

# FT 55-RL2AM-800-PNSUIDL-L5M

**Ordering information**

|                          |                                                                                                                                                                                                            |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Designation for ordering | FT 55-RL2AM-800-PNSUIDL-L5M                                                                                                                                                                                |
| Part number              | 624-41009                                                                                                                                                                                                  |
| Order text               | Laser distance sensor, working range 200...1000 mm, 2xQ, QA 4...20 mA / 0.1...10 V, IO-Link, laser class 2, Auto-de-<br>tect (PNP/NPN), metal housing, IP67 / IP69, display, metal<br>connector M12, 5-pin |
| Components supplied      | Operating manual, Sensor, Laser warning signs                                                                                                                                                              |



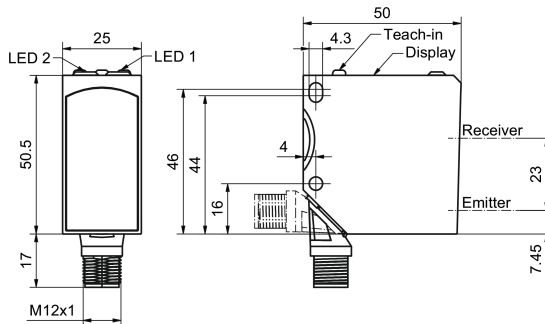
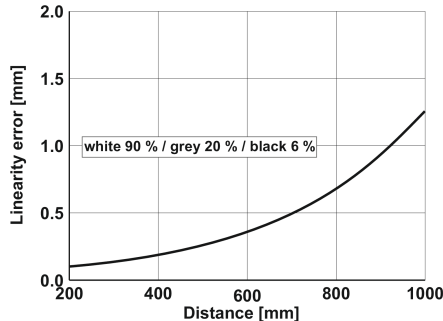
| Optical data                        |                                                        |
|-------------------------------------|--------------------------------------------------------|
| Setting range [mm]                  | 200 ... 1,000                                          |
| Resolution [mm]                     | 0.050                                                  |
| Explanation of resolution           | QA, 14 bit                                             |
| Linearity [mm]                      | 1.50                                                   |
| Explanation of linearity            | Typical, 5...90%; homogeneous, stationary object       |
| Repeatability [mm]                  | ≤ 0.80                                                 |
| Explanation of repeatability        | 0.02...0.2 mm, 5...90%, stationary object, see graphic |
| Light source                        | Laser                                                  |
| Laser class                         | 2 (IEC 60825-1)                                        |
| Light color                         | Red                                                    |
| Wavelength [nm]                     | 655                                                    |
| Light spot size [mm]                | 4 x 1                                                  |
| Switching frequency ≤ [Hz]          | ≤ 380                                                  |
| Explanation of switching frequency  | Switching frequency in IO-Link operation lower         |
| Switching hysteresis [mm]           | 2.0                                                    |
| Explanation of switching hysteresis | 5...90%; homogeneous, stationary object                |
| Measuring frequency [Hz]            | 2500.00                                                |
| Sensitivity to ambient light [Lux]  | ≤ 3000                                                 |

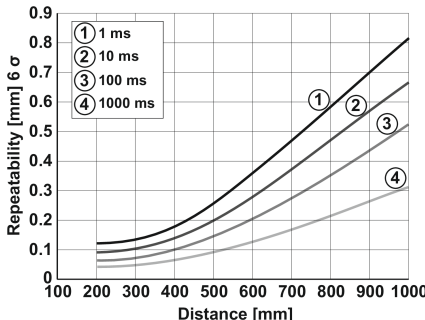
| Functions                  |                                                                                                                                                                                                     |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display, LED yellow        | Status indicator Q1/Q2                                                                                                                                                                              |
| Display, LED green         | Operating voltage indicator                                                                                                                                                                         |
| Setting options            | Teach-in Q1, Q2, QA, Q as switching window or switching point Average value<br>setting on QA Auto-detect / NPN / PNP / Push-Pull Smart functions (on and off de-<br>lay, counter, pulse, frequency) |
| Default settings           | Analogue output QA: 4...20 mA, measurement range limits<br>Switching output Q1: 450 mm, N.O.<br>Switching output Q2: 750 mm, N.O.                                                                   |
| Measuring range adjustment | Via display and IO-Link                                                                                                                                                                             |

| IO-Link                          |              |
|----------------------------------|--------------|
| Data storage                     | Yes          |
| Communication mode               | COM 2        |
| Length of the process data [Bit] | 32           |
| Min. cycle time [ms]             | 3.0          |
| SIO mode                         | is supported |
| IO-Link specification            | 1.1          |

| Electrical data                   |                                                                            |
|-----------------------------------|----------------------------------------------------------------------------|
| Operating voltage UB [V DC]       | 15 ... 30                                                                  |
| Output current [mA]               | ≤ 50                                                                       |
| Readiness delay [ms]              | ≤ 300                                                                      |
| Reverse polarity protection       | Yes                                                                        |
| Short circuit protection          | Yes                                                                        |
| Response time Q [μs]              | ≤ 1,000                                                                    |
| Response time QA [μs]             | ≤ 800.0                                                                    |
| Explanation of response time      | at 0...10 V to 0.1 V undefined accuracy                                    |
| Analog output QA                  | 2 ... 10 mA / 4 ... 20 mA; 0 ... 10 V / 2 ... 10 V                         |
| Measured value output             | Analog (voltage), Analog (current), IO Link                                |
| Protection class                  | 2                                                                          |
| Output function                   | N.O./N.C.                                                                  |
| Power consumption [W]             | 1.50                                                                       |
| Switching output Q                | Auto-Detect/PNP/NPN/Push-Pull                                              |
| Explanation of switching output Q | Auto-Detect: Automatic selection of PNP or NPN by the sensor               |
| Number of outputs                 | 2                                                                          |
| Warm-up time [Min.]               | 20                                                                         |
| Temperature profile [mm/K]        | 0.01                                                                       |
| Averaging times                   | 1 ms, 10 ms, 100 ms, 1000 ms                                               |
| Measured value refresh time       | Response time QA + averaging rate                                          |
| Explanation of thermal response   | QA < 0,02%/K, digital < 0,01%/K                                            |
| Load [Ω]                          | 1000                                                                       |
| Explanation of load               | ≤ 1 kOhm (2...10 mA) / ≤ 500 Ohm (4...20 mA) ≥ 2 kOhm (0...10 V, 2...10 V) |

| Mechanical data                     |                                   |
|-------------------------------------|-----------------------------------|
| Height [mm]                         | 50.5                              |
| Length [mm]                         | 50.0                              |
| Width [mm]                          | 25.0                              |
| Weight [g]                          | ~ 185                             |
| Front panel material                | PMMA                              |
| Housing material                    | Die-cast zinc, matte chrome       |
| Display material                    | PMMA                              |
| Ambient temperature: operation [°C] | -20 ... 50                        |
| Ambient temperature: storage [°C]   | -20 ... 60                        |
| Protection class                    | IP 67, IP 69                      |
| Explanation of protection class     | with IP 67 / IP 69 plug connected |
| Vibration and shock resistance      | EN IEC 60947-5-2                  |
| Connection name                     | Plug, M12x1, 5-pin, IO-Link       |
| - Number of pins                    | 5                                 |
| - Thread                            | M12x1                             |
| Housing type                        | Cuboidal                          |
| Display                             | LCD, with background illumination |

| Technical drawings  |                                                                                      |
|---------------------|--------------------------------------------------------------------------------------|
| Dimensional drawing |  |
| Linearity (typ.)    |   |

| Repeatability (typ.) | <div><table><caption>Approximate data from Repeatability graph</caption><tr><th>Distance [mm]</th><th>1 ms (6σ)</th><th>10 ms (6σ)</th><th>100 ms (6σ)</th><th>1000 ms (6σ)</th></tr><tr><td>200</td><td>0.10</td><td>0.08</td><td>0.06</td><td>0.04</td></tr><tr><td>400</td><td>0.15</td><td>0.12</td><td>0.09</td><td>0.06</td></tr><tr><td>600</td><td>0.25</td><td>0.20</td><td>0.15</td><td>0.10</td></tr><tr><td>800</td><td>0.40</td><td>0.32</td><td>0.25</td><td>0.16</td></tr><tr><td>1000</td><td>0.55</td><td>0.45</td><td>0.35</td><td>0.22</td></tr></table></div> <div>155-03460</div> | Distance [mm] | 1 ms (6σ)   | 10 ms (6σ)   | 100 ms (6σ) | 1000 ms (6σ)    | 200 | 0.10 | 0.08           | 0.06 | 0.04 | 400             | 0.15 | 0.12 | 0.09                    | 0.06 | 600 | 0.25               | 0.20 | 0.15 | 0.10 | 800 | 0.40 | 0.32 | 0.25 | 0.16 | 1000 | 0.55 | 0.45 | 0.35 | 0.22 |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|--------------|-------------|-----------------|-----|------|----------------|------|------|-----------------|------|------|-------------------------|------|-----|--------------------|------|------|------|-----|------|------|------|------|------|------|------|------|------|
| Distance [mm]        | 1 ms (6σ)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 10 ms (6σ)    | 100 ms (6σ) | 1000 ms (6σ) |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |
| 200                  | 0.10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.08          | 0.06        | 0.04         |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |
| 400                  | 0.15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.12          | 0.09        | 0.06         |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |
| 600                  | 0.25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.20          | 0.15        | 0.10         |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |
| 800                  | 0.40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.32          | 0.25        | 0.16         |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |
| 1000                 | 0.55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.45          | 0.35        | 0.22         |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |
| Connections          | <div><p><b>5-pin, Auto-detect</b></p><table><tr><th>Pin</th><th>Signal</th><th>Color</th></tr><tr><td>1</td><td>+U<sub>B</sub></td><td>BN</td></tr><tr><td>2</td><td>Q<sub>A</sub></td><td>WH</td></tr><tr><td>3</td><td>-U<sub>B</sub></td><td>BU</td></tr><tr><td>4</td><td>Q<sub>1</sub>/IO-Link</td><td>BK</td></tr><tr><td>5</td><td>Q<sub>2</sub>/IN</td><td>GY</td></tr></table><p>Auto-Detect circuit diagram showing a pull-up resistor and a diode connected to a common ground.</p></div> <div>154-00590</div>                                                                                                                                                               | Pin           | Signal      | Color        | 1           | +U <sub>B</sub> | BN  | 2    | Q <sub>A</sub> | WH   | 3    | -U <sub>B</sub> | BU   | 4    | Q <sub>1</sub> /IO-Link | BK   | 5   | Q <sub>2</sub> /IN | GY   |      |      |     |      |      |      |      |      |      |      |      |      |
| Pin                  | Signal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Color         |             |              |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |
| 1                    | +U <sub>B</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | BN            |             |              |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |
| 2                    | Q <sub>A</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | WH            |             |              |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |
| 3                    | -U <sub>B</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | BU            |             |              |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |
| 4                    | Q <sub>1</sub> /IO-Link                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | BK            |             |              |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |
| 5                    | Q <sub>2</sub> /IN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | GY            |             |              |             |                 |     |      |                |      |      |                 |      |      |                         |      |     |                    |      |      |      |     |      |      |      |      |      |      |      |      |      |

**Product link**

<https://www.sensopart.com/en/products/details/624-41009>