MODBUS Serial Communications Card

3019

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PRODUCT HIGHLIGHTS

- Four Configurable Serial Ports
- MODBUS Serial Master and Slave Protocols
- Supports RS-232 and RS-485 Protocols
- Supports RTU and ASCII Transmission Modes
- Supports Full- and Half-duplex Transmission Modes
- Supports Normal and Null Modem Serial Wiring
- 32 MB SDRAM, 32 Mbytes Flash Memory
- Output Validation
- LED Status Indicator
- Hot Swappable

PRODUCT OVERVIEW

The 3019 MODBUS Serial Communication Card connects to the 3099/2-100 Single Termination Module – MODBUS Serial. The termination module provides four serial ports for communications with MDOBUS-compatible controllers. Each serial port has 4 DIP-switches that are used to designate the protocol. It supports integration of an RTP control system with equipment using the MODBUS Serial protocol. All hardware configuration options are located on the 3099/25-100 Termination Module.

The MODBUS Serial Communications Card manages all aspects of the protocol and data exchange including message translating and formatting, message checking, responding to MODBUS controllers with power acknowledgments, error, or success codes, and protocol data byte ordering. This built-in intelligence unburdens the RTP controller's processor from the responsibility of managing the MODBUS network.

The card performs bus checking functions on the input, output, and command operations. Data is sent twice, once normal and once inverted. The results are then compared and the data is not acted upon unless the comparison passes. If the check does not pass, an error bit is set in the status register.

The Contention checking circuit monitors the bus command signals for any simultaneous occurrences of two or more command signals. If a simultaneous occurrence is detected, an error bit is set in the status word.

Each MODBUS port can be configured to operate either as a MODBUS master device that request read and write data transfers from MODBUS slave devices, or as a

MODBUS slave device that responds to requests from a MODBUS master. It supports multiple MODBUS servers, asynchronous read and write functions, a multiple outstanding read and write request queue, and coil and discrete I/O functions.

Its "hot swappable" design has backplane interface logic to protect the card from damage, and to prevent control and data signal degradation on the bus, when plugged into a live RTP chassis. A front panel LED indicates overall health status of the card.

RTP is the Best Technology for Your Investment, Here's Why:

The 3000 is a multi-processor architecture that delivers exceptional Performance and Comprehensive Diagnostics. The results speak for themselves: A Reaction Time of 12 msec, true 1 msec SOE (Analog and Digital), an MTBF of greater than 50000 years, an MTTFS of greater than 60000 years, and a PFDavg of 5×10^{-5}. *Compare these numbers to any other system.*

Built-in Proof Test Diagnostics means it will never be necessary to shut down at the proof test interval. Unlimited online downloads of logic and configuration changes do not require a periodic shut down like other systems. *Compare this functionality to any other system.*

Net Suite Software: One-time price includes unlimited use of Logic Development, Alarm Manager, Data Archive and Historian, and HMI without hardware or software keys. *Compare this functionality and price to all other systems.*

Finally, a Safety Instrumented System (SIS) should always take the process it protects to a safe state when it is required to do so, and it should never interfere with the operation of the process at any time. *The 3000 TAS does this better than any other system.*

SPECIFICATIONS

Electrical Specifications

Isolation	500VAC/DC field to RTP Chassis Ground
µProcessor	RC4000 RISC processor

CPU Speeds:

CPU	150 MHz
System Bus	50 MHz

Memory:	32 Mbytes SDRAM
	32 Mbytes Flash

User Connectors

Number:	4
Type:	Serial, user configurable
Protocol:	RS-232 and RS-485
Serial Wiring:	Null or Normal modem

Supported MODBUS Functions

Code	Function	Supported Port	
		Master	**Slave**
01	Read Coils	✓	✓
02	Read Discrete Inputs	✓	✓
03	Read Holding Registers	✓	✓
04	Read Input Registers	✓	✓
05	Write Single Coil		✓
06	Write Single Register		✓
15	Force Multiple Coils	✓	✓
16	Preset Multiple Registers	✓	✓

MODBUS Protocols: Serial Master/Slave

Transmission Mode:	RTU Full-duplex
	RTU Half-duplex
	ASCII Full-duples
	ASCII Half-duplex

RS-485 Interface:

Mode*:	Full/Half duplex
Receiver Input Resistance:	24 KΩ
Protection:	Current Limiting
	Thermal Shutdown
Data Rage:	115.2 Kbaud, maximum
	1200 Baud, minimum

* RS-485 half-duplex requires bias resistors

RS-232C Interface:

Mode:	Full Duplex
Receiver Input Resistance:	5 KΩ (maximum)
Data Rate:	115.2 Kbaud, maximum
	1200 Baud, minimum

Power Requirements:

+5VDC @ 1.4 A

Environmental*

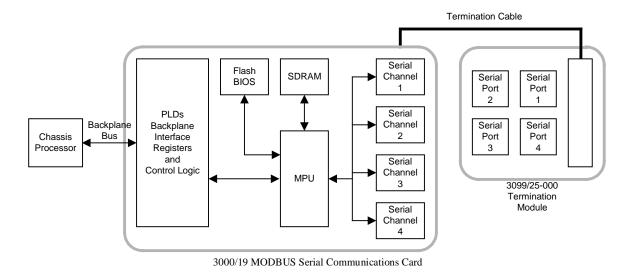| **Standard Operating Range:**	–20ºC to +60ºC
Storage Temperature Range:	–25ºC to +85ºC
Relative Humidity Range:	10% to 95% non-condensing

*Complies with IEC 61131-2

Termination Module*

3099/25-100 Single Termination Module
Termination Cable Included with 3000/19 Card
*Consult factory for complete list of all available terminations

3000/19 MODBUS Serial Communications Card