

# Communication Modules (ROC800-Series)

Communication modules add communication ports to a ROC800-Series Remote Operations Controllers. The Central Processor Unit (CPU) of a ROC800-Series provides three built-in communication ports. Refer to Specifications Sheet 6:ROC809. A maximum of three communication modules can be added, resulting in a maximum of six communication ports per ROC809 unit.

A variety of communication modules provide solutions to suit many specific applications. Modules include:

- ◆ EIA-232 (RS-232) for point-to-point asynchronous serial communication. EIA-232 (RS-232) communications are commonly used to provide the physical interface for connecting serial devices, such as gas chromatographs and radios, to the ROC800-Series. The EIA-232 (RS-232) communications module provides essential hand-shaking lines required for radio communications, such as Data Terminal Ready (DTR) and Ready to Send (RTS).
- ◆ EIA-422/485 (RS-422/485) for asynchronous serial communication. EIA-422/485 (RS-422/485) communications are commonly used to multi-drop units on a serial network over long distances using inexpensive twisted-pair cables. When the module is set to EIA-485 (RS-485) mode, it allows multiple-point communications. When set to EIA-422 (RS-422) mode, it allows long distance point-to-point communications. Modules are set via jumpers
- ◆ Dial-up modem for communication over Public-Switched Telephone Network (PSTN) up to 57.6K bits per second (bps) using V.42 bis, MNP2-4 and MNP10 error correction.
- ◆ Multi-Variable Sensor (MVS) module provides the communications interface and the isolated, short-circuit current-limited power required to connect up to six MVS sensors per module. A ROC809 can support a maximum of two MVS modules providing an interface for up to 12 MVS sensors.

Communication modules can only be installed in module slot 1, 2, or 3. Modules can easily be installed or removed from the module slots at any time by removing the two captive screws accessible from the front of the unit.

Serial and MVS modules are hot-swappable, meaning the module can be removed and another module of the same kind can be installed under power. The modules are hot-pluggable, meaning they may be installed directly into unused module slots under power. The modules are also self-identifying via ROCLINK™ 800 Configuration Software. Modem modules may only be inserted when the ROC809 unit is powered down.

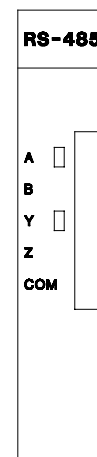
Each communication module is completely isolated from other modules, the backplane, power, and signal isolation, with the exception of the EIA-232 (RS-232) module. The field interface has been designed to protect the electronics in the module. Filtering is provided on each module to reduce the effect of noise on communication errors.

All modules have removable terminal blocks for convenient wiring and servicing. The terminal blocks can accommodate a wide range of wire gauges up to 12 American Wire Gauge (AWG).

The EIA-422/485 (RS-422/485) module has four jumpers to select between:

- ◆ EIA-422 (RS-422) mode, 4-wire.
- ◆ EIA-485 (RS-485) mode, 2-wire.
- ◆ Provide or not provide termination resistors.

Light-emitting diodes (LEDs) indicate the current status for each channel of the module.



Communications Module Example

D301171X012

**EIA-232 (RS-232) Communications Module Specifications**

**FIELD WIRING TERMINALS**

Terminal	Label	Definition
1	RX	Receive
2	TX	Transmit
3	RTS	Request to Send
4	DTR	Data Terminal Ready
5	GND	Common

**COMMUNICATIONS**

**Type:** Single Comm Port per module.  
Meets EIA-232C and RS-232C Standard.  
57.6K bps Maximum Data Rate.

**OVER-VOLTAGE PROTECTION**

±25 Volts DC, continuous on any terminal.

**POWER CONSUMPTION**

Main power supply loading at the Battery Terminals (at 12.0 Volts DC):

**Typical :** 4 mA

**Additional loading that may apply:**

**Per Active LED:** 1.5mA

**WIRING**

12 AWG at the removable terminal block.

**LED INDICATORS**

RX (Receive), TX (Transmit), RTS (Ready To Send), and DTR (Data Terminal Ready).

**WEIGHT**

47.6 g (1.68 oz).

**EIA-422/485 (RS-422/485) Communications Module Specifications**

**FIELD WIRING TERMINALS – EIA-422 (RS-422)**

Terminal	Label	Definition
1	A	Receive +
2	B	Receive –
3	Y	Transmit +
4	Z	Transmit –
5	COM	Floating EIA-422 Common

**FIELD WIRING TERMINALS – EIA-485 (RS-485)**

Terminal	Label	Definition
1	A	Receive / Transmit +
2	B	Receive / Transmit –
3	Y	No Connect
4	Z	No Connect
5	COM	Floating EIA-485 Common

**COMMUNICATIONS**

**Type:** Single Comm Port per module. Comm3 to Comm5.  
Meets EIA-422/485 and RS-422/485 Standards.  
57.6K Maximum Data Rate.

**OVER-VOLTAGE PROTECTION**

±14 Volts DC, continuous on any terminal.

**POWER CONSUMPTION**

Main power supply loading at the Battery Terminals (at 12.0 Volts DC):

**Typical :** 112 mA

**WIRING**

12 AWG at the removable terminal block.

**LED INDICATORS**

**A:** On when currently receiving.

**Y:** On when transmitting.

**ISOLATION**

**Field to Logic:** 1500 Volts DC, 1 minute.

**Field to Power:** 1500 Volts DC, 1 minute.

**Module to Module:** 1500 Volts DC, 1 minute.

**WEIGHT**

49.9 g (1.76 oz).

**Dial-Up Modem Module Specifications**

**FIELD WIRING TERMINALS**

**Connector:** RJ-11 type.

**OPERATION**

**Type:** Single Comm Port per module.  
14.4 K bps with V.42 bis. Providing up to 57.6K bps throughput.

**Mode:** 2-wire for dial-up PSTN (Bell 212A and 103 compatible).

**Data Rate:** Up to 57.6K bps asynchronous.

**LED Indicators:** TX (Transmit), RX (Receive), Ring, and Carrier Detect.

**Error Correction:** V.42, MNP2-4 and MNP10.

**Certification:** FCC Part 68 approved.

**Ring Voltage Detected:** 38 to 150 RMS, type B ringer.

**Ring Frequency Detected:** 15.3 to 68 Hz, type B ringer.

**Telephone Loop Current:** 20 to 100 mA when off-hook.

**Data Transmit Level:** -12 to -9.0 dBm, -10.5 typical.

**DTMF Transmit Level:** -2.5 to 0 dBm, average over 3 second interval.

**Surge Protection:** Conforms to FCC Part 68.

**OVER-VOLTAGE PROTECTION**

±14 Volts DC, continuous on any terminal.

**POWER CONSUMPTION**

Main power supply loading at the Battery Terminals (at 12.0 Volts DC):

**Typical :** 95 mA

**Additional loading that may apply:**

**Per Active LED:** 1.5mA

**WIRING**

12 AWG at the removable terminal block.

**LED INDICATORS**

TX (Transmit), RX (Receive), RI (Ring), and CD (Carrier Detect).

**ISOLATION**

Per FCC Part 68.

**WEIGHT**

113.4 g (4.0 oz).

**Multi-Variable Sensor (MVS) Module Specifications**

**FIELD WIRING TERMINALS**

Terminal	Label	Definition
1	A	RX / TX +
2	B	RX / TX -
3	N/A	No Connection
4	+	Sensor Power
5	-	Common

**COMMUNICATIONS**

Provides communications interface and field power for up to six MVS sensors. One second updates occur for each of the three variables for each of the sensors attached.

**OVER-VOLTAGE PROTECTION**

±14 Volts DC, continuous on any terminal.

**WIRING**

12 AWG at the removable terminal block.

**WEIGHT**

61.2 g (2.16 oz).

**POWER CONSUMPTION**

Main power supply loading at the Battery Terminals (at 12.0 Volts DC):

**Typical :** 112 mA

**Additional loading that may apply:**

**Per Active LED:** 1.5mA

**+T @ 12V:** 1.25 \* Measured Current Draw at +T Terminal

**+T @ 24V:** 2.5 \* Measured Current Draw at +T Terminal

**LED INDICATORS**

**A:** On when currently receiving.

**None:** On when transmitting.

**ISOLATION**

**Field to Logic:** 1500 Volts DC, 1 minute.

**Field to Power:** 1500 Volts DC, 1 minute.

**Module to Module:** 1500 Volts DC, 1 minute.

**Communication Modules Common Specifications**

**DIMENSIONS**

26 mm W by 133 mm H by 75 mm D  
(1.04 in. W by 5.25 in. H by 2.96 in. D).

**ENVIRONMENTAL**

**Operating Temp:** -40 to 85°C (-40 to 185°F).

**Storage Temp:** -55 to 100°C (-67 to 212°F).

**Relative Humidity:** IEC68-2-3; 5-95% non-condensing.

**Vibration:** IEC68-2-6; 0.15 mm/sec<sup>2</sup> @ 10-150 Hz.

**Mechanical Shock:** IEC68-2-27; 11 ms, sinusoidal 50 Gs non-operating, 15 Gs operating.

**Thermal Shock:** IEC68-2-14; Air to air from -20 to 85°C (-4 to 185°F).

**APPROVALS**

**Complies with the CE certifications:**

- EN55011 (Emissions).
- EN61000-4-2 (Electrostatic Discharge Immunity).
- EN61000-4-4 (Electrical Fast Transients Immunity).
- EN61000-4-6 (Conducted Immunity).
- EN61000-4-8 (Power Frequency Magnetic Field Immunity).
- EN61000-6-2 (Radiated RF Immunity).

**Meets CSA Standards:**

- CSA 22.2 No. 14-91M.
- CSA 22.2 No. 213-M1987.
- Class I, Division 2, Groups A, B, C, and D.

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