Installation Instructions
32-Channel Analog Input Module
Quantum Series 140 AxI 05x 00sc

Chapter 1
OVERVIEW

Throughout this installation and operation guide, unless reference is being made to one specific version of the module, the designation 140 AxI 05x 00sc will be used for generic reference purposes. The 140 AxI 05x 00sc consists of a series of four analog input modules, each with 32 channels of input. The differentiation between the four different modules is shown in the table below.

140 ACI 050 00sc	current only
140 AVI 050 00sc	voltage only
140 ACI 051 00sc	current or voltage combination
*140 ACI 052 00sc	current or voltage combination with time and date stamping

* The 140 ACI 052 00sc Time Stamp option is covered in a separate manual.

Each module will accept 32 single ended analog inputs. The inputs are divided into four groups of eight inputs each. Each group has 15V isolation to the other groups. Analog inputs within a group has 0V of isolation channel-to-channel. All inputs have 500V ac isolation channel-to-backplane.

These modules have been designed for projects that include large quantities of analog inputs. Process control and data acquisition applications for industries such as utilities, waste water, oil and gas, food and beverage, and building automation are ideally suited for this module. The time and date stamp version of the module is perfect for remote terminal unit (RTU) applications or for supervisory control and data acquisition (SCADA) applications requiring programmable alarm levels.

Input channels include over voltage circuit protection, over and under range detection and active notch filtering. The voltage mode of the module handles four different voltage ranges and the current mode handles two current ranges. You can configure the module to provide data in one of four data formats. Set up of the module is very simple through the use of configuration and status registers using Concept, Modsoft or Taylor programming software.

1.1 Inputs

The module can be purchased as current only, voltage only, current or voltage combination, or as a current or voltage combination with a time stamp option. The 32 channels are separated into four groups of eight. Each group can be configured for a different voltage or current range. The ranges available are as follows:

Current Ranges

- 4-20 mA, 0-20 mA

Voltage Ranges:

- ±10VDC, 0-10VDC, 0-5VDC, 1-5VD

The module can provide data to the PLC in the following formats:

- 12 bit (0 to 4095)
- signed 15 bit (-32768 to +32767)
- unsigned 16 bit (0 to 65535)
- DVM (0 to 10000)
- Input Filter Options (10Hz, 50Hz, 60Hz, 1kHz)

1.2 LEDs

The module has a front LED panel that includes 35 LEDs:

Ready LED -

1 Green LED indicates module's self test has passed and is ready to communicate.

Active LED -

1 Green LED indicates BUS communication is established between the module and the rack.

Fault LED -

1 Red LED indicates a module self test error, or fatal H/W error. A blink code will indicate the type of self test error. Count the number of blinks before a pause to determine the error code in the table below.

Fault Blink #	LED Blink Code Fault
3	DPM Test Error
4	CPU Error
5	Watchdog Timer Error
6	RAM Error
7	Flash EPROM CRC Error
8	Calibration EEPROM Error

Channel LED -

32 Green LEDs indicates the channel is enabled and a valid input signal level is present. The LED is off if the channel is disabled. A blinking LED indicates that the channel has exceeded a range limit.

Chapter 8
SPECIFICATIONS

Number of Channels	32
Input Registers Required	9
Output Registers Required	1
Input Configuration	32 inputs configured in groups of 8 channels per common
LEDs	35 - One each for Ready (Green), Active (Green), Fault (Red), 32 Channel (Green)
Voltage Range	±10VDC, 0 to 10VDC, 0 to 5VDC, 1 to 5VDC
Current Range	4 to 20mA, 0 to 20mA
Impedance, input	Voltage Mode: 10 Megohms, min. Current Mode: 350 ohms
Fault Detection	Over & under range status bits, for all current and voltage modes.
CMRR	90 dB
Power Requirements	630 mA @ 5 V maximum
Max Input Current	±50 mA continuous
Max Input Voltage	± 20VDC continuous
Agency Approvals	UL, CUL Class 1 Div II, CE, FCC Class A
Accuracy	Note: Accuracy is dependent on the filter frequency selection, range selection, data format, and input noise.
Voltage Typ	±0.03% of full scale typical @ 25°C.
Voltage Max	±0.05% of full scale Maximum @ 0 to 60°C.
Current Typ	±0.05% of full scale typical @ 25°C
Current Max	±0.10% of full scale maximum @ 0 to 60°C
Miscellaneous	
Display format	12 bit integer, 16 bit integer, 15 bit signed integer, 10000 count DVM

Engineering units	mV, mA
Resolution	10 bits to 22 bits (frequency dependent)
Input Filter	10Hz, 50Hz, 60Hz, 1KHz Digital Notch Filter, Programmable in groups of 8 inputs.
Channel Update Time	See Installation Guide for Channel Update Time chart vs filter selection
Single Channel	12 ms to 308 ms (frequency dependent)
32 Channel	384 ms to 9.9 sec (frequency dependent)
Isolation	
Channel to Rack	500 VAC Continuous Optical & magnetic
Channel to Channel	0 volts, non-isolated within a group
Group to Group	±15V