

**IINTRODUCTION**

C2-65 is a serial interface device that converts signals from a USB standard to a serial asynchronous RS485-422 standard.

Operation of C2-65 needs preliminary a USB driver to be installed

See the end of this manual for installing procedures.

It's possible to set by external dip switches the following functions:

**1) NORMAL MODE** : the functions of conversions will be performed .

This is the mode normally used in field applications

**2) LOOP MODE** : Allows users to test the performance of the device ( see diagnostic section at the end of the manual ).

3) TERMINATING RESISTORS: for Rs 422-485 line.

Terminating the lines involves a higher power consumption from the USB port. So use them when necessary ( Tab.2 )

**THE DEVICE**

C1: Standard USB connector ( fit with standard USB commercial cables )

S2 : Funtion mode switch. Use "normal " position for functioning with field devices . Use " loop " position for testing

S1: Type of line switch. When S2 is in normal position set in Rs422 for RS422 lines and in RS485 for RS485 lines.

When S2 is in loop position this switch enables loop back of signals from first line ( screw 4-5 ) as loop 1 or from second line (screw 2-3 ) as loop 2.

D1: Enables the switching resistors ( 120 Ohm ) independently for the 2 couples of lines. These resistors are internally capacitively decoupled in order to reduce current consumption during steady states of signals.

M1: Screw for Rs422/485 line ( see table 1 )

Led Power : Light green when device is powered and driver correctly installed.

Led TX : Lights when DATA are transmitted to line

Led RX : Lights when DATA are received from the line

LED TX ENABLE : Lights when Line is engaged by device( RS 485 ).

**Connection to the RS485/422 line**

If you want to use maximum performance of C2-65, a Belden like ( 9841 for RS485 or 9842 for RS 422 ) is recommended . The couples of wires connected to 2-3 and 4-5 screw must be twisted .Connect according table 1.

Wiring for RS422		Wiring for RS485	
C2-65 Terminals	Field Device	C2-65 Terminals	Field Device
1	GND2	1	GND2
2	RX -	2	N.C.
3	RX +	3	N.C.
4	TX -	4	TX - / RX -
5	TX +	5	TX + / RX +

Tab.1

Maximum N° of devices connected to The Rs485/422 line : 32

The shield of the cable can be connected to the ground of C2-65 ( screw ° 1 ) . The screw n° 1 can be externally connected to field local ground through a 100 Ohm resistor. ( to avoid ground loops ) see fig. n° 2

**Applications**

1) For star topology connect the devices to a USB hub as in fig. 2

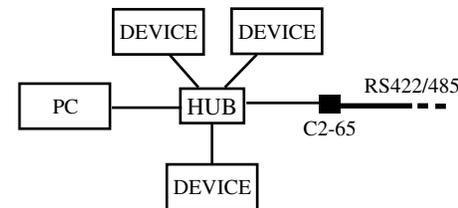


Fig. 2

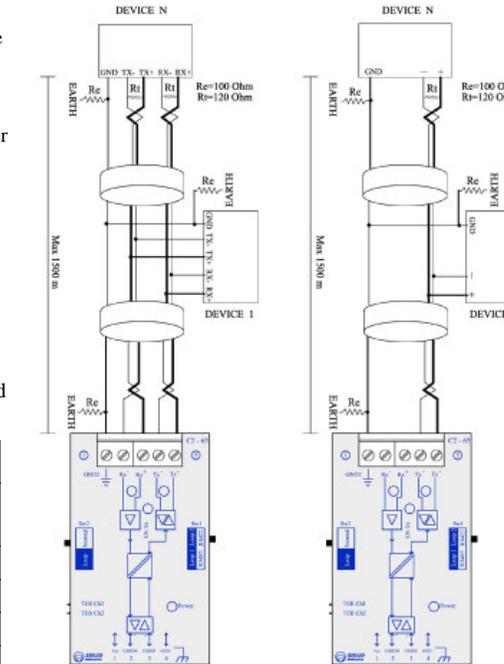


Fig.3 Connection of C2-65 for RS485 or RS422 lines

2) For point to point connection over Rs485 line up to 2 Mbi/sec over 1500 m. distance for RS422 full duplex operation.( Fig 4 )

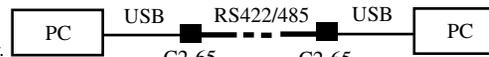


Fig.4:point to point connection

3) Typical modbus connection : master ( PC ) - multislave ( field devices ) . Halph duplex ( RS485 ) or Full duplex ( RS422 )

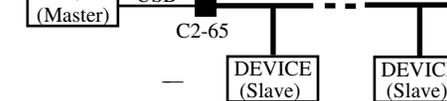


Fig.5:multipoint connection

**Terminations**

C2-65 is provided with internal 120 OHM terminations that can be activated by use of microswitch S1-S2.

Terminations are advisable when maximum performances must be obtained from device. An aproximative guide to use terminations is reported in tab. 2 that depending on baud rate used and lenght of line.

Terminations involves a greater power consumption that however is limited to the restricted interval time round the front of the signals . Pull up and pull down resistors ( 10 K ) are also internally provided to increase noise immunity specially when terminating resistors are not activated.

Baud Rate	Distance (m)						
	0	50	100	200	300	600	1100 1400 1500
1.2 Kbit/s	[Shaded bar]						
2.4 Kbit/s	[Shaded bar]						
4.8 Kbit/s	[Shaded bar]						
9.6 Kbit/s	[Shaded bar]						
19.2 Kbit/s	[Shaded bar]						
38.4 Kbit/s	[Shaded bar]						
57.6 Kbit/s	[Shaded bar]						
115.2 Kbit/s	[Shaded bar]						

Tab. 2

**Driver Installing**

Connect the device after installing the VCP driver compatible with the operating system running on your PC. Dinstall other VCP drivers eventually installed on your PC .Go to web site:

<http://www.ftdichip.com/Drivers/VCP.htm>

If your PC is windows XP or Vista load the version 2.04.06 , otherwise choose the right version proposed. Follow the download instruction suggested by FTDI in its web site.After installing procedure is complete, connect the cable to the device : the green led power will light. The driver has assigned a n° of virtual COM port to your device .Go to the control panel , in the peripheral devices section and take down the n° of the COM port assigned by the driver. This will be the reference n° of your COM port that must be used by your application programs.

**Diagnostic**

Verify the correct functioning of the device : Open Hyperterminal program , program your COM port with wichever data rate. Set S2 in loop position , tape a character on the keyboard and verify that it loops back to the monitor.

Verify both the lines moving switch S1 from loop1 and loop 2.

Switch the S2 switch to " normal " position .Your COM PORT is ready to be used by your application programs.

