

Digital I/O: INPUT: Basic, Count, Count+, Smart+

The digital I/O option port in the 4-Series provides us with 4 optically isolated inputs and 4 optically isolated outputs. All power is supplied externally.

In this demo we will look at connecting a **remote input** to a 4 Series Basic scale.

The Digital I/O option kit for basic / count and count + is part number 22013142. The option installs inside the scale (or terminal) and field connection is via a 9 pin female connector mounted on the connector plate at the rear of the scale.

In a 4-Series Basic scale the option is installed as port 2, port 1 remains as RS232. In the Basic scale we can have one option, so if we choose digital I/O we can not add any further options, such as Ethernet.

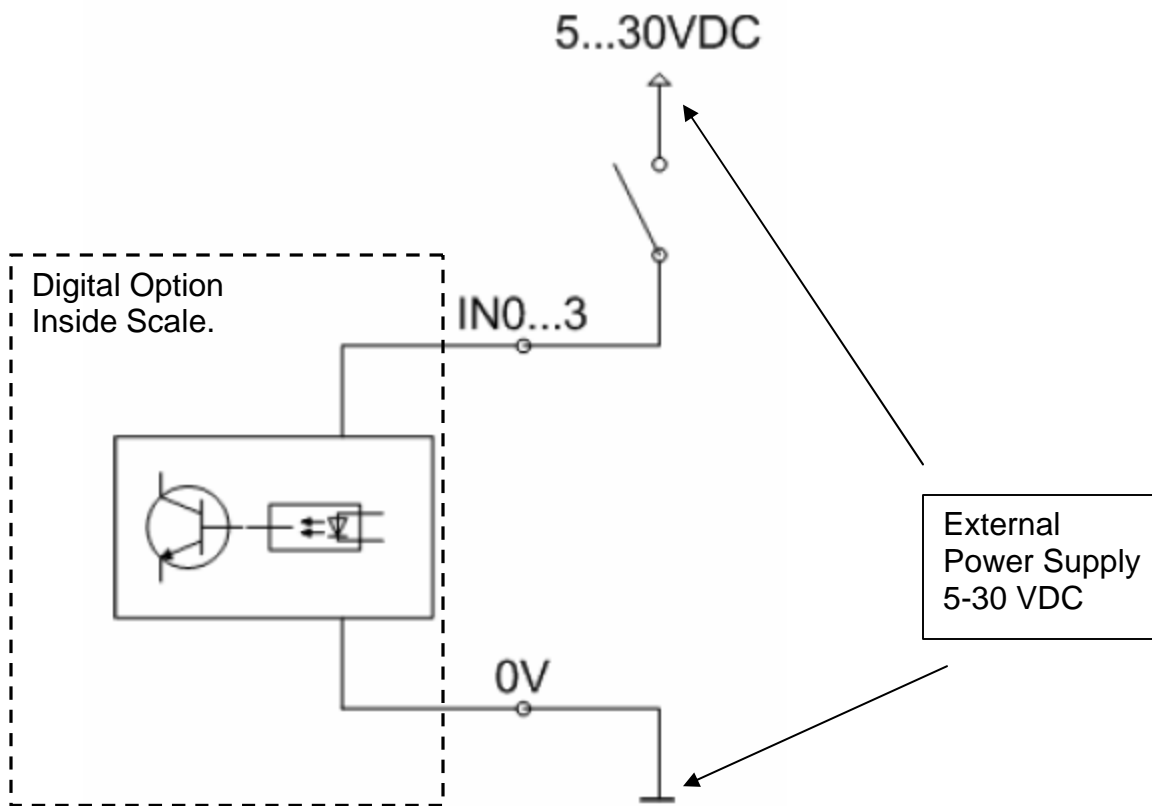
The installation of the Digital I/O kit is explained in the installation instructions, 22013616, supplied with the kit. The kit may also be factory installed when ordered together with the scale. See specifications.



Connector plate on rear of scale / terminal.

How does the input circuit work?

The input circuit is optically isolated from the internal circuitry, which means you must provide an external power source. When we connect the external power sourced to the input circuit an optical coupler is energized, turning on the input signal.



Circuit operation.

The external switch is connected to the + VDC of the external power supply. The switched contact of the external switch is connected to input 0, on pin 6 (INO) of the 9 pin Digital I/O connector. 0 volts of the power supply is connected to pin 1 (GND) of 9 pin Digital I/O connector.

When the switch is closed, electrical current flows through the circuit, energizing the optocoupler inside the Digital I/O board. The optocoupler then turns "on" Input 1 of the option. If the switch is opened the input turns "off". The inputs are numbered 0 – 3 on the hardware and 1 - 4 in the scale setup menus.

Operation of 4 Series Basic with digital input assigned to “Unit Roll”.

The display is operating in “lb” mode, each time we close the external switch, the scale display changes to units of measure as below.

lb (pounds avoirdupois)
t (metric tons)
g (grams)
kg (kilograms)
oz (ounces avoirdupois)

Hardware installation:

Wire circuit to **pin 6** for input 1 and **pin 1** for 0 volts.

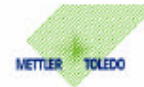
Scale Setup:

Communication / Option / Digital / IN 0 (for hardware input 1) / Unit .

Instead of Unit Roll, we could use: ZERO, TARE, CLEAR, PRINT or OFF (not used).
We have 4 inputs available with the digital option.

Digital I/O-Option (22010184)

Specifications



Control Inputs	4 digital inputs electrically isolated via opto coupler $I_{\min} = 1\text{mA} @ U_{\min} = 5\text{VDC}$ $I_{\max} = 8\text{mA} @ U_{\max} = 30\text{VDC}$
Control Outputs	4 digital outputs electrically isolated via opto coupler, open collector $I_{\max} = 100\text{mA}, U_{\max} = 30\text{VDC}$
Supply Voltage	externally 5...30VDC for control inputs and control outputs
Protection Class	IP65
Connector	female, 9-pin D-SUB 1 0V 2 output OUT 0 3 output OUT 1 4 output OUT 2 5 output OUT 3 6 input IN0 7 input IN1 8 input IN2 9 input IN3
Connection Cable	length 1,5m male, 9-pin D-SUB open cable end with end splice order number 21 254 225 black 0V brown output OUT 0 red output OUT 1 grey output OUT 2 yellow output OUT 3 green input IN0 blue input IN1 violet input IN2 white input IN3
Accessory	Relaisbox 4-ID7 max. switching power 2A/30VDC or 2A/250VAC order number 22 001 088

End of demo.