

RMA 3000 Remote Meter Assemblies Specifications

34-ST-03-81 June 2012



Introduction

Overview

The Remote Meter Assembly RMA 3000 functions as an output and status indicator for a compatible Honeywell Smartline Transmitter or as an output indicator for a non-Honeywell transmitter operating in a 4-20mA current loop. The RMA 3000 consists of a meter mounted in an aluminum explosion-proof housing with several protective paint styles available.

Four meter types are available for mounting in the RMA 3000 housing:

- the **Smart Meter (SM)**,
- the **Digital Meter (DM)**,
- the **Analog Meter (ME)**, and
- the **Engineering Unit Display Meter (EU)**

The **Smart Meter SM** can be used to display either output in % or engineering units appropriate to the transmitter depending on the transmitter type and configuration. The SM can be used with any one of the following Smartline Transmitters in either analog or DE mode: ST 3000 Smart Pressure Transmitter, or the STT 3000 Smart Temperature Transmitter

The **Digital Meter DM** is used exclusively with Honeywell transmitters operating in the DE (Digital Enhanced) mode. The DM features a fan style 25 segment bargraph with digital indication and status displays. The DM digital indicator gives precise output of the transmitter from -199.9 to +199.9% of transmitter range. Engineering units are not available on the DM.

The **Analog Meter ME** is used with analog output transmitters to give % output using a needle-type meter movement.

The **Engineering Units Meter EU** provides digital display of temperature, pressure, level, flow, or other measurements in real Engineering Units. This meter provides a universal solution for 4-20mA measurement displays by converting any 4-20mA signal into an LCD digital display in the preferred engineering units.

The EU Display Meter is available for remote-mount field use or can be integrally mounted in the STT250 Temperature Transmitters or in the STT250 Model STT25H with the HART™ protocol.



SM



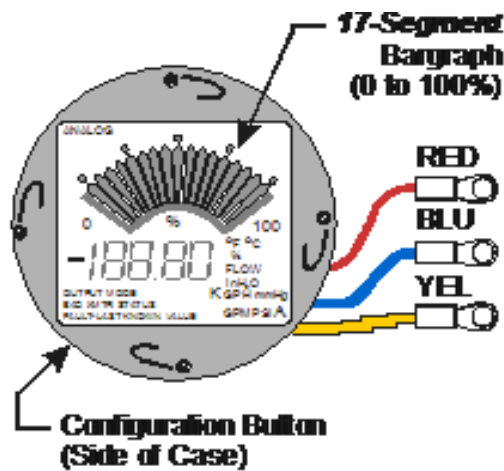
DM



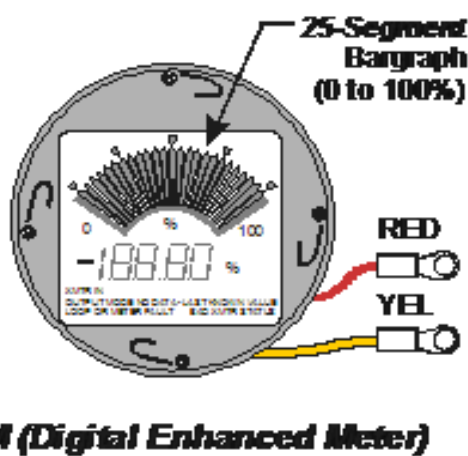
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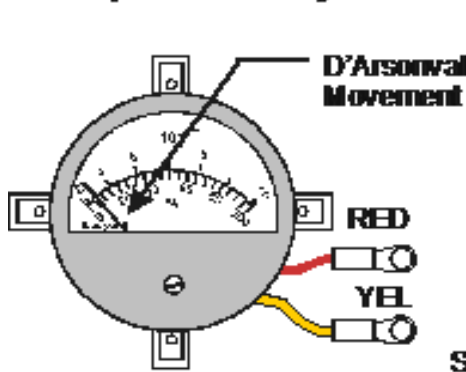
EU



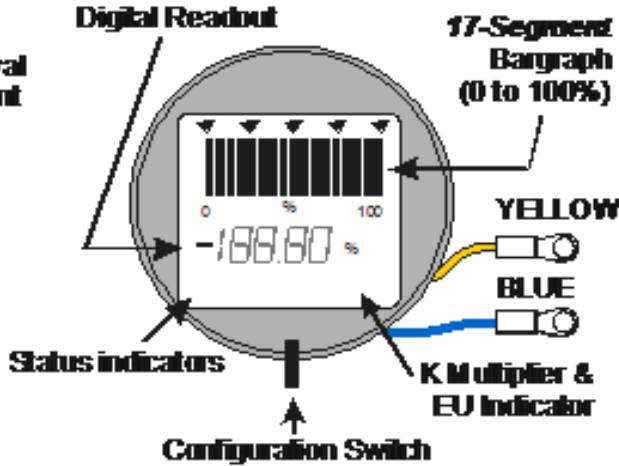
SM (Smart Meter)



DM (Digital Enhanced Meter)



ME (Analog Meter)



EU (Engineering Units Meter)

Highlights of Meter Features

Features and Functions

RMA300 - SM

The Smart Meter (SM) is a digital device that functions as an output and status indicator for a compatible Honeywell Smartline Transmitter, or just as an output indicator for a non-Honeywell transmitter operating in a 4 to 20 mA current loop. It can operate in the analog mode (4-20 mA), or can operate in the Honeywell proprietary Digital Enhanced (DE) mode.

As indicated in the illustration, the SM is similar in appearance to the DM. That is, they both have a multi-segment fan-style bargraph that indicates from 0% to 100%, and both include status indicators. However, the SM can be easily distinguished from the DM in that the SM has:

- 17-segment bargraph (compared to 25 for the DM) more status indicators than the DM
- Three wire connections (Red, Blue, and Yellow) to other components whereas the DM has two wire connections (Red and Yellow).
- The SM has a configuration button on the periphery of the case at lower left.

RMA300 - DM

Designed for use with Honeywell smart transmitters operating in the Digital (DE) Communications Mode, the DE Meter provides convenient, easy-to-read transmitter output and loop status indications on its liquid-crystal display. As shown in the figure, the DE Meter display features a 25-segment bargraph, a digital readout, and a set of status messages.

The 25-segment bargraph gives a gross indication of transmitter output from 0 to 100% that can be viewed from up to 30 feet away. The digital readout, a complement to the bargraph indication, gives a precise indication of transmitter output from -199.9 to +199.9% that can be read from up to 10 feet away.

Status messages serve as online diagnostics for various detectable loop conditions. When the transmitter is in the square root mode, the DE Meter still displays the transmitter output from 0 to 100%. The DE Meter has no square root mode or flow indicator display.

RMA300 - ME

Function - The ME is an analog device that functions as an output indicator for any transmitter that operates in the 4-20 mA current mode.

Application - The ME can be used as a Remote Meter Assembly component with any one of the following Smartline Transmitters operating in the analog (4 to 20 mA) mode.

Electrical Characteristics – The ME is an electromechanical device of the D'Arsonval type. That is, the current passing through a coil in the meter is used to deflect a needle to indicate the magnitude of the current, where a current of 4-20 mA represents 0% to 100%.

The ME can be used in combination with the SM in the same loop, provided that the formula presented under the SM description above in electrical characteristics for multiple meters is obeyed.

RMA300 - EU

The EU Display Meter is connected in series with the 4-20mA loop and is powered by the loop power. It operates by processing the 4-20mA signal via an analog-to-digital converter and scaling the digital measurement linearly into the desired operating range, which the user configures into the meter. The LCD display includes a selection of integral engineering units for temperature and pressure applications (for example - °C, °F, in H₂O, psi, etc. and a "K" multiplier that can be included when larger ranges require it).

The EU Display Meter also includes a bar-graph display of measured signal as a percentage of the 16mA signal span. This enables confirmation from some distance away that the measurement loop is operating satisfactorily or that attention is required. The meter is configured by an integral selection switch, which enables setting the Low (4mA) and High (20mA) display range limits.

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RMA300SM Specifications

| Operating Conditions | | |
|---|--|-------------------------------------|
| Parameter | Rated | Extreme, Transportation and Storage |
| Ambient Temperature | -40 to +185 °F -40 to +85 °C | -58 to +194 °F -50 to +90 °C |
| Relative Humidity | 0 – 100% | 0 – 100% |
| Design | | |
| Accuracy Analog (4-20mA) Mode Honeywell Digital (DE) Mode | ± 0.5% of span Reproduces the transmitter signal exactly to within its resolution | |
| Display Resolution Bargraph Digital Readout | ± 3% reading ± 0.05% for ± 199.9 reading range, ± 0.5% for ± 1999 reading range, ± 5% for ± 19990 reading range | |
| Maximum Meter Voltage (red lead to yellow lead) | 42 VDC | |
| Maximum Loop Voltage Drop (yellow lead to screw terminal) | 2.25 VDC | |
| Maximum Loop Operating Current | 3.6 mA | |
| ATTENTION | The LCD display will turn black between 80 and 90 °C (176 and 194 °F), rendering the display unreadable. This effect is temporary. | |

RMA300DM Specifications

| Operating Conditions | | |
|---|--|-------------------------------------|
| Parameter | Rated | Extreme, Transportation and Storage |
| Ambient Temperature | -40 to +176 °F -40 to +80 °C | -58 to +194 °F -50 to +90 °C |
| Relative Humidity | 0 – 100% | 0 – 100% |
| Design | | |
| Display Resolution Bargraph Digital Readout | ± 4% reading ± 0.1% reading | |
| ATTENTION | The LCD display will turn black between 80 and 90 °C (176 and 194 °F), rendering the display unreadable. This effect is temporary. | |

RMA300ME Specifications

| Operating Conditions | | |
|----------------------|---------------------------------|-------------------------------------|
| Parameter | Rated | Extreme, Transportation and Storage |
| Ambient Temperature | -40 to +176 °F -40 to +80 °C | -58 to +194 °F -50 to +90 °C |
| Relative Humidity | 0 – 100% | 0 – 100% |
| Design | | |
| Display Resolution | ± 1% reading | |

RMA300EU Specifications

| Operating Conditions | | |
|--|--|-------------------------------------|
| Parameter | Rated | Extreme, Transportation and Storage |
| Ambient Temperature | -40 to +185 °F -40 to +85 °C | -58 to +194 °F -50 to +90 °C |
| Relative Humidity | 10 – 90%, non condensing | 0 – 100% |
| Design | | |
| Digital Display Accuracy | ± 0.5% of span | |
| Digital Display Resolution | <div> <div> ± 0.05% for ± 199.9 reading range, ± 0.5% for ± 1999 reading range, ± 5% for ± 19990 reading range ± 50% for ± 199900 reading range ± 500% for ± 1999000 reading range ± 5000% for ± 19990000 reading range </div> <div> <i>Shown as:</i> 199.9 1999 19990 199.9 K 1999 K 19990 K </div> </div> | |
| Bargraph % Display Resolution | ± 3% of reading on 17-segment scale | |
| Power Supply Volts drop across meter | 2.3 VDC with reverse polarity protection. | |
| Connection Polarity | Yellow = Positive (+ve); Blue = Negative (-ve) | |
| Minimum Loop Current | 3.6 mA | |
| Available Engineering Units Integral LCD indicator As stick on label | °F, °C, %, in H ₂ O, GPH, GPM, mmHg, PSI, PSIA Wide selection of printed units for temperature, pressure, and flow. | |

All Displays





| Certification Conditions | |
|---------------------------|-----------------------------------|
| Installation | Ambient Limits |
| Explosionproof/Flameproof | -4°F to +149°F -20°C to +65°C |
| Intrinsically Safe | -40°F to +140°F -40°C to +60°C |

Enclosure Specifications

| | |
|----------------------------|---|
| Material of Construction | Aluminum (SS available) |
| Number of Conduit Openings | Two ½" NPT openings |
| Available Adapters | ½ NPT to M-20 316SS conduit adapter ½ NPT to ¾ NPT 316SS conduit adapter |
| Paint | Beige or Red Epoxy |

Approval and Certification

Model Selection Guide, Table III

| Approval Body | Approval Type | Location or Classification |
|----------------|---|--|
| None | None | |
| Factory Mutual | Explosionproof, Dust Ignitionproof, Non-Incendive | Class I, Div. 1, Groups A, B, C, D; Class II, III, Div. 1, Groups E, F, G; Class I, Div. 2, Groups A, B, C, D (DM, ME & SM, T4 at 40°C) |
| | Intrinsically Safe | Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G; (DM, ME & SM, T4 at 40°C) |
| | Enclosure: Type 4X | |
| CSA | Explosion Proof & Dust Ignition Proof | Class I, Div. 1, Groups B, C, D; Class II, III, Div. 1, Groups E, F, G (DM, ME & SM, T4 at 93°C; EU, T4 at 60°C) |
| | Intrinsically Safe | Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G; (DM, ME & SM, T4 at 93°C; EU, T4 at 60°C) |
| | Enclosure: Type 4X | |
| ATEX * | Intrinsically Safe |  LCIE 02ATEX 6178X II 1 GD (Table II= TG or TB); II 2 GD (Table II= XC or XR); Ex ia IIC T5 (Ta= -40° to 60°C) Ex tD A21 IP6X T95°C (at Ta = 85°C) or T80°C (at Ta = 65°C) |
| | Flameproof |  LCIE 02ATEX6177X II 2 GD Ex d IIC T6(Ta= -40 °C to 65 °C) or T5 (Ta= -40 °C to 85 °C) Ex tD A21 IP6X T95°C (at Ta = 85°C) or T80°C (at Ta = 65°C) |
| | Non Sparking |  HON 02.202 II 3 GD Ex nA IIC T6 (Ta= -40 °C to 65 °C) or T5 (Ta= -40 °C to 85 °C) Ex tD A22 IP6X T95°C (at Ta = 85°C) or T80°C (at Ta = 65°C) |
| | Multiple Marking ** Intrinsically Safe, Flameproof and Non Sparkling |  LCIE 02ATEX 6178X II 1 GD (Table II= TG or TB); II 2 GD (Table II= XC or XR); Ex ia IIC T5 (Ta= -40° to 60°C) Ex tD A21 IP6X T95°C (at Ta = 85°C) or T80°C (at Ta = 65°C) LCIE 02ATEX6177X II 2 GD Ex d IIC T6(Ta= -40 °C to 65 °C) or T5 (Ta= -40 °C to 85 °C) Ex tD A21 IP6X T95°C (at Ta = 85°C) or T80°C (at Ta = 65°C) HON 02.202 II 3 GD Ex nA IIC T6, -40 ≤ Ta ≤ 65°C Ex tD A22 IP6X T95°C (at Ta = 85°C) or T80°C (at Ta = 65°C) |
| IECEX | Intrinsically Safe And Flameproof | Ex ia IIC T4 (Ta = -40°C to +85°C), T5 (Ta = -20°C to +60°C) Ex d IIC T6 (Ta = -20°C to +65°C), T5 (Ta = -40°C to +85°C) |
| SAEx | Intrinsically Safe And Flameproof | Ex ia IIC T4 (Ta = -40°C to +85°C), T5 (Ta = -20°C to +60°C) Ex d IIC T6 (Ta = -20°C to +65°C), T5 (Ta = -40°C to +85°C) |

* See ATEX Installation requirements in the Operator manual

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Supplemental Accessories and Kits

Conduit Plugs and Adapters may be ordered separately (*Meter Assemblies come with plastic dust plugs as standard*)


| Description | Material of Construction | Part Number |
|--|--------------------------|--------------|
| Certified conduit plugs for CSA, ATEX and IECEx | | |
| 1/2 NPT Certified Socket Plug | Zinc-plated Carbon Steel | 50021832-501 |
| 1/2 NPT Certified Socket Plug | 316 SS | 50021832-502 |
| Certified adapters for CSA, ATEX and IECEx | | |
| 1/2 NPT (male) to 3/4 NPT (female) | 316 SS | 50000682-501 |
| 1/2 NPT (male) to M20 (female) | 316 SS | 51202409-501 |
| Certified cable glands for UL and cUL | | |
| 1/2 NPT | Brass Nickel plated | 50023212-501 |

** Consult Honeywell Order Entry System for current parts pricing

TABLE III - APPROVALS

RMA300

Availability

| Approval Body | Approval Type | Location or Classification | Selection | Availability |
|--|---|--|-----------|--------------|
| None | None | | 9X | • |
| Factory Mutual | Explosionproof, Dust Ignitionproof, Non-Incendive | Class I, Div. 1, Groups A, B, C, D; Class II, III, Div. 1, Groups E, F, G; T4 at 40°C | 1C | • |
| | | Class I, Div. 2, Groups A, B, C, D | | |
| | Intrinsically Safe | Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G; T4 at 40°C | | |
| | Enclosure Rating | Type 4X | | |
| CSA | Explosion Proof & Dust Ignition Proof | Class I, Div. 1, Groups B, C, D; Class II, III, Div. 1, Groups E, F, G (DM, ME & SM, T4 at 93°C; EU, T4 at 60°C) | 2J | • |
| | Intrinsically Safe | Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G; (DM, ME & SM, T4 at 93°C; EU, T4 at 60°C) | | |
| | Enclosure Rating | Type 4X | | |
| ATEX*  | Intrinsically Safe Zone 0/1 / Zone 20/21 | II 1 GD (Table II = TG or TB); II 2 GD (Table II = XC or XR) Ex ia IIC T5 (Ta = -20°C to +60°C), Ex tD A21 IP6X T95°C (at Ta = 85°C) or T80°C (at Ta = 65°C) | 3U | • |
| | Flameproof Zone 1 / Zone 21 | II 2 GD Ex d IIC T5 (Ta = -40°C to +85°C) T6 (Ta = -40°C to +65°C) Ex tD A21 IP6X T95°C (at Ta = 85°C) or T80°C (at Ta = 65°C) Enclosure IP66/67 | 33 | • |
| | Non-Sparking Zone 2 / Zone 22 | II 3 GD Ex nA, IIC T5 (Ta = -40°C to +85°C) T6 (Ta = -20°C to +65°C) Ex tD A22 IP6X T95°C (at Ta = 85°C) or T80°C (at Ta = 65°C) | 3Y | • |


(continued on next page)

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| | | | | |
|---|--|---|----|---|
| ATEX*  | Multiple Marking ** Int. Safe, Zone 0/1, or Flameproof, Zone 1, or Non-Sparking Zone 2 | II 1 GD (Table II TG or TB) II 2 GD (Table II= XC or XR) Ex ia IIC T5 (Ta= -40° to 60°C) II 2 GD Ex d IIC T6 (Ta= -40 °C to 65 °C) or T5 (Ta = -40°C to +85°C) Ex tD A21 IP6X T95°C (at Ta = 85°C) or T80°C (at Ta = 65°C) II 3 GD Ex nA IIC T6 (Ta = -20°C to +65°C) or T5 (Honeywell) T5 (Ta = -40°C to +85°C) Ex tD A22 IP6X T95°C (at Ta = 85°C) or T80°C (at Ta = 65°C) Enclosure IP66/67 | 3C | • |
| | | | | |
| IECEx | Flameproof, Zone 1 | Ex d IIC T6 (Ta = -20°C to +65°C), T5 (Ta = -40°C to +85°C) Enclosure IP66/67 | CA | • |
| | Intrinsically safe, Zone 0/1 | Ex ia IIC T4 (Ta = -40°C to +85°C), T5 (Ta = -20°C to +60°C) | | |
| SAEx | Flameproof, Zone 1 | Ex d IIC T6 (Ta = -20°C to +65°C), T5 (Ta = -40°C to +85°C) Enclosure IP66/67 | ZA | • |
| | Intrinsically safe, Zone 0/1 | Ex ia IIC T4 (Ta = -40°C to +85°C), T5 (Ta = -20°C to +60°C) | | |

* See ATEX installation requirements in the Operator's Manual

**The user must determine the type of protection required for installation of the equipment. The user shall then check the box [✓] adjacent to the type of protection used on the equipment certification nameplate. Once a type of protection has been checked on the nameplate, subsequently the equipment shall not be reinstalled using any of the other certification types.

RESTRICTIONS

| Restriction Letter | Available Only With | | Not Available With | |
|--------------------|--|------------------------|--------------------|----------------|
| | Table | Selection | Table | Selection |
| a | III | 3U,33,3Y,3C | | |
| b | Select only one option from this group | | | |
| g | III | 3U, 33, 3Y, 3C, CA, ZA | | |
| h | III | 1C, 2J | | |
| m | I | 9X, 1C, 2J, 33, 3Y | III | 3U, 3C, CA, ZA |

Notes: See 13:ST-OE-9 for OMS Order Entry Information including TC, manuals, certificates, drawings and SPINS.
See 13:ST-27 for Published Specials with pricing.

| |
|---|
| Ordering Example: RMA300-SM-MB,TG-2J |
|---|

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The information and specifications in this document are subject to change without notice

For More Information

Learn more about how Honeywell's RMA 3000 Remote Meter Assemblies can provide accurate transmitter output, visit our website www.honeywellprocess.com/RMA-3000-Remote-Meter-Assemblies or contact your Honeywell account manager.

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