HIGH RESOLUTION MEASUREMENT SENSORS

DISPLACEMENT SENSORS

- *80 ± 40 mm operating distance*
- *Resolution reaching 8 µm*
- *Linearity <0.1 %*
- *Management of internal buffer memory*
- *0.5x0.75 mm spot at focus distance*

S62-Y SERIES

The new **S62-Y** series of displacement sensors with class II Laser red emission and micrometric resolution is based on optic triangulation technology, offering very accurate distance measurement as well as precise thickness or position verification.
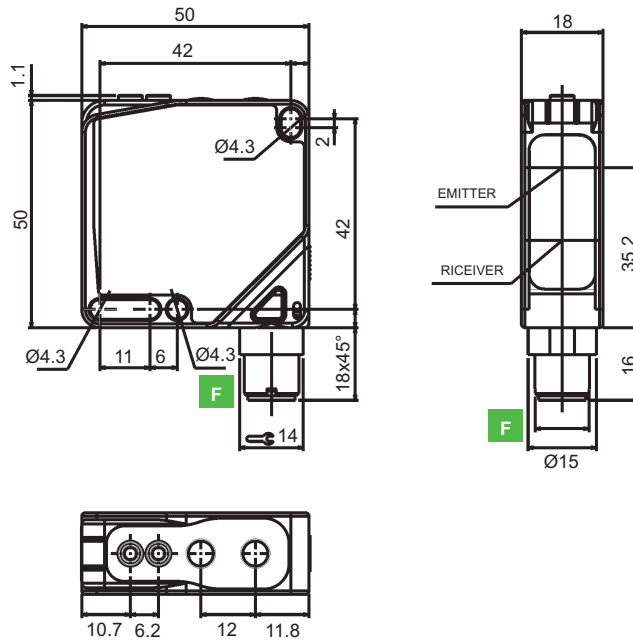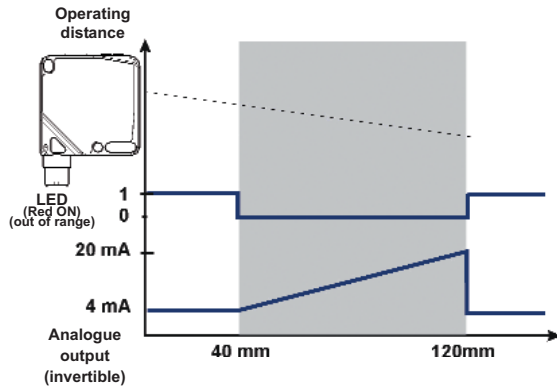
The sensor especially suits applications with reduced space and offers a very low response time (<666 µs) with a very high measurement resolution reaching 8 µm. The PC connection using the RS485 serial protocol and graphic user interface make sensor configuration and data control very intuitive and easy.

Typical applications are in the wood industry, metal working, positioning for assembly lines and pick and place.

The series includes two different models, both with an additional alarm signal in case of low signal or dirty lenses.
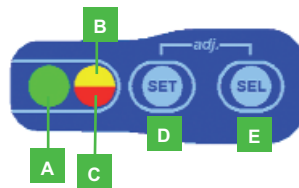
DATASENSOR
value through detection

S62-Y SERIES

The **S62-Y** sensor uses optical triangulation to determine the position of the target object: when the laser beam is reflected from the object to the receiver, spot position is digitally processed to calculate object position.
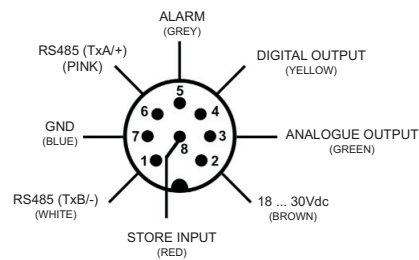

Operating distance

LED (Red ON) (out of range)

20 mA

4 mA

Analogue output (invertible)

40 mm   120mm

DIMENSIONS

mm

INDICATORS AND SETTINGS

A	Laser ON LED
B	Digital output status LED
C	Object detection LED
D	SET push-button - output switching adjustment
E	SEL push-button - MASTER/SLAVE selection mode
F	M12 connector output

ACCESSORIES

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

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

CONNECTIONS

ALARM (GREY)

RS485 (TxA/+) (PINK)

DIGITAL OUTPUT (YELLOW)

GND (BLUE)

ANALOGUE OUTPUT (GREEN)

RS485 (TxB/-) (WHITE)

18 ... 30Vdc (BROWN)

STORE INPUT (RED)

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TECHNICAL DATA

Operating distance:	80 ± 40 mm
Measurement range:	80 mm
Minimum resolution:	50 μm
Linearity:	< 0.25% operating distance
Power supply:	18 ... 30 Vdc
Consumption:	< 70 mA
Light emission [1] **:**	red Laser 658 nm
Spot dimension:	0.5 x 0.7 mm at 100 mm
Setting:	TEST and SEL push-buttons
Indicators:	green Laser ON LED
	yellow DIGITAL OUTPUT LED
	red TARGET LED
Digital outputs:	PNP, NO
Response time:	666 μs
Measurement frequency:	< 750 Hz
Max. capacitive load:	< 330 nF (digital output)
Analogue output:	4…20 mA (PIZ vers.)
	0…10 V (PVZ vers.)
Max. load allowed:	≤ 500 Ω (PIZ vers.)
(apparent ohmic resistance)	> 100 kΩ (PVZ vers.)
Serial interface:	EIA/TIA-485, half-duplex
Max. number of sensors connected to one bus:	8 (with different addresses)
Temperature drift:	10 μm/°C
Protection circuits:	power supply inversion
	output short-circuit protection (except RS485)
	overload protection (digital outputs)
Delay at power on:	< 1 s
Connections:	M12 8-pole connector
Mechanical protection:	IP67 [2]
Laser protection class:	2 (EN 60825/I)
Protection devices:	A, B
Housing material:	ABS [3]
Weight:	40 g max.
Operating temperature:	-0 ... +55°C
Storage temperature:	-20 ... +70°C
Reference standard:	EN 60947-5-2,
	EN 60825-1, CDRH21 CFR 1040.10

TECHNICAL NOTES

[1] *Average life of 50.000 h with T_A = +25 °C*

[2] *Connector can be blocked on two positions*

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

RESOLUTION DIAGRAM

DATASENSOR
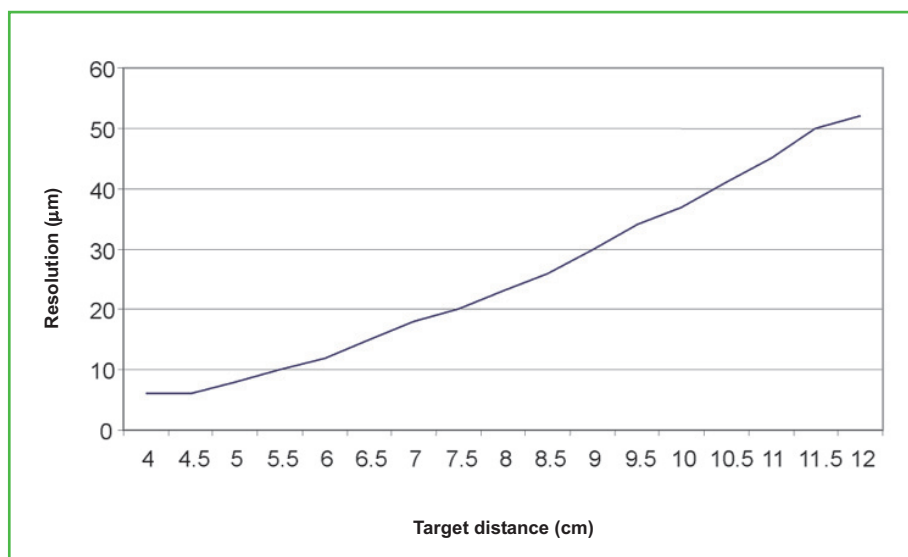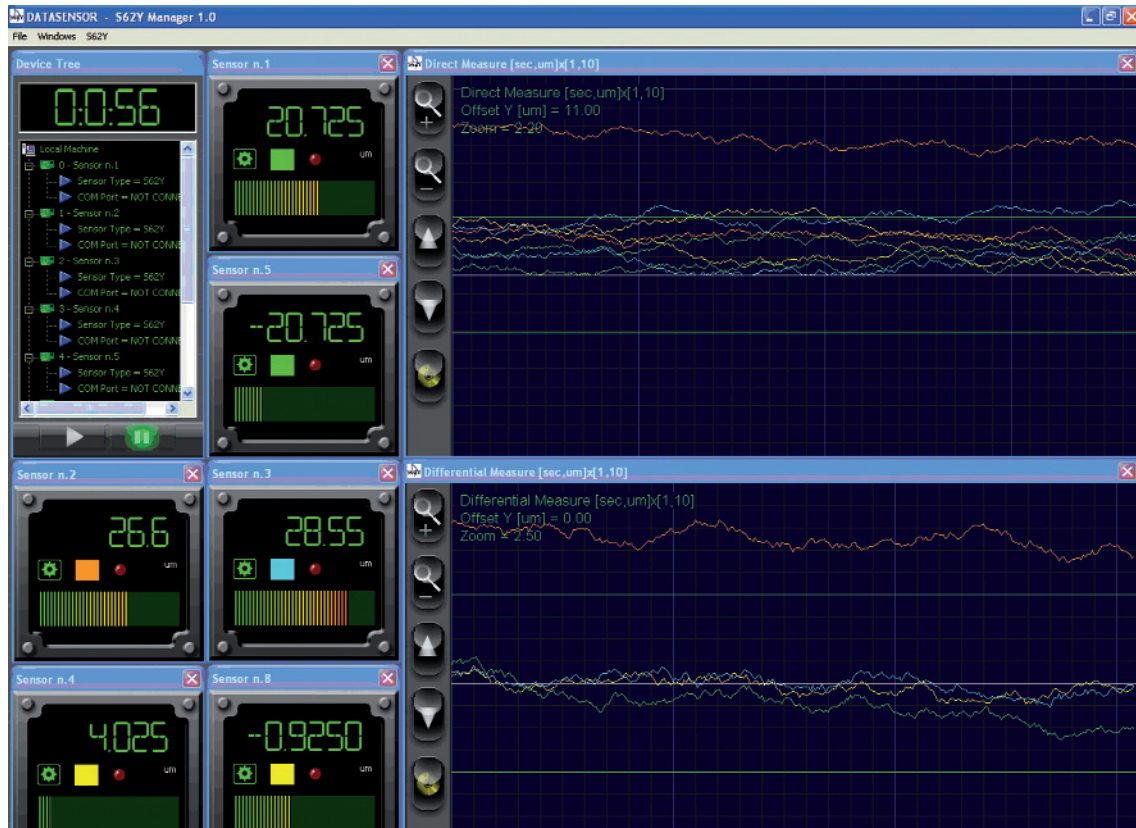
PC SOFTWARE

The **S62-Y** Manager control interface, developed together with the product to ensure intuitive, fast functioning, enables even less expert users to set-up complex applications using one or more **S62-Y** sensors, using the advanced features available on the serial interface.

The software is available on the CD-ROM supplied with the product and includes an exhaustive on-line help. It operates in the Windows 2000/XP/Vista environment.

Special features:

• Management of several sensors at the same time
• Measurement indicator with numeric and graphic display
• Differential detection/reading comparison between pairs of sensors
• Data plotting on time/distance XY graph
  (graph display may be turned on/off by user)
• Graphic windows may be saved in image format
• Acquired data may be saved in ASCII format
• Data may be saved to a binary meta-format file
• Event management and ASCII LOG file (alarms)
• The graphic structure makes the software easy to control using a touch-screen display.

DATASENSOR

STAND-ALONE MASTER/SLAVE FUNCTIONING

Two **S62-Y** sensors are connected together in this mode and the analogue output of one (MASTER) supplies the thickness variation (differential measurement) of the objects that move between the sensors respect to a zero condition.

The sensors can be installed even with overlapping measurement fields. The object must have the necessary thickness to guarantee that both sides are included in the measurement field of both sensors.
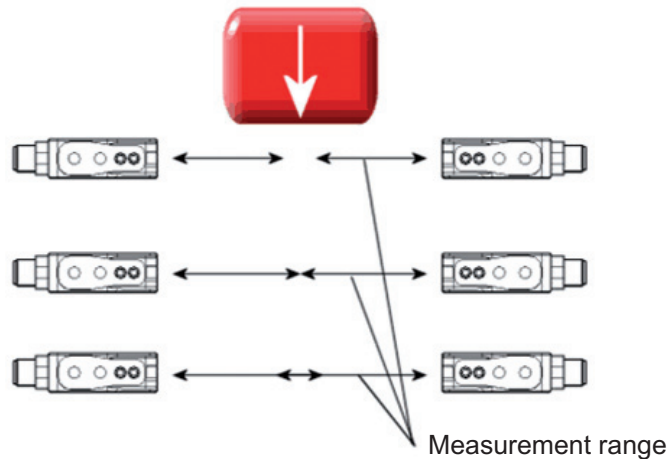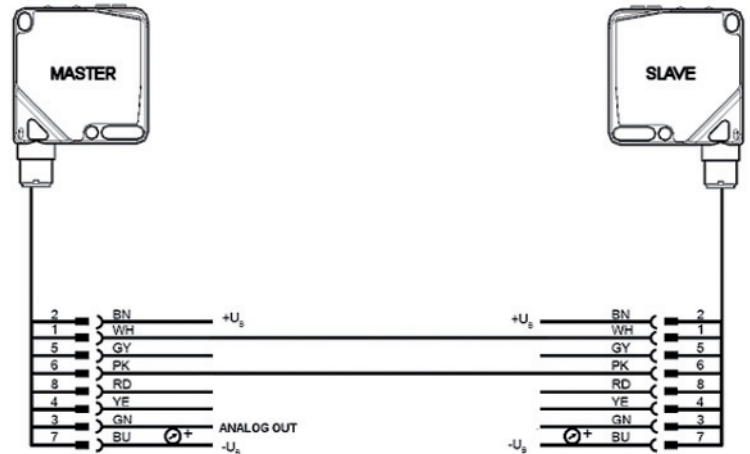

Measurement range

Note: the best performances are obtained when the object to measure is in the middle of the two measurement ranges.

INSTALLATION

Mount the two **S62-Y** sensors and connect as shown in the drawing. Set one of the two sensors in the MASTER mode.

The MASTER sensor's analogue output represents the differential measurement of the thickness of the moving object. In the reference condition, i.e. when an object with a thickness equal to the one detected during the set-up procedure, the analogue output of the MASTER sensor reaches the middle value of the range (about 5V in the PVZ version and about 12 mA in the PIZ version).

The analogue output variations follow the thickness variation of the objects that pass respect to the reference condition.

Note:
- *in the MASTER/SLAVE configuration, the two sensors can be indifferently PIZ or PVZ. If a PIZ version is connected to a PVZ version, the analogue output will supply the differential measurement in mA current if the PIZ sensor has been set as MASTER. Viceversa, the differential measurement will be in Vdc voltage if the PVZ has been set as MASTER;*

- *the MASTER/SLAVE functioning requires a continuous query of the SLAVE sensor through the RS485 serial interface. Environmental disturbances can electrically jeopardize the communication bus and the communication between the two sensors can be disturbed;*

- *the MASTER sensor can detect disturbances on the serial communication, signalling the condition with a red LED blinking during normal functioning. If the blinking is continuous, we suggest to power off the sensors, control the connections and re-power the system.*

DATASENSOR

FUNCTIONS ACCESSIBLE VIA RS485

The **S62-Y** sensor features a standard industrial EIA/TIA-485 serial interface, also known as RS485. Half-duplex communication permits several sensors (up to 8) to be connected to the same bus at the same time.
Besides permitting several reading modes for measured data, the serial interface allows the user to access the programming mode and many other auxiliary sensor functions.

Each sensor on the RS485 bus is identified by an address. The default, factory-set address for all sensors is "000" and it is the user's responsibility to set a specific address for each sensor.
Depending on whether the M/S bit identifies the transmission as coming from a MASTER element (command) or a SLAVE element (command response), the address identifies the packet receiver and source respectively.

When implementing the bus connection as shown in the figure below, we recommend the user to maintain the RS485 connection between individual sensors and main bus as short as possible.
For main line termination issues, please refer to the EIA/TIA-485 standard.

MANAGEMENT OF INTERNAL BUFFER MEMORY

The **S62-Y** sensor uses an internal buffer memory to save the measurement result when an external trigger event takes place (pulse on STORE pin).
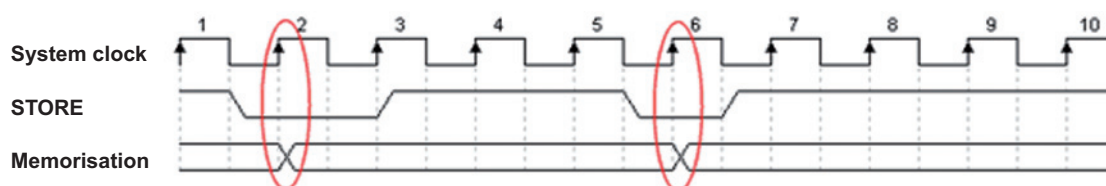This function is very useful in applications that require measurement synchronisation amongst different sensors (e.g. line measurements with several devices positioned side by side as shown in the figure).
The size of the measurement storage buffer is 32 elements: This means 32 different measurements can be stored without losing data. The buffer operates on the FIFO principle. Once the 32 locations are occupied, the device will overwrite the oldest data. The buffer may be accessed or queried for valid data via the RS485 interface.
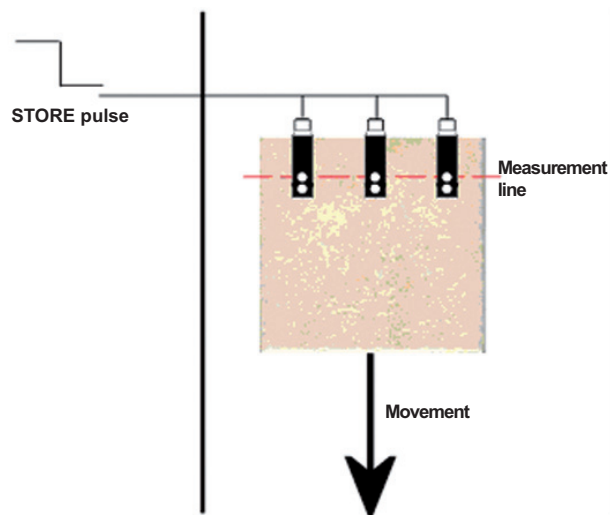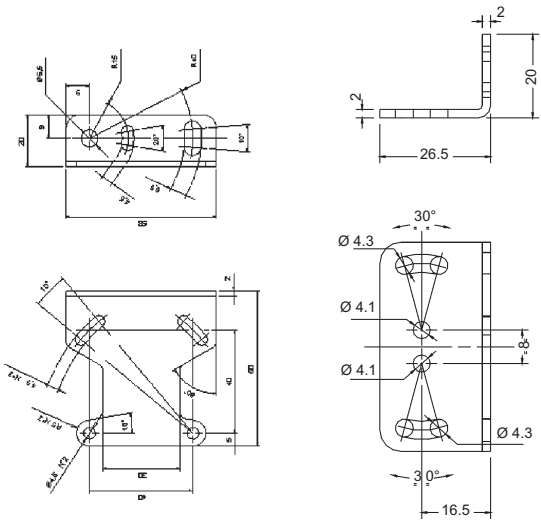

The sensor stores measurements on STORE pulse edge, rather than on the level.
This will avoid time constraints for the user and prevent filling the storage capacity with unwanted measurement memorisations.
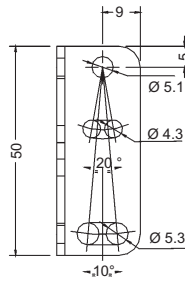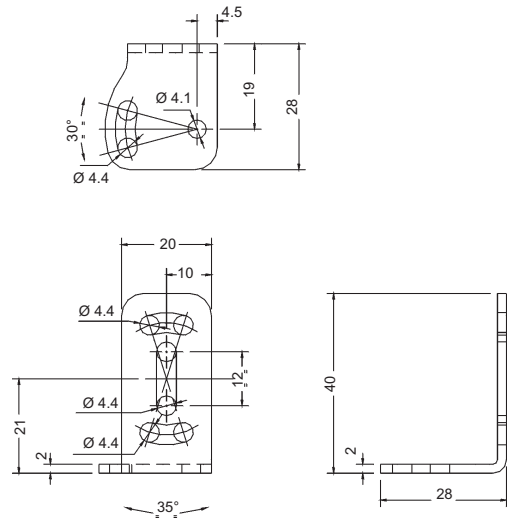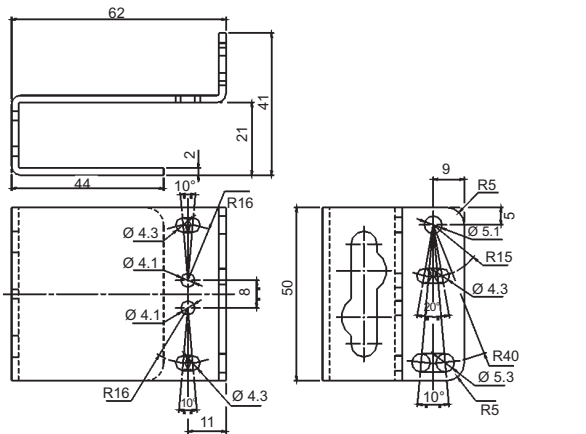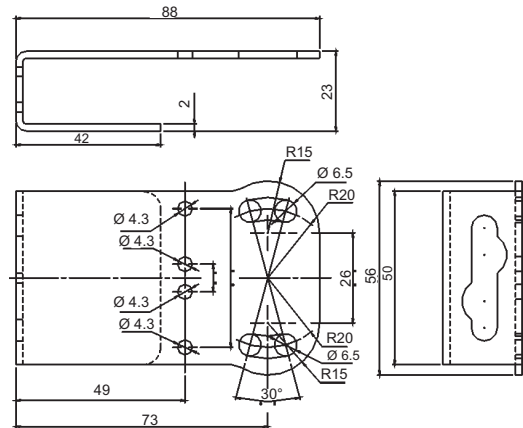
ST-504

ST-5020

ST-5021

ST-5053

ST-5054

JOINT-S62

mm

DATASENSOR
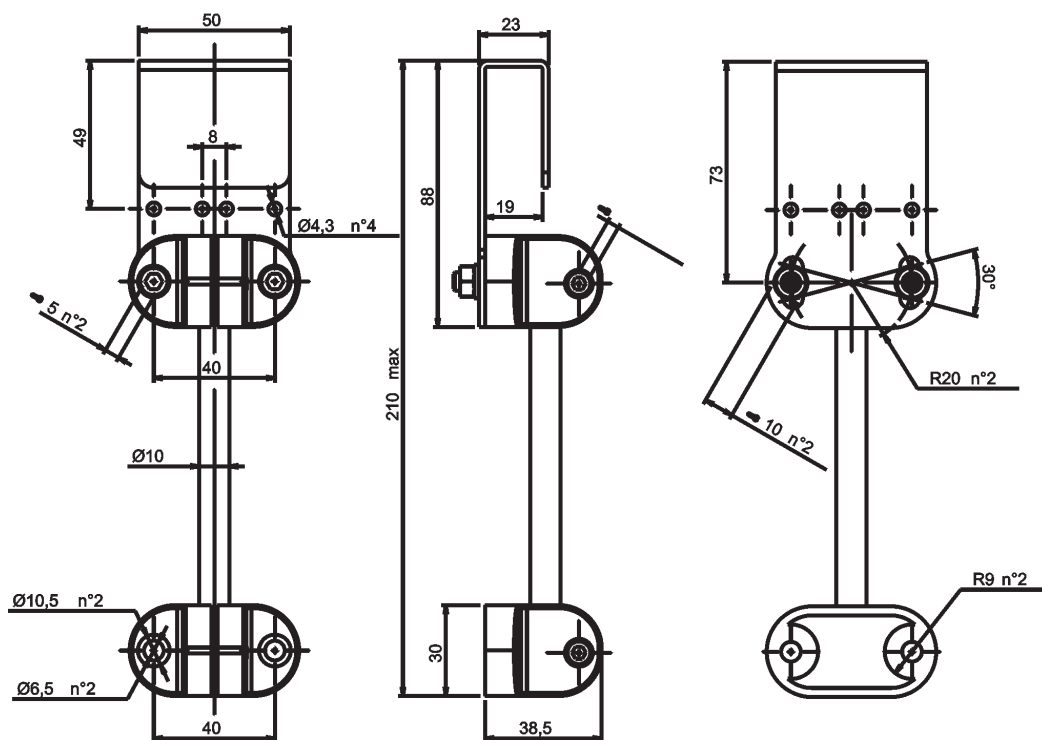
MODEL SELECTION AND ORDER INFORMATION

MODEL	FUNCTION	CONNECTION	OUTPUT	ORDER N°
S62-PL-5-Y03-PIZ	displacement sensor	M12 connector	PNP, 4-20 mA	956211160
S62-PL-5-Y03-PVZ	displacement sensor	M12 connector	PNP, 0-10 V	956211170

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CV-A1-26-B-03	M8 8-pole straight 3 m shielded cable	95ACC1510
JOINT-S62	protection bracket with jointed support	95ACC2430
ST-504	fixing bracket	95ACC1320
ST-5020	fixing bracket	95ACC5330
ST-5021	fixing bracket	95ACC5340
ST-5053	protection bracket	95ACC2410
ST-5054	protection bracket	95ACC2420

Please refer also to DATASENSOR connectors and reflectors

DISPLACEMENT SENSORS

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