

EMI® *New Gimatic Teachable Sensors*

Gimatic PRO-SN..HSG sensors are highly accurate digital magnetoresistive sensors with up to 3 programmable output signals, for example: gripper fully open, gripper fully closed, and part gripped.

Configuring the outputs is achieved through a simple one-button interface. It includes a TEACH button and various LED lights, one for power and one for each output signal: 1, 2, and 3. For more details on programming, see the Programming Procedure on following pages.

There is one style: the SN which has a 90° cable relief. They are available in PNP or NPN signal-type.

- **Highly accurate, this sensor is ideal for part confirmation/mid-stroke detection for the new style SGP-S grippers.**
- Easy single button programming.
- Ideal for applications where space is limited and multiple output signals are needed.
- Fixed in place with set screw.
- Each output can be independently configured to Normally Open or Normally Closed and is clearly identified by LEDs.
- Wide +/- 30mm sensing range (relative to the magnet and the sensor).
- Adaptor cable #7527 is available for splitting the single 8-pin M8 connector into 3x3-pin M8 connectors.



Programmable Magnetic Sensors for New SGP-S Grippers

Quick#	Part#	Signal	Description	Price
7635	PRO-SN4N225HSG	PNP	5-Wire, 12/24 Vdc, 0.2 A, PUR cable, 2.5 meters long leads	\$67.00
7636	PRO-SN4M225HSG	NPN		\$67.00
7633	PRO-SN3N215HSG	PNP	12/24 Vdc, 0.2 A, PUR cable, 1.5 meters long with M8 8-pin Connector	\$77.00
7634	PRO-SN3M215HSG	NPN		\$77.00



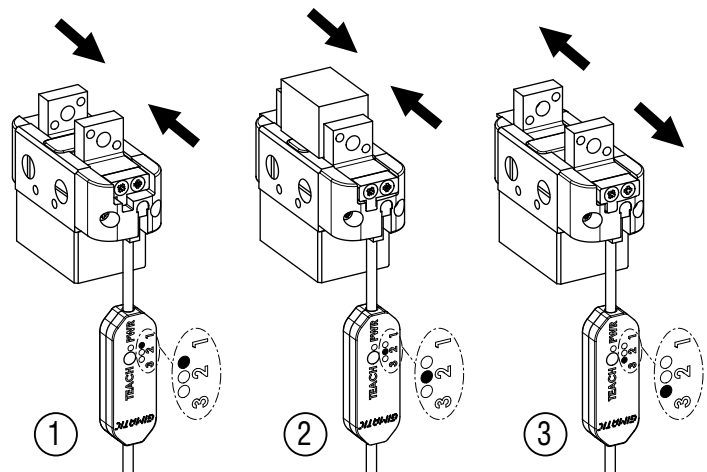
PRO Sensor Mounting Bracket

Quick#	Part#	Price
7650	PRO-SPB	\$4.99

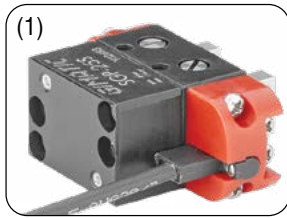
Includes: 2x M5x12 Flat head Socket Head Screws, and 2x Q#7115 Drop-In Channel Nuts

Use PRO-SN Sensors

With new Teachable PRO sensors the detected positions can be adjusted by a teaching procedure, so that 3 digital outputs can be:
 Output 1 - totally closed gripper [1];
 Output 2 - gripped part intermediate position [2];
 Output 3 - totally open gripper [3].
 This achieves accurate three position sensing with one sensor: open, part captured, part missed.

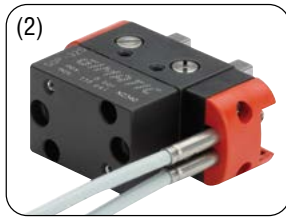


The new SGP-S sensor slot accepts PRO-SN..HSG Gimatic sensors (1). Going forward, SGP-S grippers purchased from EMI will be assembled with the new end cap for these short “C” slot sensors but will include the old sensor slot end cap assembly if you wish to continue to use inductive sensors (2).



(1)

New sensor slot

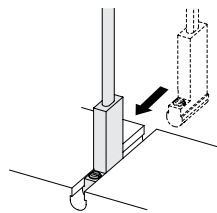


(2)

Old sensor slot

SGP-S Kit to Upgrade old Grippers for PRO-SN..HSG

Quick#	Part#	For:	Price
7596	SGP-20S-KU	SGP-20S	\$6.44
7597	SGP-25S-KU	SGP-25S	\$6.44
7598	SGP-32S-KU	SGP-32S	\$6.44
7599	SGP-40S-KU	SGP-40S	\$6.44



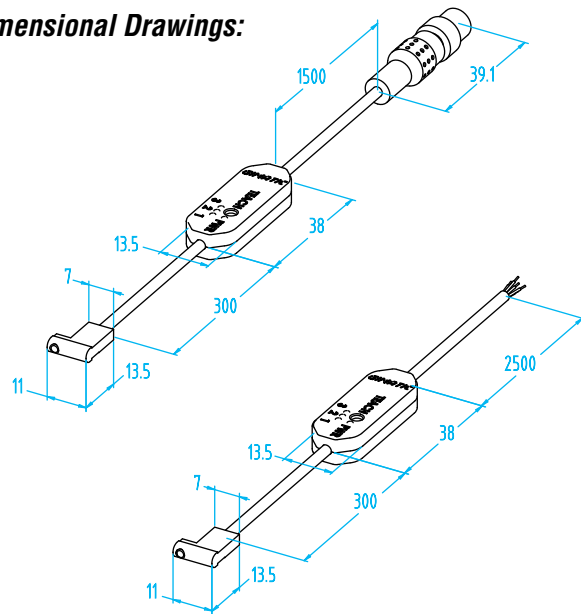
Upgrade your old style SGP Grippers:

Old grippers can be upgraded to use Gimatic’s the new teachable “PRO-SN..HSG” sensors

Advantages:

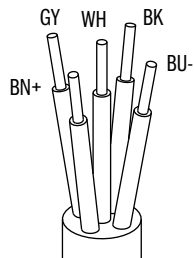
- Accurate three position sensing with one sensor: open, part captured, part missed.
- Cost: 1x PRO-SN: \$67.00 / \$77.00 -vs- 2x IS Sensors \$ 117.00

Dimensional Drawings:

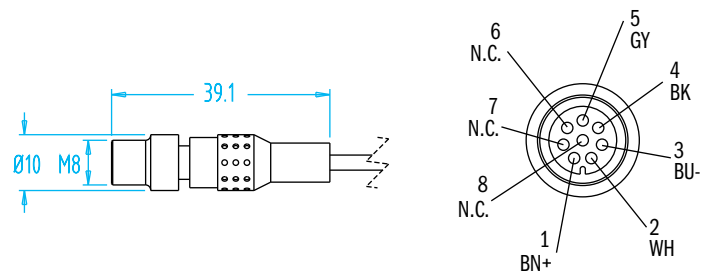


Wiring Diagram:

with Leads:

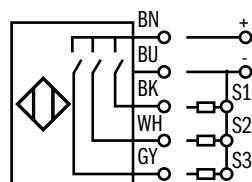


with M8 8-pin Connector:

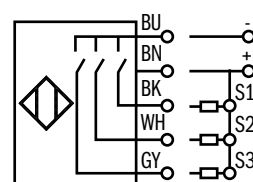


Connections:

PNP:



NPN:



Programming Procedure

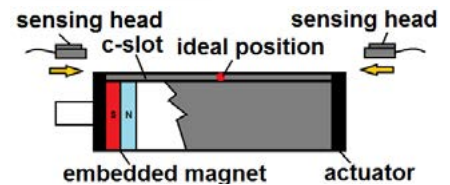
1. Applying Supply Voltage

Power the sensor by connecting the voltage (Brown) and ground (Blue) wires to your power source (6-30 VDC). When connected correctly, the green PWR LED will illuminate. At this point, it is also suggested to power your actuator (pneumatic, electric, etc.) for simple and accurate positioning. In some cases, you may be able to actuate manually, though accuracy of actuator position may be affected.



2. Inserting the Sensing Head into the C-slot

To install the sensor, simply slide it into the sensor slot of your actuator and locate it in the approximate middle of the length of the sensor slot. Tighten the sensor's set screw using a small flathead screwdriver just tight enough to keep it in place temporarily (you may have to adjust the location of the sensor in future steps to find the optimal sensing location, Step 3).



3. Entering Teach Mode and Optimizing Sensor Location

To enter Teach Mode, press and hold the TEACH button for at least 5 seconds, then release the button. All 3 output signal LEDs will begin blinking after holding the button for 5 seconds. Then when released, only LED 1 (Output 1) will continue to blink. With LED 1 blinking, the Teach Pendant is now in Teach Mode.

Once in Teach Mode, it's best to confirm the sensor is optimally located along the length of the sensor slot. To check the sensor location, cycle the component through its complete range of motion from fully open to fully closed. While cycling, monitor the blinking frequency of LED 1.

When the sensor is properly located, LED 1 blinks at 1Hz throughout the entire stroke of the actuator. If LED 1 blinks at 2Hz in a given actuator position, adjust the sensor location until it flashes at 1Hz in that actuator position. Then continue to cycle and relocate the sensor until LED 1 blinks steadily at 1Hz throughout the entire stroke. This blinking frequency indicates the magnetic flux density detected by the sensor.

To adjust the location of the sensor, loosen the set screw just enough to allow movement. Then slide the sensor back and forth in the sensor slot until the LED blinks steadily at 1Hz throughout the stroke of the actuator. Once an optimal location is found, tighten the sensor down in place, and cycle the actuator a few more times to confirm the location is correct.

Enter teach mode:



Optimize sensor location:



4. Selecting the Output to Configure

While the Teach Pendant is in Teach Mode, the actively blinking LED represents the Output which is selected to be configured. Initially, only LED 1 (Output 1) is actively flashing. To select Output 2, press and quickly release the TEACH button (holding for less than 1 second). LED 2 (Output 2) should begin blinking. Repeat the same procedure to select Output 3. Finally, repeat this procedure one more time to exit Teach Mode.

Press & Release to select output



5. Configuring and Programming Outputs

To change the output type (NO or NC) of Output 1, 2, or 3, first ensure the sensor is in Teach Mode (Step 3). Then select the desired output to be changed, ensuring the corresponding LED is blinking (Step 4). Next press and hold the TEACH button, releasing after 1.5 to 3 seconds when the light changes color from amber (Normally Open) to green (Normally Closed), or vice versa.

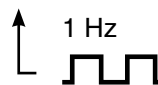
Once the desired output type is selected, the output is ready for programming. Ensure the desired output to program is blinking (in Teach mode), then press and hold the TEACH button, releasing after more than 3 seconds. At this point, the LED of the just programmed output remains on (stops blinking) in the color representing the output type selected, and the next output's LED will begin blinking automatically. Continue configuring and/or programming the remaining outputs as necessary.

Changing the output type

1.5s ≤ Press < 3.0s from NO to NC



1.5s ≤ Press < 3.0s from NC to NO

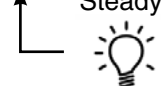
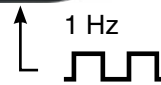


Programming the switching position

Press ≥ 3.0s teaching position



Press ≥ 3.0s teaching position



Programming Procedure (continued)

6. Programming Sensor for 3 Gripper Positions

To configure the 3 outputs, begin in Teach Mode (Step 3). For this example, we will set outputs for a parallel gripper at the following positions: Fully Open, Mid-stroke, and Fully Closed outputting Normally Open signal types.

Output 1 - Fully Open: First confirm LED 1 is blinking amber (NO), indicating Output 1 is ready to program, and in the correct output type mode (if necessary, see step 5 to switch output type). Next move the position of the gripper fingers to fully open. Press and hold the TEACH button for at least 3 seconds, until LED 1 stops blinking, then release the TEACH button. At this point LED 2 will automatically begin blinking and LED 1 will remain ON (no longer blinking). Output 1 has been programmed. **NOTE:** Output 1 signal wire is BLACK (free leads) or PIN 4 (M8 connector)

Output 2 - Mid-stroke: Confirm LED 2 is blinking, indicating Output 2 is ready to teach. Place your part between the fingers of the gripper and move the fingers into the gripping position. Now program Output 2 for this mid-stroke position by pressing the TEACH button for at least 3 seconds, until LED 2 stops blinking. Then release the TEACH button. LED 3 will automatically begin blinking and LED's 1 & 2 will remain ON (no longer blinking). Output 2 has been programmed. **NOTE:** Output 2 signal wire color is WHITE (free leads) or PIN 2 (M8 connector version)

Output 3 - Fully Closed: Confirm LED 3 is blinking, indicating Output 3 is ready to teach. Move the fingers into the fully closed position. Press and hold the TEACH button for at least 3 seconds, until LED 3 stops blinking. Then release the TEACH button. LED's 1, 2, & 3 remain ON (no longer blinking). Output 3 has been programmed. **NOTE:** Output 3 signal wire color is GREY (free leads) or PIN 5 (M8 connector version)

Exit Teach Mode by pressing and quickly releasing the TEACH button. The sensor is now configured for use in your application! LED's will now turn ON corresponding with the position of the gripper fingers, and send the requisite signal.

Output 1 - Gripper Open:



Output 2 - Gripper Mid-Stroke: (Part Gripped)



Output 3 - Gripper Closed: (Part Missed)

