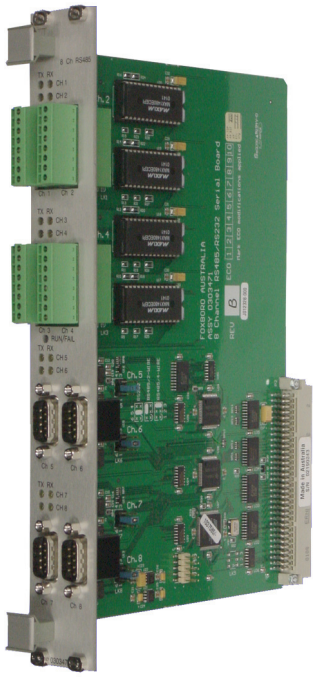
I/A Series® Remote Terminal Unit (RTU)
RTU50 Eight Channel Serial Card



INTRODUCTION

The RTU50 Eight Channel Serial Module provides a flexible and cost effective method for communicating with a multitude of intelligent field devices or master devices. The module facilitates point-to-point and multi-drop communication with a wide range of electronic flow meters, analytical devices, relays, circuit breakers and other intelligent devices.

Each of the eight ports may be configured to support communication to master or slave devices via the DNP3, Modbus, or user configurable protocols. When combined with the RTU50 main processor's programming capabilities, the Eight Channel Serial Module provides a powerful interface for gathering data from OEM devices.

FEATURES

Key features include:

- Eight channels per module
  - Four isolated RS-485 2-wire ports
  - Four RS-232 or RS-485 (2-wire or 4-wire) ports
- LED indication of communications activity on each channel
- Data rate: 50 to 38400 bps
- Hardware handshake on RS-232
- RS-232 modem control available on RS-232/RS-485 selectable ports
- Supports the following protocols:
  - DNP3 Master

- DNP3 Slave
- Modbus Master
- Modbus Slave
- User configured

- Slew-rate limited
- High electrostatic discharge immunity on all ports
- High isolation transceiver on 2-wire ports
- Surge ground and screen connection on 2-wire ports

OVERVIEW

The Eight Channel Serial Module provides multiple configurable communications ports with protocol support for DNP3 and Modbus, Master and Slave. Proprietary protocols may be configured by the user using the configurable State and Logic Language High Level Serial Interface functions (refer RTU50 SALL HLSI PSS 21S-4A1 B3).

The first four channels (1-4) provide isolated RS-485 half-duplex (2-wire) interfaces, ideal for long cable runs, large networks, and noisy environments.

Duplicated signal connections on the 2-wire RS-485 interface allow simple wiring of multi-drop configurations. Channels are slew-rate limited to minimize interference to other systems and to reduce the effect of cabling and terminations. Surge ground and current limited screen connections are provided on isolated 2-wire ports to assist noise and electrostatic discharge immunity.

The other four channels (5-8) are independently configurable for RS-232, RS-485 full duplex (4-wire), or RS-485 half-duplex (2-wire) connection. RS-485 4-wire operation is compatible with RS-422 devices. The differential signalling of the RS-485 and RS-422 standards provide high tolerance to noise and differences in ground potential.

RS-232 hardware flow control is provided on Channels 5-8. RS-232 level modem control is available on Channels 5-8 for RS-232 and RS-485. Configurations for use in SALL HLSI allows hardware flow and/or modem control in user developed protocols.

PHYSICAL SPECIFICATIONS

Physical Size

187 mm x 262 mm x 35 mm

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature

STANDARD
0°C to 60°C (32°F to 140°F)

EXTENDED(1)
-20°C to +70°C (-4°F to 158°F)

Humidity

10 to 95% (non-condensing)

(1) Extended temperature range modules are available on request.

FUNCTIONAL SPECIFICATIONS

General
Two quad UART devices with a 64 character FIFO on each transmitter and receiver

Indications
Transmit LED and Receive LED (yellow) for each channel, Run/Fail LED (green/red) for the module

Data Rate
50 to 38400 baud
(dependent on protocol configuration options)
RS-232 and RS-485 ports are slew-rate limited

Communications Protocols
DNP3 Master, DNP3 Slave
Modbus Master, Modbus Slave
SALL HLSI

Channels 1 Through 4

INTERFACE
RS-485 2-wire (compatible with CCITT V.11 and TIA/EIA-485-A)
8 way plug-in screw type terminals (Phoenix MC 1.5-3,81 series)

ISOLATION
1 kV rms (1 minute)
Galvanic isolation (data lines from the logic circuits)
Surge ground and screen connection

DRIVER CAPABILITY
1000 pF or 1200 m, 32 unit drive, 1 unit loading

Channels 5 Through 8

INTERFACE
Link configurable as RS-232, RS-485 2-wire or RS-485 4-wire, DB9 Male, modified TIA/EIA-574 (PC-compatible RS-232)
RS-232 hardware flow control
RS-232 level modem control for RS-232 and RS-485 configurations

ISOLATION
Direct connection (±7 V common mode on RS-422/RS-485)
High electrical discharge immunity

DRIVER CAPABILITY
RS-232: 1000 pF or 15 m, ±5 V drive
RS-485: 1000 pF or 1200 m, 32 unit drive, ¼ unit loading

NOTE
RS-485 4-wire is RS-422 level compatible.

PIN ASSIGNMENT

Table 1. Channels 1 Through 4

Pin	RS-485 (2-wire) Isolated
1	Transmit/Receive Data B (+)
2	Transmit/Receive Data A (–)
3	Signal Ground
4	Chassis – connected to SCD frame
5	Chassis – connected to SCD frame
6	Signal Ground
7	Transmit/Receive Data A (–)
8	Transmit/Receive Data B (+)

Table 2. Channels 5 Through 8

Pin	Direction	RS-232	RS-485 (4-wire)	RS-485 (2-wire)
1	In	Signal Detect*	–	–
2	In	Receive Data	Receive Data B (R+)	–
3	Out	Transmit Data	Transmit Data A (T–)	Transmit/Receive A (–)
4	Out	Data Terminal Ready*	–	–
5	–	Signal Common	Signal Common	Signal Common
6	In	Data Set Ready*	–	–
7	Out	Request To Send*	Transmit Data B (T+)	Transmit/Receive B (+)
8	In	Clear To Send*	Receive Data A (R–)	–
9	In	Ring Indicator*	–	–

NOTES

Minimum RS-232 connections are Receive Data, Transmit Data, and Signal Common.

Signals marked with asterisks (*) do not require connection.

Null modem connections may be used.

Where collision detection is not provided, the state of Signal Detect is ignored.

Data Terminal Ready is asserted after the port is configured.

Request To Send is asserted during the transmission of data.

ORDERING INFORMATION

Part Number	Description
0399135	RTU50 Eight Channel Serial Module

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