4809

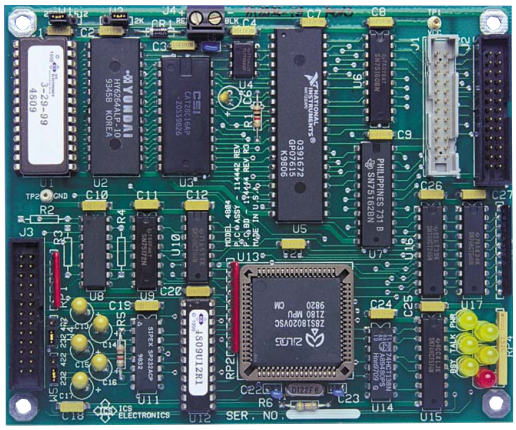
GPIB<->MODBUS INTERFACE BOARD

- Converts simple commands into Modbus RTU messages.
  Relieves user from having to format messages and do CRC checking.
- Provides both single ended RS-232 and balanced RS-422 / RS-485 serial signals.
  Can control multiple Modbus devices.
- GPIB Interface is IEEE-488.2 Compliant.
  Meets latest GPIB Standards.
- GPIB Address can be set by SCPI commands or by an external switch.
  User can select address setting method.
- Saves GPIB, Serial settings and user's IDN message in E²ROM.
  Personalizes board as part your end product.
- Operates on +5 Volts.
  Runs off of host's power supply.
- On card status LEDs
  Visual indication of operation and test status

DESCRIPTION

The Model 4809 GPIB<->Modbus Interface Board is an IEEE 488.2 / GPIB to Serial Interface that adapts Modbus slave devices to the GPIB or HP-IB bus. The 4809 lets the user send simple read-write messages over the GPIB bus to control and query slave Modbus devices. The 4809 relieves the user from the Modbus message formatting and error checking tasks. The 4809 has both RS-232 and RS-485 interfaces so it can be connected directly to a single Modbus slave device or to multiple Modbus devices on an RS-485 network.

The 4809 is a small 4.5 x 5.5 inch board that is normally mounted inside the host chassis with the Modbus device. The 4809 is powered by the host's +5 volt power supply. Signal connections are made with flat ribbon cables that plug into headers on the 4809. When used with the ICS's GPIB Connector / Address Switch Boards, the 4809 becomes an quick and easy way to provide an IEEE-488.2 compatible interface for any Modbus device.



4809

Operation

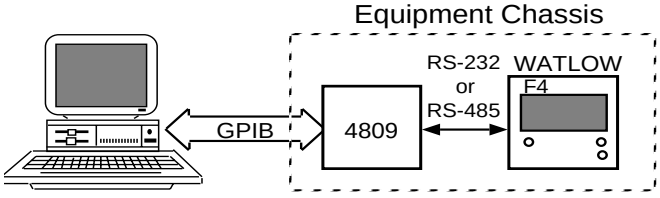
The user sends GPIB commands to the 4809 that sets the Modbus device address, specifies the register to be read or written and the data value. The 4809 converts these commands into the Modbus RTU format, adds the CRC checksum and transmits the messages to the Modbus device. Received messages are checked and query response data is outputted to the GPIB bus when the 4809 is next addressed to talk. Modbus communication faults, exception messages and other errors are reported to the user through a Modbus Error Register in the 4809's Status Structure. The 4809 can be set to generate an SRQ when a Modbus error occurs. Application Note, AB48-25 describes how to use the 4809 to control a Modbus device and includes a example Visual Basic control program.

Configuring

The 4809's SCPI command parser lets the user configure and query the interface settings with SCPI commands. The user can enter an IDN message to personalize the 4809 as part of the end product. The configuration settings are saved in a E²ROM so they can be recalled when the 4809 is powered-on or reset.

GPIB Connections and Address

The 4809 has two GPIB headers. One header is for direct connection to a panel mounted GPIB connector. The second header includes address switch lines and mates with ICS's GPIB Connector / Address Switch Assemblies. The GPIB Connector / Address Switch Assemblies mount to the host's rear panel and have an 8-bit rocker switch for externally setting the 4809's GPIB address.



Interfacing a Watlow Controller to the GPIB Bus

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4809: SPECIFICATIONS

IEEE 488 Bus Interface

The 4809's 488 Bus Interface meets IEEE STD 488.2-1987 and has the following capabilities:

SH1, AH1, T5, L3, SR1, PP0, DC1
RL0, DT0, C0 and E1 / E2 drivers

Bus drivers incorporate power up / down protection to prevent glitching the bus during power turn-on.

Address Capability
Primary addresses 0-30.

Buffers

GPIB Input	2 Kbytes
GPIB Input	1 Kbytes
Serial Input / Output	256 bytes

Status Reporting Structure
IEEE-488.2 and SCPI Status Byte, ESR, Questionable and Operational Registers.

SRQ Generation
SRQs are generated per the IEEE-488.2 specification if the unit is not addressed to talk, if SRQs are enabled and if an enabled register bit occurs.

488.2 Common Commands
*CLS, *ESE, *ESE?, *ESR?, *IDN?, *OPC, *OPC?, *PSC, *RST, *SAV, *SRE, *SRE?, *STB, *TST?, AND *WAI.

SCSI Commands
The 4809 conforms to the SCPI 1994.0 Specification and uses SCPI commands to set:

GPIB Bus Address
External GPIB Address Enable
Baud rate select
Data bits 7 or 8
Stop bits 1 or 2
Parity Odd, Even or None
RS485 Half-Duplex operation
Talk Format HEXlist or ASCii

Included Accessories

Instruction Manual
Configuration Disk with menu driven configuration programs sample programs.

Serial Interface

Full duplex serial interface with single ended RS-232 and differential RS-422 (RS-485) signals. Signal selection made by jumpers on the 4809. RS-485 half-duplex operation enabled with a SCPI command.

RS-232 Signals	TxD, RxD, RTS, CTS, DSR and DTR
RS-422 Signals	Tx and Rx pairs
Baud Rates:	300, 600, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K and 38.4K baud
Data Bits	7 or 8 bits
Parity	Odd, even or none
Stop Bits	1 or 2

Modbus Commands

Following commands accept ASCII decimal values or HEX values starting with #h. Code is the Modbus RTU command code used by the 4809.

Cmd	Code	Function
C n	-	Sets Device Address
L w	0x08	Performs loopback test
R reg, n	0x03	Reads *n* words from register *reg*
W reg, w	0x06	Writes to a single register *reg*
WB reg, n, w...w	0x10	Writes multiple words *n* to a single register *reg*
D time		Sets serial timeout in ms
E?		Queries Modbus Error Register

Physical

Size, L x W x H
139.7 x 114.3 x 12.7 mm
(5.5 x 4.5 x 0.5 inches)

Connectors:
Three flat ribbon headers
GPIB: 24-pin 3M 2524 male connector mates to panel mounted GPIB connector.
GPIB / Addr: 26-pin 3M 2526 male connector mates to ICS GPIB / Connector Switch Assemblies.
Serial: 26-pin 3M 2526 male connector mates to a DB-25 pin connector.

LED Indicators:
PWR, RDY, TALK, LSTN, SRQ and ERR

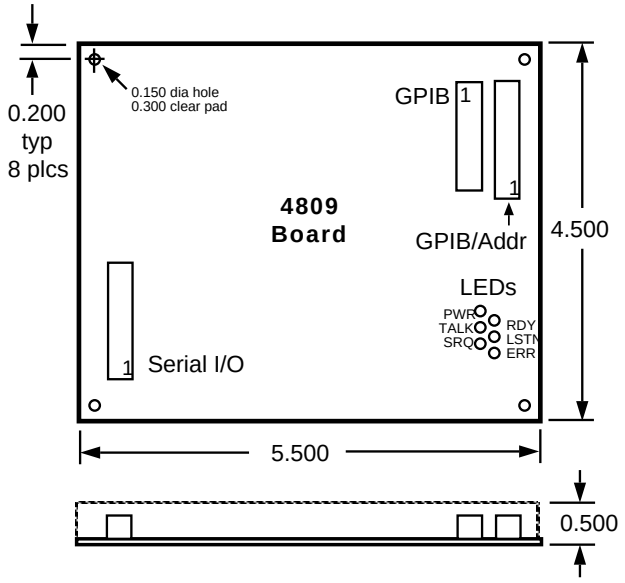
Temperature:
Operation -10° C to +55° C
Storage -20° C to +85° C

Humidity:
0-90% RH without condensation

Power: +5 Vdc @ 400 mA (typical)

Available Accessories

GPIB flat ribbon cable, 90 cm max., P / N 114439-90.
GPIB Connector / Addr Sw Assy with flat ribbon cable, 90 cm max., P / N 113640-90 or 113642-90.



ORDERING INFORMATION

	Part Number
GPIB - Serial Interface Board (includes Manual and Configuration Disk)	4809
GPIB - Serial Interface Board (Board only)	114922
4809 Starter Kit includes 4809 Board, 488-PCIlt GPIB Controller, Cables, Manual and CD-ROM	114923-01
4809 Starter Kit includes 4809 Board, 488-USB GPIB Controller, Cables, Manual and CD-ROM	114923-02