Compact and Versatile Controller for SCADA & Telemetry Solutions

SCADAPack x70 & 47xi Smart RTUs

Unique Features

SCADAPack™ x70 Smart RTUs combine the monitoring and communications capabilities of a Remote Terminal Unit (RTU), with the processing and data-logging power of a Programmable Logic Controller (PLC), providing superior functionality wherever remote processes require automatic supervision and autonomous control.

SCADAPack 47xi Remote Smart RTUs and Controller with Integrated Edge Platform provide the full functionality of a smart RTU, an edge controller, and an embedded Linux computer; all in one rugged industrial device.

Green Premium™ ecolabel product – Sustainable performance, by design

se.com

Life Is On Schneider Electric™

Enhanced performance in oil/gas, water/wastewater, and wind/solar applications

SCADAPack x70 and 47xi Smart RTUs are the foundation for a range of solutions offering specific software and configuration tools, tailored to your needs in:

Digital Oil Field Solutions:

- Production automation and optimization
- Wellhead, pipeline, battery, and tank automation
- Leak detection/negative wave pressure calculation
- Protocol gateway (e.g. MQTT, Sparkplug B, OPC UA)
- Production and wellhead edge analytics

Water/Wastewater Solutions:

- Web application monitoring and control of remote sites
- Potable Water Distribution Networks
- Wastewater Collection Networks
- Lift Stations
- Water wells
- Irrigation systems
- Leakage detection
- Potable water and wastewater analytics

Wind/Solar Solutions:

- Substation control and monitoring
- Wind, solar, and radiation monitoring
- Meteorological analytics
- Device-positioning optimization

Flexible I/O, Communications & Processor Options

SCADAPack RTU	I/O					Communications				Processor	
	Analog Input[1]	Analog Output[1]	Digital Input[1]	Digital Output[1]	Frequency Input[1]	Serial Port	Ethernet Port	USB Device Port	USB Host Port	Dual RTU Real-Time Processor	Linux Edge Application Processor
470	4	0	4	2	4 (shared with DIs)	5	2	1	1	Y	N
474	12	2	20	12	8 (shared with DIs	5	2	1	1	Y	N
570	0	0	2	1	0	4	3	1	1	Y	N
575	6	2 (option)	18	9	8 (shared with DIs)	4	3	1	1	Y	N
574	8	2 (option)	18	11	0	4	3	1	1	Y	N
470i	4	0	4	2	4 (shared with DIs)	4	4	1	3	Y	Y
474i	12	2	20	12	12 (8 shared with DIs)	4	4	1	3	Y	Y

Footnote:

[1] Number of on-board I/O may be further expanded for any SCADAPack using Expansion I/O Modules. Refer to individual product data sheets for detailed specifications.

Schneider Electric

35 rue Joseph Monier
92500 Rueil-Malmaison, France
Email: RemoteOperations@se.com

www.se.com

Life Is On Schneider Electric

Part Number TBUL00001-40 v19

Green Premium™

Schneider Electric's commitment to deliver products with best-in-class environmental performance.

Green Premium™

More than 75% of our product sales offer superior transparency on the material content, regulatory information and environmental impact of our products:

- RoHS compliance
- REACH substance information
- Industry leading # of PEP's*
- Circularity instructions

Green Premium promises compliance with the latest regulations, transparency on environmental impacts as well as circular and low-CO_2 products.

CO2 and P&L impact through… Resource Performance

Green Premium brings improved resource efficiency throughout an asset's lifecycle. This includes efficient use of energy and natural resources, along with the minimization of CO_2 emissions.

Cost of ownership optimization through… Circular Performance

We're helping our customers optimize the total cost of ownership of their assets. To do this, we provide IoT-enabled solutions, as well as upgrade, repair, retrofit, and remanufacture services.

Peace of mind through… Well-being Performance

Green Premium products are RoHS and REACH-compliant. We're going beyond regulatory compliance with step-by-step substitution of certain materials and substances from our products.

Improved sales through… Differentiation

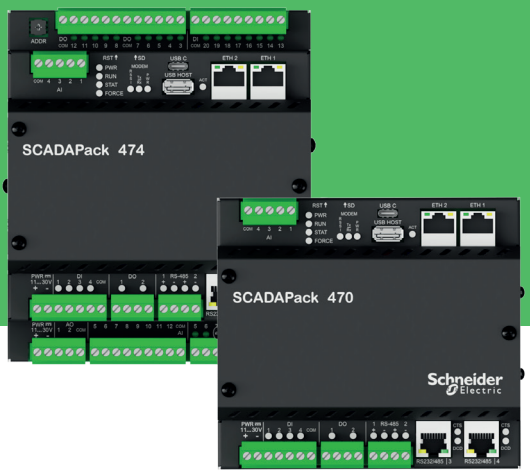
Green Premium delivers strong value propositions through third-party labels and services. By collaborating with third-party organizations we can support our customers in meeting their sustainability goals such as green building certifications.

Learn more about Green Premium

*PEP: Product Environmental Profile (i.e. Environmental Product Declaration)

SCADAPack 470 | 474

Remote Programmable Smart RTUs



Product at a glance

SCADAPack™ x70 is the latest generation of SCADAPack Smart RTUs. Optimized for remote operations, the SCADAPack 470 and 474 Smart RTUs are the newest models to be introduced in this new series.

Simple: SCADAPack RemoteConnect configuration software facilitates configuration, logic development, data logging, and diagnostics in a single application, helping to reduce costs and overhead associated with maintaining multiple software applications for managing a single device. The SCADAPack 47x has ready-to-use Realflo™ Oil and Gas Flow Computer and Realift™ artificial lift solutions.

Efficient: The SCADAPack x70 Logic Editor within RemoteConnect software is based on EcoStruxure™ Control Expert software components, allowing for code reuse and sharing between Schneider Electric Modicon™ PLCs and SCADAPack Smart RTUs.

Rugged: Designed with Cybersecurity and ruggedized communications in mind, SCADAPack 47x hardware features conformal-coated boards and wide operating temperatures of -40...70 °C (-40...158 °F). Class I, Div. 2 and Zone 2 hazardous area certifications are included.

Green Premium™ ecolabel product – Sustainable performance, by design

SCADAPack 470 | 474

Remote Programmable Smart RTUs

Product Highlights:

Flexible Protocol Implementation

- Open standard telemetry protocols such as DNP3 level 4 with Security Suite (Secure Authentication) and IEC 60870-5-104
- Easily associate Modbus™ and DNP3 protocols to database objects and variables
- DNP3 routing and Modbus Store and Forward facilitate communications bridge functionality using either protocol

Tagged (named) Object Database

- Improved readability and debugging of configuration and logic
- Easy-to-use object data logging

Microsoft® Excel Export and Import of Database Objects

- Create external templates for reuse and manipulation of configurations
- Reduce engineering time and costs for large systems with common configurations

SCADAPack x70 Logic Editor

- Based on EcoStruxure Control Expert (Unity Pro) software components with 5-language support for IEC 61131-3
- Code segment and function block export and import for code sharing between Schneider Electric Modicon PLCs and SCADAPack RTUs
- Leverage experience and personnel training across remote (RTU) and in-plant (PLC) projects

Remote Maintenance

- Update firmware, load/update logic, load configurations, and view diagnostics remotely or locally with RemoteConnect software
- Manage and configure multiple devices such as HART® instruments, actuators, variable frequency drives (VFDs), and other devices using plug-in DTMs for FDT2 or FDT1.2 within RemoteConnect software

Remote Ready Hardware

- 12...24 Vdc Input Power with input voltage monitor
- Wide operating temperature -40…70 °C (-40...158 °F)
- Conformal-coated circuit boards

Typical applications for SCADAPack 470/474 RTUs

Oil and Gas:

- Tank monitoring and automation
- Well test automation
- Well production and optimization
- Measurement

Water and Wastewater

- Leakage detection
- Equipment monitoring and control
- Water quality monitoring
- Irrigation
- DMAs (District Metering Areas), PMAs (Press. Monitoring Areas)
- Monitoring flow / level / pressure and temperature, etc.

and many others...

Solution Ready

- Available Realflo Oil and Gas flow computer
- Available Realift artificial lift control system

SCADAPack 470 | 474

Remote Programmable Smart RTUs

Configuring and programming SCADAPack 47x RTUs

RemoteConnect software

RemoteConnect software facilitates configuration, diagnostics, logic development, and device management:

- Locally through any of the communication ports (default: USB device port)
- Remotely through serial or TCP/IP networks and modems

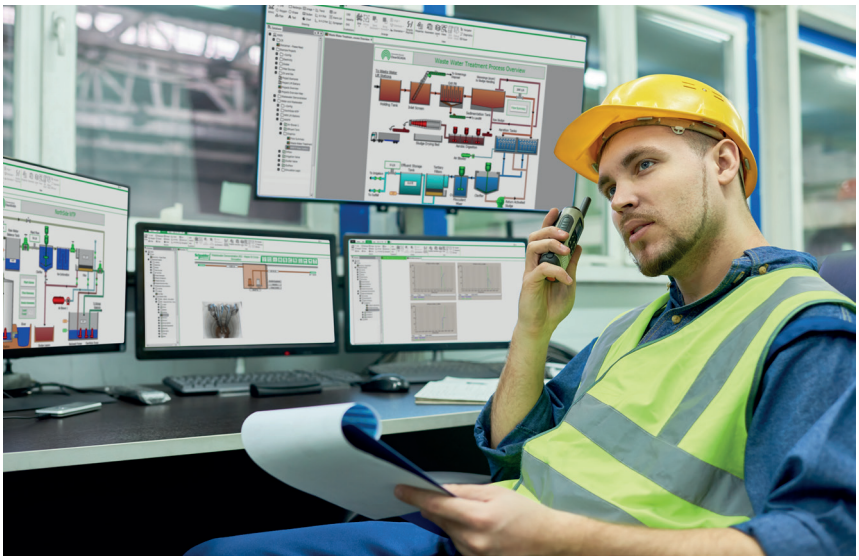
Device Management

- Upgrade of SCADAPack firmware
- Upgrade of I/O expansion module firmware[1]
- HART device configuration and data monitoring via vendor-supplied plug-in DTMs[2]
- Asset Management Software (AMS) TCP/IP network access to HART instruments and actuators via HART pass-through

Logic Development

RemoteConnect includes the SCADAPack x70 Logic Editor with which users can:

- Choose from five IEC 61131-3 compliant languages
- Use compiled run-time code for fast execution
- Import and export logic code segments for use in other SCADAPack projects or sharing[3] with Modicon PLC projects
- Perform online debugging and logic modifications from the SCADAPack x70 Logic Editor
- Develop and write logic to a running system without interruption to the logic
- Deploy new logic code between scans with minimal effect on execution time
- Using the EFB Toolkit, C programming can be used to create custom functions and function blocks



Configuration

- Use descriptive naming of objects to enhance development, debugging, and translation to host systems
- Import or export configurations for templating and bulk editing externally in Excel
- Group, filter, and sort objects for easy editing and viewing with RemoteConnect software object browsers

Datalogging

- RemoteConnect includes the SCADAPack x70 data logger. This feature can be used to provide a detailed record of a remote asset when investigating its operation remotely or on site.
- Use the RemoteConnect object browser to configure database objects for periodic or event-driven data logging.
- RemoteConnect's visualization tool can be used to display logged data when connected to the SCADAPack.
- Store up to 1,000,000[4] event records using internal memory and over 100,000,000 records using a USB drive or MicroSD card.

Diagnostics

- View system information and status from object browsers within RemoteConnect software
- View advanced diagnostics using the Telnet command line interface, including built-in protocol analyzers for DNP3, IEC 60870-5-104 and Modbus

SCADAPack 470 | 474

Remote Programmable Smart RTUs

Specifications

Architecture	
Processor	Dual ARM® Cortex® A7, plus ARM Cortex M3; 500 Mhz
Memory	• SRAM – 4 MB, battery backed static RAM • DDR3 RAM – 256 MB, dynamic RAM • NAND Flash – 256 MB, flash memory
Events and datalogging	• DNP3 and IEC 60870-5-104 events: 40,000[5], store up to 1,000,000 events using internal file system • Store up to 100,000,000 events using USB drive or MicroSD card

Database capacity	• Maximum number of database objects: Typically 15,000
	• Maximum number of database objects linked with logic programming: Typically 6,000
	• Object memory:
	  • Typical 2,600,000 bytes (event buffer at 5000 events)
	  • Maximum: 2,756,800 bytes (event buffer at 100 events)
	  • Minimum: 1,480,000 bytes (event buffer at 40,000 events)

Maximum DNP3 Outstation devices[5]	Approximately 90
Maximum DNP3 Outstation objects[5]	Approximately 15,000[6] across DNP3 Outstation devices
Maximum Modbus Server Devices[7]	150
Maximum objects mapped from Modbus devices	3,000[6]
File system storage	Approximately 70 MB
USB host storage	• Single-partition plug-in USB mass storage devices up to 32 GB[8] • File format: FAT32
MicroSD card	Up to 32 GB formatted with the FAT32 file system. MicroSD cards larger than 32 GB can be used by preparing a 32 GB volume on the card.

Communications	
Serial Ports: 1, 2	RS-485: 2-wire half-duplex operation. 4-pin removable terminal block, maximum baud rate 115,200 bps.
Serial Ports: 3, 4	• RS-232: TxD, RxD, CTS, RTS, DCD, DTR • RS-485: 2-wire half-duplex operation • 8-pin modular RJ45 jack, maximum baud rate 115,200 bps
Serial Port: 5	• RS-232: TxD, RxD, CTS, RTS, DCD, DTR • Switched power out for modem, 350 mA available at RTU inputs voltage 12...24 Vdc, 8-pin removable terminal block under top cover.
Serial Protocols	DNP3 level 4 outstation/client and peer-to-peer, Modbus RTU server/client
Ethernet Ports: Eth1, Eth2	8-pin modular RJ45 jack, 10/100 Mbps UTP (10/100 Base-T), transformer-isolated, switched or independent ports
IP Protocols	• DNP3 level 4 in TCP or in UDP Controlling Station/Outstation and peer-to-peer, • Modbus/TCP Server, Modbus/TCP Client • IEC 60870-5-104 controlled station • Telnet Server, FTP Server
USB Device Port	• USB 2.0-compliant C-type receptacle • Supports communications at 1.5 Mb/s and 12 Mb/s
USB Host Port	• USB 2.0-compliant A-type receptacle • Supports USB mass storage devices up to 32 GB • Supports communications at 1.5 Mb/s and 12 Mb/s

SCADAPack 470 | 474

Remote Programmable Smart RTUs

Specifications – cont'd

General

Logic Control	RemoteConnect software (SCADAPack x70 Logic with five IEC 61131-3 languages)
I/O Terminations	3.3...0.08 mm^2 (12...28 AWG), solid or stranded
Dimensions	• SCADAPack 470: 142 mm W x 127 mm H x 67 mm D (5.59 in. x 5.00 in. x 2.64 in.) • SCADAPack 474: 142 mm W x 166 mm H x 88 mm D (5.59 in. x 6.54 in. x 3.46 in.)
Packaging	• Corrosion-resistant; zinc-plated steel base and stainless steel cover with black enamel paint • G3 conformal-coated circuit boards
Environment	• -40…70 °C (-40…158 °F) operating temperature when the unit is mounted horizontally on a vertical surface • -40…65 °C (-40…149 °F) operating temperature when the unit is mounted in any other position • -40…85 °C (-40…185 °F) storage temperature • 5...95% relative humidity, non-condensing • Pollution Degree 2, Installation Category I, Indoor use
Shock	IEC 61131-2 ½ sine, 15 ms, 15 g
Vibration	• IEC 61131-2 • 5...8.4 Hz: Amplitude controlled, 7.0 mm (0.28 in) peak-to-peak • 8.4...150 Hz: Acceleration controlled, 1.0 g peak

Power Supply

Input voltage	• Rated Voltage 14…29 Vdc • Turn-on 10…11.5 Vdc • Turn-off 9…10 Vdc
Power requirements	• 2.8 W (SCADAPack 470) • 4 W (SCADAPack 474)
Maximum power input to controller (excluding modem)	8.4 W

Certifications

Industrial Standards	Requirements specific to the SCADAPack functional characteristics, immunity, robustness, and safety: • IEC/EN 61131-2 • CAN/CSA 22.2 No. 61010-1-12 and CAN/CSA 22.2 No. 61010-2-201 • UL 61010-1 and UL 61010-2-201
CE Marking Compliance	• For the latest information regarding product compliance with European Directives for CE marking, refer to the EU Declaration of Conformity issued for your product at se.com • For the latest information regarding product environmental compliance visit the Schneider Electric Check a Product portal at https://checkaproduct.se.com/
Installation in Classified Ex Area	• North America: Hazardous locations Class I, Division 2, groups A, B, C, and D, T4 and Class I, Zone 2, T4, -40 °C ≤ Tamb ≤ 70 °C (-40 °F ≤ Tamb ≤ 158 °F) and Class I, Zone 2, IIC T4 according to CSA C22.2 No. 213-17, UL 12.12.01 • ATEX, UKEX: Zone 2, II 3G, Ex ec nC IIC T4 Gc according to EN IEC 60079- 0, EN IEC 60079-7 and EN IEC 60079-15 • IECEx: Zone 2, Ex ec nC IIC T4 Gc according to IEC 60079- 0, IEC 60079-7 and IEC 60079-15 • For Eurasian Economic Union: EAC
Specific Countries	• For Australia and New Zealand: ACMA requirements for RCM marking • For United States: FCC Part 15 Subpart B Class A

SCADAPack 470 | 474

Remote Programmable Smart RTUs

Specifications – cont'd

Digital and Analog Inputs/Outputs

SCADAPack Smart RTU	Digital inputs 12...24 Vdc		Digital outputs		Pulse counter inputs (shared with DIs)		Analog inputs		Analog outputs
	DI 1...4	DI 5...20	DO 1...2	DO 3...12	DI 1...4	DI 5...12	AI 1...4	AI 5...12	AO 1...2
470	4	-	2	-	4	-	4	-	-
474	4	16	2	10	4	8	4	8	2

Digital Inputs	DI 1...4 12...24 Vdc DI 5...20 (SCADAPack 474 only) 12…24 Vdc
Pulse Counter Inputs	DI 1...4 Max. 10 kHz (@ 50% duty cycle) Built-in turbine preamplifier[10] for direct connection to turbine coils using short, shielded cable only. Shared with first 8 digital input channels on lower I/O board DI 5...8 (SCADAPack 474 only) Max. 1.5 kHz (@ 50% duty cycle) DI 9...12 (SCADAPack 474 only) Max. 150 Hz (@ 50% duty cycle)
Digital Outputs	DO 1...2 Form A, NO (Normally Open) relays, 2 A @ 30 Vdc, DO 3...12 (SCADAPack 474 only) Form A, NO (Normally Open) relays, 2 A @ 30 Vdc
Analog Inputs	AI 1...4 0…20 mA, 4…20 mA, 0…5 Vdc, 1…5 Vdc, 12-bit resolution, unipolar, non-isolated, voltage/current selectable by software, configurable for 30 mSec high speed update rate AI 5...12 (SCADAPack 474 only) 0…20 mA, 4…20 mA, 0…5 Vdc, 1…5 Vdc, 24-bit resolution, single-ended, isolated from logic and chassis. Filtering configuration 'none' results in fast sampling @100 mSec total for all 8 channels, '50/60Hz' filter configuration results in sampling @ 500mSec for all 8 channels
Analog Outputs	AO 1...2 (SCADAPack 474 only) 0…20 mA, 4…20 mA (voltage output with external resistor), 12-bit resolution over 0…20 mA range, single-ended, isolated from logic and chassis
Internal (System) Analog Inputs	• Input power supply voltage monitor, 36 Vdc full scale • Memory/RTC battery voltage monitor • Internal temperature monitor, measurement range -40…75 °C (-40...167 °F)
Clock calendar	±15 seconds per month at -40…70 °C (-40...158 °F)

Additional I/O

Supported Modules	• Supported modules: 5304, 5405, 5410, 5414, 5415, 5505, 5506, 5606, 5607, 6601, 6602, 6607 • When SCADAPack 47x controller is used with 5000-series I/O Expansion modules, order one Inter Module Cable (IMC) adaptor cable (ref. TBUM297138), to adapt from 20 signal lines (used by SCADAPack x70 Smart RTUs) to 16 signal lines (used by 5000-series IO modules) • Maximum number of external expansion modules per unit: 15
I/O Expansion Limits[9]	• Refer to the SCADAPack x70 Documentation Set > Hardware Manuals for further details. • Maximum intermodule cable length (not including the short cables that come with each module) is 1.82 m (75 in.)

SCADAPack 470 | 474

Remote Programmable Smart RTUs

Model Code

TBUP474-UA50-BB00S is an example of a SCADAPack 474 part number using the model codes below

Code	Select: Hardware platform
TBUP470U	SCADAPack 470, 32-bit controller, Dual Core, SCADAPack x70 Firmware (RemoteConnect Configuration & IEC 61131-3 programming software, included)
TBUP474U	SCADAPack 474, 32-bit controller, Dual Core comes with additional I/O, SCADAPack x70 Firmware (RemoteConnect Configuration & IEC 61131-3 programming software, included)

Code	Select: SCADA Security
A	Standard security features, includes DNP3 Secure Authentication SAv2 (Security Administrator application required)

Code	Select: Protocol Option
5	DNP3 Serial/IP client/outstation/peer-to-peer, Modbus RTU/TCP client/server, TCP/IP, and IEC 60870-5-104

Code	Select: License Option
0	Standard DNP3 features, includes DNP3 Data Concentrator Controlling Station License

Code	Select: Analog & Digital Inputs/Outputs
AA	SCADAPack 470: • 4 Analog Inputs, selectable as 0…20 mA, 4…20 mA, 0…5 Vdc, 1…5 Vdc • 4 Digital Inputs (12...24 Vdc) • 2 Digital Outputs Form A, NO (Normally Open) relays
BB	SCADAPack 474, adds: • 8 Analog Inputs, factory-shipped selectable as 0…20 mA, 4…20 mA, 0…5 Vdc, 1…5 Vdc • 2 Analog Outputs, selectable as 0...20 or 4...20 mA • 16 Digital Inputs (12...24 Vdc) • 10 Digital Outputs Form A NO (Normally Open) relays

Code	Future Option
0	None

Code	Select: Realflo Flow Computer - Flow Run License Options
0	None
3	3 Runs - any combination of gas, liquid or water totaling 3 runs (gas runs include gas transmission option)
6	6 Runs - any combination of gas, liquid or water totaling 6 runs (gas runs include gas transmission option)
T	12 Runs - any combination of gas, liquid or water totaling 12 runs (gas runs include gas transmission option)
V	20 Runs - any combination of gas, liquid or water totaling 20 runs (gas runs include gas transmission option)

Code	Select: Certifications
S	• North America: Hazardous locations Class I, Division 2, groups A, B, C, and D, T4 and Class I, Zone 2, T4, -40 °C ≤ Tamb ≤ 70 °C (-40 °F ≤ Tamb ≤ 158 °F) and Class I, Zone 2, IIC T4 according to CSA C22.2 No. 213-17, UL 12.12.01 • ATEX, UKEX: Zone 2, II 3G, Ex ec nC IIC T4 Gc according to EN IEC 60079- 0, EN IEC 60079-7 and EN IEC 60079-15 • IECEx: Zone 2, Ex ec nC IIC T4 Gc according to IEC 60079- 0, IEC 60079-7 and IEC 60079-15 • For Eurasian Economic Union: EAC

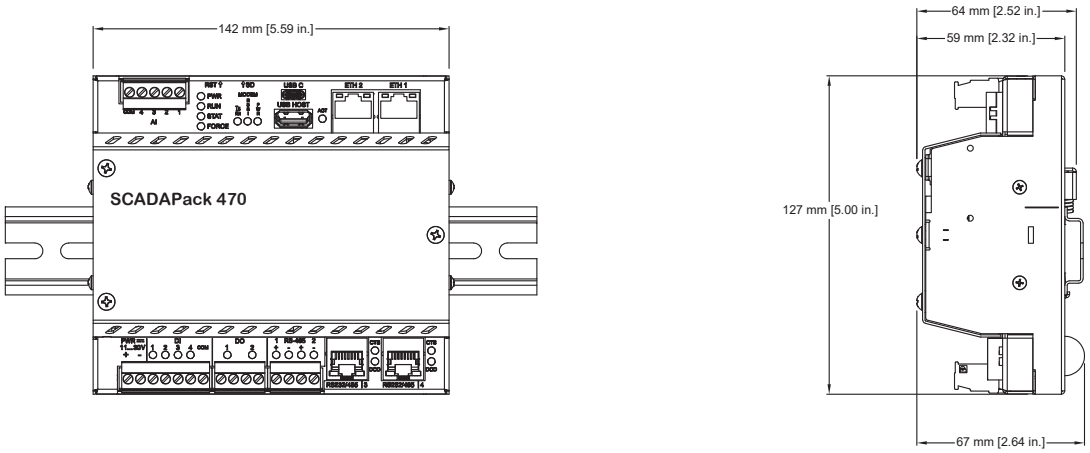
SCADAPack 470 | 474

Remote Programmable Smart RTUs

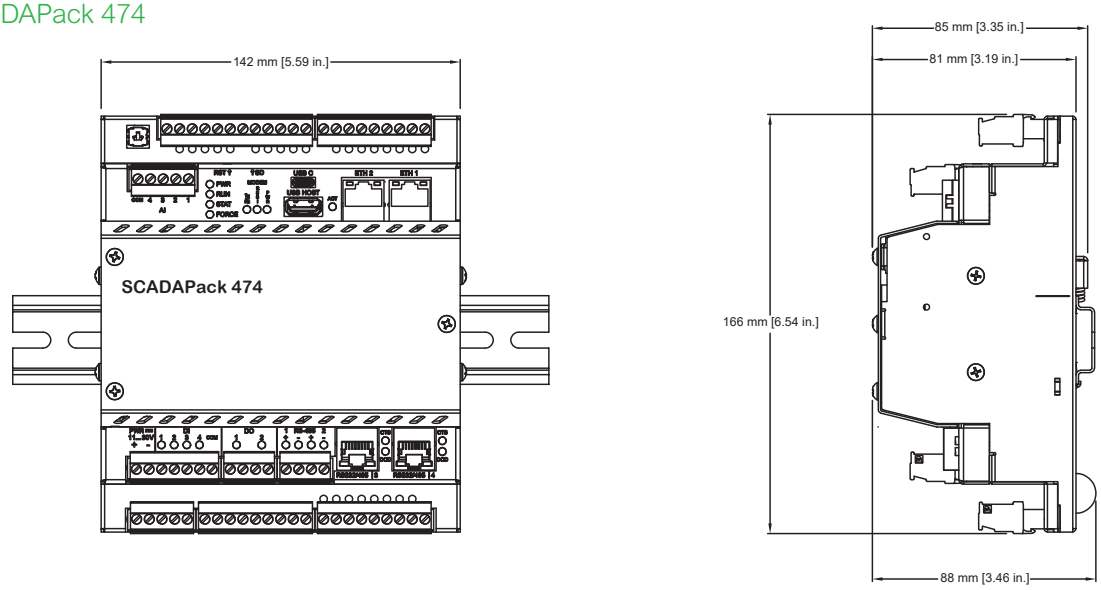
Accessories

Part Number	Description
TBUM297310	SCADAPack 47x Connector Kit - five complete sets of spare connectors for SCADAPack 470 and 474 RTUs, and 6607 I/O expansion module
TBUM297147	SCADAPack Rod Pump Controller, Factory
TBUM297148	SCADAPack Rod Pump Controller, Field Upgrade

Dimensions - SCADAPack 470



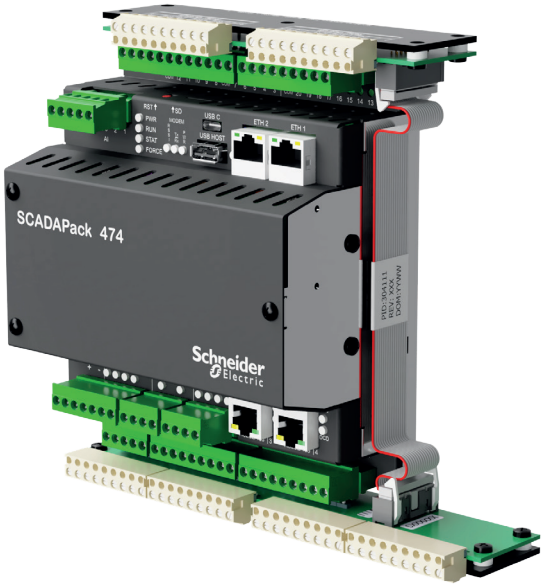
Dimensions - SCADAPack 474



SCADAPack 470 | 474

Remote Programmable Smart RTUs

Terminal Adaptors



Optional terminal adaptors provide the possibility for drop-in wiring replacement of existing SCADAPack P1, or SCADAPack P4 RTUs. This approach can save substantial time and costs when upgrading existing panels to SCADAPack 474.

The terminal adaptors provide pin headers that accept the older style 'gray' plug-in terminal blocks. The adaptors position the terminal headers to approximately the same physical position as they are on the existing SCADAPacks. If panel space allows, and the wiring scheme is compatible with the terminal adaptors, the SCADAPack 474 can be placed into the existing panel, and existing wiring to the lower I/O board can be plugged onto the terminal adaptors without removing the wires from the terminal blocks.

For further details on the TBUM297915 terminal adaptor kit, refer to its data sheet (TBULM08038-10).

1. I/O expansion module firmware upgrades are supported on 6xxx modules only.
2. DTM is Device Type Manager – vendor-supplied device driver for device-specific configuration and data display. RemoteConnect software is an FDT1.2 (Field Device Tool version 1.2) and FDT2 (Field Device Tool version 2) container for compatible DTMs.
3. Sharing of logic code does not include hardware specific functions or system variables that are not common to both platforms.
4. Internal memory can be configured to limit internal event storage. External events are stored on a device formatted to 32 GB.
5. Polled by the SCADAPack when it is operating as a DNP3 Controlling Station
6. Varies depending on object types, event storage, and integrated application memory usage.
7. Refer to product manual for details as actual maximum number of Modbus server devices depends on polling method(s) and port type (serial or Ethernet).
8. Larger USB mass storage devices may be formatted to 32 GB FAT32.
9. Additional power supply modules (model 5103 or 6103) may be required for additional bus power, depending on how many expansion modules are included on the bus.
10. Turbine preamplifier supported on DI1 and DI2 only.

Note: Refer to the SCADAPack x70 Documentation Set for further details.

Schneider Electric

35 rue Joseph Monier
92500 Rueil-Malmaison, France
Email: RemoteOperations@se.com

www.se.com

Life Is On Schneider Electric

Part Number: TBULM08030-06 v36

Green Premium™

Schneider Electric's commitment to deliver products with best-in-class environmental performance.

Green Premium™

More than 75% of our product sales offer superior transparency on the material content, regulatory information and environmental impact of our products:

- RoHS compliance
- REACH substance information
- Industry leading # of PEP's*
- Circularity instructions

Green Premium promises compliance with the latest regulations, transparency on environmental impacts as well as circular and low-CO_2 products.

CO2 and P&L impact through… Resource Performance

Green Premium brings improved resource efficiency throughout an asset's lifecycle. This includes efficient use of energy and natural resources, along with the minimization of CO_2 emissions.

Cost of ownership optimization through… Circular Performance

We're helping our customers optimize the total cost of ownership of their assets. To do this, we provide IoT-enabled solutions, as well as upgrade, repair, retrofit, and remanufacture services.

Peace of mind through… Well-being Performance

Green Premium products are RoHS and REACH-compliant. We're going beyond regulatory compliance with step-by-step substitution of certain materials and substances from our products.

Improved sales through… Differentiation

Green Premium delivers strong value propositions through third-party labels and services. By collaborating with third-party organizations we can support our customers in meeting their sustainability goals such as green building certifications.

Learn more about Green Premium

*PEP: Product Environmental Profile (i.e. Environmental Product Declaration)

SCADAPack 470i | 474i

Remote Smart RTU and Controller with Integrated Edge Platform

Product at a glance

The SCADAPack™ 470i and 474i combine the SCADAPack x70 Smart RTU platform with a Linux-based application processor. Having cybersecurity at their core, they provide the full functionality of a Smart RTU, an edge controller, and an embedded Linux computer; all in one rugged industrial device.

The SCADAPack 470i and 474i are configured using RemoteConnect, include a web server, and are designed for solution development by users employing the large ecosystem of tools, forums, and libraries available for rapid development on embedded Linux devices. Tools such as Node-RED® can be used to support communications protocols such as MQTT®, Sparkplug® B, and OPC® UA. A software development kit is available to support C/C++ development and containers can be used for development in languages such as Python™.

Industrial-hardened hardware supports operating temperatures of -40...70 °C (-40...158 °F), has robust vibration ratings, and cULus Class I, Division 2 and ATEX/IECEx Zone 2 hazardous area certifications. The SCADAPack x70 uses components that will be available in the long term, making them the remote IoT edge platform of choice for many years to come.

Green Premium™ ecolabel product – Sustainable performance, by design

SCADAPack 470i | 474i

Remote Smart RTU and Controller with Integrated Edge Platform

Product Highlights:

Edge Solutions

- Use Linux as a rapid development environment for solutions using higher level programming languages such as C/C++ or Python, providing a low-power open computing platform and Smart RTU in a single box
- Employ USB devices with Linux driver support such as cameras, microphones, WiFi dongles and more, to extend the capability of the RTU
- Provide toolless user interfaces for operators to monitor and control sites by developing secure custom web applications to oversee the RTU's operations
- Develop and deploy edge analytics solutions using Python
- Add ready-made solutions directly, or by using containers

Flexible Communications

- Employ open-standard telemetry protocols such as Modbus™, IEC 60870-5-104, and DNP3 level 4 Secure Authentication
- Bridge communications using DNP3 or IEC 60870-5-104 routing and Modbus Store and Forward
- Use tools such as Node-RED[1] to support IoT protocols such as OPC UA, MQTT, and Sparkplug B
- Included web server provides access to remote operation status using PC or mobile web browser
- Develop custom web applications
- Develop custom communication protocol drivers using the Linux rapid development environment

Powerful, Smart RTU

- Tagged (named) object databases allows I/O, configuration, logic, and application information to be communicated using open standard telemetry protocols such as Modbus, IEC 60870-5-104, and DNP3 and exchanged with Linux applications and IoT protocols
- Create IEC 61131-3 logic, with 5-language support, and password protection using the SCADAPack x70 Logic Editor
- Leverage experience and personnel training across remote (RTU) and in-plant (PLC) projects by sharing IEC 61131-3 logic between SCADAPack x70 RTUs and Modicon™ PLCs
- Update firmware, load/update logic, load configurations, and view diagnostics remotely or locally with RemoteConnect configuration software
- Available applications including the Realflo™ Oil, Gas, liquids, and CO_2 flow computer, and Realift™ pump off controller

Security at the Edge

- Control IP communications using included IP firewall and Network Address Translation (NAT) for RTU communications and Linux applications
- Ruggedized IP communications and RTU operations tested to comply with Achilles® Level 2 and Synopsis Defensics™
- Includes DNP3 Secure Authentication Level 2 support
- Planned compliance with IEC 62443 SL1 industry cybersecurity standard
- Use tools such as Node-RED[1] to employ secure IoT protocols
- SDK and other features help to support secure development of Linux applications
- Password-protection for access to SCADAPack configuration

1. Node-RED is a flow-based programming tool maintained and authored by the OpenJS Foundation & Contributors, and which can be used on a SCADAPack 470i and SCADAPack 474i.

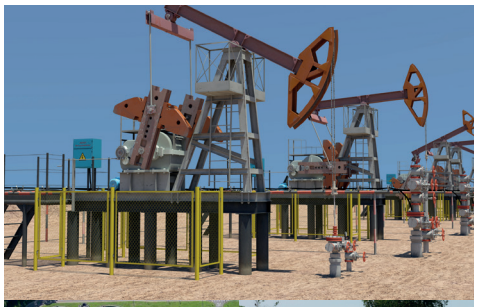
SCADAPack 470i | 474i

Remote Smart RTU and Controller with Integrated Edge Platform

Product Highlights cont'd:

Rugged Hardware Optimized for Remote Deployment

- 11...30 Vdc Input Power with input voltage monitor
- Low power consumption
- Wide operating temperature -40...70 °C (-40...158 °F)
- G3 conformal-coated circuit boards
- Certified for use in hazardous locations (cULus Class I, Division 2 and ATEX/IECEx Zone 2)



Typical Applications

Oil and Gas

- Production automation and optimization
- Wellhead, pipeline, battery, and tank automation
- Leak detection/negative wave pressure calculation
- Protocol gateway (e.g. MQTT, Sparkplug B, OPC UA)
- Production and wellhead edge analytics

Water & Wastewater

- Web application monitoring and control of remote sites
- Potable Water Distribution Networks
- Wastewater Collection Networks
- Lift Stations
- Water wells
- Irrigation systems
- Leakage detection
- Potable water and wastewater analytics

Wind and Solar

- Substation control and monitoring
- Wind, solar, and radiation monitoring
- Meteorological analytics
- Device-positioning optimization

Configuring and Programming

RemoteConnect configuration software

RemoteConnect configuration software facilitates configuration, diagnostics, logic development, and device management:

- Locally through any of the communication ports (default: USB device port)
- Remotely through serial or TCP/IP networks and modems

Configuration

- Use descriptive naming of objects to enhance development, debugging, and translation to host systems
- Import or export configurations for templating and bulk editing externally in Microsoft® Excel
- Group, filter, and sort objects for easy editing and viewing with RemoteConnect configuration software object browsers

SCADAPack 470i | 474i

Remote Smart RTU and Controller with Integrated Edge Platform

Linux Development

- SCADAPack 470i and 474i SDK supports the development of applications using C/C++
- Develop solutions in languages such as Python using Docker containers
- Deploy solutions directly to Linux using Docker containers
- Develop and debug on a Linux environment offline, in conjunction with live connection to SCADAPack 470i/474i Linux database, or online
- Leverage skills, training, and code by exploiting the large online ecosystem of libraries, forums, sample code to develop solutions quickly and easily with standard Linux and Raspberry PI®-style development environments

Logic Development (SCADAPack x70 Logic Editor)

- Employ all five IEC 61131-3 languages
- Uses compiled run-time code for fast execution
- Import and export logic code segments for use in other SCADAPack projects or sharing with Modicon PLC projects
- Perform online debugging and logic modifications from the SCADAPack x70 Logic Editor
- Develop and write logic to a running system without interruption to the logic

Web Application Development

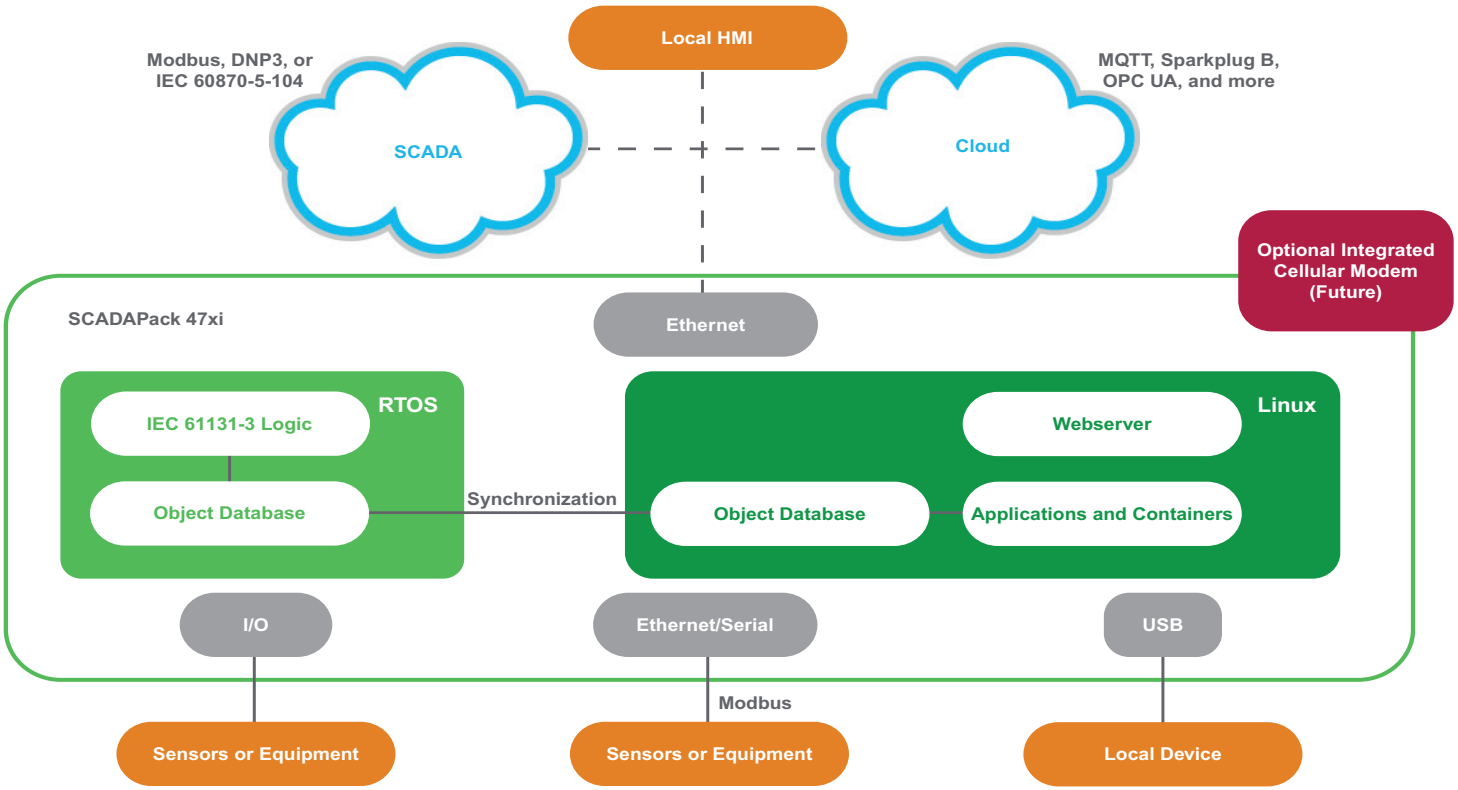
- Develop custom web applications using EcoStruxture™ RTU Operations Expert and Node-RED[1]
- Develop custom web applications using included NGINX web server
- Create web applications using Role Based Access Control with LDAP support available in Ecostruxture RTU Operations Expert

Diagnostics

- View system information and status from object browsers within RemoteConnect configuration software
- View advanced diagnostics using the Telnet command line interface, including built-in protocol analyzers for DNP3, IEC 60870-5-104 and Modbus
- View system information and status from a web browser

Device Management

- Upgrade of SCADAPack and I/O expansion firmware
- Deploy custom device drivers and custom extensions using Linux application environment



SCADAPack 470i | 474i

Remote Smart RTU and Controller with Integrated Edge Platform

Specifications

Architecture	
Processors	RTU Real-time processor: • Dual ARM® Cortex® A7; 500M Hz, plus ARM Cortex M3 • 32-bit low power consumption CPU Linux Edge Application processor: • Dual ARM Cortex A7; 500 MHz • 32-bit low power consumption CPU
Memory	RTU Real-time processor: • SRAM – 4 MB, battery backed static RAM • DDR3 RAM – 256 MB, dynamic RAM • NAND Flash – 256 MB, flash memory Linux Edge Application processor: • DDR3 RAM – 1 GB, dynamic RAM • NAND Flash – 1 GB, flash memory
File System Storage	RTU Real-time processor: • Approximately 70 MB user storage • Single-partition plug-in USB mass storage devices up to 32 GB FAT32 • Single-partition plug-in MicroSD card up to 32 GB mass storage Linux Edge Application processor: • Dual internal NAND Flash operating system image for robustness • Approximately 500 MB internal user application and storage • MicroSD card up to 1 TB mass storage • USB mass storage devices up to 1 TB

Data Capacity	RTU Real-time operating system:
	• Maximum DNP3 and IEC60870-5-104 events: 100,000[2]
	• Data Logging Capacity:
	  • Up to 1 million datalog events in internal memory
	  • Up to 250 million datalog events in external media
	• Database Capacity
	  • Maximum number of database objects: Typically 15,000
	  • Maximum number of database objects linked with logic programming: Typically 6,000
	  • Object memory:
	  • Typical 2,600,000 bytes (event buffer at 5000 events)
	  • Maximum: 2,756,800 bytes (event buffer at 100 events)
	  • Minimum: 1,480,000 bytes (event buffer at 40,000 events)
	  • Maximum DNP3 Outstation devices[3]: Approximately 90
	  • Maximum DNP3 Outstation objects[3]: Approximately 15,000 across DNP3 Outstation devices
	  • Maximum Modbus Server Devices when polled using the configurable Modbus Scanner: 150
	  • Maximum objects mapped from Modbus devices: 3,000

Serial Ports: 1, 2	RS-485: 2-wire half-duplex operation. 4-pin removable terminal block, maximum baud rate 115,200 bps
Serial Ports: 3, 4	• RS-232: TxD, RxD, CTS, RTS, DCD, DTR • RS-485: 2-wire half-duplex operation • 8-pin modular RJ45 jack, maximum baud rate 115,200 bps
Serial Protocols	DNP3 subset level 4 outstation with DNP3 client and peer-to-peer, Modbus RTU server/client. Custom protocols can be developed
Ethernet Ports: 1, 2, 3, 4	8-pin modular RJ45 jack, 10/100 Mbps UTP (10/100 Base-T), transformer-isolated, independent ports
IP Protocols	• DNP3 subset level 4 in TCP or in UDP outstation with DNP3 client and peer-to-peer capability • Modbus/TCP Server, Modbus/TCP Client • IEC 60870-5-104 controlled station • Secure SSH server, Secure HTTPS Web server, Telnet Server, FTP Server
USB Device Port	USB 2.0-compliant C-type receptacle
USB Host Ports	• Port 1: USB 2.0-compliant A-type receptacle, supports USB mass storage devices up to 32 GB • Ports 2, 3: USB 2.0-compliant A-type receptacle, available to Linux

2. Reduced if database objects exceed approximately 2,000 objects
3. Polled by the SCADAPack when it is operating as a DNP3 Controlling Station

SCADAPack 470i | 474i

Remote Smart RTU and Controller with Integrated Edge Platform

Specifications – cont'd

General	
Logic Control	RemoteConnect software (SCADAPack x70 Logic with five IEC 61131-3 languages)
I/O Terminations	3.3...0.08 mm^2 (12...28 AWG), solid or stranded
Dimensions	• SCADAPack 470i: 142 mm W x 126 mm H x 68 mm D (5.6 in. x 4.9 in. x 2.7 in.) • SCADAPack 474i: 142 mm W x 167 mm H x 89 mm D (5.6 in. x 6.6 in. x 3.5 in.)
Packaging	• Corrosion-resistant; zinc-plated steel base and stainless steel cover with black enamel paint • Conformal-coated circuit boards
Environment	• -40…70 °C (-40…158 °F) operating temperature when the unit is mounted horizontally on a vertical surface • -40…65 °C (-40…149 °F) operating temperature when the unit is mounted in any other position • -40…85 °C (-40…185 °F) storage temperature • 5...95% relative humidity, non-condensing • Pollution Degree 2, Installation Category I, Indoor use
Shock	IEC 61131-2 ½ sine, 15 ms, 15 g
Vibration	• IEC 61131-2 • 5...8.4 Hz: Amplitude controlled, 7.0 mm (0.28 in) peak-to-peak • 8.4...150 Hz: Acceleration controlled, 1.0 g peak

Power Supply	
Input voltage	• Rated Voltage 14…29 Vdc • Turn-on 10…11.5 Vdc • Turn-off 9…10 Vdc
Power requirements	• 4.8 W (SCADAPack 470i) • 6 W (SCADAPack 474i)
Maximum power input to controller (excluding modem)	10.5 W

Certifications	
Industrial Standards	Requirements specific to the SCADAPack functional characteristics, immunity, robustness, and safety: • IEC/EN 61131-2 • CAN/CSA 22.2 No. 61010-1-12 and CAN/CSA 22.2 No. 61010-2-201 • UL 61010-1 and UL 61010-2-201
CE Marking Compliance	• For the latest information regarding product compliance with European Directives for CE marking, refer to the EU Declaration of Conformity issued for your product at se.com • For the latest information regarding product compliance with RoHS, WEEE directives and REACH regulation, visit the Schneider Electric Check a Product portal at https://checkaproduct.se.com/
Installation in Classified Ex Area	• North America: Hazardous locations Class I, Division 2, groups A, B, C, and D, T4 and Class I, Zone 2, T4, -40 °C ≤ Tamb ≤ 70 °C (-40 °F ≤ Tamb ≤ 158 °F) and Class I, Zone 2, IIC T4 according to CSA C22.2 No. 213-17, UL 12.12.01 • ATEX, UKEX: Zone 2, II 3G, Ex ec nC IIC T4 Gc according to EN IEC 60079- 0, EN IEC 60079-7 and EN IEC 60079-15 • IECEx: Zone 2, Ex ec nC IIC T4 Gc according to IEC 60079- 0, IEC 60079-7 and IEC 60079-15 • For Eurasian Economic Union: EAC
Specific Countries	• For Australia and New Zealand: ACMA requirements for RCM marking • For United States: FCC Part 15 Subpart B Class A

SCADAPack 470i | 474i

Remote Smart RTU and Controller with Integrated Edge Platform

Specifications – cont'd

Digital and Analog Inputs/Outputs

SCADAPack Smart RTU	Digital inputs 12...24 Vdc		Digital outputs		Pulse counter inputs (shared with DIs)		Analog inputs		Analog outputs
	DI 1...4	DI 5...20	DO 1...2	DO 3...12	DI 1...4	DI 5...12	AI 1...4	AI 5...12	AO 1...2
470i	4	-	2	-	4	-	4	-	-
474i	4	16	2	10	4	8	4	8	2

Digital Inputs	• DI 1...4
	  • 12...24 Vdc
	• DI 5...20 (SCADAPack 474i only)
	  • 12…24 Vdc

Pulse Counter Inputs	• DI 1...4
	  • Max. 10 kHz (@ 50% duty cycle)
	  • Built-in turbine preamplifier[4] for direct connection to turbine coils using short, shielded cable only.
	• DI 5...8 (SCADAPack 474i only)
	  • Max. 1.5 kHz (@ 50% duty cycle)
	  • Shared with first 8 digital input channels on lower I/O board
	• DI 9...12 (SCADAPack 474i only)
	  • Max. 150 Hz (@ 50% duty cycle)

Digital Outputs	• DO 1...2
	  • Form A, NO (Normally Open) relays, 2 A @ 30 Vdc,
	• DO 3...12 (SCADAPack 474i only)
	  • Form A, NO (Normally Open) relays, 2 A @ 30 Vdc

Analog Inputs	• AI 1...4
	  • 0…20 mA, 4…20 mA, 0…5 Vdc, 1…5 Vdc, 12-bit resolution, unipolar, non-isolated, voltage/current selectable by software,
	  • configurable for 30 mSec high speed update rate
	• AI 5...12 (SCADAPack 474i only)
	  • 0…20 mA, 4…20 mA, 0…5 Vdc, 1…5 Vdc, 24-bit resolution, single-ended, isolated from logic and chassis.
	  • Filtering configuration 'none' results in fast sampling @100 mSec total for all 8 channels, '50/60Hz' filter configuration results in sampling @ 500mSec for all 8 channels

Analog Outputs	• AO 1...2 (SCADAPack 474i only) • 0…20 mA, 4…20 mA (voltage output with external resistor), 12-bit resolution over 0…20 mA range, single-ended, isolated from logic and chassis
Internal (System) Analog Inputs	• Input power supply voltage monitor, 36 Vdc full scale • Memory/RTC battery voltage monitor • Internal temperature monitor, measurement range -40…75 °C (-40…167 °F)
Clock calendar	±15 seconds per month at -40…70 °C (-40...158 °F)

Additional I/O

Supported Modules	• 5304, 5410, 5414, 5415, 5505, 5506, 5606, 5607, 6601, 6607 • When SCADAPack 47xi controller is used with 5000-series I/O Expansion modules, order one Inter Module Cable (IMC) adaptor cable (ref. TBUM297138), to adapt from 20 signal lines (used by SCADAPack x70 Smart RTUs) to 16 signal lines (used by 5000-series IO modules) • Maximum number of external expansion modules per unit: 15 [5]
I/O Expansion Limits[5]	• Refer to the SCADAPack x70 Documentation Set > Hardware Manuals for further details. • Maximum intermodule cable length (not including the short cables that come with each module) is 1.82 m (75 in.)

4. Applies to inputs 1 and 2 only. Cabling 10 ft (3 m) maximum in low noise environments
5. Additional power supply modules (model 6103) may be required for additional bus power, depending on how many expansion modules are included on the bus.

Refer to the SCADAPack x70 Documentation Set for further details.

SCADAPack 470i | 474i

Remote Smart RTU and Controller with Integrated Edge Platform

Model Code

TBUP474I-IA50-BB03S is an example of a SCADAPack 474i part number using the model codes below

Code	Select: Hardware platform
TBUP470I	SCADAPack 470i, 32-bit controller, Dual Core
TBUP474I	SCADAPack 474i, 32-bit controller, Dual Core, comes with additional I/O

Code	Select: Firmware platform
I	SCADAPack x70i RemoteConnect with IEC 61131-3 programming software, Linux Application Processor included

Code	Select: SCADA Security
A	Standard security features (including DNP3 Secure Authentication)

Code	Select: Protocol Option
5	DNP3 Serial/IP client/outstation/peer-to-peer[6], Modbus RTU/TCP client/server, TCP/IP

Code	Select: License Option
0	None

Code	Select: Analog Inputs /Outputs
A	P470i: 4 Analog Inputs, selectable as 0…20 mA, 4…20 mA, 0…5 Vdc, 1…5 Vdc
B	P474i: adds 8 Analog Inputs, factory-shipped selectable as 0…20 mA, 4…20 mA, 0…5 Vdc, 1…5 Vdc, and 2 Analog Outputs, selectable as 0...20 or 4...20 mA

Code	Select: Digital Inputs/Outputs
A	P470i: 4 Digital Inputs (12...24 Vdc), 2 Digital Outputs Form A, NO (Normally Open) relays
B	P474i: adds 16 Digital Inputs (12...24 Vdc) and 10 Digital Outputs Form A NO (Normally Open) relays

6. Including DNP3 Data Concentrator Client License – allows collection of DNP3 events and data from multiple outstations

SCADAPack 470i | 474i

Remote Smart RTU and Controller with Integrated Edge Platform

Model Code cont'd

TBUP474I-IA50-BB03S is an example of a SCADAPack 474i part number using the model codes below

Code	Future Option
0	None

Code	Select: Realflo Flow Computer - Flow Run License Options
0	None
3	3 Runs - any combination of gas, liquid or water totaling 3 runs (gas runs include gas transmission option)
6	6 Runs - any combination of gas, liquid or water totaling 6 runs (gas runs include gas transmission option)
T	10 Runs - any combination of gas, liquid or water totaling 10 runs (gas runs include gas transmission option)
V	20 Runs - any combination of gas, liquid or water totaling 20 runs[7]

Code	Select: Certifications
S	• FCC 47 CFR Part 15, Subpart B; ICES-003; CE and RCM markings, cULus Hazardous Location Class I, Division 2, Groups A, B, C and D, T4; and Class I, Zone 2, IIC • ATEX: EU Directive 2014/34/EU) in defined atmosphere Zone 2 ATEX II 3G, Ex ec nC IIC T4 Gc according to EN IEC 60079- 0, EN IEC 60079-7 and EN IEC 60079-15 • For Eurasian Economic Union: EAC

Accessories

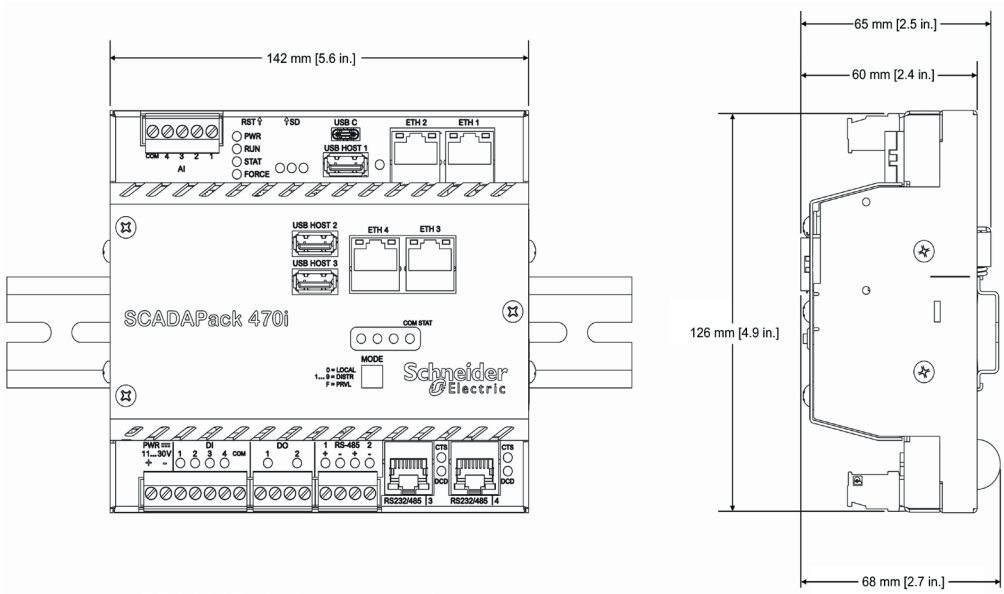
Part Number	Description
TBUM297310	SCADAPack 47x Connector Kit - five complete sets of spare connectors for SCADAPack 470i and 474i RTUs, and 6607 I/O expansion module
TBUM297147	SCADAPack Rod Pump Controller, Factory
TBUM297148	SCADAPack Rod Pump Controller, Field Upgrade

7. Gas transmission option is a standard feature of all SCADAPack x70 Smart RTUs with an active flow run license

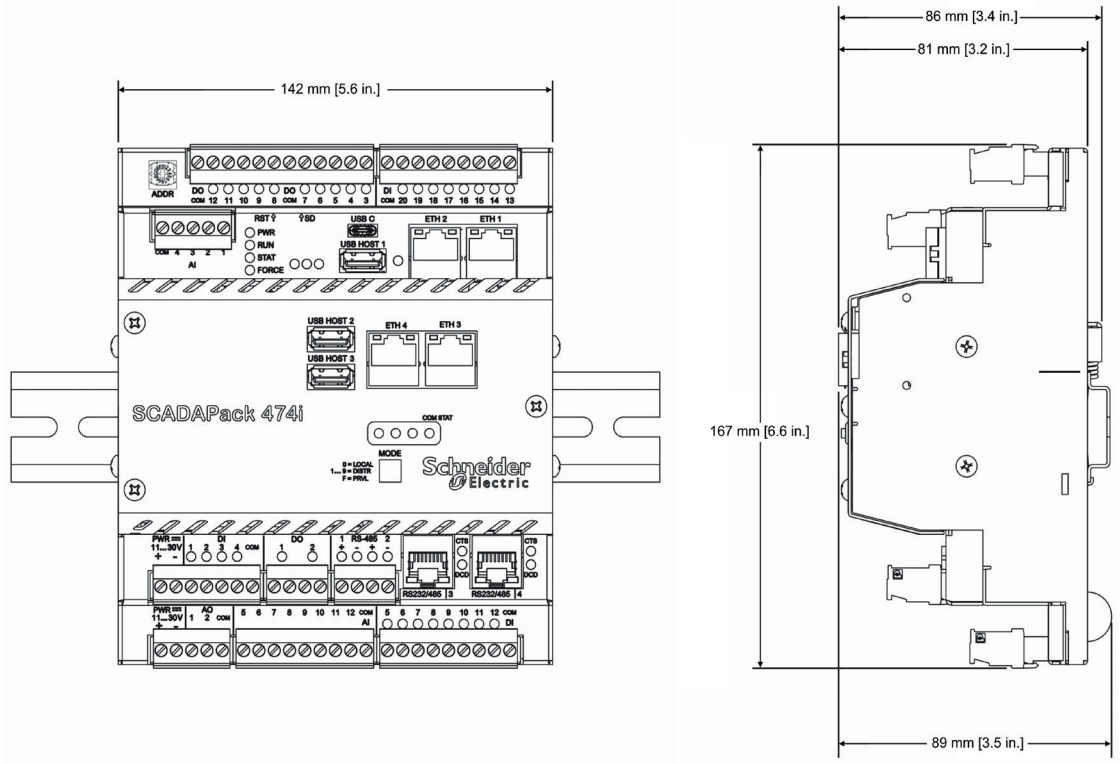
SCADAPack 470i | 474i

Remote Smart RTU and Controller with Integrated Edge Platform

Dimensions - SCADAPack 470i



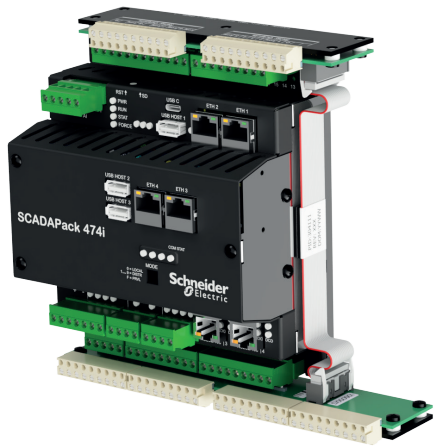
Dimensions - SCADAPack 474i



SCADAPack 470i | 474i

Remote Smart RTU and Controller with Integrated Edge Platform

Terminal Adaptors



Optional terminal adaptors provide the possibility for drop-in wiring replacement of existing SCADAPack P1, or SCADAPack P4 RTUs. This approach can save substantial time and costs when upgrading existing panels to SCADAPack 474i.

The terminal adaptors provide pin headers that accept the older style ‘gray’ plug-in terminal blocks. The adaptors position the terminal headers to approximately the same physical position as they are on the existing SCADAPacks. If panel space allows, and the wiring scheme is compatible with the terminal adaptors, the SCADAPack 474i can be placed into the existing panel, and existing wiring to the lower I/O board can be plugged onto the terminal adaptors without removing the wires from the terminal blocks.

For further details on the TBUM297915 terminal adaptor kit, refer to its data sheet (TBULM08038-10).

Refer to the SCADAPack x70 Documentation Set for further details.

Schneider Electric

35 rue Joseph Monier
92500 Rueil-Malmaison, France
Email: RemoteOperations@se.com

www.se.com

Life Is On | Schneider Electric

Part Number: TBULM08030-08 v04

Green Premium™

Schneider Electric's commitment to deliver products with best-in-class environmental performance.

Green Premium™

More than 75% of our product sales offer superior transparency on the material content, regulatory information and environmental impact of our products:

- RoHS compliance
- REACH substance information
- Industry leading # of PEP's*
- Circularity instructions

Green Premium promises compliance with the latest regulations, transparency on environmental impacts as well as circular and low-CO_2 products.

CO2 and P&L impact through… Resource Performance

Green Premium brings improved resource efficiency throughout an asset's lifecycle. This includes efficient use of energy and natural resources, along with the minimization of CO_2 emissions.

Cost of ownership optimization through… Circular Performance

We're helping our customers optimize the total cost of ownership of their assets. To do this, we provide IoT-enabled solutions, as well as upgrade, repair, retrofit, and remanufacture services.

Peace of mind through… Well-being Performance

Green Premium products are RoHS and REACH-compliant. We're going beyond regulatory compliance with step-by-step substitution of certain materials and substances from our products.

Improved sales through… Differentiation

Green Premium delivers strong value propositions through third-party labels and services. By collaborating with third-party organizations we can support our customers in meeting their sustainability goals such as green building certifications.

Learn more about Green Premium

*PEP: Product Environmental Profile (i.e. Environmental Product Declaration)

SCADAPack 570 | 574 | 575

Remote Programmable Smart RTUs

Product at a glance

SCADAPack™ x70 is the latest generation of SCADAPack Smart RTUs. Optimized for remote operations, the SCADAPack 570, 574 and 575 Smart RTUs are included in this series.

Simplicity: SCADAPack RemoteConnect configuration software facilitates configuration, logic development, data logging, and diagnostics in a single application, helping to reduce costs and overhead associated with maintaining multiple software applications for managing a single device. The SCADAPack 57x has ready-to-use Realflo™ Oil and Gas Flow Computer solutions.

Efficiency: The SCADAPack x70 Logic Editor within RemoteConnect software is based on EcoStruxure™ Control Expert software components, allowing for code reuse and sharing between Schneider Electric Modicon™ PLCs and SCADAPack Smart RTUs.

Rugged: Designed with Cybersecurity and ruggedized communications in mind, SCADAPack 47x hardware features conformal-coated boards and wide operating temperatures of -40...70 °C (-40...158 °F). Class I, Div. 2 and Zone 2 hazardous area certifications are included.

Green Premium™ ecolabel product – Sustainable performance, by design

SCADAPack 570 | 574 | 575

Remote Programmable Smart RTUs

Product Highlights:

Flexible Protocol Implementation

- Open standard telemetry protocols such as DNP3 level 4 with Security Suite (Secure Authentication) and IEC 60870-5-104
- Easily associate Modbus™ and DNP3 protocols to database objects and variables
- DNP3 routing and Modbus Store and Forward facilitate communications bridge functionality using either protocol

Tagged (named) Object Database

- Improved readability and debugging of configuration and logic
- Easy-to-use object data logging

Microsoft® Excel Export & Import of Database Objects

- Create external templates for reuse and manipulation of configurations
- Reduce engineering time and costs for large systems with common configurations

x70 Logic Editor

- Based on EcoStruxure Control Expert (Unity Pro) software with 5-language support for IEC 61131-3
- Code segment and function block export & import for code sharing between Schneider Electric Modicon PLCs and SCADAPack RTUs
- Leverage experience and personnel training across remote (RTU) and in-plant (PLC) projects

Remote Maintenance

- Update firmware, load/update logic, load configurations, and view diagnostics remotely or locally with RemoteConnect software
- Manage and configure multiple devices such as HART® instruments, actuators, variable frequency drives (VFDs), and other devices using plug-in DTMs for FDT2 and FDT1.2 within RemoteConnect software

Remote Ready Hardware

- 12...30 Vdc Input Power with input voltage monitor
- Wide operating temperature -40…70 °C (-40...158 °F)
- Conformal-coated circuit boards

Typical applications for SCADAPack 570/575 RTUs

Oil and Gas

- Support for Realflo™ Flow Computer, SCADAPack Smart RTU-based flow measurement application, providing flow computation for natural gas, hydrocarbon liquids and produced water
- Tank monitoring & automation
- Well test automation
- Well production and optimization

Water & Wastewater

- Leakage detection
- Equipment monitoring & control
- Water quality monitoring
- Irrigation
- DMAs (District Metering Areas), PMAs (Pressure Monitoring Areas)
- Monitoring flow / level / pressure and temperature, and many others...

Solution Ready

- Available Realflo Oil and Gas flow computer

SCADAPack 570 | 574 | 575

Remote Programmable Smart RTUs

Configuring and programming SCADAPack 57x RTUs

RemoteConnect Software

RemoteConnect software facilitates configuration, diagnostics, logic development, and device management:

- Locally through any of the communication ports
- Remotely through serial or TCP/IP networks, modems and radios

Device Management

- Upgrade of SCADAPack firmware
- Upgrade of I/O expansion module firmware[1]
- HART device configuration and data monitoring via vendor supplied plug-in DTMs[2]
- Asset Management Software (AMS) TCP/IP network access to HART instruments and actuators via HART pass through

Logic Development

RemoteConnect includes the SCADAPack x70 Logic Editor with which users can:

- Choose from five IEC 61131-3 compliant languages
- Use compiled run-time code for fast execution
- Import and export logic code segments for use in other SCADAPack projects or sharing[3] with Modicon PLC projects
- Perform online debugging and logic modifications from the x70 Logic Editor
- Develop and write logic to a running system without interruption to the logic
- Deploy new logic code between scans with minimal effect on execution time
- Using the EFB Toolkit, C programming can be used to create custom functions and function blocks

Configuration

- Use descriptive naming of objects to enhance development, debugging, and translation to host systems
- Import or export configurations for templating and bulk editing externally in Excel
- Group, filter, and sort objects for easy viewing and editing with RemoteConnect software object browsers

Datalogging

- RemoteConnect includes the SCADAPack x70 data logger. This feature can be used to provide a detailed record of a remote asset when investigating its operation remotely or on site.
- Use the RemoteConnect object browser to configure database objects for periodic or event-driven data logging.
- RemoteConnect's visualization tool can be used to display logged data when connected to the SCADAPack.
- Store up to 1,000,000[4] event records using internal memory and over 100,000,000 records using a USB drive.

Diagnostics

- View system information and status from object browsers within RemoteConnect software
- View advanced diagnostics using the Telnet command line interface, including built-in protocol analyzers for DNP3, IEC 60870-5-104 and Modbus

SCADAPack 570 | 574 | 575

Remote Programmable Smart RTUs

Specifications

Architecture	
Processor	SPEAr 1380 32-bit dual-core Cortex A9 microcontroller, 500 MHz
Memory	• 128 MB NAND FLASH, 128 MB DDR3 RAM • Non-Volatile RAM CMOS SRAM with lithium battery retains contents for 2 years with no power
Events and datalogging	• DNP3 and IEC 60870-5-104 events: 40,000[5], store up to 1,000,000 events using internal file system • Store up to 100,000,000 events using USB drive

Database capacity	• Maximum number of database objects: Typically 15,000
	• Maximum number of database objects linked with logic programming: Typically 6,000
	• Object memory:
	  • Typical 2,600,000 bytes (event buffer at 5000 events)
	  • Maximum: 2,756,800 bytes (event buffer at 100 events)
	  • Minimum: 1,480,000 bytes (event buffer at 40,000 events)

Maximum DNP3 Outstation devices[5]	Approximately 90
Maximum DNP3 Outstation objects[5]	Approximately 15,000[6] across DNP3 Outstation devices
Maximum Modbus Server Devices[7]	150
Maximum objects mapped from Modbus devices	3,000[6]
File system storage	Internal: 70 MB usable; External: 32 GB (using optional USB memory stick)
USB host storage	• Single-partition plug-in USB mass storage devices up to 32 GB[8] • File format: FAT32

Communications	
Serial Ports: Serial1, Serial2	• RS-232 port, 8-pin modular RJ45 jack, +5 Vdc power control, hardware handshaking, maximum baud rate 115,200 bps • Rated to ±15 kV (IEC 61000-4-2, Air Discharge) static protection
Serial Ports: Serial3, Serial4	Configurable as: • RS-232 or RS-485 two-wire, half-duplex, maximum baud rate 115,200 bps • 8-pin modular RJ45 jack, rated to ±15 kV (IEC 61000-4-2, Air Discharge) static protection
Serial Protocols	DNP3 level 4 server/client and peer-to-peer, Modbus RTU server/client
Ethernet Ports: Eth1, Eth2, Eth3	8-pin modular RJ45 jack, 10/100 Mbps UTP (10/100 Base-T), transformer-isolated
IP Protocols	• DNP3 level 4 in TCP or in UDP Client/Server and peer-to-peer, • Modbus/TCP Server, Modbus/TCP Client • IEC 60870-5-104 controlled station • Telnet Server, FTP Server • HART pass through over TCP when connected to SCADAPack 6602 modules
USB Device Port	USB 2.0 compliant “B”-type receptacle, for local configuration
USB Host Port	USB 2.0-compliant “A”-type receptacle, supports USB memory sticks up to 32 GB[6]

SCADAPack 570 | 574 | 575

Remote Programmable Smart RTUs

Specifications – cont'd

General	
Logic Control	RemoteConnect software (five IEC 61131-3 languages)
I/O Terminations	Plug-in terminal blocks 0.0810...3.31 mm^2 (28...12 AWG), solid or stranded
Dimensions	• SCADAPack 570: 150.5 mm x 134.8 mm x 74.9 mm (5.93 in. wide x 5.31 in. high x 2.95 in. deep) • SCADAPack 574: 150.5 mm x 181.7 mm x 91.0 mm (5.93 in. wide x 7.15 in. high x 3.58 in. deep) • SCADAPack 575: 150.5 mm x 182.3 mm x 86.5 mm (5.93 in. wide x 7.18 in. high x 3.41 in. deep)
Packaging	• Corrosion-resistant; zinc-plated steel base and stainless steel cover with black enamel paint • G3 conformal-coated circuit boards
Environment	• Operating temperature -40...70 °C (-40...158 °F), storage temperature, -40...85 °C (-40...185 °F) • 5% RH to 95% RH, non-condensing
Shock	IEC 61131-2 mechanical shock (tested up to 15 g shock)
Vibration	• IEC 61131-2 • 5...8.4 Hz: Amplitude controlled, 7.0 mm (0.28 in) peak-to-peak • 8.4...150 Hz: Acceleration controlled, 1.0 g peak
Realflo Flow Computer	Flow Run License Options: • 3 Runs - any combination of gas, liquid or water totaling 3 runs (gas runs include gas transmission option) • 6 Runs - any combination of gas, liquid or water totaling 6 runs (gas runs include gas transmission option) • 12 Runs - any combination of gas, liquid or water totaling 12 runs (gas runs include gas transmission option) • 20 Runs - any combination of gas, liquid or water totaling 20 runs (gas runs include gas transmission option)

Power Supply	
Rated Voltage and Power	12...30 Vdc: • SCADAPack 570 typical 4.3 W • SCADAPack 574 typical 6.5 W, Max. 9.2 W • SCADAPack 575 typical 5.4 W, Max. 9.1 W • Class 2 power supply required

Certifications	
EMC & Radio Frequency	• FCC 47 CFR Part 15, Subpart B • ICES-003 • CE and RCM markings
General Safety	• SCADAPack 570 and 575: UL 508 • SCADAPack 574: IEC 61010-2-201; UL; CSA
Hazardous locations (option)	• cCSAus Non-Incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D and Class I, Zone 2 • SCADAPack 570 and 575: IECEx/ATEX Ex nA IIC T4 Gc -40 °C ≤ Ta ≤ +70 °C • SCADAPack 574: ATEX Ex nA IIC T4 Gc -40 °C ≤ Ta ≤ +70 °C • For the latest information regarding product environmental compliance visit the Schneider Electric Check a Product portal at https://checkaproduct.se.com/ • For Eurasian Economic Union: EAC

SCADAPack 570 | 574 | 575

Remote Programmable Smart RTUs

Specifications – cont'd

Digital and Analog Inputs/Outputs

	Digital inputs		Digital outputs		Counter inputs			Analog inputs Lower IO Module:	Analog outputs (option) Lower IO Module:
	Controller Board: 10 ms SOE	Lower IO Module: 1 ms SOE	Controller Board:	Lower IO Module:	Controller Board: 10 KHz (shared)	Lower IO Module: 1.5 KHz (shared)	Lower IO Module: 150 Hz (shared)		
SCADAPack 570	2	-	1	-	2	-	-	-	-
SCADAPack 574	2	16	1	10	2	-	-	8	2
SCADAPack 575	2	16	1	8	2	4	4	6	2

Digital Inputs

Controller Board: 2
- Din1...2
- 12…24 Vdc
- DC input current: 0.4 mA at 12 Vdc, 0.8 mA at 24 Vdc
- Ground return connected to Chassis Ground

Lower IO Module 574: 16
- DI0...15
- 12…24 Vdc, Turn-on voltage: 9 Vdc (minimum), Turn off voltage: 4 Vdc (maximum)
- Over-voltage tolerance: 150% sustained over-voltage without foreseeable damage
- DC input current: 0.67 mA typical at 24 Vdc
- Isolation: in groups of 8, 1500 Vac from logic supply and chassis

Lower IO Module 575: 16
- DI1...16
- 12…24 Vdc
- DC input current: 1.2 mA at 12 Vdc, 2.4 mA at 24 Vdc
- Isolation: in 2 groups of 8. Isolation from RTU logic and chassis: 1000 Vac/ 1500 Vdc

Counter Inputs

Controller Board: 2
- DI1...2
- Shared with 2 digital input channels
- 0…10 kHz

Lower IO Module 575: 8
- DI1...4: 0…1.5 kHz
- DI5...8: 0…150 Hz
- Shared with first 8 digital input channels on lower I/O board

Digital Outputs

Controller Board: 1
- Dout
- Sinking MOSFET output, rated 30 Vdc, 0.5 A, ground return connected to Chassis Ground

Lower IO Module 574: 10
- DO0...9
- Dry-contact or solid-state relays (Form A - normally open)
- 5 contacts share one common
- Isolation: Chassis or logic to contact 1500 Vac (1 min.)
- Controls: (DNP3 protocol) Direct Operate, Select Before Operate, Trip/Close, Latch, Pulse

Dry-contact relays:
- Contact rating 3 A, 30 Vdc (resistive), 12 A maximum per common

Solid-state relays:
- Load voltage 30 Vdc maximum
- Load current 2 A continuous max at 50 °C (122 °F), or 1.33 A at 70 °C (158 °F) ambient

Lower IO Module 575: 8
- DO1...8
- 2 Form C relays: SPDT, separate Normally Open/Normally Closed/Common)
- 6 Form A relays: Normally Open, one shared common
- Isolation: 500 Vac minimum to RTU logic
- Maximum Switching Voltage: 30 Vdc or 25 Vac
- Maximum Switching Load: 60 W or 50 VA (2 A)
- Status & Reporting: Individual relay status feedback to software for quality indication
- Controls (DNP3 Protocol): Direct Operate, Select Before Operate, Trip/Close, Latch, Pulse

SCADAPack 570 | 574 | 575

Remote Programmable Smart RTUs

Specifications – cont'd

Digital and Analog Inputs/Outputs

Analog Inputs	Lower IO Module 574: 8 • AI0...7 • Software-configurable: 0...20 mA, 4...20 mA, 0...5 Vdc or 0...10 Vdc, plus over range • Resolution: 15-bit ADC (15-bit in measurement range 0…10 Vdc, and 14-bit in 5 Vdc or 20 mA input ranges) • Accuracy: ±0.1% of full scale at 25 °C (77 °F), ±0. 2% over temperature range • Input Resistance: 250 Ω in current ranges, 20 kΩ in voltage ranges • Normal mode rejection: 27 dB at 60 Hz • Sampling rate: 170 ms • Isolation: 500 Vac from logic and chassis Lower IO Module 575: 6 • AI1...6 Dipswitch-configurable to current or voltage input • Input ranges: 0…20 mA, 4…20 mA, 0…5 Vdc, 1…5 Vdc • Uni-polar, differential • Resolution: 24-bit ADC (19-bit over the measurement range) • Accuracy: ±0.1% of full scale at 25 °C (77 °F), ±0.2% over temperature range • Isolation: 250 Vac isolation from channel to channel and from logic and chassis • Input Resistance: 250 Ω or 800 kΩ in current/voltage configurations • Under range: 4...20 mA measures to 0 mA • Common Mode Rejection: -80 dB @ 50/60 Hz • Sampling rate: software-selectable to 30 ms (unfiltered) or 500 ms (filtered)
Analog Outputs	Lower IO Module 574: 2 • AO0...1 • Optional • 0...20 mA or 4...20 mA, voltage output may be accomplished with external precision resistor. Lower IO Module 575: 2 • AO1...2 • Optional • Output ranges: 0...20 mA, 4...20 mA, voltage output may be accomplished with external precision resistor • Uni-polar • Resolution: 12-bit over 0...20 mA range • Accuracy: ±0.15% at 25 °C, ±0.35% of full scale over temperature range • Power Supply: 12…30 Vdc, external, Current: 50 mA • Isolation: transformer, 500 Vdc maximum to RTU logic and chassis • Load Range: 12 Vdc: 0…475 Ω, 24 Vdc: 0…1075 Ω • Status & Reporting: Individual Open Loop status to software for quality indication • Controls DNP3 Protocol: Direct Operate, Select Before Operate
Internal Power Monitor	• Input voltage monitor with low voltage indication • Memory/RTC battery voltage monitor with low voltage indication
Internal Temperature Monitor	Measurement range -40…75 °C (-40...167 °F)

Additional I/O

Supported Modules	• Supported modules: 5304, 5405, 5410, 5414, 5415, 5505, 5506, 5606, 5607, 6601, 6602, 6607 • When SCADAPack 57x controller is used with 5000 series modules, order one adaptor cable ref. TBUM297138 to adapt from 20 conductors to 16 conductors).
I/O Expansion Limits[9]	• Refer to the SCADAPack x70 Documentation Set > Hardware Manuals for further details. • Maximum intermodule cable length (not including the short cables that come with each module) is 1.82 m (75 in.)

SCADAPack 570 | 574 | 575

Remote Programmable Smart RTUs

Model Code

TBUP575UA56AB00S is an example of a SCADAPack 575 part number using the model codes below

Code	Select: Hardware platform
TBUP570U	SCADAPack 570, 32-bit controller, Dual Core, SCADAPack x70 Firmware (RemoteConnect Configuration & IEC 61131-3 programming software, included)
TBUP574U	SCADAPack 574, 32-bit controller, Dual Core, comes with additional I/O, SCADAPack x70 Firmware (RemoteConnect Configuration & IEC 61131-3 programming software, included)
TBUP575U	SCADAPack 575, 32-bit controller, Dual Core, comes with additional I/O, SCADAPack x70 Firmware (RemoteConnect Configuration & IEC 61131-3 programming software, included)

Code	Select: SCADA Security
A	Standard security features, includes DNP3 Secure Authentication SAv2 (Security Administrator application required)

Code	Select: Protocol Option
5	DNP3 Serial/IP client/server/peer-to-peer, Modbus RTU/TCP client/server, TCP/IP, and IEC 60870-5-104

Code	Select: License Option
6	Standard DNP3 features, includes DNP3 Data Concentrator Controlling Station License

Code	Select: Analog Inputs
A	SCADAPack 570: None SCADAPack 574: adds 8, selectable as 0...20 mA, 4...20 mA, 0...5 Vdc, 1...5 Vdc, or 0...10 Vdc SCADAPack 575: adds 6, selectable as 0…20 mA or 4…20 mA
B	SCADAPack 575: adds 6, shipped selectable as 0…5 Vdc or 1…5 Vdc

Code	Select: Digital Inputs/Outputs
A	SCADAPack 570: • 2 Digital Inputs (12...24 Vdc) • 1 Digital Output (open collector)
B	SCADAPack 574 adds: • 16 Digital Inputs (12...24 Vdc) • 10 Digital Outputs (Dry Contact relays) SCADAPack 575 adds: • 16 Digital Inputs (12...24 Vdc) • 8 Dry Contact Relay outputs (6 Form A, 2 Form C)
C	SCADAPack 574 adds: • 16 Digital Inputs (12...24 Vdc) • 10 Digital Outputs (Solid State relays)

SCADAPack 570 | 574 | 575

Remote Programmable Smart RTUs

Model Code cont'd

TBUP575UA56AB00S is an example of a SCADAPack 575 part number using the model codes below

Code	Select: Analog Outputs
0	None
1	SCADAPack 574 and SCADAPack 575: 2 channel, shipped selectable as 0…20 mA or 4…20 mA, external DC supply required

Code	Select: Realflo Flow Computer - Flow Run License Options
0	None
3	3 Runs - any combination of gas, liquid or water totalling 3 runs (gas runs include gas transmission option)
6	6 Runs - any combination of gas, liquid or water totalling 6 runs (gas runs include gas transmission option)
T	12 Runs - any combination of gas, liquid or water totalling 12 runs (gas runs include gas transmission option)
V	20 Runs - any combination of gas, liquid or water totalling 20 runs (gas runs include gas transmission option)

Code	Select: Certifications
S	• IEC 61010-2-201; UL; CSA; EMC and radio frequency; FCC 47 CFR Part 15, Subpart B; ICES-003; CE and RCM markings • For Eurasian Economic Union: EAC
X	• SCADAPack 570 and 575: Adds IECEx/ATEX: Ex nA IIC T4 Gc -40 °C ≤ Ta ≤ +70 °C • SCADAPack 574[8]: Adds ATEX: Ex nA IIC T4 Gc -40 °C ≤ Ta ≤ +70 °C • For Eurasian Economic Union: EAC
U	• Adds cCSAus Non-Incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D and Class I, Zone 2 • For Eurasian Economic Union: EAC

I/O Expansion Modules (6xxx)[7]

Part No.	Expansion Modules (complete the following part numbers with an S, U, or X suffix depending on certification required)
Models supported by SCADAPack 530E/535E/570/574/575 models only	
TBUX297583	Model 6601-20mA, 16 D/I 12...24 Vdc, 8 Dry Contact Relay O/P, 6 config. A/I (0/4…20 mA)
TBUX297585	Model 6601-20mA, 16 D/I 12...24 Vdc, 8 Dry Contact Relay O/P, 6 config. A/I (0/4…20 mA), 2 A/O (external DC supply)
TBUX297590	Model 6602, Analog I/O, HART, 8 A/I, 4 A/O, 4...20 mA (requires external DC supply)
TBUX297591	Model 6602, Analog I/O, HART, 8 A/I, 4...20 mA

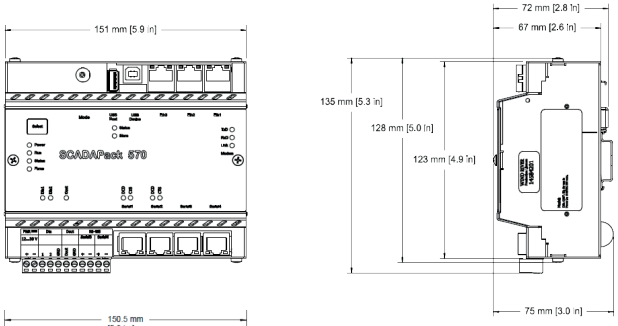
1. I/O expansion module firmware upgrades are supported on 6xxx modules only.
2. DTM is Device Type Manager – vendor-supplied device driver for device-specific configuration and data display. RemoteConnect software is an FDT1.2 (Field Device Tool version 1.2) and FDT2 (Field Device Tool version 2) container for compatible DTMs.
3. Sharing of logic code does not include hardware specific functions or system variables that are not common to both platforms.
4. Internal memory can be configured to limit internal event storage. External events are stored on a device formatted to 32 GB.
5. Polled by the SCADAPack when it is operating as a DNP3 Controlling Station
6. Varies depending on object types, event storage, and integrated application memory usage.
7. Refer to product manual for details as actual maximum number of Modbus server devices depends on polling method(s) and port type (serial or Ethernet).
8. Larger USB mass storage devices may be formatted to 32 GB FAT32.
9. Additional power supply modules (model 5103 or 6103) may be required for additional bus power, depending on how many expansion modules are included on the bus.

SCADAPack 570 | 574 | 575

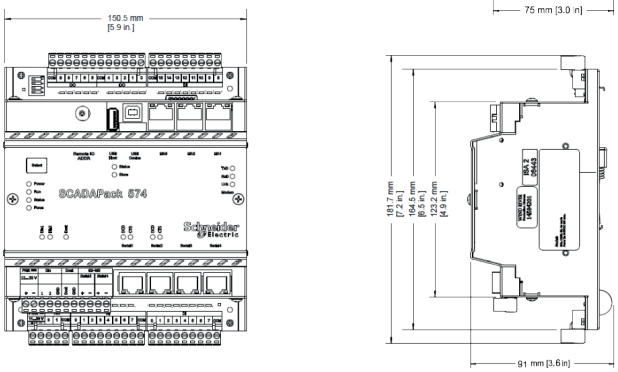
Remote Programmable Smart RTUs

Dimensions

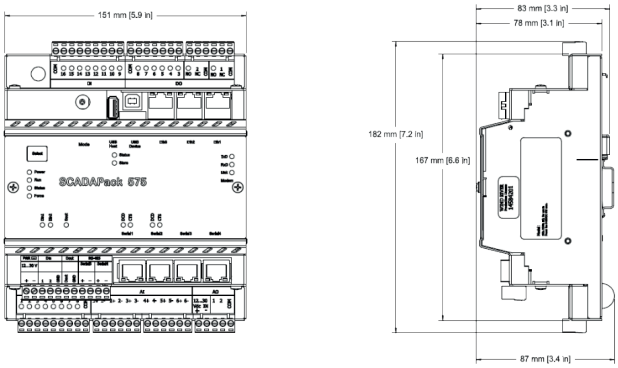
SCADAPack 570



SCADAPack 574



SCADAPack 575



Note: Refer to the SCADAPack x70 Documentation Set for further details.

Disclaimer:
The information provided in this document contains general descriptions and/or technical characteristics of the performance of the described products or services. For detailed specification, performance and instruction of use, refer to corresponding Catalogs and user guides if available.

To the extent permitted by applicable law, no responsibility or liability is assumed by Schneider Electric and its subsidiaries for any errors or omissions in the informational content of this document or consequences arising out of or resulting from the reliance upon the information contained herein.

Schneider Electric reserves the right to make changes or updates with respect to or in the content of this document or the format thereof, at any time without notice.

Schneider Electric

35 rue Joseph Monier
92500 Rueil-Malmaison, France
Email: RemoteOperations@se.com

www.se.com

Life Is On | Schneider Electric

Part Number TBULM08039-08 v34

Green Premium™

Schneider Electric's commitment to deliver products with best-in-class environmental performance.

Green Premium™

More than 75% of our product sales offer superior transparency on the material content, regulatory information and environmental impact of our products:

- RoHS compliance
- REACH substance information
- Industry leading # of PEP's*
- Circularity instructions

Green Premium promises compliance with the latest regulations, transparency on environmental impacts as well as circular and low-CO_2 products.

CO_2 and P&L impact through… Resource Performance

Green Premium brings improved resource efficiency throughout an asset's lifecycle. This includes efficient use of energy and natural resources, along with the minimization of CO_2 emissions.

Cost of ownership optimization through… Circular Performance

We're helping our customers optimize the total cost of ownership of their assets. To do this, we provide IoT-enabled solutions, as well as upgrade, repair, retrofit, and remanufacture services.

Peace of mind through… Well-being Performance

Green Premium products are RoHS and REACH-compliant. We're going beyond regulatory compliance with step-by-step substitution of certain materials and substances from our products.

Improved sales through… Differentiation

Green Premium delivers strong value propositions through third-party labels and services. By collaborating with third-party organizations we can support our customers in meeting their sustainability goals such as green building certifications.

Learn more about Green Premium

*PEP: Product Environmental Profile (i.e. Environmental Product Declaration)