

#### Overview



SITRANS LT500 is a versatile, single and multi-vessel level monitor/controller for virtually any application in a wide range of industries.

#### Benefits

- Easy to use, configurable HMI display with local four-button programming, menu-driven parameters, and Wizard support for key applications.
- English, German, French, Spanish, Chinese, Italian, Portuguese, Japanese, Danish, Dutch, Swedish, Finnish, Polish, Russian, and Korean, Lithuanian, Czech, Hungarian, Turkish, Greek, Azerbaijan languages on the HMI.
- Removable terminal blocks for ease of wiring.
- Digital inputs for back-up level override from point level device, totalizer control, or pump interlock.
- Communication options for HART, Modbus RTU, Modbus TCP, PROFIBUS PA, PROFIBUS DP, PROFINET, EtherNet/IP.
- Configuration and monitoring via WebIQ (browser based) over PROFINET, EtherNet/IP, or Modbus TCP
- Remote configuration and diagnostic management of supported sensors (SITRANS LR110, SITRANS LR120, SITRANS Probe LU240).
- Single or dual point level monitoring.
- Advanced process intelligence echo processing for reliable accurate measurement in difficult applications.
- Parameter back-up and copy functions.
- Auto False-Echo Suppression for fixed obstruction avoidance.
- IQ Guard for health monitoring, NE107 diagnostics, up to 200 saved echo profiles, event logging, data logging, parameter change logging, hundreds of diagnostics, limit monitoring, self check validation, parameter back-up and copy functions, and programming configuration backup/report.
- Real-time clock supporting energy saving algorithms for minimizing pump operation during high cost energy periods.
- Smart device connection for file storage and sharing via USB.
- Up to 6 independent programmable relays for pump control, alarms, or remote totalization.
- Time to spill/empty monitoring and alarming.
- Level, volume, and flow measurements in open channels, differential control, extended pump control, and alarm functions.
- Wall, panel, and remote panel mounting options.
- Remote configuration via EDD with SIMATIC PDM and SITRANS DTM via USB.
- MCERTS certified for open channel flow.
- Patented digital receiver for improved performance in electrically noisy applications (close proximity to VSDs).
- Remote configuration via MobileIQ with Android, IOS or Windows based bluetooth connection.
- Seamless integration into TIA Portal and PCS 7 with faceplates and function blocks.

## Level Measurement

### Continuous level measurement

#### Controllers / SITRANS LT500 - HydroRanger / MultiRanger

##### Application

SITRANS LT500 mA HART version can be used with SITRANS LR110, LR120, Probe LU240 or any level device generating a mA signal. The ultrasonic version can connect any EchoMax or legacy transducer. SITRANS LT500 offers true dual point monitoring and digital communications. SITRANS LT500 is low maintenance and economical. With its advanced control functions, it can operate pumps during lower cost time periods and manage pump rosters for efficiency.

SITRANS LT500 will monitor open channel flow and features advanced relay alarming and pump control functions as well as volume conversion.

- Key Applications: wet wells, flumes/weirs, bar screen control, hoppers, chemical storage, liquid storage, crusher bins, dry solids storage

SITRANS mobile IQ is a Bluetooth app that provides an intuitive interface to quickly configure, set up, and monitor SITRANS LT500 series (available for Android, Apple, and Windows devices).

For more information: <http://www.siemens.com/mobileIQ>.

##### Design

SITRANS LT500 is available in wall, panel, or remote panel mounting options.

### Selection and ordering data

SITRANS LT500 mA Hart version Continuous, non-contact, for liquids, slurries, and solids. Monitors level, volume, and volume flow, for virtually any application in a wide range of process industries.		Article No. 7ML60		● ● - ● ● ● ● - ● A A ●	
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
<b>Product brand<sup>3)</sup></b>					
SITRANS LT500				2	
SITRANS LT500 HydroRanger				0	
SITRANS LT500 MultiRanger				1	
<b>Feature set</b>					
Level, Volume, and Flow <sup>4)</sup>				3	
Level, Volume, and Flow, high accuracy <sup>5)</sup>				4	
<b>Sensor input type</b>					
4 ... 20 mA input(s) for radar sensors				0	
<b>Number of measurement points</b>					
Single point version				A	
Dual point version				B	
<b>Relay output</b>					
1 relay (1 Form A), 250 V AC				A	
3 relays (2 Form A, 1 Form C), 250 V AC				B	
6 relays (4 Form A, 2 Form C), 250 V AC				C	
<b>Mounting, enclosure design</b>					
Wall mount, standard enclosure				0	
Wall mount, 4 entries, M20 cable glands included				1	
Panel mount				2	
Remote panel mount				3	
<b>Type of protection</b>					
Ordinary Locations/General Purpose (Non-Ex), cCSA <sub>US</sub> , cUL <sub>US</sub> FM, CE, UKCA, RCM, EAC <sup>8)</sup>				0	
Ex rated <sup>1)</sup>				1	
<b>Removable data storage</b>					
Included, (8 GB micro SD)					1
<b>Input voltage</b>					
12 ... 30 V DC					2
100 ... 230 V AC					3

Selection and ordering data	Order code
<b>Further designs</b>	
Please add "-Z" to Article No. and specify Order code(s).	
Stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Tag (device parameter, max. 32 characters) plate stainless steel 304/1.4301	Y15
<b>Approvals</b>	
CSA (USA & Canada)	
CSA Class I, Div. 2, Group A, B, C and D; Class II, Div 2, Group F & G; Class III/Class I, Zone 2 GP IIC T3 Zone 22 GP IIIB T160 °C	E21
<b>Certificates</b>	
Quality inspection certificate - calibration IEC 62828-4	C11
Declaration of compliance DIN 55350-18, Type M / ISO 9001	C19
Factory certificate 2.2 (EN 10204)	C14
<b>RFID tag</b>	
RFID/NFC tag according IEC 61406-1	D91
<b>Communication</b>	
HART with 4 ... 20 mA active output <sup>6)</sup>	F01
Modbus RTU	F04

Selection and ordering data	Order code
Modbus TCP	F13
PROFIBUS PA	F05
PROFIBUS DP	F06
PROFINET	F07
EtherNet/IP	F09
<b>Wireless communication</b>	
Bluetooth (consult catalog sheet for radio approval coverage) <sup>11)</sup>	F50
<b>Product version</b>	
Suitable for high temperatures +60 °C (140 °F) <sup>7)</sup>	J20
<b>Specials</b>	
Special design	Y99
For customs, contact a local sales person. For more information please visit <a href="http://www.automation.siemens.com/aspa_app">http://www.automation.siemens.com/aspa_app</a>	
<b>Operating Instructions</b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	

## Level Measurement

### Continuous level measurement

#### Controllers / SITRANS LT500 - HydroRanger / MultiRanger

#### Selection and ordering data (continued)

Selection and ordering data	Article No.
<b>Optional equipment</b>	
Tag, stainless steel, 12 x 45 mm, one text line, (max. 16 characters)	7ML1930-1AC
Barriers in a NEMA 4X/IP65 enclosure	A5E50255823
Barrier suitable for LR1xx & LU240 (STAHL: 9001/01-280-110-101)	A5E50113513
Sunshield/pipe mount plate, 304 Stainless steel	7ML1930-1GA
Panel mount installation kit for ERS500, SITRANS LUC500, MiniRanger Plus, and HydroRanger Plus	A5E53663857
M12 IP65/IP67/IP69/IP69K external mount receptacle port to individual cable leads M20 mounting	A5E53796231
Ethernet cable 4 inch/100 mm long	A5E53796237
RJ45 external mount receptacle to receptacle adaptor	A5E53796234
M20 plastic cable gland with split seal for use with RJ45 cables, includes M20 nut	A5E54001790
USB cable, 2 m (6.56 ft), standard USB-B to USB-mini B	7ML1930-1GD
M20 cable gland kit (4 M20 cable glands, 4 M20 nuts, 4 washers)	7ML1930-1FV
Wall mount installation hardware	A5E42140728
AC power supply surge protector	55D7432-7
DC power supply surge protector	55D7432-5
SITRANS RD100, loop powered display	7ML5741-.....
SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices	7ML5742-.....
SITRANS RD200, universal input display with Modbus conversion	7ML5740-.....
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion	7ML5744-.....
Industrial Ethernet cables	6XV1870-.....
<b>Spare parts</b>	
Replacement motherboard, single point, includes DC power module	A5E50113558
Replacement motherboard, dual point, includes DC power module	A5E50113557
Replacement motherboard, single point, includes AC power module	A5E50113542
Replacement motherboard, dual point, includes AC power module	A5E50113543
Replacement lid with 4 button HMI	A5E50113559

Selection and ordering data	Article No.
Replacement lid with 4 button HMI remote panel mount version	A5E52897553
Replacement lid with blind remote panel mount version	A5E53276261
Retrofit kit for wall mount to panel mount version	A5E50114010
Retrofit kit for wall mount to remote panel mount version	A5E53276259
Replacement wall mount door with HMI overlay only (no display LUI)	A5E54153189
Panel mount cable extension, 2.5 m (8.2 ft)	7ML1930-1GF
Remote panel mount gasket and fastener kit	7ML1830-1PK
Replacement terminal blocks for 4 ... 20 mA input(s) sensor type version	A5E38824197
Card AC power supply, spare	7ML1830-1MD
Card DC power supply, spare	7ML1830-1ME
Ethernet RJ45 to termination pin adaptor (for use with Ethernet based communication cards)	A5E53671319
Replacement SD card, 8GB	A5E50113554
Replacement SD card, 20GB	A5E53821516
Bluetooth adaptor replacement kit	A5E50113563
HART communications module	A5E50113564
PROFIBUS PA communications module	A5E50113568
Modbus RTU communications module	A5E50113565
PROFIBUS DP communications module	A5E50113567
PROFINET communications module	A5E50113570
EtherNet/IP communications module	A5E50113562
Modbus TCP communications module	A5E50113566

- 1) Available only with order code E21 and E31, and Mounting, enclosure design options 0 or 1.
- 2) Available only with Sensor input type option 1.
- 3) Branding only affects the name marked on the label, no other difference in form or function.
- 4) MCERTS class 2 certified.
- 5) MCERTS class 1 certified.
- 6) HART communication card not required for standard mA output.
- 7) Available only with Relay output option A or B, Type of protection option 0, and Voltage input option 2. Note, relays are de-rated to 1A. Does not include Mcerts approvals.
- 8) Not available with Ex approval options E21 and E31.
- 9) To be ordered at the same time as the device.
- 10) Order after receipt of the device, if required.
- 11) Available with "Type of protection" option 0 only.

	Article No.
<b>SITRANS LT500 Ultrasonic version</b> Continuous, non-contact, for liquids, slurries, and solids. Monitors level, volume, and volume flow, for virtually any application in a wide range of process industries.	7ML60 ● ● - ● ● ● ● ● - ● A A ●
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
<b>Product brand<sup>3)</sup></b>	
SITRANS LT500	2
SITRANS LT500 HydroRanger	0
SITRANS LT500 MultiRanger	1
<b>Feature set</b>	
Level, Volume, and Flow <sup>4)</sup>	3
Level, Volume, and Flow, high accuracy <sup>5)</sup>	4
<b>Sensor input type</b>	
Ultrasonic transducer input(s)	1
<b>Number of measurement points</b>	
Single point version	A
Dual point version	B

### Selection and ordering data (continued)

	Article No.												
<b>SITRANS LT500 Ultrasonic version</b> Continuous, non-contact, for liquids, slurries, and solids. Monitors level, volume, and volume flow, for virtually any application in a wide range of process industries.	7ML60	●	●	-	●	●	●	●	-	●	A	A	●
<b>Relay output</b>													
1 relay (1 Form A), 250 V AC											A		
3 relays (2 Form A, 1 Form C), 250 V AC											B		
6 relays (4 Form A, 2 Form C), 250 V AC											C		
<b>Mounting, enclosure design</b>													
Wall mount, standard enclosure												0	
Wall mount, 4 entries, M20 cable glands included												1	
Panel mount												2	
Remote panel mount												3	
<b>Type of protection</b>													
Ordinary Locations/General Purpose (Non-Ex), CSA, cULus, FM, CE, UKCA, RCM, EAC												0	
Ex rated <sup>1)</sup>												1	
<b>Removable data storage</b>													
Included, (8 GB micro SD)													1
<b>Input voltage</b>													
12 ... 30 V DC													2
100 ... 230 V AC													3

Selection and ordering data	Order code
<b>Further designs</b>	
Please add "-Z" to Article No. and specify Order code(s).	
<u>Stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]:</u> Tag (device parameter, max. 32 characters) plate stainless steel 304/1.4301	Y15
<u>Approvals</u>	
CSA (USA & Canada)	
CSA Class I, Div. 2, Group A, B, C and D; Class II, Div 2, Group F & G; Class III/Class I, Zone 2 GP IIC T3 Zone 22 GP IIIB T160 °C	E21
<u>Certificates</u>	
Quality inspection certificate - calibration IEC 62828-4	C11
Declaration of compliance DIN 55350-18, Type M / ISO 9001	C19
Factory certificate 2.2 (EN 10204)	C14
<u>RFID tag</u>	
RFID/NFC tag according IEC 61406-1	D91
<u>Communication</u>	
HART with 4 ... 20 mA active output <sup>6)</sup>	F01
Modbus RTU	F04
Modbus TCP	F13
PROFIBUS PA	F05
PROFIBUS DP	F06
PROFINET	F07
EtherNet/IP	F09
<u>Wireless communication</u>	
Bluetooth (consult catalog sheet for radio approval coverage) <sup>1)</sup>	F50
<u>Product version</u>	
Suitable for high temperatures +60 °C (140 °F) <sup>7)</sup>	J20

Selection and ordering data	Order code
<u>Specials</u>	
Special design	Y99
For customs, contact a local sales person. For more information please visit <a href="http://www.automation.siemens.com/aspa_app">http://www.automation.siemens.com/aspa_app</a>	
<u>Operating Instructions</u>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	

Selection and ordering data	Article No.
<b>Optional equipment</b>	
Tag, stainless steel, 12 x 45 mm, one text line, (max. 16 characters)	7ML1930-1AC
Sunshield/pipe mount plate, 304 Stainless steel	7ML1930-1GA
Panel mount installation kit for ERS500, SITRANS LUC500, MiniRanger Plus, and HydroRanger Plus	A5E53663857
Coaxial cable converter in a NEMA 4X/IP65 enclosure	A5E53332217
M12 IP65/IP67/IP69/IP69K external mount receptacle port to individual cable leads M20 mounting	A5E53796231
M20 plastic cable gland with split seal for use with RJ45 cables, includes M20 nut	A5E54001790
Ethernet cable 4 inch/100 mm long	A5E53796237
RJ45 external mount receptacle to receptacle adaptor	A5E53796234
M20 cable gland kit (4 M20 cable glands, 4 M20 nuts, 4 washers)	7ML1930-1FV
Wall mount installation hardware	A5E42140728
AC power supply surge protector	5SD7432-7
DC power supply surge protector	5SD7432-5
USB cable, 2 m (6.56 ft), standard USB-B to USB-mini B	7ML1930-1GD
SITRANS RD100, loop powered display	7ML5741-.....

## Level Measurement

### Continuous level measurement

#### Controllers / SITRANS LT500 - HydroRanger / MultiRanger

#### Selection and ordering data (continued)

Selection and ordering data	Article No.
SITRANS RD150, remote digital display for 4 ... 20 mA and HART devices	7ML5742-.....
SITRANS RD200, universal input display with Modbus conversion	7ML5740-.....
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion	7ML5744-.....
Industrial Ethernet cables	6XV1870-.....
<b>Spare parts</b>	
Replacement motherboard, single point, US comes with DC power module	A5E52897550
Replacement motherboard, dual point, US comes with DC power module	A5E52897552
Replacement motherboard, single point, US comes with AC power module	A5E52897548
Replacement motherboard, dual point, US comes with AC power module	A5E52897549
Replacement lid with 4 button HMI	A5E50113559
Replacement lid with 4 button HMI remote panel mount version	A5E52897553
Replacement lid with blind remote panel mount version	A5E53276261
Retrofit kit for wall mount to panel mount version	A5E50114010
Retrofit kit for wall mount to remote panel mount version	A5E53276259
Replacement wall mount door with HMI overlay only (no display LUI)	A5E54153189
Replacement terminal blocks for Ultrasonic transducer input(s) sensor type version	A5E52897545
Panel mount cable extension, 2.5 m (8.2 ft)	7ML1930-1GF
Card AC power supply, spare	7ML1830-1MD
Card DC power supply, spare	7ML1830-1ME

Selection and ordering data	Article No.
Ethernet RJ45 to termination pin adapter (for use with Ethernet based communication cards)	A5E53671319
Remote panel Mount Gasket and Fastener Kit	7ML1830-1PK
Replacement SD card, 8GB	A5E50113554
Replacement SD card, 20GB	A5E53821516
Bluetooth adaptor replacement kit	A5E50113563
HART communications module	A5E50113564
PROFIBUS PA communications module	A5E50113568
Modbus RTU communications module	A5E50113565
PROFIBUS DP communications module	A5E50113567
PROFINET communications module	A5E50113570
EtherNet/IP communications module	A5E50113562
Modbus TCP communications module	A5E50113566

- 1) Available only with order code E21 and E31, and Mounting, enclosure design option 0 or 1.
- 2) Available only with Sensor input type option 1.
- 3) Branding only affects the name marked on the label, no other difference in form or function.
- 4) MCERTS class 2 certified.
- 5) MCERTS class 1 certified.
- 6) HART communication card not required for standard mA output.
- 7) Available only with Relay output option A or B, Type of protection option 0, and Voltage input option 2. Note, relays are de-rated to 1A. Does not include Mcerts approvals.
- 8) Not available with Ex approval options E21 and E31.
- 9) To be ordered at the same time as the device.
- 10) Order after receipt of the device, if required.
- 11) Available with "Type of protection" option 0 only.

#### Technical specifications

SITRANS LT500 mA HART version	
<b>Mode of operation</b>	Level, space, distance, volume, flow, head, level difference, level average, totalization
<b>Sensor input, mA HART version</b>	
Number of inputs	1 or 2
PV measurement	Advanced process intelligence
Terminal voltage	Max. 26 V, Min. 18 V (0 ... 22.6 mA)
Wiring	2 conductor, twisted, shielded, 0.5 ... 0.75 mm <sup>2</sup> (22 ... 18 AWG)
Max. cable length	500 m (1 640.42 ft) with or without an IS barrier based on 160 nF/km cable
Sensor input communication	<ul style="list-style-type: none"> <li>4 ... 20 mA</li> <li>HART protocol, for supported sensors: SITRANS LR110, LR120, SITRANS Probe LU240</li> </ul>
4 ... 20 mA sensor input	
• Range	Dependent on connected sensor up to 10 <sup>10</sup>
• Resolution	0.025 % of full scale
• Accuracy	0.1 % of full scale
Note: resolution, range, and accuracy are dependent on connected sensor	
• Sensor power source	Limited Energy Source according to IEC 61010-1
<b>Digital input</b>	
Quantity	2
Switching threshold, low	0 ... 0.5 V DC
Switching threshold, high	10 ... 50 V DC
Input current	Max. 3 mA
Bias voltage supply	24 V
Isolation	Galvanically Isolated to the SELV (Safety Extra Low Voltage) 50 V level
<b>Analog output</b>	
Quantity	1 or 2
Range	0 ... 20 mA or 4 ... 20 mA isolated
Max. load	750 Ω
Resolution	0.1 % of range
Update time	Up to 1 measurement per second
Accuracy	±20 μA
Startup current	3.6 mA
Fail-safe	Programmable as high, low, last reliable, set value, or hold per NAMUR NE43
Wiring	2 conductor, twisted, shielded, 0.5 ... 0.75 mm <sup>2</sup> (22 ... 18 AWG)
Isolation	Galvanically Isolated to 500 V
<b>Relay output</b>	
Quantity	Up to 6, 4 form A and 2 form C
Rating	<ul style="list-style-type: none"> <li>5 A at 250 V AC, 5 A at 30 V DC, non-inductive</li> <li>High temperature option - 1 A at 250 V AC, 1 A at 30 V DC, non-inductive</li> </ul>
Durability	50 000 operations min. per relay (5 A at 30 V DC, resistive load)
Minimum applicable load	10 mA at 12 V
Fail-safe	Programmable as energized, de-energized, or hold
Wiring	Copper conductors per local requirements to meet 250 V 5 A contact rating
<b>Rated operating conditions</b>	
Installation conditions	
• Location	Indoor/outdoor

#### Technical specifications (continued)

SITRANS LT500 mA HART version	
• Installation category	II
• Pollution degree	4
Ambient conditions	
• Ambient temperature	-20 ... +50 °C (-4 ... +122 °F)
• High temperature version	-20 ... +60 °C (-4 ... +140 °F)
• Storage temperature	-20 ... +60 °C (-4 ... +140 °F)
• Humidity	Maximum relative humidity 80 % for temperatures up to 31 °C (88 °F) decreasing linearly to 50 % relative humidity at 40 °C (104 °F)
• Altitude	2 000 m (6 565 ft) maximum
• Vibration resistance	
- Vibration broad-band random, according to IEC 60068-2-64	<ul style="list-style-type: none"> <li>10 ... 200 Hz, 0.0104 g<sup>2</sup>/Hz</li> <li>200 ... 500 Hz, 0.005 g<sup>2</sup>/Hz</li> </ul>
- Vibration non-stationary including shock, according to IEC 60068-2-27	<ul style="list-style-type: none"> <li>Peak Acceleration: 25 g</li> <li>Duration: 6 ms</li> <li>Number of impacts per direction: 1 000</li> <li>Impact directions: 6</li> </ul>
• Bump/shock resistance	25 g
<b>EMC performance</b>	IEC/EN 61326-1, EN 55011 (Class A)
<b>Design</b>	
Weight	
• Wall mount	1.22 kg (2.68 lb)
• Panel mount	1.35 kg (2.97 lb)
• Remote panel mount	1.73 kg (3.80 lb)
Enclosure	
• Material	High impact polycarbonate lexan per UL 94V-0
• Degree of protection	
• Wall mount	IP65/Type 4X
• Panel mount	IP54/Type 3
• Remote panel mount	IP65/Type 3 (front panel), IP20 (enclosure)
• UV exposure	F1 rating per UL746C
Display and control	
• LCD display	60 x 40 mm (2.36 x 1.57 inch) LCD, 240 x 160 pixels resolution graphical HMI with NE107 diagnostic data, echo profile display and backlight
• Menu navigation	4 push button keys, rated for 1 million button cycles over 10 years
Update time	1 second or less
Memory	Program and parameters stored in non-volatile Flash memory
Real time clock memory retention without power	48 hours
CPU speed	96 MHz
Memory card	8 GB Industrial micro SD, supporting up to 32 GB
<b>Power supply</b>	
AC version	100 ... 230 V AC, ±15 %, 50/60 Hz, 36 VA (17 W)
DC version	12 ... 30 V DC (20 W)

# Level Measurement

## Continuous level measurement

### Controllers / SITRANS LT500 - HydroRanger / MultiRanger

#### Technical specifications (continued)

SITRANS LT500 mA HART version	
Certificates and approvals	<ul style="list-style-type: none"> <li>CE, UKCA, RCM, EAC, FM, cCSA<sub>US</sub>, cUL<sub>US</sub>, KC</li> <li>RoHS, China RoHS, WEEE, REACH</li> <li>cCSA<sub>US</sub> Class I, Div. 2, Group A, B, C and D; Class II, Div 2, Group F &amp; G; Class III &amp; Class I, Zone 2 GP IIC T3 Zone 22, GP IIIB T160°C</li> <li>MCERTS</li> <li>Kazakhstan Metrology</li> <li>FCC, IC, RED, CMIIT, ETA-WPC</li> <li>Environmental Product Declaration (EPD)</li> <li>Siemens EcoTech Profile (SEP)</li> </ul>
Radio (Bluetooth) AW050	Australia, Brazil, Canada, Chile, China, Colombia, Ecuador, Egypt, EU, Hong Kong, India, Israel, Japan, Kazakhstan, Malaysia, Mexico, New Zealand, Pakistan, Peru, South Africa, South Korea, Taiwan, UAE, UK, USA, Vietnam
Production and development certification	<ul style="list-style-type: none"> <li>ISO 9001</li> <li>ISO 14001</li> <li>ISO 18001</li> <li>ISO 45001</li> <li>IEC ISO/IEC 80079-34</li> <li>PED 2014/68/EU</li> <li>IEC 62443-4-1, maturity level 3</li> </ul>
Communication	
Service interface	USB 2.0 mini A cable
Optional Fieldbus	<ul style="list-style-type: none"> <li>HART 7, with Active/Passive 4 ... 20 mA</li> <li>Modbus RTU</li> <li>Modbus TCP</li> <li>PROFIBUS PA per profile 4.01</li> <li>PROFIBUS DP per profile 4.01</li> <li>PROFINET</li> <li>EtherNet/IP</li> </ul>
Remote configuration via service interface	<ul style="list-style-type: none"> <li>EDD via SIMATIC PDM</li> <li>SITRANS DTM via PACTware</li> </ul>
Remote configuration via fieldbus	<ul style="list-style-type: none"> <li>EDS-AOP (EtherNet/IP)</li> <li>EDD via SIMATIC PDM with Profibus DP, ProfiNet, Modbus RTU</li> </ul>
Remote configuration via ethernet network interface	WebIQ Web-based interface for local programming via web browser (only with PROFINET, EtherNet/IP, Modbus TCP)
Remote configuration via Ethernet directly on PC	WebIQ Web-based interface for local programming via web browser (only with Modbus TCP)
Remote configuration via bluetooth	MobileIQ via Android, IOS, Windows

SITRANS LT500 Ultrasonic version	
Mode of operation	Level, space, distance, volume, flow, head, difference, average, totalization
Sensor input, ultrasonic version	
Number of inputs	1 or 2
PV measurements	Advanced process intelligence
Measuring range	0.3 ... 60 m (1 ... 196 ft), transducer dependent
Transducer frequency	10 ... 52 kHz
Ultrasonic transducer	Compatible transducers: all EchoMax and ST-H series transducers, legacy coaxial cable connections via converter

#### Technical specifications (continued)

SITRANS LT500 Ultrasonic version	
Accuracy	
• Error in measurement	<ul style="list-style-type: none"> <li>Standard operation: <math>\pm 1</math> mm (0.04 inch) plus 0.17 % of measured distance</li> <li>High accuracy OCM: <math>\pm 1</math> mm (0.04 inch), within 3 m (9.84 ft) range (with XRS-5 and TS-3)</li> </ul>
• Resolution	<ul style="list-style-type: none"> <li>Standard operation: 0.1 % of range or 2 mm (0.08 inch), whichever is greater</li> <li>High accuracy OCM: 0.6 mm (0.02 inch), within 3 m (9.84 ft) range</li> <li>Accuracy per IEC 60770-1</li> </ul>
• Temperature compensation	<ul style="list-style-type: none"> <li>-40 ... +150 °C (-40 ... +300 °F)</li> <li>Integral temperature sensor in transducer</li> <li>External TS-3 temperature sensor (optional)</li> <li>Programmable fixed temperature values</li> </ul>
Wiring	Transducer: 2 copper conductors, twisted, with foil shield/drain wire, 300 V 0.5 ... 0.75 mm <sup>2</sup> (22 ... 18 AWG)
• Max. cable length	365 m (1 200 ft)
Analog input	
Range	Dependent on connected sensor up to 10 <sup>10</sup>
Resolution	0.025 % of full scale
Accuracy	0.1 % of full scale
Polling rate	>1 Hz
Maximum cable length	500 m (1640.42 ft)
Supply voltage	24 V
Digital input	
Quantity	2
Switching threshold, low	0 ... 0.5 V DC
Switching threshold, high	10 ... 50 V DC
Input current	Max. 3 mA
Bias voltage supply	24 V
Isolation	Galvanically Isolated to the SELV (Safety Extra Low Voltage) 50 V level
Sensor power source	Limited Energy Source according to IEC 61010-1
Analog output	
Quantity	1 or 2
Range	0 ... 20 mA or 4 ... 20 mA isolated
Max. load	750 Ω
Resolution	0.1 % of range
Update time	Up to 1 measurement per second
Accuracy	$\pm 20$ μA
Startup current	3.6 mA
Fail-safe	Programmable as high, low, last reliable, set value, or hold per NAMUR NE43
Wiring	2 conductor, twisted, shielded, 0.5 ... 0.75 mm <sup>2</sup> (22 ... 18 AWG)
Isolation	Galvanically Isolated to 500 V
Relay output	
Quantity	Up to 6, 4 form A and 2 form C
Rating	<ul style="list-style-type: none"> <li>5 A at 250 V AC, 5 A at 30 V DC, non-inductive</li> <li>High temperature option - 1 A at 250 V AC, 1 A at 30 V DC, non-inductive</li> </ul>
Durability	50 000 operations min. per relay (5 A at 30 V DC, resistive load)
Minimum applicable load	10 mA at 12 V
Fail-safe	Programmable as energized, de-energized, or hold

#### Technical specifications (continued)

SITRANS LT500 Ultrasonic version	
Wiring	Copper conductors per local requirements to meet 250 V 5 A contact rating
System synchronization	Up to 25 units on the bus (only SITRANS LT500s). Up to 16 units on the bus (if 1 legacy controller is included).
<b>Rated operating conditions</b>	
Installation conditions	
• Location	Indoor/outdoor
• Installation category	II
• Pollution degree	4
Ambient conditions	
• Ambient temperature	-20 ... +50 °C (-4 ... +122 °F)
• High temperature version	-20 ... +60 °C (-4 ... +140 °F)
• Storage temperature	-20 ... +60 °C (-4 ... +140 °F)
• Humidity	Maximum relative humidity 80 % for temperature up to 31 °C (88 °F) decreasing linearly to 50 % relative at 40 °C (104 °F)
• Altitude	2 000 m (6 565 ft) maximum
• Vibration resistance	
- Vibration broad-band random, according to IEC 60068-2-64	<ul style="list-style-type: none"> <li>• 10 ... 200 Hz, 0.0104 g<sup>2</sup>/Hz</li> <li>• 200 ... 500 Hz, 0.005 g<sup>2</sup>/Hz</li> </ul>
- Vibration non-stationary including shock, according to IEC 60068-2-27	<ul style="list-style-type: none"> <li>• Peak Acceleration: 25 g</li> <li>• Duration: 6 ms</li> <li>• Number of impacts per direction: 1 000</li> <li>• Impact directions: 6</li> </ul>
• Bump/shock resistance	25 g
<b>EMC performance</b>	IEC/EN 61326-1, EN 55011 (Class A)
<b>Design</b>	
Weight	
• Wall mount	1.22 kg (2.68 lb)
• Panel mount	1.35 kg (2.97 lb)
• Remote panel mount	1.73 kg (3.80 lb)
Enclosure	
• Material	High impact polycarbonate lexan per UL 94V-0
• Degree of protection	
• Wall mount	IP65/Type 4X
• Panel mount	IP54/Type 3
• Remote panel mount	IP65/Type 3 (front panel), IP20 (enclosure)
UV exposure	F1 rating per UL746C
Display and control	
• LCD display	60 x 40 mm (2.36 x 1.57 inch) LCD, 240 x 160 pixels resolution graphical HMI with NE107 diagnostic data, echo profile display and backlight
• Menu navigation	4 push button keys, rated for 1 million button cycles over 10 years
Update time	1 second or less
Memory	Program and parameters stored in non-volatile Flash memory
Real time clock memory retention without power	48 hours

#### Technical specifications (continued)

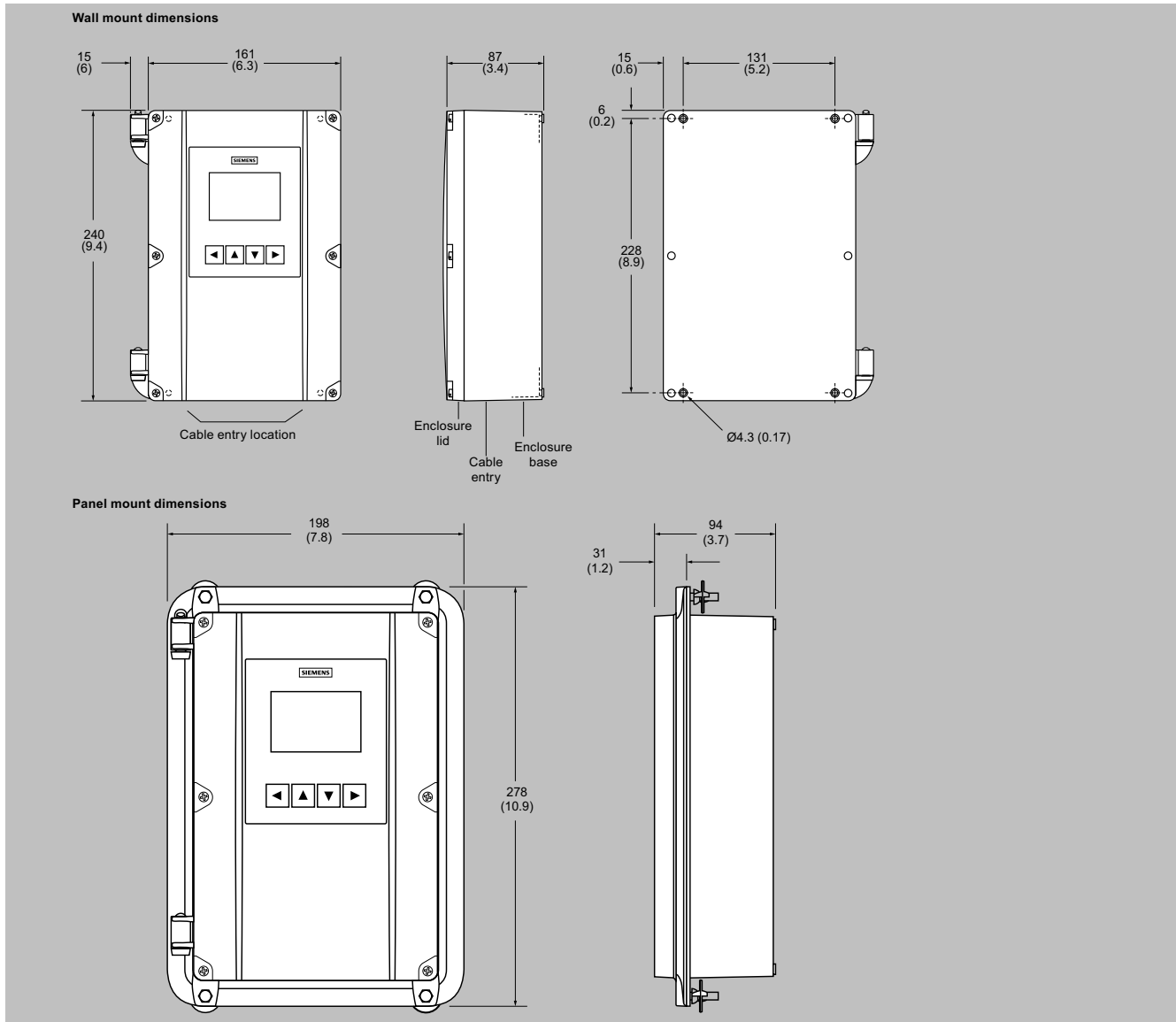
SITRANS LT500 Ultrasonic version	
CPU speed	96 MHz
Memory card	8 GB Industrial micro SD, supporting up to 32 GB
<b>Power supply</b>	
AC version	100 ... 230 V AC, ±15 %, 50/60 Hz, 36 VA (17 W)
DC version	12 ... 30 V DC (20 W)
<b>Certificates and approvals</b>	<ul style="list-style-type: none"> <li>• cCSAus, CE, UKCA, RCM, EAC, FM, cULus, KC</li> <li>• RoHS, China RoHS, WEEE, REACH</li> <li>• cCSAus Class I, Div. 2, Group A, B, C and D; Class II, Div 2, Group F &amp; G; Class III &amp; Class I, Zone 2 GP IIC T3 Zone 22 GP IIIB T160 °C</li> <li>• MCERTS</li> <li>• Kazakhstan Metrology</li> <li>• FCC, IC, RED, CMIIT, ETA-WPC</li> <li>• Environmental Product Declaration (EPD)</li> <li>• Siemens EcoTech Profile (SEP)</li> </ul>
Radio (Bluetooth) AW050	Australia, Brazil, Canada, Chile, China, Colombia, Ecuador, Egypt, EU, Hong Kong, India, Israel, Japan, Kazakhstan, Malaysia, Mexico, New Zealand, Pakistan, Peru, South Africa, South Korea, Taiwan, UAE, UK, USA, Vietnam
<b>Production and development certification</b>	<ul style="list-style-type: none"> <li>• ISO 9001</li> <li>• ISO 14001</li> <li>• ISO 18001</li> <li>• ISO 45001</li> <li>• IEC ISO/IEC 80079-34</li> <li>• PED 2014/68/EU</li> <li>• IEC 62443-4-1, maturity level 3</li> </ul>
<b>Communication</b>	
Service interface	USB 2.0 mini A cable
Optional Fieldbus	<ul style="list-style-type: none"> <li>• HART 7, with Active/Passive 4 ... 20 mA</li> <li>• Modbus RTU</li> <li>• Modbus TCP</li> <li>• PROFIBUS PA per profile 4.01</li> <li>• PROFIBUS DP per profile 4.01</li> <li>• PROFINET</li> <li>• EtherNet/IP</li> </ul>
Remote configuration via service interface	<ul style="list-style-type: none"> <li>• EDD via SIMATIC PDM</li> <li>• SITRANS DTM via PACTware</li> </ul>
Remote configuration via fieldbus	<ul style="list-style-type: none"> <li>• EDS-AOP (EtherNet/IP)</li> <li>• EDD via SIMATIC PDM with Profibus DP, ProfiNet, Modbus RTU</li> </ul>
Remote configuration via ethernet network interface	WebIQ Web-based interface for local programming via web browser (only with PROFINET, EtherNet/IP, Modbus TCP)
Remote configuration via ethernet directly on PC	WebIQ Web-based interface for local programming via web browser (only with Modbus TCP)
Remote configuration via bluetooth	MobileIQ via Android, IOS, Windows

# Level Measurement

## Continuous level measurement

### Controllers / SITRANS LT500 - HydroRanger / MultiRanger

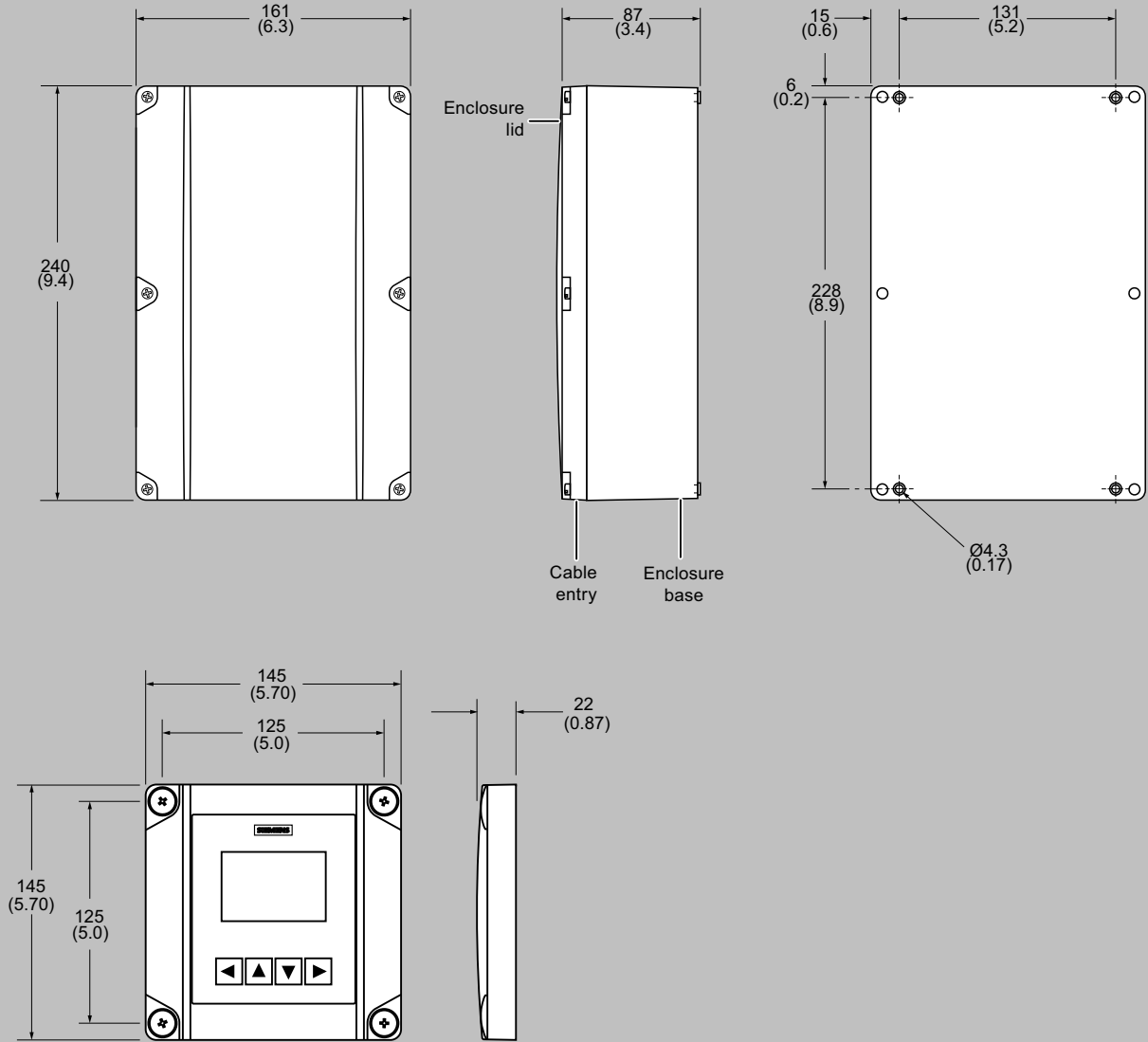
#### Dimensional drawings



SITRANS LT500, dimensions in mm (inch)

#### Dimensional drawings (continued)

SITRANS LT500 Remote panel unit



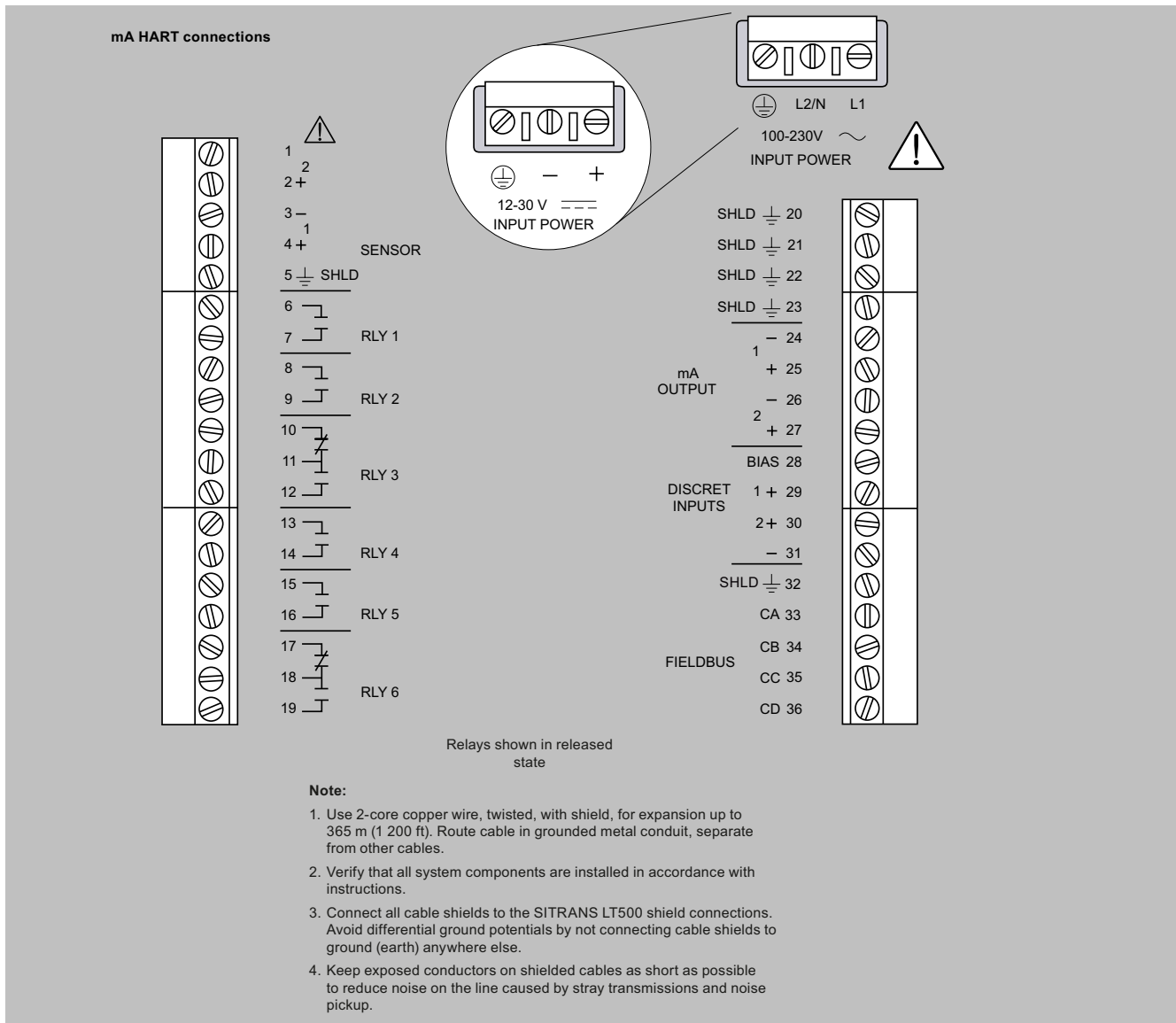
SITRANS LT500 Remote panel unit, dimensions in mm (inch)

# Level Measurement

## Continuous level measurement

Controllers / SITRANS LT500 - HydroRanger / MultiRanger

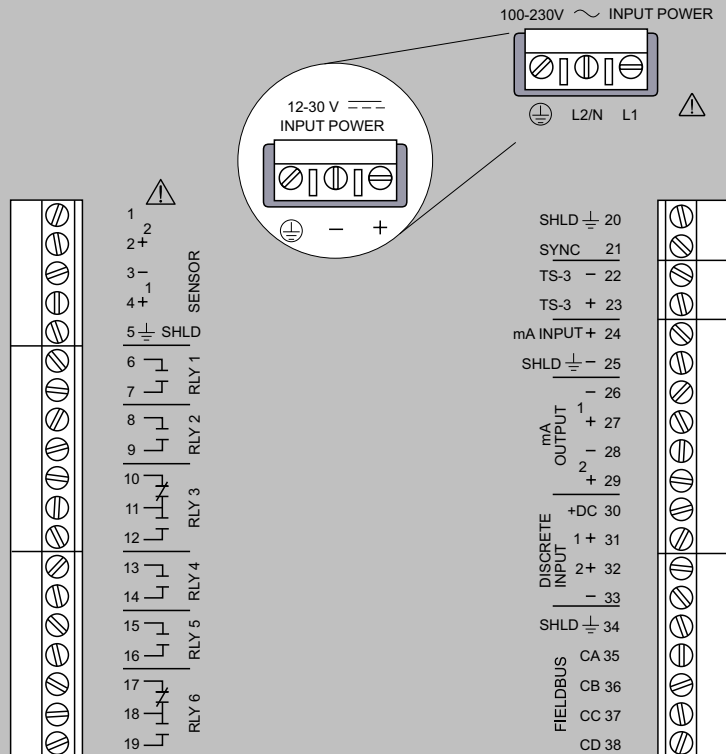
### Circuit diagrams



SITRANS LT500 mA HART connections

### Circuit diagrams (continued)

#### Ultrasonic transducer connections



Relays shown in released state

#### 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 SITRANS LT500 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.

SITRANS LT500 Ultrasonic transducer connections

## Level Measurement

### Continuous level measurement

#### Ultrasonic / Ultrasonic transducers / ST-H

##### Overview



ST-H transducers use ultrasonic technology to measure level in chemical storage and liquid tanks.

##### Benefits

- Can be mounted on a narrow standpipe
- Immune to corrosive and harsh environments
- Integral temperature sensor

##### Application

The narrow design of the ST-H allows the transducer to be mounted on a narrow standpipe. When mounted correctly, it is completely protected from the process and can even be used in harsh, corrosive environments.

During operation, the ultrasonic transducer emits acoustic pulses in a narrow beam perpendicular to the transducer face. The level transceiver measures the propagation time between pulse emission and reception of the echo to calculate the distance from the transducer to the material. Variations in sound velocity due to changes in temperature within the permissible range are automatically compensated by the integral temperature sensor.

- Key Applications: chemical storage, liquid tanks

### Selection and ordering data

	Article No.				
<b>ST-H Ultrasonic level transducer</b> <b>Continuous, non-contact, 0.3 m (1 ft) range, for liquids.</b>	7ML1100-	●	●	A	● 0
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.					
<b>Process connection</b>					
ETFE, 2" NPT [(Taper), ASME B1.20.1]	0				
ETFE, R 2" [(BSPT), EN 10226]	1				
ETFE, G 2" [(BSPP), EN ISO 228-1]	2				
PVDF copolymer, 2" NPT [(Taper), ASME B1.20.1]	3				
PVDF copolymer, R 2" [(BSPT), EN 10226]	4				
PVDF copolymer, G 2" [(BSPP), EN ISO 228-1]	5				
<b>Cable length</b>					
5 m (16.40 ft)			A		
10 m (32.81 ft)			B		
30 m (98.43 ft)			C		
50 m (164.04 ft)			D		
100 m (328.08 ft)			E		
<b>Approvals</b>					
CE, UKCA, FM Class I, II, Div. 1, Groups C, D, E, F, G T4A <sup>3)</sup>					2
CSA Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G T3;					3
ATEX II 2G Ex mb IIC T5 Gb, Ta = -20°C to +60°C;					
UKEX II 2G Ex mb IIC T5 Gb, Ta = -20°C to +60°C;					
INMETRO Ex mb IIC T5 Gb, -20 °C ≤ Ta ≤ +60 °C;					
RCM, KC <sup>1)</sup>					
ATEX II 2G Ex mb IIC T5 Gb, Ta = -20°C to +60°C;					4
UKEX II 2G Ex mb IIC T5 Gb, Ta = -20°C to +60°C;					
INMETRO Ex mb IIC T5 Gb, -20 °C ≤ Ta ≤ +60 °C;					
CE, UKCA, RCM, KC <sup>2)</sup>					

1) Available with Process connection options 0 ... 2 only.

2) Available with Process connection options 3 ... 5 only.

3) Not suitable for Ketone, Hexane, Ester or Ethyl Acetate atmospheres.

Selection and Ordering data	Order code
<b>Further designs</b>	
Please add "-Z" to Article No. and specify Order code(s).	
Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text	Y17

Accessories	Article No.
<b>Operating Instructions</b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	
<b>Accessories</b>	
Universal box bracket, mounting kit	7ML1830-1BK
3" ASME, DN 65 PN 10, JIS 10K 3B ETFE flange adapter for 2" NPT	7ML1830-1BT
3" ASME, DN 65 PN 10, JIS 10K 3B ETFE flange adapter for 2" BSPT	7ML1830-1BU
Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling	7ML1830-1AQ
Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings	7ML1830-1AX
Easy Aimer 304, NPT with 1" stainless steel coupling	7ML1830-1AU
Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings	7ML1830-1GN
Plastic adapter 1" NPT	7ML1930-1FX
Plastic adapter 1" NPT/M20	7ML1830-1EF

# Level Measurement

## Continuous level measurement

### Ultrasonic / Ultrasonic transducers / ST-H

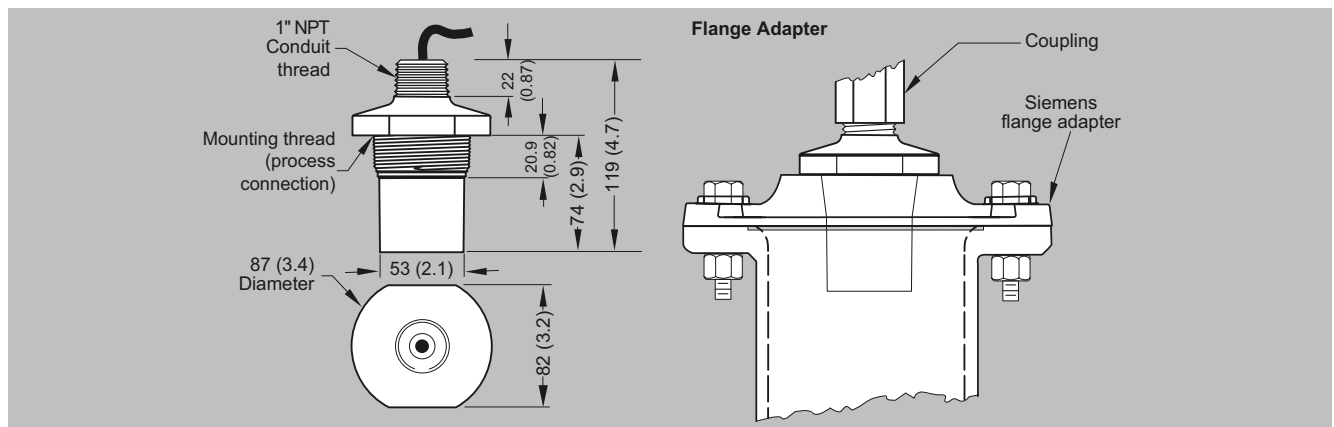
#### Technical specifications

ST-H	
<b>Mode of operation</b>	
Measuring principle	Ultrasonic transducer
<b>Input</b>	
Measuring range	0.3 ... 10 m (1 ... 33 ft)
<b>Output</b>	
Frequency	44 kHz
Beam angle	12°
<b>Accuracy</b>	
Temperature compensation	Compensated by integral temperature sensor
<b>Rated operating conditions</b>	
Pressure	Normal atmospheric pressure
<b>Ambient conditions</b>	
Ambient temperature	-20 ... +60 °C (-5 ... +140 °F) (ATEX and UKEX approved model) -40 ... +73 °C (-40 ... +163 °F) (CSA/FM approved model)
Storage temperature	-20 ... +60 °C (-5 ... +140 °F)
<b>Design</b>	
Weight <sup>1)</sup>	1.4 kg (3 lb)
Material (enclosure)	Base and lid made of ETFE or PVDF (epoxy fitted joint) <sup>2)</sup>
Process connection	2" NPT [(Taper), ASME B1.20.1], R 2" [(BSPT), EN 10226] or G 2" [(BSPP), EN ISO 228-1]
Degree of protection	IP68
Cable connection	2-core shielded/twisted, 0.519 mm <sup>2</sup> (20 AWG), PVC sheath
Cable (max. length)	365 m (1 200 ft) with RG 62 A/U coaxial cable
<b>Options</b>	
Flange adapter	3" Universal (fits DN 65, PN 10 and 3" ASME)
<b>Certificates and approvals</b>	
CE, UKCA, RCM, KC, CSA Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G T3 (ETFE only); FM Class I, II, Div. 1, Groups C, D, E, F, G T4A; ATEX II 2G Ex mb IIC T5 Gb; UKEX II 2G Ex mb IIC T5 Gb; INMETRO Ex mb IIC T5 Gb	

1) Approximate shipping weight of transducer with standard cable length

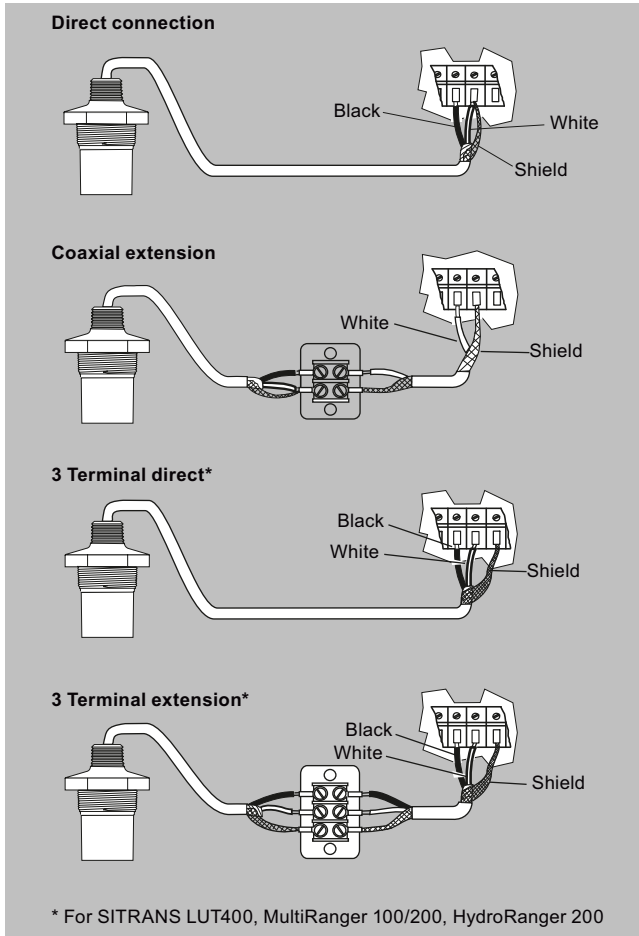
2) When measuring chemicals, check compatibility of ETFE or PVDF and epoxy, or mount joint external to process.

#### Dimensional drawings



ST-H ultrasonic transducer, dimensions in mm (inch)

Circuit diagrams



ST-H ultrasonic transducer connections

## Level Measurement

### Continuous level measurement

#### Ultrasonic / Ultrasonic transducers / EchoMax XRS-5

##### Overview



EchoMax XRS-5 ultrasonic transducer provides reliable, continuous level monitoring of liquids and slurries in narrow lift stations/wet wells, flumes, weirs and filter beds using a beam angle of just 10° and a CSM rubber face.

##### Benefits

- Narrow beam angle of only 10°
- Chemically resistant PVDF copolymer enclosure and CSM rubber face
- Measuring range: 8 m (26 ft) for measurement of liquids and slurries
- Fully submersible: IP68 degree of protection
- Easy installation with 1" NPT or R 1" BSPT connection

##### Application

The XRS-5 is non-contacting with a measuring range from 0.3 to 8 m (1 to 26 ft). Advanced echo processing ensures reliable data even in conditions with obstructions, turbulence, and foam.

The hermetically sealed CSM rubber face and the PVDF copolymer enclosure are designed for maximum resistance to methane, salt water, caustics, and harsh chemicals common to wastewater installations. With an IP68 degree of protection, this rugged sensor is fully submersible in the event of flood conditions. Use a submergence shield if full submergence is possible in the application. A submergence shield will maintain a high level reading output during submerged conditions.

The low-cost XRS-5 transducer is compatible with a full range of Siemens controllers, from a basic system for high/low alarm or simple pump control, up to advanced control systems with communications, telemetry and SCADA integration capabilities.

- Key Applications: wet wells, flumes, weirs, filter beds

### Selection and ordering data

	Article No.								
<b>EchoMax XRS-5 Ultrasonic level transducer</b> Continuous, non-contact, 8 m (26 ft) range, for liquids and slurries.	7ML1106-●●●●0-0●								
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.									
<b>Process connection</b>									
1" NPT [(Taper), ASME B1.20.1]	1								
R 1" [(BSPT), EN 10226]	2								
<b>Cable length</b>									
5 m (16.40 ft)			A						
10 m (32.81 ft)			B						
30 m (98.43 ft)			C						
<b>Facing</b>									
Standard (CSM rubber)					A				
PTFE (flange versions)					B				
<b>Approvals</b>									
CSA Class I, Div. 2, Groups A, B, C, D; CSA Class II, Div. 1, Groups E, F, G; FM Class I, Zone 1, AEx m IIC, T6; FM Class II, III, Div. 1, Groups E, F, G T6; ATEX II 2GD Ex mb IIC T6 Gb, Ta = -20°C to +65°C; ATEX II 2GD Ex tb IIIC T85°C Db; UKEX II 2GD Ex mb IIC T6 Gb, Ta = -20°C to +65°C; UKEX II 2GD Ex tb IIIC T85°C Db; IECEX Ex mb IIC T6 Gb, Ta = -20°C to +65°C; IECEX Ex tb IIIC T85°C Db; INMETRO Ex mb IIC T6 Gb, IP66/IP68, -20°C ≤ Ta ≤ +65°C; INMETRO Ex tb IIIC T85°C Db, IP66/IP68; CE, UKCA, RCM, KC					2				
<b>Mounting flange (flush mount)</b>									
None									A
3" ASME, 150 lb, flat faced									B
4" ASME, 150 lb, flat faced									C
6" ASME, 150 lb, flat faced									D
DN 80, PN 10/16, Type A, flat faced									J
DN 100, PN 10/16, Type A, flat faced									K
DN 150, PN 10/16, Type A, flat faced									L
JIS10K 3B style									Q
JIS10K 4B style									R
JIS10K 6B style									S
Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.									

Selection and Ordering data	Order code
<b>Further designs</b>	
Please add "-Z" to Article No. and specify Order code(s).	
Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text	Y17

Selection and ordering data	Article No.
<b>Accessories</b>	
Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors	7ML1930-1BJ
Submergence shield kit	7ML1830-1BH
Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling	7ML1830-1AQ
Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings	7ML1830-1AX
Easy Aimer 304, NPT with 1" stainless steel coupling	7ML1830-1AU
Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings	7ML1830-1GN
FMS-200 universal box bracket, mounting kit	7ML1830-1BK
FMS-210 channel bracket, wall mount	7ML1830-1BL

## Level Measurement

### Continuous level measurement

#### Ultrasonic / Ultrasonic transducers / EchoMax XRS-5

#### Selection and ordering data (continued)

Selection and ordering data	Article No.
FMS-220 extended channel bracket, wall mount	7ML1830-1BM
FMS-310 channel bracket, floor mount	7ML1830-1BN
FMS-320 extended channel bracket, floor mount	7ML1830-1BP
FMS-350 bridge channel bracket, floor mount (see Mounting Brackets catalog page for more information)	7ML1830-1BQ
1" NPT locknut, plastic	7ML1830-1DS
1" BSP locknut, plastic	7ML1830-1DR
1" BSP locknut, flanged, plastic	7ML1830-1DN
Plastic adapter 1" BSP - 20 mm	7ML1830-1EA
Plastic adapter 1" NPT	7ML1930-1FX
Plastic adapter 1" NPT/M20	7ML1830-1EF
<b>Operating Instructions</b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	

Selection and ordering data	Article No.
<b>EchoMax XRS-5C Ultrasonic level transducer</b> <b>Continuous, non-contact, 8 m (26 ft) range, for liquids and slurries.</b>	7ML1105- ● ● ● ● 1 - 0 ●
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
<b>Process connection</b>	
1" NPT [(Taper), ASME B1.20.1]	1
<b>Cable length</b>	
5 m (16.40 ft)	A
10 m (32.81 ft)	B
30 m (98.43 ft)	C
<b>Facing</b>	
Standard (CSM rubber)	A
PTFE (flange versions)	B
<b>Approvals</b>	
CSA Class I Div. 1, Groups A, B, C, D; Class II Div. 1, Groups E, F, G; Class III	1
<b>Mounting flange (flush mount)</b>	
None	A
3" ASME, 150 lb, flat faced	B
4" ASME, 150 lb, flat faced	C
6" ASME, 150 lb, flat faced	D
Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.	
<b>Operating Instructions</b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	

Selection and Ordering data	Order code
<b>Further designs</b>	
Please add "-Z" to Article No. and specify Order code(s).	
Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text	Y17

Selection and ordering data	Article No.
<b>Accessories</b>	
Submergence shield kit	7ML1830-1BH
Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling	7ML1830-1AQ
Easy Aimer 304, NPT with 1" stainless steel coupling	7ML1830-1AU
FMS-200 universal box bracket, mounting kit	7ML1830-1BK
FMS-210 channel bracket, wall mount	7ML1830-1BL

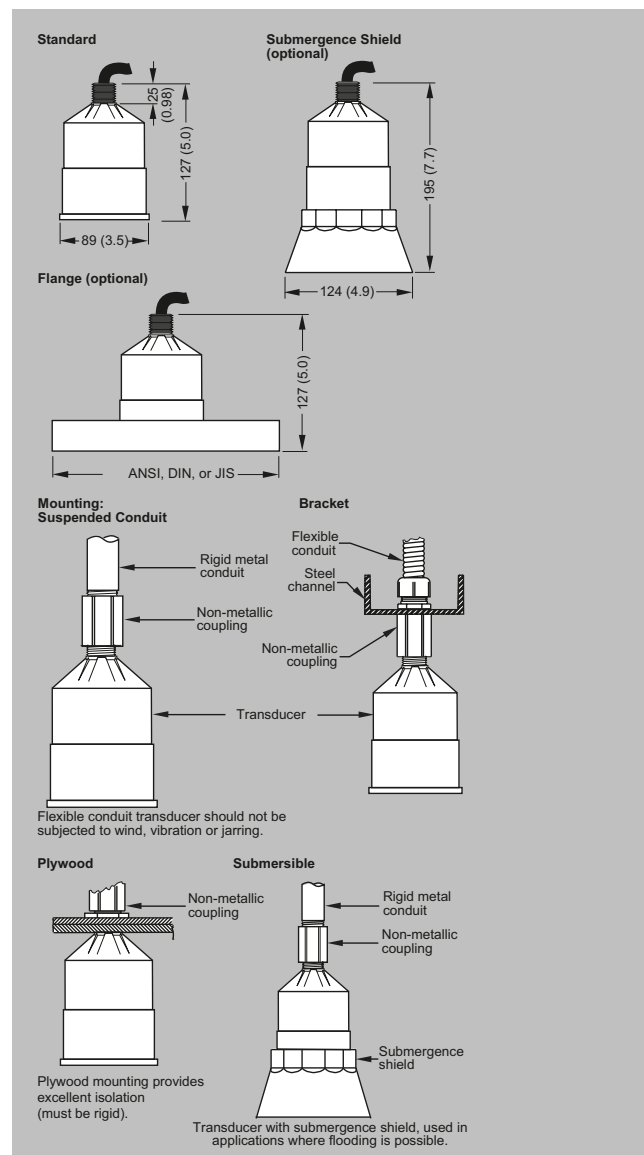
#### Selection and ordering data (continued)

Selection and ordering data	Article No.
FMS-220 extended channel bracket, wall mount	7ML1830-1BM
FMS-310 channel bracket, floor mount	7ML1830-1BN
FMS-320 extended channel bracket, floor mount	7ML1830-1BP
FMS-350 bridge channel bracket, floor mount (see Mounting Brackets catalog page for more information)	7ML1830-1BQ

#### Technical specifications

EchoMax XRS-5	
<b>Mode of operation</b>	
Measuring principle	Ultrasonic transducer
<b>Input</b>	
Measuring range	0.3 ... 8 m (1 ... 26 ft), dependent on application
<b>Output</b>	
Frequency	44 kHz
Beam angle	10°
<b>Accuracy</b>	
Temperature error	Compensated by integral temperature sensor
<b>Rated operating conditions</b>	
Vessel pressure	Normal atmospheric pressure
Ambient Conditions	
• Ambient temperature	-20 ... +65 °C (-4 ... +149 °F)
• Storage temperature	-20 ... +65 °C (-4 ... +149 °F)
<b>Design</b>	
Weight (approximate shipping weight of sensor with standard cable length)	1.2 kg (2.6 lb)
Material (enclosure)	PVDF copolymer enclosure and CSM face
Process connection	1" NPT [(Taper), ANSI/ASME B1.20.1] or R 1" [(BSPT), EN 10226]
Degree of protection	IP65/IP68
Cable connection	2-core shielded/twisted, 0.5 mm <sup>2</sup> (20 AWG), PVC sheath
Cable (max. length)	<ul style="list-style-type: none"> <li>• 365 m (1 200 ft) with RG 62 A/U coaxial cable</li> <li>• 365 m (1 200 ft) with 2-core twisted pair, foil shield, 0.5 mm<sup>2</sup> (20 AWG), PVC sheath, only for MultiRanger 100/200</li> </ul>
<b>Options</b>	
Flange version	Factory flange with PTFE face for ASME, EN or JIS configuration
Submergence shield	For applications with flooding possible
<b>Certificates and approvals</b>	CE, UKCA, RCM, KC CSA Class I, Div. 2, Groups A, B, C, D, Class II, Div. 1 Groups E, F, G FM Class I, Zone 1, AEx m IIC, T6 Class II, III, Div. 1, Groups E, F, G T6 ATEX II 2GD / UKEX II 2GD / IECEx / INMETRO Ex mb IIC T6 Gb, Ex tb IIIC T85°C Db

#### Dimensional drawings



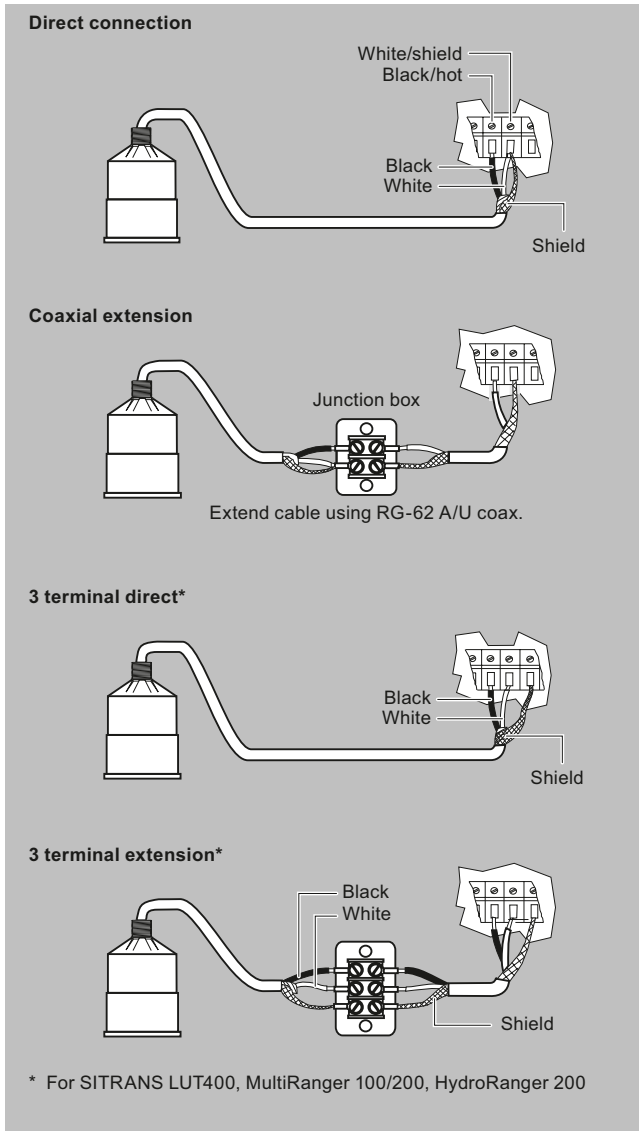
XRS-5 ultrasonic transducer, dimensions in mm (inch)

# Level Measurement

## Continuous level measurement

### Ultrasonic / Ultrasonic transducers / EchoMax XRS-5

#### Circuit diagrams



XRS-5 ultrasonic transducer connections