Product Data Sheet
January 2017
BP2462, Rev AA

Mobrey™ Hydratect 2462

Steam/Water Detection System

FM

- High reliability system for water detection in steam lines
- **SIL 3** certified to IEC 61508 as required by IEC 61511
- Commonly used on steam drums, drain pots, or for steam Turbine Water Induction Protection (TWIP).
- Electrodes for use up to 1040 °F (560 °C) and 4350 PSI (300 bar)
- Relay outputs in varying options, for status and fault alarms

EMERSON

Hydratect 2462 Steam / Water Detection System

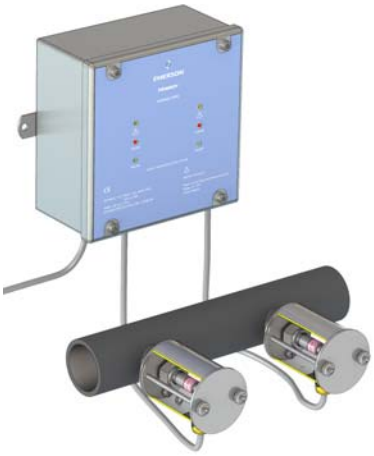
The Hydratect electronic water and steam detection system is designed as an electronic alternative to conventional water level switches for steam raising plant. It can be used in a wide variety of situations wherever the detection of water or steam is vital for safe and efficient plant operation.

The Hydratect 2462 control unit provides signal processing for two electrodes. Each channel monitors the status of its associated electrode. Four conductors are used between the control unit and each electrode so it can differentiate between steam, water, short-circuit and open-circuit. A green LED indicates water, a red LED indicates steam, and an amber LED indicates a fault condition. Each channel has a status relay to indicate water or steam, and a fault relay which will de-energize on a fault condition. The two channels are completely independent having separate power supplies, signal processing and fault detection. The relay outputs can be externally wired for a 'one out of two' or 'two out of two' tripping scheme.

Hydratect control unit

'The Hydratect 2462 is **SIL 3** certified when both channels are identically configured and wired for 'one out of two voting'. Each channel is SIL 2 certified if used independently.

A Hydratect 2462 system consists of electrodes which are fitted into inserts which are welded into the pipe work. Alternatively, manifolds can be supplied to drawing with inserts already in place. Electrodes are protected by covers. A military specification high temperature cable connects each electrode to the Hydratect control unit.



A Hydratect installation

A single Hydratect 2462 system is comprised of:

- A single 2462 control unit
- Two electrode inserts, or alternatively a manifold
- Two high temperature electrodes
- Two electrode cables
- Two electrode covers

Electrodes are comprised of exotic materials braised with specialized ceramic insulators. They can withstand temperatures and pressures far above those of more conventional technologies.

The Hydratect 2462 is designed for:

- Fault tolerance
- Fail-safe operation
- Fully validated trips
- Detection of electrode contamination
- Detection of open circuit electrode connections

Electrode

The highest standards of reliability are achieved by using a combination of error detection, triple redundancy of some components, and a fail safe design. Threshold levels used to differentiate between steam, water and electrode contamination are configurable for use with different water qualities, and 'wet steam' which occurs at lower temperatures.

Typical applications are high and low level alarms and trips on steam drums, feed heaters, de-aerators, condensate pots etc, and turbine water induction prevention system (TWIP) on steam lines.

Contents

Hydratect 2462 Ordering Information

A Hydratect 2462 steam/water detection system comprises:-

- Control unit (see Table 1 on page 3)
- Two electrodes, two shrouded inserts, and two covers (see Table 2 on page 3)
- Anti Seize compound for electrode installation (see Table 2 on page 3)
- Two electrode cables (see Table 3 on page 4)
- Manifold, if user is not mounting electrodes in own manifold or pipework (see Table 3 on page 4)

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See page 5 for more information on Material Selection.

Table 1. Hydratect Control Unit Ordering Information

Model	Product Description
2462	Hydratect control unit
Power Supply and Input Boards	
A	2 point level switch, ac mains, single pole single throw relay outputs
C	2 point level switch, 24 Vdc, single pole single throw relay outputs
E	2 point level switch, ac mains, two pole changeover relay outputs
Typical Model Number: 2462A	

Options (include with the selected model number)

Safety certifications	
QT	Safety certificate to IEC 61508
Typical Model Number: 2462AQT	

Table 2. Hydratect Electrodes, Shrouded Inserts, and Covers Ordering information

Model	Product Description				
Electrodes[1]			**Max Pressure PSI (Bar)**	**Max Temp. °F (°C)**	**pH Range**
246785A	Hydratect union electrode (series III). ZTA insulator. 7/8-in. thread.		4350 (300)	1040 (560)	7 to 11
246785Z	Hydratect union electrode (series III). Zirconia insulator. 7/8-in. thread.		3045 (210)	698 (370)	7 to 11
Anti Seize Compound					
830007220	Thread Lubricant (1 fl oz)				
Shrouded Inserts[2][3][4]					
24673540B	Series III insert, 7/8-in. thread, SS 316 (300 bar, 560 °C)				
Cover					
24670118A	Series III cover				
Manifolds: In-line or side-arm manifolds with up to 4 ports, suitable for conditions up to 141 bar and 400 °C, are available to special order. Ask a local sales office for a manifold design sheet.					

1. Two electrodes of the same type are required for a Hydratect system. Do not mix electrode types.
2. Two shrouded inserts and two covers are required for a Hydratect system.
3. Minimum pipe internal diameter for installation of insert is 1.5-in. (38mm).
4. Options for insert materials available on request.

Table 3. Hydratect Electrode Cables Ordering Information

Model	Product Description
24620204A(1)	10 ft. (3 m) multicore electrode cable
24620205A(1)	33 ft. (10 m) multicore electrode cable
24620206A(1)	60 ft. (18 m) multicore electrode cable
24620207A(1)	98 ft. (30 m) multicore electrode cable

1. One cable is required for each electrode.

Specifications

Material selection

Emerson™ provides a variety of products with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options and components for the particular application. Emerson Process Management is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

Hydratect 2462 specification

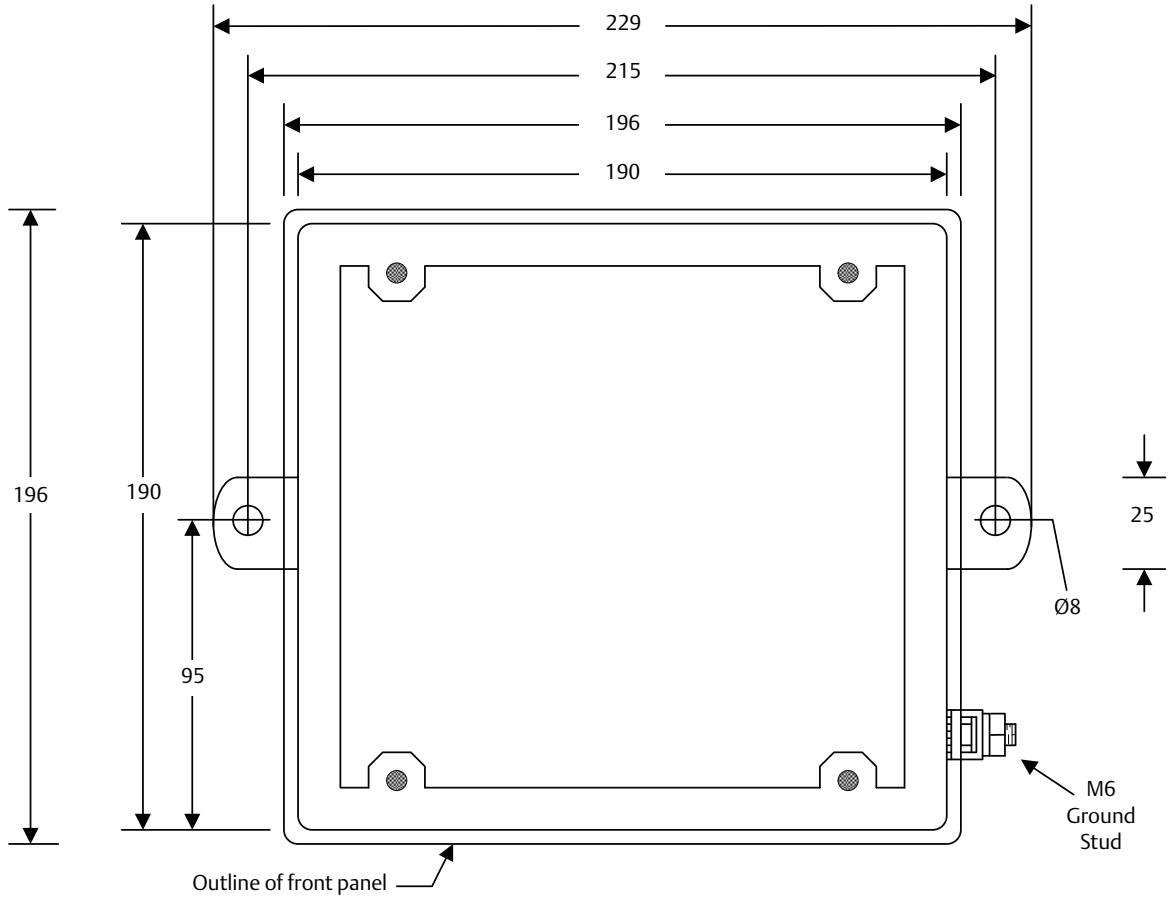
General	
Product	Hydratect 2462 steam/water detection system
Electrode Channels	2 (See Table 2 on page 3 for Hydratect electrode specifications)
Water/Steam Threshold	0,6 µS/cm (normal) or 1,6 µS/cm (alternate) depending on water purity
Display	
Integral display	One Red LED for indication of steam One Green LED for indication of water One Amber LED for indication of fault
Electrical	
Power supply	Power supply (ac): 94 to 130 V or 187 to 256 V, 48 Hz to 65 Hz, 2 x 10 VA maximum Power supply (dc):2 x 200mA' maximum with '2 x 10W' maximum Power supply (dc): 20 to 60V, 2 x 10W maximum
Status relay output (One per channel)	Water normal: Energized in water Steam normal: Energized in steam Separate normally open and normally closed contacts: • Maximum voltage: 250 Vac, 125 Vdc • Maximum current: 8 A • Maximum Switching Power (ac): 1500 VA • Maximum Switching Power (dc): 240 W < 30 V, 65 W < 60 V, 25 W < 125 V
Fault relay output (One per channel)	Energized during normal operation (fail-safe). *Specification as status relay output above*
Mechanical	
Enclosure	Stainless steel, grade 304, wall mounting (two point) Finish - natural IP65 / NEMA4X 7.5 in. x 7.5 in. x 3.5 in. (190 mm x 190 mm x 90 mm)
Weight	6.2 lb (2.8 kg)
Environment	
Operating Temperature	–4 to 158 °F (–20 to 70 °C)
Operating Pressure	Manifolds are available with 1 to 4 electrode ports. Various materials depending on required pressure and temperature rating. Design sheets are available on request.
	See Table 2 on page 3 for the Hydratect electrode specifications
Relative Humidity	Up to 100%
Approvals	
FM	Approved for steam-system water detection

LVD	EN 61010-1
Pressure Equipment Directive	Safety accessory
Electromagnetic Compatibility	EN 61326-1

Dimensional Drawings

Hydratect enclosure

Dimensions are in mm.



Overall depth = 100 mm (case and panel) + 3 mm (bracket) + 4.5 mm (bolt heads and washers)

Global Headquarters

Emerson Automation Solutions
6021 Innovation Blvd.
Shakopee, MN 55379, USA
+1 800 999 9307 or +1 952 906 8888
+1 952 949 7001
RFQ.RMD-RCC@Emerson.com

North America Regional Office

Emerson Automation Solutions
8200 Market Blvd.
Chanhassen, MN 55317, USA
+1 800 999 9307 or +1 952 906 8888
+1 952 949 7001
RMT-NA.RCCRFQ@Emerson.com

Latin America Regional Office

Emerson Automation Solutions
1300 Concord Terrace, Suite 400
Sunrise, FL 33323, USA
+1 954 846 5030
+1 954 846 5121
RFQ.RMD-RCC@Emerson.com

Europe Regional Office

Emerson Automation Solutions Europe GmbH
Neuhofstrasse 19a P.O. Box 1046
CH 6340 Baar
Switzerland
+41 (0) 41 768 6111
+41 (0) 41 768 6300
RFQ.RMD-RCC@Emerson.com

Asia Pacific Regional Office

Emerson Automation Solutions Asia Pacific Pte Ltd
1 Pandan Crescent
Singapore 128461
+65 6777 8211
+65 6777 0947
Enquiries@AP.Emerson.com

Middle East and Africa Regional Office

Emerson Automation Solutions
Emerson FZE P.O. Box 17033,
Jebel Ali Free Zone - South 2
Dubai, United Arab Emirates
+971 4 8118100
+971 4 8865465
RFQ.RMTMEA@Emerson.com

Linkedin.com/company/Emerson-Automation-Solutions

Twitter.com/Rosemount_News

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Youtube.com/user/RosemountMeasurement

Google.com/+RosemountMeasurement