

SECTION 40 78 26

PAPERLESS RECORDER AND DISPLAY MEASURING SYSTEM

PART 1 – General

1. Complete Recorder and visualization of all process sequences. The Memograph M RSG45 has a wide range of functionality, modular construction and an intuitive operator concept.

A. 1.02 SUBMITTALS

- A. Furnish complete Product Data, Shop Drawings, Test Reports, Operating Manuals, Record Drawings, Manufacturer's Certifications, Manufacturer's Field Reports
- B. Product Data:
 1. Dimensional Drawings.
 2. Materials of Construction
 3. Range and Rangeability.
 4. Classification Rating.
 5. Power:
 - a. Voltage.
 6. Output options.

1.03 QUALITY ASSURANCE

- A. Manufacture facilities certified to the quality standards of ISO Standard 9001 - Quality Systems - Model for Quality Assurance in Design/Development, Production, Installation, and Servicing.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store all instruments in a dedicated structure with space conditioning to meet the recommended storage requirements provided by the manufacturer.
- B. Any instruments that are not stored in strict conformance with the manufacturer's recommendation shall be replaced.

1.05 PROJECT OR SITE CONDITIONS

- A. Provide instruments suitable for the installed site conditions including, but not limited to, material compatibility, site altitude, process and ambient temperature, and humidity conditions.

1.06 CALIBRATION AND WARRANTY

- A. The meter shall have standard one year warranty from date of shipment and if the meter is commissioned by a factory certified technician, the warranty is extended to three years from the date of shipment.

1.07 MAINTENANCE

- A. Provide all parts, materials, fluids, etc. necessary for maintenance and calibration purposes throughout the warranty period. Deliver all of these supplies before project substantial completion.

1.08 LIFECYCLE MANAGEMENT

- A. Instrument documentation, like original calibration certificates, manuals and product status information shall be accessed via a web enabled system with a license. The instrument-specific information shall be accessed via its serial number. When services are provided by an authorized service provider the services information like subsequent field calibrations shall be archived and accessible via this web enabled system.

PART 2 – PRODUCTS

2.01 MANUFACTURER

- A. Endress+Hauser – Memograph M RSG45

2.02 MANUFACTURED UNITS

- A. The Videographic Data Manager shall be panel-mounted, with a front bezel size of 7.69" x 5.87" OR 7.72" x 5.91" (SS front).

Materials of Construction:

- Front Frame: Powder-coated Die-cast Zinc OR 316L Stainless Steel
- Housing/Case: Galvanized Sheet Steel
- Front Flap/Door: Plastic (ABS)

Degree of Protection:

- Front: IP65/NEMA 4
- Rear: IP 20

The depth of the Videographic Data Manager shall be 6.22" including the terminal connectors. The panel cutout of the data manager shall be 5.43" x 5.43".

1. The data manager shall have a wide range power supply: 100-230 VAC (+10%), 50/60 Hz or 24 V AC/DC (-10% / +15%) 50/60 Hz
2. The data manager shall be available in combinations of 4/8/12/16/20 analog inputs. The analog inputs will be Universal: Voltages, Currents, RTDs or Thermocouples, Pulse or Frequency.
3. The data manager shall be available in combinations of 4/8/12/16/20 HART inputs. The HART inputs will allow evaluation and recording of up to 40 digital HART values.
4. The data manager shall act as a HART gateway providing direct access to connected HART sensors.
5. The data manager shall be available in combinations of 6/12 digital inputs, 5/11 relays and 2 analog outputs.
6. The digital input shall be as per IEC 61131-2. The function of the digital inputs shall be selectable between control input (start/stop), counter, timer or on/off events. The on/off events shall be listed in an event list.
7. The data manager shall use a 7" multicolored TFT display with 800 x 480 (update) pixels. The recorder shall have selectable display modes: as Curves, Curves in Zones, Bar Graphs, Digital Display, and Waterfall.
8. The data manager shall also include the totalizer function to integrate the analog inputs.
9. The temperature sensors supported by the data manager shall include:
 - 1) RTDs - Pt 100, Pt 500, Pt 1000, Cu100 , Cu50, Pt 50, CU53 and Pt46
 - 2) Thermocouples - Types J, K, T, N, L, D, C, B, S, R, A

10. The data manager shall support the following base standards relevant to the Temperature sensors listed above such as: IEC751, IEC 581-1, JIS6104-1984, GOST, DIN 43710, ASTM E998.
 11. The scan rate of the data manager shall be 100 ms per channel (thermocouples and RTDs- 1s/channel).
 12. The nominal supply voltage for loop power shall be $24\text{ V} \pm 15\%$ VDC, and maximum current of 250 mA.
- B. The measured data shall be stored in an internal 128 MB SRAM memory. The data storage cycle shall be programmable from 1 second up to 1 hour. To archive the measured data, the data manager shall transfer the data using either an SD card or USB Flash Drive.
1. To review the data on a PC computer, FDM software and cable shall be included into the delivery of the data manager free of charge. The software shall provide for tamper-proof data processing. Apart from data access through FDM software, the data manager shall also provide direct access to archived data with MS Excel (.csv format). The data manager shall also provide an embedded web server to allow for remote monitoring from anywhere in the world.
 2. The configuration of the data manager shall be achieved using a single navigator (rotation/push button) on the front side in interactive dialogue mode with on screen menu. It will also have the option for connecting a USB keyboard. The recorder shall be available in multiple operating languages.
 3. The data manager shall have the option a 316L stainless steel front bezel with configuration via touch screen.
 4. The data manager shall be FDA 21 CFR Part 11 compliant.
 5. The data manager shall have the capability to monitor the measured values with 30 freely assignable set points. The data manager shall provide 5 configurable relay outputs and 1 fixed alarm relay. The relays shall have a maximum switching capacity of $3\text{ A} @ 30\text{ VDC}$ / $3\text{ A} @ 250\text{ VAC}$ and a minimum switching load of 300 mW.

- C. The data manager will provide a standard Ethernet interface along with options for Serial RS232/RS485
- 1. Available communication protocols to include MODBUS RTU master/slave, MODBUS TCP master/slave, Profibus DP slave, and Profinet I/O.
- 2. The data manager shall be equipped with an integrated web server that provides direct communication to the device via the Ethernet interface. Both initial commissioning and set up changes are possible as well as access to current and historical process data.

2.03 SAFETY

- A. All electrical equipment shall meet the requirements of ANSI/NFPA 70, NATIONAL ELECTRIC CODE, latest edition.
- B. All device front panels shall conform to IP 65/NEMA 4 classification.
- C. All devices shall maintain a CSA GP rating and be UL Listed.
- D. The data manager shall have the option for ATEX II2G Ex px IIC Gb and ATEX II2D Ex pD IIIC Db hazardous area approval.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the complete set of plans, and ambient temperatures and furnish instruments that are compatible with installed process condition.
- B. Examine the installation location for the instrument and verify that the instrument will work properly when installed.

3.02 INSTALLATION

- A. As shown on installation details and mechanical drawings.
- B. As recommended by the manufacturer's installation and operation manual.

3.03 FIELD QUALITY CONTROL

- A. Demonstrate the performance of all instruments to the ENGINEER before commissioning.
- B. Each instrument shall be tested before commissioning and the ENGINEER shall witness the response in the PLC control system and associated registers.
- C. Manufacturer's Field Services:
 - 1. Manufacturers' Representative shall verify installation of all installed data managers.
 - 2. Manufacturers' Representative shall notify the ENGINEER in writing of any problems or discrepancies, and proposed solutions.

3.04 PROTECTION

- A. All instruments shall be fully protected after installation and before commissioning. Replace any instruments damaged before commissioning:
 - 1. The ENGINEER shall be the sole party responsible for determining the corrective measures.