Diagram

Digital Control / Command System

0V

RS232 Output

Shield grounded at both ends

Polarisation resistors for receive end of the bus (if not integreited in System)

Interface

Tx   0V   Rx

+5VT
390 Ω   220 Ω   390 Ω   0VT

Four-wire RS485 link

Enable links
Channel :
1   2   3   4

Digital setpoint : connect

Cable clamp grounding

ON SW2
ON
SW3   SW1

11 12 13 14 15 16 17 18

73 74

61 62 63 64 65 66

+10V A/N

RX- RX+ 0VT TX- TX+ 5VT

CCC Board

Terminal and polarisation resistors mini switches

Exemple of digital setpoint wiring with **four-wire** RS485 (or RS422) communication bus and with RS232 / RS485 Interface
Modbus®, Jbus® & Eurotherm communications protocols

Attention!

The schield must be grounded at both ends in the different locals if the local grounds are **equipotential**. If they are not equipotential, the schield must be grounded in a TU side only.

HA175720ENG001

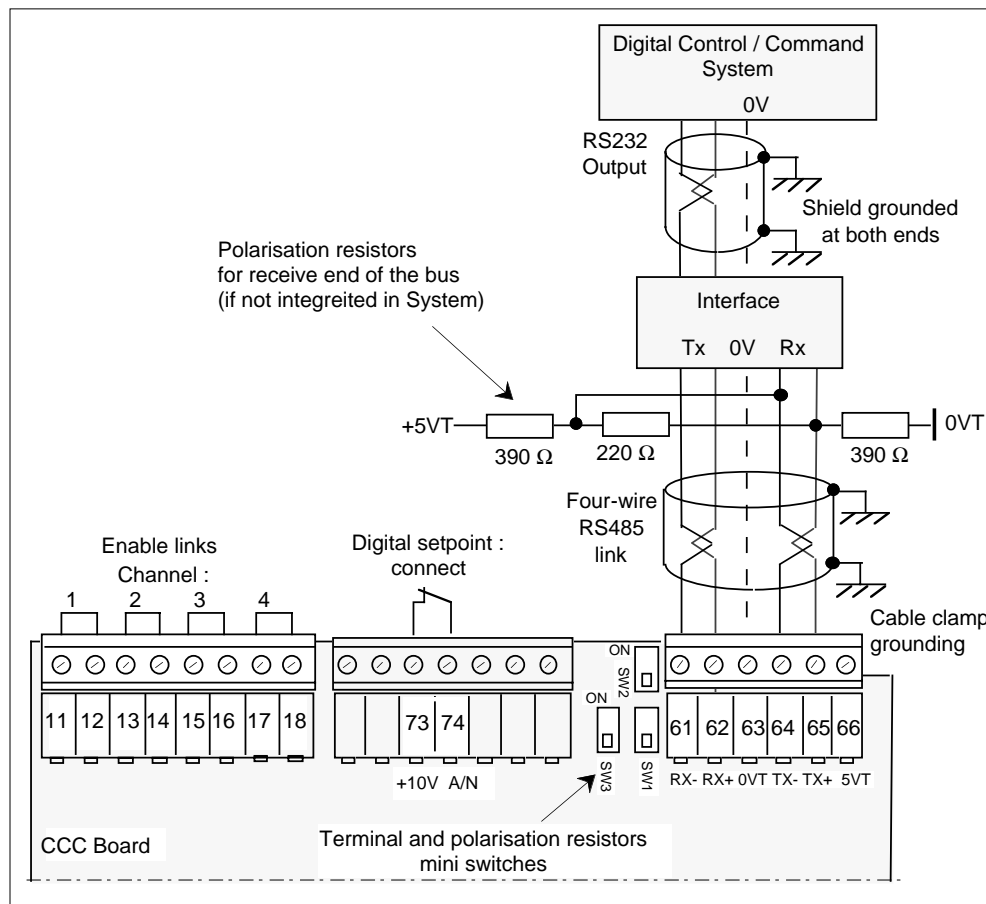**EUROTHERM AUTOMATION**

TU Range Thyristor Unit

ADDENDUM

Communication bus wiring

For TU User Manuals :

Part N° HA175008ENG, HA175008ENG001,HA175120ENG, HA175233ENG001, HA175507ENG, HA173939ENG001, HA174094ENG001

Replace the Issue 1.0 of the Addendum HA175720ENG001

This Addendum is intended for the TU series thyristor units manufactured from beginning July 1997

CE

Digital setpoint wiring

The digital communication must be connected to terminals **61** to **66** (6-pin connector) on the microprocessor board. The Master used for digital communication is generally a Digital Control/Command System with, as a general rule, an Interface Unit (261 or other).

When using the digital setpoint, terminal **74** must be connected to terminal **73** ('+10V').

To ensure reliable operation of the communications link, (without data corruption due to noise or line reflections) the connections should be made using a **twisted pair** of wires inside a **screened** cable, the screen being connected to ground according to wiring diagram.

Two-wire link

A two-wire **RS485** link can be used directly or with RS422 and Interface (all the communications protocols). The 0VT connection (terminal 63) is optional.

The two **external** links (**61- 64** and **62 - 65**) must be connected by user for Modbus®, Jbus® and Eurotherm protocol. For Profibus DP protocol the connections (**61- 65** and **62 - 64**) are **internal**.

Four-wire link

The use of a four-wire **RS422** or **RS485** link is possible with Modbus®, Jbus® and Eurotherm protocols. The 0VT connection (terminal 63) is optional.

Termination and polarisation resistors

The line must be fitted with a termination resistor at **each end** accross receive wires.
The resistor value depends on the characteristic impedance of the line ($R = 120\,\Omega$ to $220\,\Omega$).

For line termination and polarisation, three mini switches (**SW1, SW2 & SW3**) on the micro-processor board connect three internal resistors to be inserted at the **end of the bus**.
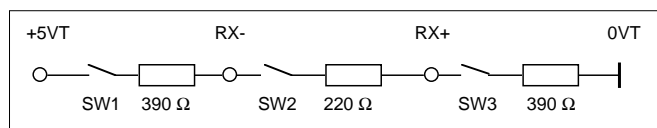
Wiring diagram of the internal connection of the termination and polarisation resistors

SW1 to SW3 factory setting position is **OFF**.

Attention!
If using **several** thyristor units on the same communication bus, the mini switches setting the termination resistance must be set to the **ON** position according to table.

Mini switches on CCC board	All the communication protocols		
	First Unit	Last Unit	Other Units
SW1 & SW3	ON	ON	OFF
SW2	OFF	ON	OFF

If the first or the last unit is disconnected, the mini-switches must be set in the new right position.

Terminal number	Assignment		Profibus DP
	Modbus®, Jbus® and Eurotherm		**Profibus DP**
61	RX-	Signal receive	B
62	RX+	"	A
63	0VT	0V of digital signals	0VT
64	TX-	Signal transmit	A
65	TX+	"	B
66	5VT	+5V of digital signals	+5VT

Terminal labelling of digital control terminal block
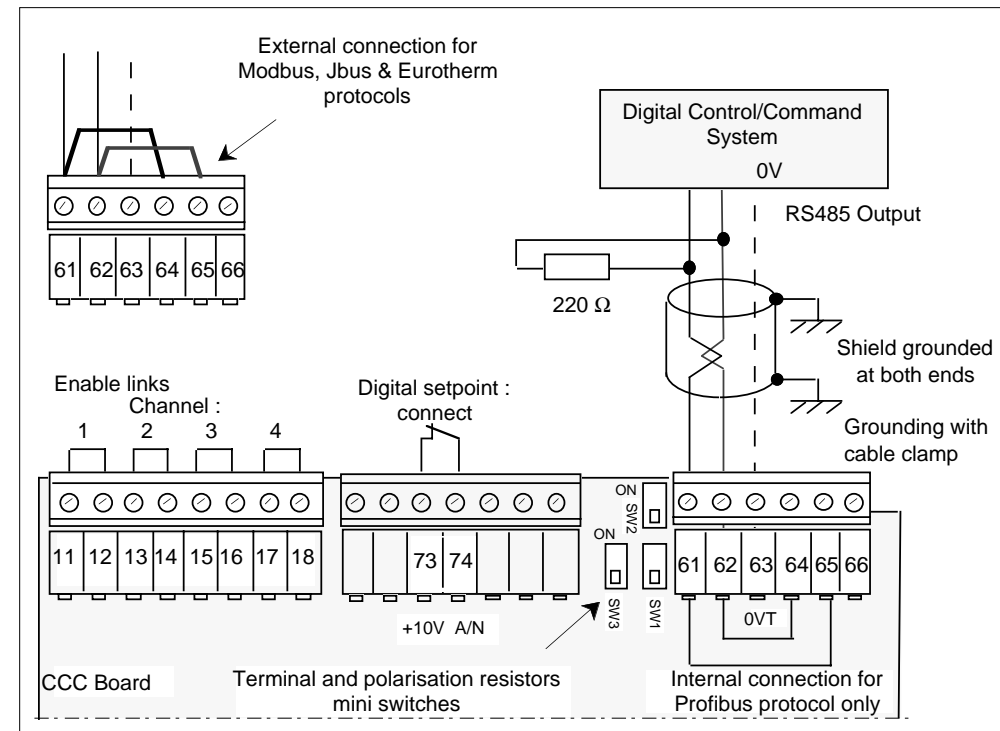
Exemple of digital setpoint wiring with **two-wire** RS485 communication bus
All the communications protocols