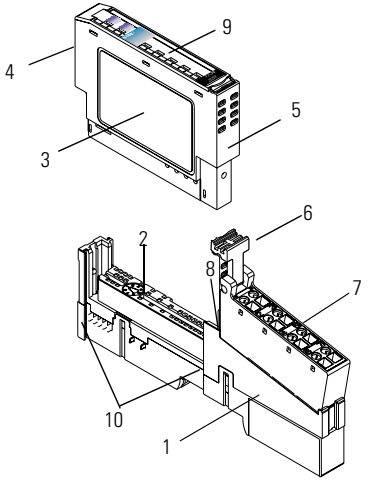
Installation Instructions

POINT I/O RS-232 and RS-485 ASCII Modules

(Cat. No. 1734-232ASC, 1734-485ASC)



	Description		Description
1	Mounting Base[1]	6	RTB Removal Handle
2	Mechanical Keying (orange)	7	Removable Terminal Block (RTB)[1]
3	Module Wiring Diagram	8	DIN Rail Locking Screw (orange)
4	Module Locking Mechanism	9	Slide-in Writable Label
5	Insertable I/O Module	10	Interlocking Side Pieces

[1] Wiring Base Assembly consists of item 1) mounting base, 1734-MB and item 7) removable terminal block, 1734-RTB.

Publication 1734-IN588B-EN-P - July 2003

General

The ASCII modules provide a flexible DeviceNet interface to a wide variety of RS-232, RS-485, and RS-422 ASCII devices. The modules provide the communication connections to the ASCII device.

The 1734-232ASC module connects to the RS-232 network while the 1734-485ASC module connects to the RS-485 or RS-422 network.

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of these products must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards. In no event will Rockwell Automation be responsible or liable for indirect or consequential damage resulting from the use or application of these products.

Any illustrations, charts, sample programs, and layout examples shown in this publication are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Rockwell Automation does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Rockwell Automation office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this publication, notes may be used to make you aware of safety considerations. The following annotations and their accompanying statements help you to identify a potential hazard, avoid a potential hazard, and recognize the consequences of a potential hazard:

WARNING

Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

ATTENTION

Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

ATTENTION

Preventing Electrostatic Discharge

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.

When not in use, store the equipment in appropriate static-safe packaging.

ATTENTION

Environment and Enclosure

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as "open type" equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the Allen-Bradley publication 1770-4.1 ("Industrial Automation Wiring and Grounding Guidelines"), for additional installation requirements pertaining to this equipment.

ATTENTION

POINT I/O is grounded through the DIN rail to chassis ground. Use zinc-plated, yellow-chromated steel DIN rail to assure proper grounding. Using other DIN rail materials (e.g. aluminum, plastic, etc.) which can corrode, oxidize or are poor conductors, can result in improper or intermittent platform grounding.

WARNING

When you connect or disconnect the Removable Terminal Block (RTB) with field side power applied, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding.

Installing the Mounting Base

To install the mounting base on the DIN rail, proceed as follows.

1. Position the mounting base vertically above the installed units (adapter, power supply or existing module).

2. Slide the mounting base down allowing the interlocking side pieces to engage the adjacent module or adapter.

3. Press firmly to seat the mounting base on the DIN rail. The mounting base will snap into place.

4. To remove the mounting base from the DIN rail, remove the module, and use a small bladed screwdriver to rotate the base locking screw to a vertical position. This releases the locking mechanism. Then lift straight up to remove.

Installing the I/O Module

The module can be installed before or after base installation. Make sure that the mounting base is correctly keyed before installing the module into the mounting base. In addition, make sure the mounting base locking screw is positioned horizontal referenced to the base.

1. Using a bladed screwdriver, rotate the keyswitch (2) on the mounting base clockwise until the number required for the type of module being installed aligns with the notch in the base. Refer to page 1-17 for the keyswitch position.

WARNING

When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

2. Make certain the DIN rail locking screw is in the horizontal position. (You cannot insert the module if the locking mechanism is unlocked.)

3. Insert the module straight down into the mounting base and press to secure. The module will lock into place.

Installing the Removable Terminal Block (RTB)

A removable terminal block is supplied with your wiring base assembly. To remove, pull up on the RTB handle. This allows the mounting base to be removed and replaced as necessary without removing any of the wiring. To reinsert the removable terminal block, proceed as follows.

1. Insert the end opposite the handle into the base unit. This end has a curved section that engages with the wiring base.

WARNING

When you connect or disconnect the Removable Terminal Block (RTB) with field side power applied, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding.

2. Rotate the terminal block into the wiring base until it locks itself in place.

3. If an I/O module is installed, snap the RTB handle into place on the module.

Removing a Mounting Base

To remove a mounting base, you must remove any installed module, and remove the removable terminal block (if wired).

1. Unlatch the RTB handle on the I/O module.
2. Pull on the RTB handle to remove the removable terminal block.

WARNING

When you connect or disconnect the Removable Terminal Block (RTB) with field side power applied, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding.

3. Press on the module lock on the top of the module.
4. Pull on the I/O module to remove from the base.

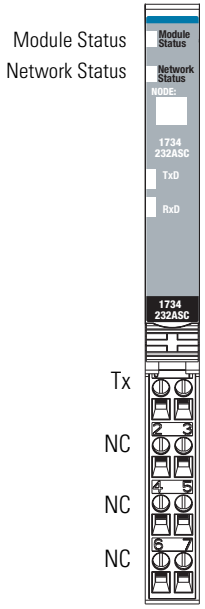
WARNING

When you insert or remove the module while backplane power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

5. Use a small bladed screwdriver to rotate the orange base locking screw to a vertical position. This releases the locking mechanism.
6. Then lift straight up to remove.

Wiring the 1734-232ASC Module

RS-232



43123

Tx = Transmit
NC = No Connection

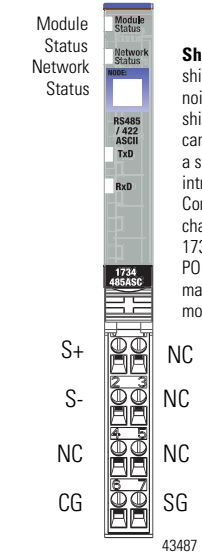
Rx = Receive
SG = Signal Ground

Shielded Cable: The 1734-232ASC module requires shielded cable to help reduce the effects of electrical noise coupling. Ground each shield at one end only. A shield grounded at both ends forms a ground loop, which can cause module communications to fault. Never connect a shield to the common side of a logic circuit (this would introduce noise into the logic circuit).

Connect the shield directly to a chassis ground. This chassis ground connection is not available on the 1734-232ASC RTB (Removable Terminal Block). On a POINT I/O system, the chassis ground connection can be made at the DIN Rail, at the metal panel the DIN Rail is mounted to, or at the user's I/O device.

Wiring the 1734-485ASC Module

RS-485

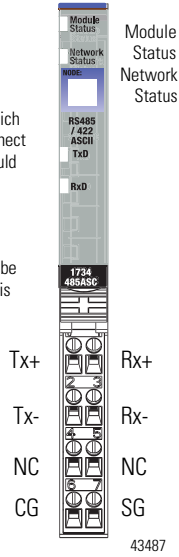


S+ = Transmit
CG = Chassis Ground
SG = Signal Ground

S- = Receive
NC = No Connection

Shielded Cable: The 1734-485ASC module requires shielded cable to help reduce the effects of electrical noise coupling. Ground each shield at one end only. A shield grounded at both ends forms a ground loop, which can cause module communications to fault. Never connect a shield to the common side of a logic circuit (this would introduce noise into the logic circuit).
Connect the shield directly to a chassis ground. This chassis ground connection is not available on the 1734-485ASC RTB (Removable Terminal Block). On a POINT I/O system, the chassis ground connection can be made at the DIN Rail, at the metal panel the DIN Rail is mounted to, or at the user's I/O device.

RS-422



Tx = Transmit
CG = Chassis Ground
SG = Signal Ground

Rx = Receive
NC = No Connection

Module Terminations

Terminal	RS-232	RS-485	RS-422
0	Tx[1]	S+[1]	Tx+[1]
1	Rx[2]	NC	Rx+[1]
2	NC	S-[2]	Tx-[2]
3	NC	NC	Rx-[2]
4	NC	NC	NC
5	NC	NC	NC
6	NC	CG	CG
7	SG	SG	SC

1 S+ and Tx+ are transmit from the module
2 S- and Rx- are receive into the module

RS-232

0 Tx	1 Rx
2 NC	3 NC
4 NC	5 NC
6 NC	7 SG

43124

RS-485

0 S+	1 NC
2 S-	3 NC
4 NC	5 NC
6 CG	7 SG

43488

RS-422

0 Tx+	1 Rx+
2 Tx-	3 Rx-
4 NC	5 NC
6 CG	7 SG

43489

Tx, S+ = Transmit
Rx, S- = Receive
NC = No Connection
SG = Signal Ground
CG = Chassis Ground

Communicating with the ASCII Modules

The ASCII modules operate as the PointBus front-end to your serial device. Data can be exchanged with the master through a polled, cyclic, or change-of-state connection. Bit-Strobe Command Response Messaging and the Unconnected Message Manager (UCMM) are not supported[1]. The module produces and consumes data as follows:

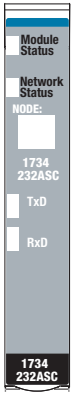
I/O Connection Type	Consumes	Produces
Polled	4-132 bytes	4-132 bytes
Cyclic	4-132 bytes	4-132 bytes
Change-of-State	4-132 bytes	4-132 bytes

1 If you are not familiar with these terms, see the DeviceNet Specification for definitions (online: www.odva.org).

The ASCII modules are not compatible with the 1734-APB PROFIBUS adapter.

Troubleshooting with the Indicators

RS-232



Module Status

Network Status

RS-485

Module Status

Network Status

Indication	Probable Cause
Module Status	
Off	No power applied to device
Green	Device operating normally
Flashing Green	Device needs commissioning due to configuration missing, incomplete or incorrect.
Flashing Red	Recoverable fault.
Red	Unrecoverable fault may require device replacement
Flashing Red/Green	Device is in self-test

Indication	Probable Cause
Network Status	
Off	Device is not on-line - Device has not completed dup_MAC_id test. - Device not powered - check module status indicator
Flashing Green	Device is on-line but has no connections in the established state.
Green	Device on-line and has connections in the established state.
Flashing Red	One or more I/O connections in timed-out state
Red	Critical link failure - failed communication device. Device detected error that prevents it communicating on the network.
Flashing Red/Green	Communication faulted device - the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identify Communication Faulted Request - long protocol message.

Indication	Probable Cause
Transmit/Receive Status	
Flashing Transmit/ Off Receive	Check wiring, ground, and RX connection. User parameter object to view record numbers.
Flashing Receive/ Off Transmit	Check wiring. Watch TX light. If it does not flash, check that you are properly initiating transmission. Use EDS parameter object to try transmitting and watch the light. If it flashes, you are not properly initiating transmission via I/O messaging. If it does flash, check the remote device.
Off Transmit/ Green Receive	Check connections as you may have wired the device backwards.

Safety Approvals

The following information applies when operating this equipment in hazardous locations:	**Informations sur l'utilisation de cet équipement en environnements dangereux :**
Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.	Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.

WARNING	**EXPLOSION HAZARD** • Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. • Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. • Substitution of components may impair suitability for Class I, Division 2. • If this product contains batteries, they must only be changed in an area known to be nonhazardous.	**AVERTISSEMENT**	**RISQUE D'EXPLOSION** • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit. • La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles.

Specifications

Specifications - 1734-232ASC, -485ASC Modules	
Number of Inputs	1 full duplex
Input Voltage "0", Asserted, ON, Space, Active "1", Disasserted, OFF, Mark, Inactive	Signal with respect to Signal Ground (SG) +3 to +25V dc -3 to -25V dc
Indicators	1 green/red module status indicator, logic side 1 green/red network status indicator, logic side 2 greed TXD, RXD status indicators, logic side
Keyswitch Position	2 (specialty)
Module Location	1734-TB or -TBS wiring base assembly
Pointbus Current	75mA @ 5V dc
Power Dissipation	0.75W maximum @ 28.8V dc
Thermal Dissipation	2.5 BTU/hr maximum @ 28.8V dc
Isolation Voltage	Tested to withstand 2200V dc for 60s No isolation between individual channels
External dc Power Supply Voltage Voltage Range Supply Current	 24V dc nominal 10-28.8V dc 15mA @ 24V dc Fault protected to 28.8V dc
Serial Port Parameters	
Serial Character Framing	7N2, 7E1, 7O1, 8N1, 8N2, 8E1, 8O1, 7E2, 7O2
Serial Port Comm Speed	9600, 1200, 2400, 4800, 19.2k, 38.4k
Serial Port Receive from ASCII Device	
Max Number of Receive Chars	1-128
Receive Record Start Mode	No, exclude, include start delimiter
Receive Start Delimiter	ASCII character
Receive Record End Mode	No, exclude, include end delimiter
Receive End Delimiter	ASCII character

Specifications - 1734-232ASC, -485ASC Modules (Continued)	
Send (Produce) on DeviceNet to Master	
Receive String Data Type	Array, short_string, string
Pad Mode	Pad mode disabled, enabled
Pad Character	ASCII character
Receive Swap Mode	Disabled, 16-bit, 24-bit, 32-bit swap
DeviceNet Handshake Mode	Master/slave handshake, produce immediate
Produce Assembly Size	4-132
Serial Data	0-128 bytes
Receive Transaction ID	0-255
Serial Port Transmit to ASCII Device	
Max Number of Transmit Chars	1-128
Transmit End Delimiter Mode	No, exclude, include end delimiter
Transmit End Delimiter Character	ASCII character
Consume on DeviceNet from Master	
Consume String Data Type	Array, short_string, string
Transmit Swap Mode	Disabled, 16-bit, 24-bit, 32-bit swap
DeviceNet Record Header Mode	Transmit handshake/immediate
Consume Assembly Size	4-132
Serial Port Transmit/Explicit Messages	
Transmit Serial Data String	0-128 bytes
Transmitted Serial Data Length	0-128 bytes
Transmit Transaction ID	0-255
Status	TX FIFO overflow, RX FIFO overflow, RX parity error, handshake error, new data flag

Specifications - 1734-232ASC, -485ASC Modules (Continued)	
General Specifications	
Dimensions Inches (Millimeters)	2.21H x 0.47W x 2.97L (56H x 12W x 75.5L)
Environmental Conditions	
Operational Temperature	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): -20 to 55°C (-4 to 131°F)
Storage Temperature	IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock): -40 to 85°C (-40 to 185°F)
Relative Humidity	IEC 60068-2-30 (Test Db, Unpackaged Nonoperating Damp Heat): 5 to 95% noncondensing
Shock	IEC 60068-2-27 (Test Ea, Unpackaged Shock)
Operating	30g peak acceleration
Nonoperating	50g peak acceleration
Vibration	IEC 60068-2-6 (Test Fc, Operating) 5g @ 10-500Hz
ESD Immunity	IEC 61000-4-2: 6kV contact discharges 8kV air discharges
Radiated RF Immunity	IEC 61000-4-3: 10V/m with 1kHz sine-wave 80%AM from 30MHz to 2000MHz 10V/m with 200Hz 50% pulse 100%AM from 900MHz
EFT/B Immunity	IEC 61000-4-4: ±4kV at 2.5kHz on power ports ±2kV at 5kHz on signal ports
Surge Transient Immunity	IEC 61000-4-5: ±1kV line-line(DM) and ±2kV line-earth(CM) on power ports ±2kV line-earth (CM) on shielded ports

Specifications - 1734-232ASC, -485ASC Modules (Continued)	
Conducted RF Immunity	IEC 61000-4-6: 10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz
Emissions	CISPR 11 Group 1, Class A
Enclosure Type Rating	None (open-style)
Conductors Wire Size Category	14 AWG (2.5mm^2) - 22AWG (0.25mm^2) shielded solid or stranded copper wire rated at 75°C or greater 3/64 inch (1.2mm) insulation 2[1]
RS-232 Field Wiring Terminations	0 - Tx 1 - Rx 2 - NC 3 - NC 4 - NC 5 - NC 6 - NC 7 - SG
RS-485 Field Wiring Terminations	0 - S+ 1 - NC 2 - S- 3 - NC 4 - NC 5 - NC 6 - CG 7 - SG
RS-422 Field Wiring Terminations	0 - Tx+ 1 - Rx+ 2 - Tx- 3 - Rx- 4 - NC 5 - NC 6 - CG 7 - SG
Terminal Base Screw Torque	7 pound-inches (0.6Nm) maximum
Mass	1.22 oz/34.6 grams
Certifications (when product is marked)	**CE**[2] - European Union 89/335/EEC EMC Directive, compliant with: EN 61000-6-4; Industrial Emissions EN 50082-2; Industrial Immunity EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity **C-Tick**[2] - Australian Radiocommunications Act compliant with AS/NZS 2064, Industrial Emissions

1 Use this conductor category information for planning conductor routing as described in publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."

2 See the Product Certification link at www.ab.com for Declaration of Conformity, Certificates, and other certification details.

Notes:

Notes:

Notes:

Rockwell Automation Support

Rockwell Automation tests all of our products to ensure that they are fully operational when shipped from the manufacturing facility.

If you are experiencing installation or startup problems, please review the troubleshooting information contained in this publication first. If you need technical assistance to get your module up and running, please contact Customer Support (see the table below); our trained technical specialists are available to help.

If the product is not functioning and needs to be returned, contact your distributor. You must provide a Customer Support case number to your distributor in order to complete the return process.

Phone	United States/Canada	1.440.646.5800
	Outside United States/Canada	You can access the phone number for your country via the Internet: 1. Go to http://support.rockwellautomation.com/ 2. Under *Contacting Customer Support* and Other Countries, click on *Click here*
Internet	Worldwide	Go to http://support.rockwellautomation.com/

Notes:

www.rockwellautomation.com

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