

Model: 485SDA12

Addressable RS-485 Data Acquisition Module

Features

- ✓ 256 Unique User Defined Addresses
- ✓ Automatic Baud Rate Detection
- ✓ 11 Channels of 12-bit A/D
- ✓ 0.610mV A/D Resolution (with 2.5VDC Reference)
- ✓ 3 Digital Inputs (-30 to +30 VDC)
- ✓ 3 Digital Outputs (0 to 5 VDC)

Functional Description

The 485SDA12 provides a low-cost, easy to use solution for serial port data acquisition. It offers 11 channels of 12-bit A/D inputs, 3 digital outputs, and 3 digital inputs. With these features, the module can be used to sense a variety of external conditions and to control a variety of devices. The module comes with a demo program in QuickBasic. A data logging utility is included to provide a simple way to import data into other programs (such as Excel). These programs are Windows compatible (95, 98, NT, 2K, XP, and Vista). RS-232 and 10-bit A/D versions are available (232SDA10, 232SDA12, and 485SDA10).

Ordering Information

Model Number	Description
485SDA12	RS-485 Addressable Data Acquisition Module
Accessories	
485PS2	12VDC@100mA Power Supply, Wall transformer

Operation

- A manual is contained on the CD ROM, which ships with the module.
- There are only three commands required to control the 485SDA12: Read A/D, Read Digital I/O, and Set Output State. There are also four commands that are used to configure the module: Set Power Up State, Set Turn-around Delay, Set Module Address, and Read Module configuration. The configuration parameters are stored in non-volatile memory. An extended command set for bit error detection is available. Refer to the manual for more information.
- A/D Converter: The module has 11 channels of 12-bit A/D inputs. The full-scale voltage can be set anywhere from 2.5 VDC to 5.0 VDC. A 5 VDC reference is available to provide a 0 to 5 VDC range without any external components. The A/D converter has a conversion time of approximately 10 microseconds. However, the sampling rate is limited by the serial communications. The actual sampling rate for a single channel is approximately 120 samples per second at 9600 baud. This rate drops to 25 samples per second when sampling all of the channels. The A/D inputs are made via a DB-25 female connector.
- Digital I/O Lines: The 485SDA12 has 3 digital inputs and 3 digital outputs. The digital outputs are CMOS/TTL compatible. The digital inputs are CMOS/TTL compatible, and can handle voltages from -30 to +30 VDC. A DB-25 female connector is used.



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- Communications: The unit connects to the host computer's RS-485 or RS-422 serial port using terminal blocks. The 485SDA12 will work with a 2-wire or 4-wire RS-485 system. The unit automatically detects data rates from 1200 to 9600 baud. Use a 8 data bits, 1 stop bit, and no parity. The address and turn-around delay are software programmable to allow for use of multiple devices or connection to existing systems.

I/O Connector Pin-out

Pin	Function	Pin	Function
1	Ground	14	Digital Output Number 0
2	+12 VDC Output (see note)	15	Digital Output Number 1
3	Digital Input Number 0	16	Digital Output Number 2
4	Digital Input Number 1	17	+5 VDC Output
5	Digital Input Number 2	18	A/D Reference Input (+)
6	Digital Ground	19	A/D Reference Input (-)
7	Analog Ground	20	No Connection
8	A/D Input Number 0	21	A/D Input Number 6
9	A/D Input Number 1	22	A/D Input Number 7
10	A/D Input Number 2	23	A/D Input Number 8
11	A/D Input Number 3	24	A/D Input Number 9
12	A/D Input Number 4	25	A/D Input Number 10
13	A/D Input Number 5	Note: Actual output is equal to power supply input minus 0.7 VDC	

RS-485 Terminal Block

TB Label	Signal	485SDA12 Function	Notes
TD(A)	Transmit Data (A)	Output	Loop to RD(A) for 2-Wire RS-485
TD(B)	Transmit Data (B)	Output	Loop to RD(B) for 2-Wire RS-485
RD(A)	Receive Data (A)	Input	Loop to TD(A) for 2-Wire RS-485
RD(B)	Receive Data (B)	Input	Loop to TD(B) for 2-Wire RS-485
GND	Ground		Connect Signal Ground and Power Ground
+12V	12 VDC Power Input	Power	

Specifications

Analog to Digital Converter

Resolution: 12 Bit
 Channels: 11
 Reference Range: 5.0 VDC Max (1.221 mV per Bit)
 2.5 VDC Min (0.610 mV per Bit)
 A/D Ref Input (negative): 0 to 2.5 VDC
 A/D Ref Input (positive): 2.5 to 5.0 VDC
 Input Voltage Range: Negative 0.3 to Positive 5.3 VDC
 Total Adjusted Error: Plus or minus 1.0 LSB Max.
 Note: A/D input must be driven from a source impedance less than 1 k ohm

Digital Outputs

Channels: 3
 Low Voltage: 0.6 VDC @ 8.7 milliamps
 High Voltage: 4.3 VDC @ -5.4 milliamps

Communications

Standard: RS-422/485
 Addresses: 256
 Turn-around delay: Programmable 0 to 255 character times
 Data Rate: 1200 to 9600 baud (automatic detection)
 Format: 8 data bits, 1 stop bit, no parity
 Connector: Terminal Block

5 Volt Reference

Output Voltage: 4.975 VDC to 5.025 VDC
 (5.0 VDC typical)
 Accuracy: Plus or minus 0.5 %
 Max Output Current: 5 mA

Digital Inputs

Channels: 3
 Voltage: Minus 30 to Positive 30 VDC
 Low Voltage: Minus 30 to Positive 1 VDC
 High Voltage: Positive 2 to Positive 30 VDC
 Leakage Current: 1 micro amp maximum

Power Supply

Input Voltage: 9 to 18 VDC
 Current: 25 milliamps
 Does not include external devices or port powered (see manual)



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