MultiRanger is a versatile short to medium-range ultrasonic single and multi-vessel level monitor/controller for virtually any application in a wide range of industries.

Benefits
- Digital input for back-up level override from point level device
- Communication using built-in Modbus RTU via RS 485
- Compatible with SmartLinx communication options or SIMATIC PDM via RS 485
- Single or dual point level monitoring
- Auto False-Echo Suppression for fixed obstruction avoidance
- Differential amplifier transceiver for common mode noise reduction and improved signal-to-noise ratio
- MultiRanger 100: level measurements, simple pump control, and level alarm functions
- MultiRanger 200: level, volume, and flow measurements in open channels, differential control, extended pump control, and alarm functions
- Wall and panel mounting options

Application
MultiRanger can be used on different materials, including fuel oil, municipal waste, acids, woodchips, or on materials with high angles of repose. MultiRanger offers true dual point monitoring, digital communications with built-in Modbus RTU via RS 485, as well as compatibility with SIMATIC PDM, allowing PC configuration and setup. MultiRanger features Sonic Intelligence advanced echo-processing software for increased reading reliability.

MultiRanger 100 offers cost-effective level alarming, as well as on/off and alternating pump control. MultiRanger 200 will monitor open channel flow and features more advanced relay alarming and pump control functions as well as volume conversion.

It is compatible with chemical-resistant EchoMax transducers that can be used in hostile environments at temperatures as high as 145 °C (293 °F).
- Key Applications: wet wells, flumes/weirs, bar screen control, hoppers, chemical storage, liquid storage, crusher bins, dry solids storage

Design
The MultiRanger is available in wall or panel mounting options.
## Technical specifications

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### Input

| Analog (MultiRanger 200 only) | 0 ... 20 mA or 4 ... 20 mA, from alternate device, scalable |
| Discrete | 10 ... 50 V DC switching level Logical 0 ≤ 0.5 V DC Logical 1 = 10 ... 50 V DC Max. 3 mA |

### Output

| EchoMax transducer | 44 kHz |
| Ultrasonic transducer | Compatible transducers: ST-H and EchoMax series XPS-10, XPS 15/15F, and XRS-5 |
| Relays | Rating 5 A at 250 V AC, non-inductive |
| Version with 1 relay (MultiRanger 100 only) | 1 SPST Form A |
| Version with 3 relays | 2 SPST Form A/1 SPDT Form C |
| Version with 6 relays | 4 SPST Form A/2 SPDT Form C |
| mA output | 0 ... 20 mA or 4 ... 20 mA |
| Max. load | 750 Ω, isolated |
| Resolution | 0.1 % of range |

### Accuracy

| Error in measurement | 0.25 % of range or 6 mm (0.24 inch), whichever is greater |
| Resolution | 0.1 % of measuring range, or 2 mm (0.08 inch), whichever is greater |
| Temperature compensation | ≤-50 ... +150 °C (-58 ... +302 °F) |
| Integral temperature sensor | External TS-3 temperature sensor (optional) |
| Programmable fixed temperature values | |

### Rated operating conditions

| Installation conditions | Indoor/outdoor |
| Location | II |
| Pollution degree | 4 |
| Ambient temperature (housing) | -20 ... +50 °C (-4 ... +122 °F) |

### Design

| Weight | 1.37 kg (3.02 lb) |
| Panel mount | 1.50 kg (3.31 lb) |
| Material (enclosure) | Polycarbonate |

### Degree of protection (enclosure)

| Wall mount | IP65/Type 4X/NEMA 4X |
| Panel mount | IP54/Type 3/NEMA 3 |

### Electrical connection

| Transducer and mA output signal | 2-core copper conductor, twisted, shielded, 0.5 ... 0.75 mm² (22 ... 18 AWG), Belden 8760 or equivalent is acceptable |
| Max. separation between transducer and transceiver | 365 m (1 200 ft) |

### Displays and controls

| 100 x 40 mm (4 x 1.5 inch) multi-block LCD with backlighting |

### Power supply

| AC version | 100 ... 230 V AC ± 15 %, 50/60 Hz, 36 VA (17 W) |
| DC version | 12 ... 30 V DC (20 W) |

### Certificates and approvals

| CE, RCM, EAC, KCC² | Lloyd's Register of Shipping |
| FM, CSA, UL listed | CSA Class I, Div. 2, Groups A, B, C, and D, Class II, Div. 2, Groups F and G, Class III (wall mount only), ATEX II 3D, EAC Ex |

### Communication

| RS 232 with Modbus RTU or ASCII via RJ-11 connector |
| RS 485 with Modbus RTU or ASCII via terminal strips |
| Optional: SmartLinx cards for - PROFINET DP - DeviceNet |

1) Program range is defined as the empty distance to the face of the transducer plus any range extension
2) EMC performance available on request
Selection and Ordering data

MultiRanger 100/200
Versatile short to medium-range ultrasonic single and multi-vessel level monitor/controller for virtually any application in a wide range of industries

Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Selection and Ordering data

Further details
Please add "-Z" to Article No. and specify Order code(s).

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]; Measuring-point number/identification (max. 27 characters) specify in plain text

Y15

Operating Instructions
English
7ML19985FB06
German
7ML19985FB36

Note: The Operating Instructions should be ordered as a separate item on the order.

All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation

Accessories
Handheld programmer
A5E36563512
Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosure
7ML1930-1AC
M20 cable gland kit (4 M20 cable glands, 4 M20 nuts, 4 washers)
7ML1930-1FV
Sunshield kit, 304 stainless steel
7ML1930-1GA
USB to RS 232 adapter
7ML1930-6AK
SITRANS RD100, loop powered display - see Chapter 7
7ML5741-... 
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7
7ML5740-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7
7ML5744-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7
7ML5750-...

Spare parts
Power Supply Board (100 ... 230 V AC)
7ML1830-1MD
Power Supply Board (12 ... 30 V DC)
7ML1830-1ME
MultiRanger 100/200/ HydroRanger 200 display, non-HMI
7ML1830-1MF
Removable terminal blocks
A5E38824197
Level Measurement
Continuous level measurement
Ultrasonic controllers

MultiRanger 100/200

Dimensional drawings

Wall mount version
- 14.9 (0.58)
- 160.3 (6.325)
Suitable location for conduit entrances
Siemens recommends using a hole punch for drilling the holes.

Panel mount version
- 198 (7.80)
- 278 (10.94)

Hand programmer
- 54 (2.13)
- 97 (3.82)

MultiRanger 100/200, dimensions in mm (inch)

Circuit diagrams

Note:
1. Use 2-core copper wire, twisted, with shield, for expansion up to 365 m (1200 ft). Route cable in grounded metal conduit, separate from other cables.
2. Verify that all system components are installed in accordance with instructions.
3. Connect all cable shields to the MultiRanger shield connections. Avoid differential ground potentials by not connecting cable shields to ground (earth) anywhere else.
4. Keep exposed conductors on shielded cables as short as possible to reduce noise on the line caused by stray transmissions and noise pickup.

MultiRanger 100/200 connections