



S85

LASER distance sensor for precise measurement up to 20 m with a millimeter of resolution and repeatability through the Time of Flight technology

- Time of Flight technology
- Class 2 visible red LASER for an easy alignment with the target
- Measuring range up to 10m or 20m in the advanced model
- 1 mm resolution, 7 mm accuracy, 1 mm repeatability
- 4-20 mA or 0-10 V scalable analog output and 2 digital outputs
- RS485 serial interface in the advanced model
- Standard M12 connector
- IP67 Industrial metal housing

APPLICATIONS

- Automated warehousing
- Processing and Packaging machinery
- Industrial vehicles
- Automotive

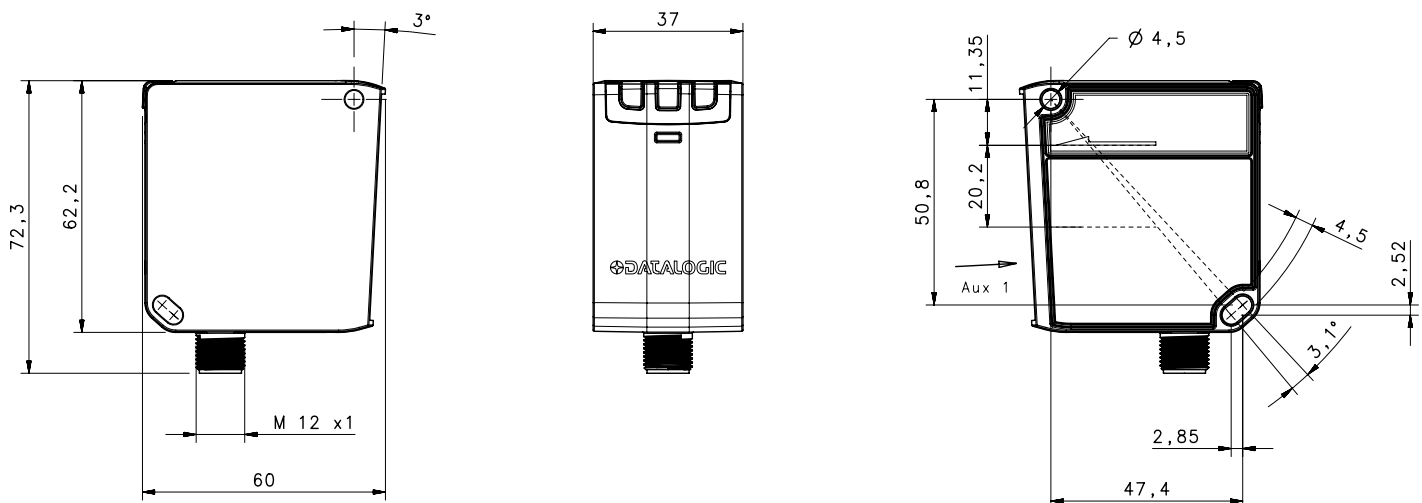


SENSORS

| S85 | | |
|------------------------------------|-----------|--|
| Distance sensor (90% White target) | | 0,2...20 m (S85...Y13) 0,2...10 m (S85...Y03) |
| Repeatability | | 1...2 mm |
| Accuracy | | 7...10 mm |
| Resolution | | 1 mm |
| Light emission | | red LASER (class 2) |
| Response time | | 30 ms (S85...Y03) 15...30 ms (S85...Y13) |
| Serial interface | | RS485 (S85...Y13) |
| Setting | | Display (S85...Y13) push-buttons (S85...Y03) |
| Power supply | Vdc | 24 Vdc +/- 20% |
| | PNP | ▪ |
| Output | NPN | ▪ |
| | Push pull | ▪ |
| | other | Analog output: 4...20 mA or 0...10 V |
| Connection | connector | ▪ |
| Approximate dimensions (mm) | | 60x72x37 |
| Housing material | | Zamak |
| Mechanical protection | | IP67 |

| TECHNICAL DATA | |
|---------------------------------------|---|
| Power supply | 24 Vdc \pm 20% |
| Consumption (output current excluded) | 2,8 W max. (mod. S85...Y03) 3 W max. (mod. S85...Y13) |
| Light emission | red Laser 658 nm |
| Setting | push-buttons (mod. S85...Y03) push-buttons and display (mod. S85...Y13) |
| Operating distance | 90% white target 0,2...10 m (mod. S85...Y03), 0,2...20 m (mod. S85...Y13) 18% grey target 0,2...5 m (mod. S85...Y03), 0,2...8 m (mod. S85...Y13) 6% black target 0,2...3 m (mod. S85...Y03), 0,2...5 m (mod. S85...Y13) |
| Indicators | yellow Q1 LED, Q2 LED green/red POWER/OUT OF RANGE LED 5-digit multi display (mod. S85...Y13) |
| Output | push pull/Q (mod. S85...Y03) PNP, NPN, push pull, Q, Qneg (mod. S85...Y13) |
| Analog output | 0-10 V (mod. S85...Y03-00V) 4-20 mA (mod. S85...Y03-00I) 0-10 V/4-20 mA (mod. S85...Y13-00IVY) |
| Response time | slow 45 ms (mod. S85...Y13) medium 30 ms fast 15 ms (mod. S85...13) |
| Connection | M12 5-pole connector (mod. S85...Y03), M12 8-pole connector (mod. S85...Y13) |
| Dielectric strength | 500 Vac, 1 min between electronics and housing |
| Insulating resistance | >20 M Ω , 500 Vdc between electronics and housing |
| Mechanical protection | IP67 |
| Ambient light rejection | according to EN 60947-5-2, >40 Klux DC ambient light |
| Vibrations | 0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6) |
| Shock resistance | 11 ms (30 G) 6 shock for every axis (EN60068-2-27) |
| Housing material | ZINC ALLOY ZAMA 13 EN-1774/PC LEXAN 121R display |
| Lens material | PMMA |
| Operating temperature | -15 ... 50 °C |
| Storage temperature | -25 ... 70 °C |
| Weight | 250 g max. |

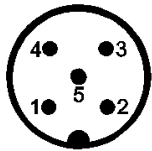
DIMENSIONS



CONNECTIONS

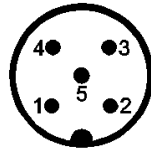
M12 CONNECTOR - STANDARD

S85-Y03-00V
Voltage version



- 1 (BROWN): +24 V \pm 20 %
- 2 (WHITE): Q2 100mA max.
- 3 (BLUE): 0 V
- 4 (BLACK): Q1 100mA max.
- 5 (GREY): ANALOG. OUT 0-10V

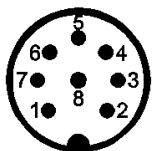
S85-Y03-00I
Current version



- 1 (BROWN): +24 V \pm 20 %
- 2 (WHITE): Q2 100mA max.
- 3 (BLUE): 0 V
- 4 (BLACK): Q1 100mA max.
- 5 (GREY): ANALOG. OUT 4-20mA

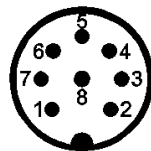
M12 CONNECTOR - ADVANCED

S85-Y13-00IVY
Analog version



- 1 (WHITE): RS485 -
- 2 (BROWN): +24 V \pm 20 %
- 3 (GREEN): ANALOGUE OUT
- 4 (YELLOW): Q1 100mA max.
- 5 (GREY): Q2 100mA max.
- 6 (PINK): RS485 +
- 7 (BLUE): 0 V
- 8 (RED): MULTIFUNC.INPUT

S85-Y13-00Y



- 1 (WHITE): RS485 -
- 2 (BROWN): +24 V \pm 20 %
- 3 (GREEN): RESERVED
- 4 (YELLOW): Q1 100mA max.
- 5 (GREY): Q2 100mA max.
- 6 (PINK): RS485 +
- 7 (BLUE): 0 V
- 8 (RED): MULTIFUNC.INPUT

INDICATORS AND SETTINGS

Without the procedure setting the sensor is configured to measure distances on a white target from a minimum value of 200 mm and a maximum of 20000 mm, with both switching point placed at 500 mm.

The parameters can be changed by the menu on the display pointing the LASER on the target in the different interested points.

INDICATORS

- LED 1 | Q1 (yellow)
- LED 2 | Q2 (yellow)
- LED 3 | POWER ON (green),
OUT OF RANGE (red)



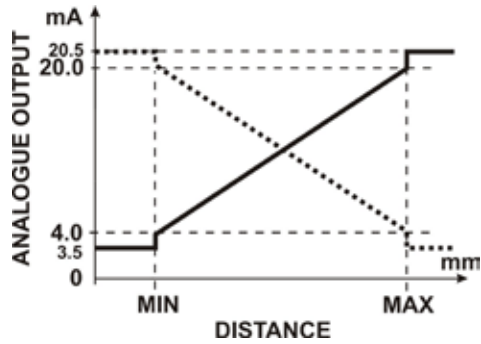
- DISPLAY | Run/W.UP → Run mode or Warm-up mode
- | Q+Q → Digital Output setting → PNP/NPN/Push-Pull
- | I/V → Analog Output Setting → Ampere/Volt
- | Lock Symbol → Keylock or unlock
- | 5-digit display → Value corresponds to Distance in mm

| Menu | Functions |
|------------------|--|
| OUT 1 | Switching point1: Light/Dark; Switching point value; PNP, NPN, Push-pull; Alarm |
| OUT 2 | Switching point 2: Light/Dark; Switching point value; PNP, NPN, Push-pull; Alarm |
| HYSTERESIS | Hysteresis level: 5...1000 mm |
| ANALOG OUT | Voltage (0...10 V); Current (4...20 mA) |
| MULTIFUNCTION IN | LASER OFF; Teach IN (Thresholds); RS485 Send Data |
| AVERAGE | Response time: SLOW; MEDIUM; FAST |
| RS485 | Node N°; Enable; Termination; Output mode; Delay (0...254 ms) |
| SCALABLE OUT | Analog output range: Reset, MIN and MAX distance |
| FACTORY RESET | Factory default values |
| INFO | Software version |

DETECTION DIAGRAMS

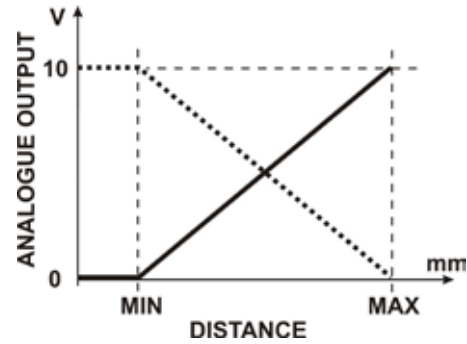
CURRENT ANALOG OUTPUT

MEASUREMENT RANGE (4...20 mA)
OUT OF RANGE (3,95...4 mA; 20...20,5 mA)



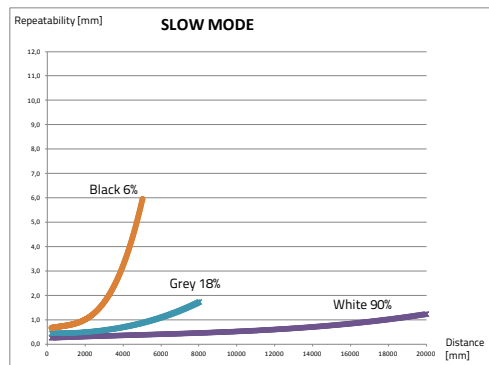
VOLTAGE ANALOG OUTPUT

MEASUREMENT RANGE (0...10 V)



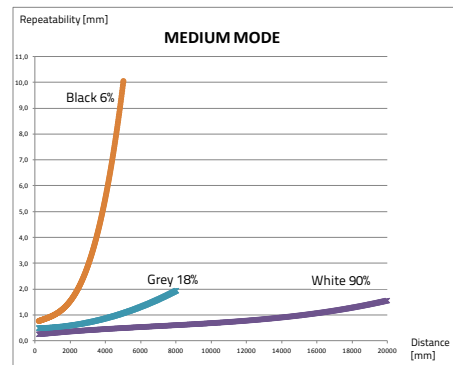
S85-...-Y13 ADVANCED REPEATABILITY (SLOW MODE)

[WHITE 90%; GREY 18%; BLACK 6%]



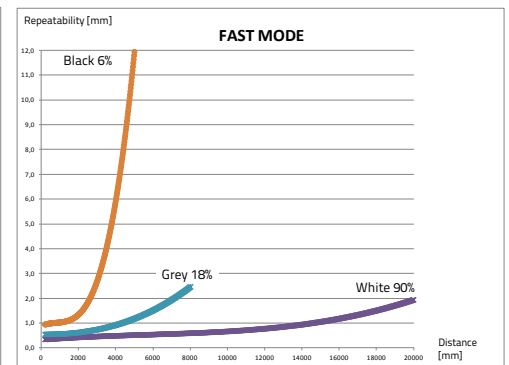
S85-...-Y13 ADVANCED REPEATABILITY (MEDIUM MODE)

[WHITE 90%; GREY 18%; BLACK 6%]



S85-...-Y13 ADVANCED REPEATABILITY (FAST MODE)

[WHITE 90%; GREY 18%; BLACK 6%]



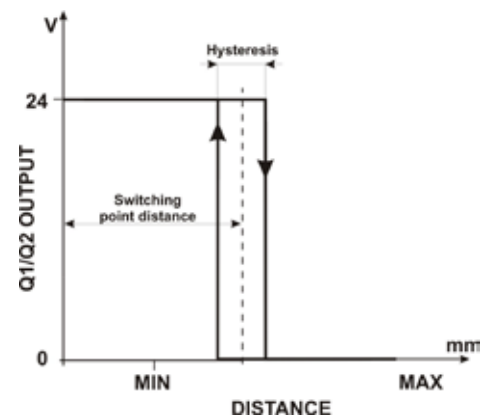
S85-...-Y13 ADVANCED

REPEATABILITY/RESPONSE TIME

(90% WHITE TARGET @ 20 m)

| Mode | Response time | Repeatability |
|--------|---------------|---------------|
| Slow | 45 ms | < 1,5 mm |
| Medium | 30 ms | 1,5 mm |
| Fast | 15 ms | < 2 mm |

HYSTERESIS

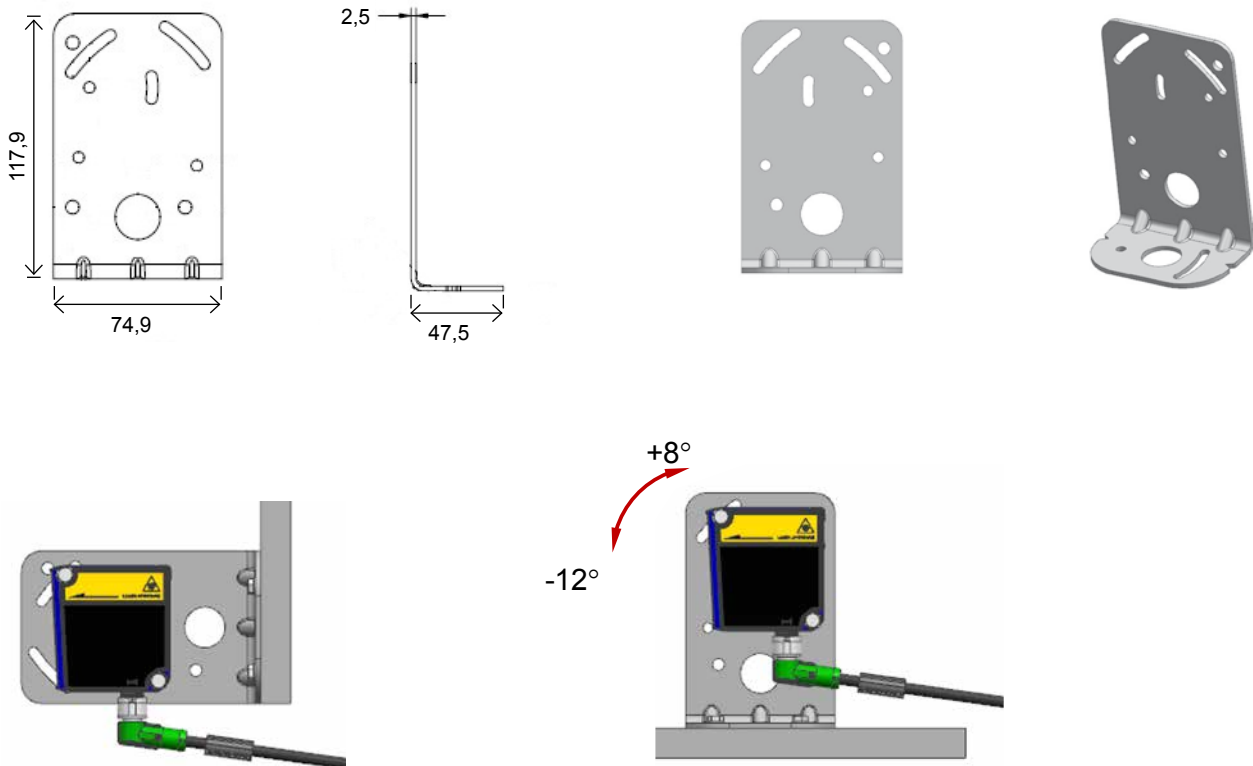


MODEL SELECTION AND ORDER INFORMATION

| OPTIC FUNCTION | OPERATING DISTANCE | CONNECTION | OUTPUT & INPUT | MODELS | ORDER No. |
|----------------------------|--------------------|----------------------|--|--------------------|-----------|
| Distance sensor (Standard) | 10 m | M12 5-pole connector | 2 Digital outputs; Analog output: Voltage (0...10 V) | S85-MH-5-Y03-00V | 951511010 |
| | | | 2 Digital outputs; Analog output: Current (4...20mA) | S85-MH-5-Y03-00I | 951511030 |
| Distance sensor (Advanced) | 20 m | M12 8-pole connector | 2 Digital outputs; Analog output: Current (4...20mA) or Voltage (0...10 V); RS485; Multifunction input | S85-MH-5-Y13-00IVY | 951511020 |
| | | | 2 Digital outputs; RS485; Multifunction input | S85-MH-5-Y13-00Y | 951511040 |

ACCESSORIES

ST-S85-STD



| MODEL | DESCRIPTION | ORDER No. |
|------------|------------------|-----------|
| ST-S85-STD | mounting bracket | 95ACC7840 |

CABLES

| TYPE | DESCRIPTION | LENGTH | MODEL | ORDER No. |
|----------------------|---------------------------------|-----------------------------|---------------|---------------|
| Axial M12 connector | 5-pole, grey, P.V.C. | 3 m | CS-A1-03-G-03 | 95ACC2110 |
| | | 5 m | CS-A1-03-G-05 | 95ACC2120 |
| | | 10 m | CS-A1-03-G-10 | 95ACC2140 |
| | 5-pole, U.L., black, P.V.C | 3 m | CS-A1-03-U-03 | 95ASE1170 |
| | | 5 m | CS-A1-03-U-05 | 95ASE1180 |
| | | 10 m | CS-A1-03-U-10 | 95ASE1190 |
| | | 15 m | CS-A1-03-U-15 | 95ASE1200 |
| | | 25 m | CS-A1-03-U-25 | 95ASE1210 |
| Axial M12 Connector | 8-pole, black, P.V.C. | 3 m | CS-A1-06-B-03 | 95ACC2230 |
| | | 5 m | CS-A1-06-B-05 | 95ACC2240 |
| | | 10 m | CS-A1-06-B-10 | 95ACC2250 |
| Radial M12 Connector | 8-pole, shielded, black, P.V.C. | 3 m | CV-A2-26-B-03 | 95ACC1600 |
| | | 5 m | CV-A2-26-B-05 | 95ACC1610 |
| | | 10 m | CV-A2-26-B-10 | 95ACC1620 |
| Axial M12 Connector | 8-pole, shielded, black, P.V.C. | 3 m | CV-A1-26-B-03 | 95ACC1510 |
| | | 5 m | CV-A1-26-B-05 | 95ACC1520 |
| | | 10 m | CV-A1-26-B-10 | 95ACC1530 |
| | | 15 m | CV-A1-26-B-15 | 95ACC2080 |
| | | 25 m | CV-A1-26-B-25 | 95ACC2100 |
| | | 8-pole, U.L., black, P.V.C. | 3 m | CS-A1-06-U-03 |
| | 5 m | | CS-A1-06-U-05 | 95ASE1230 |
| | 10 m | | CS-A1-06-U-10 | 95ASE1240 |
| | 15 m | | CS-A1-06-U-15 | 95ASE1250 |
| | 8-pole, black | 25 m | CS-A1-06-U-25 | 95ASE1260 |
| 50 m | | CS-A1-06-U-50 | 95A252710 | |
| Connector-not cabled | | CS-A1-06-B-NC | 95ACC2550 | |