SPC1-AP6X / SPC1-AN6X

Programmable pulse or interval counter

- **Direct adaptation between sensor and connecting cable**
- **Counting of pulses or intervals**
- **Simple setting by external teach-input**
- **No additional wiring required**
- **Counting range from 0 to 65535**
- **Switching amplifier up to 400 mA**
- **N.C./N.O. inverter**

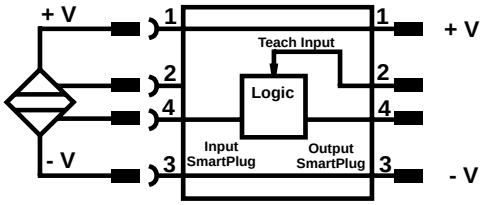
The SPC1 SmartPlug is a freely programmable counter for the direct adaptation to sensors with a standardized M12x1 connection.

The SPC1 SmartPlug is available in 2 versions:

PNP input - PNP output SPC1-AP6X (for use with PNP sensors)
NPN input - NPN output SPC1-AN6X (for use with NPN sensors)

Connection:

The SmartPlug is very easy to connect; it is plugged onto the M12x1 connector of a sensor and the connecting cable is connected to the other side of the SmartPlug. The sensor configuration has to meet the standards (1+V (BN) 3 -V (BU) 4 output (BK)).

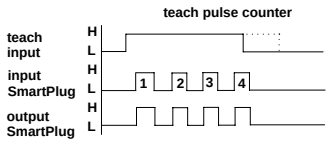


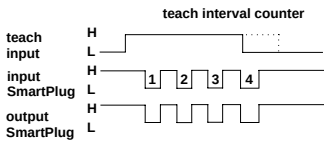
Setting:

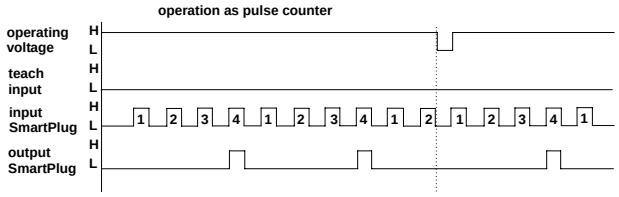
The setting of the preset number is made by using the signals "teach input" and "input SmartPlug". If for example, 4 pulses have to be counted, the setting can be made as follows (operating voltage being switched on):

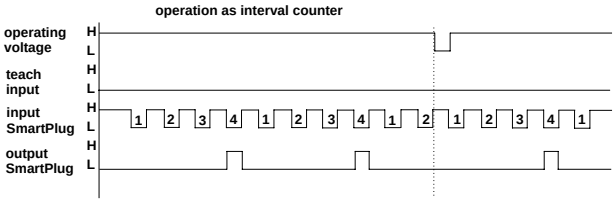
1. Connect teach input with +V.
2. Actuate the sensor 4 times (= 4 pulses) - The SmartPlug recognizes automatically 4 pulses at the "input SmartPlug".
3. Disconnect teach input from +V → READY.

After this setting, the output of the SmartPlug is activated every fourth pulse. The setting is maintained when the sensor is switched off.









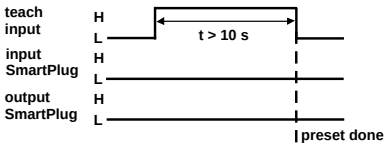
H = input or output active; L= input or output inactive

When switching on the operating voltage, the counting procedure is reset. The initial state of the preset number is 1 (pulse counter).

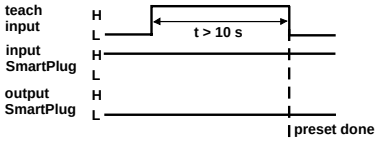
Technical Data

Operating Voltage	10-30 VDC, residual ripple of max. 10%	**Display:**	Red LED
Own Current Consumption:	<10 mA	**Housing Material:**	Plastic PBTP/PA
Input Resistance:	>10 kΩ	**Protection Standard:**	IP 67
Max. Input Frequency:	10 kHz	**Dimensions Inches[mm]:**	See diagram
Min. Response Time:	0.1 ms	**Connection Input:**	4-pin socket M12x1
Max. Output Current:	400 mA short-circuit proof	**Connection Output:**	4-pin connector M12x1
Ambient Temperature Range:	0° to +60°C (+32° to +140°F)	**Weight:**	15 g
Storage Temperature Range:	-20° to +60°C (-4° to +140°F)		

Preset to factory setting 1 pulse counter

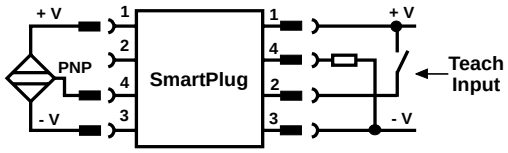


or

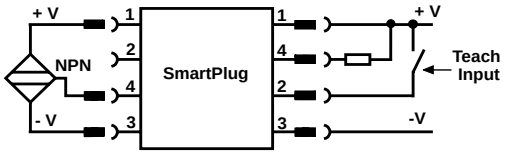


Wiring Diagrams

SPC1-AP6X



SPC1-AN6X



Application Examples:

1. Gearwheel/Divider: On a gearwheel with 100 teeth, one pulse per rotation is to be measured.
   a) A suitable sensor with standardized M12x1 connection is mounted in a way that each tooth is safely recognized.
   b) A SmartPlug SPC1 is connected between sensor and sensor connecting cable.
   c) The preset number 100 is taught into the SmartPlug, → connect "teach input" with +V, turn round the gearwheel exactly one time.
   d) Disconnect "teach input" from +V. READY

   At the output of the SmartPlug, one pulse per rotation is measured.
2. Counting parts: Bulk material is filled into cartons by means of a conveyor belt. The task is to specify the exact number of parts required to fill up the carton.
   a) A suitable sensor with standardized M12x1 connection is mounted in a way that all parts are safely recognized.
   b) A SmartPlug SPC1 is connected between sensor and sensor connecting cable.
   c) A "teach input" stays connected to +V until the desired number of parts has passed the sensor (=unit the carton is full).
   d) Disconnect "teach input" from +V. READY

   At the output of the SmartPlug, one pulse is measured when the preset quantity of parts has been recorded; the carton is full.
3. Switching amplifier: Most sensors have a maximum output current of 100 mA to 200 mA. By using a SmartPlug, the maximum output current can be increased to 400 mA.
   a) A SmartPlug SPC1 is connected between sensor and sensor connecting cable.
   b) The "teach input" stays connected to +V until the sensor has been actuated once (preset number 1).
   c) Disconnect "teach input" from +V. READY

   At the output of the SmartPlug every input pulse is measured, the output can be charged with 400 mA.
4. N.C./N.O. inverter: Teach the SmartPlug as interval counter "1". An input N.C. signal will be inverted into a N.O. signal and reverse.