TCUF Connector Wiring Diagrams

Version: 07-09-2011

This manual supports: TCUF - TCUFINT

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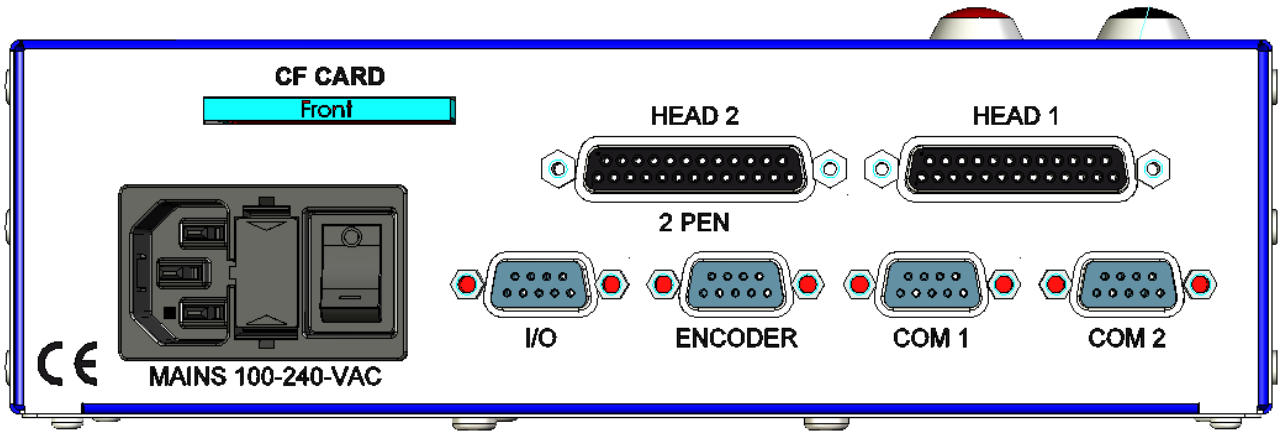
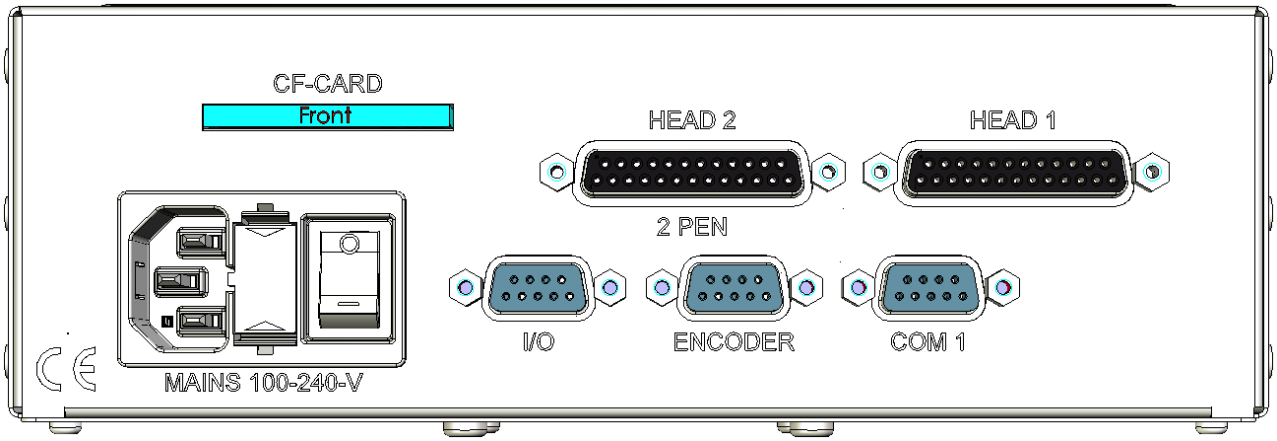
TCUF connectors



TCUFINT connectors



Fuses

The TCUF units have 4 fuses, 2 on the outside and 2 on the inside.
The outer fuses are on the supply voltage, they are located right next to the power socket. The type is 2A Glass Fuse 5x20mm. If there is no reaction at all when you turn on the unit please check these fuses.
The inner fuses are for the internal 5V and 12V DC supply for the I/O and encoder connectors.
The TCUFs can supply external equipment with 5 and 12V DC from the internal power supply.
F5 is the 5V fuse and F4 is the 12V fuse both are 0,5A SMD Fast acting. The value of the fuses is related to the power available from the TCUF power supply. Use only 0,5A if you need more power you must use an external power supply.
F5 and F4 are located inside the TCUF right next to the COM2 connector. On the first production batch the fuses was located on the bottom side of the PCB, but now you can access them directly from the opening in the back.

You can buy the fuses from HSA or locally, if you choose locally make sure you get the right fuses, warranty does not cover replacement of burned PCB's because of wrong fuses.

Part number:

HSA	Farnell	Mouser
ACEL-Fuse-0,5A-SMD	9922156	576-0451.500MRL
ACEL-Fuse-2A-5x20	1123244	504-BK/S506-2-R

I/O connector

Main function for this connector is to provide the start signal, to begin print. In the same connector are also additional 2 output signals. It is located on the front of the TCUF, as a 9-pin female D-SUB connector.

Output 1 = Active low – print message signal (open collector)

Output 2 = Active low – low ink warning (open collector)

Input 1 = Not used

Input 2 = Not used

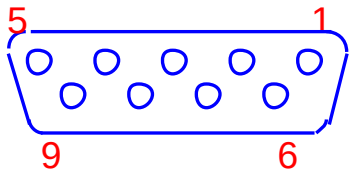
You can use either a simple mechanical switch or a photo cell for the start signal. The I/O connector can supply 5V and 12V DC for the sensor but you can use any sensor in the 3-33V range if you connect an external power source.

You can buy an I/O-ENC test box set from HSA which enables you to test:

- I/O connector - Input 1, Input 2, Output 1, Output 2, Start signal input, 5V and 12V on the I/O connector and an adjustable automatically continuous start signal is available.
- Encoder connector - Enc A & Enc B channels, Low ink, 5V and 12V and an automatically continuous encoder pulse generator is available.

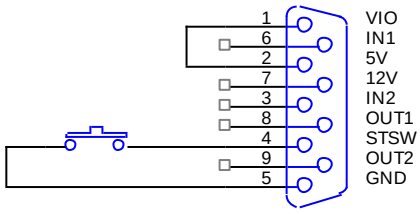
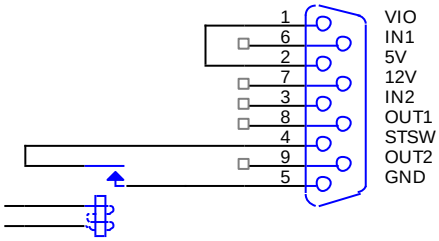
Part number:

HSA	Product category
I/O-ENC test box set	Electric spare parts

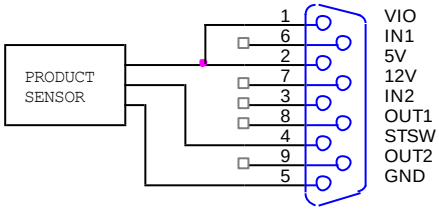
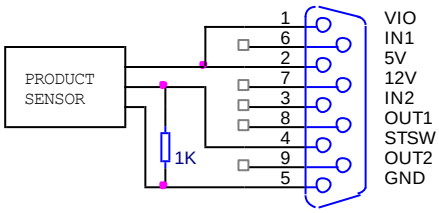


PIN	Description
1	VIO – voltage reference
2	5V
3	Input 2 – Not used
4	Start signal input
5	GND
6	Input 1 – Not used
7	12V
8	Output 1
9	Output 2

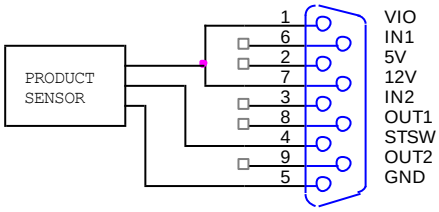
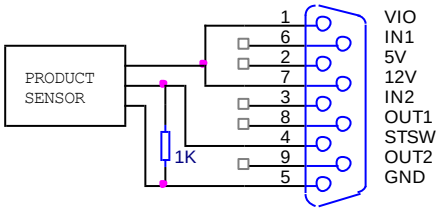
Mechanical start switch

	**Pushbutton** Loop pins 1-2 and connect the switch between pins 4 and 5 N/O contact setup as negative edge trigger N/C contact setup as positive edge trigger
	**Relay** Loop pins 1-2 and connect the switch between pins 4 and 5 N/O contact setup as negative edge trigger N/C contact setup as positive edge trigger

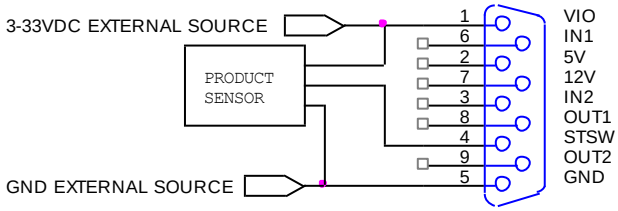
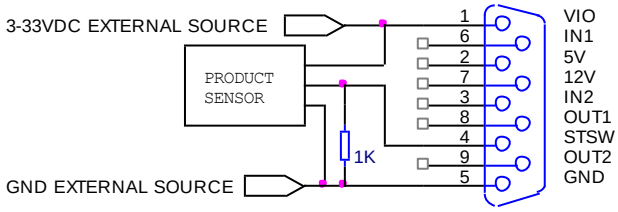
5V DC Sensor

	**5 Volt NPN or PUSH/PULL sensor** VCC to pins 1,2 Signal to pin 4 GND to pin 5
	**5 Volt PNP sensor** VCC to pins 1,2 Signal to pin 4 GND to pin 5 1 K resistor between pin 4 and 5

12V DC Sensor

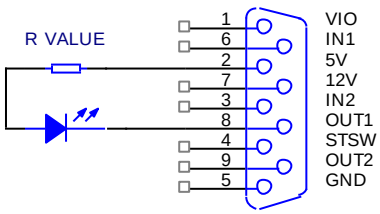
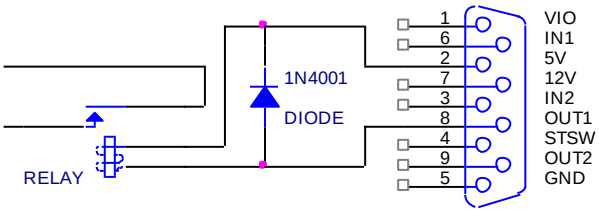
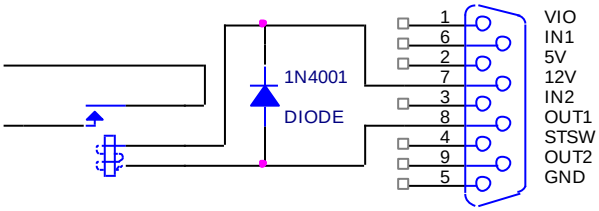
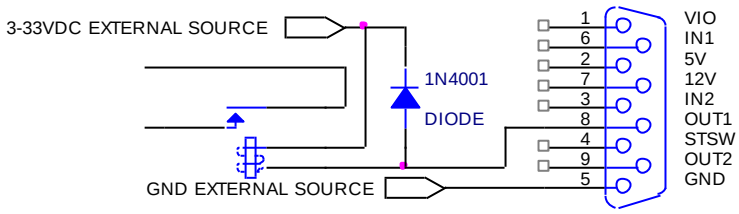
	**12 Volt NPN or PUSH/PULL sensor** VCC to pins 1,7 Signal to pin 4 GND to pin 5
	**12 Volt PNP sensor** VCC to pins 1,7 Signal to pin 4 GND to pin 5 1 K resistor between pin 4 and 5

3-33V DC Sensor with external power source

	**NPN or PUSH/PULL sensor** VCC to pin 1 Signal to pin 4 GND to pin 5
	**PNP sensor** VCC to pin 1 Signal to pin 4 GND to pin 5 1 K resistor between pin 4 and 5

Output 1 Active low – print message signal (open collector)

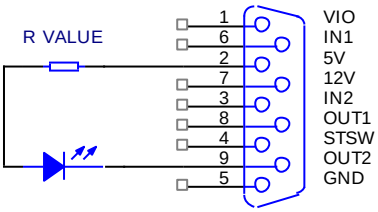
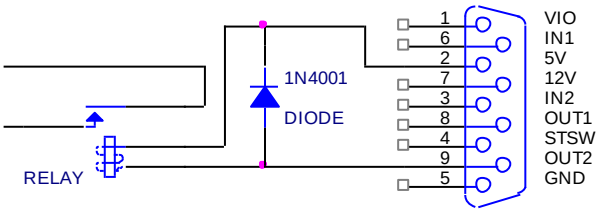
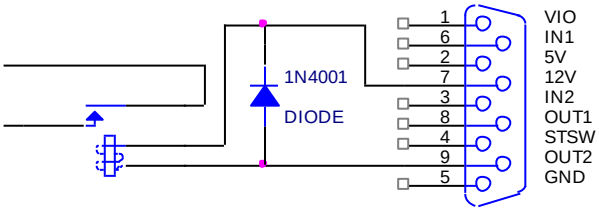
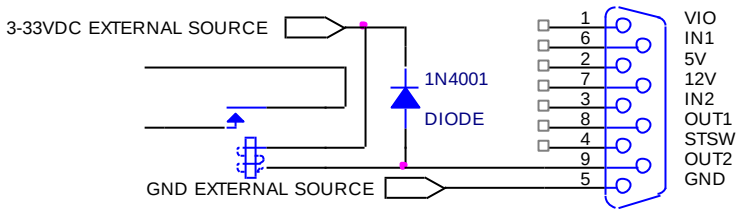
Warning: Do not connect a relay with a higher voltage than the voltage already connected to the VIO pin1 you will damage the unit.

	**LED indicator** Connect the components between pins 2 and 8 The R value can be calculated using the equation below $R = \frac{5 - Ud}{Id}$ Where Ud is diode voltage and Id is diode current
	**5V DC relay** Connect the relay coil between pins 2 and 8 Some relays have a built in diode, if not please also mount the protection diode on the coil connections.
	**12V DC relay** Connect the relay coil between pins 7 and 8 Some relays have a built in diode, if not please also mount the protection diode on the coil connections.
	**3-33V DC relay with external power source** Connect the relay coil between external VCC and pin 8 Connect external GND to pin 5 Some relays have a built in diode, if not please also mount the protection diode on the coil connections.

Warning: Do not connect a relay with a higher voltage than the voltage already connected to the VIO pin1 you will damage the unit.

Output 2 Active low – low ink warning (open collector)

Warning: Do not connect a relay with a higher voltage than the voltage already connected to the VIO pin1 you will damage the unit.

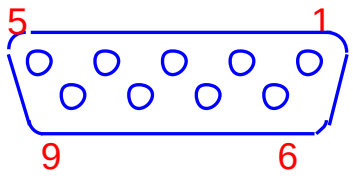
	**LED indicator** Connect the components between pins 2 and 9 The R value can be calculated using the equation below $R = \frac{5 - Ud}{Id}$ Where Ud is diode voltage and Id is diode current
	**5V DC relay** Connect the relay coil between pins 2 and 9 Some relays have a built in diode, if not please also mount the protection diode on the coil connections.
	**12V DC relay** Connect the relay coil between pins 7 and 9 Some relays have a built in diode, if not please also mount the protection diode on the coil connections.
	**3-33V DC relay with external power source** Connect the relay coil between external VCC and pin 9 Connect external GND to pin 5 Some relays have a built in diode, if not please also mount the protection diode on the coil connections.

Warning: Do not connect a relay with a higher voltage than the voltage already connected to the VIO pin1 you will damage the unit.

Encoder connector

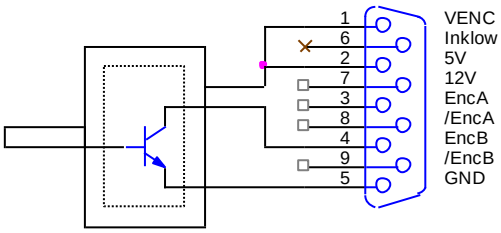
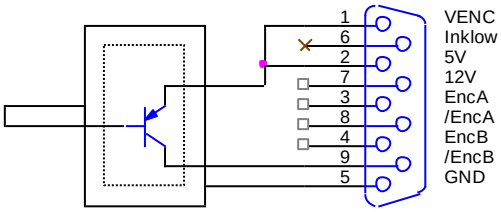
This connector is where the signals for the encoder are coming in. The connector is located on the front of the TCUF as a 9-pin female D-SUB connector.

The encoder connector can supply 5V and 12V DC for the encoder but you can use any encoder in the 3-33V range if you connect an external power source.

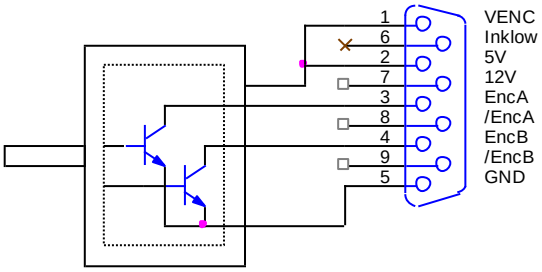
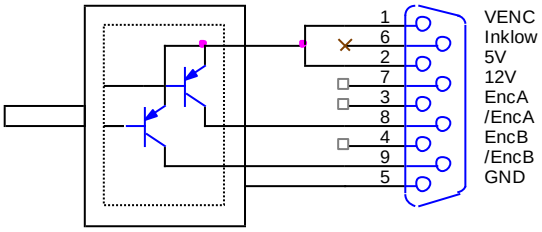


PIN	Description
1	VENC – voltage reference
2	5V
3	Encoder A
4	Encoder B
5	GND
6	Not used
7	12V
8	/Encoder A (inverted)
9	/Encoder B (inverted)

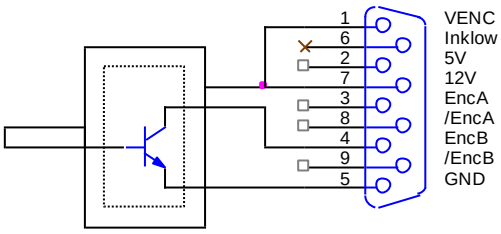
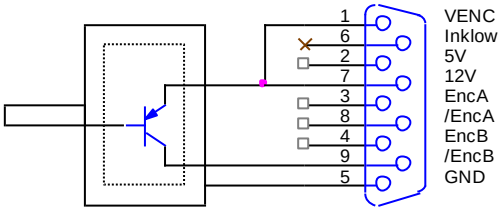
5V DC Encoder single channel

	**5V DC NPN or PUSH/PULL** VCC to pins 1, 2 Signal to pin 4 GND to pin 5
	**5V DC PNP** VCC to pins 1, 2 Signal to pin 9 GND to pin 5

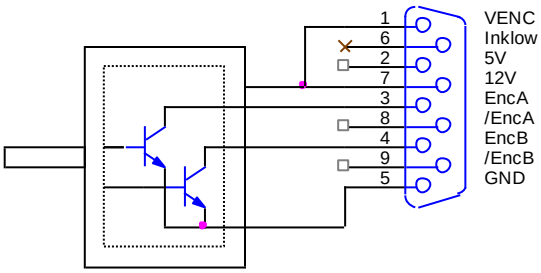
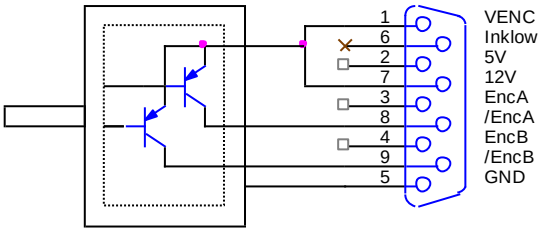
5V DC Encoder dual channel

	**5V DC NPN or PUSH/PULL** VCC to pins 1, 2 Signals to pins 3, 4 GND to pin 5
	**5V DC PNP** VCC to pins 1, 2 Signals to pins 8, 9 GND to pin 5

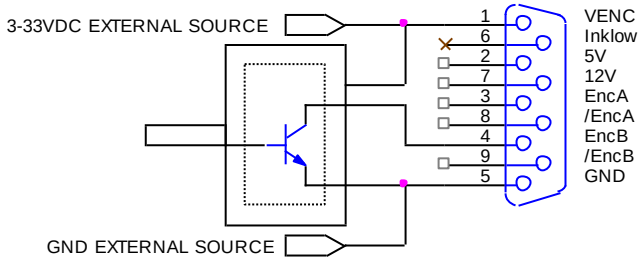
12V DC Encoder single channel

	**12V DC NPN or PUSH/PULL** VCC to pins 1, 7 Signal to pin 4 GND to pin 5
	**12V DC PNP** VCC to pins 1, 7 Signal to pin 9 GND to pin 5

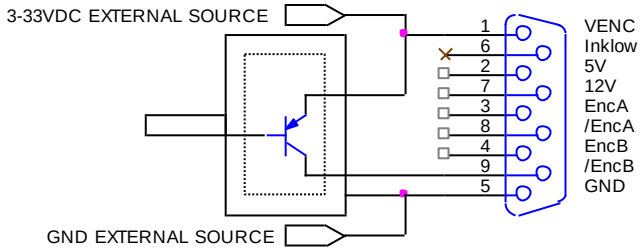
12V DC Encoder dual channel

	**12V DC NPN or PUSH/PULL** VCC to pins 1, 7 Signals to pins 3, 4 GND to pin 5
	**12V DC PNP** VCC to pins 1, 7 Signals to pins 8, 9 GND to pin 5

3-33V DC Encoder with external power source single channel

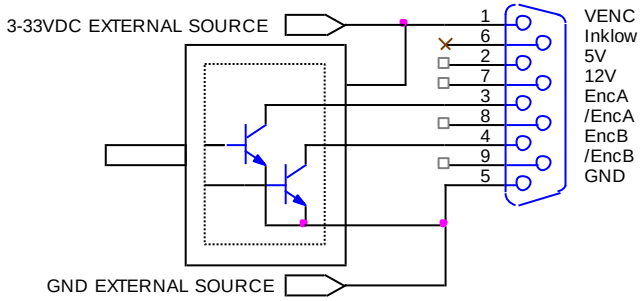


3-33V DC NPN or PUSH/PULL with external power source
VCC to pin 1
Signal to pin 4
GND to pin 5

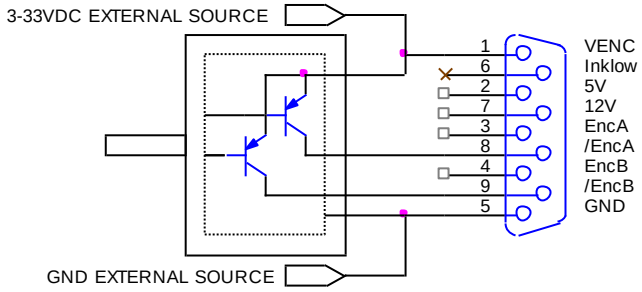


3-33V DC PNP with external power source
VCC to pin 1
Signal to pin 9
GND to pin 5

3-33V DC Encoder with external power source dual channel

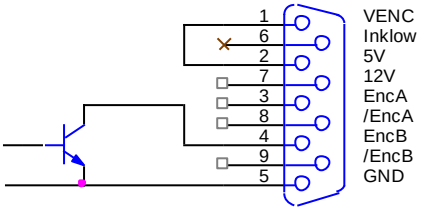
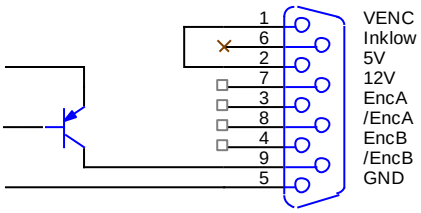


3-33V DC NPN or PUSH/PULL with external power source
VCC to pin 1
Signal to pin 3, 4
GND to pin 5

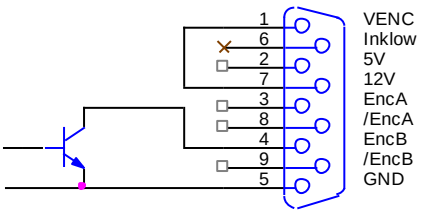
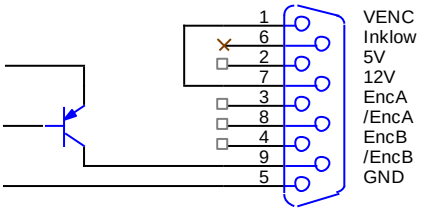


3-33V DC PNP with external power source
VCC to pin 1
Signal to pin 8, 9
GND to pin 5

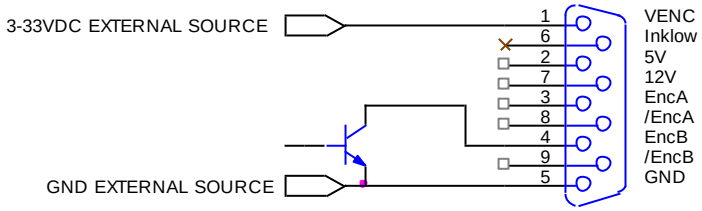
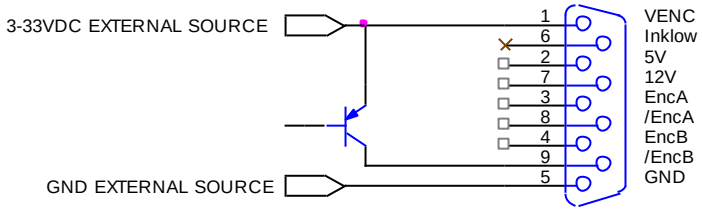
5V DC simulated encoder with external power source

	**5V DC NPN or PUSH/PULL with external power source** Loop pins 1-2 Signal to pin 4 GND to pin 5
	**5V DC PNP with external power source** Loop pins 1-2 Signal to pin 9 GND to pin 5

12V DC simulated encoder with external power source

	**12V DC NPN or PUSH/PULL with external power source** Loop pins 1-7 Signal to pin 4 GND to pin 5
	**12V DC PNP with external power source** Loop pins 1-7 Signal to pin 9 GND to pin 5

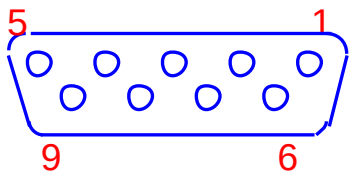
3-33V DC simulated encoder with external power source

	**3-33V DC NPN or PUSH/PULL with external power source** VCC to pin 1 Signal to pin 4 GND to pin 5
	**3-33V DC PNP with external power source** VCC to pin 1 Signal to pin 9 GND to pin 5

RS-232 connector

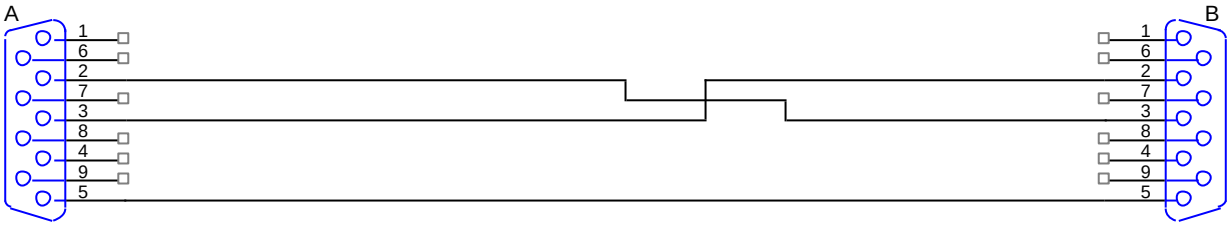
This connector is used for remote communication with the TIPC15, this section will tell you how to connect the wires, please see the remote communication manual for port setup and commands.

The connector is 9 pin Male, and the pins are configured as master. If you wish to connect from a standard PC com port you must use a crossed cable.



PIN	Description
1	
2	Rx
3	Tx
4	
5	GND
6	
7	
8	
9	

Crossed cable
Connector A pin 5 is connected to connector B pin 5
Connector A pin 2 is connected to connector B pin 3
Connector A pin 3 is connected to connector B pin 2



Support

For support please contact your local distributor or HSA Systems customer service

E-mail: techsupport@hsasystems.com

Phone: +45 66 10 34 01