Installation and Operation Manual

WS007019A

LTU601

FLYGT
a xylem brand

Table of Contents

1 Introduction and Safety

1.1 Introduction

Purpose of the manual

The purpose of this manual is to provide necessary information for installation, operation, and maintenance of the unit.

Read and keep the manual

Save this manual for future reference, and keep it readily available at the location of the unit.

CAUTION:

Read this manual carefully before installing and using the product. Improper use of the product can cause personal injury and damage to property, and may void the warranty.

Intended use

WARNING:

Operating, installing, or maintaining the unit in any way that is not covered in this manual could cause death, serious personal injury, or damage to the equipment and the surroundings. This includes any modification to the equipment or use of parts not provided by Xylem. If there is a question regarding the intended use of the equipment, please contact a Xylem representative before proceeding.

1.2 Safety terminology and symbols

About safety messages

It is extremely important that you read, understand, and follow the safety messages and regulations carefully before handling the product. They are published to help prevent these hazards:

- Personal accidents and health problems
- Damage to the product and its surroundings
- Product malfunction

Hazard levels

Hazard level		Indication
	DANGER:	A hazardous situation which, if not avoided, will result in death or serious injury
	WARNING:	A hazardous situation which, if not avoided, could result in death or serious injury
	CAUTION:	A hazardous situation which, if not avoided, could result in minor or moderate injury

Hazard level	Indication
NOTICE:	Notices are used when there is a risk of equipment damage or decreased performance, but not personal injury.

Special symbols

Some hazard categories have specific symbols, as shown in the following table.

Electrical Hazard	Permanent-magnet hazard
 Electrical Hazard:	 CAUTION:

1.3 User safety

Introduction

All government regulations, local health and safety directives must be observed.

Prevent danger due to electricity

All danger due to electricity must be avoided. Electrical connections must always be carried out in compliance with the following:

- The standard connections shown in the product documentation that is delivered together with the product
- All international, national, state, and local regulations. (For details, consult the regulations of your local electricity supplier.)

For more information about requirements, see sections dealing specifically with electrical connections.

Power lock-out

DANGER: Electrical Hazard

Before starting work on the unit, make sure that the unit and the control panel are isolated from the power supply and cannot be energized. This applies to the control circuit as well.

Qualification of personnel

WARNING: Electrical Hazard

Risk of electrical shock or burn. A certified electrician must supervise all electrical work. Comply with all local codes and regulations.

All work on the product must be carried out by certified electricians or Xylem authorized mechanics.

Xylem disclaims all responsibility for work done by untrained, unauthorized personnel.

1.4 Disposal of packaging and product

Observe the local regulations and codes in force regarding sorted waste disposal.

1.5 Spare parts

CAUTION:

Only use the manufacturer's original spare parts to replace any worn or faulty components. The use of unsuitable spare parts may cause malfunctions, damage, and injuries as well as void the warranty.

1.6 Warranty

For information about warranty, see the sales contract.

1.7 Support

Xylem only supports products that have been tested and approved. Xylem does not support unapproved equipment.

2 Product Description

2.1 General description

The package

The package includes:

- Level transmitter unit sensor
- Cable holder

About the level sensor

The level sensor is designed for submerged measuring of liquid levels in open channels, drains, or tanks.

Operating in both clean, and heavily polluted, viscous fluids, suitable applications include pump stations, sewage plants, waterworks, and industrial process tanks.

Signal output is a standard 4–20 mA direct current, proportional to the measured level.

Features

- Durability and high resistance to grime, deposits, and chemicals due to seamless encapsulated design, and choice of materials
- 2–wire 4–20 mA, passive signal cable with pressure equalizing tubing
- Steel reinforced cable provides tensile strength.
- Cable lengths for the standard measuring ranges: 12 m (39.37 ft) cable for 0–3 m (0–98.4 ft), 0–5 m (0–16.4 ft), and 0–10 m (0–32.8 ft) ranges.

Available languages

For manuals in other languages, visit *http://tpi.xyleminc.com*.

2.2 Approvals and standards

CE conformity

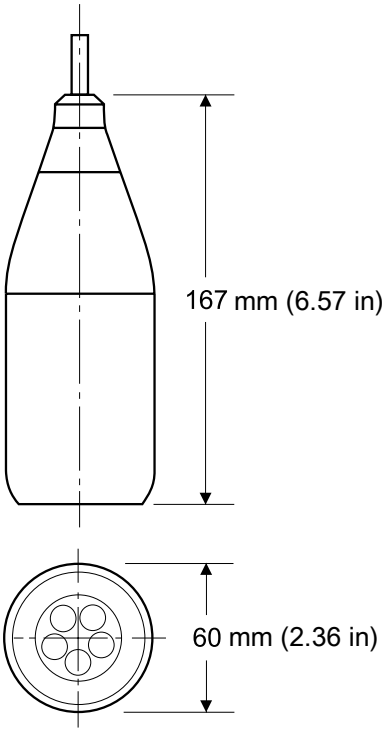
Directive	Description
The EMC directive	In accordance with EN 61000-6-1:1999, EN 61000-6-2:1999, EN 61000-6-3:2001, EN 61000-6-4:2001
Ingress protection rating	IP 68

2.3 Wiring and parts

Wiring

Wire color	Description
Red or white	Power + 10–30 V DC
Brown	Signal/4 - 20 mA
Black	Signal ground/shield (P/E connection)

Sensor body dimensions



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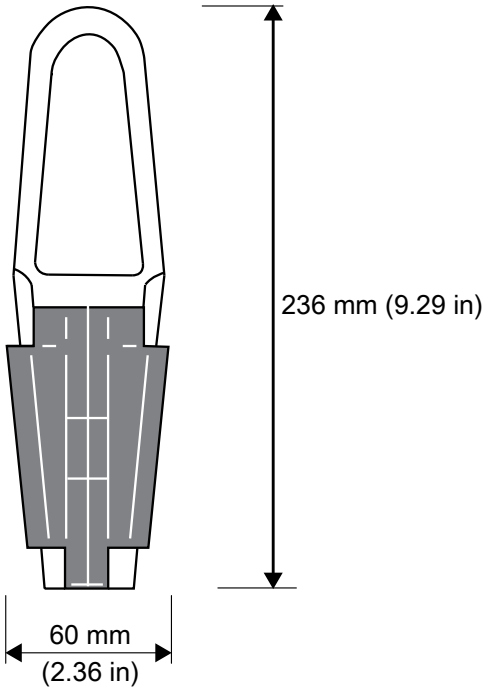
Cable fitting dimensions



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The image shows the dedicated cable fitting for the free-hanging sensor unit.

3 Mechanical Installation

Precautions

Before starting work, make sure that the safety instructions in the chapter *Introduction and Safety* (page 2) have been read and understood.

3.1 Mounting configuration

The level sensor is submersible.

- When it hangs free from the cable with dedicated suspension attachment, it is not position-dependent.[1]

3.2 Mount the unit

1. Lower the sensor carefully into the liquid media so that it penetrates the surface slowly.

   Never drop the sensor into the liquid or allow it to fall freely.
2. Continue lowering the sensor until it reaches its working position, which is at the bottom of its range (≥ 4 mA).

   Do not exceed this depth.
3. Where applicable, secure the sensor to the cable holder.

3.3 Care and handling

The level sensor is of a robust construction through choice of materials and design, making it tolerant of chemical and mechanical damage. However, precautions must be taken to avoid corrosive media, over-pressure, and sharp impact.

Low pH

Acidic conditions in the media, for example pH<4, can reduce the life span of the sensor.

For more information, please contact your local sales and service representative.

Cleaning

If needed, carefully clean the sensor and rinse in a mild detergent.

Mechanical damage

Direct probing of the diaphragm can damage the sensor, voiding the warranty.

Never allow the sensor to fall into the liquid, or deliberately drop it into the liquid.

[1] In case of turbulence, the sensor can be immersed in a pipe, with inside diameter minimum 65 mm (2.56 in)

4 Electrical Installation

Precautions

Before starting work, make sure that the safety instructions in the chapter *Introduction and Safety* (page 2) have been read and understood.

DANGER: Electrical Hazard

Before starting work on the unit, make sure that the unit and the control panel are isolated from the power supply and cannot be energized. This applies to the control circuit as well.

DANGER: Electrical Hazard

All electrical equipment must be grounded (earthed). Test the ground (earth) lead to verify that it is connected correctly. Frequently inspect electrical systems to ensure that the path to ground is continuous.

WARNING: Electrical Hazard

Risk of electrical shock or burn. A certified electrician must supervise all electrical work. Comply with all local codes and regulations.

WARNING: Electrical Hazard

There is a risk of electrical shock or explosion if the electrical connections are not correctly carried out, or if there is fault or damage on the product. Visually inspect equipment for damaged cables, cracked casings or other signs of damage. Make sure that electrical connections have been correctly made.

CAUTION: Electrical Hazard

Prevent cables from becoming sharply bent or damaged.

4.1 Connect the sensor

The sensor is connected to the 4–20 mA input.

1. Connect the red or white wire to the power + 10–30 V DC terminal.
2. Connect the brown wire to the signal/4– 20 mA terminal.
3. Connect the black wire to the signal ground/shield terminal (P/E connection).

4.2 Increase the cable length

When the supplied cable length is insufficient, observe the following:

- Due to the pressure equalization hose in the cable, it cannot be spliced directly to another cable. Instead, use the junction box for this purpose (Part number 839505).
- Use a shielded cable, to safe guard against electrical disturbance. Signal cables must never be run in the proximity of power cables.

5 Technical Reference

5.1 Technical data

Electrical specifications

Feature	Description
Measuring principle	Piezoresistive
Supply voltage	10–30 V DC
Output signal	2–wire 4–20 mA, passive transmitter
Linearity / Stability	Better than ± 0.5% FS / ± 0.1% FS
Measurement accuracy	Better than ± 0.25% FS @ 10–30 °C (50–86 °F) Better than ± 0.5% FS @ full temperature range
Long time stability	Better than ± 0.5% FS per year

Temperature specifications

Feature	Description
Process medium temperature	Nominal -10–60°C (14–140°F)
Temperature deviation, zero point	Better than ± 0.02% / °C
Temperature deviation, full range	Better than ± 0.02% / °C

Materials specifications, standard

Component	Description
Sensor body, including plastic encapsulation	Stainless steel 1.4404 AISI 316 L, Polypropylene (PPS)
Diaphragm	Stainless steel 1.4404 AISI 316 L
Cable	2 x 0.5 mm (0.078 x 0.02 in) (pressure), 5 x 0.15 mm (0.19 x 0.006 in) (data), shielded, Polyurethane rubber (PUR)

5.2 Sensor variants

Measuring ranges specifications

To order, refer to the part numbers listed.

Nominal measuring range, mWG	0–2 m (0–6.56 ft)	0–3 m (0–9.84 ft)	0–5 m (0–16.4 ft)	0–10 m (0–32.81 ft)
Part number; For free hanging mounting, 6 m (19.68 ft)cable	–	834525	–	–
Part number; For free hanging mounting, 12 m (39.37 ft)cable	–	834521	834522	834523
Part number; For free hanging mounting, 20 m (65.61 ft)cable	840033	–	834537	834538
Part number; For free hanging mounting, 35 m (114.83 ft)cable	840034	–	–	–
Part number; For free hanging mounting, 65 m (213.25 ft)cable	840035	–	–	–
Part number; With threaded connection for pipe mounting, 12 m (39.37 ft)cable	–	834527	834528	834529

- Minimum programmable range 0–2 m (0–6.56 ft)
- Maximum programmable range 0–12 m (0–39.37 ft)
- Maximum overpressure 3 bar

Optional part numbers

Part number	Option
834526	Copper ring
Unique part number per order	Non-standard cable lengths
Unique part number per order	Non-standard measuring range

Accessories and spare parts

Part number	
834530	Operator panel, for level indication
839505	Junction box, for cable with pressure equalization hose, including surge arrester
Unique part number per order	Cable (spare)
832174	Cable holder (spare)

Xylem |'zīləm|

1) The tissue in plants that brings water upward from the roots
2) A leading global water technology company

We're a global team unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to xyleminc.com

Refer to www.xylemwatersolutions.com/contacts/ for contact details of your local sales and service representative.

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The original instruction is in English. All non-English instructions are translations of the original instruction.

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