NON–CONTACTLASER DISTANCE SENSOR

LMS Series

"Non–ContactMeasurement With Laser; Analog, CANopen,MODBUS, Switch Output"

- Non–contactdistance measurement with laser (Time Of Flight)
- 940nm invisible laser (VCSEL), Class 2
- 2000mmmesauring range
- 12mmsmall body diamater
- Analog, CANopen, MODBUS and switch output options
- LED status indicator
- Resistant to environmental conditions, IP67 protection class
- Long service life
- Low power consumption

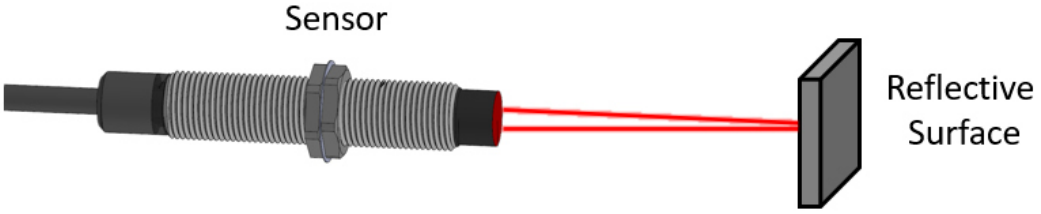
LMS Series Laser Distance Sensor is used in various applications for measurement of distance or detect approximation non–contactly with laser light. It precisely determines the distance between the sensor and the object through the flight time of the light.

The operation of the product is based on the principle of sending the laser beam and receiving it back from the reflective surface / reflector. A laser beam is sent by the sensor to the reflective surface to be measured. The time difference between sending and receiving the beam indicates the actual distance of the target in millimeters.

LMS series laser distance sensors are easily mounted with their small and compact structure. Additionally, they are easily integrated into your system with Analog, switch, CANopen and MODBUS interface options.

APPLICATIONS

- Distance measurement
- Asset control
- Motion control
- Positioning
- Obstacle detection
- Altitude monitoring



TEHNICAL FEATURES

Optical Data

Working Principle	Time–of–Flight,reflected from reflector
Measuring Range	0…2000mm
Light Type	Invisible Laser (VCSEL), Class2
Wavelength	940 nm
Field Of View	18°
Recommended Reflector Size	5x5cm for distance ≤1000mm 10x10cmfor distance >1000mm(10x10cmreflector is provided as standard in the box content)
Max. Permissibleexternal light	1000lux (effected by intense sunlight)

Electrical Data

Supply	**Analog**	**CANopen**	**RS–485**	**Switch***
	12…30 Vdc	6…30 Vdc		
Output Types	Analog : 0–10V, 0–5V, 0.5–4.5V, 0–20mA, 4–20mA CANopen RS–485 Switch (1 x PNP open collector)**			
Power Consumption	0,24 Watt max.			
Current Consumption	10mA @24VDC max			
Sampling Rate	**Analog**	**CANopen**	**RS–485**	**Switch**
	20Hz			100Hz
Accuracy	±%2			
Minimum Resolution	1 mm			
Analog Output Load	500 Ω			
Analog Output Resolution	12 Bit (1 mm resolution)			
Indicator	RGB LED			
Reverse Polarity Protection	Yes			
TemperatureCompensation	Yes			
Watchdog	Yes			

* **Completelyisolated switchoutput**: Switch output can be fed from a separate source. Between 6–30volts, the device can be powered by a source independent of the power source.

** **Switch short circuit protection:** There is a maximumcurrent limit of 200mA.When it reaches the 200mAcurrent limit, the device cuts off the switch output. It ensures the protection of the source and connected devices. In order for the device to start giving output again, the short circuit condition must be eliminated and the device must be restarted.

Mechanical Data

Protection Class	IP67	
Operating Temperature	–20…+85°C	
Storage Temperature	–20…+85°C	
Material	**Body**	Nickel plated brass
	Cable	PVC
Electrical Connection	Cable or M12 connector	

RS–485 FEATURES

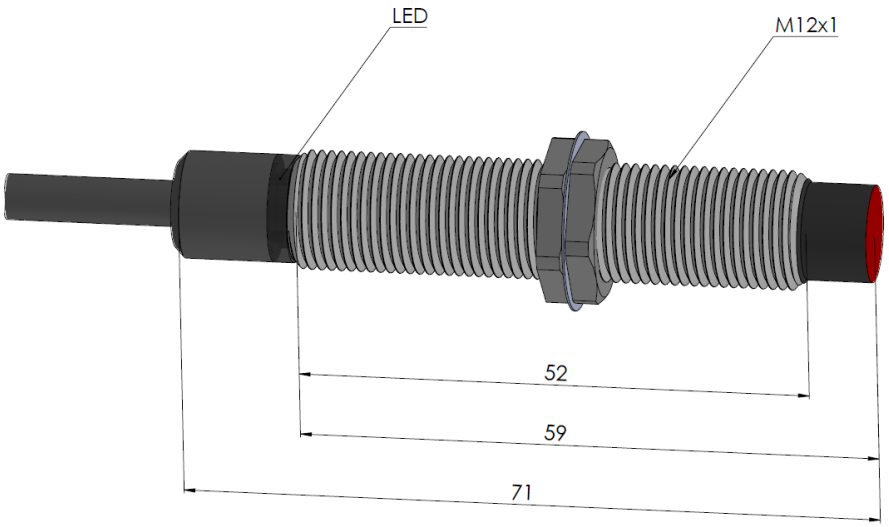
CommunicationProtocol	Modbus RTU
Baud Rate	600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200 Default: 9600
Parity	None, Odd, Even Default: None
Adres	Between 1 and 247 Default: 1

CANopen FEATURES

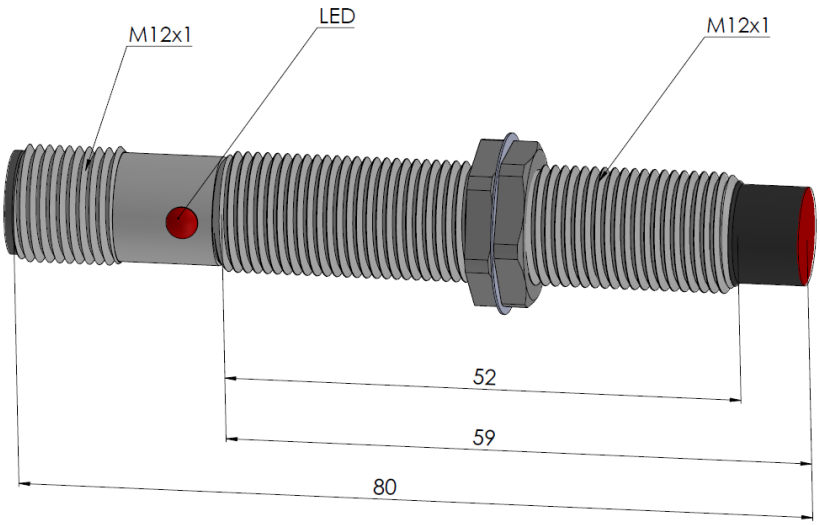
Communication Profile	Ds406
Response Frequency	20 Hz.
Device Type	CANopen, DS406
Node ID	1 ile 127 arası LSS ya da SDO ile ayarlanabilir.
Baud Rate	10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 Mbit/s
PDO Data Rate	100 ms
Error Check	Heartbeat, Emergency Message
PDO	1 Tx PDO
PDO Modes	Event/Time triggered, Synch/Asynch
SDO	1 server
Position data	Object Dictionary 6004
Terminating Resistor	No

MECHANICAL DIMENSIONS (mm)

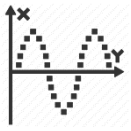
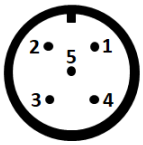
–With Cable–

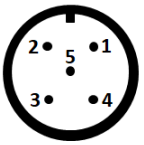


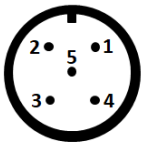
–With M12 Connector–

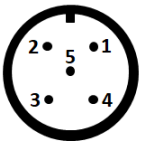


ELECTRICAL CONNECTIONS

ANALOG OUTPUT (0–10V, 0–20mA, 4–20mA)		
SIGNAL 	M12 5 PIN MALE CONN. 	CABLE 
+V(12…30VDC)	Pin 1	Red
GND	Pin 2	Black
Analog Out +	Pin 3	Yellow
N/C	Pin 4	Green
N/C	Pin 5	Pink

RS–485MODBUS OUTPUT		
SIGNAL Modbus	M12 5 PIN MALE CONN. 	CABLE 
+V(12…30VDC)	Pin 1	Red
GND	Pin 2	Black
RS485 –B	Pin 3	Yellow
RS485 –A	Pin 4	Green
N/C	Pin 5	Pink

CANopen OUTPUT		
SIGNAL CANopen	M12 5 PIN MALE CONN. 	CABLE 
CAN SHIELD	Pin 1	CAN SHIELD
+V(12…30VDC)	Pin 2	Red
GND	Pin 3	Black
CAN_H	Pin 4	Yellow
CAN_L	Pin 5	Green

SWITCH OUTPUT (PNP OPEN COLLECTOR)		
SIGNAL 	M12 5 PIN MALE CONN. 	CABLE 
+VCihaz (6…30VDC)	Pin 1	Red
GND Device	Pin 2	Black
+VSwitch (6…30VDC)	Pin 3	Yellow
GND Switch	Pin 4	Green
Switch Out	Pin 5	Pink

Completely isolated switch output: Switch output can be fed from a separate source. Between 6–30volts, the device can be powered by a source independent of the power source.

Switch short circuit protection: There is a maximum current limit of 200mA. When it reaches the 200mA current limit, the device cuts off the switch output. It ensures the protection of the source and connected devices. In order for the device to start giving output again, the short circuit condition must be eliminated and the device must be restarted.

LED INDICATOR

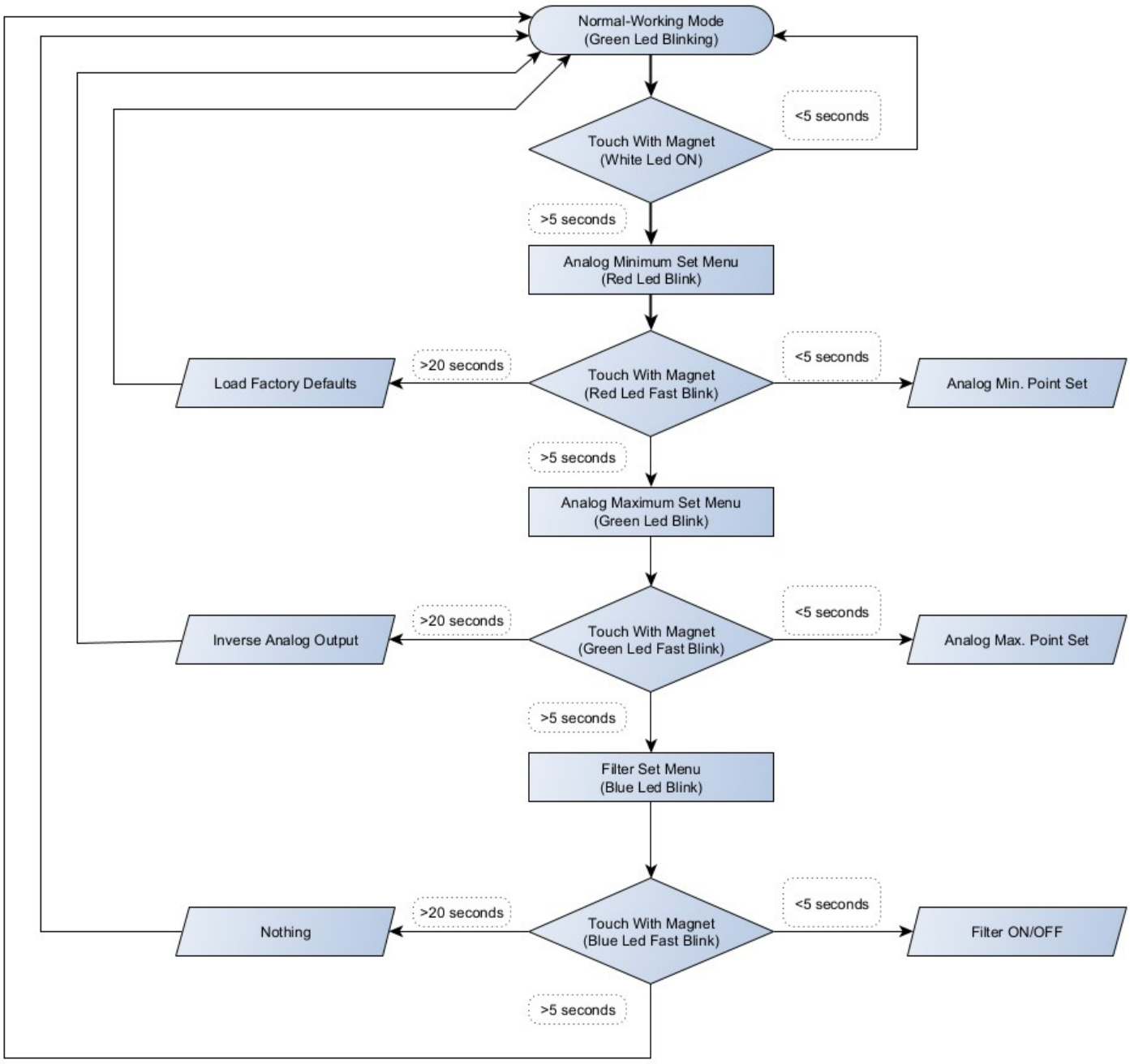
There is 1 RGB LED indicator on the device. This LED color and blinking speed changes depending on normal operation, error and configuration situations.

Normal Operating Status: When the device is in normal operating mode, the LED indicator flashes green once per second.

Error Status: If the maximum measurement distance is exceeded, the Red LED flashes once a second.
If there is insufficient light reflection, the blue LED will flash once per second. If the blue and red LEDs flash together, this indicates that two errors are present at the same time.

Configuration Status with Magnet: While the device is configured with a magnet, when it starts to detect the magnet, the LED color changes depending on the setting menu it is in (analog output or switch setting). LED color indicates which setting menu you are in and which setting can be made. As long as the magnet is detected, the blinking speed of the LED increases, flashing 10 times per second. Blinks for one second unless the magnet is detected.

ANALOG OUTPUT CONFIGURATION WITH MAGNET



The zone where the adjustment magnet is approached

1. Setting the analog output minimum point:

Depending on output type; the distance at which the minimum analog value will be given is set.

When the device is in Normal Operation mode, the magnet is held to the magnetic reader area while the Green LED flashes for one second. If the magnet is detected, the sign LED starts to emit white light. If the magnet is held for more than 5 seconds, the device enters the menu where the analog minimum set point will be adjusted. In this case, the indicator LED starts to blink red and at one-second intervals.

Operations that can be done in this menu;

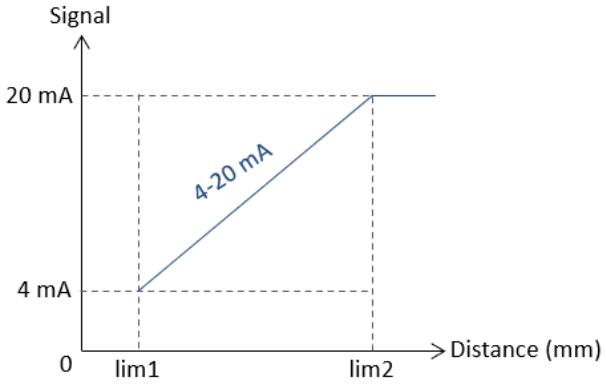
-**Setting the analog minimum point at the desired distance:** The LMS is positioned at the position where minimum analog output is desired. The magnet is read for a period of time greater than 1 second and less than 5 seconds.

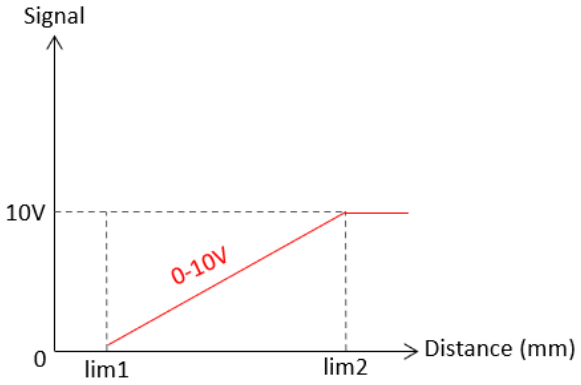
-**Goto next menu:** The magnet is read for more than 5 seconds. If the analog minimum point is not set at this stage, the point that was previously set as the analog minimum point will be valid.

-**Return to factory settings:** If the magnet is read for more than 20 seconds, it restores the analog minimum, analog maximum, switch point1, switch point2 points made when the device was delivered to the user. The device exits the settings menus and returns to normal operating mode.

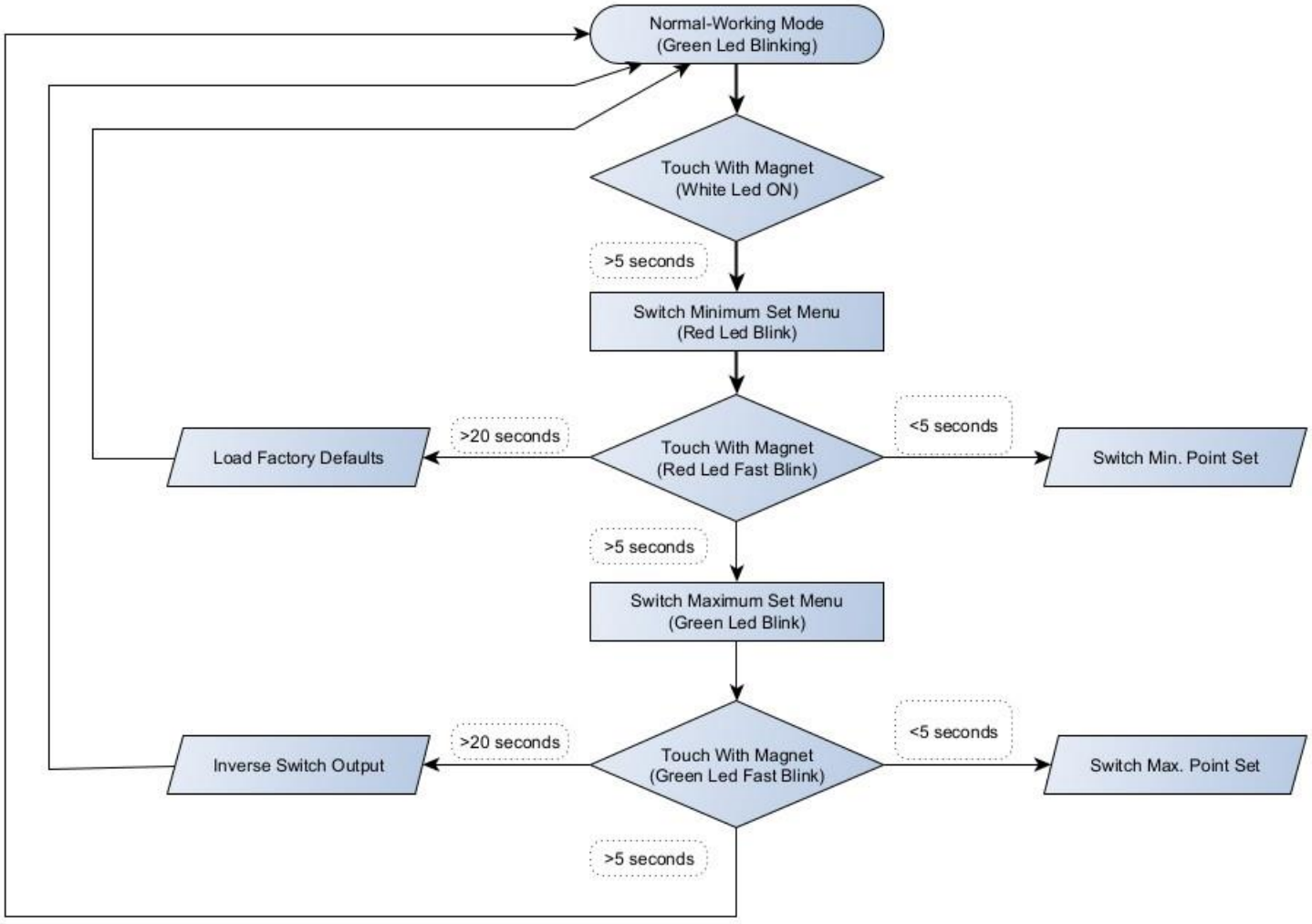
2. Setting the analog output maximum point:
Depending on output type; the distance at which the maximum analog value will be given is set.
If the magnet is read for more than 5 seconds and less than 15 seconds while the sign LED is red and flashing at one–second intervals, this menu is entered. The indicator LED starts blinking green and at one–second intervals.
Operations that can be done in this menu;
–Setting the analog maximum point at the desired distance: The LMS is positioned at the position where maximum analog output is desired. The magnet is read for a period of time greater than 1 second and less than 5 seconds.
–Invertinganalogoutput: If the magnet is read for more than 20 seconds, it gives the analog maximum value (e.g. 20mA) at the minimum range point (e.g. 0 meters) and the analog minimum value (e.g. 4mA) at the maximum range point (e.g. 4 meters).
–Goto the next menu: The magnet is read for more than 5 seconds. If the analog maximum point is not set at this stage, the point that was previously set as the analog maximum point will be valid.

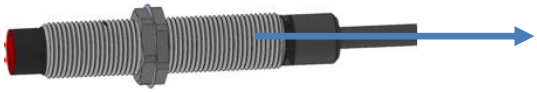
ANALOG OUTPUT SCALE SETTINGS–SAMPLE SIGNAL OUTPUT GRAPHICS





SWITCH OUTPUT CONFIGURATION WITH MAGNET





The zone where the adjustment magnet is approached

In this menu, the minimumand maximumdistance range at which the Switch output of the product will be active is determined.

1. Setting the switch minimumpoint:
If the magnet is read for more than 5 seconds while the sign LED is green and flashing at one–second intervals, the switch is entered into its minimum setting. The indicator LED starts blinking red and at one–second intervals.
If the magnet is read for more than 1 second and less than 5 seconds, the LMS switch minimum point is saved.
If the magnet is read for more than 20 seconds, the device returns to factory settings and restarts.
–Go to the next menu: The magnet is read for more than 5 seconds. If the switch minimum point is not set at this stage, whatever point was previously set will be valid.
Default: Min:0mm, Max:1300mm

2. Setting the switch maximumpoint:
If the magnet is read for more than 5 seconds while the sign LED is green and flashing at one–second intervals, the switch is entered into its maximumsetting. The indicator LED starts blinking green and at one–second intervals.
If the magnet is read for more than 1 second and less than 5 seconds, the LMS switch maximumpoint is saved.
If the magnet is read for more than 20 seconds, the device switch output is inverted. In other words, the transition is made from NO to NC.
If the magnet is read for more than 5 seconds, it returns to normal operating mode.

Warning(!) If a magnet is brought close to the magnetic reader area and the indicator light does not start blinking rapidly, it means that the magnet is not detected. It should be tried by changing the direction of the magnet, or if the magnet is a weak magnet, it should be tried with a stronger magnet.

ORDER CODE

Output Type

V0 : 0–10VDC
V1 : 0–5VDC
V3 : 0.5–4.5VDC
A0 : 0–20mA
A4 : 4–20mA
NV0 : 10–0VDC
NV1 : 5–0VDC
NV3 : 4.5–0.5VDC
NA0 : 20–0mA
NA4 : 20–4mA

C: CANopen

S2: RS–485

SW1: PNP open collector–NO
SW2: PNP open collector–NC

Model

112: Ø12 mm

LMS 112	-	XXXX	-	XXX	-	XXXX

Masuring Range

Can be selected between
0…2000mm

Electrical Connection

2M : 2m cable (std)
S13M: M12/5 pin male connector
*Optional others

Note: 1 pcs 10x10cmreflector is provided as standard in the box content.