



INTELLIGENT CONTROLS INC
PO BOX 638
34 SPRINGHILL RD SACO, ME 04072 U S A

APPLICATION BULLETIN

000-0250 D

SC-01 Smart Converter – User Guide

Overview

The Smart Converter allows up to thirty-two RS232 devices to be connected to one RS485 bus. The RS232 devices can be addressable or non-addressable (“dumb”) devices. For addressable RS232 devices, you can communicate to each device individually with Smart Converters.

Specifications

RS485 bus	
Address Range:	A-Z, a-f
Control power:	10-14 VDC, 100 mA
Comm. Port Settings:	9600 pbs, 8 data bits, 1 stop bit, no parity
Isolation:	1000 VDC
RS232:	Support TX, RX, GND, DB9 Female, DTE or DCE
RS485:	4 wires, Terminal Block
Max. Distance:	1000 feet
Dimension:	2.5”L x 2.0”W x 1.0”H, 7 ounces

Items in the package

Smart Converter
Type 1 cable (1 foot, DB9 male to DB9 male)
User guide

General Operation

On the side of the Smart Converter there are 4 green LED indicators, one labeled PWR that turns on when the Smart Converter is powered on, one labeled TXD that flashes when the Smart Converter is transmitting data on the RS-485 Bus device and one labeled RXD that flashes when data is being received from the RS-485 Bus. The fourth green LED is not used.

Communications

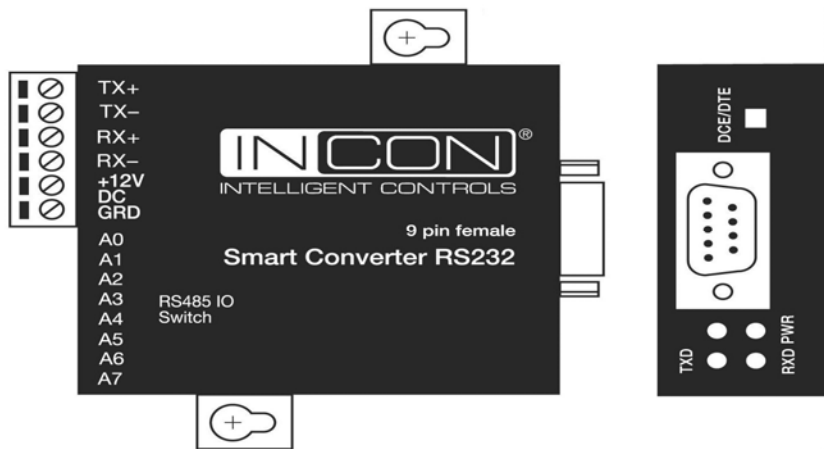
The Smart Converter communicates at 9600 baud, 8 data bits, no parity, 1 stop bit, and no handshaking. There is no delay or buffering through the Smart Converter.

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Setup

Two switch settings must be configured on each Smart Converter:

- RS485 address ID, using the DIP switches
- RS232 DCE/DTE selection switch



Please refer to Appendix A for the address letter table.

When connecting a device to an existing RS485 Bus; using one Smart Converter:

- Set the DCE/DTE switch to “DCE”
- Select an address letter using Appendix A and set the DIP switches
- Connect the supplied serial cable, the end with blue dot, to the RS232 connector on the device and the other end to the Smart Converter
- Connect the RS485 cables to the removable terminal block as shown in the drawing

If connecting to a host PC, a second Smart Converter is required. Set the address for the host converter to “11111111”, all switches in the down position. Set the DCE/DTE switch to “DTE”. Connect a second Type 1 cable to the host and second Smart Converter as described above. Connect the RS485 cables to the removable terminal blocks between both Smart Converters. 31 additional units can be wired together in the same network. Use Gender Adapters as needed.

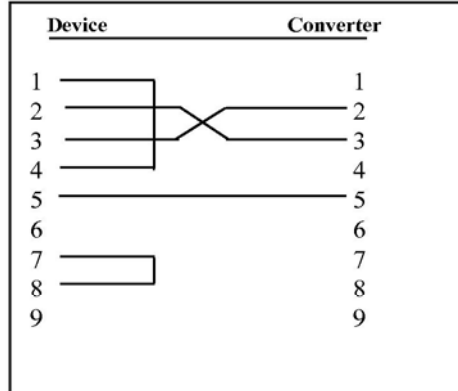
Open the software application to begin communicating with the device.

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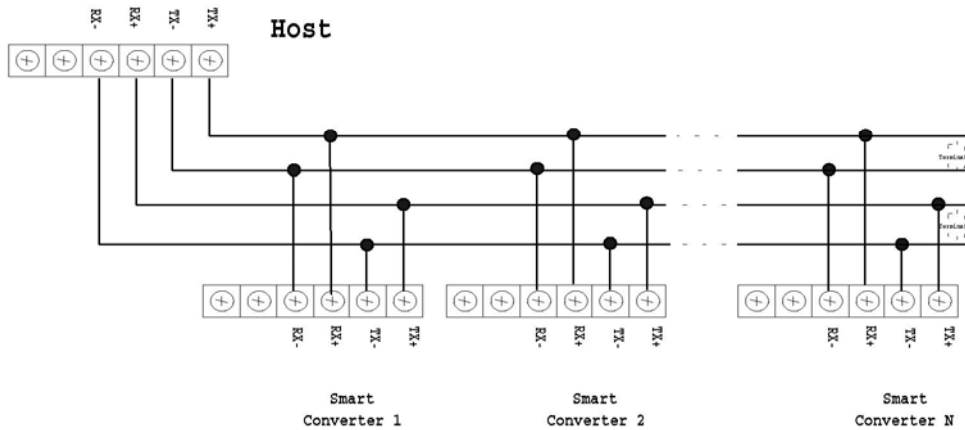
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Cable Pin Layout:



The typical RS485 bus wiring (host address “11111111”):



Troubleshooting

- To make sure that the wiring is correct, test each converter individually by setting the device address to “11111111”. Hyperterminal may then be used to communicate directly to the non-addressed device. After communication is verified, set the Address of the device as desired.
- Make sure that the cable(s) is connected correctly; the end of the cable with the blue dot goes to the RS232 device or host communication port, the other end goes to the Smart Converter.
- Verify the RS485 cables are connected correctly to the removable terminal block(s) as shown in the drawing.
- Observe the RXD and TXD LEDs to verify data flow.
- If no data flow cycle power to the Smart Converter.



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Appendix A RS485 Address Table

DIP Switch in down position = "1" and in up position = "0"

The Computer/Host side DIP position = "11111111"

RS485 ID	DIP Switch 1	DIP Switch 2	DIP Switch 3	DIP Switch 4	DIP Switch 5	DIP Switch 6	DIP Switch 7	DIP Switch 8	RS485 ID	DIP Switch 1	DIP Switch 2	DIP Switch 3	DIP Switch 4	DIP Switch 5	DIP Switch 6	DIP Switch 7	DIP Switch 8
A	0	1	1	1	1	1	0	1	Q	0	1	1	1	0	1	0	1
B	1	0	1	1	1	1	0	1	R	1	0	1	1	0	1	0	1
C	0	0	1	1	1	1	0	1	S	1	1	0	1	0	1	0	1
D	1	1	0	1	1	1	0	1	T	1	1	0	1	0	1	0	1
E	0	1	0	1	1	1	0	1	U	0	1	0	1	0	1	0	1
F	1	0	0	1	1	1	0	1	V	1	0	0	1	0	1	0	1
G	0	0	0	1	1	1	0	1	W	0	0	0	1	0	1	0	1
H	1	1	1	0	1	1	0	1	X	1	1	1	0	0	1	0	1
I	0	1	1	0	1	1	0	1	Y	0	1	1	0	0	1	0	1
J	1	0	1	0	1	1	0	1	Z	1	0	1	0	0	1	0	1
K	0	0	1	0	1	1	0	1	a	0	1	1	1	1	0	0	1
L	1	1	0	0	1	1	0	1	b	1	0	1	1	1	0	0	1
M	0	1	0	0	1	1	0	1	c	0	0	1	1	1	0	0	1
N	1	0	0	0	1	1	0	1	d	1	1	0	1	1	0	0	1
O	0	0	0	0	1	1	0	1	e	0	1	0	1	1	0	0	1
P	1	1	1	1	0	1	0	1	f	1	0	0	1	1	0	0	1