

# FT 25-RA-170-NSU-M4M

## Ordering information

**Designation for ordering** FT 25-RA-170-NSU-M4M

**Part number** 604-41003

**Order text** Working range 30...200 mm, red light, analogue 1...10 V, teach-in, NPN, N.O./N.C, metal connector M8x1, 4-pin. For this product there is a new variant 604-41009 FT 25-RA-170- PNSUL-M4M This offers additional functions via IO-Link. Further product information can be found at [www.sensopart.de](http://www.sensopart.de)



**Components supplied** Operating manual, Sensor



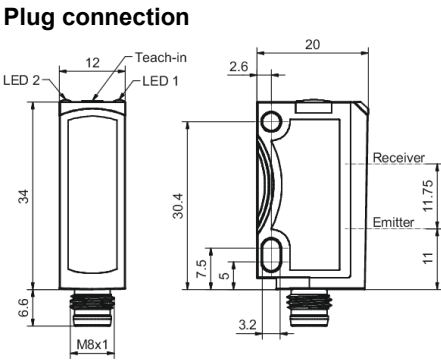
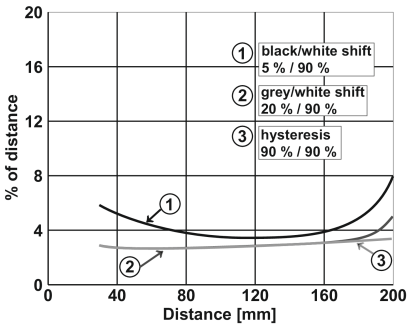
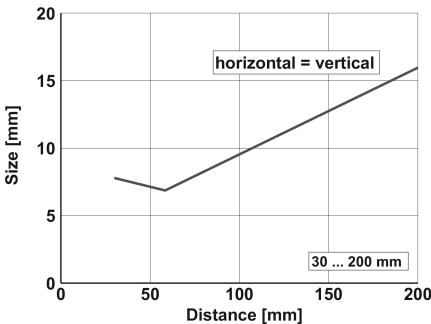
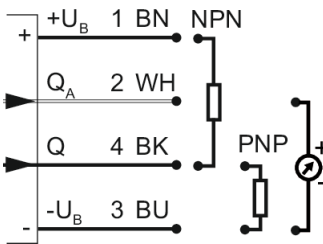
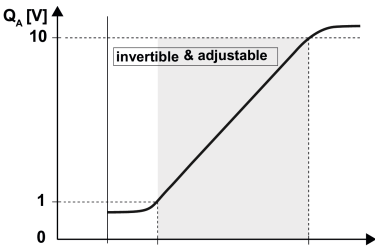
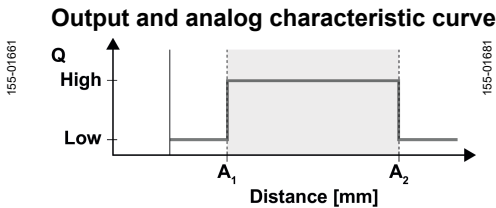
| Optical data                       |                                                                           |
|------------------------------------|---------------------------------------------------------------------------|
| Setting range [mm]                 | 30 ... 200                                                                |
| Explanation of the setting range   | Reference material 5...90% remission                                      |
| Resolution [mm]                    | 0.680                                                                     |
| Explanation of resolution          | 12-bit                                                                    |
| Linearity [mm]                     | 2.00                                                                      |
| Explanation of linearity           | ± 2 mm, reference material gray, 20% remission                            |
| Repeatability [mm]                 | ≤ 1.00                                                                    |
| Explanation of repeatability       | Reference material gray, 20% remission, under constant ambient conditions |
| Light source                       | LED                                                                       |
| Light color                        | Red                                                                       |
| Wavelength [nm]                    | 632                                                                       |
| Light spot size [mm]               | See diagram                                                               |
| Switching frequency ≤ [Hz]         | ≤ 1,000                                                                   |
| Explanation of switching frequency | ti/tp 1:1                                                                 |

| Functions                  |                                                                                                                                                       |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display, LED yellow        | Switching output indicator                                                                                                                            |
| Display, LED green         | Operating voltage indicator                                                                                                                           |
| Setting options            | Analogue measurement range QA<br>Invertible analogue characteristic curve<br>Switching output Q (switching window)<br>N.O. / N.C. via teach-in button |
| Default settings           | Analogue output QA (1...10 V): 30...200 mm<br>Switching output Q, N.O. detection range: 30...200 mm                                                   |
| Measuring range adjustment | Via teach-in button                                                                                                                                   |

| Electrical data              |                        |
|------------------------------|------------------------|
| Operating voltage UB [V DC]  | 13 ... 30              |
| No-load current [mA]         | ≤ 30                   |
| Output current [mA]          | ≤ 100                  |
| Readiness delay [ms]         | ≤ 300                  |
| Reverse polarity protection  | Yes                    |
| Short circuit protection     | Yes                    |
| Response time Q [μs]         | ≤ 500                  |
| Response time QA [μs]        | ≤ 3400.0               |
| Analog output QA             | 1 ... 10 V / max. 3 mA |
| Analog output QA voltage [V] | 1 ... 10               |
| Measured value output        | Analog (voltage)       |
| Protection class             | 2                      |
| Max. capacitive load [nF]    | 10                     |
| Output function              | N.O./N.C.              |
| Switching output Q           | NPN                    |
| Number of outputs            | 1                      |
| Warm-up time [Min.]          | 10                     |
| Temperature profile [mm/K]   | 0.20                   |

| Mechanical data                                     |                                   |
|-----------------------------------------------------|-----------------------------------|
| Height [mm]                                         | 34.0                              |
| Length [mm]                                         | 20.0                              |
| Width [mm]                                          | 12.0                              |
| Weight [g]                                          | ~ 10                              |
| Front panel material                                | PMMA                              |
| Housing material                                    | ABS                               |
| Ambient temperature: operation [°C]                 | -20 ... 60                        |
| Explanation of operation at ambient air temperature | UL: -20...+50 °C                  |
| Ambient temperature: storage [°C]                   | -20 ... 80                        |
| Protection class                                    | IP 67, IP 69                      |
| Explanation of protection class                     | with IP 67 / IP 69 plug connected |
| Vibration and shock resistance                      | EN 60947-5-2                      |
| Connection name                                     | Metal plug M8x1, 4-pin            |
| - Number of pins                                    | 4                                 |
| - Thread                                            | M8x1                              |
| Housing type                                        | Cuboidal                          |

## Technical drawings

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Dimensional drawing</b>   | <div data-bbox="544 197 986 555"><p><b>Plug connection</b></p><p>Front view dimensions: LED 2 (12), LED 1 (12), Teach-in (12), 34, 6.6, M8x1.</p><p>Side view dimensions: 20, 2.6, 30.4, 7.5, 5, 3.2, Receiver (11.75), Emitter (11).</p></div> <div data-bbox="1449 232 1465 293" style="writing-mode: vertical-rl; transform: rotate(180deg);">153-00837</div>                                                                                                                                                                                                        |
| <b>Scanning properties</b>   | <div data-bbox="544 607 952 929"><p>① black/white shift 5 % / 90 %<br/>② grey/white shift 20 % / 90 %<br/>③ hysteresis 90 % / 90 %</p></div> <div data-bbox="1449 607 1465 667" style="writing-mode: vertical-rl; transform: rotate(180deg);">155-01667</div>                                                                                                                                                                                                                                                                                                           |
| <b>Light spot size</b>       | <div data-bbox="544 983 976 1305"><p>horizontal = vertical<br/>30 ... 200 mm</p></div> <div data-bbox="1449 985 1465 1046" style="writing-mode: vertical-rl; transform: rotate(180deg);">155-01663</div>                                                                                                                                                                                                                                                                                                                                                               |
| <b>Connections</b>           | <div data-bbox="544 1359 868 1601"></div> <div data-bbox="1449 1361 1465 1422" style="writing-mode: vertical-rl; transform: rotate(180deg);">154-00543</div>                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Characteristic curves</b> | <div data-bbox="544 1736 920 1982"><p>invertible &amp; adjustable</p></div> <div data-bbox="971 1704 1469 1910"><p><b>Output and analog characteristic curve</b></p><p>Q High Low<br/>A<sub>1</sub> A<sub>2</sub><br/>Distance [mm]</p></div> <div data-bbox="971 1738 987 1798" style="writing-mode: vertical-rl; transform: rotate(180deg);">155-01661</div> <div data-bbox="1449 1738 1465 1798" style="writing-mode: vertical-rl; transform: rotate(180deg);">155-01681</div> |

**Product link**

<https://www.sensopart.com/en/products/details/604-41003>