2.4
Display Menu Panel

Overview

Description

The Display Panel is divided into 2 main zones:

1 - Vertical tree view - Allows you to select an item that will be displayed on the display area.

2 - Display area - This area displays the screen associated to the selected item
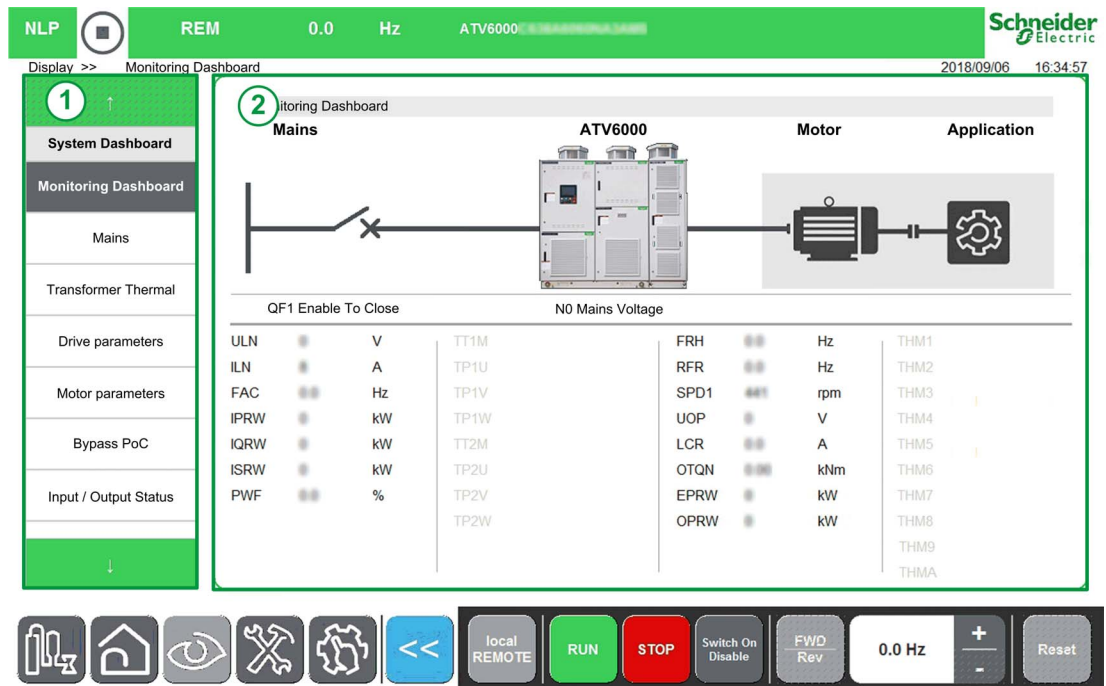
Tree view presents the hierarchical vertical view of drive functions information.

The different tree view nodes are:
- **System Dashboard** *(see page 75)*
- **Dashboard Energy** *(see page 117)*
- **Dashboard Pump** *(see page 125)*
- **Dashboard M/S** *(see page 129)*
- **Oscilloscope** *(see page 45)*
- **Identification** *(see page 54)*
- **Motor Control** *(see page 135)*

Section 2.5
Diagnostic Menu Panel

Overview

Description

The Diagnostics Panel is divided into 2 main zones:

1 - Vertical tree view - Allows you to select an item that will be displayed on the diagnostics display area.

2 - Diagnostic display area - This area displays the screen associated to the selected item
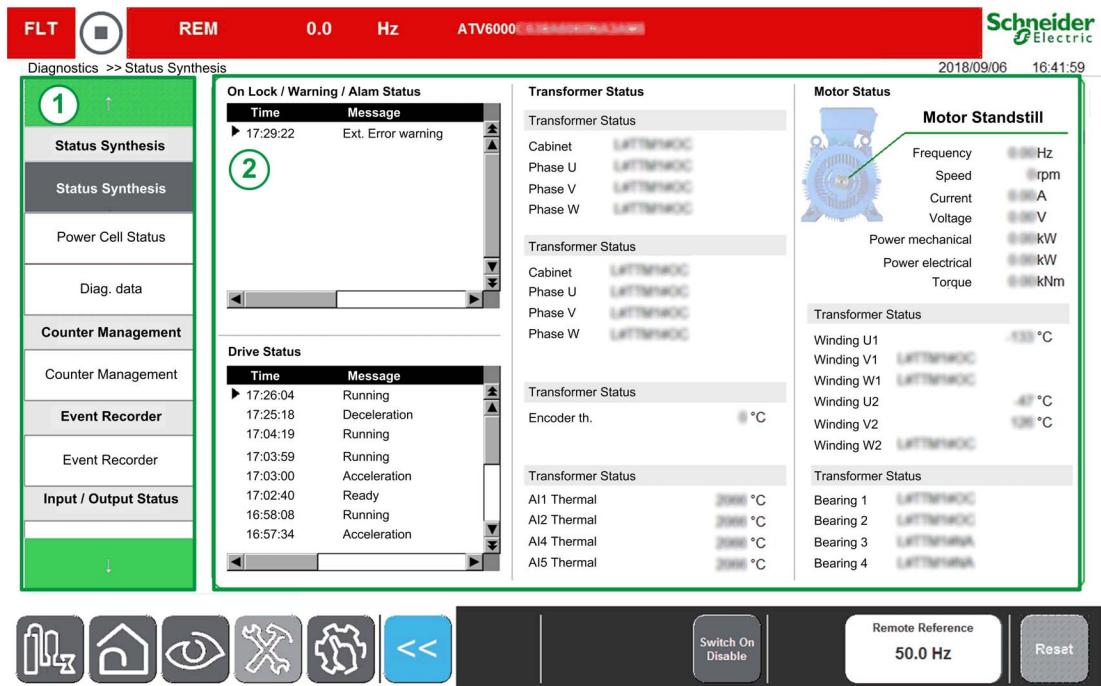
Tree view presents the hierarchical vertical view of drive functions information.

The different tree view nodes are:
● **Status Synthesis** *(see page 56)*
● **Counter Management** *(see page 164)*
● **Event Recorder** *(see page 60)*
● **Error History** *(see page 63)*
● **Warning history** *(see page 62)*

Section 2.6
Settings Menu Panel

Overview

Description

The Settings Panel is divided into 2 main zones:

1 - Vertical tree view - Allows you to select an item that will be displayed on the setting display area.

2 - Setting display area - This area displays the screen associated to the selected item
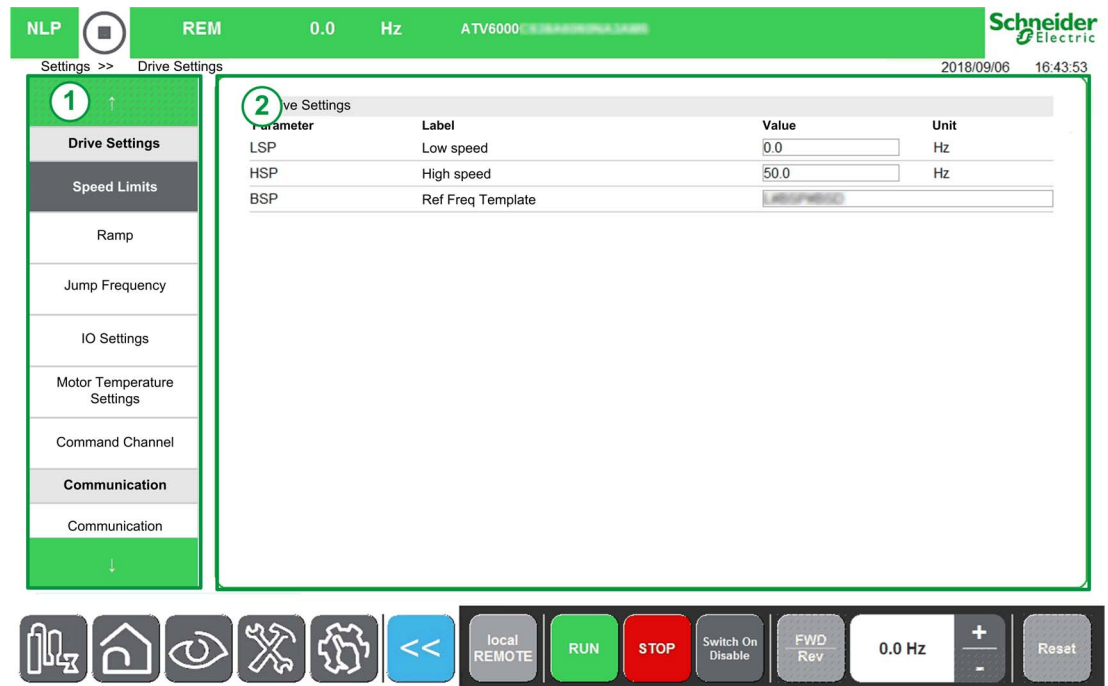
Tree view presents the hierarchical vertical view of drive functions information.

The different tree view nodes are:
- **Drive Settings** *(see page 169)*
- **Communication** *(see page 205)*
- **My Preferences**
- **File Management**

Assign a Value.

You can set a value to the corresponding parameters in this menu

Step	Action
1	Select the parameters value in the display area **Result**: The software keyboard will pop up.
2	Type your value and: ● press **Enter** to save changes. **Result**: The new parameter value is automatically applied. ● or press **Esc** to abort the changes

NOTE:
- The parameter values are automatically refreshed at regular intervals.

Part III
HMI Function

What Is in This Part?

This part contains the following chapters:

Chapter	Chapter Name	Page
3	Display Function	39
4	Diagnostics Functions	55
5	HMI Settings and Preferences.	67

Chapter 3
Display Function

Overview

This information can be accessed using the **Display** Menu Panel available on the ATV6000 HMI Panel.

What Is in This Chapter?

This chapter contains the following sections:

Section 3.1
Monitoring Dashboard

Presentation

Access

[Display] ➜ [Dashboard System] ➜ [Monitoring Dashboard]

Overview

This information can be accessed using the **MyDashboard** Menu available through the ATV6000 HMI Panel.

The **Monitoring Dashboard** menu allows you to:
● Displays the real-time value of the mains-related parameters
● Displays the real-time value of the drive-related parameters
  ❍ Drive parameters
  ❍ Drive status, cabinet Switch and on-lock status register parameters
  ❍ Command status parameters
  ❍ PID display parameters
  ❍ Thermal monitoring parameters

● Displays the real-time value of the motor-related parameters
  ❍ Motor parameters
  ❍ Thermal motor data

1. **Mains Parameters**
  ❍ Click on this element to open the related menu. *(see page 76)*

2. **Drive Parameters**
  ❍ Click on this element to open the related menu. *(see page 83)*

3. **Motor Parameters**
  ❍ Click on this element to open the related menu. *(see page 93)*

4. **Application**
  ❍ This section is only available if customized applications are programmed.

Section 3.2
Inputs / Outputs Monitoring

Presentation

Access

[Display] ➡ [Dashboard System] ➡ [IO Status]

Overview

The following screenshot shows the **Inputs / Outputs Monitoring** menu.
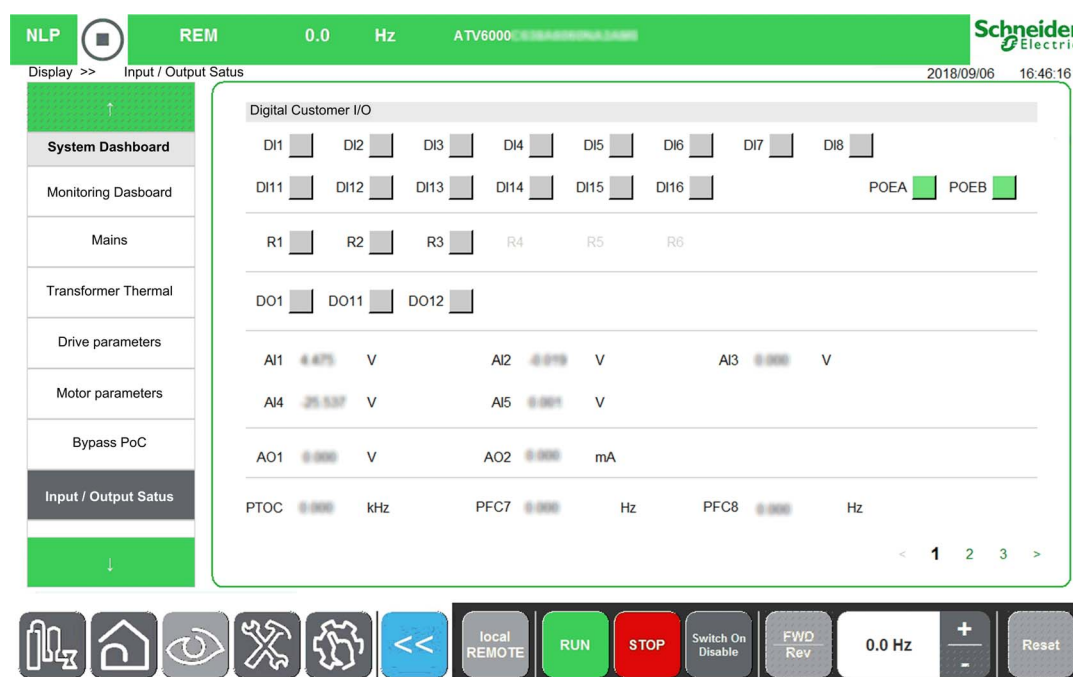
The **Inputs / Outputs Monitoring** menu is divided into several areas and pages, it presents:
- the state and assignment of digital inputs/outputs (Terminals + Option module).
- the state and assignment of analog inputs/outputs (Terminals + Option module).
- the state and assignment of Cabinet digital inputs/outputs.
- the state and assignment of relays inputs/outputs (Terminals + Option module).

NOTE: Read-only parameters, cannot be configured.

Status

The following table provides the details of the assignment status, it displays if the function is assigned to a Input/Output:

Color & Status	Description
Grey	Indicates that the assignment is not defined.
Green	Indicates that the assignment is configured.

Inputs and Outputs Parameters

Read-only parameter, cannot be configured.

The following table displays all the functions associated with Input /Ouput Monitoring menu in order to verify, for example, for compatibility problems. For assignment details refer to the setting menu

If no functions have been assigned a grey square is displayed.

I/O	Terminals	With Option module	Cabinet
Digital Inputs.	D1...D8:	D11...D16:	D50...D64:
	[DI1 High Assignment] *L I H* ... [DI8 High Assignment] *L B H*	[DI11 High Assignment] *L I I H* ... [DI16 High Assignment] *L I 6 H*	[DI50 High Assignment] *L 5 0 H* ... [DI64 High Assignment] *L 6 4 H*
	[DI1 Low Assignment] *L I L* ... [DI8 Low Assignment] *L B L*	[DI11 Low Assignment] *L I L* ... [DI1 Low Assignment] *L I 6 L*	[DI50 Low Assignment] *L 5 0 L* ... [DI64 Low Assignment] *L 6 4 L*
	[Logic inputs physical image] *i L I i* (b0)...(b7)	[Logic inputs physical image] *i L I i* (b10)...(b15)	[Cabinet Input physical state] *i L C i* (b0)...(b14)
Relay Outputs	R1...R3:	-	R60...R67:
	[R1 Assignment] *r I* ... [R3 Assignment] *r 3*		[R60 Assignment] *r 6 0* ... [R67 Assignment] *r 6 7*
	[Logic outputs physical image] *o L I L* (b0)...(b2)		[Cabinet Ouput physical state] *o L C I* (b0)...(b7)
Relay Inputs	-	R4...R6:	-
		[R4 Assignment] *r 4* ... [R6 Assignment] *r 6*	
		[Logic outputs physical image] *o L I i*.b3...OL1I.b6	
Analog Inputs	AI1...AI3:	AI4, AI5:	-
	[AI1 Assignment] *A i I A*...[AI3 Assignment] *A i 3 A* [AI1]?*A i I C*...[AI3] *A i 3 C*	[AI4 Assignment] *A i 4 A*, [AI5 Assignment] *A i 5 A* [AI4] ?*A i 4 C*, [AI5] *A i 5 C*	
Analog Outputs	AQ1,AQ2:	-	-
	[AQ1 assignment] *A o I*, [AQ2 assignment] *A o 2* [[AQ1] *A o I C*, [AQ2] *A o I C*		
Pulse input	[PTO Assign] *P t o* [PTO Frequency] *P t o C* [DI7 Pulse Input Assign] *P i 7 A*, [DI7 Pulse Input Assign] *P i 7 A* [Logic inputs physical image] *i L I i* (b6), [Logic inputs physical image] *i L I i* (b7)	-	-

Section 3.3
Energy Dashboard

Presentation

Access

[Display] ➡ [Energy Dashboard]

Overview

The **Energy Dashboard** menu allows you to see the real-time information of the connected devices.
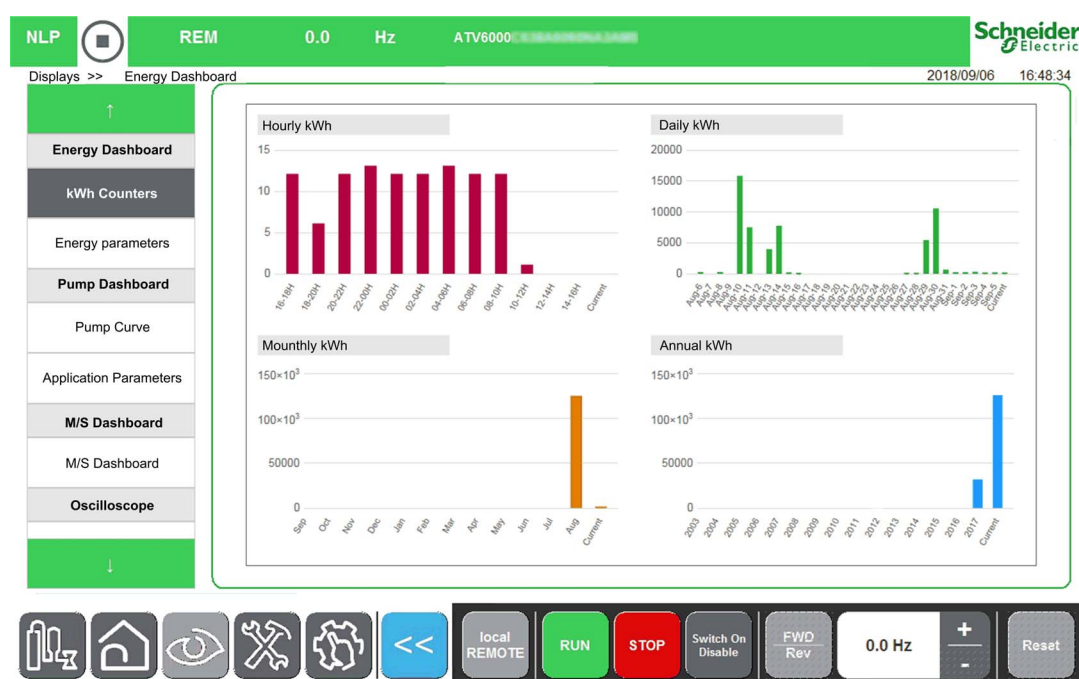
The **Energy Dashboard** tab is divided into two main zones:
● A tree view on the left-side of the screen.
● A display area on the right-side of the screen.

This menu displays the graphical representation of hourly, daily, monthly, and yearly power consumption of the device

NOTE: The parameter values are automatically refreshed at regular intervals.

Parameters

See related energy function parameters *(see page 118)*.

Section 3.4
Pump Dashboard

Presentation

Access

[Display] → [Pump Dashboard]

Overview

When the User has entered the pump curve characteristics and activated it, the following curve displays are available:

- Mechanical power vs flow display
- Head of pump vs flow display
- Efficiency vs flow display
- Mechanical power vs speed display

Pump Data - Application Parameters

See related pump data parameters

Section 3.5
Oscilloscope

What Is in This Section?

This section contains the following topics:

Presentation

Access

[Display] ➔ [Oscilloscope]

Overview

The oscilloscope menu is used to display the real-time waveforms of the ATV6000's input and output variables and also keep traces of parameters on the connected device.

NOTE: Oscilloscope configuration change when the device is running will not be saved in Control configuration file

The Oscilloscope Panel is composed of several areas described below:

1. **Curves area**: *(see page 47)*
   ○ When acquisition is started, then curves are displayed on the same moment.

2. **Status area** *(see page 47)*
3. **Toolbar area** *(see page 48)*

NOTE: Device must be in online mode.

Curve Area
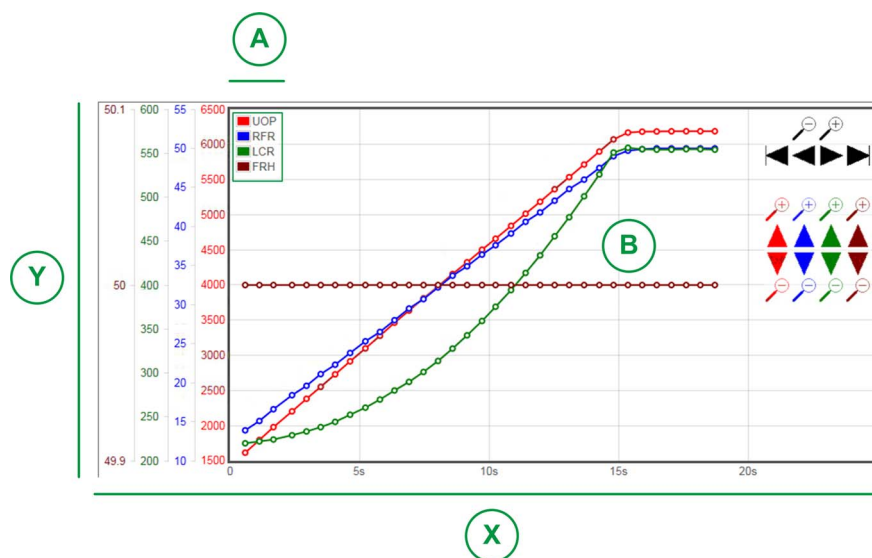
X: Horizontal axis indicating the time value.

Y: Vertical axis, indicating the value of the associated channel signal. (Here 4 Channels are displayed.)

A: Legends

B: Curves

NOTE: Oscilloscope function can display one axis per curve, each axis, and curve has a different color

Status Area

Status area indicates the status of the actual acquisition and displays the value for each channel.
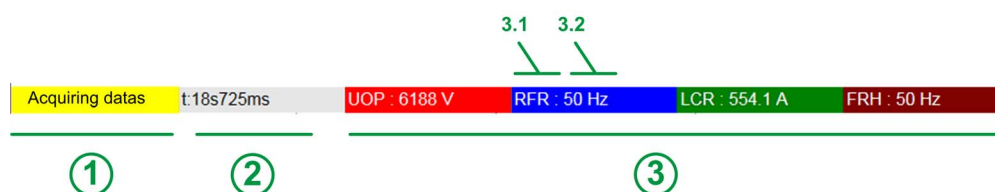
It is composed by:

1 Status of the acquisition.
2 Time value.
3 Acquisition value for each channel.
3.1 Associated parameters for each channel.
3.2 Associated curve color for each channel.

ToolBar

Overview

The Toolbar is composed of several buttons described below:

1. **Control**: Allows to Start or stop acquisition mode.
2. **Time**: Configuration mode; allows you to define the time recording selection. *(see page 51)*
3. **Channels**: Configuration mode; allows you to define the parameters to be recorded.
   4 Channels can be configured. *(see page 51)*
4. **Trigger**: Configuration mode; allows you to define trigger signals to start a recording when a specific event occurs. *(see page 51)*
5. **Legend**: Allows to display indication of the different curves.
6. **Trash can**: Allows to delete your current acquisition.
7. **Display option**: Allows you to define the display mode selection.
8. **Snapshot mode**: Allows you to take a snapshot of your acquisition. See Export files function *(see page 72)*.

Control

The table provides the details of the Control button available on toolbar area

Icon	Name	Description
▶	**Start**	Start acquisition
■	**Stop**	Stop acquisition

Time Selection

This area allows you to define the settings for the recoding traces.

- **Sampling time**:
  It allows you to select the duration between 2 points.
  Range: 500 ms, 1 s, 2 s, 5 s, 10 s, 20 s, 30 s, 1 min, 5, min.
  Default value: 1 s
  Maximum record duration: 3 last remaining days.
- **Window time**:
  It allows you to select the acquisition area.
- **Offset time**: Offset will be applied to the display area in order to set the Y axis of the associated curve.
- **Configure the Pan**
  - ○ Displays or hides a pan/panning toolbar to shift the image within a viewing area.
  - ○ Use the **+** and **-** buttons to zoom IN or zoom Out.

  NOTE: The signal amplitude being between 1 s and 72 h (Seconds, minutes, and hour).

Channels Selection

This area allows you to define the settings for recording the traces.
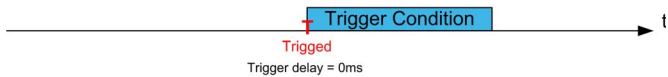
- **Channel 1...4**:
  Selection of the parameter among a predefined list.
  NOTE: It is possible to add a new parameter with the modbus address.
- **Offset**:
  Offset will be applied to the display area in order to set the Y axis of the associated curve.
- **Amplitude** (axe y):
  This amplitude allows to set the maximum value of the Y axis of the associated curve.

Trigger Selection
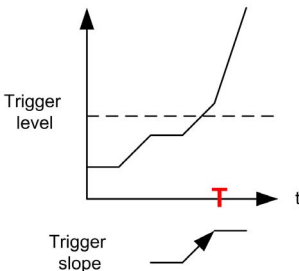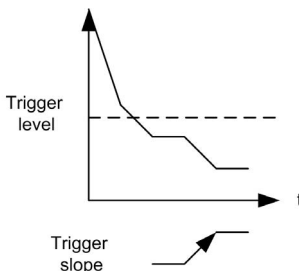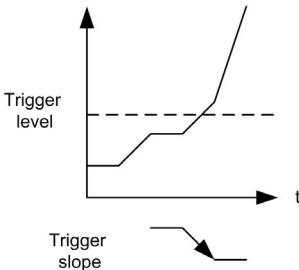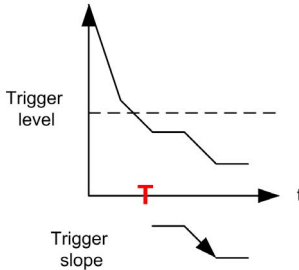
This area allows you to define the settings for recording the traces.
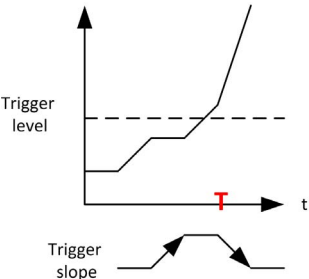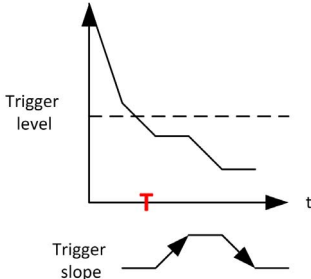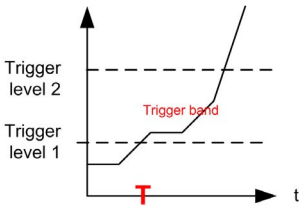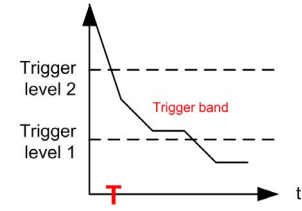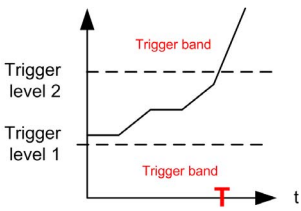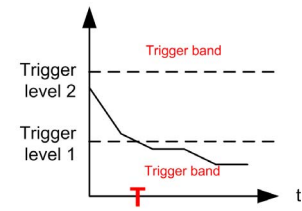
- **Trigger Parameter:**
  It displays all the parameters which are added to be traced.
- **Trigger threshold**:
  It allows to define the scale value of the associated parameter.
- **Trigger Delay:**

Defines the delay between the trigger event and the beginning of trace acquisition

Trigger delay	Description
0 ms:	This selection means that the data acquisition starts at the trigger event. Trigger Condition Trigged Trigger delay = 0ms t
+ X ms	This selection means that the data acquisition will start after the trigger event. Trigger Condition Trigged Trigger delay = +Xms t

- **Trigger Type**

It allows to define the type of acquisition.

Type	Description
None	Acquisition starts when **Start** is pressed.
Positive slope	Trigger data channel — Trigger data channel Trigger level — Trigger level Trigger slope — Trigger slope Acquisition starts when trigger parameter become greater than trigger selected value
Negative slope	Acquisition starts when trigger parameter become smaller than trigger selected value Trigger data channel — Trigger data channel Trigger level — Trigger level Trigger slope — Trigger slope

Type	Description
Positive & Negative	Acquisition starts when trigger parameter becomes smaller or greater than trigger selected value
WindowsIn	Acquisition starts when trigger parameter is inside a minimum (Level 1) and maximum (Level 2) trigger value.
WindowsOut	Acquisition starts when trigger parameter is outside a minimum (Level 1) and maximum (Level 2) trigger value.

Snapshot Mode

Click on the button to take a snapshot of the acquisition, it can be exported on a USB key. See Export files function *(see page 72)*.

Oscilloscope Configuration

Defining Parameters

To define and set the parameters linked to the channel for a recording.

Step	Action
1	Click on Channel button. **Result**: The box is extended.
2	In the dialog box: Select the parameter you wish to record.
3	Input the sampling rate value.
4	Input the offset value.
5	Input the amplitude value.
6	Click on the Start button to start the acquisition.
For more details, refer to Channels Selection *(see page 48)*.	

NOTE: It is possible to add a new parameter with the modbus address.

Defining a Trigger Signals

To define the trigger signals for a recording:

Step	Action
1	Click on Trigger button **Result**: The box is extended
2	In the dialog box: Select the parameter you wish to record
3	Input the scale value of the associated parameter.
4	Input the delays between the trigger event and the beginning of the trace acquisition.
5	Click on the Start button to start the acquisition.
For more details, refer to Trigger Selection *(see page 49)*.	

Export File

When the acquisition is running, a snapshot is done; It is possible to export all snapshots of the "Oscilloscope Snapshot" into the default directory. See menu Export Files *(see page 72)*.

Parameters Selection

Selectable List of Parameters

This table provides the list of parameters that can be selected to the channel.

Menu	Code	Label	Units
Mains Data *(see page 76)*	uLn	[Mains Voltage]	V
	uL1	[Mains Voltage phase 1-2]	V
	uL2	[Mains Voltage phase 2-3]	V
	uL3	[Mains Voltage phase 3-1]	V
	iLn	[Mains Current]	A
	iL1	[Mains Current L1]	A
	iL2	[Mains Current L2]	A
	iL3	[Mains Current L3]	A
	FAC	[Mains Frequency]	Hz
	iPrW	[Active Input Power]	kW
	iqrW	[Input Reactive Power]	kW
	iSrW	[Apparent Input Power]	kW
	PWF	[Input Power Factor]	%
	uMV	[Mains Unbalance Ratio]	%
Power stage Data *(see page 79)*	tt1M	[Transfo Cab Temp 1]	°C
	tP1u	[Thermal transformer U1]	°C
	tP1V	[Thermal transformer V1]	°C
	tP1W	[Thermal transformer W1]	°C
	tt2M	[Transfo Cab Temp 2]	°C
	tP2u	[Thermal transformer U2]	°C
	tP2V	[Thermal transformer V2]	°C
	tP2W	[Thermal transformer W2]	°C
Motor data *(see page 93)*	FrH	[Pre-Ramp Ref Freq]]	Hz
	Fro	[Ramp output frequency (signed)]	
	uoP	[Motor Voltage]	V
	LCr	[Motor Current]	A
	rFr	[Motor Frequency]	Hz
	SPd	[Motor Speed]	rpm
	otr	[Motor Torque]	%
	otrn	[Motor Torque (Nm)]	Nm
	EPr	[Active Electrical output power estimation]	%
	EPrW	[Acv Elc out pwr estm]	kW
	oPr	[Motor Power]	%
	oPrW	[Power Estim Value]	kW
Motor Thermal *(see page 79)*	tHM1	[Thermal winding U1]	°C
	tHM2	[Thermal winding V1]	°C
	tHM3	[Thermal winding W1]	°C
	tHM5	[Thermal winding U2]	°C
	tHM6	[Thermal winding V2]	°C
	tHM7	[Thermal winding W2]	°C
	tHM4	[Thermal bearing 1]	°C
	tHM8	[Thermal bearing 2]	°C
	tHM9	[Thermal bearing 3]]	°C
	tHMA	[Thermal bearing 4]	°C

Menu	Code	Label	Units
Drive Data *(see page 83)*	L F ⌐ A	[Ref Frequency]	Hz
	L F ⌐ d	[DRIVECOM : Nominal speed value]	
	L ʅ ⌐ A	[Torque ref.]]	%
	C ⌐ F 5	[Config. active]	-
	⌐ F C C	[Ref Freq Channel]	-
	C Π d C	[Command Channel]	-
	C Π d 5	[Cabinet Switch Status]	-
	۹ F ۵ 5	[QF1 Command State]	-
	P L ۵ 1	[On Lock Register]	Bit
	ʅ L 5 1	[Overload State 1]	
	ʅ L 5 ₂	[Overload State 2]	

Section 3.6
Identification

Drive Identification

Access

[Display] ➡ [Identification]

Overview

This menu displays the global information about the device:

- **Drive**
  - ○ Drive Type
  - ○ Rating
  - ○ Cooling Type
  - ○ Drive Design

- **Transformer**
  - ○ Type
  - ○ Input Voltage
  - ○ Output Voltage

- **Power Cell**
  - ○ Variant
  - ○ Quantity
  - ○ Voltage Rating
  - ○ Current Rating

- **Board CPU**
  - ○ Ethernet
  - ○ ...

- **HMI Panel identification**
  - ○ Version

- **PLC Inside identification**
  - ○ Version

Chapter 4
Diagnostics Functions

Overview

This information can be accessed using the **Diagnostics** Menu Panel available to the ATV6000 HMI Panel.

What Is in This Chapter?

This chapter contains the following sections:

Section 4.1
Status Synthesis

What Is in This Section?

This section contains the following topics:

Status Synthesis

Access

[Diagnostics] ➡ [Status Synthesis]

Overview

This menu is used to display thermal state of the motor, transformers and encoder installed.
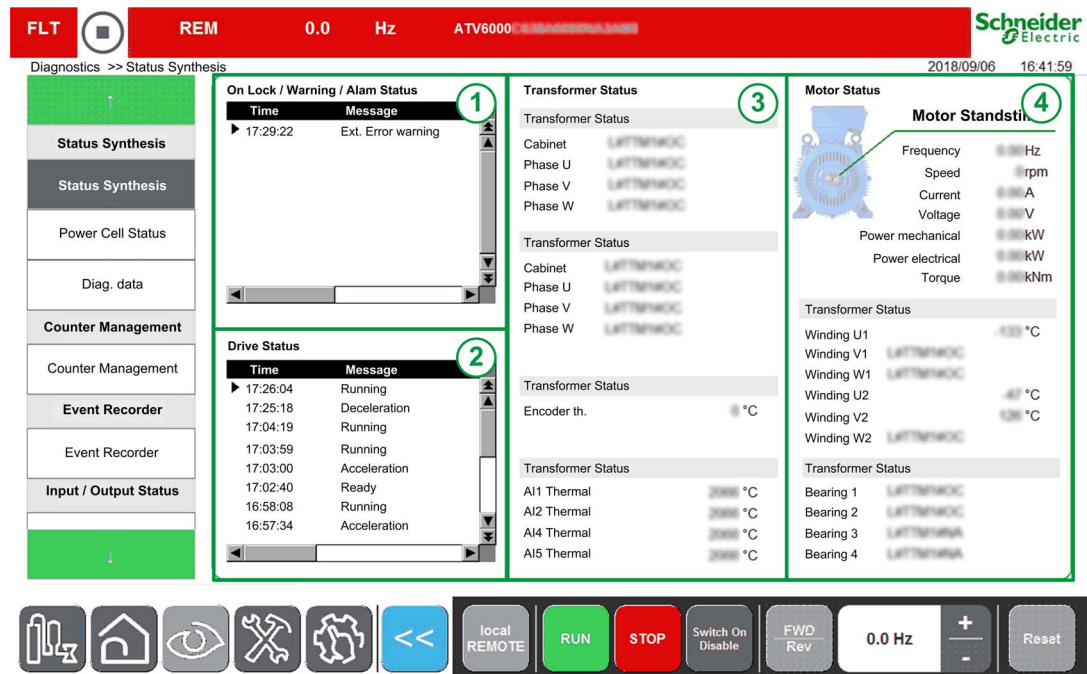
The Status Synthesis Menu is divided into 4 sections.
1. **On lock / Warning / Alarm Status:** displays the Status related to selected error in the status history.
   NOTE: Click on this element opens an new window linked to the Error menu.

2. **Drive Status:** displays the drive state.
3. **Transformer Status:** displays the thermal information of the transformer.
4. **Motor Status:** displays the characteristic and thermal information of the motor.

Power Cell Status

Access

[Diagnostics] ➡ [Status Synthesis] ➡ [Power cell Info]

Description

This menu is used to display the status of each installed Power Cell.
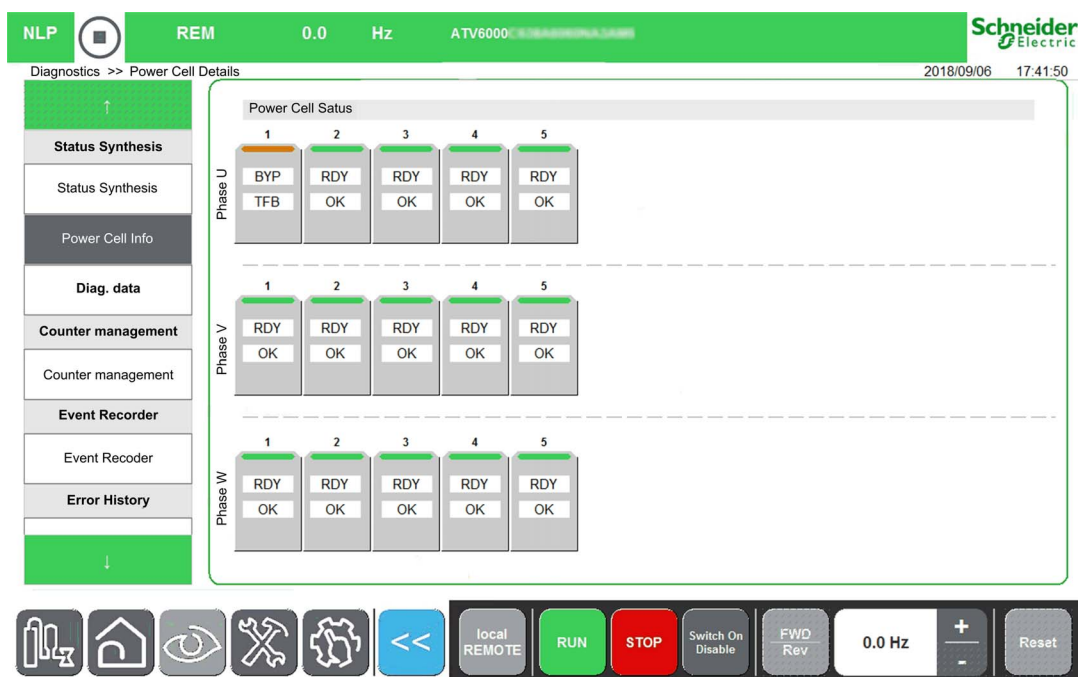
NOTE: Clicking on the **POC** allows you to navigate through different status pages.

Power Cell Status
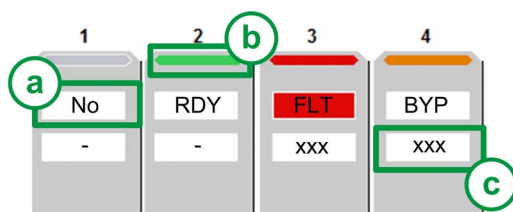
- ● **Power cell Status:** Displays the power cell diagnostic related to general status.
    - **a.** Status 1 - PCM0: Displays the status related to the main status of the power cell.
    - **b.** Color status bar: Displays a specific color linked to the each status of the power cell.
    - **c.** Status 2 - PCM1: Displays a value related to the detected warning (Warn) or error (Err) of the power cell.
      NOTE: PCM1 is only able to monitor an hexadecimal value.

Example with Status 1: PCM0:

Item	Color	Code	Description
1	Grey	no	Indicates that the Power Cell is not configured
2	Green	rdy	Indicates that the Power cell is ready
3	Red	FLt	Indicates that the Drive detected error on the Power cell
4	Orange	byP	Indicates that the Power cell is bypassed

Example with status 2: PCM1:

Item	Hexa value	Bit	Description
1	-	-	Not configured
2	-	Bit 0 set to 0: OK	No warning/no error
3	-	Bit 4 set to 1: OHF	Overheating error
4	-	Bit 4 set to 1: OHF	Overheating error

[Power cell status 1] *P C M O*

Power cell status list 1

Read-only parameters, cannot be configured.

Setting	Code / Value	Description
[PoC not configured]	*n o*	Power cell not configured **Color status bar:** Grey
[PoC Invalid Config]	*t o P o*	Power cell not configured but detected **Color status bar:** Red
[PoC not supplied]	*n L P*	Power cell is powered on but the DC bus is not loaded **Color status bar:** Green
[PoC ready]	*r d Y*	Power cell ready **Color status bar:** Green
[PoC running]	*r u n*	Power cell run command present and zero reference **Color status bar:** Green
[PoC fault]	*F L t*	Power cell error **Color status bar:** Red
[PoC By-passed]	*b Y P*	Power cell bypassed **Color status bar:** Orange
[Power Output Disabled]	*P o d*	Power output disable **Color status bar:** Orange
[Damaged PoC By-passed]	*b Y P F*	Damaged Power cell bypassed **Color status bar:** Red

[Power cell status 2] *P C M 1*

Power cell status list 2

Read-only parameters, cannot be configured. Hexadecimal values are displayed to the HMI Panel.

Bit	Description, Value
0	Set to 1: UOF Upward optical fiber error (PoC => FPGA)
1	Set to 1: OBW Light overvoltage warning
2	Set to 1: USF DC bus under-voltage error
3	Set to 1: PHF Input phase loss error
4	Set to 1: OHF Overheating error
5	Set to 1: RCF Rectifier command error
6	Set to 1: OBF DC bus over-voltage error
7	Set to 1: DOF Downward optical fiber error (FPGA=>PoC)
8	Set to 1: Power cell bypassed
9	Set to 1: Reserved
10	Set to 1: BPA Bypass IGBT
11	Set to 1: Diagnostic in progress
12	Set to 1: Power output disabled

Section 4.2
Event Recorder

Even Record Menu

Access

[Diagnostics] ➔ [Event recorder]

Overview

The Event record menu allows the user to consult and export the drive event log file. A configurable context is saved with each event.

The configurable event cannot be configured using HMI Panel, it must be done using the DTM, and activated at the end of the commissioning by services.

NOTE:
- This function can be configured at any time, whatever the status of the drive.
- The HMI is able to store 9Gb of events, which represents 40 years of data stored on the HMI.

The Event Recorder panel is composed of 2 areas
1. Selection area
2. Event display area.

Selection Area

The selection area is composed of 2 parts
- **Date Selection**
  - It is used to select the required date.
  - When a date is selected, the "Event List display" area is automatically updated.
  - By default, when entering in the menu, the selected date is "today".

- **Event Filter Selection**
  - It is used to select through "Checkbox" the required event record types.
  - When an event type is selected, the "Event List display" area is automatically updated.
  - By default, when entering in the menu, all the events are selected.

NOTE: All the data are saved in the CSV file and do not depend on the filter selection.

Event Display

Event Display area is composed by 2 options
- **Pages Navigation**
  - There are 100 events per page.

- **Event List Display**

Export Files

The operation parameters are recorded automatically when the ATV6000 is running.

6 Types of event are recorded.
- Periodicity
- Channel for command and reference value
- Warning code
- Error code
- Drive state
- Configuration stored

They are stored in text file format into the Log folder of the HM hard disk everyday, see Export Files *(see page 72)* menu.

Section 4.3
Warning History

Warning History

Access

[Diagnostics] ➜ [Warning History]

Overview

This menu presents the list of warnings that occurred in the device.

For a complete list of warnings, see the Diagnostics and Troubleshooting chapter

Section 4.4
Error History

What Is in This Section?

This section contains the following topics:

Error History

Access

[Diagnostics] ➡ [Error History]

Overview

This menu presents the list of errors detected by the drive.

Error History Panel is composed of several pages described below:
- **Error History**
  - ○ **Details**: Clicking on this button opens a new page (Error details) linked to the error selected.
  - ○ **Help**: Clicking on this button opens a new page (Error description) linked to the error selected.
- **Error Description**
  This page displays the **Code**, **Description**, **Time**, and probable **Cause & Remedy** of the active error detected in the device.
  NOTE: See full list of error codes available in the Diagnostics and Troubleshooting in *(see page 223)*
- **Error details**
  This page displays the status and main characteristics of the drive.
  - ○ **Help**: Clicking on this button opens a new page linked to the error selected.
  - ○ **Close**: Clicking on this button allows to go back to the **Error History** page.

500 Last Detected Errors

Access

[Diagnostics] ➜ [500 Last detected errors]

Overview

This menu presents the 500 last detected errors, it is possible to export this data, see Export files menu *(see page 72)*

For a complete list of error codes, see the Diagnostics and Troubleshooting chapter *(see page 223)*

Chapter 5
HMI Settings and Preferences.

Overview

This section can be accessed using the **Settings** Menu available only on the ATV6000 HMI Panel.

What Is in This Chapter?

This chapter contains the following sections:

Section 5.1
My Preferences

What Is in This Section?

This section contains the following topics:

Topic	Page
Localization Settings	69
User Logging	70

Localization Settings

Access

[Settings] ➡ [My preferences] ➡ [Localization Settings]

About This Menu

Localization screen is used to perform configuration settings related to the user interface.

● **Language Selection**
Used to change HMI Internal System Language:
❍ English
❍ Français
❍ Deutsch
❍ Español
❍ Русский язык
❍ 中文

● **Set date/time:**
Used to set the date and time in the following format yyyy/mm/dd / hh:mm:ss

● **Application Name**
Used to display the application name, it allows to enter a new application name for your system.

User Logging

Access

[Settings] ➡ [My preferences] ➡ [User logging]

About This Menu

Each Menu and parameter has an access Level. These access levels are password protected and defined during the commissioning.

HMI Panel start at the first time with the **Basic** user profile.

NOTE:
- After 15 minutes of inactivity the user is automatically logged off .
- User passwords can only be modified by the admin or Schneider Services.
- If you attempt to login to the HMI using an incorrect password, your session will be locked for security reasons after 10 attempts. Contact your local Schneider Electric representative.

Access level and Profile

It is possible to use different user profiles linked to different access levels.

Basic
- Users: Operator
- Access Rights:
  - ❍ Monitoring data only (Diagnostics, Settings, Configuration panels are not accessible).
  - ❍ Control and Command panel

Advanced
- Users: Operator advanced, Maintenance engineer / technician, Support.
- Access Rights:
  - ❍ Settings and monitoring with limitation.
  - ❍ Device Name
  - ❍ Control and Command panel
  - ❍ No Firmware update.

Services Expert
- Users: Maintenance engineer / Support engineer, Commissioning Engineer.
- Access Rights:
  - ❍ All access, monitoring and settings
  - ❍ Create account
  - ❍ Firmware update
  - ❍ Control and Command panel

Access Levels for the HMI panel

User profile	Custom Application (1)	Home	Display	Diagnostics	Even Recorder Export	Settings	Command Panel
Basic	✔	✔	✔	R	–	–	✔
Advanced	✔	✔	✔	R	✔	R	✔
Services Expert	✔	✔	✔	✔	✔	✔	✔
(1) Only available if customized applications are programmed							

✔ Full access
R Limited access
– No access

Login

Procedure to login, whatever the user profile.

Step	Action
1	Input the desired user profile. Refer to the user profile naming defined during the commissioning.
2	Enter the password for the given level. The password can be entered directly via the soft keyboard.
3	Press OK

Logout

Logs out the actual logged in Basic user profile.

Section 5.2
File Management

Export Files

Access

[Settings] ➡ [File Management] ➡ [Export Files]

Overview

The HMI panel has an SD card slot and two USB host ports for external storage.

Export files mode can be used with several functions, some of them are managed in their own menus

It is possible to select, using "checkbox" in this menu, the data to export among the following functions:

Functions	File Path	Customer file name	Description	Menu
Drive Configuration	*Ctrl - User:/Drive/Conf/ConfPackage.cfg*	`ConfPackage.cfg`	Configuration upload	Export files
Error History	*Hmi- C:\temp\FaultHistory.csv*	`FaultHistory.csv`	Last 15 Error History	Export files
Warning History	*Hmi- C:\temp\500lastwarnings.html*	`Lastwarnings.html`	Last warning history	Export files
Last 500 Error	*Hmi- C:\temp\ 500lastfaults.html*	`500lastfaults.html`	Last 500 error history	Last 500 Error *(see page 65)*
Event recorder	*Hmi- D:\KALA_persistent\Events\xxx*	`Events_record_YYYY _MM_DD.csv.gz`	All Events history	Event recorder *(see page 60)*
Distribution Logging	*Ctrl - User:/Drive/Log/Distribution.csv*	`Distribution.csv`	Distribution logging	Export files
KW Report	*Ctrl - User:/Drive/Log/KWReport.csv*	`KWReport.csv`	KW Report logging	Export files
Oscilloscope Snapshot	*Hmi- C:\temp\scope_screenshots\xxx*	`scope_scn_YYYY_MM_ DD_TTTT.png`	Oscilloscope capture	Oscilloscope *(see page 45)*
NOTE: Due to technical reasons, do not open your .CSV file by double-clicking it; Open your spreadsheet software and use the "import" functionality to open the file.				

Procedure

Step	Action
1	Select which function(s) you want to export.
2	Plug the USB key into the USB slot **Result:** The USB key is detected, a new element appears on the HMI.
3	Click on the element. **Result:** During the export a message indicates that the export in progress. **Result:** This data is then transfered to the USB key.

NOTE:
The files are exported onto the selected USB key in the folder "ATV6000_export".
● If the folder already exists, it will be overwritten.
● It is not possible to import from a USB key to HMI Panel

Part IV
Display Parameters

Overview

Display menu shows monitoring data related to the drive and the application.

It offers an application-oriented display in terms of energy, cost, cycle, efficiency, ...

This is available with customized units and graphics view.

This information can be accessed using the **Display** Menu available in ATV6000 DTM launched through the SoMove FDT or ATV6000 HMI Panel.

What Is in This Part?

This part contains the following chapters:

Chapter 6
System Dashboard

What Is in This Chapter?

This chapter contains the following sections:

Section 6.1
Mains data

Mains Data

Access

[Display] ➡ [Dashboard System] ➡ [Mains Data]

About This Menu

This menu shows the mains-related parameters.

Read-only parameters cannot be configured.

[Mains Voltage] �685

Mains voltage based on AC bus measurement, motor running or stopped.

Setting	Description
1.0...860.0 Vac	Setting range: **[no meas.]** - - - - is displayed if no value is measured. **Factory setting**: –

[Mains Voltage phase 1-2] 685 /

Mains voltage phase 1-2 measurement.

Setting	Description
-3,276.7...3,276.7 Vac	Setting range **Factory setting**: –

[Mains Voltage phase 2-3] 685 2

Mains voltage phase 2-3 measurement.

Setting	Description
-3,276.7...3,276.7 Vac	Setting range **Factory setting**: –

[Mains Voltage phase 3-1] 685 3

Mains voltage phase 3-1 measurement

Setting	Description
-3,276.7...3,276.7 Vac	Setting range **Factory setting**: –

[Mains Current] ı L n

Actual mains current (effective value of the fundamental mode).

Accuracy: 2% (related to drive nominal current).

Setting	Description
According to drive rating	Setting range **Factory setting**: –

[Mains Current] ꞮL1

Mains estimated current phase 1

Setting	Description
According to drive rating	Setting range **Factory setting**: –

[Mains Current] ꞮL2

Mains estimated current phase 2

Setting	Description
According to drive rating	Setting range **Factory setting**: –

[Mains Current] ꞮL3

Mains estimated current phase 3

Setting	Description
According to drive rating	Setting range **Factory setting**: –

[Mains Frequency] FAC

Actual mains frequency.

Setting	Description
-3476.7...3276.7 Hz	Setting range **Factory setting**: –

[Active Input Power] ꞮPrW

Active electrical input power.

Setting	Description
According to the drive rating	Setting range in kW if **[Motor Standard]** bFr is set to **[50Hz IEC]** 50 or in HP if **[Motor Standard]** bFr is set to **[60Hz NEMA]** 60 **Factory setting**: _

[Input Reactive Power] ꞮqrW

Reactive electrical input power.

Setting	Description
According to the drive rating	Setting range in kW if **[Motor Standard]** bFr is set to **[50Hz IEC]** 50 or in HP if **[Motor Standard]** bFr is set to **[60Hz NEMA]** 60 **Factory setting**: _

[Apparent Input Power] ꞮSrW

Apparent Electrical input power estimation

Setting	Description
According to the drive rating	Setting range in kW if **[Motor Standard]** bFr is set to **[50Hz IEC]** 50 or in HP if **[Motor Standard]** bFr is set to **[60Hz NEMA]** 60 **Factory setting**: _

[Input Power Factor] *P W F*

Mains input power factor.

Setting	Description
According to the drive rating	Setting range displayed as a percentage **Factory setting**: _

[Mains Unbalance Ratio] *u Π V*

Mains unbalance ratio.

Setting	Description
-327.67...327.67%	Setting range **Factory setting**: –

Section 6.2
Power stage data

[Transformer Thermal Display] *t t H P*

Access

[Display] ➜ [System Dashboard] ➜ [Transformer Thermal Display]

About This Menu

This menu shows the transformer-related parameters.

Following parameters are available if [Cab Transfo PT100] *o C t 2* is configured.

Read-only parameters cannot be configured.

Cabinet	Transformer 1			Transformer 2		
	Winding U	Winding V	Winding W	Winding U	Winding V	Winding W
t t 1 ∏	TP1U	TP1V	TP1W	-	-	-
t t 2 ∏	-	-	-	TP2U	TP2V	TP2W

[Transfo Cab Temp 1] *t t 1 ∏*

Thermal Transformer Cabinet Monitoring 1

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer U1] *t P 1 u*

Thermal transformer 1 winding U

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer V1] *t P 1 V*

Thermal transformer 1 winding V

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer W1] *t P 1 W*

Thermal primary transformer 1 winding W

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Transfo Cab Temp 2] *t t 2 M*

Thermal Transformer Cabinet Monitoring 2

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer U1] *t P 2 u*

Thermal primary transformer 2 winding U

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer V1] *t P 2 V*

Thermal primary transformer 2 winding V

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer W1] *t P 2 W*

Thermal primary transformer 2 winding W

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer Secondary U1] *t S 1 u*

Thermal secondary transformer 1 winding U

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer Secondary V1] *t S 1 V*

Thermal secondary transformer 1 winding V

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer Secondary W1] *t S 1 W*

Thermal secondary transformer 1 winding W

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer Secondary U2] *t S 2 u*

Thermal secondary transformer 2 winding U

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer Secondary V2] *t S 2 V*

Thermal secondary transformer 2 winding V

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal transformer Secondary W2] *t S 2 W*

Thermal secondary transformer 2 winding W

Setting	Code / Value	Description
-50 °C...250 °C		Setting range Actual temperature
[-32000]	*n A*	Sensor Not Available
[-32001]	*o C*	Sensor Open Circuit
[-32002]	*S C*	Sensor Short Circuit
[-32003]	*S E*	Communication error detected between Fiber BOX and PLC

Section 6.3
Drive data

What Is in This Section?

This section contains the following topics:

Drive Parameters

Access

[Display] → [Dashboard System] → [Drive Data] → [Drive Parameters]

About This Menu

This menu shows the drive-related parameters.

[AIV1 Image input] $A \cdot V \cdot I$

AIV1 Image input.

This parameter is read-only. It enables to display the speed reference applied to the motor, or the sensor value, via the fieldbus channel.

Setting	Description
-8,192...8,192	Setting range **Factory setting**: –

[Pre-Ramp Ref Freq] $F \cap H$

Frequency reference before ramp.

This parameter is read-only. It enables to display the speed reference applied to the motor, regardless of which channel for reference value has been selected.

Setting	Description
-300.0...300.0 Hz	Setting range **Factory setting**: 0 Hz

[Ref Frequency] $L F \cap A$

Reference frequency.

This parameter only appears if the function has been enabled. It is used to change the reference frequency from the remote control.

Setting ( )	Description
-300.0...300.0 Hz	Setting range **Factory setting**: –

[Torque ref.] $L E \cap A$ ★

Torque reference.

This parameter only appears if the function has been enabled. It is used to change the torque reference value from the remote control. OK does not have to be pressed to enable a change of reference value.

This parameter can be accessed if:
- **[Trq/spd switching]** $E S S$ is not set to **[Not Assigned]** $\cap o$, and
- **[Torque ref. channel]** $E \cap I$ is set to **[Ref. Freq-Rmt.Term]** $L C C$.

Setting ( )	Description
-300.0...300.0%	Setting range **Factory setting**: –

[Torque reference] $t \ r \ r$ ★

Torque reference.

This parameter can be accessed if:
● **[M/S Device Role]** $\Pi \ 5 \ d \ t$ is set to **[Slave]** $5 \ L \ H \ V \ E$, and
● **[M/S Control Type]** $\Pi \ 5 \ C \ t$ is set to:
  ○ **[Torque Direct]** $t \ r \ 9 \ d$, or
  ○ **[Torque Reverse]** $t \ r \ 9 \ r$, or
  ○ **[Torque Custom]** $t \ r \ 9 \ C$.

Setting **( )**	Description
-32,767...32,767	Setting range **Factory setting**: –

[Measured Freq] $F \ 9 \ 5$ ★

Pulse input measured frequency.

This parameter can be accessed if **[Frequency meter]** $F \ 9 \ F$ is not set to **[Not Configured]** $n \ o$.

Setting **( )**	Description
0...30 KHz	Setting range **Factory setting**: –

Drive Status

Access

[Display] ➤ [Drive Data] ➤ [Drive Status]

About This Menu

This menu shows the status of the drive, cabinet Switch and on-lock status register.

[Drive State] *H П ı 5*

Drive state.

Setting	Code / Value	Description
[Autotuning]	*t u n*	Autotuning
[Ready]	*r d Y*	Drive ready
[Freewheel]	*n 5 t*	Freewheel stop control
[Running]	*r u n*	Motor in steady state or run command present and zero reference
[Accelerating]	*A C C*	Acceleration
[Decelerating]	*d E C*	Deceleration
[Current limitation]	*C L ı*	In current limitation
[Mot. fluxing]	*F L u*	Fluxing function is activated
[No Mains Voltage]	*n L P*	Control is powered on but the DC bus is not loaded
[Dec. adapt.]	*o b r*	Adapted deceleration
[Torque Limitation]	*t L ı*	Torque limitation
[Power Limitation]	*P L ı*	Power limitation
[Init]	*ı n ı*	Drive is initializing
[Reset]	*r 5 t*	Drive is reset
[SD Transfer Ready]	*r t t d*	Ready to transfer to drive
[Synchro. To Drive]	*5 Y t d*	Synchro to drive
[Transfer to drive in progress]	*t t d ı*	Transfer to drive in progress
[Undervoltage Warning]	*u 5 A*	Undervoltage warning
[TC Mode Active]	*t C*	TC indus mode activated
[In autotest]	*5 t*	Self test in progress
[Autotest error]	*F A*	Self test not successful
[Autotest OK]	*o K*	Self test Ok
[EEprom test]	*E P*	Self test Eeprom error
["Operating State "Fault""]	*F L t*	Product has detected an error
[DCP Flashing Mode]	*d C P*	DCP flashing mode
[Firmware Update]	*F W u P*	Firmware update
[Angle test]	*A 5 A*	Angle setting
[ON Lock active]	*o n L K*	Input MV ON Lock
[POE active]	*P o d*	Power output disable active

[Cabinet Switch Status] *C N d S*

Cabinet Switch Status

Setting	Code / Value	Description
[No]	*n o*	No command selected
[Remote]	*r E N*	Remote command selected
[Local]	*L o C*	Local command selected
[Panel]	*P A n*	Panel command selected

[On Lock Register] *P L o 1*

Device On lock status register

Bit	Description, Value
0	Set to 1: Door Open
1	Set to 1: Fan not Ready
2	Set to 1: Mains OFF Button
3	Set to 1: MV Circuit breaker Tripped
4	Set to 1: MV Circuit breaker grounding contact
5	Set to 1: MV Circuit breaker Isolated
6	Set to 1: QF2 Tripped
7	Set to 1: QF3 Tripped
8	Set to 1: QF91 Tripped
9	Set to 1: QF1 Tripped
10	Set to 1: Reserved
11 to 15	set to 1: Reserved ETO

[Command Status] *C П П -* Menu

Access

[Display] ➡ [Dashboard System] ➡ [Drive Data] ➡ [Command Status]

About This Menu

Read only parameters cannot be configured.

This menu shows monitoring parameters linked to the command selection. For settings and configuration refer to the Command and Reference Menu *(see page 197)*.

[Command Channel] *C П d C*

Command channel.

Setting	Code / Value	Description
[Ref.Freq-Rmt.Term]	*t E r*	Terminal block source **Factory Setting**
[Ref.Freq-Rmt.Term]	*L C C*	Command via Display Terminal
[Ref. Freq-Modbus]	*П d b*	Command via Modbus
[Ref. Freq-CANopen]	*C A n*	Command via CANopen if a CANopen module has been inserted
[Ref. Freq-Com. Module]	*n E t*	Command via fieldbus module if a fieldbus module has been inserted
[Embedded Ethernet]	*E t H*	Command via Embedded Ethernet
[PC tool]	*P W S*	DTM based software
[Modbus 2]	*П d b 2*	Modbus 2 source
[HMI Panel]	*H П ı P*	HMI Panel by Modbus 2 source
[Ctrl Inside]	*P L C ı*	PLC Inside source

[Cmd Register] *C П d*

Command register.

[Control Mode] *C H C F* is not set to [I/O profile] *ı o*

Possible values in CiA402 profile, separated, or not separated mode:

Bit	Description, Value
0	Set to 1: "Switch on"/Contactor command
1	Set to 0: "Disable voltage"/Authorization to supply AC power
2	Set to 0: "Quick stop"
3	Set to 1: "Enable operation"/Run command
4 to 6	Reserved (= 0)
7	"Fault reset" acknowledgment active on 0 to 1 rising edge
8	Set to 1: Stop according to the [Type Of Stop] *S t t* parameter without leaving the operation enabled state
9 and 10	Reserved (= 0)
11 to 15	Can be assigned to commands

Possible values in the I/O profile. On state command [2-Wire Control] *2 C* :

Bit	Description, Value
0	Forward (on state) command: 0: No forward command 1: Forward command **NOTE:** The assignment of bit 0 cannot be modified. It corresponds to the assignment of the terminals. It can be switched. Bit 0 *C d 0 0* is only active if the channel of this control word is active.
1 to 15	Can be assigned to commands

Possible values in the I/O profile. On edge command **[3-Wire Control]** *∃ C* :

Bit	Description, Value
0	Stop (run authorization): 0: Stop 1: Run is authorized on a forward or reverse command
1	Forward (on 0 to 1 rising edge) command
2 to 15	Can be assigned to commands
NOTE: The assignment of bits 0 and 1 cannot be modified. It corresponds to the assignment of the terminals. It can be switched. Bits 0 *C d 0 0* and 1 *C d 0 1* are only active if the channel of this control word is active.	

[Ref Freq Channel] *r F C C*

Channel of reference frequency.

Identical to **[Command Channel]** *C ∏ d C*

[Pre-Ramp Ref Freq] *F r H*

Frequency reference before ramp.

This parameter is read-only. It enables the display of the frequency reference applied to the motor, regardless of which channel for reference value has been selected.

Setting	Description
-300.0...300.0 Hz	Setting range **Factory setting**: _

[CIA402 State Reg] *E t A*

CIA402 State Register.

Possible values in CiA402 profile, separated, or not separated mode:

Bit	Description, Value
0	"Ready to switch on", awaiting power section line supply
1	"Switched on", ready
2	"Operation enabled", running
3	Operating detected error state: 0: Inactive 1: Active
4	"Voltage enabled", power section line supply present: 0: Power section line supply unavailable 1: Power section line supply present **NOTE:** When the drive is powered by the power section only, this bit is always at 1.
5	Quick stop
6	"Switched on disabled", power section line supply locked
7	Warning: 0: No warning 1: Warning
8	Reserved (= 0)
9	Remote: command or reference via the network 0: Command or reference via the Display Terminal 1: Command or reference via the network
10	Targets reference reached: 0: The reference is not reached 1: The reference has been reached **NOTE:** When the drive is in speed mode, this is the speed reference.
NOTE: The combination of bits 0, 1, 2, 4, 5 and 6 defines the state in the DSP 402 state chart (see the communication manuals).	

Bit	Description, Value
11	"Internal limit active", reference outside limits: 0: The reference is within the limits 1: The reference is not within the limits **NOTE:** When the drive is in speed mode, the limits are defined by the **[Low speed]** $L\,5\,P$ and **[High speed]** $H\,5\,P$ parameters.
12	Reserved
13	Reserved
14	"Stop key", STOP via stop key: 0: STOP key not pressed 1: Stop triggered by the STOP key on the Display Terminal
15	"Direction", direction of rotation: 0: Forward rotation at output 1: Reverse rotation at output
NOTE: The combination of bits 0, 1, 2, 4, 5 and 6 defines the state in the DSP 402 state chart (see the communication manuals).	

Possible values in the I/O profile:

Bit	Description, Value
0	Reserved (= 0 or 1)
1	Ready: 0: Not ready 1: Ready
2	Running: 0: The drive does not start if a reference other than zero is applied 1: Running, if a reference other than zero is applied, the drive can start
3	Operating detected error state: 0: Inactive 1: Active
4	Power section line supply present: 0: Power section line supply unavailable 1: Power section line supply present
5	Reserved (= 1)
6	Reserved (= 0 or 1)
7	Warning 0: No warning 1: Warning
8	Reserved (= 0)
9	Command via a network: 0: Command via the terminals or the Display Terminal 1: Command via a network
10	Reference reached: 0: The reference is not reached 1: The reference has been reached
11	Reference outside limits: 0: The reference is within the limits 1: The reference is not within the limits **NOTE:** When the drive is in speed mode, the limits are defined by LSP and HSP parameters.
12	Reserved (= 0)
13	Reserved (= 0)
14	Stop via STOP key: 0: STOP key not pressed 1: Stop triggered by the STOP key on the Display Terminal
15	Direction of rotation: 0: Forward rotation at output 1: Reverse rotation at output
NOTE: The value is identical in the CiA402 profile and the I/O profile. In the I/O profile, the description of the values is simplified and does not refer to the CiA402 (Drivecom) state chart.	

[PID display] *P ı C -* Menu

Access

[Display] ➡ [Dashboard System] ➡ [Drive Data] ➡ [PID display]

About This Menu

Read-only parameters cannot be configured.

[Internal PID ref] *r P ı* ★

Internal PID reference.

Setting ⟨⟩	Description
0...32,767	Setting range **Factory setting**: 150

[PID Reference] *r P C* ★

PID setpoint value.

Setting	Description
0...65,535	Setting range **Factory setting**: 0

[PID feedback] *r P F* ★

PID feedback value.

Setting	Description
0...65,535	Setting range **Factory setting**: 0

[PID Error] *r P E* ★

PID error value.

Setting	Description
-32,767...32,767	Setting range **Factory setting: –**

[PID Output] *r P o* ★

PID output value.

Setting	Description
[PID Min Output] *P o L* ...[PID Max Output] *P o h*	Setting range **Factory setting**: _

[Thermal Monitoring] *ŁPП-* Menu

Access

[Display] ➡ [Dashboard System] ➡ [Drive Data] ➡ [Thermal Monitoring]

About This Menu

The content of this menu can be accessed if the thermal monitoring function has been activated.

Read-only parameters cannot be configured.

[AI1 Th Value] *ŁH I V* ★

AI1 thermal value.

Setting	Description
-15...200°C	Setting range **Factory setting: –**

[AI3 Th Value] *ŁH ∃ V* ★

AI3 thermal value.

Identical to **[AI1 Th Value]** *ŁH I V* .

[AI4 Th Value] *ŁH ५ V* ★

AI4 thermal value.

Identical to **[AI1 Th Value]** *ŁH I V* .

This parameter can be accessed if VW3A3203 I/O extension module has been inserted.

[AI5 Th Value] *ŁH 5 V* ★

AI5 thermal value.

Identical to **[AI1 Th Value]** *ŁH I V* .

This parameter can be accessed if VW3A3203 I/O extension module has been inserted.

[Enc Th Value] *Łh Ł V*

Encoder thermal sensor value

Setting	Description
-15...200°C	Setting range **Factory setting: –**

Section 6.4
Motor Data

What Is in This Section?

This section contains the following topics:

Topic	Page
[Motor parameters] *ⅡⅡ₀ -* Menu	94
Thermal Motor Data *Ⅱ Ⅰ Ⅱ Ⅰ -* Menu	98

[Motor parameters] *П П □* - Menu

Access

[Display] ➡ [Dashboard System] ➡ [Motor Data] ➡ [Motor parameters]

About This Menu

This menu shows the motor-related parameters.

Read-only parameters cannot be configured.

[Pre-Ramp Ref Freq] *F r H*

Frequency reference before ramp.

This parameter is read-only. It enables the display of the frequency reference applied to the motor, regardless of which channel for reference value has been selected.

Setting	Description
-300.0...300.0 Hz	Setting range **Factory setting**: _

[Ramp output frequency (signed)] *F r □*

Ramp output frequency

Setting	Description
-300.0...300.0 Hz	Setting range **Factory setting**: _

[Motor Frequency] *r F r*

Motor frequency.

This parameter displays the estimated rotor frequency without motor slip.

Setting	Description
-3,276.7...3,276.7 Hz	Setting range **Factory setting**: 0.0 Hz

[Motor Speed] *5 P d*

Motor speed.

This parameter displays the estimated rotor speed without motor slip.

Setting	Description
0...65,535 rpm	Setting range **Factory setting**:–

[Measured output fr.] *П П F*

Measured output frequency.

This parameter can be accessed only if the encoder module has been inserted, and the available selections will depend on the type of encoder module used.

Setting	Description
-3,276.7...3,276.7	Setting range **Factory setting**: –

[Motor Mechanical speed] *S P d M*

Motor mechanical speed.

This parameter displays the estimated rotor speed with motor slip.

Setting	Description
[Undefined] *u n d* or -32,767...32,765 rpm	Setting range **Factory setting:**–

[Signed Mech Speed] *S P d 1*

Signed motor mechanical speed.

Setting	Description
[Undefined] *u n d*...32,767 rpm	Setting range **Factory setting:**–

[Motor Current] *L C r*

Motor current.

Setting	Description
0.00...65,535 A	Setting range according to drive ratings **Factory setting**: –

[Motor Current Id] *i d M*

Measurement motor current Id

Setting	Description
-32,767 Nm...32,767	Setting range according to drive ratings **Factory setting**: –

[Motor Current Iq] *i q M*

Measurement motor current Iq

Setting	Description
-32,767 Nm...32,767	Setting range according to drive ratings **Factory setting**: –

[Motor Voltage] *u o P*

Motor voltage.

Setting	Description
0...65,535 V	Setting range **Factory setting:**–

[Motor Torque] *o t r*

Motor torque.

Output torque value (100% = **[Nom Motor Torque]** *t q n*).

NOTE: The displayed value is always positive in motor mode and negative in generator mode whatever the direction.

Setting	Description
-300.0... 300.0%	Setting range **Factory setting**: –

[Motor Torque (Nm))] *otqn*

Motor torque (Nm).

Output torque value.

NOTE: The displayed value is always positive in motor mode and negative in generator mode whatever the direction.

Setting	Description
-32,767 Nm...32,767 Nm	Setting range: according to drive ratings **Factory setting**: –

[Motor Power] *oPr*

Motor power.

Output power in % (100% = nominal motor power).

Setting	Description
-300...300%	Setting range **Factory setting**: –

[Power Estim Value] *oPrW*

Motor shaft power estimation.

Setting	Description
According to the drive rating	Setting range in kW if **[Motor Standard]** *bFr* is set to **[50Hz IEC]** *50* or in HP if **[Motor Standard]** *bFr* is set to **[60Hz NEMA]** *60* **Factory setting**: _

[Acv Elc out pwr estm] *EPrW?*

Active electrical output power estimation.

Setting	Description
According to the drive rating	Setting range in kW if **[Motor Standard]** *bFr* is set to **[50Hz IEC]** *50* or in HP if **[Motor Standard]** *bFr* is set to **[60Hz NEMA]** *60* **Factory setting**: _

[Nom Motor Torque] *tqn*

Computed nominal motor torque in Nm (+/- 2% tolerance).

Setting	Description
0.01...65,535 Nm	Setting range according to drive rating. **Factory setting**: –

[Motor Torque (Nm))] *otrn*

Motor Torque in Nm

Setting	Description
-32,767 Nm...32,767 Nm	Setting range according to drive ratings **Factory setting**: –

[Motor Therm state] *tHr*

Motor thermal state.

The normal motor thermal state is 100%, the **[Motor Overload]** *oLF* is set to 118%.

Setting	Description
0...200%	Setting range **Factory setting**: –

[Motor Run Time] r t H

Motor run time.

Run elapsed time display (resettable) in seconds (number of seconds during which the motor has been switched on).

Setting	Description
0...4,294,967,295 s	Setting range **Factory setting**: _

[Power-on Time] P t H

Power-on time (resettable) or counter can be set to 0 by using the **[Time Counter Reset]** r P r parameter.

Setting	Description
0...4,294,967,295 s	Setting range **Factory setting**: _

[Overload State 1] t L S 1

Over-load monitoring state 1. Linked to **[Drive overload monit]** o b r - menu

Setting	Description
0...100 %	Setting range **Factory setting**: -

[Overload State 2] t L S 2

Over-load monitoring state 2. Linked to **[Drive overload monit]** o b r - menu

Setting	Description
0...100 %	Setting range **Factory setting**: -

[Stator Frequency] S F q

Stator frequency.

Setting	Description
[No Freq Applied] n o ...300.0 Hz	Setting range **Factory setting**: –

[Rotor Frequency] r F q

Rotor frequency.

This parameter displays the estimated rotor frequency with motor slip.

Setting	Description
[No Freq Applied] n o ...300.0 Hz	Setting range **Factory setting**: –

Thermal Motor Data *ПƚНP‑* Menu

Access

[Display] ➡ [Dashboard System] ➡ [Motor Data] ➡ [Thermal Motor Data]

About This Menu

Thermal motor data menu

Read-only parameters cannot be configured.

Following parameters are available if **[Motor PT100 Usage]** *oCƚ1* is configured.

For the thermal motor data, up to 10 PT 100 sensors are available.

PT100										
Number Name	N° 1 U1	N° 2 V1	N° 3 W1	N° 4 B1	N° 5 U2	N° 6 V2	N° 7 W2	N° 8 B2	N° 9 B3	N° 10 B4
Parameter for actual temperature	THM1	THM2	THM3	THM4	THM5	THM6	THM7	THM8	THM9	THMA
Assignment one motor (minimum)	Winding Motor 1			Bearing 1 Motor 1	-			-	-	-
Assignment one motor (maximum)	Winding Motor 1 (U1/V1/W1)			Bearing 1 Motor 1	Winding Motor 1 (U2/V2/W2)			Bearing 2 Motor 1	-	-
Assignment two motor (minimum)	Winding Motor 1			Bearing 1 Motor 1	Winding Motor 2			Bearing 1 Motor 2	-	-
Assignment two motor (maximum)	Winding Motor 1			Bearing 1 Motor 1	Winding Motor 2			Bearing 1 Motor 2	Bearing 2 Motor 1	Bearing 2 Motor 2
Assigned parameters for Warning / fault level	THW1 THT1			THW3 THT3	THW2 THT2			THW4 THT4	THW3 THT3	THW4 THT4

[Thermal winding U1] *ƚНП1*

Motor Thermal Monitoring: Temperature of winding U1

Setting	Code / Value	Description
-32002 °C...32000 °C		Setting range
[No]	*nA*	Sensor Not Available
[DI50 (High level)]… [DI61 (High level)]	*oC*	Sensor Open Circuit
[DI50 (Low level)]… [DI61 (Low level)]	*SC*	Sensor Short Circuit
[DI50 (Low level)]… [DI61 (Low level)]	*SE*	Communication error detected between Fiber BOX and PLC

[Thermal winding V1] *t H П 2*

Motor Thermal Monitoring: Temperature of winding V1

Setting	Code / Value	Description
-32002 °C...32000 °C		Setting range
[No]	*n A*	Sensor Not Available
[DI50 (High level)]… [DI61 (High level)]	*o C*	Sensor Open Circuit
[DI50 (Low level)]… [DI61 (Low level)]	*S C*	Sensor Short Circuit
[DI50 (Low level)]… [DI61 (Low level)]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal winding W1] *t H П 3*

Motor Thermal Monitoring: Temperature of winding W1

Setting	Code / Value	Description
-32002 °C...32000 °C		Setting range
[No]	*n A*	Sensor Not Available
[DI50 (High level)]… [DI61 (High level)]	*o C*	Sensor Open Circuit
[DI50 (Low level)]… [DI61 (Low level)]	*S C*	Sensor Short Circuit
[DI50 (Low level)]… [DI61 (Low level)]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal bearing 1] *t H П 4*

Motor Thermal Monitoring: Temperature of bearing 1

Setting	Code / Value	Description
-32002 °C...32000 °C		Setting range
[No]	*n A*	Sensor Not Available
[DI50 (High level)]… [DI61 (High level)]	*o C*	Sensor Open Circuit
[DI50 (Low level)]… [DI61 (Low level)]	*S C*	Sensor Short Circuit
[DI50 (Low level)]… [DI61 (Low level)]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal winding U2] *t H П 5*

Motor Thermal Monitoring: Temperature of winding U2

Setting	Code / Value	Description
-32002 °C...32000 °C		Setting range
[No]	*n A*	Sensor Not Available
[DI50 (High level)]… [DI61 (High level)]	*o C*	Sensor Open Circuit
[DI50 (Low level)]… [DI61 (Low level)]	*S C*	Sensor Short Circuit
[DI50 (Low level)]… [DI61 (Low level)]	*S E*	Communication error detected between Fiber BOX and PLC

[Thermal winding V2] *t H П 6*

Motor Thermal Monitoring: Temperature of winding V2

Setting	Code / Value	Description
-32002 °C...32000 °C		Setting range
[No]	*n A*	Sensor Not Available
[DI50 (High level)]... [DI61 (High level)]	*o C*	Sensor Open Circuit
[DI50 (Low level)]... [DI61 (Low level)]	*5 C*	Sensor Short Circuit
[DI50 (Low level)]... [DI61 (Low level)]	*5 E*	Communication error detected between Fiber BOX and PLC

[Thermal winding W2] *t H П 7*

Motor Thermal Monitoring: Temperature of winding W2

Setting	Code / Value	Description
-32002 °C...32000 °C		Setting range
[No]	*n A*	Sensor Not Available
[DI50 (High level)]... [DI61 (High level)]	*o C*	Sensor Open Circuit
[DI50 (Low level)]... [DI61 (Low level)]	*5 C*	Sensor Short Circuit
[DI50 (Low level)]... [DI61 (Low level)]	*5 E*	Communication error detected between Fiber BOX and PLC

[Thermal bearing 2] *t H П 8*

Motor Thermal Monitoring: Temperature of bearing 2

Setting	Code / Value	Description
-32002 °C...32000 °C		Setting range
[No]	*n A*	Sensor Not Available
[DI50 (High level)]... [DI61 (High level)]	*o C*	Sensor Open Circuit
[DI50 (Low level)]... [DI61 (Low level)]	*5 C*	Sensor Short Circuit
[DI50 (Low level)]... [DI61 (Low level)]	*5 E*	Communication error detected between Fiber BOX and PLC

[Thermal bearing 3] *t H П 9*

Motor Thermal Monitoring: Temperature of bearing 3

Setting	Code / Value	Description
-32002 °C...32000 °C		Setting range
[No]	*n A*	Sensor Not Available
[DI50 (High level)]... [DI61 (High level)]	*o C*	Sensor Open Circuit
[DI50 (Low level)]... [DI61 (Low level)]	*5 C*	Sensor Short Circuit
[DI50 (Low level)]... [DI61 (Low level)]	*5 E*	Communication error detected between Fiber BOX and PLC

[Thermal bearing 4] $t\,H\,\Pi\,A$

Motor Thermal Monitoring: Temperature of bearing 4

Setting	Code / Value	Description
-32002 °C...32000 °C		Setting range
[No]	$n\,A$	Sensor Not Available
[DI50 (High level)]… **[DI61 (High level)]**	$o\,C$	Sensor Open Circuit
[DI50 (Low level)]… **[DI61 (Low level)]**	$5\,C$	Sensor Short Circuit
[DI50 (Low level)]… **[DI61 (Low level)]**	$5\,E$	Communication error detected between Fiber BOX and PLC

Section 6.5
[Communication map]

What Is in This Section?

This section contains the following topics:

[Communication map] *C M M -* Menu

Access

[Display] → [Dashboard System] → [Communication map]

About This Menu

Read-only parameters cannot be configured.

[Command Channel] *C M d C*

Command channel.

Setting	Code / Value	Description
[Ref.Freq-Rmt.Term]	*t E r*	Terminal block source **Factory Setting**
[Ref.Freq-Rmt.Term]	*L C C*	Command via Display Terminal
[Ref. Freq-Modbus]	*M d b*	Command via Modbus
[Ref. Freq-CANopen]	*C A n*	Command via CANopen if a CANopen module has been inserted
[Ref. Freq-Com. Module]	*n E t*	Command via fieldbus module if a fieldbus module has been inserted
[Embedded Ethernet]	*E t H*	Command via Embedded Ethernet
[PC tool]	*P W S*	DTM based software
[Modbus 2]	*M d b 2*	Modbus 2 source
[HMI Panel]	*H M i P*	HMI Panel by Modbus 2 source
[Ctrl Inside]	*P L C i*	PLC Inside source

[Cmd Register] *C M d*

Command register.

[Control Mode] *C H C F* is not set to [I/O profile] *i o*

Possible values in CiA402 profile, separate, or not separate mode:

Bit	Description, Value
0	Set to 1: "Switch on"/Contactor command
1	Set to 0: "Disable voltage"/Authorization to supply AC power
2	Set to 0: "Quick stop"
3	Set to 1: "Enable operation"/Run command
4 to 6	Reserved (= 0)
7	"Fault reset" acknowledgment active on 0 to 1 rising edge
8	Set to 1: Halt stop according to the [Type Of Stop] *S t t* parameter without leaving the operation enabled state
9 and 10	Reserved (= 0)
11 to 15	Can be assigned to commands

Possible values in the I/O profile. On state command [2-Wire Control] *2 C* :

Bit	Description, Value
0	Forward (on state) command: 0: No forward command 1: Forward command **NOTE:** The assignment of bit 0 cannot be modified. It corresponds to the assignment of the terminals. It can be switched. Bit 0 *C d 0 0* is only active if the channel of this control word is active.
1 to 15	Can be assigned to commands

Possible values in the I/O profile. On edge command **[3-Wire Control]** $3C$:

Bit	Description, Value
0	Stop (run authorization): 0: Stop 1: Run is authorized on a forward or reverse command
1	Forward (on 0 to 1 rising edge) command
2 to 15	Can be assigned to commands
NOTE: The assignment of bits 0 and 1 cannot be modified. It corresponds to the assignment of the terminals. It can be switched. Bits 0 $Cd00$ and 1 $Cd01$ are only active if the channel of this control word is active.	

[Ref Freq Channel] $rFCC$

Channel of reference frequency.

Identical to **[Command Channel]** $CMdC$

[Pre-Ramp Ref Freq] FrH

Frequency reference before ramp.

Setting	Description
-300.0...300.0 Hz	Setting range **Factory setting**: _

[CIA402 State Reg] EtA

CIA402 State Register.

Possible values in CiA402 profile, separate, or not separate mode:

Bit	Description, Value
0	"Ready to switch on", awaiting power section line supply
1	"Switched on", ready
2	"Operation enabled", running
3	Operating detected error state: 0: Inactive 1: Active
4	"Voltage enabled", power section line supply present: 0: Power section line supply unavailable 1: Power section line supply present **NOTE:** When the drive is powered by the power section only, this bit is always at 1.
5	Quick stop
6	"Switched on disabled", power section line supply locked
7	Warning: 0: No warning 1: Warning
8	Reserved (= 0)
9	Remote: command or reference via the network 0: Command or reference via the Display Terminal 1: Command or reference via the network
10	Targets reference reached: 0: The reference is not reached 1: The reference has been reached **NOTE:** When the drive is in speed mode, this is the speed reference.
11	"Internal limit active", reference outside limits: 0: The reference is within the limits 1: The reference is not within the limits **NOTE:** When the drive is in speed mode, the limits are defined by the **[Low speed]** LSP and **[High speed]** HSP parameters.
NOTE: The combination of bits 0, 1, 2, 4, 5 and 6 defines the state in the DSP 402 state chart (see the communication manuals).	

Bit	Description, Value
12	Reserved
13	Reserved
14	"Stop key", STOP via stop key: 0: STOP key not pressed 1: Stop triggered by the STOP key on the Display Terminal
15	"Direction", direction of rotation: 0: Forward rotation at output 1: Reverse rotation at output
NOTE: The combination of bits 0, 1, 2, 4, 5 and 6 defines the state in the DSP 402 state chart (see the communication manuals).	

Possible values in the I/O profile:

Bit	Description, Value
0	Reserved (= 0 or 1)
1	Ready: 0: Not ready 1: Ready
2	Running: 0: The drive does not start if a reference other than zero is applied 1: Running, if a reference other than zero is applied, the drive can start
3	Operating detected error state: 0: Inactive 1: Active
4	Power section line supply present: 0: Power section line supply unavailable 1: Power section line supply present
5	Reserved (= 1)
6	Reserved (= 0 or 1)
7	Warning 0: No warning 1: Warning
8	Reserved (= 0)
9	Command via a network: 0: Command via the terminals or the Display Terminal 1: Command via a network
10	Reference reached: 0: The reference is not reached 1: The reference has been reached
11	Reference outside limits: 0: The reference is within the limits 1: The reference is not within the limits NOTE: When the drive is in speed mode, the limits are defined by LSP and HSP parameters.
12	Reserved (= 0)
13	Reserved (= 0)
14	Stop via STOP key: 0: STOP key not pressed 1: Stop triggered by the STOP key on the Display Terminal
15	Direction of rotation: 0: Forward rotation at output 1: Reverse rotation at output
NOTE: The value is identical in the CiA402 profile and the I/O profile. In the I/O profile, the description of the values is simplified and does not refer to the CiA402 (Drivecom) state chart.	

[Modbus network diag] *∏ ∩ ┛* - Menu

Access

[Display] ➡ [Dashboard System] ➡ [Communication map] ➡ [Modbus network diag]

About This Menu

Used for the Modbus serial communication port. Refer to the Modbus serial embedded communication manual for a complete description.

[Mdb Frame Nb] *∏ ╹ ⊆ ┠*

Modbus network frames counter: number of processed frames.

Setting	Description
0...65,535	Setting range **Factory setting**: Read only

[Mb NET CRC errors] *∏ ╹ ε ⊆*

Modbus network CRC error countered: number of CRC errors

Setting	Description
0...65,535	Setting range **Factory setting**: Read only

[Modbus Cmd] *⊆ ∏ ┛ ╹*

Command word image built with Modbus port source.

Identical to **[CMD Register]** *⊆ ∏ ┛* *(see page 103)*.

[Modbus Ref Freq] *ㄴ ⸁ ┌ ╹*

Frequency reference image built with Modbus port source (LFR_MDB).

Setting	Description
-32,767...32,767 Hz	Setting range **Factory setting**: 0.0 Hz

[Ethernet Emb Diag] *∏ ⸁ ε* - Menu

Access

[Display] ➡ [Dashboard System] ➡ [Communication map] ➡ [Ethernet Emb Diag]

About This Menu

Refer to the Modbus TCP Ethernet-IP communication manual for a complete description.

[ETH emb Rx frames] *ε ┌ ✗ ε*

Ethernet embedded Rx frames counter.

Setting 🔄	Description
0...4,294,967,295	Setting range **Factory setting**: Read only

[ETH emb Tx frames] *E t X E*

Ethernet embedded Tx frames counter.

Setting ⟨⟩	Description
0...4,294,967,295	Setting range **Factory setting**: Read only

[ETH emb error frames] *E E r E*

Ethernet embedded error frames counter.

Setting ⟨⟩	Description
0...4,294,967,295	Setting range **Factory setting**: Read only

[Ethernet Rate Data] *A r d E* ★

Actual data rate.

Setting ⟨⟩	Code / Value	Description
[Auto]	*Auto*	Automatic
[10M. full]	*10F*	10 Mega bytes full-duplex
[10M. half]	*10H*	10 Mega bytes half-duplex
[100M. full]	*100F*	100 Mega bytes full-duplex
[100M. half]	*100H*	100 Mega bytes half-duplex

[Ethernet Embd cmd.] *C П d S*

Command word image built with Ethernet embedded source.

Identical to **[CMD Register]** *C П d (see page 103)*.

[Ethernet Embd Ref Freq] *L F r S*

Embedded Ethernet reference frequency.

Setting	Description
-32,767...32,767 Hz	Setting range **Factory setting**: 0.0 Hz

[CANopen map] *C n П -* Menu

Access

[Display] ➡ [Dashboard System] ➡ [Communication map] ➡ [CANopen map]

About This Menu

CANopen® image. Refer to the CANopen® communication module manual.

[Canopen NMT state] *n П t S*

Drive NMT state of the CANopen® slave.

Settings	Code / Value	Description
[Boot]	*boot*	Bootup
[Stopped]	*StoP*	Stopped
[Operation]	*oPE*	Operational
[Pre-op]	*PoPE*	Pre-Operational

[Number of TX PDO] nbtP

Number of transmit PDO.

Setting ⟨⟩	Description
0...65,535	Setting range **Factory setting**: Read only

[Number of RX PDO] nbrP

Number of receive PDO.

Setting ⟨⟩	Description
0...65,535	Setting range **Factory setting**: Read only

[CANopen Error] ErCo

Error registry CANopen®.

Setting	Description
0...5	Setting range **Factory setting**: Read only

[RX Error Counter] rEC1

Number of receive error counter (not saved at power off).

Setting	Description
0...65,535	Setting range **Factory setting**: Read only

[TX Error Counter] tEC1

Number of transmit errors countered (not saved at power off).

Setting	Description
0...65,535	Setting range **Factory setting**: Read only

[CANopen Cmd] CMd2

Command word image built with CANopen® port source.

Identical to **[CMD Register]** CMd .

[CAN Ref Freq] LFr2

Frequency reference image built with CANopen® port source (LFR_CAN).

Setting	Description
-32,767...32,767 Hz	Setting range **Factory setting**: 0.0 Hz

[Profibus Diag] *Prb-* Menu

Access

[Display] ➡ [Dashboard System] ➡ [Communication] ➡ [Profibus Diag]

About This Menu

Following parameters can be accessible if Profibus DP module (VW3A3607) has been inserted.

[Data rate used] *bdru* ★

Data rate used by the fieldbus module.

Setting()	Code / Value	Description
[Automatic]	*Auto*	Automatic detection **Factory setting**
[9.6 Kbps]	*9K6*	9,600 Bauds
[19.2 Kbps]	*19K2*	19,200 Bauds
[93.75 Kbps]	*93K7*	93,750 Bauds
[187.5 Kbps]	*187K*	187,500 Bauds
[500 Kbps]	*500K*	500,000 Bauds
[1.5 Mbps]	*1M5*	1.5 MBauds
[3 Mbps]	*3M*	3 MBauds
[6 Mbps]	*6M*	6 MBauds
[12 Mbps]	*12M*	12 MBauds

[PPO profile used] *PrFL* ★

PPO profile in use.

Setting()	Code / Value	Description
[Not configured]	*unCG*	Not configured
[1]	*1*	PROFIdrive
[100]	*100*	Device specific
[101]	*101*	Device specific
[102]	*102*	Device specific
[106]	*106*	Device specific
[107]	*107*	Device specific

[DP Master Active] *dPMA* ★

Active master: 1 or 2.

Setting()	Code / Value	Description
[MCL1]	*1*	Master 1 **Factory setting**
[MCL2]	*2*	Master 2

[Fieldbus Error] *EPF2*

External detected error from fieldbus module.

[Fieldbus Com Interrupt] *C n F*

Fieldbus module communication interruption. Refer to the related fieldbus manual.

Setting( )	Description
0...65,535	0: No error 1: Network timeout for received requests 2: Identification error between the module and the master 3: Master in clear mode 4: Master class 2 timeout

[InternCom Error1] *i L F 1*

Option module communication interruption. Refer to the related fieldbus manual.

Setting( )	Description
0...65,535	Setting range **Factory setting**: Read only

[COM. Module Cmd.] *C M d 3*

Command word image built with fieldbus module source.

Identical to **[CMD Register]** *C M d* *(see page 103)*.

[Com Module Ref Freq] *L F r 3*

Frequency reference image built with fieldbus module source (LFR_COM).

Setting ( )	Description
-32,767...32,767 Hz	Setting range **Factory setting**: 0.0 Hz

[PROFINET Diag] *P r n -* Menu

Access

[Display] [Dashboard System] ➡➡ [Communication map] ➡ [PROFINET Diag]

About This Menu

Following parameters are accessible if PROFINET® module (VW3A3627) has been inserted.

[PPO profile used] *P r F L* ★

PPO profile in use.

Setting( )	Code / Value	Description
[Not configured]	*u n C G*	Not configured
[1]	*1*	PROFIdrive
[100]	*1 0 0*	Device specific
[101]	*1 0 1*	Device specific
[102]	*1 0 2*	Device specific
[106]	*1 0 6*	Device specific
[107]	*1 0 7*	Device specific

[iPar Status] ¡PAE ★

PROFINET: IPAR service status.

Setting ( )	Code / Value	Description
[Idle State]	¡dLE	Idle state
[Init]	¡n¡t	Initialization
[Configuration]	CanF	Configuration
[Ready]	rdY	Ready
[Operational]	aPE	Operational
[Not Configured]	uCFG	Not configured
[Unrecoverable Error]	urEC	Unrecoverable detected error

[iPar Error Code] ¡PAd ★

IPar detected error code.

Setting ( )	Description
0...5	Setting range **Factory setting**: Read only

[DP Master Active] dPПA ★

Active master: 1 or 2.

Setting ( )	Code / Value	Description
[MCL1]	1	Master 1 **Factory setting**
[MCL2]	2	Master 2

[Fieldbus Error] EPF2

External detected error from fieldbus module.

Setting	Description
0...13	0: No Error 9: Duplicate IP 10: No IP address 12: IPAR unconfigured 13: IPAR file unrecognized

[Fieldbus Com Interrupt] CnF

Fieldbus module communication interruption.

Setting ( )	Description
0...65,535	0: No error 1: Network timeout 2: Network overload 3: Ethernet carrier loss 17: IOC scanner error

[InternCom Error1] ¡LF1

Fielbus module communication interruption.

Setting ( )	Description
0...65,535	Setting range **Factory setting**: Read only

[COM. Module Cmd.] *C П d 3*

Command word image built with fieldbus module source.

Identical to **[CMD Register]** *C П d* *(see page 103)*.

[Com Module Ref Freq] *L F r 3*

Frequency reference image built with fieldbus module source (LFR_COM).

Setting 🔵	Description
-32,767...32,767 Hz	Setting range **Factory setting**: 0.0 Hz

[EtherCAT Module Diag] *E t d -* Menu

Access

[Display] [Dashboard System] ➡➡ [Communication map] ➡ [EtherCAT Module Diag]

About This Menu

Following parameters can be accessed if EtherCAT module (VW3A3601) has been inserted.

[External Error] *E P F 2*

External detected error from fieldbus module.

[Fieldbus Com Interrupt] *C n F*

Fieldbus module communication interruption.

Setting 🔵	Description
0...65,535	Setting range **Factory setting**: _

[InternCom Error1] *i L F 1*

Internal communication interruption 1.

Setting 🔵	Description
0...65,535	Setting range **Factory setting**: _

[COM. Module Cmd.] *C П d 3*

Command word image built with fieldbus module source.

Identical to **[CMD Register]** *C П d* *(see page 103)*.

[Com Module Ref Freq] *L F r 3*

Frequency reference image built with fieldbus module source (LFR_COM).

Setting 🔵	Description
-32,767...32,767 Hz	Setting range **Factory setting**: 0.0 Hz

[DeviceNet Diag] d V n - Menu

Access

[Display] ➔ [Dashboard System] ➔ [Communication map] ➔ [DeviceNet Diag]

About This Menu

Following parameters can be accessed if DeviceNet module (VW3A3609) has been inserted.

[Data rate used] b d r u ★

Data rate used by the fieldbus module.

Setting	Code / Value	Description
[Automatic]	Auto	Automatic detection **Factory setting**
[125 Kbps]	125K	125,000 Bauds
[250 Kbps]	250K	250,000 Bauds
[500 Kbps]	500K	500,000 Bauds

[Fieldbus Error] E P F 2

External detected error from fieldbus module.

Setting	Description
0...1	0: No Error 1: Profile error, verify the settings on **[Command and Reference]** C r P - menu.

[Fieldbus Com Interrupt] C n F

Fieldbus module communication interruption. Refer to the related fieldbus manual.

Setting	Description
0...65,535	0: No error 1: Error triggered by network 2: Duplicated MAC ID 3: FIFO Rx error 4: FIFO Tx error 5: CAN overrun 6: Transmission error 7: Bus off 8: IO timeout 9: Acknowledge error 10: DeviceNet network reset 11: IO connection deleted 12: No network power 13: IOC error

[COM. Module Cmd.] C M d 3

Command word image built with fieldbus module source.

Identical to **[CMD Register]** C M d *(see page 103)*.

[Com Module Ref Freq] L F r 3

Frequency reference image built with fieldbus module source (LFR_COM).

Setting	Description
-32,767...32,767 Hz	Setting range **Factory setting**: 0.0 Hz

[Modbus HMI Diag] *ⁿ ⁻ ʰ* ⁻ Menu

Access

[Display] → [Dashboard System] → [Communication map] → [Modbus HMI Diag]

About This Menu

Used for the Modbus serial communication port at the front of the control block.

[Mdb NET frames] *ⁿ ₂ ᴄ ᴵ*

Terminal Modbus 2: number of processed frames.

Setting 🔘	Description
0...65,535	Setting range **Factory setting**: Read only

[Mdb NET CRC errors] *ⁿ ₂ ᴱ ᴄ*

Terminal Modbus 2: number of CRC errors.

Setting 🔘	Description
0...65,535	Setting range **Factory setting**: Read only

[Modbus 2 Cmd] *ᴄ ⁿ ⁻ ᴳ*

Modbus 2 command register.

Identical to **[CMD Register]** *ᴄ ⁿ ⁻* *(see page 103)*.

[Modbus 2 Ref Freq] *ᴸ ᶠ ⁻ ᴳ*

Frequency reference image built with Modbus 2 port source (LFR_MDB2 or LFR_HMIP).

Setting 🔘	Description
-32,767...32,767 Hz	Setting range **Factory setting**: 0.0 Hz

[Ethernet Module Diag] *ⁿ ᵗ ᴱ* ⁻ Menu

Access

[Display] → [Communication map] → [Ethernet Module Diag]

About This Menu

Following parameters are accessible if Ethernet-IP - Modbus TCP Module has been inserted.

[ETH opt Rx frames] *ᴱ ⁻ ˣ ᵒ*

Ethernet embedded Rx frames counter.

Setting 🔘	Description
0...4,294,967,295	Setting range **Factory setting**: _

[ETH opt Tx frames] *E t X o*

Ethernet embedded Tx frames counter.

Setting ⟨⟩	Description
0...4,294,967,295	Setting range **Factory setting**: _

[ETH opt error frames] *E E r o*

Ethernet embedded error frames counter.

Setting ⟨⟩	Description
0...4,294,967,295	Setting range **Factory setting**: _

[Controller Embd Cmd] *C П d 1*

Controller Embedded command register.

Identical to **[CMD Register]** *C П d* *(see page 103)*.

[Actual rate] *A r d* ★

Actual data rate.

Setting ⟨⟩	Code / Value	Description
[Auto]	*A u t o*	Automatic
[10M. full]	*1 0 F*	10 Mega bytes full-duplex
[10M. half]	*1 0 H*	10 Mega bytes half-duplex
[100M. full]	*1 0 0 F*	100 Mega bytes full-duplex
[100M. half]	*1 0 0 H*	100 Mega bytes half-duplex

[Ethernet Error Code] *E r r* ★

Ethernet specific error code.

Setting ⟨⟩	Description
0...65,535	Setting range **Factory setting**: Read only

[Controller Embd Ref] *L F r 1*

Controller embedded reference frequency

Frequency reference image built with PLC inside source (LFR_HMIP).

Setting ⟨⟩	Description
-32,767...32,767 Hz	Setting range **Factory setting**: 0.0 Hz

Chapter 7
Energy Dashboard

Section 7.1
[Energy parameters]

What Is in This Section?

This section contains the following topics:

[Elec Ener Input Counter] *E L ı -* Menu

Access

[Display] ➜ [Dashboard Energy] ➜ [Energy parameters] ➜ [Elec Ener Input Counter]

About This Menu

This menu presents the input electrical energy data.

Read-only parameters cannot be configured.

[Active Input Power] *ı P r W*

Active electrical input power.

Setting	Description
According to the drive rating	Setting range in kW if [Motor Standard] *b F r* is set to [50Hz IEC] *5 0* or in HP if [Motor Standard] *b F r* is set to [60Hz NEMA] *6 0* **Factory setting**: _

[Input Reactive Power] *ı q r W*

Reactive electrical input power.

Setting	Description
According to the drive rating	Setting range in kW if [Motor Standard] *b F r* is set to [50Hz IEC] *5 0* or in HP if [Motor Standard] *b F r* is set to [60Hz NEMA] *6 0* **Factory setting**: _

[Apparent Input Power] *ı 5 r W*

Apparent Electrical input power estimation

Setting	Description
According to the drive rating	Setting range in kW if [Motor Standard] *b F r* is set to [50Hz IEC] *5 0* or in HP if [Motor Standard] *b F r* is set to [60Hz NEMA] *6 0* **Factory setting**: _

[Input Power Factor] *P W F*

Mains input power factor.

Setting	Description
According to the drive rating	Setting range displayed as a percentage **Factory setting**: _

[Real Input Energy(TWh)] *ı E 4* ★

Input electrical power consumed (TWh).

This parameter can be accessed if [Real Input Energy(TWh)] *ı E 4* is not set to 0.

Setting	Description
-999...999 TWh	Setting range **Factory setting**: _

[Real Input Energy(GWh)] *ı E 3* ★

Input electrical power consumed (GWh).

Setting	Description
-999...999 GWh	Setting range **Factory setting**: _

[Real Input Energy(MWh)] ⌐E2 ★

Input electrical power consumed (MWh).

Setting	Description
-999...999 MWh	Setting range **Factory setting**: _

[Real Input Energy(kWh)] ⌐E1 ★

Input electrical power consumed (kWh).

Setting	Description
-999...999 kWh	Setting range **Factory setting**: _

[Real Input Energy(Wh)] ⌐E0 ★

Input electrical power consumed (Wh).

Setting	Description
-999...999 Wh	Setting range **Factory setting**: _

[Elec Ener Output Counter] ELo - Menu

Access

[Display] ➡ [Dashboard Energy] ➡ [Energy parameters] ➡ [Elec Ener Output Counter]

About This Menu

This menu presents the output electrical energy data.

[Acv Elc out pwr estm] EPrW?

Active electrical output power estimation.

Setting	Description
According to the drive rating	Setting range in kW if **[Motor Standard]** bFr is set to **[50Hz IEC]** 50 or in HP if **[Motor Standard]** bFr is set to **[60Hz NEMA]** 60 **Factory setting**: _

[Real Consumption] oE4 ★

Electrical energy consumed (TWh).

This parameter can be accessed if **[Real Consumption]** oE4 is not set to 0.

Setting	Description
-999...999 TWh	Setting range **Factory setting**: _

[Real Consumption] oE3

Electrical energy consumed (GWh).

Setting	Description
-999...999 GWh	Setting range **Factory setting**: _

[Real Consumption] *o E 2*

Electrical energy consumed (MWh).

Setting	Description
-999...999 MWh	Setting range **Factory setting**: _

[Real Consumption] *o E 1*

Electrical energy consumed (kWh).

Setting	Description
-999...999 kWh	Setting range **Factory setting**: _

[Real Consumption] *o E 0*

Electrical energy consumed (Wh).

Setting	Description
-999...999 Wh	Setting range **Factory setting**: _

[Elc Egy Today] *o C t*

Electrical energy consumed today by the motor (kWh).

Setting	Description
0...4,294,967,295 kWh	Setting range **Factory setting**: _

[Elc Egy Yesterday] *o C Y*

Electrical energy consumed yesterday by the motor (kWh).

Setting	Description
0...4,294,967,295 kWh	Setting range **Factory setting**: _

[Over-Consumption Thd] *P C A H*

Power level for over-consumption.

Setting	Description
[Under-Consumption Thd] *P C A L* ...200.0%	Setting range **Factory setting**: 0.0%

[Under-Consumption Thd] *P C A L*

Power level for under-consumption.

Maximum value = *P C A H* if *P C A H* ≤ 100%.

Setting	Description
0.0...100.0% or **[Over-Consumption Thd]** *P C A H* if *P C A H* ≤ 100%	Setting range **Factory setting**: 0.0%

[Over/Under-Cons Delay] $PCAt$

Over/under-consumption detection time.

Setting	Description
0...60 min	Setting range **Factory setting**: 1 min

[Peak Output Power] $NoEP?$

Peak output power.

Setting	Description
According to the drive rating	Setting range **Factory setting**: _

[Mechanical energy] *N E C -* Menu

Access

[Display] ➜ [Dashboard Energy] ➜ [Energy parameters] ➜ [Mechanical energy]

About This Menu

This menu presents the output mechanical energy data.

[Power Estim Value] *o P r W*

Motor shaft power estimation.

Setting	Description
According to the drive rating	Setting range in kW if **[Motor Standard]** *b F r* is set to **[50Hz IEC]** *5 0* or in HP if **[Motor Standard]** *b F r* is set to **[60Hz NEMA]** *6 0* **Factory setting**: _

[Motor Consumption] *N E 4* ★

Energy consumption (TWh).

This parameter can be accessed if **[Motor Consumption]** *N E 4* is not set to 0.

Setting	Description
0...999 TWh	Setting range **Factory setting**: _

[Motor Consumption] *N E 3* ★

Energy consumption (GWh).

Setting	Description
0...999 GWh	Setting range **Factory setting**: _

[Motor Consumption] *N E 2* ★

Energy consumption (MWh).

Setting	Description
0...999 MWh	Setting range **Factory setting**: _

[Motor Consumption] *N E 1* ★

Energy consumption (kWh).

Setting	Description
0...999 kWh	Setting range **Factory setting**: _

[Motor Consumption] *N E 0* ★

Energy consumption (Wh).

Setting	Description
0...999 Wh	Setting range **Factory setting**: _

Energy Dashboard

[Energy saving] *E S A -* Menu

Access

[Display] ➜ [Dashboard Energy] ➜ [Energy parameters] ➜ [Energy saving]

About This Menu

This menu presents the comparison in term of cost, energy, CO_2 between solutions with and without drive.

[Reference Power] *P r E F*

Reference Power without drive

Setting	Description
0.00...655.35 kW	Setting range in kW if **[Motor Standard]** *b F r* is set to **[50Hz IEC]** *5 0* or in HP if **[Motor Standard]** *b F r* is set to **[60Hz NEMA]** *6 0*. **Factory setting**: 0.00 kW

[kWh Cost] *E C S t*

Cost of the kWh.

Setting	Description
0.00...655.35 $	Setting range in € if **[Motor Standard]** *b F r* is set to **[50 Hz IEC]** *5 0* or in $ if **[Motor Standard]** *b F r* is set to **[60Hz NEMA]** *6 0*. **Factory setting**: _

[CO2 Ratio] *E C o 2*

Quantity of CO_2 by kWh.

Setting	Description
0.000...65.535 kg/kWh	Setting range **Factory setting**: 0.000 kg/kWh

[Energy Saved] *E S A V*

Energy saved with the drive solution.

Setting	Description
0...4,294,967,295 kWh	Setting range **Factory setting**: _

[Money Saved] *C A S H*

Cost saved with the drive solution.

Setting	Description
0.00...42,949,672 $	Setting range in € if **[Motor Standard]** *b F r* is set to **[50 Hz IEC]** *5 0* or in $ if **[Motor Standard]** *b F r* is set to **[60 Hz NEMA]** *6 0*. **Factory setting**: _

[Co2 Saved] *C o 2 S*

CO_2 saved with the drive solution.

Setting	Description
0.0...429,496,729.5 t	Setting range **Factory setting**: _

Chapter 8
Pump Dashboard

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
[Application parameters] _A P r -_ Menu	126
[Variable speed pump] _П P P -_ Menu	127
Pump Thermal Monitoring	128

[Application parameters] RPr - Menu

Access

[Display] ➡ [Dashboard Pump] ➡ [Application parameters]

About This Menu

This menu displays information related to the application.

[Application State] $RPP5$

Application state.

This parameter indicates the drive application state.

Setting	Code / Value	Description
[Running]	run	No application function in progress; the drive is running
[Stop]	$StoP$	No application function in progress; the drive is not running
[Local Mode Active]	$LoCAL$	Forced local mode activated
[Channel 2 Active]	$oVEr$	Override speed control mode activated
[Manual Mode Active]	$MAnu$	Motor running; manual PID mode is active
[PID Active]	$Auto$	Motor running; auto PID mode is active
[Boost In progress]	$booSt$	The boost is in progress
[Sleep Active]	$SLEEP$	The sleep is active
[BL In Progress]	$b9S$	Backlash sequence is in progress

[Total Quantity] $FS1C$

Total quantity.

Setting	Description
-2,147,483,647...2,147,483,647	Setting range according to [Flow rate unit] $SuFr$ Factory setting: –

[Highest Flow] $FS1K$

Highest flow.

Setting	Description
-32,767...32,767	Setting range according to [Flow rate unit] $SuFr$ Factory setting: –

[Lowest Flow] $FS1J$

Lowest flow.

Setting	Description
-32,767...32,767	Setting range according to [Flow rate unit] $SuFr$ Factory setting: –

[Variable speed pump] *Π P P -* Menu

Access

[Display] ➜ [Dashboard Pump] ➜ [Pump parameters] ➜ [Variable speed pump]

About This Menu

This menu shows the pump-related parameters.

[Motor Run Time] *r t H*

Motor run time.

Run elapsed time display (resettable) in seconds (length of time the motor has been switched on).

Setting	Description
0...4,294,967,295 s	Setting range **Factory setting**: _

[Motor Mechanical speed] *S P d Π*

Motor mechanical speed.

This parameter displays the estimated rotor speed with motor slip.

Setting	Description
0...65,535 rpm	Setting range **Factory setting**: _

[Nb Of Start] *n S Π*

Number of motor starts (resettable).

Setting	Description
0...4,294,967,295	Setting range **Factory setting**: _

[Acv Elc Out Pwr Estm] *E P r W?*

Active electrical output power estimation.

Setting	Description
-327.67...327.67 kW	Setting range in kW if **[Motor Standard]** *b F r* is set to **[50 Hz IEC]** *5 0* or in HP if **[Motor Standard]** *b F r* is set to **[60 Hz NEMA]** *6 0* **Factory setting**: _

[Flow Estimated] *S L F V* ★

Estimated flow value.

Setting	Description
-32,767...32,767	Setting range according to **[Flow rate unit]** *S u F r* **Factory setting: --**

[Est. Pump Head] *S L H V* ★

Estimated Pump head value

Setting	Description
-32,767...32,767	Setting range according to **[P sensor unit]** *S u P r* **Factory setting: --**

[Efficiency] *E F Y*

The efficiency is based on mechanical power.

Setting	Description
0.0...100.0 %	Setting range **Factory setting**: _

[Energy Cons. Ind.] *E C i*

Energy consumption indication is based on the consumption of the electrical power

Setting	Description
-32,767...32,767	Setting range **Factory setting: –**

[Energy Perf. Ind] *E P i*

Energy performance indicator is based on the electrical power

Setting	Description
-32,767...32,767	Setting range **Factory setting: –**

[Highest Eff.] *E F Y H*

Highest efficiency.

Setting	Description
0.0...100.0 %	Setting range **Factory setting**: _

[Lowest Eff.] *E F Y L*

Lowest efficiency.

Setting	Description
0.0...100.0 %	Setting range **Factory setting**: _

Pump Thermal Monitoring

Access

[Display] ➡ [Dashboard Pump] ➡ [Dashboard Pump] ➡ [Pump Thermal Monitoring]

About This Menu

Identical to Thermal Monitoring tPM- Menu

Chapter 9
Dashboard M/S

Section 9.1
[M/S parameters]

About this Menu

This menu can be accessed if **[M/S Comm Mode]** *П 5 Ը П* is not set to **[No]** *г о* .

What Is in This Section?

This section contains the following topics:

Topic	Page
[M/S Local Display] *П 5 о -* Menu	131
[M/S System Display] *П 5 г -* Menu	133

[M/S Local Display] *Π 5 □ -* Menu

Access

[Display] ➡ [Dashboard M/S] ➡ [M/S parameters] ➡ [M/S Local Display]

About This Menu

This menu presents the master slave local display related parameters.

Read-only parameters cannot be configured.

[M/S Status] *Π 5 5*

M/S function status.

Setting	Code / Value	Description
[None]	*n o n E*	Not configured
[M/S Local Control]	*n A C t*	M/S local control
[M/S Not Ready]	*n r d Y*	M/S not ready
[M/S Ready]	*r E A d Y*	M/S ready
[M/S Running]	*r u n*	M/S running
[M/S Warning]	*A L A r Π*	M/S warning

[M/S Master Speed Ref] *Π 5 Π 5* ★

M/S Master speed reference.

This parameter can be accessed if [M/S Comm Mode] *Π 5 C Π* is not set to [No] *n o*.

Setting	Description
-300.0...300.0 Hz	Setting range **Factory setting**: _

[M/S Master Torque Ref] *Π 5 Π t* ★

M/S Master torque reference.

This parameter can be accessed if [M/S Comm Mode] *Π 5 C Π* is not set to [No] *n o*.

Setting	Description
-32,767...32,767 Nm	Setting range **Factory setting**: _

[M/S Local Speed Ref] *Π 5 5 r* ★

M/S Local speed reference.

This parameter can be accessed if:
● [M/S Comm Mode] *Π 5 C Π* is not set to [No] *n o*, and
● [M/S Device Role] *Π 5 d t* is set to [Slave] *5 L A V E*.

Setting	Description
-300.0...300 Hz	Setting range **Factory setting**: _

[M/S Local Torque Ref] *ΠStr* ★

M/S Local torque reference.

This parameter can be accessed if:
● **[M/S Comm Mode]** *ΠSCΠ* is not set to **[No]** *no*, and
● **[M/S Device Role]** *ΠSdt* is set to **[Slave]** *SLAVE*.

Setting	Description
-32,767...32,767 Nm	Setting range **Factory setting**: _

[Motor Frequency] *rFr*

Motor frequency.

This parameter displays the estimated rotor frequency without motor slip.

Setting	Description
-3,276.7...3,276.7 Hz	Setting range **Factory setting**: 0.0 Hz

[Motor Torque (Nm)] *otQn*

Motor torque.

Output torque value.

NOTE: The displayed value is always positive in motor and negative in generator mode whatever the direction.

Setting	Description
-32,767...32,767 Nm	Setting range: according to drive ratings **Factory setting**: _

[M/S System Display] *Π 5 ┌ -* Menu

Access

[Display] ➡ [Dashboard M/S] ➡ [M/S parameters] ➡ [M/S System Display]

About This Menu

This menu presents the master slave system related parameters.

This menu can be accessed if **[M/S Comm Mode]** *Π 5 C Π* is set to **[MultiDrive Link]** *Π d L* .

Read-only parameters cannot be configured.

[M/S Local Speed Ref] *Π 5 5 ┌* ★

M/S output speed reference.

This parameter can be accessed if:
- **[M/S Comm Mode]** *Π 5 C Π* is not set to **[No]** *n o*, and
- **[M/S Device ID]** *Π 5 ı d* is set to **[Slave]** *5 L A V E*.

Setting	Description
-300.0...300 Hz	Setting range **Factory setting**: _

[M/S Local Torque Ref] *Π 5 ┼ ┌* ★

M/S output torque reference.

This parameter can be accessed if:
- **[M/S Comm Mode]** *Π 5 C Π* is not set to **[No]** *n o*, and
- **[M/S Device ID]** *Π 5 ı d* is set to **[Slave]** *5 L A V E*.

Setting	Description
-32,767...32,767 Nm	Setting range **Factory setting**: _

[M/S Device Selection] *Π 5 d n*

M/S device selection.

This parameter allows to select the device parameters to be displayed.

Setting	Code / Value	Description
[Master]	*Π 5 ┼ E ┌*	Master **Factory setting**
[Slave 1]	*5 L V 1*	Slave 1
[Slave 2]	*5 L V 2*	Slave 2
[Slave 3]	*5 L V 3*	Slave 3
[Slave 4]	*5 L V 4*	Slave 4
[Slave 5]	*5 L V 5*	Slave 5
[Slave 6]	*5 L V 6*	Slave 6
[Slave 7]	*5 L V 7*	Slave 7
[Slave 8]	*5 L V 8*	Slave 8
[Slave 9]	*5 L V 9*	Slave 9
[Slave 10]	*5 L V 1 0*	Slave 10

[M/S Device Status] *ΠSdS*

M/S device status.

Status of the device selected using **[M/S Device Selection]** *ΠSdn*.

Setting	Code / Value	Description
[None]	*nonE*	Not configured
[M/S Local Control]	*nACt*	Inactive
[M/S Not Ready]	*nrdY*	M/S not ready
[M/S Ready]	*rEAdY*	M/S ready
[M/S Running]	*run*	M/S running
[M/S Warning]	*ALArΠ*	M/S warning

[M/S Device Speed Ref] *ΠSXS*

M/S device speed reference.

Displays the local speed reference value of the device selected using **[M/S Device Selection]** *ΠSdn*.

Setting	Description
-300...300 Hz	Setting range **Factory setting**: _

[M/S Device Torque Ref] *ΠSXt*

M/S device torque reference.

Displays the local torque reference value of the device selected using **[M/S Device Selection]** *ΠSdn*.

Setting	Description
-32,767...32,767 Nm	Setting range **Factory setting**: _

Chapter 10
Motor Control

Introduction

This information can be accessed using the ATV6000 HMI Panel.

What Is in This Chapter?

This chapter contains the following sections:

Section	Topic	Page
10.1	Motor Nameplate	136
10.2	Motor Control Data	148

Section 10.1
Motor Nameplate

What Is in This Section?

This section contains the following topics:

Overview

Asynchronous Motor

Dedicated parameters can be accessed if **[Motor Control Type]** *C t t* is set to:
- VVC,
- FVC,
- STD,
- UF5,
- UFQ,
- NLD, or
- ECO

Permanent Magnet Synchronous Motor

Dedicated parameters can be accessed if **[Motor Control Type]** *C t t* is set to:
- SYN, or
- FSY

Synchronous Motor with External Excitation

Dedicated parameters can be accessed if **[Motor Control Type]** *C t t* is set to:
- SYNE, or
- FSYE

ATV6000 Motor Control Types

ATV6000 drive embeds 11 motor control types which covers all the use cases depending on the application.

The following table shows the Motor Control types selection depending on the application needs:

Control	Motor Type	**[Motor Control Type]** *C t t* selection	Description
Opened-Loop	Asynchronous motor	**[U/F VC Standard]** *S t d*	U/F vector control law
		[Energy Sav.] *n L d*	Energy saving control law
		[SVC V] *V V C*	Voltage vector control law with slip compensation
		[U/F VC 5pts] *u F 5*	5 points U/F vector control law
		[U/F VC Quad.] *u F q*	U/F vector control law for variable torque applications (pumps and fans).
		[U/F VC Energy Sav.] *E C o*	U/F vector control optimized for energy saving.
	Synchronous motor	**[Sync. mot.]** *S y n*	Permanent magnet control law [2]
		[Sync Ext Excitation] *S y n E*	Permanent magnet control law with external excitation [2]
Closed-Loop [1]	Asynchronous motor	**[FVC]** *F V C*	Current vector control law
	Synchronous motor	**[Sync.CL]** *F S y*	Permanent magnet control law [2]
		[Sync CL Ext Excitation] *F S y E*	Permanent magnet control law with external excitation [2]
(1) For these applications, an encoder must be present and configured. (2) PMSM motor technologies supported: S-PMSM motor: surface permanent magnet / I-PMSM motor: Interior permanent magnet.			

Parameters List for Asynchronous Motors

The following table shows the minimum parameters list that needs to be configured for asynchronous motors depending of **[Motor Control Type]** *C t t* selection:

NOTE: After setting these parameters, perform an **[Autotuning]** *t u n* to optimize the performance.

Parameters	[SVC V] *V V C*	[FVC] *F V C*	[U/F VC 5pts] *u F 5*	[Energy Sav.] *n L d*	[U/F VC Standard] *5 t d*	[U/F VC Energy Sav.] *E C o*	[U/F VC Quad.] *u F q*
[MotorStandard] *b F r*	✓	✓	✓	✓	✓	✓	✓
[Nominal Motor Power] *n P r*	✓	✓	✓	✓	✓	✓	✓
[Nom Motor Voltage] *u n 5*	✓	✓	✓	✓	✓	✓	✓
[Nom Motor Current] *n C r*	✓	✓	✓	✓	✓	✓	✓
[Nominal Motor Freq] *F r 5*	✓	✓	✓	✓	✓	✓	✓
[Nominal Motor Speed] *n 5 P*	✓	✓	✓	✓	✓	✓	✓
[Encoder Type] *u E C P*		✓ [1]					
[Encoder supply volt.] *u E C V*		✓ [1]					
[Encoderusage] *E n u*		✓ [1]					
(1) Encoder settings depend on the encoder used in the application.							

Parameters List for Synchronous Motors

The following table shows the minimum parameters list that needs to be configured for synchronous motors depending of **[Motor Control Type]** *C t t* selection:

NOTE: After setting these parameters, to perform an **[Autotuning]** *t u n* to optimize the performance.

Parameters	[Sync. mot.] *5 Y n*	[Sync.CL] *F 5 Y*	[Sync Ext Excitation] *5 Y n E*	[Sync CL Ext Excitation] *F 5 Y E*
[Sync Nominal I] *n C r 5*	✓	✓	✓	✓
[Nom SyncMotor] Speed *n 5 P 5*	✓	✓	✓	✓
[Nom Motor torque] *t q 5*	✓	✓	✓	✓
[Pole pairs] *P P n 5*	✓	✓	✓	✓
[Angle setting type] *A 5 t*	✓	✓	✓	✓
[Encoder Type] *u E C P*		✓ [1]		✓ [1]
[Encoder supply volt.] *u E C V*		✓ [1]		✓ [1]
[Encoder usage] *E n u*		✓ [1]		✓ [1]
(1) Encoder settings depend on the encoder used in the application.				

Asynchronous Motor

Access

[Display] → [Motor Control] → [Motor nameplate] → [Asynchronous Motor]

About This Menu

This menu shows the Asynchronous motor control related parameters. This is a read-only menu that cannot be configured.

[Nominal Motor Power] *n P r*

Nominal motor power.

This parameter can be accessed if [Motor control type] *C t t* is not set to:
- [Sync. mot.] *5 Y n*, or
- [Sync.CL.] *F 5 Y*

Rated motor power given on the nameplate, in kW if [Motor Standard] *b F r* is set to [50Hz IEC] *5 0*, in HP if [Motor Standard] *b F r* is set to [60Hz NEMA] *6 0*.

Setting	Description
According to drive rating	– **Factory setting**: according to the drive rating

[Nom Motor Voltage] *u n 5*

Nominal motor voltage.

This parameter can be accessed if [Motor control type] *C t t* is not set to:
- [Sync. mot.] *5 Y n*, or
- [Sync.CL.] *F 5 Y*

Rated motor voltage given on the nameplate.

Setting	Description
100...20,000 Vac	Setting range **Factory setting**: according to drive rating and [Motor Standard] *b F r*

[Nom Motor Current] *n C r*

Rated motor current given on the nameplate.

This parameter can be accessed if [Motor control type] *C t t* is not set to:
- [Sync. mot.] *5 Y n*, or
- [Sync.CL.] *F 5 Y*

Setting	Description
0.25...1.5 In [1]	Setting range **Factory setting**: according to drive rating and [Motor Standard] *b F r*
(1) Corresponding to the rated drive current indicated in the installation manual and on the drive nameplate.	

[Nominal Motor Freq] *F r 5*

Nominal motor frequency.

This parameter can be accessed if [Motor control type] *C t t* is not set to:
- [Sync. mot.] *5 Y n*, or
- [Sync.CL.] *F 5 Y*

The factory setting is 50 Hz, or preset to 60 Hz if [Motor Standard] *b F r* is set to 60 Hz.

Setting	Description
10.0...20,000 Hz	Setting range **Factory setting**: 50 Hz

[Nominal Motor Speed] *n 5 P*

Nominal motor speed.

This parameter can be accessed if **[Motor control type]** *C t t* is not set to:

- **[Sync. mot.]** *5 Y n*, or
- **[Sync.CL.]** *F 5 Y*

Setting	Description
0...65,535 rpm	Setting range **Factory setting**: according to drive rating

[Motor 1 Cosinus Phi] *C o 5*

Nominal motor cosinus Phi.

This parameter can be accessed if:

- **[Motor param choice]** *Π P C* is set to **[Mot Cosinus]** *C o 5*, and if
- **[Motor control type]** *C t t* is not set to:
  - ❍ **[Sync. mot.]** *5 Y n*, or
  - ❍ **[Sync.CL.]** *F 5 Y*

Setting	Description
0.50...1.00	Setting range **Factory setting**: according to the drive rating

[Motor Param Choice] *Π P C*

Motor parameter choice.

This parameter can be accessed if **[Motor control type]** *C t t* is not set to:

- **[Sync. mot.]** *5 Y n*, or
- **[Sync.CL.]** *F 5 Y*

Setting	Code / Value	Description
[Mot Power]	*n P r*	Motor power **Factory setting**
[Mot Cosinus]	*C o 5*	Motor cosinus

[Nom Motor Torque] *t 9 n*

Computed nominal motor torque in Nm (+/- 2% tolerance).

Setting	Description
0.01...65,535 Nm	Setting range according to drive rating. **Factory setting**: –

[Autotuning Status] *t u 5*

Autotuning status.

This parameter is not saved at drive power-off. It shows the autotuning status since the last power-on (for information only, cannot be modified).

Setting	Code / Value	Description
[Not done]	*t A b*	The autotuning is not done **Factory setting**
[Pending]	*P E n d*	The autotuning has been requested but not yet performed
[In Progress]	*P r o G*	The autotuning is in progress
[Error]	*F A i L*	The autotuning has detected an error
[Done]	*d o n E*	The motor parameters measured by the autotuning function are used to control the motor

[Autotuning flux status] *t u r S*

Tuning in rotation status (for information only, cannot be modified).

Setting	Code / Value	Description
[Not Done]	*t A b*	Default value of the stator resistor is used to control the motor **Factory setting**
[Pending]	*P E n d*	The autotuning has been requested but not yet performed
[In Progress]	*P r o G*	The autotuning is in progress
[Error]	*F A i L*	Error detected during autotuning
[Autotuning Done]	*d o n E*	The drive management uses the stator resistor measured by the auto-tuning function

[AsyncMotor R Stator] *r S A*

Asynchronous motor stator resistance.

This parameter can be accessed if:
- **[Motor control type]** *C t t* is not set to:
  - ❍ **[Sync. mot.]** *S Y n*, or
  - ❍ **[Sync.CL.]** *F S Y*

The factory setting is replaced by the result of the autotuning operation if it has been performed.

Setting	Description
0...65,535 mOhm	Setting range **Factory setting**: 0 mOhm

[Magnetizing Current] *i d A*

Magnetizing current.

This parameter can be accessed if:
- **[Motor control type]** *C t t* is not set to:
  - ❍ **[Sync. mot.]** *S Y n*, or
  - ❍ **[Sync.CL.]** *F S Y*

Setting	Description
0...6,553.5 A	Setting range **Factory setting**: 0 A

[AsyncMotor L Induct] *L F A*

Asynchronous motor leakage inductance.

This parameter can be accessed if:
- **[Motor control type]** *C t t* is not set to:
  - ❍ **[Sync. mot.]** *S Y n*, or
  - ❍ **[Sync.CL.]** *F S Y*

Setting	Description
0...655.35 mH	Setting range **Factory setting**: 0 mH

[Rotor Time Const] *t r A*

Rotor time constant.

This parameter can be accessed if:
- **[Motor control type]** *C t t* is not set to:
  - **[Sync. mot.]** *S Y n*, or
  - **[Sync.CL.]** *F S Y*

Setting	Description
0...65,535 ms	Setting range **Factory setting**: 0 ms

[Rotor Nominal Flux] *P H i A*

Rotor nominal flux

Setting	Description
0.0...655.35 Wb	Setting range **Factory setting**: -

[Main Inductance] *L A*

Main Inductance

Setting	Description
0...65535	Setting range **Factory setting**: -

[Tangential Main Inductance] *L O A*

Tangential main inductance

Setting	Description
0...65535	Setting range **Factory setting**: 0

[Flux curve coeff A] *A L F A*

Flux saturation curve numerator coefficient A

Setting	Description
-327.67 %...327.67 %	Setting range **Factory setting**: 0

[Flux curve coeff B] *b E t O*

Flux saturation curve denominator coefficient B

Setting	Description
-327.67 %...327.67 %	Setting range **Factory setting**: 0

Permanent Magnet Synchronous Motor

Access

[Display] ➟ [Motor Control] ➟ [Motor nameplate] ➟ [Permanent Magnet Synchronous Motor]

About This Menu

This menu shows the PMSM control related parameters. This is a read-only menu that cannot be configured.

PMSM motor technologies supported:
● S- PMSM motor: surface permanent magnet
● I-PMSM motor: Interior permanent magnet

[Sync Nominal I] ⁿ⊏⁓⛫

Sync motor nominal current.

This parameter can be accessed if:
● **[Motor control type]** ⊏⊦⊦ is set to:
  ❍ **[Sync. mot.]** ⛿⛿ⁿ, or
  ❍ **[Sync.CL.]** ⎓⛿⛿

Setting	Description
0.25...1.5 In (1)	Setting range **Factory setting**: according to the drive rating.
(1) Corresponding to the rated drive current indicated in the installation manual and on the drive nameplate.	

[Nom SyncMotor Speed] ⁿ⛿⛿⛿

Nominal synchronous motor speed.

This parameter can be accessed if:
● **[Motor control type]** ⊏⊦⊦ is not set to:
  ❍ **[Sync. mot.]** ⛿⛿ⁿ, or
  ❍ **[Sync.CL.]** ⎓⛿⛿

Setting	Description
0...48,000 rpm	Setting range **Factory setting**: according to the drive rating.

[Nom Motor torque] ⊦⛿⛿

Nominal motor torque

This parameter can be accessed if:
● **[Motor control type]** ⊏⊦⊦ is set to:
  ❍ **[Sync. mot.]** ⛿⛿ⁿ, or
  ❍ **[Sync.CL.]** ⎓⛿⛿

Setting	Description
0.1...6,553.5 Nm	Setting range **Factory setting**: according to the drive rating.

[Pole pairs] *P P n S*

Pole pairs.

This parameter can be accessed if:
● **[Motor control type]** *C t t* is set to:
  ○ **[Sync. mot.]** *S Y n*, or
  ○ **[Sync.CL.]** *F S Y*

Setting	Description
1...50	Setting range **Factory setting**: according to the drive rating.

[Syn. EMF constant] *P H S*

Synchronous motor EMF constant

This parameter can be accessed if:
● **[Motor control type]** *C t t* is set to:
  ○ **[Sync. mot.]** *S Y n*, or
  ○ **[Sync.CL.]** *F S Y*

Setting	Description
0...6,553.5 mV/rpm	Setting range **Factory setting**: 0 mV/rpm

[SyncMotor Stator R] *r S A S*

Calculated synchronous motor stator R.

This parameter can be accessed if:
● **[Motor control type]** *C t t* is set to:
  ○ **[Sync. mot.]** *S Y n*, or
  ○ **[Sync.CL.]** *F S Y*

Setting	Description
0...65,535 mOhm	Setting range **Factory setting**: 0 mOhm

[Autotune L d-axis] *L d S*

Autotune L d-axis.

Axis "d" stator inductance in mH (per phase).

This parameter can be accessed if:
● **[Motor control type]** *C t t* is set to:
  ○ **[Sync. mot.]** *S Y n*, or
  ○ **[Sync.CL.]** *F S Y*

Setting	Description
0...655.35 mH	Setting range **Factory setting**: 0

[Autotune L q-axis] L q S

Autotune L q-axis.

Axis "q" stator inductance in mH (per phase).

This parameter can be accessed if:
- **[Motor control type]** C t t is set to:
  - ❍ **[Sync. mot.]** S Y n, or
  - ❍ **[Sync.CL.]** F S Y

Setting	Description
0...655.35 mH	Setting range **Factory setting**: 0

[Sync Nominal Freq] F r S S

Synchronous motor nominal frequency.

This parameter can be accessed if:
- **[Motor control type]** C t t is set to:
  - ❍ **[Sync. mot.]** S Y n, or
  - ❍ **[Sync.CL.]** F S Y

Setting	Description
10.0...500.0 Hz	Setting range **Factory setting**: n S P S x P P n S / 60

Synchronous Motor with External Excitation

Access

[Display] ➜ [Motor Control] ➜ [Motor nameplate] ➜ [Synchronous Motor with External Excitation]

About This Menu

This menu shows the synchronous motor with external excitation control related parameters. This is a read-only menu that cannot be configured.

[Sync Nominal I] *nCrS*

Sync motor nominal current.

This parameter can be accessed if:
- **[Motor control type]** *Ctt* is set to:
  - ❍ **[Sync. mot.]** *SYn*, or
  - ❍ **[Sync.CL.]** *FSY*

Setting	Description
0.25...1.5 In [1]	Setting range **Factory setting**: according to the drive rating.
(1) Corresponding to the rated drive current indicated in the installation manual and on the drive nameplate.	

[Nom SyncMotor Speed] *nSPS*

Nominal synchronous motor speed.

This parameter can be accessed if:
- **[Motor control type]** *Ctt* is not set to:
  - ❍ **[Sync. mot.]** *SYn*, or
  - ❍ **[Sync.CL.]** *FSY*

Setting	Description
0...48,000 rpm	Setting range **Factory setting**: according to the drive rating.

[Nom Motor torque] *tqS*

Nominal motor torque

This parameter can be accessed if:
- **[Motor control type]** *Ctt* is set to:
  - ❍ **[Sync. mot.]** *SYn*, or
  - ❍ **[Sync.CL.]** *FSY*

Setting	Description
0.1...6,553.5 Nm	Setting range **Factory setting**: according to the drive rating.

[Pole pairs] *PPnS*

Pole pairs.

This parameter can be accessed if:
- **[Motor control type]** *Ctt* is set to:
  - ❍ **[Sync. mot.]** *SYn*, or
  - ❍ **[Sync.CL.]** *FSY*

Setting	Description
1...50	Setting range **Factory setting**: according to the drive rating.

[Syn. EMF constant] *P H 5*

Synchronous motor EMF constant

This parameter can be accessed if:
- **[Motor control type]** *C t t* is set to:
  - ○ **[Sync. mot.]** *5 y n*, or
  - ○ **[Sync.CL.]** *F 5 y*

Setting	Description
0...6,553.5 mV/rpm	Setting range **Factory setting**: 0 mV/rpm

[SyncMotor Stator R] *r 5 A 5*

Calculated synchronous motor stator R.

This parameter can be accessed if:
- **[Motor control type]** *C t t* is set to:
  - ○ **[Sync. mot.]** *5 y n*, or
  - ○ **[Sync.CL.]** *F 5 y*

Setting	Description
0...65,535 mOhm	Setting range **Factory setting**: 0 mOhm

[Autotune L d-axis] *L d 5*

Autotune L d-axis. Axis "d" stator inductance in mH (per phase).

This parameter can be accessed if:
- **[Motor control type]** *C t t* is set to:
  - ○ **[Sync. mot.]** *5 y n*, or
  - ○ **[Sync.CL.]** *F 5 y*

Setting	Description
0...655.35 mH	Setting range **Factory setting**: 0

[Autotune L q-axis] *L 9 5*

Autotune L q-axis. Axis "q" stator inductance in mH (per phase).

This parameter can be accessed if:
- **[Motor control type]** *C t t* is set to:
  - ○ **[Sync. mot.]** *5 y n*, or
  - ○ **[Sync.CL.]** *F 5 y*

Setting	Description
0...655.35 mH	Setting range **Factory setting**: 0

[Sync Nominal Freq] *F r 5 5*

Synchronous motor nominal frequency.

This parameter can be accessed if:
- **[Motor control type]** *C t t* is set to:
  - ○ **[Sync. mot.]** *5 y n*, or
  - ○ **[Sync.CL.]** *F 5 y*

Setting	Description
10.0...500.0 Hz	Setting range **Factory setting**: *n 5 P 5* x *P P n 5* / 60

Section 10.2
Motor Control Data

[Motor control data] Menu

Access

[Display] ➜ [Motor Control] ➜ [Motor control data]

About This Menu

This menu shows the motor control related parameters. This is a read-only menu that cannot be configured.

[Motor Control Type] *Ctt*

Motor control type.

Setting	Code / Value	Description
[U/F VC Standard]	*Std*	Standard motor control type. For applications that require torque at low speed.
[SVC V]	*VVC*	Voltage vector control: Open-loop voltage flux vector control with automatic slip compensation according to the load. **Factory setting**
[FVC]	*FVC*	Current vector control closed loop: Closed-loop current flux vector control for motors with encoder sensor. **NOTE:** Verify the encoder before selecting **[FVC]** *FVC*.
[U/F VC 5pts]	*uF5*	5–segment V/F profile: As **[U/F VC Standard]** *Std* profile but also supports the avoidance of resonance (saturation).
[U/F VC Quad.]	*uFq*	Motor control type dedicated to variable torque applications, typically used for pumps and fans. **Factory setting**
[Sync. mot.]	*Syn*	Open-loop synchronous motors: Motor control type specific for permanent magnet synchronous motors.
[Energy Sav.]	*nLd*	Specific motor control type optimized for energy saving.
[Sync.CL]	*FSy*	Closed-loop synchronous motor: For permanent magnet synchronous motors, with encoder.
[U/F VC Energy Sav.]	*ECo*	Specific motor control type optimized for energy saving.
[Sync Ext Excitation]	*SynE*	Open-loop synchronous motors: Motor control type specific for permanent magnet synchronous motors with external excitation.
[Sync CL Ext Excitation]	*FSyE*	Closed-loop synchronous motor: For permanent magnet synchronous motors with external excitation and encoder.

[Slip compensation] *SLP*

Slip compensation.

This parameter can be accessed if **[Motor control type]** *Ctt* is not set to:

- **[Sync. mot.]** *Syn*, or
- **[Sync.CL]** *FSy*

Setting	Description
0...300%	Setting range **Factory setting**: 100%

[Inertia Factor] 5 P G u

Inertia factor

This parameter can be accessed if:
● **[Motor Control Type]** C t t is set to:
  ○ **[U/F VC 5pts]** u F 5

Setting	Description
0...1,000%	Setting range **Factory setting**: 40%

[FreqLoop Stab] 5 t A

Frequency loop stability (Speed loop damping factor).

This parameter can be accessed if:
● **[Speed loop type]** 5 5 L is set to **[High Perf]** H P F , and
● **[Motor control type]** C t t is not set to:
  ○ **[U/F VC 5pts]** u F 5

Setting	Description
0...100%	Setting range **Factory setting**: 20%

[FreqLoopGain] F L G

Frequency loop gain (Speed loop bandwidth).

This parameter can be accessed if:
● **[Speed loop type]** 5 5 L is set to **[High Perf]** H P F , and
● **[Motor control type]** C t t is not set to:
  ○ **[U/F VC 5pts]** u F 5

Setting	Description
0...100%	Setting range **Factory setting**: 20%

[K speed loop filter] 5 F C

Speed filter coefficient (0(IP) to 1(PI)).

Setting	Description
0...100	Setting range **Factory setting**: 65

[Estim. app. inertia] J E 5 t

Estimated application inertia.

This parameter can be accessed if:
● **[Speed loop type]** 5 5 L is set to **[High Perf]** H P F , and
● **[Motor control type]** C t t is not set to:
  ○ **[U/F VC 5pts]** u F 5

Increment given by **[Inertia Mult. Coef.]** J П u L : - 0.1 gm², 1 gm², 10 gm², 100 gm² or 1000 gm².

Setting	Description
1...9,999 kg.m²	Setting range **Factory setting**: –

[Motor fluxing] *F L U*

Motor fluxing configure

Setting	Code / Value	Description
[Not continuous]	*F n C*	Non-continuous mode
[Continuous]	*F C t*	Continuous mode This option is not possible if [Auto DC Injection] *A d C* is [Yes] *Y E S* or if [Type of stop] *S t t* is [Freewheel] *n S t*
[No]	*F n o*	Function inactive **Factory setting**

[Expert Flux Setting] *E F A P*

Expert flux approach

Setting	Code / Value	Description
[Linear Flux 1]	*L i n F 1*	Linear flux 1 **Factory setting**
[Linear Flux 2]	*L i n F 2*	Linear flux 2
[Saturation Flux]	*S A t F*	Saturation flux

[Dec.Ramp Adapt] *b r A*

Deceleration ramp adaptation.

Setting	Code / Value	Description
[No]	*n o*	Function inactive, this setting is available if [Braking Resistor] *b r C* is not set to [No] *n o*
[Yes]	*Y E S*	Function active, for applications that do not require strong deceleration [Dec.Ramp Adapt] *b r A* is set to [Yes] *Y E S* if [Braking Resistor] *b r C* is set to [No] *n o* **Factory setting**
[High Torque]	*d Y n A*	Addition of a constant current flow component. The [High torq. A] *d Y n A* selection appears depending on the rating of the drive and [Motor control type] *C t t*. It enables a stronger deceleration to be obtained than with [Yes] *Y E S*. Use comparative testing to determine your selection. When [Dec.Ramp Adapt] *b r A* is configured on [High torq. A] *d Y n A*, the dynamic performance for braking is improved by the addition of a current flow component. The aim is to increase the iron loss and magnetic energy stored in the motor.

Part V
Diagnostics Parameters

Chapter 11
Diagnostics

What Is in This Chapter?

This chapter contains the following sections:

Section 11.1
[Diag. data]

[Diag. data] *ddt-* Menu

Access

[Diagnostics] ➡ [Diag. data]

About This Menu

This menu presents the actual warning, detected error and lock register in addition to drive data.

Error register	Warning register	Lock register
[Error register 1] *dF 1* ... [Error register 14] *dF 14*	[Warning register 1] *ALr 1* ... [Warning register 9] *ALr 9*, [Warning register 10] *ALr A* ... [Warning register 12] *ALr C*	[On Lock Register] *PLo 1*, [Bypass Cabinet Lock Register] *PLo 2*

[Error register 1] *dF 1*

Status parameters giving error states 1

Bit	Description, Value
0	Set to 1: Serial flash format error (INFF)
1	Set to 1: Unknown drive rating (INF1)
2	Set to 1: Unknown or incompatible option board (INF6)
3	Set to 1: CPLD communication interruption (INF7)
4	Set to 1: Error of the internal memory of the control block (EEF1)
5	Set to 1: Power Eeprom error (EEF2)
6	Set to 1: Invalid configuration at power on (CFF)
7	Set to 1: Incorrect parameter configuration (CFI)
8	Set to 1: Modbus local serial communication interruption (SLF1)
9	Set to 1: Internal communication interruption (ILF)
10	Set to 1: Communication interruption on fieldbus module (CNF)
11	Set to 1: External error from digital input or fieldbus (EPF1)
12	Set to 1: External error from fieldbus module (EPF2)
13	Set to 1: Motor short circuit error (hardware detection) (SCF1)
14	Set to 1: Load relay error (CRF1)
15	Set to 1: Ethernet embedded internal error (INFM)

[Error register 2] *?dF 2*

Status parameters giving error states 2

Bit	Description, Value
0	Set to 1: Speed encoder feedback loss (SPF)
1	Set to 1: Instability or driving load too high (SOF)
2	Set to 1: Load slipping error (ANF)
3	Set to 1: Over current error (OCF)
4...6	Reserved
7	Set to 1: Drive over heating error (POC thermal monitoring) (OHF)

Bit	Description, Value
8	Set to 1: Motor overload error (OLF)
9	Reserved
10	Set to 1: POC over braking error (OBF)
11	Set to 1: Mains over supply error (OSF)
12	Set to 1: Motor 1-phase loss (OPF1)
13	Set to 1: Main input 1-phase loss (PHF)
14	Set to 1: POC bus under voltage error (USF)
15	Set to 1: Power supply error (INF8)

[Error register 3] ? *d F 3*

Status parameters giving error states 3

Bit	Description, Value
0	Set to 1: Motor 3-phases loss (OPF2)
1	Set to 1: Tune error (TNF)
2	Set to 1: Brake's motor 3-phases loss (BLF)
3	Set to 1: Brake feedback error (BRF)
4	Set to 1: PC software communication interruption (SLF2)
5	Set to 1: CANopen communication interruption (COF)
6	Set to 1: Encoder coupling error (ECF)
7	Set to 1: Torque limitation error (SSF)
8	Set to 1: Torque regulation time-out error (SRF)
9	Reserved
10	Set to 1: Direct ground short-circuit error (hardware detection) (SCF3)
11	Set to 1: Invalid industrialization zone (INF4)
12	Set to 1: Unknown or incompatible power board or defected keyboard (INF2)
13	Set to 1: Internal serial link communication error (INF3)
14	Set to 1: Graphic Display terminal communication error (SLF3)
15	Set to 1: Current supply error input (INFC)

[Error register 4] ? *d F 4*

Status parameters giving error states 4

Bit	Description, Value
0...1	Reserved
1	Set to 1: Encoder error (ENF)
2...7	Reserved
8	Set to 1: Current measurement circuit error (INF9)
9	Set to 1: Line contactor error (LCF)
10	Set to 1: Customer supply error (INFA)
11	Set to 1: Thermal sensor error (OC or SC) (INFB)
12,13	Reserved
14	Set to 1: IGBT short-circuit error (hardware detection) (SCF4)
15	Set to 1: Load short-circuit error during Igon load sequence (hard detection) (SCF5)

[Error register 5] ? *d F 5*

Status parameters giving error states 5

Bit	Description, Value
0	Set to 1: CPU error (ram, flash, task ...) (INFE)
1	Set to 1: AI3 4-20 mA loss (LFF3)

Bit	Description, Value
2	Set to 1: AI4 4-20 mA loss (LFF4)
3	Set to 1: Torque underload error (ULF)
4	Set to 1: Torque overload error (OLC)
5...7	Reserved
8	Set to 1: Channel switching error (switch to not valid channels) (CSF)
9	Set to 1: Hardware configuration error (HCF)
10	Reserved
11	Set to 1: Angle setting error (ASF)
12...15	Reserved

[Error register 6] ?␍F 6

Status parameters giving error states 6

Bit	Description, Value
2	Set to 1: AI1 4-20 mA loss (LFF1)
3	Set to 1: Invalid configuration after transferring a new one (CFI2)
4	Reserved
5...6	Reserved
7	Set to 1: IO-relay option error (INFG)
8	Set to 1: IO-standard option error (INFH)
9	Reserved
10	Set to 1: Differential current - Deviation error input (S7 and drive system) (INFD)
11	Set to 1: Inter processor communication interruption (INF0)
12	Set to 1: Motor stall error (STF)
13	Set to 1: Real time clock error (INFL)
14	Set to 1: AI5 4-20 mA loss (LFF5)
15	Set to 1: Ethernet embedded communication interruption (ETHF)

[Error register 7] ?␍F 7

Status parameters giving error states 7

Bit	Description, Value
0...1	Reserved
2	Set to 1: Thermal error level for AI3 (TH3F)
3	Set to 1: Thermal sensor error for AI3 (T3CF)
4	Set to 1: Pumpcycle monitoring function error (PCPF)
5...7	Reserved
8	Set to 1: Thermal error level for AI1 (TH1F)
9	Reserved
10	Set to 1: Thermal error level for AI4 (TH4F)
11	Set to 1: Thermal sensor error for AI4 (T34F)
12	Set to 1: Thermal error level for AI5 (TH5F)
13	Set to 1: Thermal sensor error for AI5 (T5CF)
14...15	Reserved

[Error register 8] ?␍F 8

Status parameters giving error states 8

Bit	Description, Value
0	Set to 1: Dry run detected error (DRYF)
1	Set to 1: PID feedback detected error (PFMF)

Bit	Description, Value
2	Set to 1: Program loading error (PGLF)
3	Set to 1: Program loading detected error (PGRF)
4	Set to 1: Incompatibility between control board and software version (INFP)
5	Set to 1: Option interface PCBA error (INFK)
6	Set to 1: Cpld watchdogs (INFR)
7...9	Reserved
10	Set to 1: Firmware update error (FWER)
11	Set to 1: Configuration preset error (CFI3)
12, 13	Reserved
14	Set to 1: Overload Time exceeded (TLOF)
15	Set to 1: Encoder option board internal error (INFJ)

[Error register 9] ?⌐F9

Status parameters giving error states 9

Bit	Description, Value
0	Set to 1: Monitoring circuit A error (IFA)
1	Set to 1: Monitoring circuit A error (IFB)
2	Set to 1: Monitoring circuit A error (IFC)
3	Set to 1: Monitoring circuit A error (IFD)
4	Set to 1: Cabinet circuit A error (CFA)
5	Set to 1: Cabinet circuit A error (CFB)
6	Set to 1: Cabinet circuit A error (CFC)
7	Set to 1: Motor winding A error (TFA)
8	Set to 1: Motor winding B error (TFB)
9	Set to 1: Motor bearing A error (TFC)
10	Set to 1: Motor bearing B error (TFD)
11,12	Reserved
13	Set to 1: Multidrive Link : Communication interruption (MDLF)
14	Set to 1: Backlash error (BSQF)
15	Set to 1: Master/Slave device error (MSDF)

[Error register 10] ?⌐F10

Status parameters giving error states 10

Bit	Description, Value
1	Set to 1: Cabinet overheat error (CHF)
2	Reserved
3	Set to 1: Power cell missing (not found at startup) (INFV)
4	Set to 1: Power-Cells downward fiber communication interruption (PWF8)
5...11	Reserved
12	Set to 1: Circuit breaker error (not in accordance to the start and stop pulse) (CBF)
13,14	Reserved
15	Encoder thermal sensor detected error (THEF)
0	Thermal sensor error on encoder (TECF)

[Error register 11] ? d F 1 1

Status parameters giving error states 11

Bit	Description, Value
0	Set to 1: Thermal sensor error on AI1 (T1CF)
1	Set to 1: Empty configuration (CFI4)
2...5	Reserved
6	Set to 1: Embedded Ethernet FDR error (FDR1)
7	Set to 1: Ethernet fieldbus module FDR error (FDR2)
8...11	Reserved
12	Set to 1: Bypass POC error (BYPF)
13...15	Reserved

[Error register 12] ? d F 1 2

Status parameters giving error states 12

Bit	Description, Value
0	Set to 1: Device Option interface compatibility error (INFO)
1	Set to 1: Option 3 communication interruption (CNF3)
2	Set to 1: Option 3 internal link error (ILF3)
3	Set to 1: External error from Option 3 (EPF3)
4	Set to 1: Mains voltage dip 3 phase loss (3PF)
5	Set to 1: Modbus 2 local serial communication interruption (SLF4)
6	Set to 1: Mains over-current (PWF1)
7	Set to 1: Mains ground voltage short-circuit error (PWF2)
8	Set to 1: Motor ground voltage short-circuit error (PWF3)
9	Set to 1: Power-Cells upward fiber communication interruption (PWF4)
10	Set to 1: Power Cells input phases loss (PWF5)
11	Set to 1: FPGA Internal error (PWF6)
12	Set to 1: Power Cells gates driver error (PWF7)
13	Set to 1: Power output enable function error (PODF)
14	Set to 1: Transformer 1 Overheat (CF01)
15	Set to 1: Transformer 2 Overheat (CF02)

[Error register 13] ? d F 1 3

Status parameters giving error states 13

Bit	Description, Value
0	Set to 1: PLC internal error (CF03)
1	Set to 1: Mains off button (CF04)
2	Set to 1: Door interlock (CF05)
3	Set to 1: Fan cooling not ready (CF06)
4	Set to 1: Cabinet overheat (CF07)
5	Set to 1: QF1 circuit breaker tripped (CF08)
6	Set to 1: Power supply for cooling fans not ready (CF09)
7	Set to 1: Auxiliary supply error (CF10)
8	Set to 1: QF1 MV Mains circuit breaker grounded contact error (CF11)
9	Set to 1: QF1 MV Mains circuit breaker isolated contact error (CF12)
10	Set to 1: QF2 feedback error (CF13)
11	Set to 1: QF3 feedback error (CF14)
12	Set to 1: QF91 feedback error (CF15)
13	Set to 1: QF11 feedback error (CF16)

Bit	Description, Value
14	Set to 1: LV surge arrestor error (CF17)
15	Set to 1: CF18 error (CF18)

[Error register 14] ?dF14

Status parameters giving error states 14

Bit	Description, Value
0	Set to 1: Motor winding 1 error (CF19)
1	Set to 1: Motor winding 2 error (CF20)
2	Set to 1: Motor bearing 1 error (CF21)
3	Set to 1: Motor bearing 2 error (CF22)
4	Set to 1: PT100 motor winding OC / SC error (CF23)
5	Set to 1: PT100 motor bearing OC / SC error (CF24)
6	Set to 1: CF25 error (CF25)
7	Set to 1: CF26 error (CF26
8	Set to 1: Application error 01 (AF01)
9	Set to 1: Application error 02 (AF02)
10	Set to 1: Application error 03 (AF03)
11	Set to 1: Application error 04 (AF04)
12	Set to 1: Application error 05 (AF05)
13	Set to 1: Application error 06 (AF06)
14	Set to 1: Application error 07 (AF07)
15	Set to 1: Application error 08 (AF08)

[Alarm registers 1] ALr1

Bit	Description, Value
0	Set to 1 (FRF) : Reaction on event: Fallback frequency
1	Set to 1 (RLS) : Reaction on event: Speed maintained
2	Set to 1 (STT) : Reaction on event: Stop following [Type of stop] Stt without triggering an error
3	Set to 1 (SRA) : Frequency reference reached
4	Set to 1 (LCA1) : Life cycle warning 1
5	Set to 1 (LCA2) : Life cycle warning 2
6	Set to 1 (DRYA) : Dry Running Warning
12	Set to 1 (PCPA) : Pumpcycle monitoring warning

[Alarm registers 2] ALr2

Bit	Description, Value
1	Set to 1 (PEE) : PID error warning
2	Set to 1 (PFA) : PID feedback warning
3	Set to 1 (PFAH) : PID feedback high threshold reached
4	Set to 1 (PFAL) : PID feedback low threshold reached
5	Set to 1 (PISH) : PID feedback monitoring warning
10	Set to 1 (TP3A) : AI3 Thermal warning
11	Set to 1 (TP4A) : AI4 Thermal warning
12	Set to 1 (TP5A) : AI5 Thermal warning
13	Set to 1 (AP1) : 4-20 loss alarm on AI1
15	Set to 1 (AP3) : 4-20 loss alarm on AI3

[Alarm registers 3] *A L r 3*

Bit	Description, Value
0	Set to 1 (AP4) : 4-20 loss alarm on AI4
1	Set to 1 (AP5) : 4-20 loss alarm on AI5
2	Set to 1 (THA) : Drive overhearting warning
3	Set to 1 (FCTA) : Fan counter speed warning
4	Set to 1 (FFDA) : Fan feedback warning
5	Set to 1 (EFA) : External error warning
6	Set to 1 (USA) : Undervoltage warning
7	Set to 1 (UPA) : Controlled stop threshold is reached
8	Set to 1 (ERN) : Emergency
9	Set to 1 (FTA) : Motor frequency high threshold 1 reached
10	Set to 1 (FTAL) : Motor frequency low threshold 1 reached
11	Set to 1 (FQLA) : Pulse warning threshold reached
12	Set to 1 (F2AL) : Motor frequency low threshold 2 reached
13	Set to 1 (FLA) : High speed reached warning
14	Set to 1 (AP4) : 4-20 loss alarm on AI4
15	Set to 1 (AP5) : 4-20 loss alarm on AI5

[Alarm registers 4] *A L r 4*

Bit	Description, Value
0	Set to 1 (RTAH) : Reference frequency high threshold reached
1	Set to 1 (RTAL) : Reference frequency low threshold reached
2	Set to 1 (F2A) : Motor frequency high threshold 2 reached
3	Set to 1 (CTA) : Motor current high threshold reached
4	Set to 1 (CTAL) : Motor current low threshold reached
5	Set to 1 (TTHA) : Motor torque high threshold reached
6	Set to 1 (TTLA) : Motor torque low threshold reached
7	Set to 1 (ULA) : Underload is detected
8	Set to 1 (OLA) : Overload is detected
9	Set to 1 (SSA) : Timeout on current or torque limitation is reached
10	Set to 1 (RTA) : Torque regulation alarm
11	Set to 1 (TAD) : Drive thermal threshold reached
12	Set to 1 (TSA) : Motor thermal threshold reached)
13	Set to 1 (TS2) : Motor 2 thermal threshold reached
14	Set to 1 (TS3) : Motor 3 thermal threshold reached
15	Set to 1 (TS4) : Motor 4 thermal threshold reached

[Alarm registers 5] *A L r 5*

Bit	Description, Value
0	Set to 1 (PTHA) : Power high threshold reached
1	Set to 1 (PTHL) : Power low threshold reached
2	Set to 1 (CAS1) : Customer warning 1 active
3	Set to 1 (CAS2) : Customer warning 2 active
4	Set to 1 (CAS3) : Customer warning 3 active
5	Set to 1 (CAS4) : Customer warning 4 active
6	Set to 1 (CAS5) : Customer warning 5 active
8	Set to 1 (POWD) : Power consumption warning

[Alarm registers 6] *ALr6*

Bit	Description, Value
2	Set to 1 (ANA) : Slipping warning
4	Set to 1 (BSA) : Load movement warning
5	Set to 1 (BCA) : Brake contact warning
6	Set to 1 (TP1A) : AI1 Thermal warning

[Alarm registers 7] *ALr7*

Bit	Description, Value
0	Set to 1 (IWA) : Monitoring circuit A warning
1	Set to 1 (IWB) : Monitoring circuit B warning
2	Set to 1 (IWC) : Monitoring circuit C warning
3	Set to 1 (IWD) : Monitoring circuit D warning
4	Set to 1 (CWA) : Cabinet circuit A warning
5	Set to 1 (CWB) : Cabinet circuit B warning
6	Set to 1 (CWC) : Cabinet circuit C warning
7	Set to 1 (TWA) : Motor winding A warning
8	Set to 1 (TWB) : Motor winding B warning
9	Set to 1 (TWC) : Motor winding C warning
10	Set to 1 (TWD) : Motor winding D warning

[Alarm registers 8] *ALr8*

Bit	Description, Value
6	Set to 1 (CHA) : Cabinet overheat warning
11	Set to 1 (MSDA) : Master/Slave device warning
12	Set to 1 (BSQA) : Backlash Sequence : Alarm
13	Set to 1 (TPEA) : Encoder module thermal warning

[Alarm registers 9] *ALr9*

Bit	Description, Value
3	Set to 1 (OBW) : Over-voltage warning
4	Set to 1 (TS1A) : Temperature sensor AI1 warning (open circuit)
6	Set to 1 (TS3A) : Temperature sensor AI3 warning (open circuit)
7	Set to 1 (TS4A) : Temperature sensor AI4 warning (open circuit)
8	Set to 1 (TS5A) : Temperature sensor AI5 warning (open circuit)
9	Set to 1 (MOTW) : Motor scaling warning
10	Set to 1 (IGW) : Mains ground warning
11	Set to 1 (OGW) : Motor ground warning
12	Set to 1 (CW01) : Controller embedded RTC battery warning
13	Set to 1 (CW02) : Cooling fan warning
14	Set to 1 (CW03) : Cabinet overheating
15	Set to 1 (CW04) : MVCB Status not OK warning

[Alarm registers 10] *ALrA?*

Bit	Description, Value
0	Set to 1 (CW05) : Fan power supply warning
1	Set to 1 (CW06) : Auxiliary power supply warning
2	Set to 1 (CW07) : LV Surge arrestor warning

Bit	Description, Value
3	Set to 1 (CW08) : PLC Cabinet Warning 8 (reserved)
4	Set to 1 (CW09) : PLC Cabinet Warning 9 (reserved)
5	Set to 1 (CW10) : PLC Cabinet Warning 10 (reserved)
6	Set to 1 (CW11) : QF2 feedback warning
7	Set to 1 (CW12) : QF3 feedback warning
8	Set to 1 (CW13) : QF91 feedback warning
9	Set to 1 (CW14) : QF11 feedback warning
10	Set to 1 (CW15) : PLC Cabinet Warning 15
11	Set to 1 (CW16) : Cabinet Warning 16
12	Set to 1 (CW17) : Transformer 1 thermal warning
13	Set to 1 (CW18) : Transformer 8 thermal warning
14	Set to 1 (CW19) : Motor winding 1 warning
15	Set to 1 (CW20) : Motor winding 2 warning

[Alarm registers 11] *ALrb*

Bit	Description, Value
0	Set to 1 (CW21) : Motor bearing 1 warning
1	Set to 1 (CW22) : Transformer 2 thermal warning
2	Set to 1 (CW23) : PLC Cabinet Warning 23 (reserved)
3	Set to 1 (CW24) : PLC Cabinet Warning 24 (reserved)
4	Set to 1 (CW25) : PLC Cabinet Warning 25 (reserved)
5	Set to 1 (CW26) : PLC Cabinet Warning 26 (reserved)
6	Set to 1 (CW27) : PLC Cabinet Warning 27 (reserved)
7	Set to 1 (CW28) : PLC Cabinet Warning 28 (reserved)
8	Set to 1 (CW29) : PLC Cabinet Warning 29 (reserved)
9	Set to 1 (CW30) : PLC Cabinet Warning 30 (reserved)
10	Set to 1 (CW31) : PLC Cabinet Warning 31 (reserved)
11	Set to 1 (CW32) : PLC Cabinet Warning 32 (reserved)
12	Set to 1 (AW01) : PLC Application ETO Warning 1
13	Set to 1 (AW02) : PLC Application ETO Warning 2
14	Set to 1 (AW03) : PLC Application ETO Warning 3
15	Set to 1 (AW04) : PLC Application ETO Warning 4

[Alarm registers 12] *ALrC?*

Bit	Description, Value
0	Set to 1 (AW05) : PLC Application ETO Warning 5
1	Set to 1 (AW06) : PLC Application ETO Warning 6
2	Set to 1 (AW07) : PLC Application ETO Warning 7
3	Set to 1 (AW08) : PLC Application ETO Warning 8
4	Set to 1 (AW09) : PLC Application ETO Warning 9
5	Set to 1 (AW10) : PLC Application ETO Warning 10
6	Set to 1 (AW11) : PLC Application ETO Warning 11
7	Set to 1 (AW12) : PLC Application ETO Warning 12
8	Set to 1 (AW13) : PLC Application ETO Warning 13
9	Set to 1 (AW14) : PLC Application ETO Warning 14
10	Set to 1 (AW15) : PLC Application ETO Warning 15
11	Set to 1 (AW16) : PLC Application ETO Warning 16
12	Set to 1 (BYW1) : Bypass Poc Warning 1

Bit	Description, Value
13	Set to 1 (BYW2) : Bypass Poc Warning 2

[On Lock Register] *P L o 1*

Device On lock status register

Bit	Description, Value
0	Set to 1: Door Open
1	Set to 1: Fan not Ready
2	Set to 1: Mains OFF Button
3	Set to 1: MV Circuit breaker Tripped
4	Set to 1: MV Circuit breaker grounding contact
5	Set to 1: MV Circuit breaker Isolated
6	Set to 1: QF2 Tripped
7	Set to 1: QF3 Tripped
8	Set to 1: QF91 Tripped
9	Set to 1: QF1 Tripped
10	Set to 1: Reserved
11 to 15	set to 1: Reserved ETO

[Bypass Cabinet Lock register] *P L o 2*?

Bit	Description, Value
0	Set to 1 = 1 : Bypass breaker ONLock state = QF11=0 QF2=0 QF3=0
1	Set to 1 = 1 : Bypass breaker ONLock state = QF11=0 QF2=1 QF3=0
2	Set to 1 = 1 : Bypass breaker ONLock state = QF11=0 QF2=1 QF3=1
3	Set to 1 = 1 : Bypass breaker ONLock state = QF11=1 QF2=0 QF3=0
4	Set to 1 = 1 : Bypass breaker ONLock state = QF11=1 QF2=0 QF3=1
5...7	Set to 1 = 1 : Reserved
8	Set to 1 = 1 : Bypass breaker ONLock state = QF2=0 QF3=0
9	Set to 1 = 1 : Bypass breaker ONLock state = QF2=0 QF3=1
10	Set to 1 = 1 : Bypass breaker state = QF2=1 QF3=1
11...15	Set to 1 = 1 : Reserved

Section 11.2
Counter Management

[Counter Management] *E L t -* Menu

Access

[Diagnostics] ➜ [Elapsed Time] ➜ [Counter Management]

About This Menu

This menu shows the drive, fan, and motor-related counters.

[Motor Run Time] *r t H*

Motor run time.

Run elapsed time display (resettable) in seconds (length of time the motor has been switched on).

Setting	Description
0...4,294,967,295 s	Setting range **Factory setting**: _

[Power-on Time] *P t H*

Power-on time (resettable) or counter can be set to 0 by using the **[Time Counter Reset]** *r P r* parameter.

Setting	Description
0...4,294,967,295 s	Setting range **Factory setting**: _

[Nb Of Start] *n 5 M*

Number of motor starts (resettable) or counter can be set to 0 by using the **[Time Counter Reset]** *r P r* parameter.

Setting	Description
0...4,294,967,295	Setting range **Factory setting**: _

[Nb of MV Power On] *n 5 V*

Number of MV Power on display (resettable)

Setting	Description
0...4,294,967,295	Setting range **Factory setting**: _

[Fan Operation Time] *F P b t*

Fan operation time.

As soon as **[Fan Operation Time]** *F P b t* reach the predefined value of 45,000 hours, a warning **[Fan Counter Warning]** *F C t A* is triggered.

[Fan Operation Time] *F P b t* counter can be set to 0 by using the **[Time Counter Reset]** *r P r* parameter.

Setting	Description
0...500,000 h	Setting range **Factory setting**: Read Only

[QF1 Nb Of Starts] 9 F P o

Number of power on mains circuit breaker (resettable) can be set to 0 by using the **[Time Counter Reset]** r P r parameter.

Setting	Description
0...4,294,967,295	Setting range **Factory setting**: _

[QF3 Nb Of Starts] 9 F P 3

Number of power on bypass circuit breaker (resettable) can be set to 0 by using the **[Time Counter Reset]** r P r parameter.

Setting	Description
0...4,294,967,295	Setting range **Factory setting**: _

[QF91 Nb Of Starts] 9 F P 4

Number of power on inrush circuit breaker (resettable) can be set to 0 by using the **[Time Counter Reset]** r P r parameter.

Setting	Description
0...4,294,967,295	Setting range **Factory setting**: _

Part VI
Drive Settings and Communication

Overview

This information can be accessed using the **Settings** Menu Panel available to the ATV6000 HMI Panel.

What Is in This Part?

This part contains the following chapters:

Chapter 12
Drive Settings

This Chapter is only available with Advanced profile and Services Expert Profile.

What Is in This Chapter?

This chapter contains the following sections:

Section 12.1
[Speed Limits]

[Speed limits] *SLM-* Menu

Access

[Settings] ➜ [Drive Settings] ➜ [Speed limits]

About This Menu

This function defines how the acceleration and deceleration are controlled during start and stop of the pump.

The pump working area is within the speed range **[Low Speed]** *LSP* - **[High Speed]** *HSP*.

The minimum speed is provided by the pump manufacturer according to the application.

Running below the minimum speed and/or starting the pump with a long acceleration ramp time has an impact on the lubrication of the seal, on the cooling of the impeller and the bearings.

A specific check-valve deceleration ramp is available to reduce any large variation of pressure that can generate an instability of the valve.
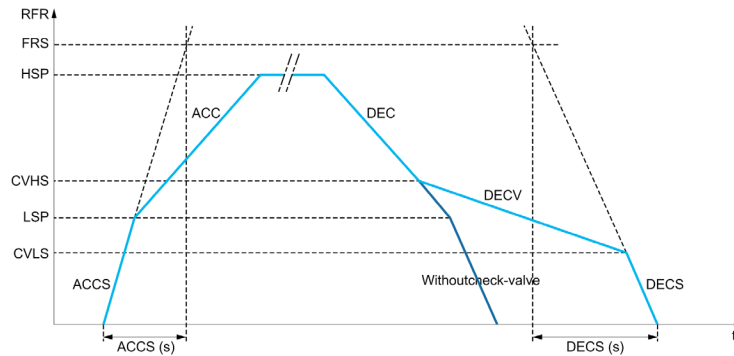
When the pump starts, the pump accelerates up to **[Low Speed]** *LSP* according to **[Start Accel Ramp]** *ACCS*.When the pump speed is above **[Low Speed]** *LSP*, the pump acceleration and deceleration are managed according to **[Acceleration]** *ACC* and **[Deceleration]** *DEC* if no other function is activated.

When the pump stops:
- The pump decelerates down to **[Check Valve Spd 2]** *CVHS* according to **[Deceleration]** *DEC*
- The pump decelerates from **[Check Valve Spd 2]** *CVHS* to **[Check Valve Spd 1]** *CVLS* according to **[Dec. Check Valve]** *DECV*
- The pump decelerates from **[Check Valve Spd 1]** *CVLS* to zero speed according to **[Deceleration on Stop]** *DECS*

If **[Start Accel Ramp]** *ACCS* = 0, the start ramp is ignored and **[Acceleration]** *ACC* is used to start the pump.

If **[Dec. Check Valve]** *DECV* = 0, the check-valve ramp is ignored and is used to decelerate down to **[Low Speed]** *LSP*, then **[Deceleration on Stop]** *DECS* is used (see below).

If **[Deceleration on Stop]** *DECS* = 0, the normal deceleration **[Deceleration]** *DEC* is used to stop the pump.

[Low Speed] *LSP*

Motor frequency at low speed.

Setting ( )	Description
0.0...300.0 Hz	Setting range **Factory setting**: 0 Hz

[High Speed] *H S P*

Motor frequency at high speed.
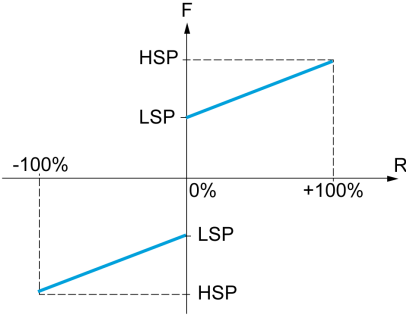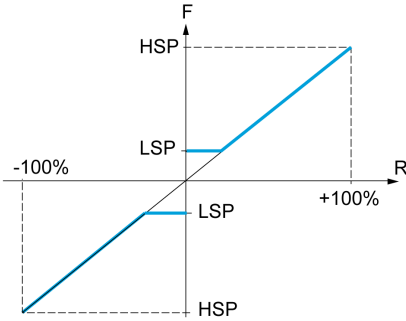
Setting ○	Description
0.0...300.0 Hz	Setting range **Factory setting**: 50.0 Hz
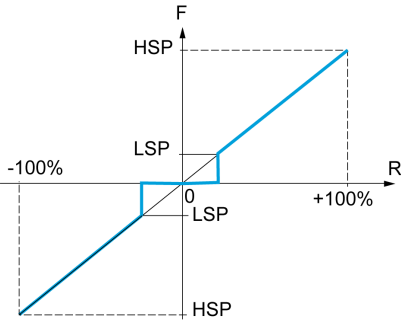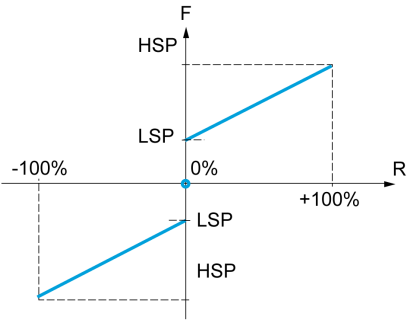
[Ref Freq Template] *b S P*

Low speed management (template).

This parameter defines how the speed reference is taken into account, for analog inputs and pulse input only. In the case of the PID controller, this is the PID output reference.

The limits are set by the **[Low speed]** *L S P* and **[High speed]** *H S P* parameters.

Setting ○	Code / Value	Description
[Standard]	*b S d*	**F** Frequency **R** Reference At reference = 0, the frequency = **[Low speed]** *L S P* **Factory setting**
[Pedestal]	*b L S*	**F** Frequency **R** Reference At reference = 0 to **[Low speed]** *L S P*, the frequency = **[Low speed]** *L S P*

Setting ()	Code / Value	Description
[Deadband]	b n S	F HSP LSP -100% R 0 +100% LSP HSP **F** Frequency **R** Reference At reference = 0 to *L S P* the frequency = 0
[Deadband at 0%]	b n S D	F HSP LSP -100% 0% R +100% LSP HSP **F** Frequency **R** Reference This operation is the same as **[Standard]** *b S d*, except that in the following cases at zero reference, the frequency = 0: The signal is less than **[Min value]**, which is greater than 0 (example: 1 Vdc on a 2–10 Vdc input). The signal is greater than **[Min value]**, which is greater than **[Max value]** (example: 11 Vdc on a 10–0 Vdc input). If the input range is configured as "bidirectional", the operation remains identical to **[Standard]** *b S d*.

Section 12.2
Ramp

[Ramp] ⎸ A ⎕ P - Menu

Access

[Settings] ➜ [Drive Settings] ➜ [Ramp]

[Ramp Type] ⎸ P ⊢

Type of ramp.

Setting	Code / Value	Description
[Linear]	L ⎸ n	Linear ramp **Factory setting**
[S-Ramp]	5	S ramp
[U-Ramp]	⊔	U ramp
[Customized]	C ⊔ 5	Customer ramp

[Ramp increment] ⎸ n ⎸

This parameter is valid for **[Acceleration]** A C C , **[Deceleration]** d E C , **[Acceleration 2]** A C 2 and **[Deceleration 2]** d E 2 .

Setting ( )	Code / Value	Description
[0.01]	0.0 ⎸	Ramp up to 99.99 seconds
[0.1]	0. ⎸	Ramp up to 999.9 seconds **Factory setting**
[1]	⎸	Ramp up to 6,000 seconds

[Acceleration] A C C

Time to accelerate from 0 to the **[Nominal Motor Freq]** F ⎸ 5 .

To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application.

Setting ( )	Description
0.00...6,000.00 s [1]	Setting range **Factory setting**: 60.0 s
(1) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 according to **[Ramp increment]** ⎸ n ⎸	

[Deceleration] d E C

Time to decelerate from the **[Nominal Motor Freq]** F ⎸ 5 to 0.

To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application.

Setting ( )	Description
0.00...6,000.00 s [1]	Setting range **Factory setting**: 60.00 s
(1) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 according to **[Ramp increment]** ⎸ n ⎸	

[Begin Acc round] *t A 1* ★

Rounding of start of acceleration ramp as a percentage of the **[Acceleration]** *A C C* or **[Acceleration 2]** *A C 2* ramp time.

Can be set from 0 to 100%.

This parameter can be accessed if the **[Ramp type]** *r P t* is set to **[Customized]** *C u S*.

Setting ⟨⟩	Description
0...100%	Setting range **Factory setting**: 10%

[End Acc round] *t A 2* ★

Rounding of end of acceleration ramp as a percentage of the **[Acceleration]** *A C C* or **[Acceleration 2]** *A C 2* ramp time.

Can be set between 0 and (100% - **[Begin Acc round]** *t A 1*).

This parameter can be accessed if the **[Ramp type]** *r P t* is set to **[Customized]** *C u S*.

Setting ⟨⟩	Description
0...100%	Setting range **Factory setting**: 10%

[Begin Dec round] *t A 3* ★

Rounding of start of deceleration ramp as a percentage of the **[Deceleration]** *d E C* or **[Deceleration 2]** *d E 2* ramp time.

Can be set from 0 to 100%.

This parameter can be accessed if the **[Ramp type]** *r P t* is set to **[Customized]** *C u S*.

Setting ⟨⟩	Description
0...100%	Setting range **Factory setting**: 10%

[End Dec round] *t A 4* ★

Rounding of end of deceleration ramp as a percentage of the **[Deceleration]** *d E C* or **[Deceleration 2]** *d E 2* ramp time.

Can be set between 0 and (100% - **[Begin Dec round]** *t A 3*).

This parameter can be accessed if the **[Ramp type]** *r P t* is **[Customized]** *C u S*.

Setting ⟨⟩	Description
0...100%	Setting range **Factory setting**: 10%

[Ramp 2 Thd] *F r t*

Ramp 2 frequency threshold

The second ramp is switched if the value of **[Ramp 2 Thd]** *F r t* is not 0 (0 deactivates the function) and the output frequency is greater than **[Ramp 2 Thd]** *F r t*.

Threshold ramp switching can be combined with **[Ramp Switch Assign]** *r P S* switching as follows:

DI or Bit	Frequency	Ramp
0	< *F r t*	*A C C*, *d E C*
0	> *F r t*	*A C 2*, *d E 2*
1	< *F r t*	*A C 2*, *d E 2*
1	> *F r t*	*A C 2*, *d E 2*

Setting ()	Description
0.0...300.0 Hz	Setting range **Factory setting**: 0.0 Hz

[Acceleration 2] $AC2$ ★

Acceleration 2 ramp time.

Time to accelerate from 0 to the **[Nominal Motor Freq]** FrS. To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application.

This parameter can be accessed if **[Ramp 2 Thd]** Frt is greater than 0 or if **[Ramp Switch Assign]** rPS is assigned.

Setting ()	Description
0.0...6,000 s [(1)]	Setting range **Factory setting**: 60.0 s
(1) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1...6,000 s according to **[Ramp increment]** Inr.	

[Deceleration 2] $dE2$ ★

Time to decelerate from the **[Nominal Motor Freq]** FrS to 0. To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application.

This parameter can be accessed if:
- **[Ramp 2 Thd]** Frt is greater than 0, or
- **[Ramp Switch Assign]** rPS is assigned.

Setting ()	Description
0.0...6,000 s [(1)]	Setting range **Factory setting**: 60.0 s
(1) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1...6,000 s according to **[Ramp increment]** Inr.	

[Ramp 3 Thd] $Ft3$ ★

Ramp 3 frequency threshold

The third ramp is switched if the value of **[Ramp 2 Thd]** Frt is not 0 (0 deactivates the function) and the output frequency is greater than **[Ramp 2 Thd]** Frt.

Threshold ramp switching can be combined with **[Ramp Switch Assign]** rPS switching as follows:

DI or Bit	Frequency	Ramp
0	< Frt	ACC, dEC
0	> Frt	$AC3$, $dE3$
1	< Frt	$AC3$, $dE3$
1	> Frt	$AC3$, $dE3$

Setting ()	Description
0.0...300 Hz	Setting range **Factory setting**: 0 Hz

[Acceleration 3] $A\mathcal{L} \ni$ ★

Acceleration 3 ramp time.

Time to accelerate from 0 to the **[Nominal Motor Freq]** $F \cap 5$. To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application.

This parameter can be accessed if **[Ramp 2 Thd]** $F \cap t$ is greater than 0 or if **[Ramp Switch Assign]** $\cap P 5$ is assigned.

Setting ( )	Description
0.0...6,000 s [1]	Setting range **Factory setting**: 60.0 s
(1) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1...6,000 s according to **[Ramp increment]** $\iota \cap \cap$.	

[Deceleration 3] $d E \ni$ ★

Deceleration 3 ramp time.

Time to decelerate from the **[Nominal Motor Freq]** $F \cap 5$ to 0. To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application.

This parameter can be accessed if:
● **[Ramp 2 Thd]** $F \cap t$ is greater than 0, or
● **[Ramp Switch Assign]** $\cap P 5$ is assigned.

Setting ( )	Description
0.0...6,000 s [1]	Setting range **Factory setting**: 60.0 s
(1) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1...6,000 s according to **[Ramp increment]** $\iota \cap \cap$.	

Section 12.3
Jump Frequency

[Jump frequency] *JuF-* Menu

Access

[Settings] ➜ [Drive Settings] ➜ [Jump frequency]

About This Menu

This function helps to prevent prolonged operation within an adjustable range around the regulated frequency.

This function can be used to help to prevent a speed, which could cause resonance, being reached. Setting the function to 0 renders it inactive.

[Skip Frequency] *JPF*

Jump frequency.

Setting ( )	Description
0.0...300.0 Hz	Setting range **Factory setting**: 0.0 Hz

[Skip Frequency 2] *JF2*

Jump frequency 2.

Setting ( )	Description
0.0...300.0 Hz	Setting range **Factory setting**: 0.0 Hz

[3rd Skip Frequency] *JF3*

Jump frequency 3.

Setting ( )	Description
0.0...300.0 Hz	Setting range **Factory setting**: 0.0 Hz

[Skip.Freq.Hysteresis] *JFH* ★

Jump frequency bandwidth.

This parameter can be accessed if at least one skip frequency *JPF*, *JF2*, or *JF3* is different from 0.

Skip frequency range: between *JPF – JFH* and *JPF + JFH* for example.

This adjustment is common to the 3 frequencies *JPF*, *JF2*, *JF3*.

Setting ( )	Description
0.1...10.0 Hz	Setting range **Factory setting**: 1.0 Hz

Section 12.4
[I/O map]

What Is in This Section?

This section contains the following topics:

[AI1] *A i 1 C* - Menu

Access

[Settings] ➜ [Drive Settings] ➜ [I/O map] ➜ [Analog inputs image] ➜ [AI1]

[AI1] *A i 1 C*

Physical value AI1.

AI1 customer image: value of analog input 1.

Setting	Description
-32,767...32,767	Setting range **Factory setting: –**

[AI1 Assignment] *A i 1 A*

Analog input AI1 functions assignment.

Read-only parameter, cannot be configured. It displays all the functions associated with input AI1 in order to verify, for example, for compatibility problems.

If no functions have been assigned, **[No]** *n o* is displayed.

Setting	Code / Value	Description
[Not Configured]	*n o*	Not assigned
[AI1]	*A i 1*	Analog input AI1 **Factory Setting**
[AI2]...[AI3]	*A i 2...A i 3*	Analog input AI2...AI3
[AI4]...[AI5]	*A i 4...A i 5*	Analog input AI4...AI5 if VW3A3203 I/O extension module has been inserted
[Motor Current]	*o C r*	Motor current
[Motor Frequency]	*o F r*	Motor speed
[Ramp out.]	*o r P*	Ramp output
[Motor torq.]	*t r q*	Motor torque
[Sign. torque]	*S t q*	Signed motor torque
[sign ramp]	*o r S*	Signed ramp output
[PID ref.]	*o P S*	PI(D) reference
[PID feedbk]	*o P F*	PI(D) feedback
[PID error]	*o P E*	PI(D) error
[PID output]	*o P i*	PI(D) integral
[Motor Power]	*o P r*	Motor power
[Mot thermal]	*t H r*	Motor thermal state
[Torque 4Q]	*t r 4 q*	4 quadrants torque output
[Measured Motor Freq]	*o F r r*	Real motor speed
[Ref Frequency via DI]	*u P d t*	Up/Down function is assigned by DIx
[HMI]	*L C C*	Reference Frequency via remote terminal
[Modbus]	*M d b*	Reference frequency via Modbus
[Modbus 2]	*M d b 2*	Modbus 2 source
[CANopen]	*C A n*	Reference frequency via CANopen if a CANopen module has been inserted
[Com. Module]	*n E t*	Reference frequency via fieldbus module if a fieldbus module has been inserted
[Embedded Ethernet]	*E t H*	Embedded Ethernet
[Sig. o/p frq.]	*o F S*	Signed output frequency
[Mot therm2]	*t H r 2*	Motor 2 thermal state
[Mot therm3]	*t H r 3*	Motor 3 thermal state
[Mot therm4]	*t H r 4*	Motor 4 thermal state

Setting	Code / Value	Description
[Unsigned Trq Ref]	_utr_	Unsigned torque reference
[Signed Trq Ref]	_Str_	Signed torque reference
[Torque lim.]	_tqL_	Torque limitation
[Motor volt.]	_uoP_	Motor voltage
[AI Virtual 1]	_AiV1_	Virtual analogical input 1
[DQ1]	_do1_	Analogical/logical output DO1
[DI7 PulseInput]...[DI8 PulseInput]	_Pi7...Pi8_	Digital input DI7...DI8 used as pulse input
[Mains Voltage]	_uLn_	Mains voltage
[Mains Current]	_iLn_	Mains current
[Input Elec. Power]	_iPr_	Mains active power
[Input Reactive Power]	_iqr_	Mains reactive power
[Input Power Factor]	_PWF_	Power factor
[HMI Panel]	_HMiP_	HMI Panel by Modbus 2 source
[Ctrl Inside]	_PLCi_	PLC Inside source
[M/S Out Speed Reference]	_MSSo_	Master Slave : Speed Output
[M/S Out Torque Reference]	_MSto_	Master Slave : Torque Output

[AI1 Type] _Ai1t_

Configuration of analog input AI1.

Setting	Code / Value	Description
[Voltage]	_10u_	0-10 Vdc **Factory setting**
[Current]	_0A_	0-20 mA
[PTC Management]	_PtC_	1 to 6 PTC (in serial)
[KTY]	_Kty_	1 KTY84
[PT100]	_1Pt2_	1 PT100 connected with 2 wires
[PT1000]	_1Pt3_	1 PT1000 connected with 2 wires

[AI1 min value] _uiL1_★

AI1 minimum value.

AI1 voltage scaling parameter of 0%.

This parameter can be accessed if [AI1 Type] _Ai1t_ is set to [Voltage] _10u_.

Setting	Description
0.0...10.0 Vdc	Setting range **Factory setting**: 0.0 Vdc

[AI1 max value] _uiH1_★

AI1 maximum value.

AI1 voltage scaling parameter of 100%.

This parameter can be accessed if [AI1 Type] _Ai1t_ is set to [Voltage] _10u_.

Setting	Description
0.0...10.0 Vdc	Setting range **Factory setting**: 10.0 Vdc

[AI1 min. value] $\mathcal{C} \sqcap \mathcal{L}$ ✦

AI1 minimum value.

AI1 current scaling parameter of 0%.

This parameter can be accessed if **[AI1 Type]** $\mathcal{A}$ ı ı ட is set to **[Current]** $\mathcal{D}$ $\mathcal{A}$.

Setting	Description
0.0...20.0 mA	Setting range **Factory setting**: 0.0 mA

[AI1 max. value] $\mathcal{C} \sqcap \mathcal{H}$ ✦

AI1 maximum value.

AI1 current scaling parameter of 100%.

This parameter can be accessed if **[AI1 Type]** $\mathcal{A}$ ı ı ட is set to **[Current]** $\mathcal{D}$ $\mathcal{A}$.

Setting	Description
0.0...20.0 mA	Setting range **Factory setting**: 20.0 mA

[AI1 filter] $\mathcal{A}$ ı ı F

AI1 filter.

Interference filtering.

Setting	Description
0.00...10.00 s	Setting range **Factory setting**: 0.00 s

[AI2] *A ı 2 C -* to [AI5] *A ı 5 C -* Menus

Access

[AI2] *A ı 2 C* to [AI5] *A ı 5 C*

Physical value AI2 to AI5.

AI2 customer image: value of analog input 2 to input 5

Identical to [AI1] *A ı I C* .

[AI2 Assignment] *A ı 2 A* to [AI5 Assignment] *A ı 5 A*

Configuration of AI2 to AI5 .

Identical to [AI1 Assignment] *A ı I A*.

[AI2 Type] *A ı 2 t* to [AI5 Type] *A ı 5 t*

Configuration of analog input AI1 to AI5.

Identical to [AI1 Type] *A ı I t* .

[AI2 min value] *υ ı L 2* to [AI5 min value] *υ ı L 5* ★

AI2 minimum value to AI5 minimum value .

Voltage scaling parameter of 0%.

Identical to [AI1 min value] *υ ı L I*.

[AI2 max value] *υ ı H 2* to [AI5 max value] *υ ı H 5* ★

AI2 maximum value to AI5 maximum value.

Voltage scaling parameter of 100%.

Identical to [AI1 max value] *υ ı H I*.

[AI2 filter] *A ı 2 F* to [AI5 filter] *A ı 5 F*

AI2 filter to AI5 filter.

Interference filtering.

Identical to [AI1 filter] *A ı I F* .

[Analog inputs image] *A ı A -* Menu

Access

[Settings] ➡ [Drive Settings] ➡ [I/O map] ➡ [Analog inputs image]

[Enc Resistor Value] *t H E r* ★

Encoder thermal resistor value.

This parameter can be accessed if:
● An encoder option module has been inserted, and
● **[Enc Therm Sensor Type]** *t H E t* is not set to **[None]** *n o n E* .

Setting	Description
-32,767...32,767	Setting range **Factory setting**: _

[AQ1] *Ao1C* - Menu

Access

[Settings] ➔ [Drive Settings] ➔ [I/O map] ➔ [Analog outputs image] ➔ [AQ1]

Minimum and Maximum Output Values

The minimum output value, in volts, corresponds to the lower limit of the assigned parameter and the maximum value corresponds to its upper limit. The minimum value may be greater than the maximum value.
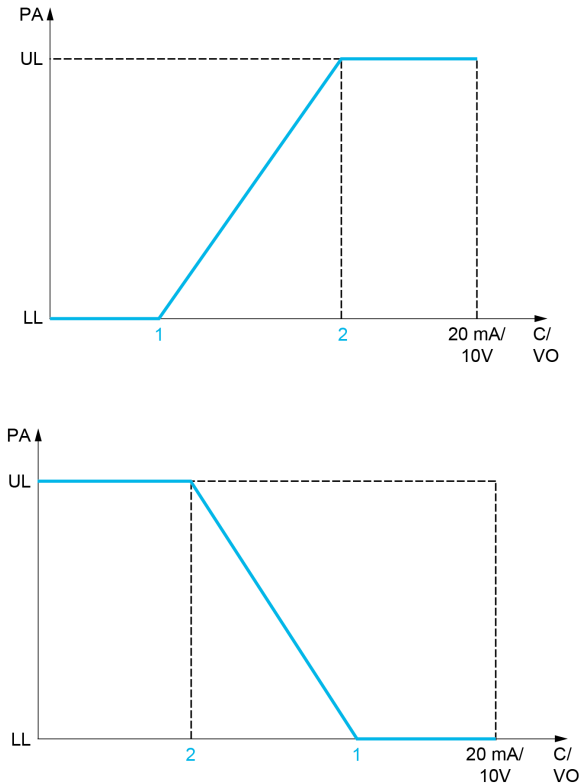
PA Parameter assigned
C / VO Current or voltage output
UL Upper limit
LL Low limit
**1** [Min Output] *AoL* X or *uoL* X
2 [Max Output] *AoH* X or *uoH* X

Scaling of the Assigned Parameter

The scale of the assigned parameter can be adapted in accordance with requirements by modifying the values of the lower and upper limits with two parameters for each analogic output.

These parameters are given in %. 100% corresponds to the total variation range of the configured parameter, so: 100% = upper limit - lower limit.

For example, **[Sign. torque]** *StQ* which varies between –3 and +3 times the rated torque, 100% corresponds to 6 times the rated torque.

● The **[Scaling AQx min]** *ASL* X parameter modifies the lower limit: new value = lower limit + (range x *ASL* X). The value 0% (factory setting) does not modify the lower limit.

● The **[Scaling AQx max]** *ASH* X parameter modifies the upper limit: new value = lower limit + (range x *ASL* X). The value 100% (factory setting) does not modify the upper limit.

● **[Scaling AQx min]** *ASL* X must always be lower than **[Scaling AQx max]** *ASH* X.
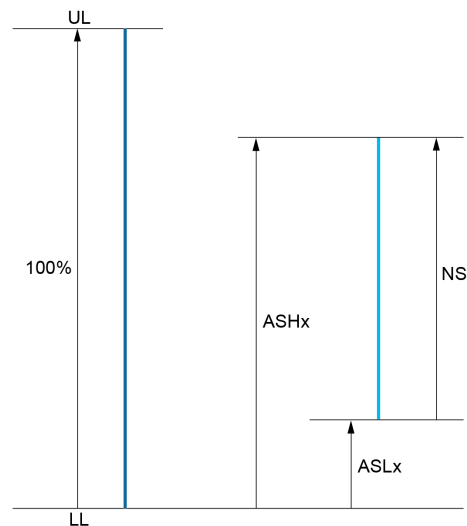
UL Upper limit of the assigned parameter
LL Lower limit of the assigned parameter
NS New scale
ᴀ ꜱ ʜ ꭓ   Scaling max
ᴀ ꜱ ʟ ꭓ   Scaling min

Application Example

The value of the motor current at the AQ1 output is to be transferred with 0...20 mA, range 2 In motor, In motor being the equivalent of a 0.8 In drive.

- The **[Motor Current]** *o C r* parameter varies from 0 to 2 times the rated drive current.
- **[Scaling AQ1 min]** *A S L 1* must not modify the lower limit, which therefore remains at its factory setting of 0%.
- **[Scaling AQ1 max]** *A S H 1* must modify the upper limit by 0.5x the rated motor torque, or 100 - 100/5 = 80% (new value = lower limit + (range x ASH1).

[AQ1] *A o 1 C*

AQ1 customer image: value of analogic output 1.

Setting ❨❩	Description
-32,767...32,767	Setting range **Factory setting**: Read only

[AQ1 assignment] *A o 1*

AQ1 assignment.

Setting	Code / Value	Description
[Not Configured]	*n o*	Not assigned **Factory Setting**
[Motor Current]	*o C r*	Current in the motor, from 0 to 2 In (In = rated drive current indicated in the Installation manual and on the drive nameplate)
[Motor Frequency]	*o F r*	Output frequency, from 0 to **[Max Frequency]** *t F r*
[Ramp out.]	*o r P*	From 0 to **[Max Frequency]** *t F r*
[Motor torq.]	*t r q*	Motor torque, from 0 to 3 times the rated motor torque
[Sign. torque]	*S t q*	Signed motor torque, between –3 and +3 times the rated motor torque. The + sign corresponds to the motor mode and the – sign to the generator mode (braking).
[sign ramp]	*o r S*	Signed ramp output, between –**[Max Frequency]** *t F r* and +**[Max Frequency]** *t F r*
[PID ref.]	*o P S*	PID controller reference between **[Min PID reference]** *P i P 1* and **[Max PID reference]** *P i P 2*

Setting	Code / Value	Description
[PID feedbk]	o P F	PID controller feedback between [Min PID feedback] P ı F ı and [Max PID feedback] P ı F 2
[PID error]	o P E	PID controller detected error between –5% and +5% of [Max PID feedback] P ı F 2 – [Min PID feedback] P ı F ı
[PID output]	o P ı	PID controller output between [Low speed] L S P and [High speed] H S P
[Motor Power]	o P r	Motor power, between 0 and 2.5 times [Nominal Motor Power] n P r
[Mot thermal]	t H r	Motor thermal state, from 0 to 200% of the rated thermal state
[Torque 4Q]	t r 4 9	Signed motor torque, between -3 and +3 times the rated motor torque. The + and - signs correspond to the physical direction of the torque, regardless of mode (motor or generator)
[Measured Motor Freq]	o F r r	Measured motor frequency
[Sig. o/p frq.]	o F S	Signed output frequency, between –[Max Frequency] t F r and +[Max Frequency] t F r
[Mot therm2]	t H r 2	Motor thermal 2 state
[Mot therm3]	t H r 3	Motor thermal 3 state
[Mot therm4]	t H r 4	Motor thermal 4 state
[Unsigned Trq Ref]	u t r	Unsigned torque reference
[Signed Trq Ref]	S t r	Signed torque reference
[Torque lim.]	t 9 L	Torque limit
[Motor volt.]	u o P	Voltage applied to the motor, between 0 and [Nom Motor Voltage] u n S
[Mains Voltage]	u L n	Mains voltage
[Mains Current]	ı L n	Mains current
[Input Elec. Power]	ı P r	Mains active power
[Input Reactive Power]	ı 9 r	Mains reactive power
[Input Power Factor]	P W F	Power factor
[Inlet Pressure Value]	P S 1 u	Inlet pressure value
[Outlet Pressure Value]	P S 2 u	Outlet pressure value
[Installation Flow]	F S 1 u	Installation flow value
[M/S Out Speed Reference]	n S S o	Master / slave output speed reference
[M/S Out Torque Reference]	n S t o	Master / slave output torque reference

[AQ1 Min Output] u o L 1★

AQ1 minimum output.

This parameter can be accessed if [AQ1 Type] A o 1 t is set to [Voltage] 1 0 u.

Setting	Description
0.0...10.0 Vdc	Setting range Factory setting: 0.0 Vdc

[AQ1 max Output] u o H 1★

AQ1 maximum output.

This parameter can be accessed if [AQ1 Type] A o 1 t is set to [Voltage] 1 0 u.

Setting	Description
0.0...10.0 Vdc	Setting range Factory setting: 10.0 Vdc

[AQ1 min output] *Ao L 1* ★

AQ1 minimum output.

This parameter can be accessed if **[AQ1 Type]** *Ao 1t* is set to **[Current]** *O A*.

Setting	Description
0.0...20.0 mA	Setting range **Factory setting**: 0.0 mA

[AQ1 max output] *Ao H 1* ★

AQ1 maximum output.

This parameter can be accessed if **[AQ1 Type]** *Ao 1t* is set to **[Current]** *O A*.

Setting	Description
0.0...20.0 mA	Setting range **Factory setting**: 20.0 mA

[Scaling AQ1 min] *A S L 1*

Scaling of the lower limit of the assigned parameter, as a percentage of the maximum possible variation.

Setting	Description
0.0...100.0%	Setting range **Factory setting**: 0.0%

[Scaling AQ1 max] *A S H 1*

Scaling of the upper limit of the assigned parameter, as a percentage of the maximum possible variation.

Setting	Description
0.0...100.0%	Setting range **Factory setting**: 100.0%

[AQ1 Filter] *Ao 1F*

Interference filtering.

Setting	Description
0.00...10.00 s	Setting range **Factory setting**: 0.00 s

[AQ2] *Ao2C* - Menu

Access

[Settings] → [Drive Settings] → [I/O map] → [Analog outputs image] → [AQ2]

[AQ2] *Ao2C*

AQ2 customer image: value of analog output 2.

Identical to [AQ1] *Ao1C* *(see page 185)*.

[AQ2 Assignment] *Ao2*

AQ2 assignment.

Identical to [AQ1 Assignment] *Ao1* with factory setting [Motor Current] *oCr* *(see page 185)*.

[AQ2 Min Output] *uoL2* ★

AQ2 minimum output.

This parameter can be accessed if [AQ2 Type] *Ao2t* is set to [Voltage] *10u*.

Identical to [AQ1 min Output] *uoL1* *(see page 186)*.

[AQ2 Max Output] *uoH2* ★

AQ2 maximum output.

This parameter can be accessed if [AQ2 Type] *Ao2t* is set to [Voltage] *10u*.

Identical to [AQ1 max Output] *uoH1* *(see page 186)*.

[AQ2 Min Output] *AoL2* ★

AQ2 minimum output.

This parameter can be accessed if [AQ2 Type] *Ao2t* is set to [Current] *0A*.

Identical to [AQ1 min Output] *AoL1* *(see page 187)*.

[AQ2 Max Output] *AoH2* ★

AQ2 maximum output.

This parameter can be accessed if [AQ2 Type] *Ao2t* is set to [Current] *0A*.

Identical to [AQ1 max Output] *AoH1* *(see page 187)*.

[Scaling AQ2 min] *ASL2*

Scaling of the lower limit of the assigned parameter, as a % of the maximum possible variation.

Identical to [Scaling AQ2 min] *ASL1* *(see page 187)*.

[Scaling AQ2 max] *ASH2*

Scaling of the upper limit of the assigned parameter, as a % of the maximum possible variation.

Identical to [Scaling AQ1 max] *ASH1* *(see page 187)*.

[AQ2 Filter] *Ao2F*

Interference filtering.

Identical to [AQ1 Filter] *Ao1F* *(see page 187)*.

[PTO Frequency] $P t o C$ - Menu

Access

[PTO Frequency] $P t o C$

Pulse train output frequency value.

Setting	Description
0.00...655.35 kHz	Setting range **Factory setting**: Read only

[PTO Assign] $P t o$

Pulse train output assignment.

Setting	Code / Value	Description
[Not Configured]	$n o$	Not assigned **Factory Setting**
[Motor Current]	$o C r$	Current in the motor, from 0 to 2 In (In = rated drive current indicated in the Installation manual and on the drive nameplate)
[Motor Frequency]	$o F r$	Output frequency, from 0 to **[Max Frequency]** $t F r$
[Ramp out.]	$o r P$	From 0 to **[Max Frequency]** $t F r$
[Motor torq.]	$t r q$	Motor torque, from 0 to 3 times the rated motor torque
[Sign. torque]	$S t q$	Signed motor torque, between –3 and +3 times the rated motor torque. The + sign corresponds to the motor mode and the – sign to the generator mode (braking).
[sign ramp]	$o r S$	Signed ramp output, between –**[Max Frequency]** $t F r$ and +**[Max Frequency]** $t F r$
[PID ref.]	$o P S$	PID controller reference between **[Min PID reference]** $P i P 1$ and **[Max PID reference]** $P i P 2$
[PID feedbk]	$o P F$	PID controller feedback between **[Min PID feedback]** $P i F 1$ and **[Max PID feedback]** $P i F 2$
[PID error]	$o P E$	PID controller detected error between –5% and +5% of **[Max PID feedback]** $P i F 2$ – **[Min PID feedback]** $P i F 1$
[PID output]	$o P i$	PID controller output between **[Low speed]** $L S P$ and **[High speed]** $H S P$
[Motor Power]	$o P r$	Motor power, between 0 and 2.5 times **[Nominal Motor Power]** $n P r$
[Mot thermal]	$t H r$	Motor thermal state, from 0 to 200% of the rated thermal state
[Torque 4Q]	$t r 4 q$	Signed motor torque, between -3 and +3 times the rated motor torque. The + and - signs correspond to the physical direction of the torque, regardless of mode (motor or generator)
[Measured Motor Freq]	$o F r r$	Measured motor frequency
[Sig. o/p frq.]	$o F S$	Signed output frequency, between –**[Max Frequency]** $t F r$ and +**[Max Frequency]** $t F r$
[Mot therm2]	$t H r 2$	Motor thermal 2 state
[Mot therm3]	$t H r 3$	Motor thermal 3 state
[Mot therm4]	$t H r 4$	Motor thermal 4 state
[Unsigned Trq Ref]	$u t r$	Unsigned torque reference
[Signed Trq Ref]	$S t r$	Signed torque reference
[Torque lim.]	$t q L$	Torque limit
[Motor volt.]	$u o P$	Voltage applied to the motor, between 0 and **[Nom Motor Voltage]** $u n S$
[Mains Voltage]	$u L n$	Mains voltage
[Mains Current]	$i L n$	Mains current
[Input Elec. Power]	$i P r$	Mains active power

Setting	Code / Value	Description
[Input Reactive Power]	*ı 9 r*	Mains reactive power
[Input Power Factor]	*P W F*	Power factor
[Inlet Pressure Value]	*P S 1 u*	Inlet pressure value
[Outlet Pressure Value]	*P S 2 u*	Outlet pressure value
[Installation Flow]	*F S 1 u*	Installation flow value
[M/S Out Speed Reference]	*Π S S o*	Master / slave output speed reference
[M/S Out Torque Reference]	*Π S t o*	Master / slave output torque reference

[PTO Max Output Freq] *P t o H* ★

Pulse train output maximum output frequency.

This parameter can be accessed if **[PTO Assign]** *P t o* is not set to **[Not configured]** *n o*.

Setting	Description
1.00...30.00 kHz	Setting range **Factory setting**: 4.00 kHz

[PTO Min Output Freq] *P t o L* ★

Pulse train output minimum output frequency.

This parameter can be accessed if **[PTO Assign]** *P t o* is not set to **[Not configured]** *n o*.

Setting	Description
1.00...30.00 kHz	Setting range **Factory setting**: 1.00 kHz

[DI7 frequency measured] *P F C 7* - Menu

Access

[Settings] ➜ [Drive Settings] ➜ [I/O map] ➜ [Freq. signal image] ➜ [DI7 frequency measured]

[DI7 Frequency Measured] *P F C 7*

Filtered customer pulse input frequency reference.

Setting	Description
0...4,294,967,295	Setting range **Factory setting**: Read only

[DI7 Pulse Input Assign] *P i 7 A*

DI7 pulse input assignment.

It displays all the functions associated with the pulse input in order to verify, for example, for compatibility problems.

If no functions have been assigned, **[No]** *n o* is displayed.

Setting	Code / Value	Description
[No]	*n o*	Not assigned
[Torque Ref Offset]	*t q o*	Torque offset source
[Torque Ref Ratio]	*t q r*	Torque ratio source
[Ref Frequency 1]	*F r 1*	Reference frequency 1
[Ref Frequency 2]	*F r 2*	Reference frequency 2
[Ref Frequency 2 Summing]	*S A 2*	Reference frequency 2 summing
[PID Feedback]	*P i F*	PI controller feedback
[Torque limitation]	*t A A*	Torque limitation: activation by an analog value
[Torque limitation 2]	*t A A 2*	Torque limitation: activation by an analog value
[Subtract Ref Freq 2]	*d A 2*	Subtract reference frequency 2
[Manual PID Ref.]	*P i M*	Manual speed reference of the PID controller (auto-man)
[PID Ref Frequency]	*F P i*	PID reference frequency
[Ref Frequency 3 Summing]	*S A 3*	Reference frequency 3 summing
[Ref Frequency 1B]	*F r 1 b*	Reference frequency 1B
[Subtract Ref Freq 3]	*d A 3*	Subtract reference frequency 3
[Forced local]	*F L o C*	Forced local reference source1
[Ref Frequency 2 multiplier]	*M A 2*	Reference frequency 2 multiplier
[Ref Frequency 3 multiplier]	*M A 3*	Reference frequency 3 multiplier
[Torque reference]	*t r 1*	Torque regulation: torque set point 1
[Torque reference 2]	*t r 2*	Torque regulation: torque set point 2
[Frequency Meter]	*F q F*	Frequency meter function activation
[External Feed Forward]	*t E F F*	External feed-forward
[M/S Speed Ref In]	*M S S i*	M/S Master speed reference input
[M/S Trq Ref In]	*M S t i*	M/S Master torque reference input

[DI7 PulseInput Low Freq] *P ɪ L 7*

Di7 pulse input low frequency.

Pulse input scaling parameter of 0% in Hz x 10 unit.

Setting	Description
0.00...30,000.00 Hz	Setting range **Factory setting**: 0 Hz

[DI7 PulseInput High Freq] *P ɪ H 7*

Di7 pulse input high frequency.

Pulse input scaling parameter of 100% in Hz x 10 unit.

Setting	Description
0.00...30.00 kHz	Setting range **Factory setting**: 30.00 kHz

[DI7 Frequency Filter] *P F ɪ 7*

Interference filtering pulse input cut-off time of the low-filter.

Setting	Description
0...1,000 ms	Setting range **Factory setting**: 0 ms

[DI8 frequency measured] *P F C 8 -* Menu

Access

[Settings] ➡ [Drive Settings] ➡ [I/O map] ➡ [Freq. signal image] ➡ [DI8 frequency measured]

[DI8 Frequency Measured] *P F C 8*

Filtered customer pulse input frequency reference.

Identical to **[DI7 frequency measured]** *P F C 7*.

[DI8 Pulse Input Assign] *P ı 8 A*

DI8 pulse input assignment.

Identical to **[DI7 Pulse Input Assign]** *P ı 7 A*.

[DI8 PulseInput Low Freq] *P ı L 8*

DI8 pulse input low frequency.

Identical to **[DI7 PulseInput Low Freq]** *P ı L 7*.

[DI8 PulseInput High Freq] *P ı H 8*

DI8 pulse input high frequency.

Identical to **[DI7 PulseInput High Freq]** *P ı H 7*.

[DI8 Frequency Filter] *P F ı 8*

Interference filtering pulse input cut-off time of the low-filter.

Identical to **[DI7 Frequency Filter]** *P F ı 7*.

Section 12.5
Motor temperature settings

Motor Temperature Settings

Access

[Settings] ➡ [Drive Settings] ➡ [Motor Temperature Settings]

About This Menu
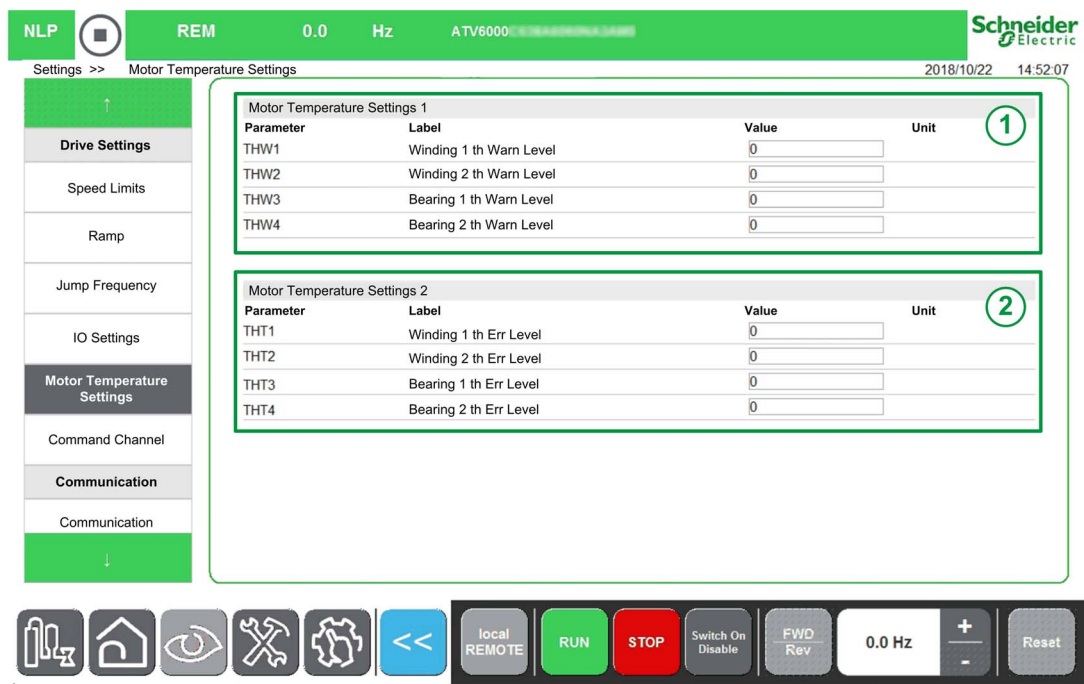
This menu gives the possibility to manage 2 levels of monitoring:
1. A Warning level: the drive triggers an event without stopping the application.
2. An Error level: the drive triggers an event and stops the application.

NOTE: Click on the parameters value, then the software keyboard will pop up.

NOTICE
OVERHEATING
Verify that the parameters **[Winding 1 Th Warn Level]** *ᴛ ʜ ʷ ¹*...**[Bearing 2 Th Warn Level]** *ᴛ ʜ ʷ ⁴* and **[Winding 1 Th Err Level]** *ᴛ ʜ ᴛ ¹*...**[Bearing 2 Th Err Level]** *ᴛ ʜ ᴛ ⁴* are properly set according to the technical data of the motor.
Failure to follow these instructions can result in equipment damage.

[Winding 1 Th Warn Level] *ᴛ ʜ ʷ ¹*

Thermal warning level for winding 1 (U1,V1,W1)

Setting	Description
0 °C...250 °C	Setting range **Factory setting**: 130°C

[Winding 2 Th Warn Level] *t H W 2*

Thermal warning level for winding 2 (U2,V2,W2)

Setting	Description
0 °C...250 °C	Setting range **Factory setting**: 130°C

[Winding 1 Th Err Level] *t H t 1*

Thermal error level for winding 1 (U1,V1,W1)

Setting	Description
0 °C...250 °C	Setting range **Factory setting**: 150°C

[Winding 2 Th Err Level] *t H t 2*

Thermal error level for winding 2 (U2,V2,W2)

Setting	Description
0 °C...250 °C	Setting range **Factory setting**: 150°C

[Bearing 1 Th Warn Level] *t H W 3*

Thermal warning level for bearing 1

Setting	Description
0 °C...250 °C	Setting range **Factory setting**: 105°C

[Bearing 2 Th Warn Level] *t H W 4*

Thermal warning level for bearing 2

Setting	Description
0 °C...250 °C	Setting range **Factory setting**: 105°C

[Bearing 1 Th Err Level] *t H t 3*

Thermal error level for bearing 1

Setting	Description
0 °C...250 °C	Setting range **Factory setting**: 115°C

[Bearing 2 Th Err Level] *t H t 4*

Thermal error level for bearing 2

Setting	Description
0 °C...250 °C	Setting range **Factory setting**: 115°C

Section 12.6
Command Channel

What Is in This Section?

This section contains the following topics:

Command and Reference Channels Overview

About This Menu

This menu shows the:
- Overview of the Switch selection
  - ○ A Mechanical switch: with maximum 4 positions: (on the front product.)
  - ○ A HMI switch: with maximum 2 positions. (on the HMI Toolbar *(see page 29)*)
- Switching Transition
- Setting parameters linked to the command channel selection *(see page 199)*

NOTE: Refer also to the monitoring parameters linked to the command channel selection *(see page 88)*

| ⚠ WARNING |
|---|
| **UNANTICIPATED EQUIPMENT** |
| Before switching position of the control mode, the motor must be at standstill position. |
| **Failure to follow these instructions can result in death, serious injury, or equipment damage.** |

The stop commands (DI STOP in 3 wires control, NST) set for each of the channel command "remote/local/panel" will continue to be taken into account whatever the active channel command.

Cabinet Switch Selection

To select the different command/reference channels, this switch can have either 2, 3 or 4 positions in the enclosure door. This setting is defined during the commissioning.
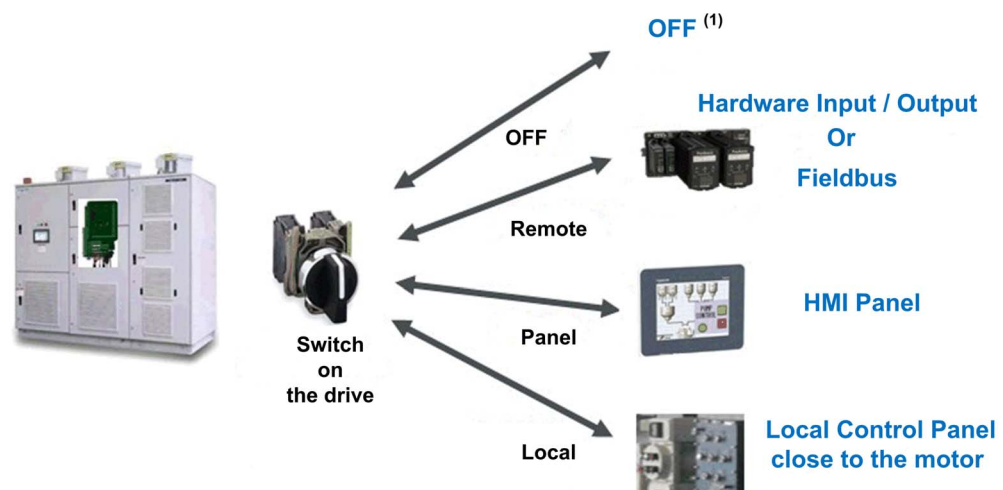
(1) Drive is in NST state

### Typical Architecture for Command and Reference Value
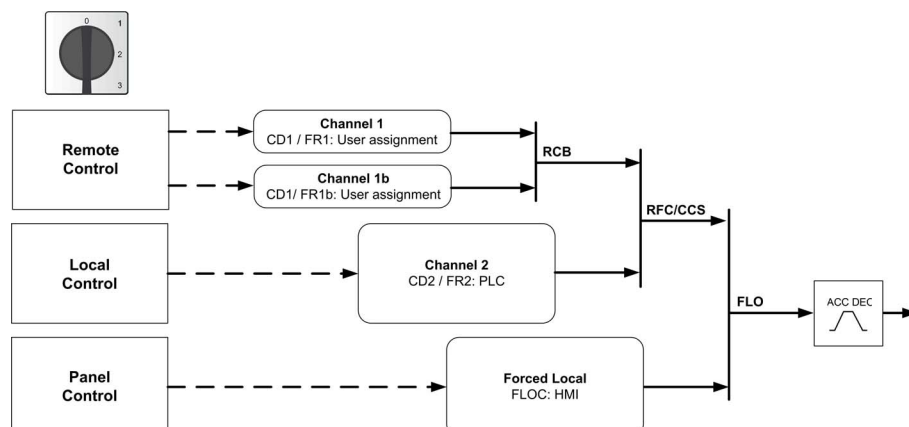
| Type of Control	Channel	Description
Remote Control	FR1/CD1: User setting	Control system drive receives start/stop inputs via IO or fieldbus.
Local Control	FR2/CD2: PLC Inside	Control system drive receives via start/stop IO or push button on your equipment.
Panel Control	FLOC: HMI Panel	Control system drive receives inputs via HMI Panel.

HMI Switch Selection

The HMI allows to switch between remote and panel mode.

Remote/Panel button on HMI is available if related parameters are set during the commissioning.
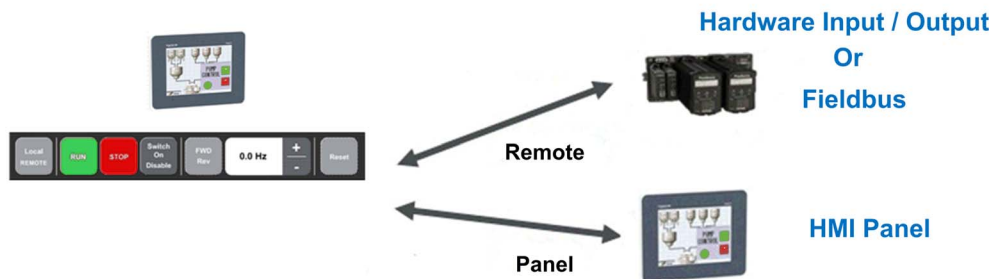
Typical Architecture for Command and Reference Value.
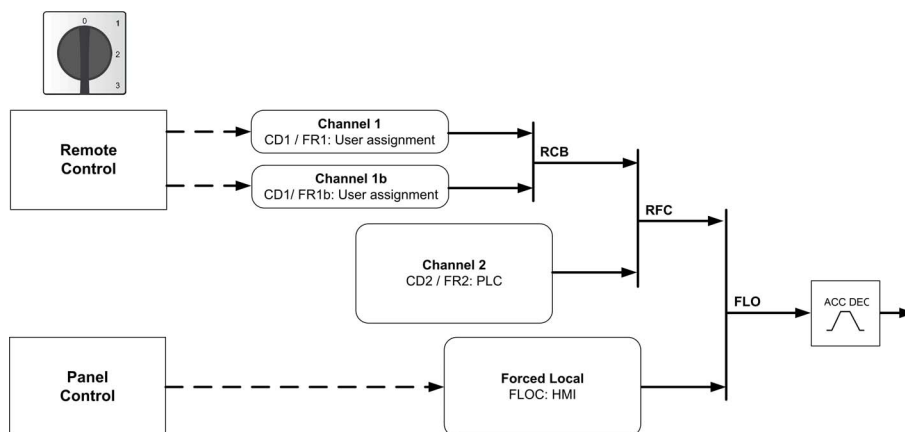
Type of Control	Channel	Description
Remote Control	FR1/CD1: User setting	Control system drive receives start/stop inputs via IO or fieldbus.
Panel Control	FLOC: HMI Panel	Control system drive receives inputs via HMI Panel.

Command and Reference Channel Switching Transition

Source	Destination	Description
Remote, Local	Panel (HMI)	Command and reference switching defines by **[HMI cmd.]** *b П P*. • BMP = **[Stop]** *5 Ł o P*: No copy • BMP = **[Bumpless]** *b ப П P*: No copy • BMP = **[Disabled]** *d ı 5*: No copy
Remote	Local	No copy: according to **[Copy Ch1-Ch2]** *C o P* = **[No]** *n o*
Panel (HMI)	Local	No copy
Panel (HMI)	Remote	
Local	Remote	

[Command and Reference] *C r P -* Menu

Access

[Settings] ➜ [Command and Reference]

Command and Reference Channels Parameter Can Be Accessed

Run commands (forward, reverse, stop, and so on) and references can be sent using the following channels:

Command	Reference
Terminals: Digital inputs DI	Terminals: Analog inputs AI, pulse input
Display Terminal	Display Terminal
Integrated Modbus	Integrated Modbus
Fieldbus module	Fieldbus module
–	+/– speed via the Display Terminal
HMI panel	HMI panel
PLC inside	PLC inside

NOTE: The stop keys on the Display Terminal can be programmed as non-priority keys. A stop key can only have priority if the **[Stop Key Enable]** *P S t* parameter menu is set to **[Yes]** *Y E S*.

The behavior of the drive can be adapted according to requirements:
- **[Not separ.]** *S i M*: Command and reference are sent via the same channel.
- **[Separate]** *S E P*: Command and reference may be sent via different channels.In these configurations, control via the communication bus is performed in accordance with the DRIVECOM standard with only 5 freely assignable bits (see communication parameter manual). The application functions cannot be accessed via the communication interface.
- **[I/O profile]** *i o*: The command and the reference can come from different channels. This configuration both simplifies and extends use via the communication interface. Commands may be sent via the digital inputs on the terminals or via the communication bus. When commands are sent via a bus, they are available on a word, which acts as virtual terminals containing only digital inputs. Application functions can be assigned to the bits in this word. More than one function can be assigned to the same bit.

NOTE: Stop commands from the Display Terminal remain active even if the terminals are not the active command channel.

### Command Channel for [Not separ.] *S i M* configuration

Reference and command, not separate.

The command channel is determined by the reference channel. The parameters *F r 1*, *F r 2*, *r F C*, *F L o* and *F L o C* are common to reference and command.

Example: If the reference is *F r 1 = A i 1* (analog input at the terminals), control is via DI (digital input at the terminals).

The black square represents the factory setting assignment.
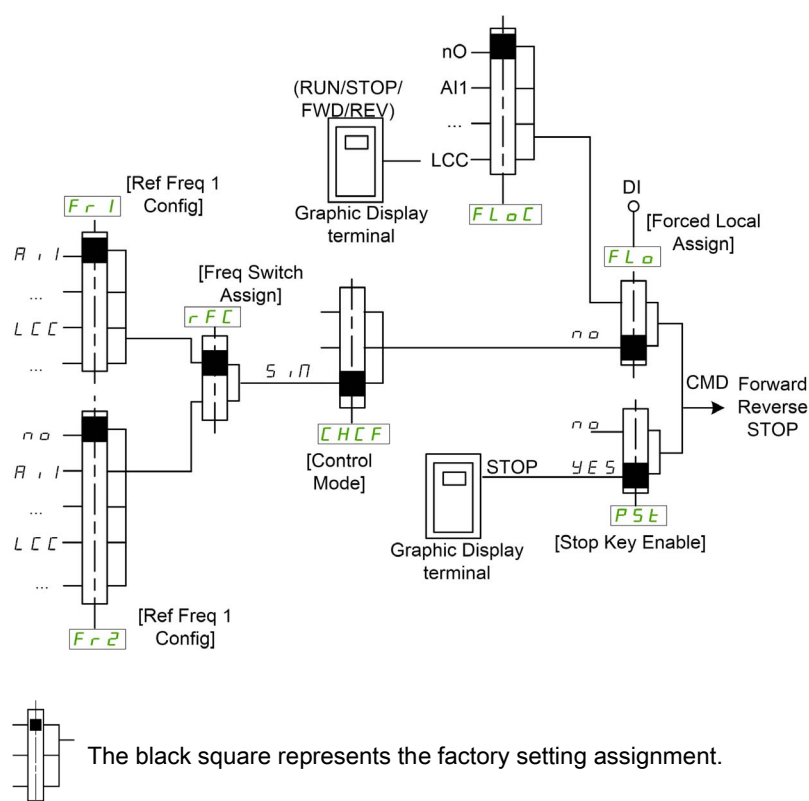
Command Channel for [Separate] 5 E P configuration

Separated Reference and command.

The parameters F L o and F L o C are common to reference and command.

Example: If the reference is in forced local mode via AI1 (analog input at the terminals), command in forced local mode is via DI (digital input at the terminals).

The command channels C d 1 and C d 2 are independent of the reference channels F r 1, F r 1 b and F r 2.

The black square represents the factory setting assignment, except for **[Control Mode]** C H C F.
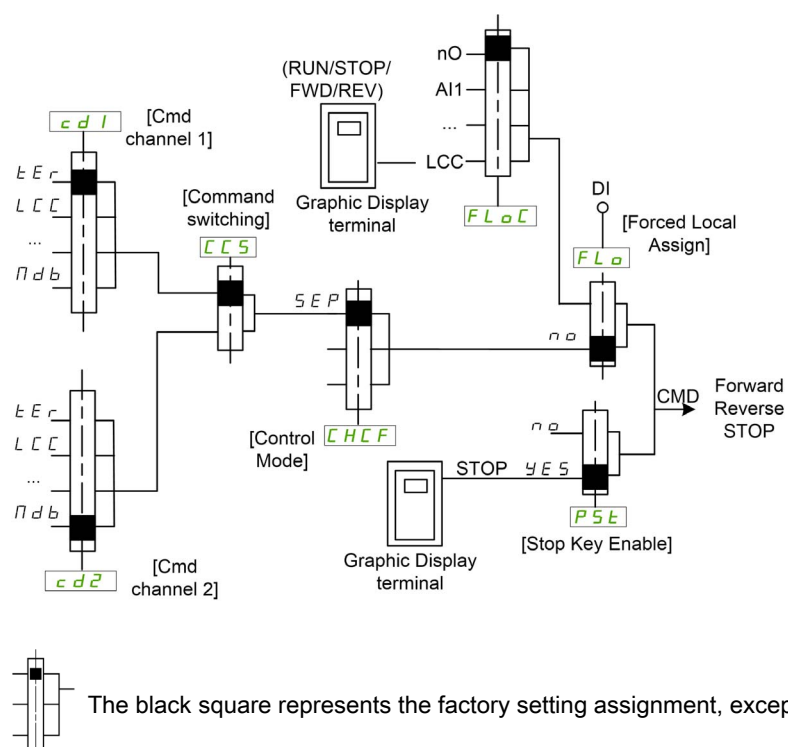
[Cmd channel 1] *C d 1* and **[Cmd channel 2]** *C d 2*: Terminals, graphic display terminal, HMI Panel, integrated Modbus, integrated CANopen®, communication card

Command Channel for I/O profile *i o* configuration

Separated Reference and command, as in **[Separate]** *S E P* configuration.

The command channels *C d 1* and *C d 2* are independent of the reference channels *F r 1*, *F r 1 b* and *F r 2*.
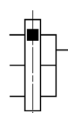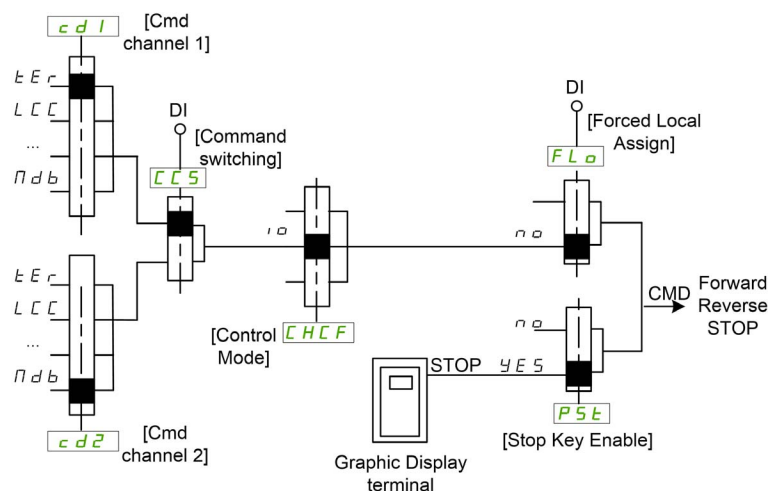

 The black square represents the factory setting assignment, except for **[Control Mode]** *C H C F*.

[Cmd channel 1] *C d 1* and **[Cmd channel 2]** *C d 2*: Terminals, graphic display terminal, HMI Panel, integrated Modbus, integrated CANopen®, communication card.

A command or an action can be assigned:
● To a fixed channel by selecting a Digital input (Dix) or a Cxxx bit:
  ○ By selecting, for example, LI3, this action will be triggered by the digital input DI3 regardless of which command channel is switched.
  ○ By selecting, for example, C214, this action will be triggered by integrated CANopen® with bit 14 regardless of which command channels is switched.

● To a switchable channel by selecting a CDxx bit:
  ○ By selecting, for example, Cd11, this action will be triggered by: LI12 if the terminals channel is active, C111 if the integrated Modbus channel is active, C211 if the integrated CANopen® channel is active, C311 if the communication card channel is active, C511 if the Ethernet channel is active.

If the active channel is the graphic display terminal, the functions and commands assigned to CDxx switchable internal bits are inactive.

NOTE: Several CDxx does not have equivalent digital inputs and can only be used for switching between 2 networks.

[Ref Freq 1 Config] *F r 1*

Configuration reference frequency 1.

Setting	Code / Value	Description
[Not Configured]	*n o*	Not assigned
[AI1]	*A i 1*	Analog input AI1 **Factory Setting**
[AI2]...**[AI3]**	*A i 2*...*A i 3*	Analog input AI2...AI3

Setting	Code / Value	Description
[AI4]…[AI5]	A ı4…A ı5	Analog input AI4...AI5 if VW3A3203 I/O extension module has been inserted
[HMI]	L C C	Reference Frequency via remote terminal
[Modbus]	N d b	Reference frequency via Modbus
[Modbus 2]	N d b 2	Modbus 2 source
[CANopen]	C A n	Reference frequency via CANopen if a CANopen module has been inserted
[Com. Module]	n E t	Reference frequency via fieldbus module if a fieldbus module has been inserted
[Embedded Ethernet]	E t H	Embedded Ethernet
[HMI Panel]	H N ıP	HMI Panel by Modbus 2 source
[Ctrl Inside]	P L C ı	PLC Inside source

[Cmd channel 1] C d 1

Command channel 1 assignment.

This parameter can be accessed if [Control Mode] C H C F is set to [Separate] S E P or [I/O profile] ı o.

Setting	Code / Value	Description
[Ref.Freq-Rmt.Term]	t E r	Terminal block source **Factory Setting**
[Ref.Freq-Rmt.Term]	L C C	Command via Display Terminal
[Ref. Freq-Modbus]	N d b	Command via Modbus
[Ref. Freq-CANopen]	C A n	Command via CANopen if a CANopen module has been inserted
[Ref. Freq-Com. Module]	n E t	Command via fieldbus module if a fieldbus module has been inserted
[Embedded Ethernet]	E t H	Command via Embedded Ethernet
[PC tool]	P W S	DTM based software
[Modbus 2]	N d b 2	Modbus 2 source
[HMI Panel]	H N ıP	HMI Panel by Modbus 2 source
[Ctrl Inside]	P L C ı	PLC Inside source

[Ref.1B channel] F r 1 b

Configuration reference frequency 1B.

Setting	Code / Value	Description
[Not Configured]	n o	Not assigned
[AI1]	A ı1	Analog input AI1 **Factory Setting**
[AI2]…[AI3]	A ı2…A ı3	Analog input AI2...AI3
[AI4]…[AI5]	A ı4…A ı5	Analog input AI4...AI5 if VW3A3203 I/O extension module has been inserted
[HMI]	L C C	Reference Frequency via remote terminal
[Modbus]	N d b	Reference frequency via Modbus
[Modbus 2]	N d b 2	Modbus 2 source
[CANopen]	C A n	Reference frequency via CANopen if a CANopen module has been inserted
[Com. Module]	n E t	Reference frequency via fieldbus module if a fieldbus module has been inserted
[Embedded Ethernet]	E t H	Embedded Ethernet
[HMI Panel]	H N ıP	HMI Panel by Modbus 2 source
[Ctrl Inside]	P L C ı	PLC Inside source

[Ref 1B switching] ⌐ ⎓ ⌐ b

⚠️ **WARNING**

UNANTICIPATED EQUIPMENT OPERATION

This parameter can cause unintended movements, for example an inversion of the direction of the rotation of the motor, a sudden acceleration or a stop.

● Verify that the setting of this parameter does not cause unintended movements.

● Verify that the setting of this parameter does not result in unsafe conditions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Select switching (1 to 1B).
● If the assigned input or bit is at *0*, **[Ref Freq 1 Config]** *F ⌐ 1* is active.
● If the assigned input or bit is at *1*, **[Ref.1B channel]** *F ⌐ 1b* is active.

[Ref 1B switching] ⌐ ⎓ b is forced to **[Ref Freq Channel 1]** *F ⌐ 1* if **[Control Mode]** *⎓ H ⎓ F* is set to **[Not separ.]** *5 ⎓ n* with **[Ref Freq 1 Config]** *F ⌐ 1* assigned via the terminals (analog inputs, pulse input).

NOTE: Activating this function from an other active command channel will also activate the monitoring of this new channel.

Setting	Code / Value	Description
[Ref Freq Channel 1]	*F ⌐ 1*	Reference frequency channel 1
[ch1B active]	*F ⌐ 1b*	Reference frequency channel 1b
[DI1]...**[DI8]**	*L ⎓ 1...L ⎓ 8*	Digital input DI1...DI8
[DI11]...**[DI16]**	*L ⎓ 1 1...L ⎓ 1 6*	Digital input DI11...DI16 if VW3A3203 I/O extension module has been inserted
[CD00]...**[CD10]**	*⎓ d 0 0...⎓ d 1 0*	Virtual digital input CMD.0...CMD.10 in **[I/O profile]** *⎓ o* configuration
[CD11]...**[CD15]**	*⎓ d 1 1...⎓ d 1 5*	Virtual digital input CMD.11...CMD.15 regardless of configuration
[C101]...**[C110]**	*⎓ 1 0 1...⎓ 1 1 0*	Virtual digital input CMD1.01...CMD1.10 with integrated Modbus Serial in **[I/O profile]** *⎓ o* configuration
[C111]...**[C115]**	*⎓ 1 1 1...⎓ 1 1 5*	Virtual digital input CMD1.11...CMD1.15 with integrated Modbus Serial regardless of configuration
[C201]...**[C210]**	*⎓ 2 0 1...⎓ 2 1 0*	Virtual digital input CMD2.01...CMD2.10 with CANopen® fieldbus module in **[I/O profile]** *⎓ o* configuration
[C211]...**[C215]**	*⎓ 2 1 1...⎓ 2 1 5*	Virtual digital input CMD2.11...CMD2.15 with CANopen® fieldbus module regardless of configuration
[C301]...**[C310]**	*⎓ 3 0 1...⎓ 3 1 0*	Virtual digital input CMD3.01...CMD3.10 with a fieldbus module in **[I/O profile]** *⎓ o* configuration
[C311]...**[C315]**	*⎓ 3 1 1...⎓ 3 1 5*	Virtual digital input CMD3.11...CMD3.15 with a fieldbus module regardless of configuration
[C501]...**[C510]**	*⎓ 5 0 1...⎓ 5 1 0*	Virtual digital input CMD5.01...CMD5.10 with integrated Ethernet in **[I/O profile]** *⎓ o* configuration
[C511]...**[C515]**	*⎓ 5 1 1...⎓ 5 1 5*	Virtual digital input CMD5.11...CMD5.15 with integrated Ethernet regardless of configuration
[C601]...**[C610]**	*⎓ 6 0 1...⎓ 6 1 0*	Virtual digital input CMD6.01...CMD6.10 with ??? In **[I/O profile]** *⎓ o* configuration
[C611]...**[C615]**	*⎓ 6 1 1...⎓ 6 1 5*	Virtual digital input CMD6.11...CMD6.15 with PLCI Regardless of configuration

Chapter 13
[Communication] $ʗₒᴨ⁻$

Introduction

[Communication] $ʗₒᴨ⁻$ menu presents the fieldbus submenus.

What Is in This Chapter?

This chapter contains the following topics:

[Modbus Fieldbus] *ℿ d 1 -* Menu

Access

[Communication] ➡ [Comm parameters] ➡ [Modbus SL] ➡ [Modbus Fieldbus]

About This Menu

This menu is related to the Modbus serial communication port on the bottom of the control block.

Refer to the Modbus serial manual.

[Modbus Address] *A d d*

Drive Modbus address.

Setting	Description
[OFF] *o F F* ...247	Setting range **Factory setting**: [OFF] *o F F*

[Modbus add Com.C.] *A ℿ o C*

Modbus adress of COM option board

Setting	Description
[OFF] *o F F* ...247	Setting range **Factory setting**: [OFF] *o F F*

[Bd.RateModbus] *t b r*

Baud rate Modbus.

Setting	Code / Value	Description
[4800 bps]	*4 K 8*	4,800 Bauds
[9600 bps]	*9 K 6*	9,600 Bauds
[19200 bps]	*1 9 K 2*	19,200 Bauds **Factory setting**
[38.4 Kbps]	*3 8 K 4*	38,400 Bauds

[Term Word Order] *t W o* ★

Terminal Modbus: word order.

Setting	Code / Value	Description
[OFF]	*o F F*	Low word first
[ON]	*o n*	High word first **Factory setting**

[Modbus Format] *t F o*

Modbus communication format.

Setting	Code / Value	Description
[8-O-1]	*8 o 1*	8 bits odd parity 1 stop bit
[8-E-1]	*8 E 1*	8 bits even parity 1 stop bit **Factory setting**
[8-N-1]	*8 n 1*	8 bits no parity 1 stop bit
[8-N-2]	*8 n 2*	8 bits no parity 2 stop bits

[Modbus Timeout] *t t o*

Modbus timeout.

Setting	Description
0.1 ...30.0 s	Setting range **Factory setting**: 10.s

[Mdb Com Stat] *C o M 1*

Modbus communication status.

Setting	Code / Value	Description
[r0t0]	*r 0 t 0*	Modbus no reception, no transmission
[r0t1]	*r 0 t 1*	Modbus no reception, transmission
[r1t0]	*r 1 t 0*	Modbus reception, no transmission
[r1t1]	*r 1 t 1*	Modbus reception and transmission

[Comm Port 1 Assign] *M r J*

Communication port 1 assignment - Bottom

Setting	Code / Value	Description
[Modbus 1]	*M d b*	Modbus 1 channel
[Modbus 2]	*M d b 2*	Modbus 2 channel
[HMI Panel]	*H M i P*	HMI Panel access
[Vscope tools]	*V S C P*	Vscope access
[MATLAB tools]	*M A t*	MATLAB access
[SHELL tools]	*S H E L L*	SHELL access
[Printf tools]	*P r i n t F*	Output printf access

[Com. scanner input] *i C S -* Menu

Access

[Communication] ➡ [Comm parameters] ➡ [Modbus SL] ➡ [Modbus Fieldbus] ➡ [Com. scanner input]

[Scan. IN1 address] *n M A 1*

Address of the first input word.

Setting	Description
0...65535	Setting range **Factory setting**: 3201 (*E t A*)

[Scan. IN2 address] *n M A 2*

Address of the second input word.

Setting	Description
0...65535	Setting range **Factory setting**: 8604 (*r F r d*)

[Scan. IN3 address] *n M A 3*

Address of the third input word.

Setting	Description
0...65535	Setting range **Factory setting**: 0

[Scan. IN4 address] n П A 4

Address of the fourth input word.

Identical to **[Scan. IN3 address]** n П A 3.

[Scan. IN5 address] n П A 5

Address of the fifth input word.

Identical to **[Scan. IN3 address]** n П A 3.

[Scan. IN6 address] n П A 6

Address of the sixth input word.

Identical to **[Scan. IN3 address]** n П A 3.

[Scan. IN7 address] n П A 7

Address of the seventh input word.

Identical to **[Scan. IN3 address]** n П A 3.

[Scan. IN8 address] n П A 8

Address of the eighth input word.

Identical to **[Scan. IN3 address]** n П A 3.

[Com. scanner output] o C 5 - Menu

Access

[Communication] ➡ [Comm parameters] ➡ [Modbus SL] ➡ [Modbus Fieldbus] ➡ [Com. scanner output]

[Scan.Out1 address] n C A 1

Address of the first output word.

Setting	Description
0...65535	Setting range **Factory setting**: 8501(C П d)

[Scan.Out2 address] n C A 2

Address of the second output word.

Setting	Description
0...65535	Setting range **Factory setting**: 8602(L F r d)

[Scan.Out3 address] n C A 3

Address of the third output word.

Setting	Description
0...65535	Setting range **Factory setting**: 0

[Scan.Out4 address] n C A 4

Address of the fourth output word.

Identical to **[Scan.Out3 address]** n C A 3.

[Scan.Out5 address] n C A 5

Address of the fifth output word.

Identical to **[Scan.Out3 address]** n C A 3.

[Scan.Out6 address] *n C A 6*

    Address of the sixth output word.

    Identical to **[Scan.Out3 address]** *n C A 3*.

[Scan.Out7 address] *n C A 7*

    Address of the seventh output word.

    Identical to **[Scan.Out3 address]** *n C A 3*.

[Scan.Out8 address] *n C A 8*

    Address of the eighth output word.

    Identical to **[Scan.Out3 address]** *n C A 3*.

[Modbus HMI] *M d 2 -* Menu

Access

    [Communication] ➜ **[Comm parameters]** ➜ **[Modbus SL]** ➜ **[Modbus HMI]**

About This Menu

    This menu is related to the Modbus serial communication port on the front of the control block. It is used by default for the Display Terminal. The Display Terminal is compliant with baud rate equal to or lower than 19,200 bps.

[HMI Baud Rate] *t b r 2*

    Baud rate Modbus.

Setting	Code / Value	Description
[4800 bps]	*4 K 8*	4,800 Bauds
[9600 bps]	*9 K 6*	9,600 Bauds
[19200 bps]	*1 9 K 2*	19,200 Bauds **Factory setting**
[38.4 Kbps]	*3 8 K 4*	38,400 Bauds

[Term 2 word order] *t W o 2* ★

    Terminal Modbus 2: Word order.

Setting	Code / Value	Description
[LOW]	*o F F*	Low word first
[HIGH]	*o n*	High word first **Factory setting**

[HMI Format] *t F o 2*

    HMI format.

Setting	Code / Value	Description
[8-O-1]	*8 o 1*	8.o.1.
[8-E-1]	*8 E 1*	8.E.1. **Factory setting**
[8-N-1]	*8 n 1*	8.n.1.
[8-N-2]	*8 n 2*	8.n.2.

[Modbus 2 Timeout] *t t o 2*

Modbus 2 timeout.

Setting	Description
0.1 ...30.0 s	Setting range **Factory setting**: 10.s

[Mdb com start] *C o M 2*

Modbus communication status.

Setting	Code / Value	Description
[r0t0]	*r 0 t 0*	Modbus no reception, no transmission
[r0t1]	*r 0 t 1*	Modbus no reception, transmission
[r1t0]	*r 1 t 0*	Modbus reception, no transmission
[r1t1]	*r 1 t 1*	Modbus reception and transmission

[Comm Port 2 Assign] *M r J 2*

Communication port 2 assignment - Top

Setting	Code / Value	Description
[Modbus 1]	*M d b*	Modbus 1 channel
[Modbus 2]	*M d b 2*	Modbus 2 channel
[HMI Panel]	*H M i P*	HMI Panel access
[Vscope tools]	*V S C P*	Vscope access
[MATLAB tools]	*M A t*	MATLAB access
[SHELL tools]	*S H E L L*	SHELL access
[Printf tools]	*P r i n t F*	Output printf access

[Embd Eth Config] *E t E -* Menu

Access

[Communication] ➞ [Comm parameters] ➞ [Embd Eth Config]

About This Menu

Refer to the Ethernet embedded manual.

[IP Mode Ether. Embd] *i M 0 0*

IP mode Ethernet embedded.

Setting *( )*	Code / Value	Description
[Fixed]	*M A n u*	Fixed address
[BOOTP]	*b o o t P*	BOOTP
[DHCP]	*d H C P*	DHCP **Factory setting**

[Enable FDR] *F d V o*

This parameter is used to enable or disable the FDR service.

This parameter can be accessed if **[IP mode Ether. Embd]** *i M 0 0* is set to **[DHCP]** *d H C P*

Setting	Code / Value	Description
[No]	*n o* / 0	No: FDR service disabled
[Yes]	*y E S* / 1	Yes: FDR service enabled

[FDR Action] *F d A o*

This parameter is used to select the FDR action that needs to be performed.

This parameter can be accessed if **[IP mode Ether. Embd]** *i M O O* is set to **[DHCP]** *d H C P*

Setting	Code / Value	Description
[NOT ACTIVE]]	*i d L E* / 0	Not active: No FDR action
[SAVE]]	*S A V E* / 1	Save: FDR save command
REST]	*r E S t* / 2	Restore: FDR restore command

[FDR Operating State] *F d S o*

This parameter is used to display the FDR operating state.

This parameter can be accessed if **[IP mode Ether. Embd]** *i M O O* is set to **[DHCP]** *d H C P*

Setting	Code / Value	Description
[NOT ACTIVE]]	*i d L E* / 0	Not active: No FDR action
[SAVE]	*S A V E* / 1	Save: FDR save command
[REST]	*r E S t* / 2	Restore: FDR restore command
[Initialization]	*i n i t* / 0	INIT: Initialization
[Not Active]	*i d L E* / 1	IDLE: Function not active
[Operational]	*o P E* / 2	OPE: Operational
[Ready]	*r d Y* / 4	RDY: Ready
[IP Configuration]	*i P C* / 5	IPC: IP configuration
[Not Configured]	*u n C F* / 7	UNCF: Function not configured
[Reading Configuration]	*G E t* / 8	GET: Download the current configuration
[Writing Configuration]	*S E t* / 9	SET: Save the current configuration
[Applying Configuration]	*A P P* / 10	APP: Applying the configuration to the drive

[FDR Operating State] *F d r o*

This parameter is used to display the FDR error status.

This parameter can be accessed if **[IP mode Ether. Embd]** *i M O O* is set to **[DHCP]** *d H C P*

Setting	Code / Value	Description
[No Error]	*n o* / 0	No error
[Service Timeout]	*t o u t* / 1	Server timeout
[Server No File]	*S n F* / 2	No file on server
[Server Corrupt File]	*C r P t* / 3	Corrupted file on server
[Server Empty File]	*E P t Y* / 4	Empty file on server
[Drive Invalid File]	*H i n V* / 5	Invalid file on drive
[CRC Error]	*C r C* / 6	CRC error
[Version Incompatibility]	*V r M* / 7	Version incompatibility between drive and file
[Drive No File]	*H n F* / 9	No file on drive
[Server Reading Size]	*S i Z E* / 10	File size reading error on server
[Drive Opening File]	*o P E n* / 11	Drive cannot open the file
[Drive Reading File]	*r E A d* / 12	Drive cannot read the file

Setting	Code / Value	Description
[Incompatibility]	5 C n t / 13	File incompatibility
[Drive Invalid Name]	n ı n V / 14	Drive name is invalid
[Server Incorrect File Size]	F 5 ı Z / 15	Incorrect file size on server
[Drive Writing File]	H W F / 16	Drive cannot write the file
[Server Writing File]	5 W F / 17	Server cannot write the file

[Fast Device Replacement] F d r - Menu

Access

[Communication] ➡ [Comm parameters] ➡ [Embd Eth Config] ➡ [Fast Device Replacement]

About This Menu

This menu can be accessed if [IP mode Ether. Embd] ı П O O is set to [DHCP] d H C P.

[Enable FDR] F d V O

Enable FDR function.

Setting	Code / Value	Description
[No]	n o	FDR service disabled **Factory setting**
[Yes]	Y E 5	FDR service enabled

[FDR Action] F d A O

FDR action.

Setting ⟨⟩	Code / Value	Description
[Not active]	ı d L E	No FDR action **Factory setting**
[Save]	5 A V E	FDR save command
[Rest]	r E 5 t	FDR restore command

[FDR Operating State] F d 5 O

FDR operating state.

Setting	Code / Value	Description
[Initialization]	ı n ı t	Initialization
[Not active]	ı d L E	Function not active **Factory setting**
[Operational]	o P E	Operational
[Ready]	r E A d Y	Ready
[IP Configuration]	ı P C	IP configuration
[Not Configured]	u n C F	Function not configured
[Reading Configuration]	G E t	Download the current configuration
[Writing Configuration]	5 E t	Save the current configuration
[Applying Configuration]	A P P	Applying the configuration to the drive

[FDR Error Status] *F d r 0*

FDR error status.

Setting	Code / Value	Description
[No Error]	*n o*	No error **Factory setting**
[Server Timeout]	*t o u t*	Server timeout
[Server No File]	*S n F*	No file on server
[Server Corrupt File]	*C r P t*	Invalid file on server
[Server Empty File]	*E P t y*	Empty file on server
[Drive Invalid File]	*H i n V*	Invalid file on drive
[CRC Error]	*C r C*	CRC error
[Version Incompatibility]	*V r M*	Version incompatibility between drive and file
[Drive No File]	*H n F*	No file on drive
[Server Reading Size]	*S i Z E*	File size reading error on server
[Drive Opening File]	*o P E n*	drive can not open the file
[Drive Reading File]	*r E A d*	drive can not read the file
[Incompatibility]	*S C n t*	File incompatibility
[Drive Invalid Name]	*n i n V*	drive name is invalid
[Server Incorrect File Size]	*F S i Z*	Incorrect file size on server
[Drive Writing File]	*H W F*	drive can not write the file
[Server Writing File]	*S W F*	Server can not write the file

[CANopen] *C n o -* Menu

Access

[Communication] ➡ [Comm parameters] ➡ [CANopen]

About This Menu

Refer to the CANopen fieldbus module manual.

[DeviceNet] *d n C -* Menu

Access

[Communication] ➡ [Comm parameters] ➡ [DeviceNet]

About This Menu

Refer to the DeviceNet fieldbus module manual.

[EtherCAT Module] *E t C -* Menu

Access

[Communication] ➡ [EtherCAT Module]

About This Menu

Following parameters can be accessed if EtherCAT module has been inserted.

Refer to the EtherCAT manual.

[EthCat slave status] *E C 5 5* ★

EtherCAT slave status

Setting	Code / Value	Description
[InIt]	*ın ıt*	Init
[PrOP]	*P r o P*	Pre-operational
[bOOt]	*b o o t*	Pre-operational
[SFOP]	*5 F o P*	Safe operational
[OP]	*o P*	Operational

[EthCat 2nd addr] *E C 5 A* ★

EtherCAT second address

Setting	Description
0...65,535	Setting range **Factory setting**: 0

[EthCat addr] *E C A A* ★

EtherCAT second address actual value

Setting	Description
0...65,535	Setting range **Factory setting**: 0

[Profibus] *P b C -* Menu

Access

[Communication] ➡ [Comm parameters] ➡ [Profibus]

About This Menu

Refer to the Profibus DP fieldbus module manual.

[Profinet] *P n C -* Menu

Access

[Communication] ➡ [Comm parameters] ➡ [Profinet]

About This Menu

Refer to the PROFINET fieldbus module manual.

Part VII
Maintenance and diagnostics

Chapter 14
Maintenance

Maintenance

Limitation of Warranty

The warranty does not apply if the product has been opened, except by Schneider Electric services.

Servicing

⚠ ⚠ **DANGER**
HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH
Read and understand the instructions in **Safety Information** chapter before performing any procedure in this chapter.
Failure to follow these instructions will result in death or serious injury.

Refer to the maintenance intervals table described to the Installation Manual. This table describes elements which need to be regularly inspected and replaced and tested according to given time intervals.

Long Time Storage for the Drive or Power Cell (as spare parts)

If the drive or the power cell (as spare parts) were not connected to mains for an extended period of time, the capacitors must be restored to their full performance before the motor is started.

NOTICE
REDUCED CAPACITOR PERFORMANCE
● Apply mains voltage to the drive for one hour before starting the motor if the drive has not been connected to mains for 12 months.
● Verify that no Run command can be applied before the period of one hour has elapsed.
Failure to follow these instructions can result in equipment damage.

If the specified procedure cannot be performed without a Run command because of internal mains contactor control, perform this procedure with the power stage enabled, but the motor being at standstill so that there is no appreciable mains current in the capacitors.

Long Time Storage for UPS

If UPS does not work for a long time, it must be charged and discharged completely once every 6 months to help ensure the service life of the battery.

Spares and Repairs

Serviceable product. Please contact your Customer Care Center on:

www.schneider-electric.com/CCC.

Limitation of Warranty

The warranty does not apply if the product has been opened, except by Schneider Electric services.

HMI - Magelis GTU

For service life information and additional support, you can download the User manual (EIO0000001735) on:

https://www.schneider-electric.com/en/download/document/EIO0000001735/.

Chapter 15
Diagnostics and Troubleshooting

Overview

This chapter describes the various types of diagnostics and provides troubleshooting assistance.

⚡ ⚠ **DANGER**
HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH
Read and understand the instructions in **Safety Information** chapter before performing any procedure in this chapter.
Failure to follow these instructions will result in death or serious injury.

What Is in This Chapter?

This chapter contains the following sections:

Section	Topic	Page
15.1	Warning Codes	220
15.2	Error Codes	223

Section 15.1
Warning Codes

Warning Codes

List of Available Warnings Messages

Setting	Code	Description
[No Warning stored]	n o A	No warning stored
[Fallback Frequency]	F r F	Reaction on event: Fallback frequency
[Speed Maintained]	r L S	Reaction on event: Speed maintained
[Type of stop]	S t t	Reaction on event: Stop following [Type of stop] S t t without triggering an error
[Ref Frequency Warning]	S r A	Frequency reference reached
[Life Cycle Warn 1]	L C A 1	Life cycle warning 1
[Life Cycle Warn 2]	L C A 2	Life cycle warning 2
[PumpCycle warning]	P C P A	Pumpcycle monitoring warning
[LowPres Warning]	L P A	Low pressure warning
[PID error Warning]	P E E	PID error warning
[PID Feedback Warn]	P F A	PID feedback warning
[PID High Fdbck Warn]	P F A H	PID feedback high threshold reached
[PID Low Fdbck Warn]	P F A L	PID feedback low threshold reached
[Regulation Warning]	P i S H	PID feedback monitoring warning
[AI2 Th Warning]	t P 2 A	AI2 Thermal warning
[AI3 Th Warning]	t P 3 A	AI3 Thermal warning
[AI4 Th Warning]	t P 4 A	AI4 Thermal warning
[AI5 Th Warning]	t P 5 A	AI5 Thermal warning
[AI1 4-20 Loss Warning]	A P 1	AI1 4-20 mA loss warning
[AI2 4-20 Loss Warning]	A P 2	AI2 4-20 mA loss warning
[AI3 4-20 Loss Warning]	A P 3	AI3 4-20 mA loss warning
[AI4 4-20 Loss Warning]	A P 4	AI4 4-20 mA loss warning
[AI5 4-20 Loss Warning]	A P 5	AI5 4-20 mA loss warning
[Drive Thermal Warning]	t H A	Drive overhearting warning
[IGBT Thermal Warning]	t J A	IGBT thermal state warning
[Fan Counter Warning]	F C t A	Fan counter speed warning
[Fan Feedback Warning]	F F d A	Fan feedback warning
[Ext. Error Warning]	E F A	External error warning
[Undervoltage Warning]	u S A	Undervoltage warning
[Preventive UnderV Active]	u P A	Controlled stop threshold is reached
[Mot Freq High Thd]	F t A	Motor frequency high threshold 1 reached
[Mot Freq Low Thd]	F t A L	Motor frequency low threshold 1 reached
[Mot Freq Low Thd 2]	F 2 A L	Motor frequency low threshold 2 reached
[High Speed Reached]	F L A	High speed reached warning
[Ref Freq High Thd reached]	r t A H	Reference frequency high threshold reached
[Ref Freq Low Thd reached]	r t A L	Reference frequency low threshold reached
[High Torque Warning]	t t H A	High torque threshold reached
[Low Torque Warning]	t t L A	Low torque threshold reached
[2nd Freq Thd Reached]	F 2 A	Motor frequency high threshold 2 reached
[Current Thd Reached]	C t A	Motor current high treshold reached

Setting	Code	Description
[Low Current Reached]	C t A L	Motor current low threshold reached
[Process Undld Warning]	u L A	Underload warning
[Process Overload Warning]	o L A	Overload warning
[Drv Therm Thd reached]	t A d	Drive thermal threshold reached
[Motor Therm Thd reached]	t S A	Motor thermal threshold reached
[Mot2 Therm Thd reached]	t S 2	Motor 2 thermal threshold reached
[Mot3 Therm Thd reached]	t S 3	Motor 3 thermal threshold reached
[Mot4 Therm Thd reached]	t S 4	Motor 4 thermal threshold reached
[Power High Threshold]	P t H A	Power high threshold reached *(see page 121)*
[Power Low Threshold]	P t H L	Power low threshold reached *(see page 121)*
[Cust Warning 1]	C A S 1	Customer warning 1 active
[Cust Warning 2]	C A S 2	Customer warning 2 active
[Cust Warning 3]	C A S 3	Customer warning 3 active
[Cust Warning 4]	C A S 4	Customer warning 4 active
[Cust Warning 5]	C A S 5	Customer warning 5 active
[Power Cons Warning]	P o W d	Power consumption warning
[Slipping warn]	A n A	Slipping warning
[MonitorCircuit A Warn]	i W A	Monitoring circuit A warning
[MonitorCircuit B Warn]	i W b	Monitoring circuit B warning
[MonitorCircuit C Warn]	i W C	Monitoring circuit C warning
[MonitorCircuit D Warn]	i W d	Monitoring circuit D warning
[CabinetCircuit A Warn]	C W A	Cabinet circuit A warning
[CabinetCircuit B Warn]	C W b	Cabinet circuit B warning
[CabinetCircuit C Warn]	C W C	Cabinet circuit C warning
[MotorWinding A Warn]	t W A	Motor winding A warning
[MotorWinding B Warn]	t W b	Motor winding B warning
[MotorBearing A Warn]	t W C	Motor bearing A warning
[MotorBearing B Warn]	t W d	Motor bearing B warning
[Circuit Breaker Warn]	C b W	Circuit breaker warning
[Cabinet Fan Fdbck Warn]	F F C A	Cabinet fan feedback warning
[Cabinet Fan Counter Warn]	F C C A	Cabinet fan counter warning
[Cabinet Overheat Warn]	C H A	Cabinet overheat warning
[CMI Jumper Warn]	C M i J	CMI jumper warning
[Dry Run Warning]	d r A Y	Dry Run Warning
[Ethernet Internal Warning]	i n W M	Ethernet Internal Warning
[Mains Ground Warn]	i G W	Mains ground warning
[Over-voltage Warn]	o b W	Over-voltage warning
[Motor Ground Warn]	o G W	Motor ground warning
[ERFW]	E r F W	Event Record Full warning
[Controller Emb RTC Battery Warn]	C W 0 1	Controller embedded RTC battery warning
[Cooling Fan Warn]	C W 0 2	Cooling fan warning
[Cabinet Overheat]	C W 0 3	Cabinet overheating
[Fan Power Supply Warn]	C W 0 5	Fan power supply warning
[Auxiliary Power Supply Warn]	C W 0 6	Auxiliary power supply warning
[LV Surge Arrestor Warn]	C W 0 7	LV surge arrestor warning
[QF2 Feedback Warn]	C W 1 1	QF2 feedback warning
[QF3 Feedback Warn]	C W 1 2	QF3 feedback warning
[QF4 Feedback Warn]	C W 1 3	QF4 feedback warning
[QF11 Feedback Warn]	C W 1 4	QF11 feedback warning
[PLC Cabinet Warning 15]	C W 1 5	PLC Cabinet Warning 15

Setting	Code	Description
[Transformer 1 Th Warn]	*CW17*	Transformer 1 thermal warning
[Transformer 2 Th Warn]	*CW18*	Transformer 2 thermal warning
[MotorWinding 1 Error]	*CW19*	Motor winding 1 error
[MotorWinding 2 Error]	*CW20*	Motor winding 2 error
[MotorBearing 1 Error]	*CW21*	Motor bearing 1 error
[Motor Scaling Warn]	*NotW*	Motor scaling warning
[MotorBearing 2 Error]	*CW22*	Motor bearing 2 error

Section 15.2
Error Codes

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Overview

Clearing the Detected Error

This table presents the steps to follow if intervention on the drive system is required:

Step	Action
1	Before disconnecting mains voltage, verify that the red LEDs of all power cells are ON by checking the LED state via the openings in the cabinet doors. If one or more of the red LEDs of the power cells are OFF, do not perform any further work, but contact your local Schneider Electric representative.
2	Disconnect all power, including external control power that may be present. Take into account that the circuit breaker or main switch does not de-energize all circuits.
3	Wait 20 minutes to allow the DC bus capacitors of the power cells to discharge. The DC bus LEDs located on each power cell are not an indicator of the absence of DC bus voltage.
4	If one or more of the red LEDs of the power cells remain ON for 20 minutes after the mains voltage has been disconnected, do not perform any further work, but contact your local Schneider Electric representative.
5	Lock all power switches in the open position.
6	Place a "Do Not Turn On" label on all power switches related to the drive system.
7	Follow the instructions given in the chapter "Verifying the Absence of Voltage" in the installation manual of the product.
8	Ground and short-circuit the mains input terminals and the motor output terminals.
9	Find and correct the cause of the detected error.
10	Restore power to the drive to confirm that the detected error has been rectified. Follow power up instruction done by the commissioning instruction.

After the cause has been removed, the detected error can be cleared by:
- Switching off the drive.
- Using the **[Product Restart]** $r P$ parameter.
- Using the **[Auto Fault Reset]** $R t r -$ function.
- A digital input or control bit set to the **[Fault reset]** $r 5 t -$ function.
  - ○ for **[Fault Reset Assign]** $r 5 F$ and **[Extended Fault Reset]** $H r C F$ configuration.
- Pressing the **RESET** button on the HMI panel

[Load slipping] *A n F*

Probable Cause

Not following the ramp. The difference between the output frequency and the speed feedback is not correct.

The sign of the speed feedback is different from the sign of the reference.

The load slipping is greater than 10% of nominal speed (FRS).

Remedy

- Confirm the drive rating according to the application (motor, load, and so on.)
- Verify the motor, gain, and stability parameters.
- Add a braking resistor.
- Verify the mechanical coupling and wiring of the encoder.
- If the torque control function is used and if the encoder is assigned to speed feedback,
  - Set **[Load slip detection]** *S d d* = **[No]** *n o*.
  - Set both **[Positive deadband]** *d b P* and **[Negative deadband]** *d b n* to a value less than 10% of the nominal motor frequency.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Angle error] *A S F*

Probable Cause

For synchronous motors, incorrect setting of the speed loop when the reference goes through 0.

Remedy

- Verify the speed loop parameters.
- Verify the motor phases and the maximum current allowed by the drive.

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has disappeared.

[Brake Control] *b L F*

Probable Cause

- Brake release current not reached.
- Brake engages frequency threshold **[Brake engage freq]** *b E n* only regulated when brake logic control is assigned.

Remedy

- Verify the drive/motor connection.
- Verify the motor windings.
- Verify the **[Brk Release Current]** *ı b r* and **[Brake release I Rev]** *ı r d* settings.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Brake Feedback] *b r F*

Probable Cause

- The status of the brake feedback contact is not correct compared to the brake logic control.
- The brake does not stop the motor quickly enough (detected by measuring the speed on the "Pulse input" input).

Remedy

- Verify the brake feedback circuit.
- Verify the brake logic control circuit.
- Verify the brake behavior.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Transformer 1 Overheat] $C F \square \ 1$

Probable Cause

- Cooling fans not working.
- Door filter mats blocked.
- High environmental temperature in the electrical room.
- Cooling fans rotates in the wrong direction.
- The transformer is overloaded.
- The threshold level set in the PLC is wrong.
- The PLC has detected a wrong measurement.
- Fiber box not working.

Remedy

- Verify the transformer temperature error threshold ($t P \ 1 u / t P \ 1 V / t P \ 1 W$) is set correctly: (Three threshold:
  - 1. Absolute temperature of transformer winding monitored by fibers exceeds 155°C;
  - 2. Temperature rise (Absolute temperature of transformer winding monitored by fibers - cabinet temperature monitored by PT100) exceeds 115°C;
  - 3. Cabinet temperature by PT100 is over than 60°C)

- Verify all cooling fans are working properly and rotate in the right direction.
- Verify door filter mats are free of dust and the required airflow is insured.
- Verify that the external cooling circuit (AC) in the electrical room is working properly.
- Verify compliance to the environmental conditions in the electrical room according to the specification.
- Verify that the measurement circuit is working properly (PT100 sensor on the transformer cabinet door/ fiber sensors on transformer windings / PLC / Wiring connections / fiber box)
- Check the log file to verify if the ATV6000 was already in "Overload" condition before the $C F \square \ 1$ error triggering.
- Verify in the PLC program the temperature of the transformer and check directly the input on the PLC extension card.
- Verify actual measurement ($t P \ 1 u / t P \ 1 V / t P \ 1 W / t t \ 1 \Pi / t S \ 1 u / t S \ 1 V / t S \ 1 W$) exceeds threshold (155°C).

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** $r \ 5 F$ parameter after the cause has been removed.

[Transformer 2 Overheat] *C F 0 2*

Probable Cause

- Cooling fans not working.
- Door filter mats blocked.
- High environmental temperature in the electrical room.
- Cooling fans rotate in the wrong direction.
- The transformer is overloaded.
- The threshold level set in the PLC is wrong.
- The PLC has detected a wrong measurement.
- Fiber box not working.

Remedy

- Verify the transformer temperature error threshold (*t P 2 u*/*t P 2 V*/*t P 2 W*) is set correctly: (Three threshold:
  - 1. Absolute temperature of transformer winding monitored by fibers exceeds 155°C;
  - 2. Temperature rise (Absolute temperature of transformer winding monitored by fibers - cabinet temperature monitored by PT100) exceeds 115°C;
  - 3. Cabinet temperature by PT100 is over than 60°C)
- Verify all cooling fans are working properly and rotate in the right direction.
- Verify door filter mats are free of dust and the required airflow is insured.
- Verify that the external cooling circuit (AC) in the electrical room is working properly.
- Verify compliance to the environmental conditions in the electrical room according to the specification.
- Verify that the measurement circuit is working properly (PT100 sensor on the transformer cabinet door/ fiber sensors on transformer windings / PLC / Wiring connections / fiber box)
- Check the log file to verify if the ATV6000 was already in "Overload" condition before the *C F 0 2* error triggering.
- Verify in the PLC program the temperature of the transformer and check directly the input on the PLC extension card.
- Verify actual measurement (*t P 2 u*/*t P 2 V*/*t P 2 W*/*t t 2 n*/*t 5 2 u*/*t 5 2 V*/*t 5 2 W*) exceeds threshold (155°C).

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[PLC Internal Error] *C F 0 3*

Probable Cause

The PLC has detected an internal error.

- Wrong PLC software loaded.
- PLC software incompatible with the control block firmware.
- Internal error on the PLC.

Remedy

- Verify the software version on the PLC and Control block. (Check compatibility).
- Upload the correct PLC software to the PLC and make sure the PLC is in RUN mode.
- Change the PLC.

Clearing the Error Code

This detected error requires a power reset.

[Mains Off Button] *C F 0 4*

Probable Cause

The "Mains voltage off" button on the control cubicle has been activated.

- Someone has pressed the "Mains Voltage Off" button.
- The wiring on the "Mains Voltage Off" button is not connected properly.

Remedy

- Release the "Mains voltage Off" button on the control cubicle.
- Check the wiring on the "Mains voltage Off" button and the dedicated input on the PLC.

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Door interlock] *C F 0 5*

Probable Cause

The electrical "Door interlock" function has detected an opened cubicle door.

- At least one cubicle door is not closed.
- The cubicle door is not closed properly and therefore door limit switch is not activated.
- The door limit switch is not working properly.
- Wire disconnection of the door limit switch or on the dedicated PLC input.
- If the option "TOP entry" is available, the additional door limit switch is not wired (Need to be done on site).

Remedy

- Make sure all cubicle doors are closed properly and fixed with the dedicated screws.
- Verify each door limit switch is working properly.
- Check the overall wiring on the door limit switch and PLC.
- If the option "TOP entry" cabinet is available verify that the wiring of the additional door limit switch was done properly.

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Cooling Fan error] *C F 0 6*

Probable Cause

- The circuit breaker of the cooling fan has tripped due to an overload
- The motor circuit breaker is switched off
- The external cooling fan supply is switched off

Remedy

- Switch on the dedicated circuit breakers for the cooling fans
- Make sure the external power supply for the fans is present (If supplied external)

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Cabinet Overheat] *C F 0 7*

Probable Cause

The cabinet temperature monitoring has detected an overheating

- The cooling fans are not working.
- The cooling fans rotates in the wrong direction.
- The filter mats are blocked and full of dust.
- The environmental temperature in the electrical room is too high.
- The air condition system in the electrical room is not working.
- The internal temperature measurement is not working.
- Measurement circuit detects wrong temperature (PT100 & Adaption board).

Remedy

- Check the environmental room temperature.
- Verify the cooling fans are working properly and rotates in the correct direction.
- Make sure filter mats are free of dust and replace them if necessary.
- Check the temperature limits and the measurement circuit is working properly.
- Verify the PT100 sensor works properly.

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[QF1 Tripped] *C F 0 8*

Probable Cause

- The MV Circuit breaker has been switched off during operation of the ATV6000.
- An external event such as overvoltage, overcurrent, internal MV Circuit breaker error has triggered the QF1.
- QF1 feedback signal loss during operation of the ATV6000 (If available).

Remedy

- Verify the root cause for the QF1 trip (External).
- Verify the QF1 feedback wire is properly connected to the PLC and the PLC input is working (If available).

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Fan Supply Error] *C F 0 9*

Probable Cause

- The circuit breaker of the cooling fan has tripped due to an overload.
- The circuit breaker has been switched off.
- The external cooling fan supply is switched off.

Remedy

- Switch on the dedicated circuit breakers for the cooling fans.
- Make sure the external power supply for the fans is present (If supplied external).

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Auxiliary Supply Error] *C F 1 0*

Probable Cause

The 230 V auxiliary power supply is interrupted.

- The external 230 V auxiliary power supply is switch off.
- The internal circuit breaker for the 230 V is opened.
- Wrong wiring on the dedicated relay K1A and the dedicated PLC input (DI23).

Remedy

- Verify that the external 230V is available (Measure with the multimeter).
- Verify the wiring on the dedicated relay K1A and the PLC input (DI23).
- Verify if the internal circuit breaker for the 230 V is switched on.

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[QF1 Grounded Contact Error] *C F 1 1*

Probable Cause

The circuit breaker QF1 is grounded

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[QF1 isolated Contact Error] *C F 1 2*

Probable Cause

The circuit breaker QF1 is switched off and racked out

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[QF2 Feedback Error] *C F 1 3*

Probable Cause

The feedback signal "QF2 is closed" has not been detected on the dedicated digital input on the PLC.

- Feedback signal missing.
- Feedback signal of QF2 not wired or loss contact.
- Feedback signal not active or stable within the PLC timeout.

Remedy

- Verify the wiring and connections on the dedicated terminals and digital inputs.
- Check the feedback signal in the PLC program.
- Verify the wiring on the QF2 circuit breaker "auxiliary contact"
- Verify that the correct PLC software was loaded.

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[QF3 Feedback Error] *C F 1 4*

Probable Cause

The feedback signal "QF3 is closed" has not been detected on the dedicated digital input on the PLC

● Feedback signal missing
● Feedback signal of QF3 not wired or loss contact
● Feedback signal not active or stable within the PLC timeout

Remedy

● Verify the wiring and connections on the dedicated terminals and digital inputs
● Check the feedback signal in the PLC program
● Verify the wiring on the QF3 circuit breaker "auxiliary contact"
● Verify that the correct PLC software was loaded

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[QF91 Feedback Error] *C F 1 5*

Probable Cause

The feedback signal "QF91 is closed" has not been detected on the dedicated digital input on the PLC

● Feedback signal missing
● Feedback signal of QF91 not wired or loss contact
● Feedback signal not active or stable within the PLC timeout

Remedy

● Verify the wiring and connections on the dedicated terminals and digital inputs
● Check the feedback signal in the PLC program
● Verify the wiring on the QF91 circuit breaker "auxiliary contact"
● Verify that the correct PLC software was loaded

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[QF11 Feedback Error] *C F 1 6*

Probable Cause

The feedback signal "QF11 is closed" has not been detected on the dedicated digital input on the PLC.

- Feedback signal missing.
- Feedback signal of QF11 not wired or loss contact.
- Feedback signal not active or stable within the PLC timeout.

Remedy

- Verify the wiring and connections on the dedicated terminals and digital inputs.
- Check the feedback signal in the PLC program.
- Verify the wiring on the QF11 circuit breaker "auxiliary contact".
- Verify that the correct PLC software was loaded.

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[LV Surge Arrestor Error] *C F 1 7*

Probable Cause

The LV surge arrestor has been triggered, the digital input 19 on the PLC is activated

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[MotorWinding 1 Error] $\mathit{C\,F\,19}$

Probable Cause

The winding temperature of motor 1 has reached the threshold level $\mathit{t\,H\,t\,1}$.

- Motor cooling fans not working or motor liquid cooling switched off.
- Motor is overloaded.
- Environmental temperature too high.
- External motor cooling fan not working or rotating the wrong direction.
- The parameter setting of the temperature threshold level $\mathit{t\,H\,t\,1}$ is wrong.
- The measurement is wrong.
- The motor is self cooled and operates on low speed.
- Motor surface full of dust.

Remedy

- Verify that the cooling fans of the motor is working properly and rotate in the correct direction.
- Verify that the external cooling circuit is working.
- Verify compliance to the environmental conditions according to the motor specification
- Verify that the measurement circuit is working properly (PT100 sensors/Wiring connections on the PLC).
- Check that the motor was in "Overload" condition before triggering the error.
- Make sure the motor surface is free of dust.
- Verify that the threshold level is set properly according to the motor specification.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** $\mathit{A\,t\,r}$ or manually with the **[Fault Reset Assign]** $\mathit{r\,S\,F}$ parameter after the cause has been removed.

[MotorWinding 2 Error] *CF2O*

Probable Cause

The winding temperature of motor 2 has reached the threshold level *tHt2*.

● Motor cooling fans not working or motor liquid cooling switched off.
● Motor is overloaded.
● Environmental temperature too high.
● External motor cooling fan not working or rotating the wrong direction.
● The parameter setting of the temperature threshold level *tHt2* is wrong.
● The measurement is wrong.
● The motor is self cooled and operates on low speed.
● Motor surface full of dust.

Remedy

● Verify that the cooling fans of the motor is working properly and rotate in the correct direction.
● Verify that the external cooling circuit is working.
● Verify compliance to the environmental conditions according to the motor specification
● Verify that the measurement circuit is working properly (PT100 sensors/Wiring connections on the PLC)
● Check that the motor was in "Overload" condition before triggering the error.
● Make sure the motor surface is free of dust
● Verify that the threshold level is set properly according to the motor specification.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *Atr* or manually with the **[Fault Reset Assign]** *rSF* parameter after the cause has been removed.

[MotorBearing 1 Error] *C F 2 1*

Probable Cause

The bearing temperature of motor 1 has reached the threshold level *t H t 3*.

- Motor cooling fans not working or motor liquid cooling switched off.
- Motor is overloaded.
- Environmental temperature too high.
- External motor cooling fan not working or rotating the wrong direction.
- The parameter setting of the temperature threshold level *t H t 3* is wrong.
- The measurement is wrong.
- The motor is self cooled and operates on low speed.
- Motor surface full of dust.

Remedy

- Verify that the cooling fans of the motor is working properly and rotate in the correct direction.
- Verify that the external cooling circuit is working.
- Verify compliance to the environmental conditions according to the motor specification.
- Verify that the measurement circuit is working properly (PT100 sensors/Wiring connections on the PLC).
- Check that the motor was in "Overload" condition before triggering the error.
- Make sure the motor surface is free of dust.
- Verify that the threshold level is set properly according to the motor specification.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[MotorBearing 2 Error] *C F 2 2*

Probable Cause

The bearing temperature of motor 2 has reached the threshold level *t H t 4*.

● Motor cooling fans not working or motor liquid cooling switched off.
● Motor is overloaded.
● Environmental temperature too high.
● External motor cooling fan not working or rotating the wrong direction.
● The parameter setting of the temperature threshold level *t H t 4* is wrong.
● The measurement is wrong.
● The motor is self cooled and operates on low speed.
● Motor surface full of dust.

Remedy

● Verify that the cooling fans of the motor is working properly and rotate in the correct direction.
● Verify that the external cooling circuit is working.
● Verify compliance to the environmental conditions according to the motor specification.
● Verify that the measurement circuit is working properly (PT100 sensors/Wiring connections on the PLC).
● Check that the motor was in "Overload" condition before triggering the error.
● Make sure the motor surface is free of dust.
● Verify that the threshold level is set properly according to the motor specification.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[PT100 Winding Error] *C F 2 3*

Probable Cause

The measurement circuit on the PLC has detected an open circuit or a short circuit on the dedicated temperature sensor

● PT100 sensor is not connected

Remedy

Reconnect or replace the temperature sensor

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[PT100 Bearing Error] *C F 2 4*

Probable Cause

The measurement circuit on the PLC has detected an open circuit or a short circuit on the dedicated temperature sensor

● PT100 sensor is not connected

Remedy

Reconnect or replace the temperature sensor

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[CabinetCircuit A Error] *C F A*

Probable Cause

The monitoring function has detected an error. The digital input assigned to **[CabinetCircuit A Assign]** *C F A A* is active when the detected error duration is longer than **[CabinetCircuit A Delay]** *F d A*.

Remedy

- Identify the cause of detection.
- Verify the connected device (door switch, thermal switch,…) and its wiring.
- Verify the **[CabinetCircuit A Assign]** *C F A A* parameter assignment.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[CabinetCircuit B Error] *C F b*

Probable Cause

The monitoring function has detected an error. The digital input assigned to **[CabinetCircuit B Assign]** *C F A b* is active when the detected error duration is longer than **[CabinetCircuit B Delay]** *F d b*.

Remedy

- Identify the cause of detection.
- Verify the connected device (door switch, thermal switch,…) and its wiring.
- Verify the **[CabinetCircuit B Assign]** *C F A b* parameter assignment.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[CabinetCircuit C Error] *C F C*

Probable Cause

The monitoring function has detected an error. The digital input assigned to **[CabinetCircuit C Assign]** *C F A C* is active when the detected error duration is longer than **[CabinetCircuit C Delay]** *F d C* .

Remedy

- Identify the cause of detection.
- Verify the connected device (door switch, thermal switch,…) and its wiring.
- Verify the **[CabinetCircuit C Assign]** *C F A C* parameter assignment.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Incorrect Configuration] *C F F*

Probable Cause

- Option module changed or removed.
- Control board replaced by a control board configured on a drive with a different rating.
- The current configuration is inconsistent.

Remedy

- Verify that there is no detected error on the option module.

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[Invalid Configuration] C F ı

Probable Cause

Invalid configuration. The configuration loaded in the drive via the commissioning tool or fieldbus is inconsistent.

Remedy

● Verify the loaded configuration.
● Load a valid configuration.

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[Conf Transfer Error] C F ı 2

Probable Cause

● The configuration transfer to the drive was not successful or interrupted.
● The configuration loaded is not compatible with the drive.

Remedy

● Verify the configuration loaded previously.
● Load a compatible configuration.
● Use PC software commissioning tool to transfer a compatible configuration
● Perform a factory setting

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[Pre-settings Transfer Error] *C F I 3*

Probable Cause

The configuration transfer to the drive was not successful or interrupted.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[Empty Configuration] *C F I 4*

Probable Cause

The selected configuration for the **[Multimotors config]** *N N C -* function has not been created previously.

Remedy

- Verify the configurations saved.
- Switch to a compatible configuration.

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[Cabinet Overheat Error] *C H F*

Probable Cause

The digital cabinet I/O DI50 and DI64 are configured as cabinet temperature monitoring. If the cabinet thermo-switch is opened, in case of over temperature, the **[Cabinet Overheat Error]** *C H F* is triggered.

This error can be triggered only in RUN state. On other state, the **[Cabinet Overheat Warn]** *C H A* is active.

- The temperature in the enclosure is too high.
- Setting of the thermoswitch (must be 60°C (140°F))

Remedy

- Verify the setting of the internal thermo switch
- Verify the wiring from the thermo switch to the cabinet I/O - DI50 and DI64 on the power board.

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[Fieldbus Com Interrupt] *C n F*

Probable Cause

This error is triggered when the communication between the fieldbus module and the master (PLC) is interrupted.

Remedy

- Verify the environment (electromagnetic compatibility).
- Verify the wiring.
- Verify the timeout.
- Replace the option module.
- Select menu "Diagnostics" for more information about the error.
- Contact your local Schneider Electric representative

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Opt 3 Comm Interrupt] $\mathcal{L} \cap F \mathcal{3}$

Probable Cause

The 3rd option card has detected a communication error.
- Ethernet cable between control block and PLC not connected properly.
- IP adress not configured on the control block or on the PLC.
- PLC not in "RUN" mode.

Remedy

- Check Ethernet connection on the control block and PLC.
- Configure the correct IP address in the control block and PLC.
- Make sure the PLC is in RUN mode.
- Update the Ethernet option card or change the Ethernet option card.
- Change Control Block or PLC.

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** $r \cdot 5F$ parameter after the cause has been removed.

[CANopen Com Interrupt] $\mathcal{L} \circ F$

Probable Cause

Communication interruption on the CANopen® fieldbus

Remedy

- Verify the communication fieldbus.
- Verify the timeout.
- Refer to the CANopen® user manual.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** $A \cdot t \cdot r$ or manually with the **[Fault Reset Assign]** $r \cdot 5F$ parameter after the cause has been removed.

[Precharge Capacitor] *C r F 1*

Probable Cause

After switching on the mains, the DC Bus is charged by the power cells. If all DC bus voltage of power cells are not stabilized within 1s, the error CrF1 is triggered.

- Unstable mains voltage.
- DC bus capacitors service life exceeded.
- Power cells DC bus capacitors service life exceeded.

Remedy

- Turn off the drive and then turn on again.
- Check and analyze the mains input voltage.
- Check DC bus voltage on power cells

Clearing the Error Code

This detected error requires a power reset.

[Channel Switch Error] *C S F*

Probable Cause

Switch to an invalid channel.

Remedy

Verify the function parameters.

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[Dry Run Error] *dr YF*

Probable Cause

The dry run monitoring function has detected an error.

NOTE: After the error has been triggered, even if the detected error has been cleared, it is not possible to restart the pump before the end of the **[DryRun Restart Delay]** *dr Yr* .

Remedy

- Verify that the pump is well primed.
- Verify that there is no air leak in the suction line.
- Verify the settings of the monitoring function.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5F* parameter after the cause has been removed.

[Encoder Coupling] *E C F*

Probable Cause

The mechanical coupling of the encoder is broken.

The detection is active when **[Encoder Coupling Monit]** *E C C* parameter is set to **[Yes]** *YE 5* .

It triggers the error when the speed feedback is 0 and the drive is in torque or current limitation.

The limits for speed feedback are:
- 5 Hz for minimum
- 10% of **[Nominal Motor Freq]** *F r 5* for maximum
- Verify the setting of **[Encoder Coupling Monit]** *E C C* parameter.
- Verify the setting of **[Encoder check time]** *E C t* parameter.

The monitoring is not compatible with torque or current limitation functions.

Remedy

Verify the mechanical coupling of the encoder.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5F* parameter after the cause has been removed.

[EEPROM Control] *E E F 1*

Probable Cause

An error of the internal memory of the control block has been detected.

Remedy

- Verify the environment (electromagnetic compatibility).
- Switch off the product.
- Return to factory settings.
- Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[EEPROM Power] *E E F 2*

Probable Cause

An error of the internal memory of the power board has been detected.

Remedy

- Verify the environment (electromagnetic compatibility).
- Switch off the product.
- Return to factory settings.
- Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Encoder] *E n F*

Probable Cause

Encoder feedback error.

The difference between the measured and estimated speed is greater than 4% of **[Nominal Motor Freq]** *F r S* or **[Sync Nominal Freq]** *F r S S*.

Remedy

- Verify the encoder board.
- Verify the encoder wiring.
- Verify the encoder type and supply voltage.
- Verify the parameter **[Encoder supply volt.]** *u E C V*
- Verify the consistency between the encoder signals and the direction of rotation of the motor.
- If necessary, reverse the direction of rotation of the motor (**[Output Ph rotation]** *P H r* parameter).

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[External Error] *E P F 1*

Probable Cause

- Event triggered by an external device, depending on user.

Remedy

Remove the cause of the external error.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Fieldbus Error] *E P F 2*

Probable Cause

Event triggered by an external device, depending on user.

Remedy

Remove the cause of the external error.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Opt 3 External Error] *E P F 3*

Probable Cause

A communication interruption on the 3rd option card has been detected

Remedy

● Check the configuration of the IP address on the PLC and on the control block.
● Make sure the PLC software has been uploaded successfully and is compatible with the control block firmware.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Embd Eth Com Interrupt] $E\,t\,H\,F$

Probable Cause

Communication interruption on the Ethernet IP ModbusTCP bus.

Remedy

- Verify the communication bus.
- Refer to the Ethernet user manual.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** $A\,t\,r$ or manually with the **[Fault Reset Assign]** $r\,5\,F$ parameter after the cause has been removed.

[FDR 1 Error] $F\,d\,r\,I$

Probable Cause

- Communication interruption between the drive and the PLC
- Configuration file incompatible, empty or invalid.
- Drive rating not consistent with the configuration file

Remedy

- Verify the drive and PLC connection
- Verify the communication workload
- Restart the transfer of configuration file from drive to PLC

Clearing the Error Code

This detected error requires a power reset.

[Firmware Update Error] *F W E r*

Probable Cause

Firmware update function has detected an error.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[Boards Compatibility] *H C F*

Probable Cause

The **[Pairing password]** *P P ı* parameter has been enabled and an option module has been changed.

Remedy

● Refit the original option module.
● Confirm the configuration by entering the **[Pairing password]** *P P ı* if the module was changed deliberately.

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[MonitorCircuit A Error] ⎆*F A*

Probable Cause

The digital input assigned to **[MonitorCircuit A Assign]** ⎆*F A A* is active for longer than **[MonitorCircuit A Delay]** ⎆*F d A*.

Remedy

- Verify the connected device and its wiring.
- Verify the **[MonitorCircuit A Assign]** ⎆*F A A* parameter assignment.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[MonitorCircuit B Error] ⎆*F b*

Probable Cause

The digital input assigned to **[MonitorCircuit B Assign]** ⎆*F A b* is active for longer than **[MonitorCircuit B Delay]** ⎆*F d b*.

Remedy

- Verify the connected device and its wiring.
- Verify the **[MonitorCircuit B Assign]** ⎆*F A b* parameter assignment.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[MonitorCircuit C Error] *iF C*

Probable Cause

The digital input assigned to **[MonitorCircuit C Assign]** *iF A C* is active for longer than **[MonitorCircuit C Delay]** *iF d C*.

Remedy

- Verify the connected device and its wiring.
- Verify the **[MonitorCircuit C Assign]** *iF A C* parameter assignment.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[MonitorCircuit D Error] *iF d*

Probable Cause

The digital input assigned to **[MonitorCircuit D Assign]** *iF A d* is active for longer than **[MonitorCircuit D Delay]** *iF d d*.

Remedy

- Verify the connected device and its wiring.
- Verify the **[MonitorCircuit D Assign]** *iF A d* parameter assignment.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Internal Link Error] _ɪ L F_

Probable Cause

Communication interruption between option module and the drive.

Remedy

- Verify the environment (electromagnetic compatibility).
- Verify the connections.
- Replace the option module.
- Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Opt 3 Intern Link Error] _ɪ L F 3_

Probable Cause

The 3rd option card has detected an internal error on the Ethernet option module.

Remedy

- Contact your local Schneider Electric representative.
- Change the Ethernet option module in the 3rd option slot

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 0] $inF0$

Probable Cause

● Communication interruption between microprocessors of the control board.
● The power board rating is not valid.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 1] $inF1$

Probable Cause

The power board rating is not valid.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 2] $inF2$

Probable Cause

The power board is incompatible with the control block software.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 3] ɪnF3

Probable Cause

Internal communication detected error.

Remedy

- Verify the wiring on drive control terminals (internal 10V supply for analog inputs overloaded).
- Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 4] ɪnF4

Probable Cause

Internal data inconsistent.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 6] ɪnF6

Probable Cause

- The option module installed in the drive is not recognized.
- The removable control terminal modules (if existing) are not present or not recognized.
- The embedded Ethernet adapter is not recognized.

Remedy

- Verify the catalog number and compatibility of the option module.
- Plug the removable control terminal modules after the drive has been switched off.
- Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 7] $inF7$

Probable Cause

Communication interruption with CPLD component of Control board.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 8] $inF8$

Probable Cause

The internal power switching supply is not correct.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 9] $inF9$

Probable Cause

An error on the current circuit measurement has been detected.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 10] *i n F A*

Probable Cause

The input stage is not operating correctly.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 11] *i n F b*

Probable Cause

The internal drive thermal sensor is not operating correctly.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Internal Error 12] *i n F C*

Probable Cause

Internal current supply error.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 14] *i n F E*

Probable Cause

Internal microprocessor detected error.

Remedy

- Verify that the error code can be cleared.
- Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 15] *i n F F*

Probable Cause

Serial memory flash format error.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 16] *i n F G*

Probable Cause

Communication interruption or internal error of output relays option module

Remedy

- Verify that the option module is correctly connected to the slot
- Replace the option module.
- Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 17] *ınF H*

Probable Cause

Communication interruption with the Extension module of digital & analog I/O or internal error of the Extension module of digital & analog I/O.

Remedy

- Verify that the option module is correctly connected to the slot
- Replace the option module.
- Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 19] *ınF J*

Probable Cause

An error on the encoder module has been detected.

Remedy

- Verify if the encoder option module is connected correctly to the slot.
- Verify the compatibility of the encoder.
- Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 20] *i n F K*

Probable Cause

Option module interface board error.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 21] *i n F L*

Probable Cause

Internal Real Time Clock error. It could be a communication error between the keypad and the drive or a clock oscillator start error.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 22] *i n F ∏*

Probable Cause

An error on the embedded Ethernet adapter has been detected.

Unstability of external 24 Vdc supply.

Remedy

Verify the connection to the Ethernet port.

Contact your local Schneider Electric representative.

Verify the 24 Vdc stability.

Clearing the Error Code

This detected error requires a power reset.

[Compatibility Error] ı n F o

Probable Cause

Internal incompatibility detected between Control and PLC or Control and HMI.

Remedy

- Verify INFO parameter to identify compatibility error between device.
- Restart the drive (switch the drive OFF / ON).
- Verify compatibility between control Option Ethernet and PLC and HMI .
- Verify compatibility between control block and Ethernet option module.
- Change the control block, update HMI FW and PLC FW.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 25] ı n F P

Probable Cause

Incompatibility between Control Board hardware version and firmware version.

Remedy

- Update the firmware package.
- Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 27] *i n F r*

Probable Cause

Incorrect supply of measurement circuit using sigma-delta measurement.

Remedy

Check supply of measurement on power adaptation.

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Internal Error 31] *i n F V*

Probable Cause

Invalid identification of power-cell according to the configuration.

Remedy

● Replace the dedicated power cell.
● Contact your local Schneider Electric representative

Clearing the Error Code

This detected error requires a power reset.

[Input Contactor] *L C F*

Probable Cause

The drive is not switched on even though **[Mains V. time out]** *L C t* timeout has elapsed.

Remedy

- Verify the input contactor and its wiring.
- Verify the **[Mains V. time out]** *L C t* timeout.
- Verify the supply mains/contactor/drive wiring.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[AI1 4-20mA loss] *L F F 1*

Probable Cause

Loss of the 4-20 mA on analog input AI1.

This error is triggered when the measured current is below 2 mA.

Remedy

- Verify the connection on the analog inputs.
- Verify the setting of **[AI1 4-20mA loss]** *L F L 1* parameter.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[AI3 4-20mA loss] *L F F 3*

Probable Cause

Loss of the 4-20 mA on analog input AI3.

This error is triggered when the measured current is below 2 mA.

Remedy

- Verify the connection on the analog inputs.
- Verify the setting of **[AI3 4-20mA loss]** *L F L 3* parameter.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[AI4 4-20mA loss] *L F F 4*

Probable Cause

Loss of the 4-20 mA on analog input AI4.

This error is triggered when the measured current is below 2mA.

Remedy

- Verify the connection on the analog inputs.
- Verify the setting of **[AI4 4-20mA loss]** *L F L 4* parameter.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[AI5 4-20mA loss] *L F F 5*

Probable Cause

Loss of the 4-20 mA on analog input AI5.

This error is triggered when the measured current is below 2 mA.

Remedy

● Verify the connection on the analog inputs.
● Verify the setting of **[AI5 4-20mA loss]** *L F L 5* parameter.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[MultiDrive Link Error] *Π d L F*

Probable Cause

● The communication has been interrupted while running.
● The function has detected an inconsistency in the system configuration.

Remedy

● Check the communication network.
● Check the configuration of the multi-drive link function.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[M/S Device Error] *M S d F*

Probable Cause

- For a master, one or more slaves are not present or not ready.
- For a slave, the master is not present.

Remedy

- Verify the drive status.
- Verify the settings of the master/slave architecture.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[DC Bus Overvoltage] *o b F*

Probable Cause

- Deceleration time too short or driving load too high.
- Supply mains voltage too high.

Remedy

- Increase the deceleration time.
- Configure the **[Dec ramp adapt.]** *b r A* function if it is compatible with the application.
- Verify the supply mains voltage.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Overcurrent] *o C F*

Probable Cause

- Parameters in the [Motor data] *П o A -* menu are not correct.
- Inertia or load too high.
- Mechanical locking.

Remedy

- Verify the motor parameters.
- Verify the size of the motor/drive/load.
- Verify the state of the mechanism.
- Decrease [Current limitation] *C L ı*.
- Increase the switching frequency.

Clearing the Error Code

This detected error requires a power reset.

[Drive Overheating] *o H F*

Probable Cause

This error message is triggered by a temperature sensor on the heat sink.

- Ambient temperature too high.
- Incorrect cooling.
- Filter blocked.

Remedy

Verify the motor load, the drive ventilation, and the ambient temperature. Wait for the drive to cool down before restarting.

Clearing the Error Code

This detected error can be cleared with the [Auto Fault Reset] *A t r* or manually with the [Fault Reset Assign] *r S F* parameter after the cause has been removed.

[Process Overload] *o L C*

Probable Cause

Process overload.

Remedy

- Verify and remove the cause of the overload.
- Verify the parameters of the **[Process overload]** *o L d -* function.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Motor Overload] *o L F*

Probable Cause

Triggered by excessive motor current.

Remedy

- Verify the setting of the motor thermal monitoring
- Verify the motor load. Wait for the motor to cool down before restarting
- Verify the setting of the following parameters:
  - ❍ **[Motor Th Current]** *i t H*
  - ❍ **[Motor Thermal Mode]** *t H t*
  - ❍ **[Motor Therm Thd]** *t t d*
  - ❍ **[MotorTemp ErrorResp]** *o L L*

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Single Output Phase Loss] *o P F 1*

Probable Cause

Loss of one phase at drive output.

Remedy

Verify the wiring from the drive to the motor.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Output Phase Loss] *o P F 2*

Probable Cause

- Motor not connected or motor power too low.
- Output contactor opened.
- Instantaneous instability in the motor current.

Remedy

- Verify the wiring from the drive to the motor.
- If the drive is connected to a low-power motor or not connected to a motor: In factory settings mode, motor phase loss detection is active **[Output Phase Loss]** *o P L* = **[OPF Error Triggered]** *Y E S*. To check the drive in a test or maintenance environment without having to switch to a motor with the same rating as the drive, deactivate motor phase loss detection **[Output Phase Loss]** *o P L* = **[Function Inactive]** *n o*.
- Verify and optimize the following parameters: **[IR compensation]** *u F r*, **[Nom Motor Voltage]** *u n S* and **[Rated mot. current]** *n C r* and perform **[Autotuning]** *t u n*.
- Verify and optimize the following parameters: **[IR compensation]** *u F r*, **[Nom Motor Voltage]** *u n S* and **[Rated mot. current]** *n C r* and perform **[Autotuning]** *t u n*.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Supply Mains Overvoltage] *o 5 F*

Probable Cause

- Supply mains voltage too high.
- Disturbed supply mains.

Remedy

Verify the supply mains voltage.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[PumpCycle Start Error] *P C P F*

Probable Cause

The Pumpcycle monitoring function has exceeded the maximum number of start sequences allowed in the time window.

Remedy

- Search for a possible cause of repetitive start of system.
- Verify the settings of the monitoring function.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[PID Feedback Error] *P F Π F*

Probable Cause

The PID feedback error was out of the allowed range around the set point during the time window.

Remedy

- Check for mechanical breakdown of pipes.
- Check for water leakage.
- Check for open discharge valve.
- Check for fire hydrant opened.
- Verify the settings of the monitoring function.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Program Loading Error] *P G L F*

Probable Cause

Verify that the error code can be cleared.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[Program Running Error] *P G r F*

Probable Cause

Verify that the error code can be cleared.

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[Input phase loss] *P H F*

Probable Cause

- Drive incorrectly supplied or a tripped fused.
- One phase is unavailable.

Remedy

- Check the power connection and the fuses.
- Disable the detected error by **[Input phase loss]** *I P L* = **[No]** *n o*.

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[POE Error] *P o d F*

Probable Cause

- Internal hardware error

Remedy

- Verify the wiring of the digital inputs POE_A and POE_B.
- Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error can be cleared manually with the **[Extended Fault Reset]** *H r F C* parameter after the cause has been removed.

[Mains Overcurrent] *P W F 1*

Probable Cause

- Short circuit on the transformer primary side
- Mains cable damaged
- Internal mains cable from the terminal to the transformer damaged
- Current sensor not working or not connected properly
- Adaption board or Control Block not working properly

Remedy

- Visual check of the transformer and verify that there are no obvious damages
- Insulation test of the transformer and all input cables
- Verify the connection of the input current sensors
- Verify the connection on the adaption board
- Make sure all power supplies are switched on and the adaption board is proper supplied
- Replace input current sensors
- Replace adaption board
- Replace Control Block
- Verify the transformer winding resistance with a micro-ohmmeter

Clearing the Error Code

This detected error can be cleared manually with the **[Extended Fault Reset]** *H r F C* parameter after the cause has been removed.

[Mains Ground Error] *PWF 2*

Probable Cause

- Ground short circuit on the input of the drive

Remedy

- Verify all mains cable connections and perform an insulation test on the input cables
- Measure the mains voltage with a properly rated, electrically insulated tools. (SEPAM Digital Relay / Appropriate probes and Oscilloscope).
- Verify the input voltage measurement connection on the adaptation board on terminal X11.

Clearing the Error Code

This detected error can be cleared manually with the **[Extended Fault Reset]** *H r F C* parameter after the cause has been removed.

[Motor Ground Error] *PWF 3*

Probable Cause

- Ground short circuit on the output of the drive

Remedy

- Verify all motor cable connections and perform an insulation test on the motor cables and motor
- Verify the output voltage measurement connection on the adaptation board on terminal X12

Clearing the Error Code

This detected error can be cleared manually with the **[Extended Fault Reset]** *H r F C* parameter after the cause has been removed.

[PoC Fiber Error] *PWF 4*

Probable Cause

- Fiber optic cable on the adaption board or power cell not connected.
- Fiber optic cables are not connected properly
- Fiber optic cable bended or damaged.
- Adaption board / Control Block not working properly.
- Power cell not working properly (Control Board on power cell not working properly).

Remedy

- Verify the connection of all fiber optic cables.
- Clean the fiber connections
- Replace the adaption board or the fiber board.
- Replace the dedicated power cell.
- Replace the fiber optic cables.

Clearing the Error Code

This detected error can be cleared manually with the **[Extended Fault Reset]** *H r F C* parameter after the cause has been removed.

[PoC Supply Error] *PWF 5*

Probable Cause

- Power-cell fuse open.
- Power cell rectifier not working properly.

Remedy

Replace dedicated power cell

Clearing the Error Code

This detected error can be cleared manually with the **[Extended Fault Reset]** *H r F C* parameter after the cause has been removed.

[FPGA Internal Error] *P W F 6*

Probable Cause

Adaption board not working properly.

Remedy

● Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error requires a power reset.

[PoC Gate Driver Error] *P W F 7*

Probable Cause

● Power cell damaged - IGBT broken
● Power cell damaged - Gate Drive board damage
● Power cell damaged - Control board power supply is not working properly.
● High current

Remedy

● Measure the current on the output and verify that it is normal
● Replace the dedicated power cell if the detected error is permanent on the same power cell

Clearing the Error Code

This detected error can be cleared manually with the **[Extended Fault Reset]** *H r F C* parameter after the cause has been removed.

[PoC Fiber DOF Error] *P W F B*

Probable Cause

The adaptation board has detected a fiber optic communication DOF error between the adaptation board and power cell.

Wrong communication detected by power cell control board Rx fiber signal which is sent by Tx on Adaptation board.

- Fiber optic cable on the adaptation board or power cell is not connected properly.
- Fiber optic cable bended or damaged.
- Adaptation board / Control Block defective
- Inoperative Power cell defective.

Remedy

- Verify that all fiber optic cables are in good condition and the connections are done properly.
- Replace the dedicated power cell.
- Replace the fiber optic cable.

Clearing the Error Code

This detected error can be cleared manually with the **[Extended Fault Reset]** *H r F C* parameter after the cause has been removed.

[Rotation Angle Monit] *r A d F*

Probable Cause

The monitoring of the rotation angle has detected a too high deviation.

Remedy

- Check for mechanical problems in the system.
- Verify the settings of the monitoring function.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Motor short circuit] 5 C F 1

Probable Cause

Short-circuit or grounding at the drive output.

Remedy

- Verify the cables connecting the drive to the motor, and the motor insulation.
- Adjust the switching frequency.
- Connect chokes in series with the motor.
- Verify the adjustment of speed loop and brake.
- Increase the **[Time to restart]** t t r

Clearing the Error Code

This detected error requires a power reset.

[Ground Short Circuit] 5 C F 3

Probable Cause

- Short circuit or ground fault.
- Short circuit on a motor with long cables.
- Insulation error in the motor or in the cables.
- Inoperative Current transformer.

Remedy

- Check the cables connecting the drive to the motor and the motor insulation.

Clearing the Error Code

This detected error requires a power reset.

[Modbus Com Interruption] *SLF1*

Probable Cause

Communication interruption on the Modbus port.

Remedy

- Verify the communication bus.
- Verify the timeout.
- Refer to the Modbus user manual.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *Atr* or manually with the **[Fault Reset Assign]** *rSF* parameter after the cause has been removed.

[PC Com Interruption] *SLF2*

Probable Cause

Communication interruption with SoMove.

Remedy

Check the connection of the SoMove Software.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *Atr* or manually with the **[Fault Reset Assign]** *rSF* parameter after the cause has been removed.

[HMI Com Interruption] $SLF3$

Probable Cause

Communication interruption with the HMI Magelis.

Remedy

● Verify the HMI connection.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** Atr or manually with the **[Fault Reset Assign]** rSF parameter after the cause has been removed.

[HMI Comm Interrupt] $SLF4$

Probable Cause

● Modbus cable between HMI and Control Block not connected.
● **[Modbus 2 Timeout]** $tto2$ parameter setting too short.
● Modbus port on Control Block or HMI not working properly.
● Control block not working properly.
● HMI not working properly (Program not loaded before timeout occurred).

Remedy

● Verify the Modbus connection on the Control Block and HMI
● Make sure all Modbus parameter settings are correct
● Replace the Control Block / HMI
● Reload the HMI program
● Reload the Control Block firmware

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** rSF parameter after the cause has been removed.

[Motor Overspeed] *5 o F*

Probable Cause

- Instability or driving load too high.

Remedy

- Check the motor, gain and stability parameters.
- Verify the size of the motor/drive/load.

Clearing the Error Code

This detected error requires a power reset.

[Encoder Feedback Loss] *5 P F*

Probable Cause

- Encoder feedback signal missing.
- No signal on the pulse input, if the input is used for speed measurement.

Remedy

- Verify the error code value **[Encoder Fdbck Error]** *E n C E* .
- Verify the wiring between the encoder and the drive.
- Verify the encoder.
- Verify the encoder settings.
- Verify the wiring of the pulse input and the sensor used.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Torque timeout] *Srf*

Probable Cause

The torque control function is not able to regulate the torque within the configured dead band. The drive has switched to speed control for longer than **[Torque ctrl time out]** *rto*.

Remedy

- Verify the settings of the **[Torque control]** *tor-* function.
- Verify that there are no mechanical constraints.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *Atr* or manually with the **[Fault Reset Assign]** *rSF* parameter after the cause has been removed.

[Torque Limitation Error] *SSF*

Probable Cause

The drive was in torque limitation or current limitation state during **[Trq/I Limit Timeout]** *Sto*.

Remedy

- Verify the settings of the **[Torque limitation]** *toL-* function.
- Verify that there are no mechanical constraints.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *Atr* or manually with the **[Fault Reset Assign]** *rSF* parameter after the cause has been removed.

[Motor Stall Error] *5 t F*

Probable Cause

The stall monitoring function has detected an error.

The **[Motor Stall Error]** *5 t F* is triggered on the following conditions:
- The output frequency is smaller than the stalling frequency **[Stall Frequency]** *5 t P 3*
- The output current is higher than the stalling current **[Stall Current]** *5 t P 2*
- For a duration longer than the stalling time S**[tall Max Time]** *5 t P 1*.

Remedy

- Search for a mechanical blocking of the motor.
- Search for a possible cause of motor overload.
- Verify the settings of the monitoring function.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[AI1 Thermal Sensor Error] *t 1C F*

Probable Cause

The thermal monitoring function has detected an error of the thermal sensor connected to the analog input AI1:
- Open circuit, or
- Short circuit

Remedy

- Verify the sensor and its wiring.
- Replace the sensor.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[AI3 Thermal Sensor Error] *t 3 C F*

Probable Cause

The thermal monitoring function has detected an error of the thermal sensor connected to the analog input AI3:
● Open circuit, or
● Short circuit

Remedy

● Verify the sensor and its wiring.
● Replace the sensor.
● Verify the setting of **[AI3 Type]** *A ı 3 t* parameter.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[AI4 Thermal Sensor Error] *t 4 C F*

Probable Cause

The thermal monitoring function has detected an error of the thermal sensor connected to the analog input AI4:
● Open circuit, or
● Short circuit

Remedy

● Verify the sensor and its wiring.
● Replace the sensor.
● Verify the setting of **[AI4 Type]** *A ı 4 t* parameter

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[AI5 Thermal Sensor Error] *t 5 C F*

Probable Cause

The thermal monitoring function has detected an error of the thermal sensor connected to the analog input AI5:
● Open circuit, or
● Short circuit

Remedy

● Verify the sensor and its wiring.
● Replace the sensor.
● Verify the setting of **[AI5 Type]** *A i 5 t* parameter.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Encoder Th Sensor Error] *t E C F*

Probable Cause

The thermal sensor monitoring function has detected a thermal sensor on the encoder module analog input:
● Open circuit, or
● Short circuit.

Remedy

● Verify the sensor and its wiring.
● Replace the sensor.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[MotorWinding A Error] *t F A*

Probable Cause

The digital input assigned to **[MotorWinding A Assign]** *t F A A* is active for longer than **[MotorWinding A Delay]** *t F d A*.

Remedy

- Verify the connected device (motor winding thermal switch) and its wiring.
- Verify the motor load and the ambient temperature. Wait for the motor to cool down before restarting.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[MotorWinding B Error] *t F b*

Probable Cause

The digital input assigned to **[MotorWinding B Assign]** *t F A b* is active for longer than **[MotorWinding B Delay]** *t F d b*.

Remedy

- Verify the connected device (motor winding thermal switch) and its wiring.
- Verify the motor load and the ambient temperature. Wait for the motor to cool down before restarting.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[MotorBearing A Error] *t F C*

Probable Cause

The digital input assigned to **[MotorBearing A Assign]** *t F A C* is active for longer than **[MotorBearing A Delay]** *t F d C* .

Remedy

- Verify the connected device (motor winding thermal switch) and its wiring.
- Verify the motor load and the ambient temperature. Wait for the motor to cool down before restarting.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[MotorBearing B Error] *t F d*

Probable Cause

The digital input assigned to **[MotorBearing B Assign]** *t F A d* is active for longer than **[MotorBearing B Delay]** *t F d d* .

Remedy

- Verify the connected device (motor winding thermal switch) and its wiring.
- Verify the motor load and the ambient temperature. Wait for the motor to cool down before restarting.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[AI1 Th Level Error] $t H I F$

Probable Cause

The thermal sensor monitoring function has detected a high temperature on analog input AI1.

Remedy

- Search for a possible cause of overheating.
- Verify the settings of the monitoring function.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** $A t r$ or manually with the **[Fault Reset Assign]** $r 5 F$ parameter after the cause has been removed.

[AI3 Th Level Error] $t H 3 F$

Probable Cause

The thermal sensor monitoring function has detected a high temperature on analog input AI3.

Remedy

- Search for a possible cause of overheating.
- Verify the settings of the monitoring function.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** $A t r$ or manually with the **[Fault Reset Assign]** $r 5 F$ parameter after the cause has been removed.

[AI4 Th Level Error] *t H 4 F*

Probable Cause

The thermal sensor monitoring function has detected a high temperature on analog input AI4.

Remedy

- Search for a possible cause of overheating.
- Verify the settings of the monitoring function.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[AI5 Th Level Error] *t H 5 F*

Probable Cause

The thermal sensor monitoring function has detected a high temperature on analog input AI5.

Remedy

- Search for a possible cause of overheating.
- Verify the settings of the monitoring function.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Encoder Th Detected Error] *t H E F*

Probable Cause

The thermal sensor monitoring function has detected a high temperature on encoder module analog input.

Remedy

- Search for a possible cause of overheating.
- Verify the settings of the monitoring function.

Clearing the Error Code

This detected error requires a power reset.

[IGBT Overheating] *t J F*

Probable Cause

The thermal model of the IGBT thermal monitoring has detected an overheat. This function helps to protect the IGBT's.

Drive power stage overheating.

Remedy

- Check the motor load, the ventilation of the inverter and the ambient.
- Reduce the switching frequency.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r S F* parameter after the cause has been removed.

[Drive Overload] *t L o F*

Probable Cause

The **[Drive overload monit]** *o b r -* function has detected an error.

Remedy

● Verify the size of the load/motor/drive according to environment conditions.
● Verify the settings of the **[Drive Overload Monit]** *t L o L* parameter.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Autotuning Error] *t n F*

Probable Cause

● Special motor or motor whose power is not suitable for the drive.
● Motor not connected to the drive.
● Motor not stopped.

Remedy

● Verify that the motor/drive are compatible.
● Verify that the motor is connected to the drive during autotuning.
● If an output contactor is being used, verify that it is closed during autotuning.
● Verify that the motor is present and stopped during autotuning.

Clearing the Error Code

This detected error can be cleared manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has disappeared.

[Process Underload] *u L F*

Probable Cause

Process underload.

Remedy

- Verify and remove the cause of the underload.
- Verify the parameters of the **[Process underload]** *u L d -* function

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

[Supply Mains UnderV] *u 5 F*

Probable Cause

- Incorrect supply mains voltage.
- Important voltage dip
- Mains supply has been removed (emergency stop, power outage), when the drive was is running state.

Remedy

Verify the voltage and the parameters of **[Undervoltage handling]** *u 5 b*.

Clearing the Error Code

This detected error is cleared as soon as its cause has been removed.

[Mains Voltage Dip Error] *3 P F*

Remedy

Contact your local Schneider Electric representative.

Clearing the Error Code

This detected error can be cleared with the **[Auto Fault Reset]** *A t r* or manually with the **[Fault Reset Assign]** *r 5 F* parameter after the cause has been removed.

Glossary

C

CPLD

Complex Programmable Logic Device.

E

Error

Discrepancy between a detected (computed, measured, or signaled) value or condition and the specified or theoretically correct value or condition.

F

Factory setting

Factory settings when the product is shipped.

Fault

Fault is an operating state. If the monitoring functions detect an error, a transition to this operating state is triggered, depending on the error class. A "Fault reset" is required to exit this operating state after the cause of the detected error has been removed. Further information can be found in the pertinent standards such as IEC 61800-7, ODVA Common Industrial Protocol (CIP).

Fault Reset

A function used to restore the drive to an operational state after a detected error is cleared by removing the cause of the error so that the error is no longer active.

FPGA

Field-Programmable Gate Away.

M

Monitoring function

Monitoring functions acquire a value continuously or cyclically (for example, by measuring) in order to check whether it is within permissible limits. Monitoring functions are used for error detection.

MV

Medium Voltage

P

Parameter

Device data and values that can be read and set (to a certain extent) by the user.

PELV

Protective Extra Low Voltage, low voltage with isolation. For more information: IEC 60364-4-41.

PLC

Programmable logic controller.

PoC

Power Cell.

POE

Power Output Enable.

Power stage

The power stage controls the motor. The power stage generates current for controlling the motor.

PWM

Pulse Width Modulation.

W

Warning

If the term is used outside the context of safety instructions, a warning alerts to a potential error that was detected by a monitoring function. A warning does not cause a transition of the operating state.

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