

Installation, Operation
and Maintenance
Manual



Flygt ENM 10 Level regulator

FLYGT
a xylem brand

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Introduction

Purpose of this manual

The purpose of this manual is to provide necessary information for:

- Installation
- Operation
- Maintenance



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.

NOTICE:

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

Inspect the delivery

Inspect the package

1. Inspect the package for damaged or missing items upon delivery
2. Note any damaged or missing items on the receipt and freight bill
3. File a claim with the shipping company if anything is out of order.
If the product has been picked up at a distributor, make a claim directly to the distributor

Inspect the unit

1. Remove packing materials from the product. Dispose of all packing materials in accordance with local regulations
2. Inspect the product to determine if any parts have been damaged or are missing
3. If applicable, unfasten the product by removing any screws, bolts, or straps. For your personal safety, be careful when you handle nails and straps
4. Contact your sales representative if anything is out of order

Product warranty

Coverage

Xylem undertakes to remedy faults in products from Xylem under these conditions:

- The faults are due to defects in design, materials, or workmanship
- The faults are reported to an Xylem representative within the warranty period
- The product is used only under the conditions described in this manual
- The monitoring equipment incorporated in the product is correctly connected and in use
- All service and repair work is done by Xylem-authorized personnel
- Genuine Xylem parts are used
- Only Ex-approved spare parts and accessories authorized by Xylem are used in Ex-approved products

Limitations

The warranty does not cover faults caused by these situations:

- Deficient maintenance
- Improper installation
- Modifications or changes to the product and installation made without consulting Xylem
- Incorrectly executed repair work
- Normal wear and tear

Xylem assumes no liability for these situations:

- Bodily injuries
- Material damages
- Economic losses

Warranty claim

Xylem products are high-quality products with expected reliable operation and long life. However, should the need arise for a warranty claim, then contact your Xylem representative.

Safety



WARNING:

- The operator must be aware of safety precautions to prevent physical injury
- Operating or installing the unit in any way that is not covered in this manual could cause death, serious personal injury, or damage to the equipment. 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 an Xylem representative before proceeding
- Do not change the service application without the approval of an authorized Xylem representative



CAUTION:

You must observe the instructions for installation, operation, and maintenance contained in this manual. Failure to do so could result in physical injury, damage, or delays.




Safety message levels


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
- Product malfunction

Definitions

Safety message level	Indication
 <p>DANGER:</p>	A hazardous situation which, if not avoided, will result in death or serious injury
 <p>WARNING:</p>	A hazardous situation which, if not avoided, could result in death or serious injury
 <p>CAUTION:</p>	A hazardous situation which, if not avoided, could result in minor or moderate injury

Safety message level	Indication
 <p>Electrical Hazard:</p>	The possibility of electrical risks if instructions are not followed in a proper manner
NOTICE:	<p>A potential situation which, if not avoided, could result in undesirable conditions</p> <p>A practice not related to personal injury</p>

User safety

General safety rules

These safety rules apply:

- Always keep the work area clean
- Pay attention to the risks presented by gas and vapors in the work area
- Avoid all electrical dangers. Pay attention to the risks of electric shock or arc flash hazards
- Always bear in mind the risk of drowning, electrical accidents, and burn injuries

Electrical connections

Electrical connections must be made by certified electricians in compliance with all international, national, state, and local regulations. For more information about requirements, see sections dealing specifically with electrical connections.

Hazardous liquids

The product is designed for use in liquids that can be hazardous to your health. Observe these rules when you work with the product:

- Make sure that all personnel who work with sewage systems are vaccinated against diseases to which they may be exposed
- Observe strict personal cleanliness

Wash the skin and eyes

Do the following if chemicals or hazardous fluids have come into contact with your eyes or your skin:

If you need to wash your...	Then...
Eyes	<ul style="list-style-type: none"> • Hold your eyelids apart forcibly with your fingers • Rinse the eyes with eyewash or running water for at least 15 minutes • Seek medical attention
Skin	<ul style="list-style-type: none"> • Remove contaminated clothing • Wash the skin with soap and water for at least one minute • Seek medical attention, if required

Ex-approved products

Follow these special handling instructions if you have an Ex-approved unit.

Personnel requirements

These are the personnel requirements for Ex-approved products in potentially explosive atmospheres:

- All work on the product must be carried out by certified electricians and Xylem-authorized mechanics. Special rules apply to installations in explosive atmospheres
- All users must know about the risks of electric current and the chemical and physical characteristics of the gas, the vapor, or both present in hazardous areas
- Any maintenance for Ex-approved products must conform to international and national standards (including IEC/EN 60079-17).

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

Product and product handling requirements

These are the product and product handling requirements for Ex-approved products in potentially explosive atmospheres:

- Before you start work on the product, make sure that the product and the control panel are isolated from the power supply and the control circuit, so they cannot be energized
- Do not open the product while it is energized or in an explosive gas atmosphere
- Intrinsically safe circuits are normally required for the automatic level-control system by the level regulator if mounted in zone 0
- Do not modify the equipment without approval from an authorized Xylem representative
- Only use parts that are provided by an authorized Xylem representative

Environmental safety

The work area

Always keep the station clean to avoid and/or discover emissions.

Recycling guidelines

Always recycle according to these guidelines:

- Follow local laws and regulations regarding recycling if the unit or parts are accepted by an authorized recycling company
- If the first guideline is not applicable, then return the unit or parts to your Xylem representative

Waste and emissions regulations

Observe these safety regulations regarding waste and emissions:

- Appropriately dispose of all waste
- Handle and dispose of the processed liquid in compliance with applicable environmental regulations
- Clean up all spills in accordance with safety and environmental procedures
- Report all environmental emissions to the appropriate authorities

Electrical installation

For electrical installation recycling requirements, consult your local electric utility.

Electrical Data

Country	Electrical Data
Canada	5 A, 250 V, DC 10 A, 250 V AC
Denmark	10 A, 250 V, AC

Country	Electrical Data
Switzerland	6 A, 250 V, AC
Sweden	10 A, 230 V, AC Resistive load 3A, 250 V, AC Inductive load 5 A, 30 V, DC Resistive load *1 mA, 5 V, DC, Gold Contact

* Part no: 594 79 19 & 594 79 20

Safety data for EX approved installation

Maximum input voltage, U_i :	30 V
Maximum input current, I_i :	100 mA
Maximum input power, P_i :	1.2 W
Depth of immersion:	Max 20 m
For cable length 20 m:	
Maximum internal capacitance, C_i :	1.8 nF
Maximum internal inductance, L_i :	10 μ H

Approvals

CE, CSA, SEMKO, NEMKO, DEMKO, EX

LVD approval according to EN61058

CSA approval: Cert no. 1330172

CL.I Zone 0, Gr. IIC;

CL.I Div.1 Gr A, B, C&D

CL.II Gr. E, F&G

CL.III when installed to the certified Intrinsically Safe relay, Ex ia, rated for the locations per submitter control drawing and installation manual.

Ex approval:

IECEX ia IIC T4 Ga: $-20^{\circ}\text{C} < \text{Ta} < 60^{\circ}\text{C}$

IECEX NEMKO 09.008

ATEX II 1G ia IIC T4

NEMKO 10ATEX 1082

The applied standards are:

EN 60079-0:2009/IEC 60079-0:2007

EN 60079-11:2007/IEC 60079-0:2006

EN 60079-26:2007/IEC 60079-26:2006

Intrinsically safe circuits are required for the automatic control system. - Use a EX-safety barrier (e.g. Prod. no. 84 01 07).



Product Description

Overview

The simplest possible method for level control! A mechanical switch in a plastic casing, freely suspended at the desired height from its own cable. When the liquid level reaches the regulator, the casing will tilt and the mechanical switch will close or break the circuit, thereby starting or stopping a pump or actuating an alarm device. No wear, no maintenance! In sewage pumping stations, for ground water and drainage pumping – in fact, for most level control applications – the ENM-10 is the ideal solution.

The regulator casing is made of polypropylene and the cable is sheathed with a special PVC or Nitrile/PVC rubber compound. The plastic components are welded and screwed together. Adhesive is never used. Impurities and deposits will not adhere to the smooth casing.

The version for Ex-applications has a black casing, made conductive by adding carbon to the polypropylene.

The level regulator contains a micro switch, max rated 250 VAC/10 A.

NOTICE:

In many cases, local codes require that the regulator be connected to a low-voltage supply, even though it is approved for a higher voltage.

Xylem recommends that the regulator be connected to a low-voltage supply, 48 or 24 V, and a protective transformer.

Special rules apply to installation in an explosive atmosphere. Intrinsically safe circuits are normally required (Ex i). Use a EX-safety barrier (e.g. Prod. no. 84 01 07).

The ENM-10 is available in different versions for different liquid densities.

As standard, the regulator can be obtained with 6, 13, 20, 30 or 50 metres (20, 42, 65, 100 or 167 feet) of cable for liquids with specific density between 0.95 and 1.10 g/cm³; for other specific densities.

For the Ex-version, the regulator is only available with 20 metres (65 ft) of Nitrile/PVC rubber cable.

The regulator can withstand up to 60°C (140°F).

The guarantee does not cover faults caused by deficient maintenance, improper installation, incorrectly executed repair work or normal wear and tear.

Xylem assumes no liability for either bodily injuries, material damages or economic losses.

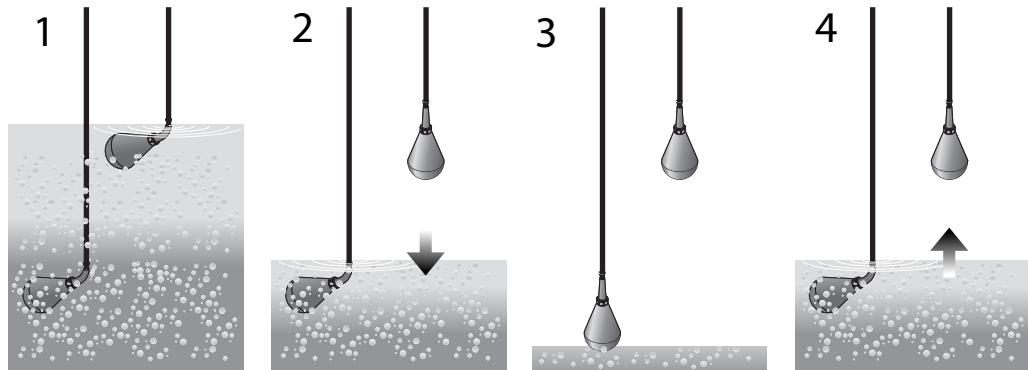
Product coverage

This manual cover the standard version "Blue casing" of ENM-10.

Product coverage

This manual cover the EX-version "Black casing" of ENM-10.

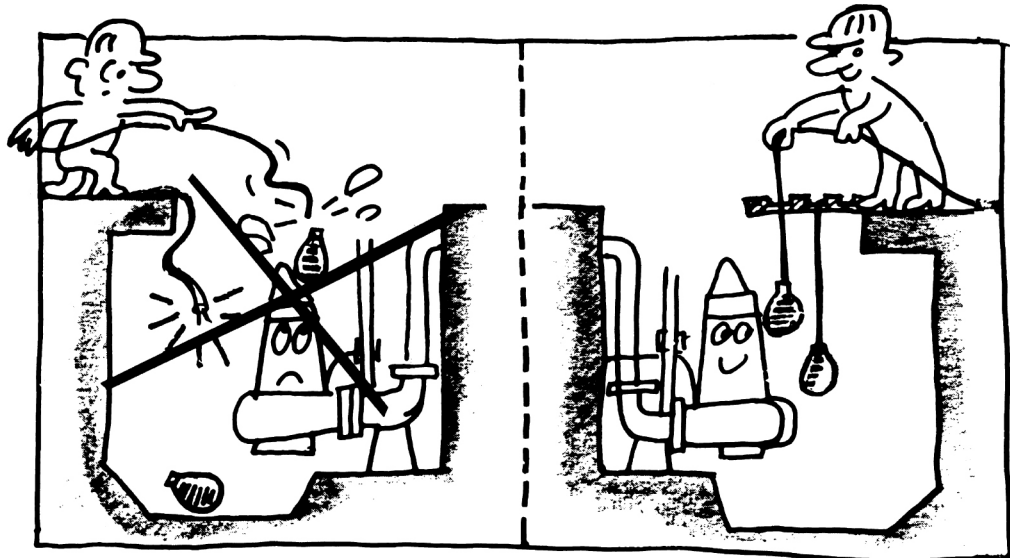
Functional Description



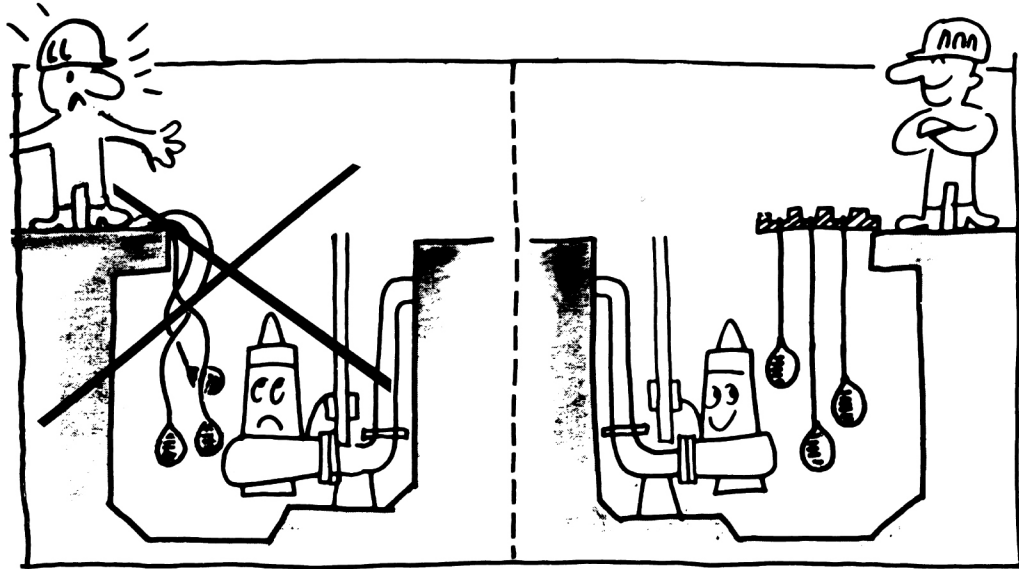
1. When the pumped media reaches a predetermined level, the upper level regulator tips over to horizontal position and the pump starts draining the basin.
2. The basin is drained of fluid.
3. The pump stops when the lower level regulator returns to the vertical position.
4. The basin starts filling up again, and the process starts all over again.

Installation

Avoid damage the level regulator during installation



Do not cross the level regulator cables during installation



Level Regulator

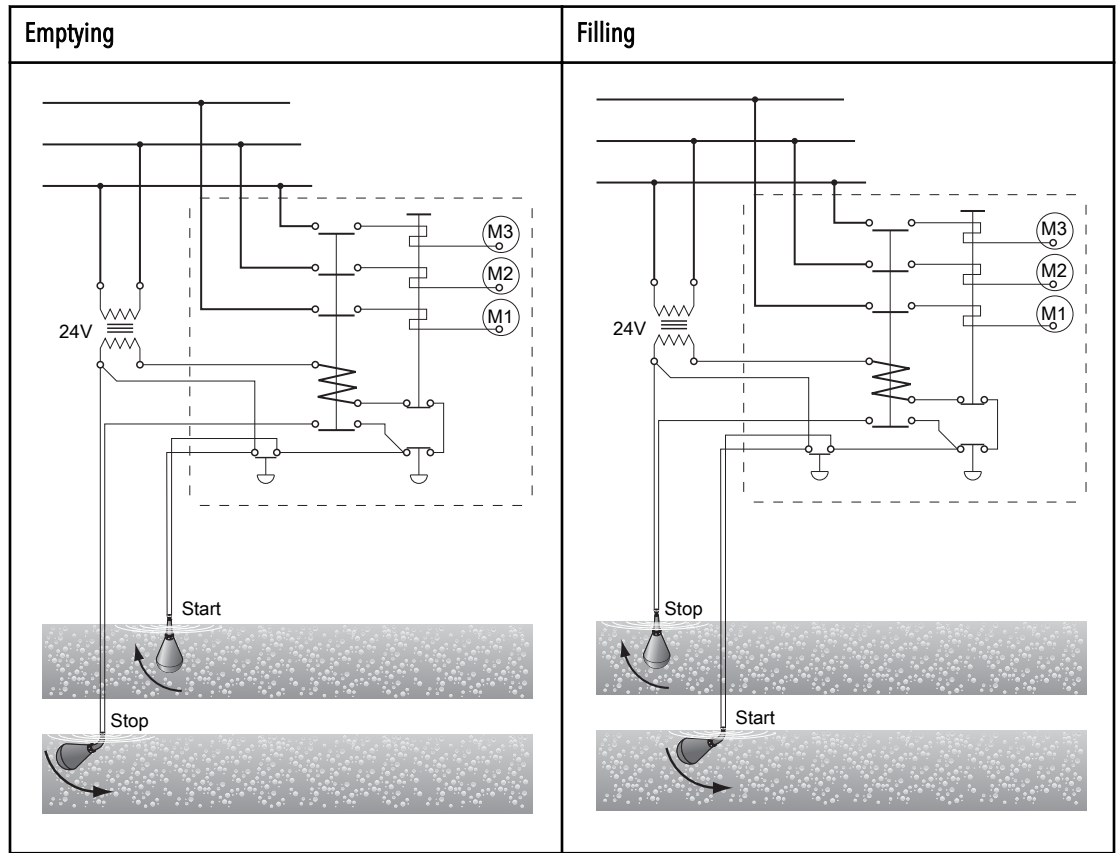
Connection illustration

To conform to local regulations, the level regulators are normally connected through a transformer to a low-tension control circuit.

Two regulators are used; one for starting and one for stopping.

A third regulator can be connected if an alarm is required at a given level.

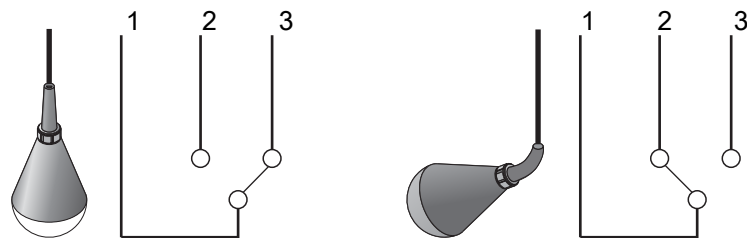
Identical regulators can be used for all functions.



Connection table

Cable	1	2	3
Color	EU, Grey US, Red	Black	EU, Brown US, White
Connections for emptying a sump	X	X	Insulate
Connections for filling a tank	X	Insulate	X

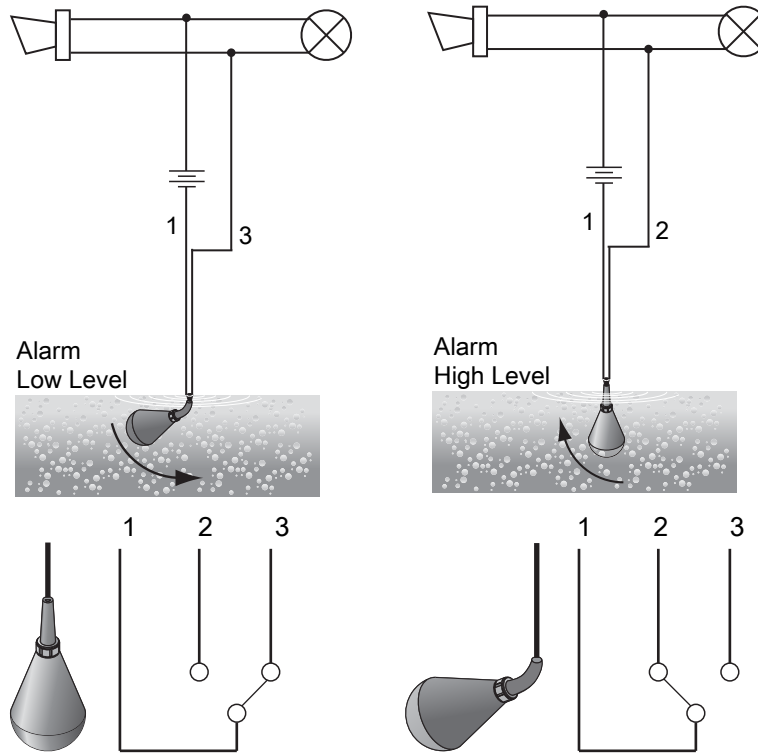
Cable colors



See table above to identify related cable colors.

Connection of Level Regulator for Audible or Visible Alarm

Connection illustration



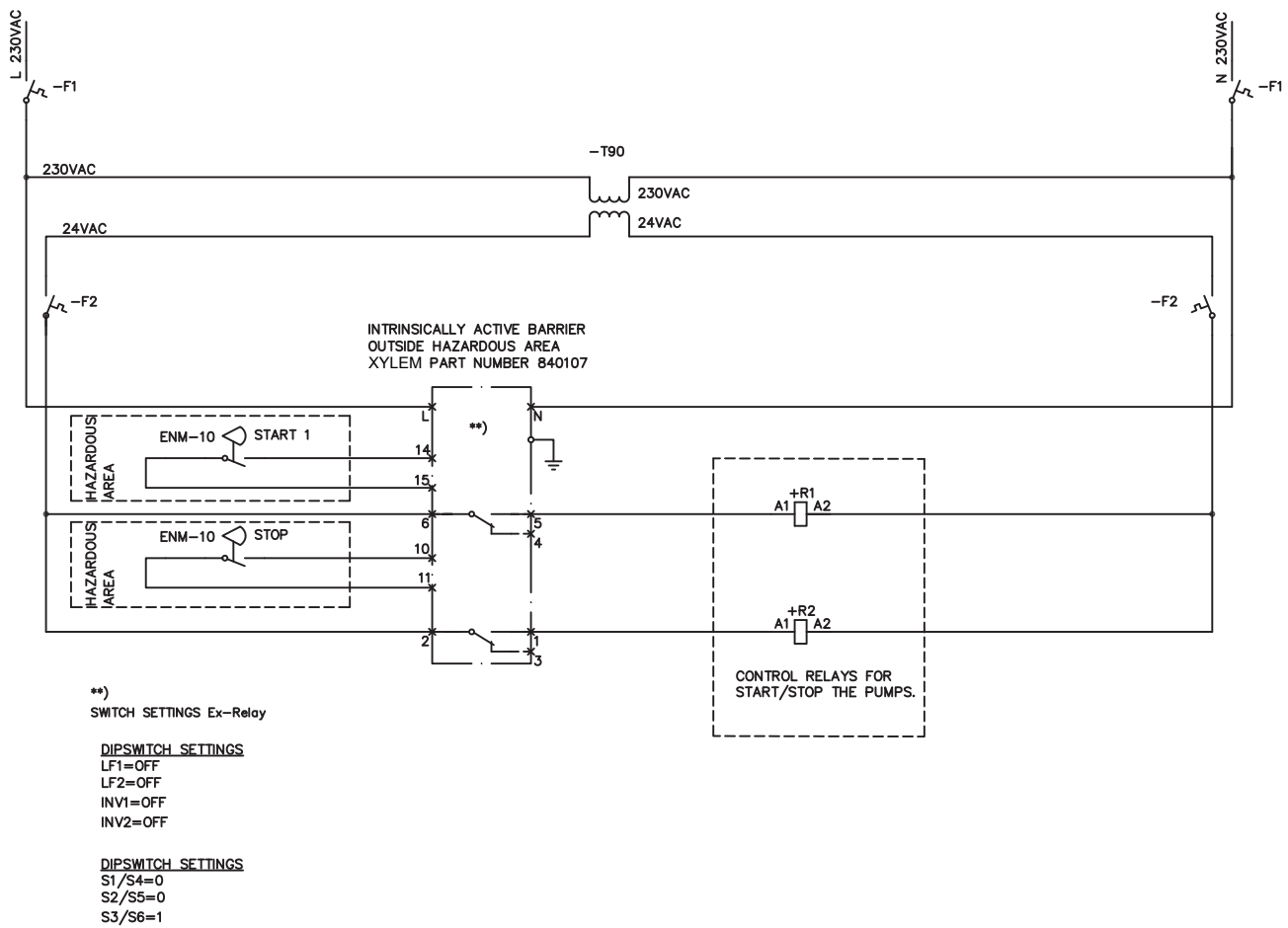
Connection table

Cable	1	2	3
Color	EU, Grey US, Red	Black	EU, Brown US, White
Alarm high level	X	X	Insulate
Alarm low level	X	Insulate	X

Ex Installation

NOTICE:

Intrinsically safe circuits are required for the automatic control system. EX-safety barrier (that is Prod. no. 84 01 07) must be installed!



Maintenance

ENM-10 is very durable and practically maintenance free. You only have to check on it occasionally, to ensure its continual operation.

- It is recommended to occasionally clean ENM-10, and especially when fat/grease covers the plastic surface
- At the same time, make an ocular inspection of the regulator to make sure neither cable, protective sleeve or plastic casing show any signs of damage
- A damaged ENM-10 cannot be repaired in any way, due to the hermetic encapsulation. If the unit is found to be damaged, replace it with a new one
- It is recommended to occasionally clean ENM-10, and especially when fat/grease covers the plastic surface
- At the same time, make an ocular inspection of the regulator to make sure neither cable, protective sleeve or plastic casing show any signs of damage
- A damaged ENM-10 cannot be repaired in any way, due to the hermetic encapsulation. If the unit is found to be damaged, replace it with a new one
- For Ex-installations/Ex-ENM-10, also make absolutely sure that the Ex-barrier is operating correctly
- - The LED changes when the switch is toggled

Available languages

<http://tpi.xyleminc.com>

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: يلائلنا ناونعلا نم ةيبرعلا ةغللاب ليمحتلل ةرفوتم اضريأ وه ليلا اذه

Xylem |'zīləm|

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

We're 12,000 people 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.

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

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