Model 485SDD16

RS-485 Digital I/O Module

Description

The 485SDD16 provides a low-cost, easy-to-use solution for serial port to discrete digital I/O applications. The 485SDD16 offers 16 programmable digital I/O lines. This general purpose control module can be used to sense external ON/OFF conditions and to control a variety of devices. The 485SDD16 includes an instruction manual and software with a demonstration program written in QuickBASIC.

Features

- 16 programmable digital I/O lines
- CMOS/TTL compatible outputs (0Vdc to 5Vdc)
- CMOS/TTL compatible inputs (0Vdc to 5Vdc)
- Configurations stored in non-volatile memory
- Automatic baud rate detection
- RS-485 2-wire or RS-422/485 4-wire communications
- 256 unique user defined address for multi-node network compatibility

Commands

There are only two commands required to control the 485SDD16: set output lines and read I/O lines. Five additional commands are used for configuring the module: set module address, set communication turn-around delay, define I/O lines, set output's power-up state, and read module configuration. Command strings are from four to six bytes in length; the "!" character, an address byte, two command characters, and one or two data bytes (if required).

485SDD16 Commands

Function	Command	Response
Set Output Lines	!{addr}SO{I/O msb}{I/O lsb}	no response
Read I/O Lines	!{addr}RD	{I/O msb}{I/O lsb}
Set Module Address	!{addr}SA{new addr}	no response
Set Turn-around Delay	!{addr}SC{#}	no response
Define I/O Lines	!{addr}SD{I/O msb}{I/O lsb}	no response
Set Powerup States	!{addr}SS{I/O msb}{I/O lsb}	no response
Read Configuration	!{addr}RC	*I/O Definitions* *Powerup States* {I/O msb}{I/O lsb}{I/O msb}{I/O lsb}{addr}{t-a delay}

NOTE: Each {...} represents one byte.

In addition to the normal "!" (21h) commands, an extended set of commands using "#" (23h) as the first character have been added to provide bit-error identification by sending complements of character bytes after the fourth byte of the command and in all response character bytes.

B&B ELECTRONICS

www.bb-elec.com *orders@bb-elec.com support@bb-elec.com*
International Office: 707 Dayton Road PO Box 1040 Ottawa, IL 61350 USA 815-433-5100 Fax 433-5104
European Office: Westlink Commercial Park Oranmore Co. Galway Ireland +353 91 792444 Fax +353 91 792445

485SDD16 Extended Commands

Function	Command	Response
Set Output Lines	#{addr}SO{I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb}	no response
Read I/O Lines	#{addr}RD	{I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb}
Set Module Address	#{addr}SA{new addr}~{new addr}	no response
Set Turn-around Delay	#{addr}SC{#}~{#}	no response
Define I/O Lines	#{addr}SD{I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb}	no response
Set Powerup States	#{addr}SS{I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb}	no response
Read Configuration	#{addr}RC	*I/O Definitions* *Powerup States* {I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb}{I/O msb}~{I/O msb}{I/O lsb}~{I/O lsb}{addr}~{addr}{t-a delay}~{t-a delay}

NOTE: Each ~{…} represents one byte complement.

Digital I/O Lines

The 485SDD16 has 16 programmable I/O lines. As inputs they are CMOS/TTL compatible. As outputs they are CMOS/TTL compatible. The digital I/O lines are available on a DB-25S (female) connector. Inputs can be used to sense switch closures, contact closures or the state of digital signals. Inputs can also sense AC voltages by connecting solid state relays between the AC voltage source and the input. Digital outputs are used to turn on and off external devices. Buffering of the output may be required in order to supply the proper power to control the external device. Controlling AC voltage devices requires connecting solid state relays between the device and the digital output. Solid state relays are available from many manufacturers.

IO Connector Pinouts

DB-25S Pin #	Function	DB-25S Pin #	Function
7	GND	16	I/O #13
8	+12Vdc Input	17	I/O #12
9	I/O #0	18	I/O #11
10	I/O #1	19	I/O #10
11	I/O #2	21	I/O #9
12	I/O #3	22	I/O #8
13	I/O #4	23	I/O #7
14	I/O #15	24	I/O #6
15	I/O #14	25	I/O #5

Communications

The 485SDD16 connects to the host computer's 2-wire or 4-wire RS-485 port or a 4-wire RS-422 port from terminal blocks. The unit automatically detects baud rates from 1200 to 9600. A data format of 8 data bits, 1 stop bit, and no parity is used.

Optical Isolation: If optical isolation is required, use B&B's 485HSPR high-speed optically isolated converter with this product.

RS-485 Terminal Block Layout

TB Label	Signal Name	Signal Direction at 485SDD16	Notes
FG	Frame Ground	-	Connection required to meet RS-422/485 Standards.
TD(A)	Transmit Data (A)	Output	Connection required. [loop to RD(A) for 2-wire hookup]
TD(B)	Transmit Data (B)	Output	Connection required. [loop to RD(B) for 2-wire hookup]
RD(A)	Receive Data (A)	Input	Connection required. [loop to TD(A) for 2-wire hookup]
RD(B)	Receive Data (B)	Input	Connection required. [loop to TD(B) for 2-wire hookup]
+12V	+12 Vdc power input	Input	Connection is required.
SG	Signal Ground	-	Connection required to meet RS-422/485 Standards.

Specifications

I/O Lines

Total:	16
Inputs	
Voltage Range:	0 Vdc to 5 Vdc
Low Voltage:	1.0 Vdc max.
High Voltage:	2.0 Vdc min.
Leakage Current:	1 microamp max.
Outputs	
Low Voltage:	0.6 Vdc @ 8.3 milliamps (Sink)
High Voltage:	4.3 Vdc @ -3.1 milliamps (Source)

Power Supply

Input Voltage:	8 Vdc to 16 Vdc @ 35 milliamps* * Doesn't include the power consumption of external devices.
Connection:	Terminal block or DB25S I/O connector

Communications

Standard:	RS-422/485
Baud Rate:	1200 to 9600 (automatic detection)
Format:	8 data bits, 1 stop bit, no parity
Addresses:	256
Turn-around Delay:	Programmable from 0 to 255 character transmission times.
Connection:	Terminal blocks

Size

0.7 x 2.1 x 5.2 in.

B&B ELECTRONICS

www.bb-elec.com *orders@bb-elec.com support@bb-elec.com*

International Office: 707 Dayton Road PO Box 1040 Ottawa, IL 61350 USA 815-433-5100 Fax 433-5104
European Office: Westlink Commercial Park Oranmore Co. Galway Ireland +353 91 792444 Fax +353 91 792445