IST-PRO-SS-SN 3 outputs programmable magnetic sensors

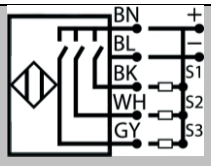
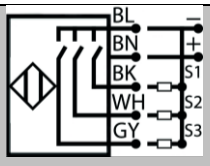
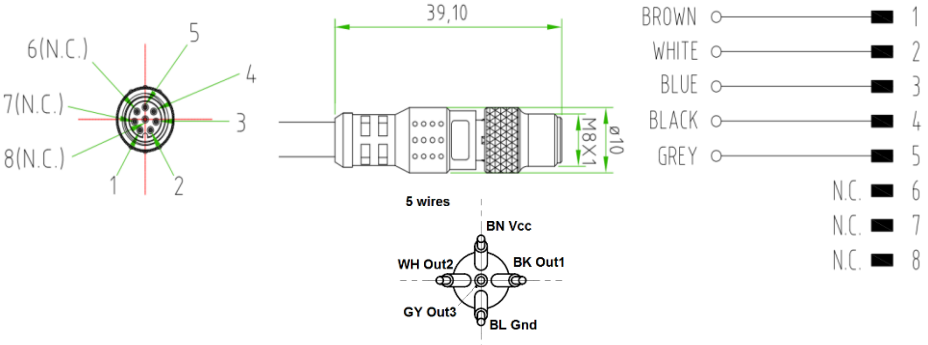
DESCRIPTION

PRO-SS and PRO-SN are digital magnetic sensors with three programmable output signals designed for C-slots. When the programmed switched position is reached, the corresponding output is activated, and its status is indicated visually with the LEDs. The type of output can also be programmed (N.O. or N.C.) whereas type of the sensor (PNP or NPN) is set at the factory and cannot be changed (please refer to the ordering codes section). The activation of the sensor is magnetically driven but the polarization of the magnet is irrelevant.

Main characteristics:

- compact and reliable solution;
- simple programming using a single push button and 3 LEDs;
- on board programming of the magnetic switching points and logic (either NO or NC) that can be set independently per any output;
- available with free cable or M8 connector output.

SPECIFICATIONS

	PRO-SS / PRO-SN
Material of the sensing head	Nylon, glass fibre reinforced
Power supply	6÷30 Vdc
Switching current (per output)	0.2 A
Power rating (ohmic load)	6 W
Maximum magnetic flux density	150 G
Minimum magnetic flux density	10 G
Magnetic hysteresis	±5 G
Maximum stroke[#]	± 30 mm
Maximum working frequency	3 Hz
Allowed temperature range	-20÷60°C
Dimensions	please refer to below schema
Mass	35 g
Electrical connection	free cables 5x28 AWG or M8 8 poles male connector
Polarity-reversal protection	Yes
Environmental degree	IP54
Output signals	3 digital PNP or NPN depending on ordering code
CE reference norm	CEI EN 60529; CEI EN 60947-5-2; CEI EN 61000-6-2; CEI EN 61000-6-3; CEI EN 55022; CEI EN 61000-4-2; CEI EN 61000-4-3; CEI EN 61000-4-4; CEI EN 65000-4-5; CEI EN 61000-4-6; CEI EN 61000-4-8; CEI EN 61000-4-11
Wiring schematics	 PNP circuit  NPN circuit
Connections	

[#] *Depending on relative distance and orientation between magnet and sensor and material of the actuator equipped with the sensor.*

IST-PRO-SS-SN 3 outputs programmable magnetic sensors

ORDERING CODES

PRO-SS 4 N 2 25 – G
PRO-SN 4 N 2 25 – G

Sensor type
- PRO-SS: axial sensitive head
- PRO-SN: angular sensitive head

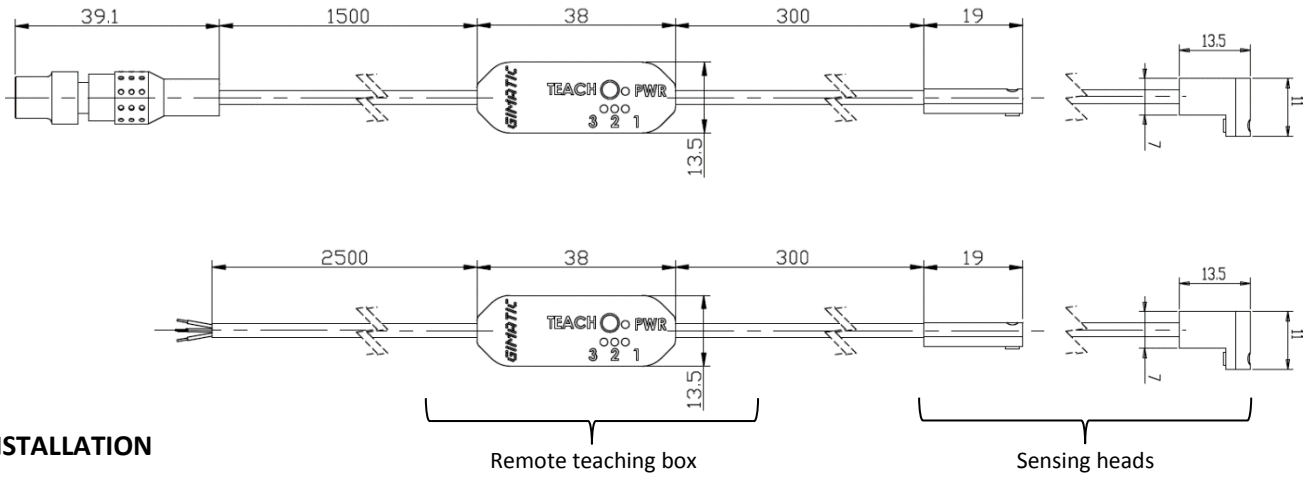
Connection type
- 3: 8 wires M8 male connector
- 4: 5 conductors free wires cable

Circuit type
- N: PNP output type
- M: NPN output type

Power supply
- 2: 24 Vdc

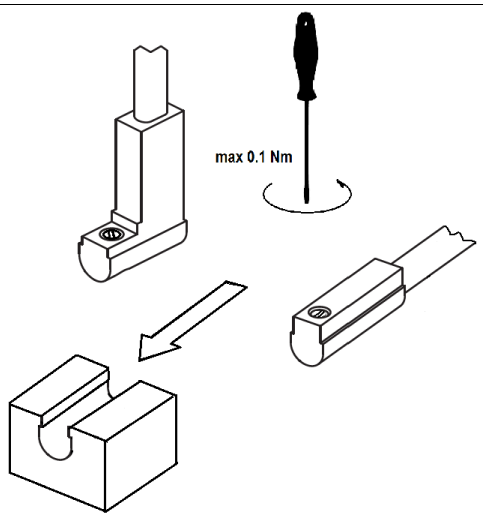
Standard cable length
- 15: 1.5 m long cable (only for connector output)
- 25: 2.5 m long cable (only for free wires cable)

DIMENSIONS



INSTALLATION

PRO-SS and PRO-SN sensors are magnetic sensing solutions dedicated to C-slots of pneumatic and electric cylinders and actuators.
Installation and configuration must be performed by qualified operators that are responsible for ensuring the safety and accident prevention regulations valid in specific individual cases.
The sensitive head of the sensors can be installed axially into the slot and its position can be locked using a screw driver. The locking torque must not exceed the limit of 0.1 Nm to prevent damaging of the sensor head.
Since the switching points of the sensor outputs can be freely programmed, the user can theoretically install the sensor head in any point along the C-slot. However, during the teaching phase of a specific configuration, the sensor provides a feedback to the user with a high frequency flashing of the LEDs (2 Hz) in case the detected magnetic flux density is not sufficient for a reliable programming. In this case, please consider changing the position of the sensing head inside the slot.
Please also refer to the programming procedure section.



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PROGRAMMING PROCEDURE

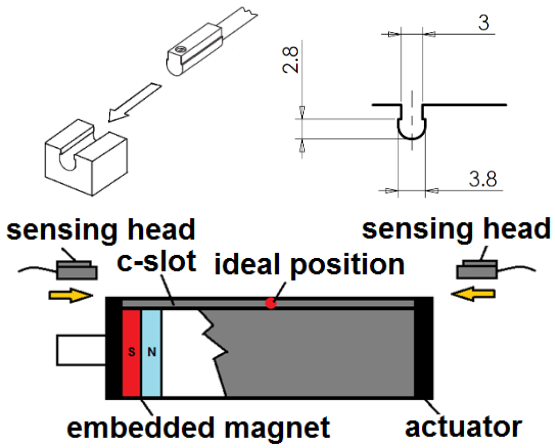
1.Applying supply voltage

Check the integrity of the sensing head and of the remote teaching box. Power up the sensor by connecting the Brown (+Vcc) and Blue (Gnd) conductors to the external power supply source. If the power supply is correct, the PWR green LED will light up.

2.Inserting the sensing head into the C-slot

Insert axially into the C-slot the sensing head of the sensor. The ideal position of the sensitive head is in the middle of the stroke of the magnet embedded inside the actuator.
The sensor itself can be used to find this position by manually making some movements of the actuator once the sensor has entered the teaching mode (please refer to step 3).

Once the correct position has been identified, lock the position of the sensitive head using a screwdriver (max locking torque 0.1 Nm).

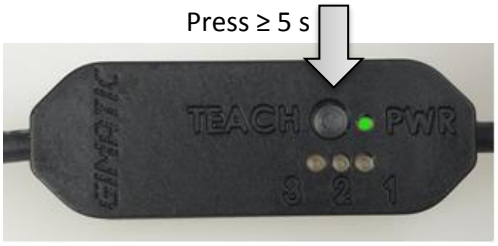


3.Entering the teaching mode

To enter the teaching mode, press and hold the TEACH button for at least 5 seconds. All the 3 outputs LEDs will start blinking. Release the TEACH button, only LED1 (output 1, black conductor) will blink, LED2 (output 2, white conductor) and LED3 (output 3, grey conductor) will turn off. Now it's possible to configure and program output 1.

The blinking frequency depends on the magnetic flux density detected by the sensor: 1 Hz for a proper functioning or 2 Hz in case of a not sufficient magnetic field strength (as moving the sensitive head in free air).

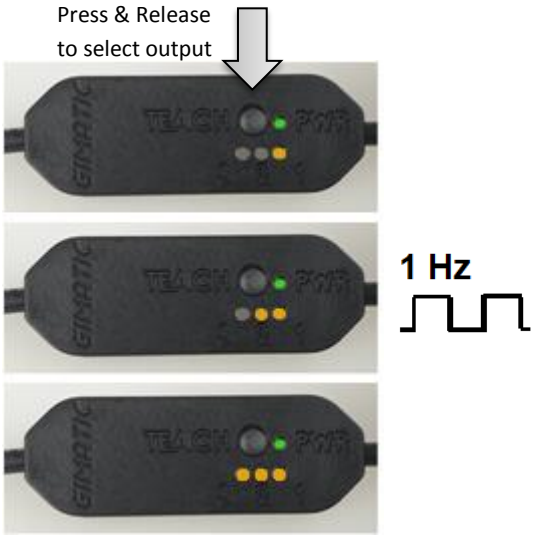
Move manually the actuator for some cycle and check that the LED of the output always blink at 1 Hz. In case of some blinking at 2 Hz, consider the change of the sensing head position (please refer to step 2) or not to use the sensor in this configuration of the actuator (it's not possible to program any output for positions with not sufficient magnetic field).



4.Selecting the output to configure

The active blinking LED represents the output selected for configuration (in terms of type N.O. or N.C.) or programmed (in terms of memorization of the switching position).

Only LED of output 1 is initially active and flashing. Press and quickly release the TEACH button (within 1 second) to select output 2. Repeat the same procedure to configure output 3 and eventually press the TEACH button once more to exit the teaching mode.



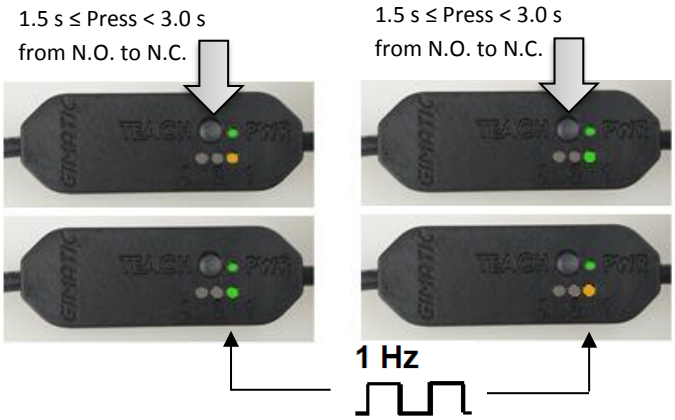
5.Configuring and programming the selected output

With an output selected and the LED blinking at 1 Hz, press and hold the TEACH button for more than 1.5 seconds to change the logic of the output from N.O. (amber colour) to N.C. (green colour) and vice versa. The new setting is memorized only if the TEACH button is released within 3 seconds otherwise the original logic is restored (and consequently the LED will turn back to the original colour) and a new switching position is memorized (the LED will be lit stably in case of a successful memorization).

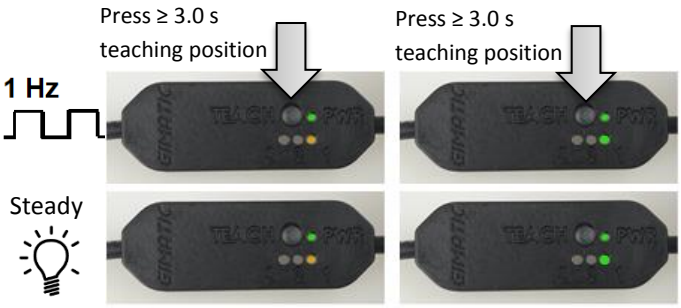
Once a new switching position has been successfully memorized, the next output will be automatically selected for configuration. When all 3 outputs have been configured, a single press of the TEACH button allows the user to exit the teaching mode.

Only one setting at a time is possible. In case both a new output type and a new switching position must be set, step 5 has to be performed twice.

Changing output type



Programming switching position



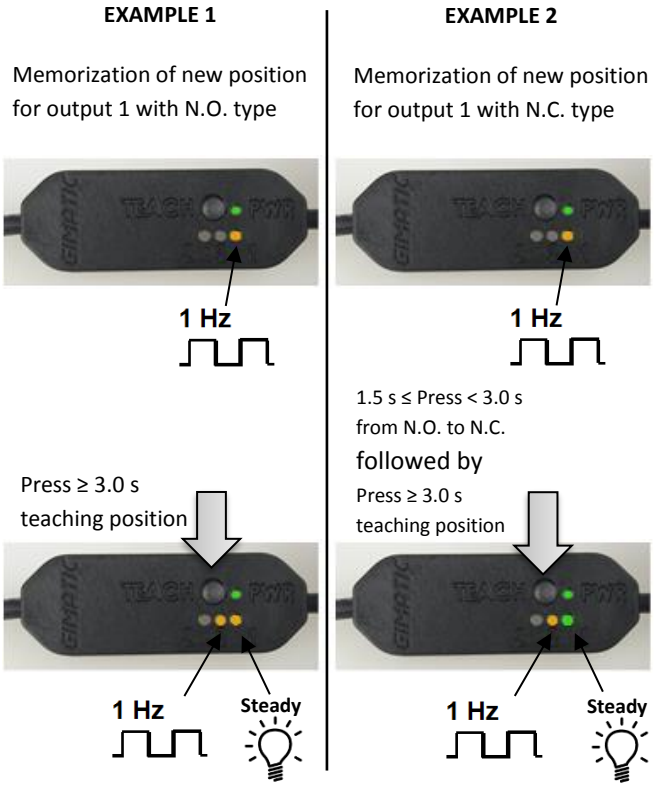
NOTE - Status of LEDs during teaching operation

Once a new output has been selected as the active one, the LED of the previous output remains active to indicate the action performed: a fixed light in case of a successful switching point memorization, a flashing light otherwise.
In any case the colour of output LEDs represents the logic configured per a single output: amber colour for N.O. and green colour for N.C.

Please refer to the picture on the right showing two examples of the teaching procedure on output 1.

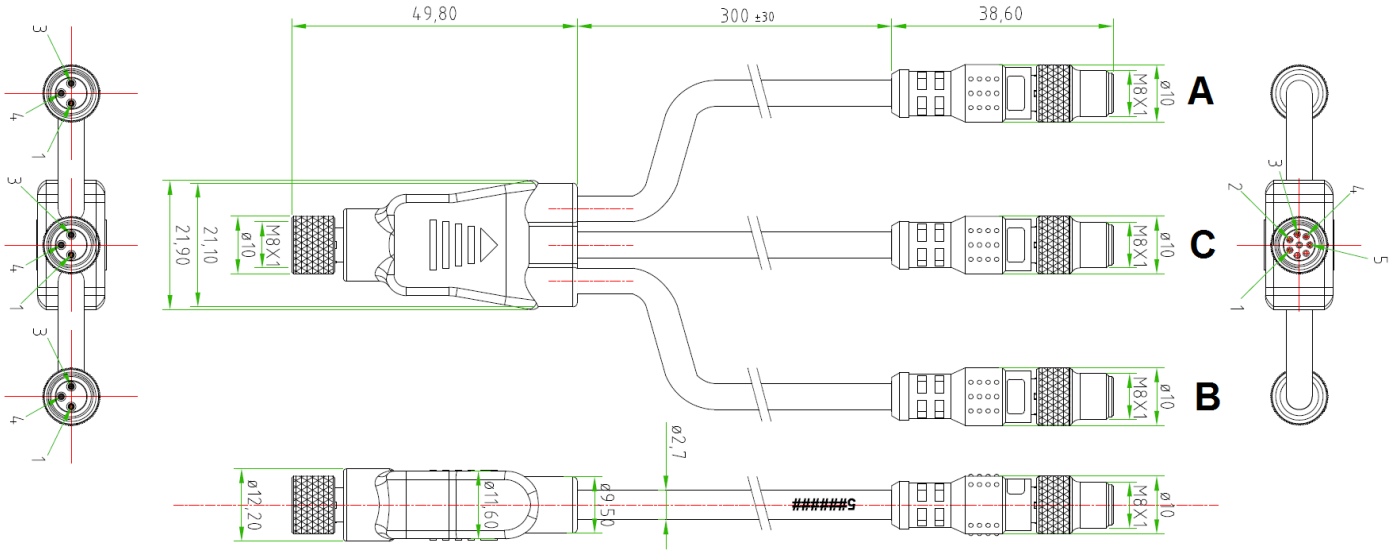
Example 1: shows the LEDs status after the memorization of a new switching position for output 1 maintaining the initial output type (N.O.)

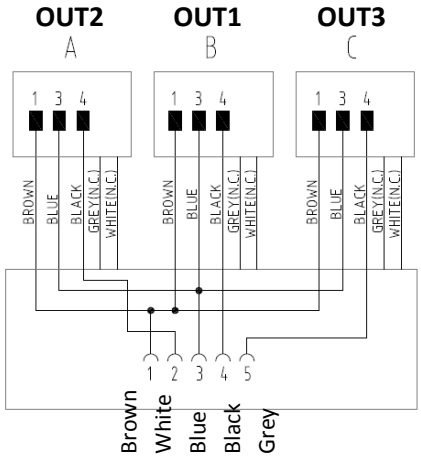
Example 2: shows the LED status of output 1 after a change of output type from the initial N.O. type to the final N.C. type and the memorization of a new switching position.



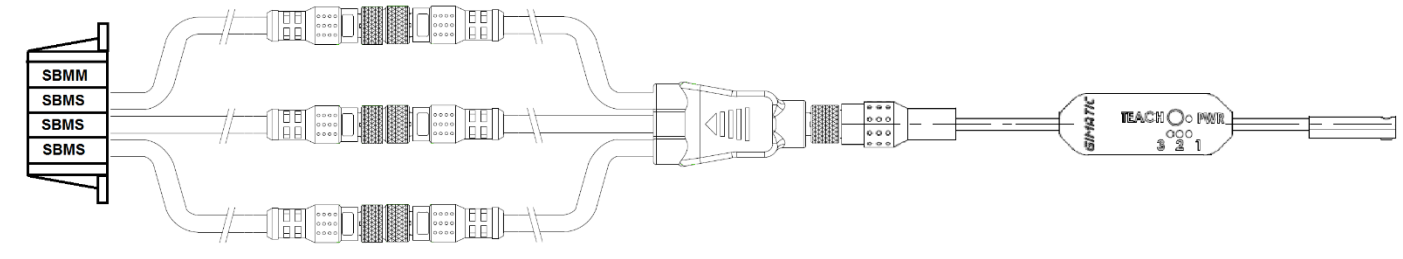
OPTIONALS

A splitter component is available with ordering code **CFGM8CMGM8X3Y** to be used in combination with either PRO-SS or PRO-SN and the modular version of Gimatic sensor boxes (i.e. SBM series).





EXAMPLE OF APPLICATION



SBM

1 SBMM-E + 3 SBMS-E

or

1 SBMM + 3 SBMS

CFGM8CMGM8X3Y

PRO-SS3N215-G