HydroRanger 200 HMI is an ultrasonic level controller for up to six pumps and provides control, differential control, and open channel flow monitoring.

Benefits
- Easy to use HMI display with local four-button programming, menu-driven parameters, and Wizard support for key applications
- English, German, French, Spanish, Chinese, Italian, Portuguese, and Russian texts on the HMI
- Removable terminal blocks for ease of wiring
- Monitors wet wells, weirs, and flumes
- Communication using built-in Modbus RTU via RS 485 and SIMATIC PDM configuration software
- Compatible with SmartLinx system: PROFIBUS DP (cyclic access of process values only) and DeviceNET
- Single or dual point level monitoring
- 6 relays
- Auto False-Echo Suppression for fixed obstruction avoidance
- Anti-grease ring/tide mark buildup
- Differential amplifier transceiver for common mode noise rejection and improved signal-to-noise ratio
- Wall and panel mounting options

Application
For water authorities, municipal water, and wastewater plants, HydroRanger 200 HMI is an economical, low-maintenance solution delivering control efficiency and productivity needed to meet today's exacting standards. It offers single point monitoring with all models, and optional dual-point monitoring with 6 relay model. As well, it has digital communications with built-in Modbus RTU via RS 485.

The standard 6 relay HydroRanger 200 HMI will monitor open channel flow and features advanced relay alarming and pump control functions as well as volume conversion. It is compatible with SIMATIC PDM, allowing for PC configuration and set-up. Sonic Intelligence advanced echo-processing software provides increased reading reliability.

HydroRanger 200 HMI uses proven continuous ultrasonic echo ranging technology to monitor water and wastewater of any consistency up to 15 m (50 ft) in depth. Achievable resolution is 0.1 % with accuracy to 0.25 % of range. Unlike contacting devices, HydroRanger 200 HMI is immune to problems caused by suspended solids, harsh corrosives, grease or silt in the effluent, reducing downtime.

Key Applications: wet wells, flumes/weirs, bar screen control

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**Overview**

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**Technical specifications**

**Mode of Operation**
- Measuring principle: Ultrasonic level measurement
- Measuring range: 0.3 ... 15 m (1 ... 50 ft), transducer dependent
- Measuring points: 1 or 2

**Input**
- Analog: 0 ... 20 mA or 4 ... 20 mA, from alternate device, scalable (6 relay model)
- Discrete: 10 ... 50 V DC switching level Logical 0 = 10 ... 50 V DC max. 3 mA

**Output**
- EchoMax transducer: 44 kHz
- Relays: Rating 5 A at 250 V AC, non-inductive
  - Model with 6 relays: 4 SPST Form A/2 SPDT Form
- 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 in transducer
  - External TS-3 temperature sensor (optional)
  - Programmable fixed temperature values

**Rated operating conditions**
- Installation conditions: Indoor / outdoor
- Pollution degree: 4
- Ambient conditions: -20 ... +50 °C (-4 ... +122 °F)

**Design**
- Weight:
  - Wall mount: 1.22 kg (2.68 lb)
  - Panel mount: 1.35 kg (2.97 lb)
- Material (enclosure): Polycarbonate
- Degree of protection (enclosure):
  - IP65/Type 4X/NEMA 4X
  - IP54/Type 3/NEMA 3
- Cable:
  - Transducer and mA output signal: 2-core copper conductor, twisted, shielded, 300 Vrms, 0.82 mm² (18 AWG), Belden 8760 or equivalent
  - Max. separation between transducer and transceiver: 365 m (1 200 ft)

**Displays and controls**
- Displays and controls: 60 x 40 mm (2.36 x 1.57 inch) LCD 240 x 160 pixels resolution

**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
- FM, CSA, UL listed
- Class I, Div. 2, Groups A, B, C and D
- Class III (wall mount only)
- MCERTS Class 2 approved for Open Channel Flow

### Communication
- RS 232 with Modbus RTU or ASCII via RJ-11 connector
- RS 485 with Modbus RTU or ASCII via terminal blocks
- Optional: SmartLinx cards for: PROFIBUS DPV1 (cyclic access of process values only)
- DeviceNet

### Selection and Ordering data
- **Further designs**
  - 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
  - Order code: Y15
- Test Certificate: Manufacturer’s test certificate M to DIN 55350, Part 18 and to ISO 9000
  - Order code: C11

### Operating Instructions
- **English**
  - A5E36281317
- **German**
  - A5E36281391

### Other Operating Instructions
- SmartLinx PROFIBUS DPV1, English
  - A5E36197302
- SmartLinx PROFIBUS DPV1, German
  - A5E36197305

### Accessories
- Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosure
  - 7ML1930-1AC
- Sunshield kit, 304 stainless steel
  - 7ML1930-1GA
- USB to RS 232 adapter
  - 7ML1930-6AK
- RS 232 to RJ11 COMMS adapter
  - 7ML1830-1MC
- 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
- Removable terminal blocks
  - A5E38824197
- Spare lid with HMI, MultiRanger 200 HMI/ HydroRanger 200 HMI, wall
  - A5E35778738
- Spare lid with HMI, MultiRanger 200 HMI/ HydroRanger 200 HMI, panel
  - A5E35778740
- SmartLinx PROFIBUS DP V1 module
  - A5E35778741

### Selection and Ordering data

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<tr>
<th>Siemens HydroRanger 200 HMI</th>
<th>Article No.</th>
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<td>Ultrasonic level controller for up to six pumps that provides control, differential control and open channel flow monitoring.</td>
<td>7ML5034-</td>
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Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

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<thead>
<tr>
<th>Mounting, enclosure design</th>
<th>Order code</th>
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<tr>
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<tr>
<td>4 button HMI, Wall mount, 4 entries, 4 M20 cable glands included</td>
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<td>4 button HMI, Panel Mount</td>
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<td>12 ... 30 V DC</td>
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<tr>
<td>Dual point model, 6 relays</td>
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<th>Communication (SmartLinx)</th>
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<td>SmartLinx PROFIBUS DP V1 module</td>
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See SmartLinx product page 4/337 for more information.

### Approvals
- General Purpose CE, FM, CSA, UL listed, RCM
- CSA Class I, Div. 2, Groups A, B, C and D
- Class II, Div. 2, Groups F and G, Class III

1) Available with Mounting/Enclosure design options 4 or 5
Level Measurement
Continuous level measurement - Ultrasonic controllers

HydroRanger 200 HMI

Dimensional drawings

Panel mount dimensions

Wall mount dimensions

HydroRanger 200 HMI, dimensions in mm (inch)
Note:
1. Use 2-core copper wire, twisted, with shield, for expansion up to 365 m (1 200 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 HydroRanger 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.

HydroRanger 200 HMI connections