LASER DISTANCE SENSORS WITH TIME OF FLIGHT MEASUREMENT

DISTANCE SENSORS

Visible red laser emission

- *High precision and speed*
- *Proximity measurement range scalable from 0 to 7 m*
- *Retroreflex measurement range reaching 20 or 100 m on reflector*
- *4 digit display and RS485 serial interface*

S80 SERIES

The **S80** series, in the compact sturdy metal housing, offers innovative class 2 laser distance sensors with time of flight measurement. This technology, based on the measurement of the time between the emission and receipt of the laser light pulses, effects accurate distance detection.

The **S80-Y0** and **S80-YL0** sensors function as proximity on respectively a 0.3 - 4 m distance, or from 0.3 to 7 m with scalable range, in object positioning or detection applications, for example as double-threshold background suppression on long distance.

The **S80-Y1** and **S80-Y2** sensors, with operating distances reaching 20 or 100 m, function as retroflex measuring the distance from a reflector mounted on the object to detect and are ideal for position applications in automatic warehouses or material handling lines in general.

All models have two switching outputs, available in both the NPN and PNP models, that can be set at different distances, while the measurement value is supplied on the 4-20 mA analogue output and RS485 serial interface; the latter can be also used to set all the parameters.

A 4-digit display visualises the distance, as well as all the parameters that can be set with the three push-buttons.

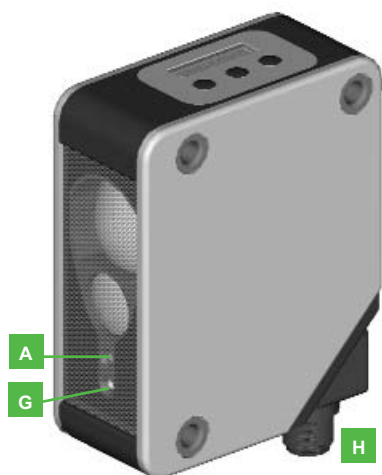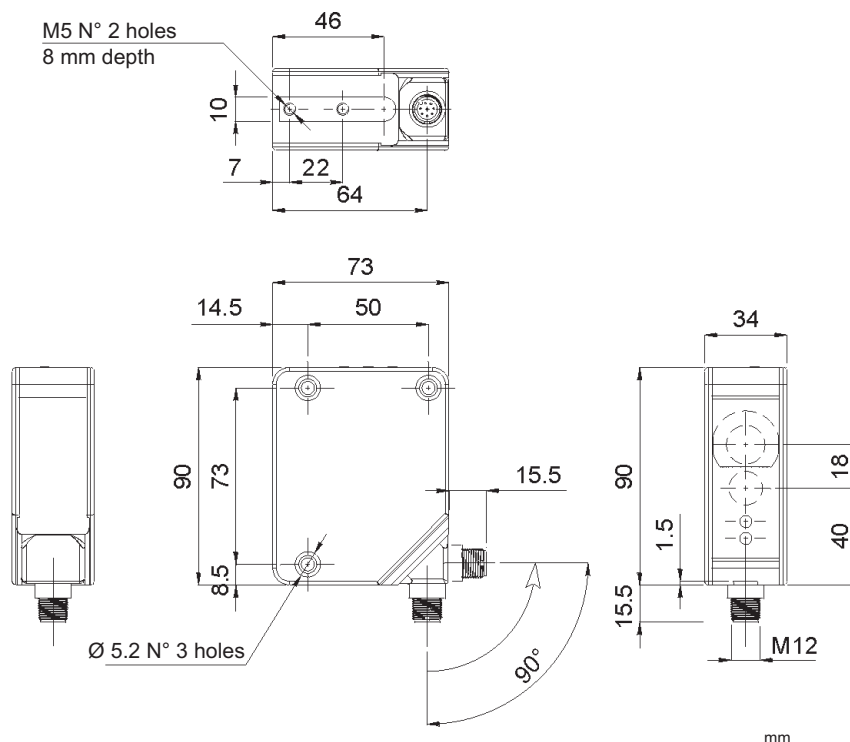**DATASENSOR**
value through detection

The laser distance sensors with time of flight measurement are suitable for long distance measurements offering constant performances on the entire range. The resolution represents the minimum dimension, or the smallest target movement detected by the sensor.

The linearity indicates the maximum deviation of the analogue output respect to the ideal value and is expressed in percentage of full range.
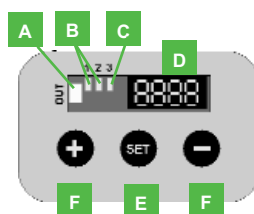
Whereas the temperature drift indicates the maximum deviation in relation to the sensor temperature variation and is expressed in mm/°C.

Lastly, the repeatability represents the variation interval of the measurement made different times on the target at the same distance.

DIMENSIONS

M5 N° 2 holes
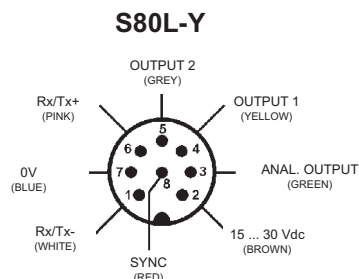8 mm depth

46
10
7
22
64

73
14.5
50
90
73
15.5
8.5
Ø 5.2 N° 3 holes

34
90
18
1.5
40
15.5
M12

90°

mm

INDICATORS AND SETTINGS

A	Output 'OR' function LED
B	Output status LED
C	Response time LED
D	4-digit display
E	SETpush-button
F	+/- selection push-buttons
G	Alarm LED
H	M12 connector output, orientable on 2 positions

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors** and **Fixing Brackets** of the **General Catalogue**.

CONNECTIONS

S80L-Y

OUTPUT 2 (GREY)
Rx/Tx+ (PINK)
OUTPUT 1 (YELLOW)
0V (BLUE)
ANAL. OUTPUT (GREEN)
Rx/Tx- (WHITE)
15 ... 30 Vdc (BROWN)
SYNC (RED)

5
6
4
7
3
8
1
2

NOTE: the wire colours refer to the cables manufactured according to the European standard

Versions and options: refer to **MODEL SELECTION TABLE**

TECHNICAL DATA

Direct measurement range [1]**:**	0.3 - 4 m (Y0), 0.3 - 7 m scalable (YL0)
Retroreflex measurement range [2]**:**	0.3 - 20.3 m (Y1), 0.3 - 100.3 m (Y2)
Digital resolution:	0.9 mm (Y0), 0.4 mm (YL0),
	0.6 mm (Y1), 6 mm (Y2)
Linearity:	0.3% (Y0/YL0), 0.25% (Y1), 0.15% (Y2)
Temperature drift:	±0.6 mm/°C (Y0/YL0),
	±1.5 mm/°C (Y1), ±2 mm/°C (Y2)
Repeatability [3]**:**	0.5% @ 4 m (Y0/YL0), 1% @ 7 m (YL0),
	0.5% @ 20 m (Y1), 0.3% @ 100 m (Y2)
Switching output hysteresis [3]**:**	5 mm (Y0/YL0), 25 mm (Y1), 40 mm (Y2)
Power supply:	15 **...** 30 Vdc (limit values)
Ripple:	2 Vpp max.
Consumption:	110 mA max. @ 24 Vdc
Light emission:	red Laser 665 nm, class 2
Setting:	SET push-button
	+/- push-button
Indicators *(on command panel)***:**	4-digit display
	yellow OUTPUT LED
	green OUTPUT STATUS LED
	green FAST mode LED
Indicators *(on front)***:**	yellow OUTPUT LED
	red ALARM LED
Output type:	2 PNP NO or 2 NPN NO
	4 **...** 20 mA analogue
Output current:	≤ 100 mA
Saturation voltage:	≤ 2 V
Response time:	5 ms (NORMAL)
	1 ms (FAST)
Switching frequency:	100 Hz (NORMAL)
	500 Hz (FAST)
Timing function:	selectable between 5, 10, 20, 30 e 40 ms
Auxiliary functions:	synchronism (SYNC)
	keylock [4]
	RS485 serial interface
Connection:	M12 8-pole connector [5]
Electrical protection:	class 2
Mechanical protection:	IP67
Protection devices:	A, B [6]
Housing material:	aluminium
Lens material:	glass
Weight:	330 g max.
Operating temperature:	-10 **...** +50°C
Storage temperature:	-25 **...** +70°C
Reference standard:	EN 60947-5-2, EN 60825-1

TECHNICAL NOTES

[1] On target 90% white to 18% grey

[2] On reflector R80

[3] In Normal mode with 5 ms response time

[4] Active with SYNC wire connected to + Vdc for at least 1 s at powering

[5] Connector can be blocked in two positions

[6] A - reverse polarity protection
   B - overload and short-circuit protection

C E   c (UL) US LISTED   ⟨Ex⟩ II3D

CAUTION
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT
EN60825-1 (1994) - IEC825-1 (1993)
Max.power ≤ 1mW   λ 665nm

DETECTION DIAGRAMS

Analogue output

Digital outputs

Direct measurement distance according to object reflection degree

DATASENSOR
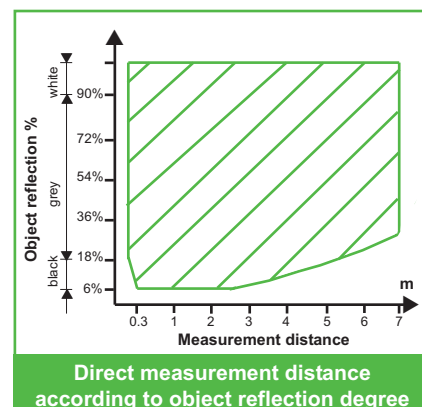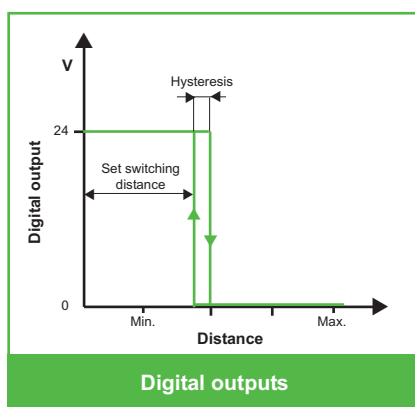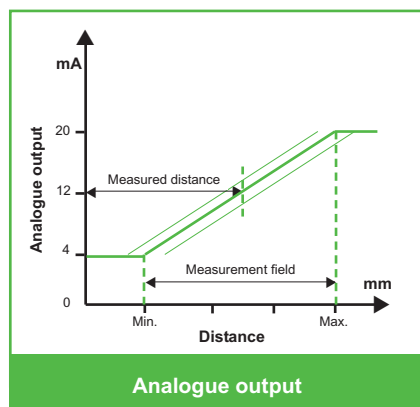
MODEL SELECTION TABLE

| MODEL	MAX. DISTANCE	REFLECTOR	CONNECTION	OUTPUT	N° ORDER
S80-MH-5-Y09-PPIZ	4 m	no	M12 connector	PNP	951501000
S80-MH-5-Y09-NNIZ	4 m	no	M12 connector	NPN	951501010
S80-MH-5-YL09-PPIZ	7 m	no	M12 connector	PNP	951501060
S80-MH-5-YL09-NNIZ	7 m	no	M12 connector	NPN	951501070
S80-MH-5-Y19-PPIZ	20 m	yes *	M12 connector	PNP	951501020
S80-MH-5-Y19-NNIZ	20 m	yes *	M12 connector	NPN	951501030
S80-MH-5-Y29-PPIZ	100 m	yes *	M12 connector	PNP	951501040
S80-MH-5-Y29-NNIZ	100 m	yes *	M12 connector	NPN	951501050

* supplied with the sensor

ACCESSORIES

ST-5037 fixing bracket
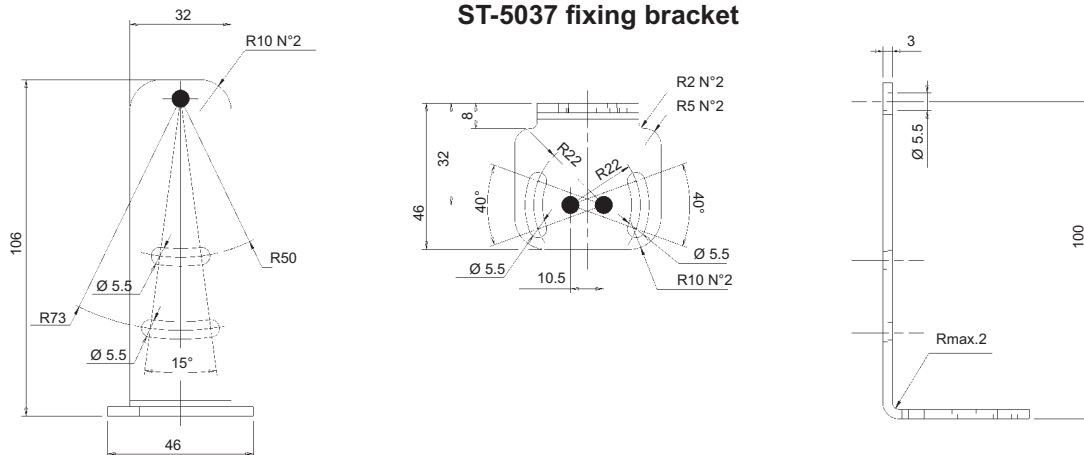
R80 reflector
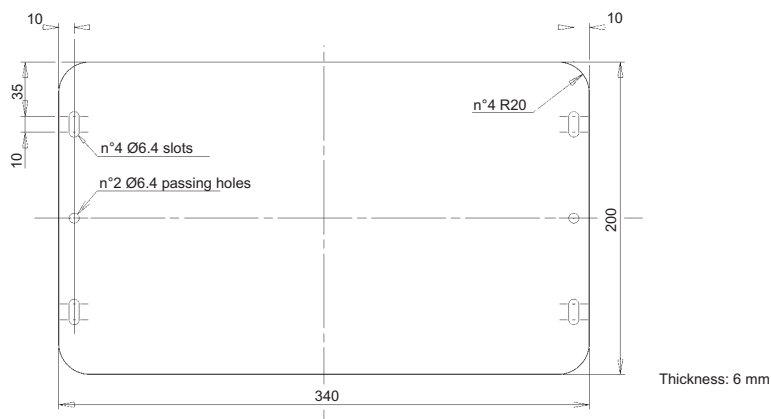
mm

ACCESSORY SELECTION TABLE

MODEL	DESCRIPTION	N° ORDER
ST-5037	'L' shaped fixing bracket	95ACC2260
R80 *	S80 distance sensor reflector	95A151210
*Refer also to **Accessories for Sensors***		
CS-A1-06-B-03	M12 8-pole conn. with 3 m unshielded cable	95ACC2230
CS-A1-06-B-05	M12 8-pole conn. with 5 m unshielded cable	95ACC2240
CS-A1-06-B-10	M12 8-pole conn. with 10 m unshielded cable	95ACC2250

* supplied with the sensor

Distributed by:

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