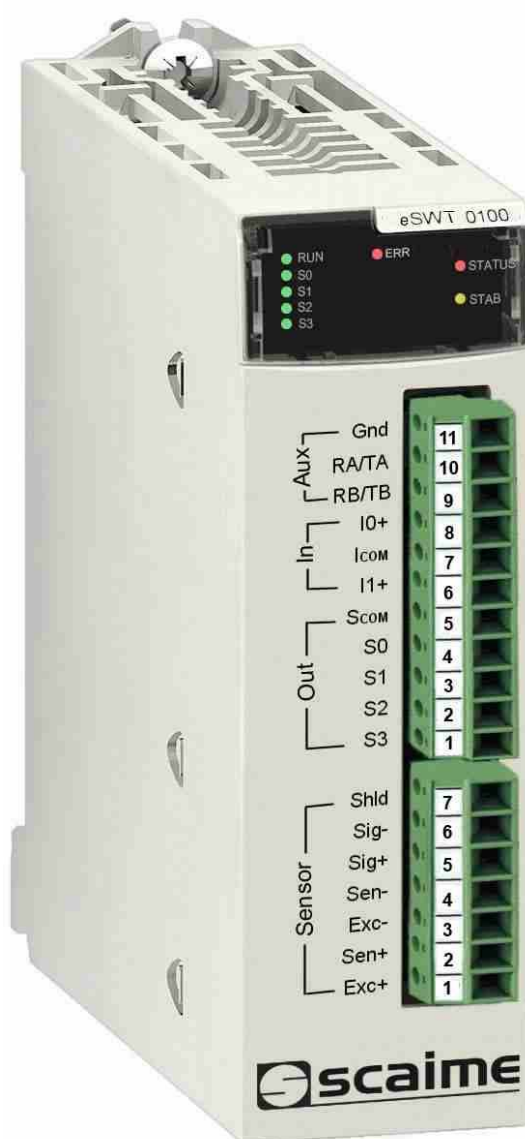




PME SWT 0100

Weighing module
For Schneider Electric MX80



NU-PMESWT-E-1214_227702-F

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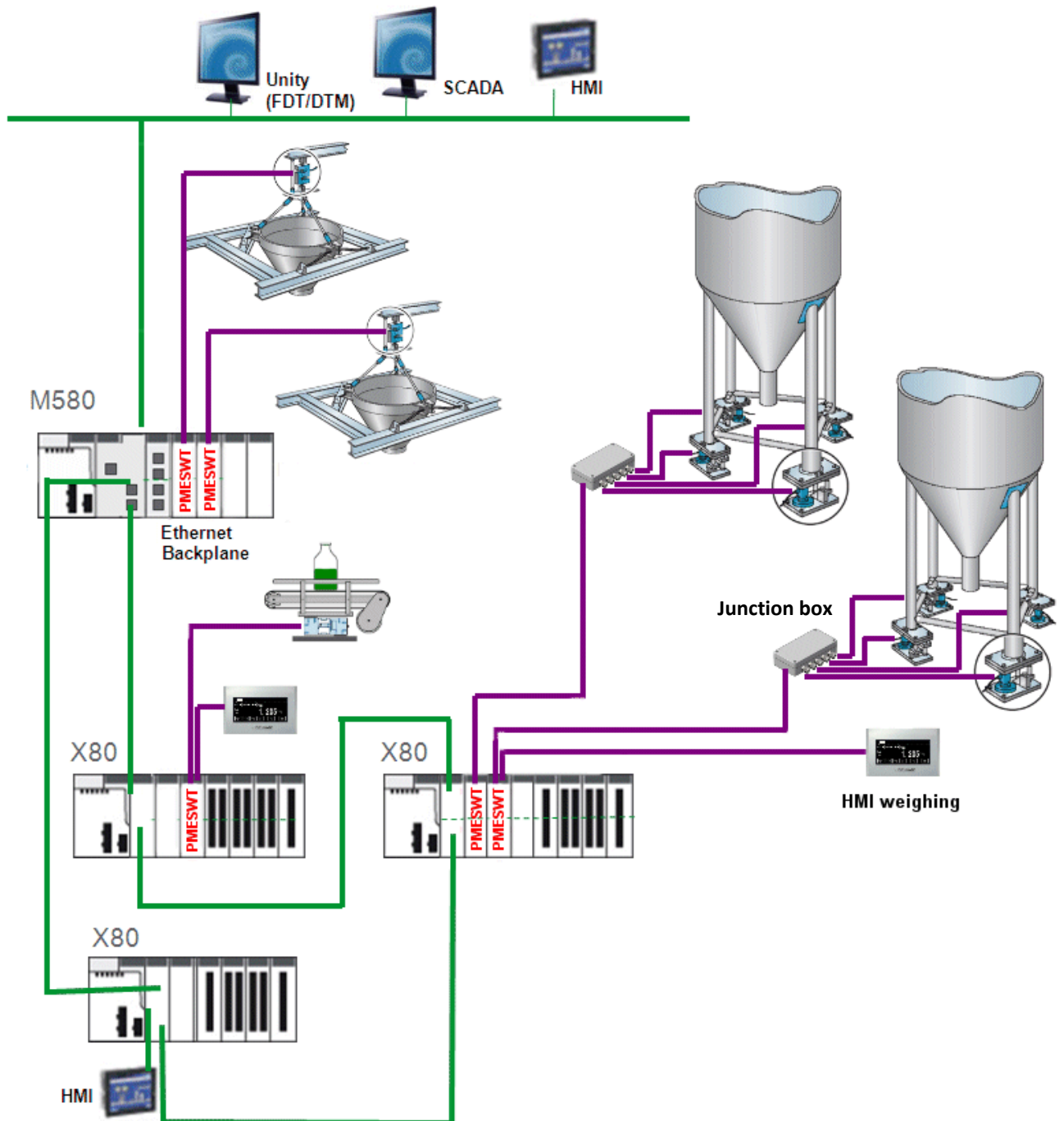
1 INTRODUCTION

PME SWT is a weighing module controller for the M580 and x80 PLC family. This user manual describes the physical characteristics and installation of the PME SWT 0100, the weighing module controller developed by SCAIME.

1.1. PME SWT Architecture

Operation of the PME SWT in M580 and X80 system architecture guarantees complete integration of weighing technology in the automation system:

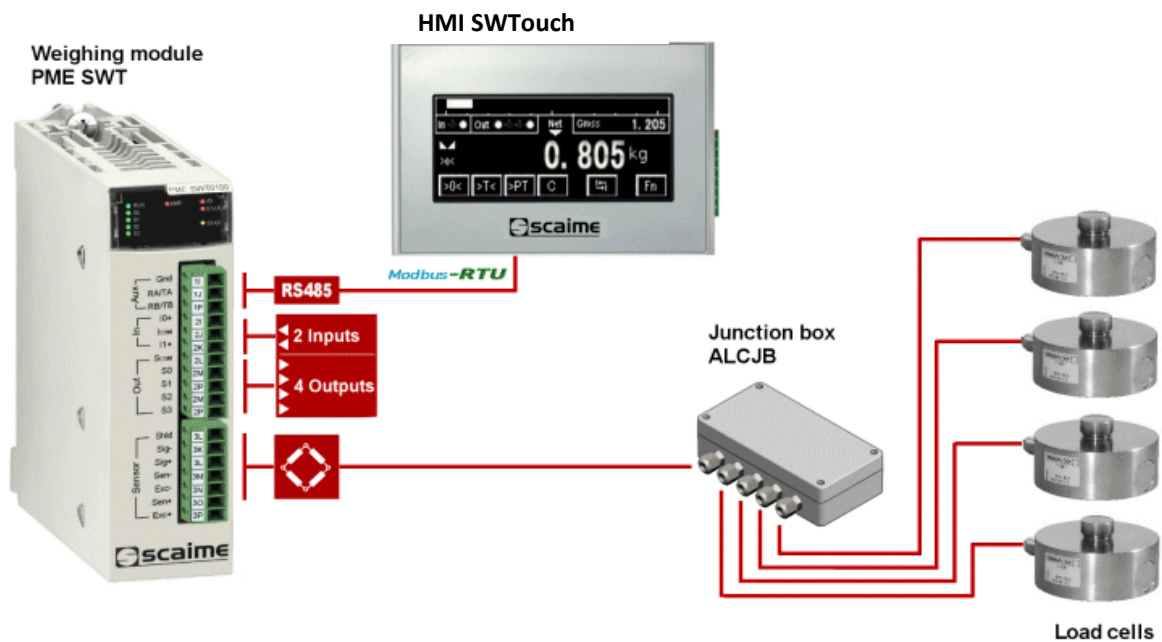
- The module can be installed on either M580 local CPU rack or X80 RIO rack of Ethernet backplane.
- Weighing data can be transferred from weighing module to M580 CPU, Unity and the network via Ethernet.
- Unity can configure, monitor and diagnose the weighing module via FDT/DTM.



The PME SWT measures the current weight value through one input load cell channel. This channel is pre-set in the factory. This makes possible the theoretical adjustment of the scale without calibration weights as well as module replacement without a new calibration of the scale.

PMESWT has one RS485 port for the connection of local tactile HMI for weight display and weighing function operations.

PMESWT also integrates two digital inputs for weighing function activation and four programmable digital outputs dedicated to weight monitoring and dosing control.



2 MODULE SPECIFICATIONS AND INTERFACES

2.1 General characteristics

The general characteristics of the PME SWT weighing modules are:

Schneider Electric compatibility			
CPU module compatibility			BME P58 xxxx
Backplane compatibility			BME XBP xx00 External or standard backplane
Power supply compatibility			BMX CPS xxxx
Max. number of modules on each X80 RIO drop			7 PME SWT
Max. number of modules on each M580 local CPU rack			6 PME SWT
Max. total number of modules per M580			12 PME SWT
General			
Backplane Power consumption	24 V _{DC} backplane supply	max	150 mA
Power module dissipation		max	3,6 W
Sensor excitation voltage			5 VDC
Input sensor sensitivity range			0.1 mV/V to 6 mV/V
Minimum input sensor resistance			42 Ohms
Sensor configuration			4/6 wires, software selection
Dimensions			100x100x32 mm3
Weight			170 g
Operating temperature			-10 °C + 60 °C
Compensated temperature			- 10 °C + 40 °C
Storage temperature			- 40 °C + 85 °C
EMC compliance			IEC 61131-2:2007
Digital inputs			
Number of inputs			2 (1 common)
Type of Input			Current sink
Nominal input values	Type 3	Voltage	24 VDC (external supply)
		Current	7 mA
Threshold input values	1 state	Voltage	≥ 11 V
		Current	≥ 2 mA (for U ≥ 11 V)
	0 state	Voltage	≤ 5 V
		Current	≤ 1.5 mA
Input impedance	At nominal voltage		3.4 kΩ

<i>Reverse polarity</i>		<i>Protected</i>
<i>IEC 61131-2 compliance</i>		<i>Type 3</i>
<i>Dielectric Isolation</i>	<i>Input/ground or input/internal logic</i>	<i>1500 V rms, 50/60 Hz for 1 min</i>
	<i>Between groups of inputs and outputs</i>	<i>500 V rms, 50/60 Hz for 1 min</i>
<i>Digital outputs</i>		
<i>Number of outputs</i>		<i>4 (1 common)</i>
<i>Nominal values</i>	<i>Voltage</i>	<i>$\pm 24 V_{DC}$ external supply</i>
	<i>Current</i>	<i>0.25 A per Output</i>
<i>Absolute maximum ratings</i>	<i>Voltage (including ripple)</i>	<i>$\pm 30 V_{DC}$</i>
	<i>Current/channel</i>	<i>0.3 A</i>
	<i>Total current/module</i>	<i>4 x 0.3 A</i>
<i>Compatibility with IEC 61131-2 direct inputs</i>		<i>Yes (Type 3)</i>
<i>Built in protection</i>	<i>Against overvoltage</i>	<i>Yes, by TVS diode</i>
	<i>Not protected against short circuit and overload</i>	
<i>Dielectric Isolation</i>	<i>Output/ground or output/internal logic</i>	<i>1500 V rms, 50/60 Hz for 1 min</i>
	<i>Between groups of inputs and outputs</i>	<i>500 V rms, 50/60 Hz for 1 min</i>
<i>Insulation Resistance</i>		<i>> 10 MOhms</i>

Metrological specifications

Analog Input signal resolution		1 000 000
Input signal range	max	$\pm 7.8 \text{ mV}$ or $\pm 3.9 \text{ mV}$
Accuracy class		$\pm 0.005 \% \text{FS}$
Linearity deviation		$\pm 0.003 \% \text{FS}$
Thermal zero shift		$\pm 0.00015 \% / ^\circ\text{C}$
Thermal span shift		$\pm 0.0002 \% / ^\circ\text{C}$
Internal resolution		24 bits
Factory calibrated setup		$\pm 500\,000 \text{ pts}$ for $\pm 2 \text{ mV/V}$
Internal Conversion rate		6.25 to 400 conversions/s
Max update frequency of data on the backplane		100 Hz

2.2 Connections



LED display

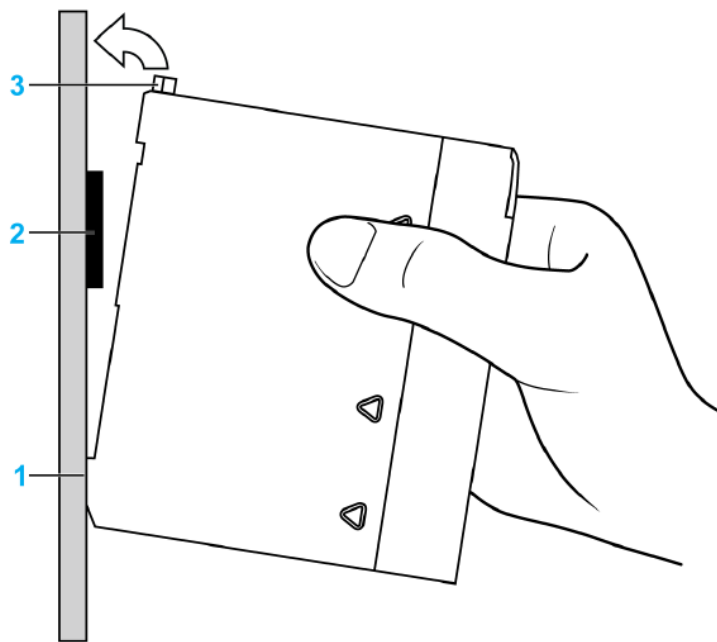
**Connector
I/O & AUX**

**Load cell
connector**

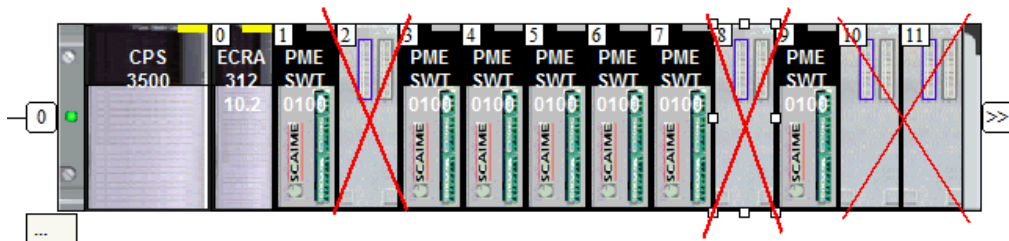
**Use Flat Screw driver
Tightening torque: 0.22 ->
0.25 Nm**

2.2.1 Install a PME SWT on a BME XBP xxxx backplane

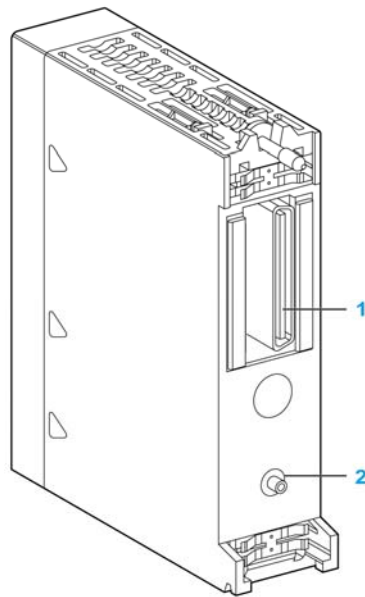
Follow the steps below to install your PME SWT module on a backplane:

Step	Action
1	Hold the module at an angle and mount it on the 2 hooks near the bottom of the backplane. The figure shows the correct way to hold the module: 
2	Swing the module up so that the connector engages the backplane connector.
3	Use a phillips-head screw driver to tighten the screw at the top of the module 2...4 in-lbs (0.22 to 0.45 N·m) of torque.

With a 12 slots rack, slots 2, 8, 10 and 11 are reserved for gateway products and are not available for module installation.



Note: The installation and removal of the weighing module is allowed with the CPU switched on, without risk of module damage or disruption of the CPU.



PME SWT has a keying PIN (2) to prevent installation on a BMX BKP xxxx backplane.

2.2.2 LED display

The PME SWT weighing module is fitted with LEDs which display the status of the module. The following table shows the weighing module display status:

LED	Continually lit	Flickering, Flashing, or Blinking	OFF
RUN (Green)	Normal operation	Flickering: Firmware upgrade in progress	Module faulty, switched OFF or starting up
ERR (Red)	Critical error, or not valid MAC address, or no Ethernet link	Flashing: Communication to PAC lost Blinking: No IP address (2x); Invalid configuration (3x); Duplicate IP address (4x); awaiting served IP address (5x); Invalid IP address (6x); Internal Error (7x)	Module starting up, or runtime error
STATUS (Green)	User calibrated	Calibration in progress	Factory calibrated
STATUS (Red)	- Converter saturation - A/D converter malfunction - EEPROM memory corruption	Measurement Out of range	No error
STAB (Yellow)	Stability criteria not reached	-	Stability criteria reached or not defined
S0 (Green)	S0 digital output ON state	-	S0 digital output OFF state
S1 (Green)	S1 digital output ON state	-	S1 digital output OFF state
S2 (Green)	S2 digital output ON state	-	S2 digital output OFF state
S3 (Green)	S3 digital output ON state	-	S3 digital output OFF state

2.2.3 [Wiring table](#)

The following table describes the front connection of the PME SWT 0100.

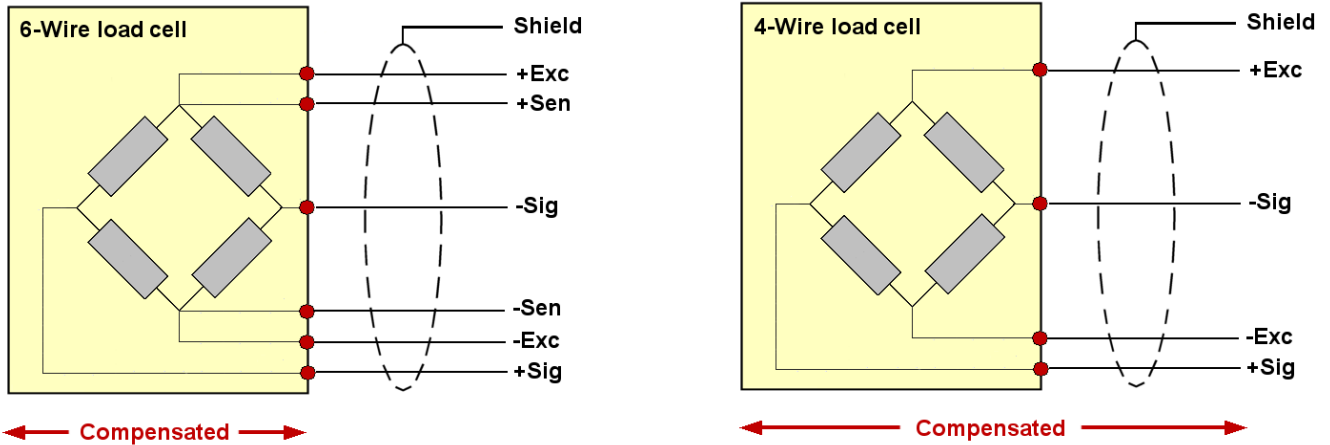
Connector	PIN number	Labelling	Description	
Backplane connector			24Vdc Power supply, 150 mA max	
OUT IN AUX	11	GND	Auxiliary RS485 data Output GND	
	10	RA/TA	Auxiliary RS485 data Output TA (+)	
	9	RB/TB	Auxiliary RS485 data Output TB (-)	
	8	I0+	Digital input 0	Input
	7	I _{COM}	Digital Input common	
	6	I1+	Digital input 1	Output
	5	S _{COM}	Digital Output Common	
	4	S0	Digital output 0	
	3	S1	Digital output 1	
	2	S2	Digital output 2	
	1	S3	Digital output 3	
Sensor	7	Shld	Measurement cable Shield	Load cell
	6	Sig-	Measurement cable load cell -	
	5	Sig+	Measurement cable load cell +	
	4	Sen-	Sensor cable load cell -	
	3	Exc-	Supply load cell -	
	2	Sen+	Sensor cable load cell +	
	1	Exc+	Supply load cell +	

2.3 Load cells wiring

PME SWT is compatible with 4 or 6 wires load cells.

In a 4-wire load cell, the additional cable length has effect on temperature shift. The load cell is calibrated and compensated taking into account its own cable length.

In a 6-wire load cell, the cable is not part of the temperature compensating system. The 2 sense lines compensate voltage fall due to additional cable length. This configuration allows cutting the 6 wires cable without any thermal effect on signal.



Note: Please check that the device is 4 wires configured (software register) in case you use a 4 wires load cell connection. See option chapter in the software user manual.

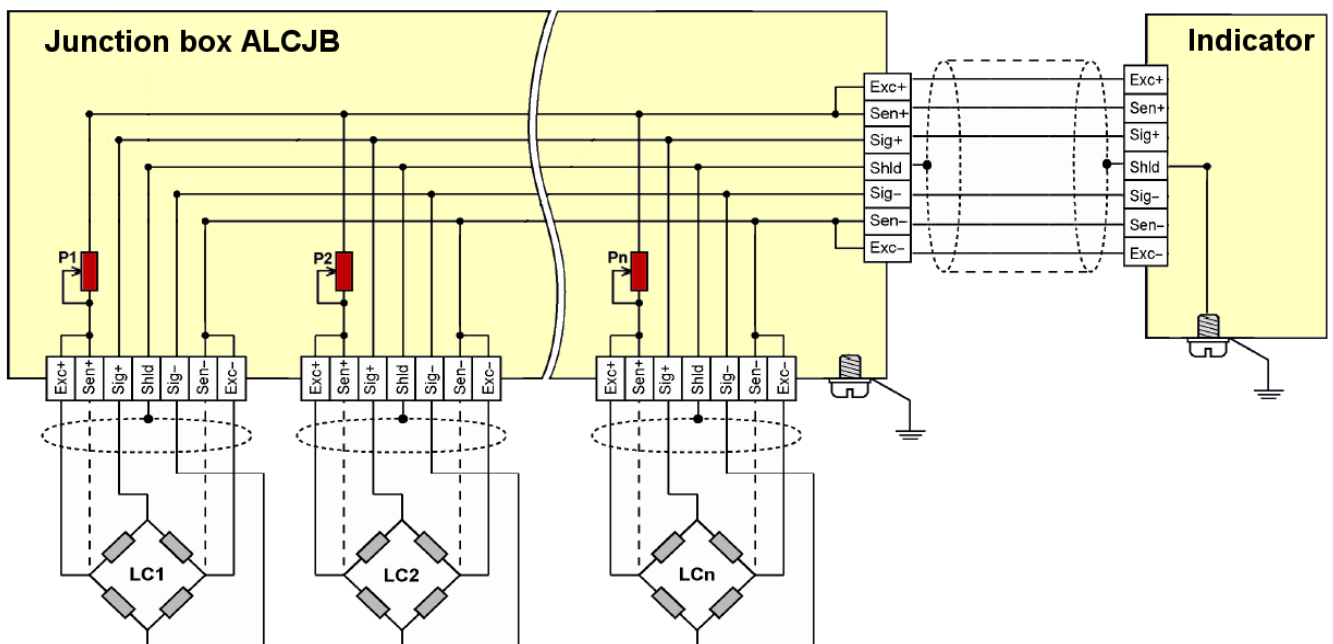
2.3.1 Multiple load cells connection

In multiple load cell weighing systems, load cells can be wired in parallel by joining the load cell cables. With the ALCJB junction boxes provided by SCAIME, the output signal becomes the average of individual output load cells signals.

Note: In case of multiple load cells connection, PME SWT can supply excitation voltage to a maximum of 8 load cells (350 Ω output resistance)

It could be necessary to trim the output of each individual load cell to avoid corner load differences, which are caused by difference in load cells output sensitivity, input resistance or unequal load distribution.

Trimming can be done by adjusting variable resistors (P1...Pn) placed in the excitation paths of the ALCJB.



2.3.2 Cable extension

Extension cables must be shielded and of low capacitance. We recommend the use of SCAIME cables, which comply with these requirements. To compensate impedance added by the extension cable, a 6-wire extension cable should be used.

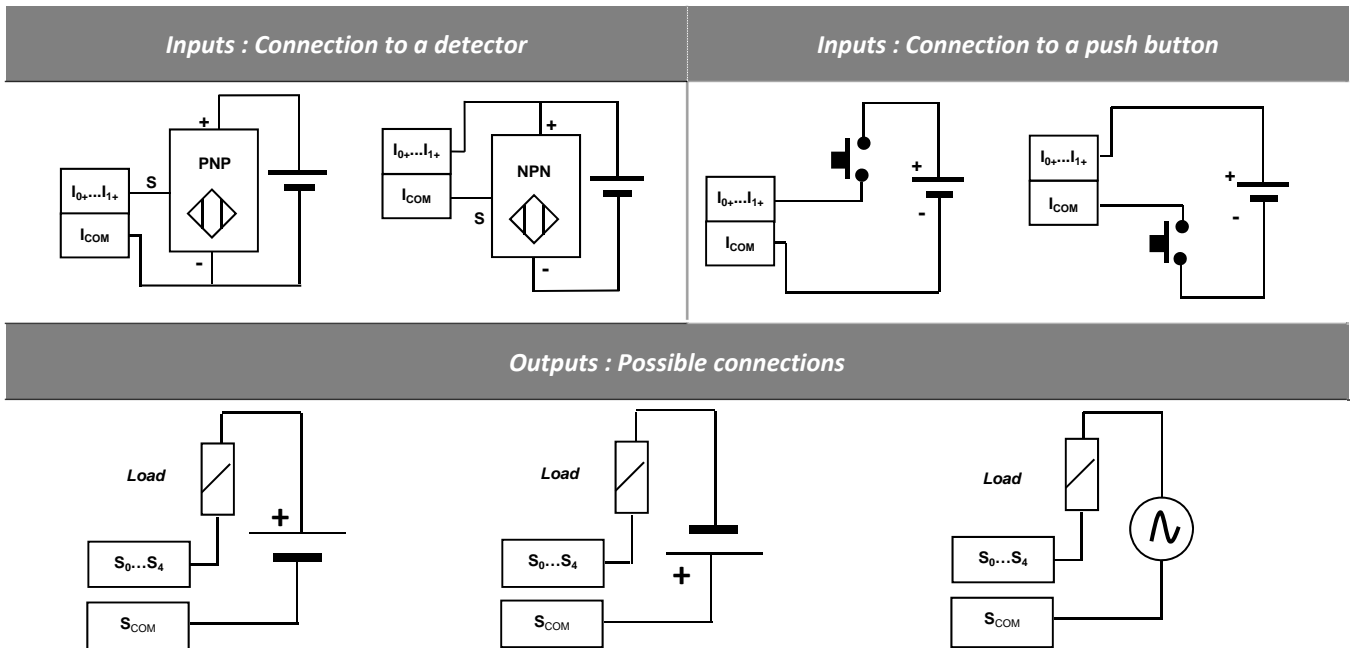
Note: To avoid electromagnetic interference, load cell cables should be kept away from power circuits, and cross them at right angles.

2.4 Inputs / outputs connections

PME SWT has 2 Inputs type 3 (according to IEC 61131-2) with 1 common I_{COM} , and 4 outputs with 1 common S_{COM} . State of each output can be seen on the front face of the module.

The following chapter suggests some possible connections of these Inputs/Outputs.

2.4.1 Typical connections



2.4.2 SWTouch display panel connection

The PME SWT module offers a half-duplex RS485, 2-wire connection serial link to carry over weight data to SWTouch, a compact graphic operator interface (See characteristics on SCAIME Web site).

This HMI can be connected directly to the PME SWT to Read PME SWT process data like Gross/Net weight, Flow rate, Measurement status, Input/output status. It allows sending weighing function commands to the PME SWT module like Zero, Tare, or Calibration.

The maximum connection distance is 30 m. The transmission lines are polarized with a 1,5 k Ω resistor. An internal termination resistor is software programmable (see software user manual, chapter option).

Data format is set with the following features: 1 start bit, 8 data bits, no parity, and 2 stop bits

Please contact your SCAIME representative or visit www.scaime.com