Technical Information
TI 094R/09/en
51004327

Safety Data Manager
memo-graph s

System compatible data manager with a unique safety concept for critical applications. Compliant to the high FDA requirements laid down in the 21 CFR Part 11.

Application areas

The Memo-Graph S “Safety Data Manager” is the compact and powerful solution in safety relevant applications. It convinces merely by the fact that data is securely recorded. By using the “Audit trail” process sequences can be verified. It plots signals, monitors alarm limit points, analyses measurement points, stores the data internally and archives them on ATA flash memory cards in a coded format. The already standard ReadWin®2000 PC software package is used for set-up, visualisation and archiving the recorded data.
Data access is limited to authorised personnel only and is controlled by use of a unique ID and password system.
Memo-Graph S can be applied wherever priority is given to safe recording:

- Pharmaceutical and food industry
- Biotechnology and fine chemicals
- Multi-product plants
- CIP cleaning systems
- Batch applications

Features and benefits

- Conform: Fulfils the FDA 21 CFR 11
- Secure: Electronic signatures
- Reliable: Audit trail
- Integrated: Batch protocol
- Practical: Product management
- Optimum: Product relevant alarm set point monitor
- Unique: Individual access rights
- Settable: Text and comment input
- Clear: Display of alarm set point curves
- Robust: Stainless steel front without door, IP65 or die-cast front with door, IP54
- Alert: Monitors CIP cleaning processes
- System compatible: Serial interface, Ethernet, Modem, Profibus DP
- Totally presettable: Universal inputs, universal outputs, loop power supplies
- Maintenance free: Electronic storage without paper and pens
- Long-term monitor: Simple access to historic data

Endress+Hauser
The Power of Know How

Operation and system construction

Measurement principle

Electronic monitoring, recording and archiving of analogue and digital input signals.

Measurement system

The connected analogue measurement points are measured parallel every 125 ms.
Galvanic isolation channel to channel is: 60 V_P.
Damping filter presettable from 0...999.9 seconds per analogue input, system basic damping can be ignored. Data storage is in the internal memory (power failure secure FLASH technology) and on a maintenance free ATA flash card. Long-term archiving is done on a PC, whereby the data is transmitted to the PC using either the data carrier or the serial interface. Using the PC software the units can be set up, read out and the measured data can be stored and displayed.

Input values

Measurement size/ measurement range

Multi-function input board with 8 analogue channels (socket 1, socket 2)

Preselectable measurement range per channel:

Description	Mesurement range	Signal resolution/accuracy
Current Input impedance 50 Ohm, max. 100 mA	4 to 20 mA	1 µA (with switchable open circuit monitor < 2 mA, event message on display) / 0.25 % of measurement range
	0 to 20 mA	1 µA / 0.25 % of measurement range
	± 1 mA	0.05 µA / 0.25 % of measurement range
	± 2 mA	0.1 µA / 0.25 % of measurement range
	± 4 mA	0.2 µA / 0.25 % of measurement range
	± 20 mA	1 µA / 0.25 % of measurement range
	± 40 mA	2 µA / 0.25 % of measurement range
Voltage Input impedance 1 MOhm, max. 60 V_P	0 to 1 V	0.05 mV / 0.25 % of measurement range
	0 to 10 V	0.5 mV / 0.25 % of measurement range
	± 20 mV	1 µV / 0.25 % of measurement range
	± 50 mV	2.5 µV / 0.25 % of measurement range
	± 100 mV	5 µV / 0.25 % of measurement range
	± 200 mV	10 µV / 0.25 % of measurement range
	± 1 V	0.05 mV / 0.25 % of measurement range
	± 2 V	0.1 mV / 0.25 % of measurement range
	± 5V	0.5 mV / 0.25 % of measurement range
	± 10 V	0.5 mV / 0.25 % of measurement range
Thermocouples	Type B (Pt30Rh-Pt6Rh): 0 to +1820 °C / 32 to 3308 °F	0.2 K / 0.25 % of measurement range from 600 °C / 1112 °F
	Type J (Fe-CuNi): -210 to +999.9 °C / -346 to 1832 °F	0.2 K / 0.25 % of measurement range from -100 °C / -148 °F
	Type K (NiCr-Ni): -200 to +1372 °C / -328 to 2501.6 °F	0.1 K / 0.25 % of measurement range from -130 °C / -202 °F
	Type L (Fe-CuNi): -200 to +900 °C / -328 to 1652 °F	0.1 K / 0.25 % of measurement range
	Type N (NiCrSi-NiSi): -270 to +1300 °C / -454 to 2372 °F	0.1 K / 0.25 % of measurement range from -100 °C / -148 °F
	Type R (Pt13Rh-Pt): -50 to +1800 °C / -58 to 3272 °F	0.1 K / 0.25 % of measurement range from +50 °C / 122 °F
	Type S (Pt10Rh-Pt): 0 to +1800 °C / 32 to 3272 °F	0.1 K / 0.25 % of measurement range from +50 °C / 122 °F

Description	Mesurement range	Signal resolution/accuracy
Thermocouples	Type T (Cu-CuNi): -270 to +400 °C / -454 to 752 °F	0.05 K / 0.25 % of measurement range from -200 °C / -328 °F
	Type U (Cu-CuNi): -200 to +600°C / -328 to 1112 °F	0.1 K / 0.25 % of measurement range from 0 °C / 32 °F
	Type W3 (W3Re/W25Re): 0 to +2315 °C / 32 to 4199 °F	0.2 K / 0.25 % of measurement range
	Type W5 (W5Re/W26Re): 0 to +2315 °C / 32 to 4199 °F	0.2 K / 0.25 % of measurement range
Selectable cold junction compensation (DIN IEC 584): internal compensation of the terminal temperature (incl. max. error: ± 2 K; front end calibration), or external: 0°C, 20°C, 50°C, 60°C, 70°C, 80°C Cable open circuit monitor, can be switched off (> approx. 20 kOhm, display "-----" on screen) Input impedance 1 MOhm (DIN IEC 584)		
Resistance thermometer	Pt100, Pt500, Pt1000: -100 to +500 °C / -148 to 932 °F	0.05 K / 0.25 % of measurement range DIN EN 60751
	Pt100: -50 to +150 °C / -58 to 302 °F	0.05 K / 0.25 % of measurement range; max. measurement error between 71 °C / 160 °F and 77 °C / 171 °F: 0.5 °C / 0.9 °F
	Ni100: -60 to +180 °C / -76 to 356 °F	0.05 K (DIN 43760 / DIN IEC 751) / 0.25 % of measurement range
Two- or three-wire connection (cable compensation ≤ 50 Ohm) Measurement current: < 1 mA Cable open and short circuit monitor: Display "-----" on screen		
PROFIBUS-DP measurement range	Dependent on connected PROFIBUS components	
Scan cycle	125 ms/channel; 8 or16 channels in 1 s	
Base accuracy	0.25 % of measurement range ± 1 digit	
Maximum allowable potential difference	Channel - channel: DC 60 V, AC 60 Vp (only safe low voltage) Channel - ground: DC 60 V, AC 60 Vp (only safe low voltage)	
Damping	Presettable time constant: 0...999.9 seconds, per analogue input, System base damping can be ignored	

Digital inputs

Digital I/O board (socket 1, socket 2)

15 digital inputs:
To DIN 19240: Logic "0" equals -3 to +5 V,
Active at logic "1" equals +12 to +30 V,
max. 25 Hz, max. 32 V, input current max. 1.5 mA
Selectable function per input: Control input (time synchronisation, set-up lock, text display, group display selection, display switch off), impulse counter, on/off events, operation time counter, combination event + operation time counter

Digital inputs

Power supply board (socket 3)

7 digital inputs:
To DIN 19240: Logic "0" equals -3 to +5 V,
Active at logic "1" equals +12 to +30 V,
max. 25 Hz, max. 32 V, input current max. 1.5 mA
Selectable function per input: Control input (time synchronisation, set-up lock, text display, group display selection, display switch off), impulse counter, on/off events, operation time counter, combination event + operation time counter

Output values

Multi-function output board (socket 2)

Analogue outputs

4 or 8 analogue outputs, each galvanically isolated from all circuits (test voltage 500 V_{AC})
Output range: 0 - 10 V, 1 - 5 V, 0 - 20 mA, 4 - 20 mA
Accuracy: 0.25 % FSD (at 1-5 V 0.5 %)
Resolution: 0.025 % (at 1-5 V 0.06 %)
Temperature drift: < 0.05 % /K FSD
Output ripple: effective < 10 mV
Response time: max. 300 ms (step at input 10 % -> 90 % FSD)
Load (current output): max. 500 Ohm
Output current (voltage output): min. 10 mA

Loop power supply

Software selectable for each channel (as alternative to analogue output)
Number of loop power supplies: 4 or 8, each galvanically isolated from all circuits
Output voltage: 24 V ±20 %
Output current: max. 22 mA (internal current limiter), short circuit protected

Relay outputs

6 relays, closing contacts (230 V/3 A, insulation group A to VDE 0110) cannot be mixed into SELV and network circuits. Can be set up as opening contacts.

Digital I/O board (socket 1, socket 2)

Relay outputs

6 relays, closing contacts, 230 V/3 A, for alarm limit condition. Cannot be mixed into SELV and network circuits. Can be set up as opening contact.

Power supply board (socket 3)

Auxiliary voltage for digital input control when using potential free contacts.
24 V_{DC} ±20 %, max. 150 mA, short circuit protected, unstabilised

Relay outputs

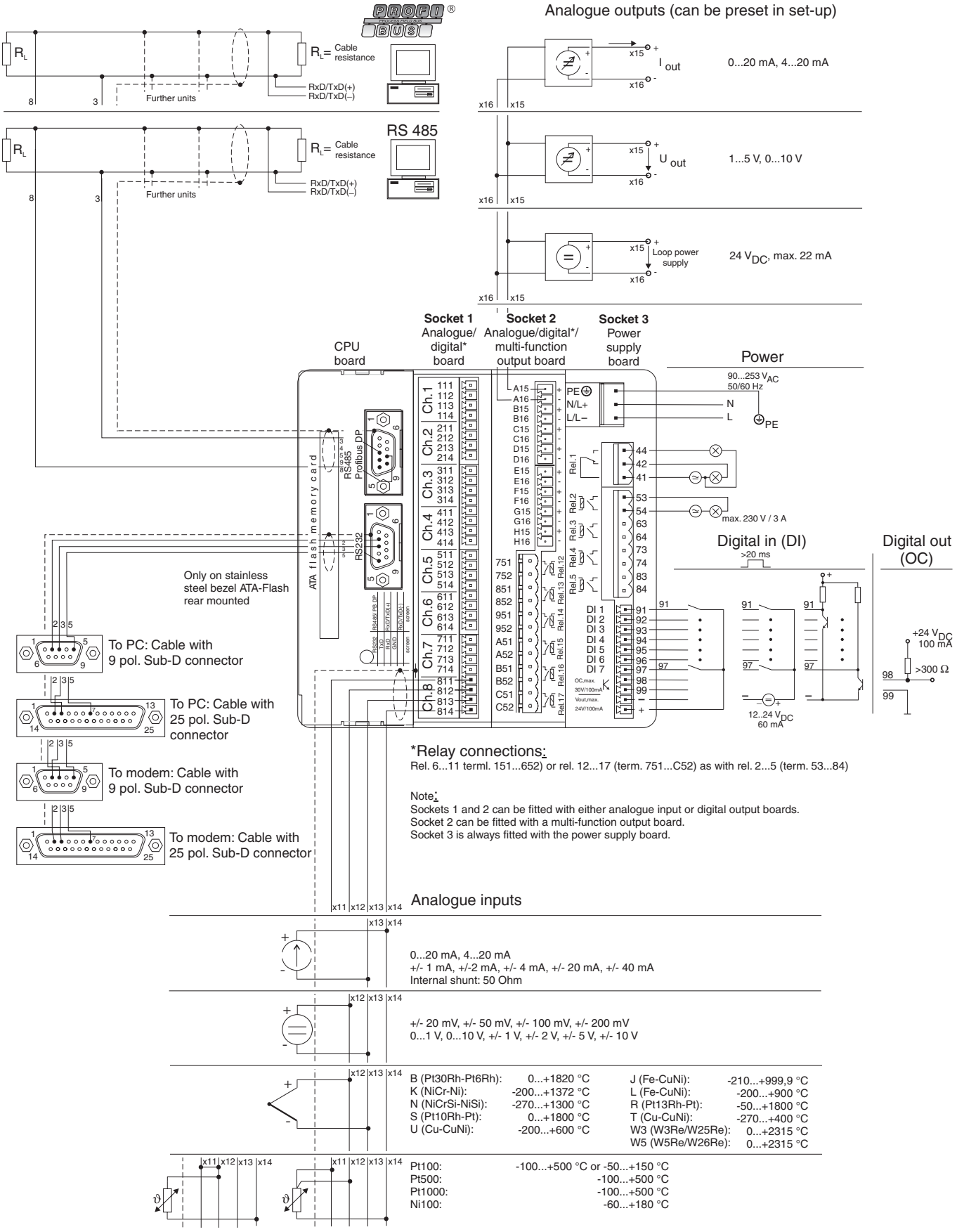
4 relays, closing contacts, 230 V/3 A, for alarm limit condition. Cannot be mixed into SELV and network circuits. Can be set up as opening contacts.
1 open collector output (max. 100 mA / 25 V)

Common relay

1 relay, changeover contact 230 V/3 A, for alarm limit condition/power failure

Power supply

Electrical connections (circuit diagram)



Power supply/ power consumption

Normal voltage power supply board: 90 to 253 V_{AC}; 50/60 Hz, max. 25 VA (full version)
Low voltage power supply board: 20 to 30 V_{UC}; 50/60 Hz, max. 25 VA (full version) in preparation

Electrical safety

EN 61010-1, protection class I, overvoltage category II

Cable specification/ connections

Keyed screw plug-in terminal strips,
Wire cross section on analogue inputs/digital I/O max. 1.5 mm² / 0.0023 in²,
Power supply/relays max. 2.5 mm² / 0.0039 in² (each with ferrules)

Interface connections

Front mounted RS 232 interface (3.5 mm / 0.14" stereo jack plug, only on unit with front door IP54)
Rear mounted RS 232 interface (9 pin, Sub-D, socket)

Serial interface (option)

RS 485 (rear mounted) unit address presettable;
Cable length max. 1000 m (0.62 mi) screened cable

PROFIBUS DP connection (option)

Function "Bus monitor"
(Without influence on the PROFIBUS system) as with conventionally connected components.
(Serial interface, rear mounted, alternative to the RS 485 interface)
Physical peak: RS 485, cable length 1000 m (0.62 mi) screened cable
Baudrate: 93.75 kBaud, fixed, alternative 45.45 kBaud
Presettable slave address
Data formats (DP/ V1 formats): Integer 8, Integer 16, Integer 32, Unsigned 8, Unsigned 16, Unsigned 32, Floating-Point (IEEE 754)
PROFIBUS measurement point functionality is identical to conventional analogue inputs.
The combined use of PROFIBUS and conventional measurement points is possible (max. 16 measurement points/unit).
PROFIBUS PA measurement point connection using a PA/DP segment coupler.

Function "Profibus slave"
Slave function combined with a PROFIBUS coupler (accessories: RSG12A-P1). Applied for bi-directional communication in cyclic data transfer.
Baudrate: 12 Mbaud, presettable

Note:
When used in a legal validation applications please take note of the additional requirements for a PROFIBUS-DP Master System.

Accuracy

Reference conditions

Reference conditions	
Power supply	230 V_{AC} ± 10%, 50 Hz ± 0.5 Hz
Warm-up time	> 1 hour
Ambient temperature	25 °C ± 5 °C / 77 °F ± 9 °F
Humidity	55 ± 10 % rh.

Ambient temperature influence

0.25 % / 10 K

Base accuracy

See input signals

Application conditions

Installation conditions

Installation	**Installation area** Panel mounting or desk top version
Installation angle	Installation to DIN 16257: NL90 ±30°

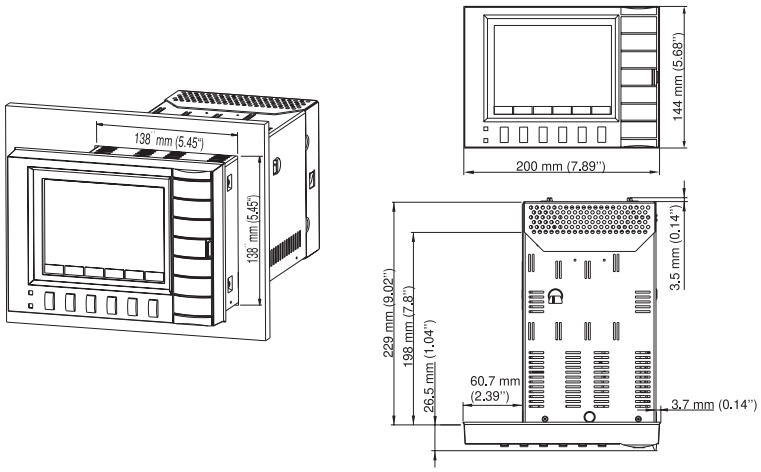
Environmental conditions

Ambient temperature	0 to +50°C / 32 to 122 °F
Storage temperature	-20 to +70°C / -4 to 158 °F
Climatic classification	To IEC 654-1: B2
Humidity	10 to 75 % rh., without condensation
Max. water content	0.02 kg/kg dry air
Ingress protection class	Front ingress protection: With die-cast bezel with door: IP 54 (EN 60529, Cat. 2) With stainless steel front without door: IP 65 Rear ingress protection: IP 20 (EN 60529, Cat. 2)
Vibration protection	Seismic test to IEEE 344 and KTA
EMC/immunity	EN 50081-1, EN 50081-2, NAMUR recommendation NE21: - ESD (electrostatic discharge): EN 61000-4-2, level 3 (6/8 kV) - electromagnetic fields: ENV 50140 / ENV 50204: level 3 (10 V/m) for standard inputs; level 2 (3 V/m) for measurement ranges < 1V or resistive thermometers (RTD)/thermocouples - Burst (fast transients): EN 61000-4-4 level4 (2/4 kV) - Surge on power supply: EN 61000-4-5: 2 kV asymmetrical, 1 kV symmetrical - HF on cables: EN 61000-4-6: 10 V for standard inputs; 3 V for measurement ranges < 1 V or resistive thermometers (RTD)/thermocouples - 50 Hz magnet fields EN 61000-4-8: 30 A/m - Power failures EN 61000-4-11: < = 20 ms
Normal mode noise rejection DIN IEC 770	40 dB at measurement range/10 (50/60 Hz ± 0.5 Hz), not on resistance measurements of RTDs
Common mode noise rejection DIN IEC 770	80 dB at 60 Vp (50/60 Hz ± 0.5 Hz)
RF protection	To EN 55011: 1991 Group 1 Class A (operation in industrial environments)

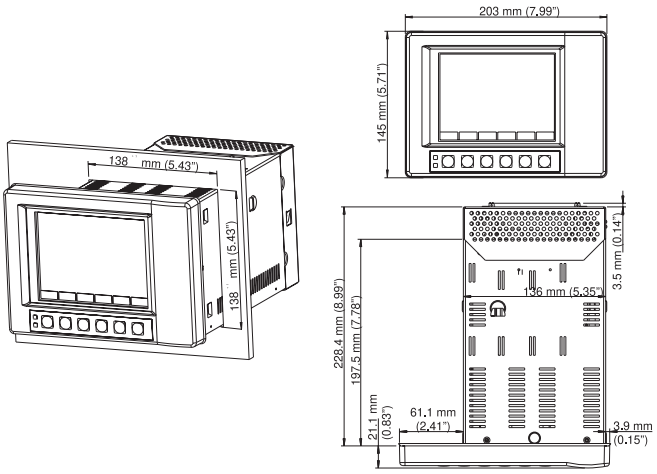
Mechanical construction

Model, dimensions

Dimensions for panel mounting on IP54 die-cast bezel version with door and rear panel or terminal cover, Front mounted ATA flash card drive

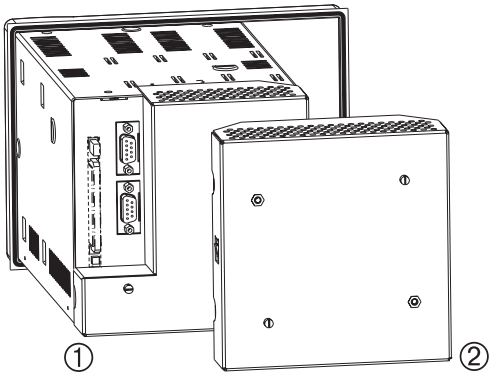


Dimensions for panel mounting on IP65 stainless steel version and rear panel or terminal cover, rear mounted ATA flash card drive



View of terminals (1) and rear panel (2) cover

Note:
Only on stainless steel bezel ATA-flash rear mounted.



Installation depth

Approx. 211 mm / 8.31" incl. terminal strips (without rear panel cover or terminal cover)
Approx. 323 mm / 12.72" (with rear panel cover or terminal cover)

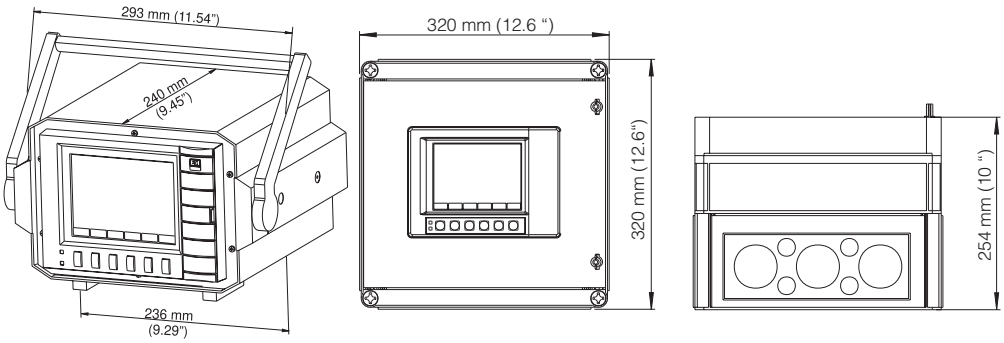
Panel cut-out

138 mm +1 mm x 138 mm +1 mm / 5.433" +0.039" x 5.433" +0.039"

Panel strength

2 mm to 40 mm / 0.079" to 1.575", fixing to DIN 43834

Dimensions desktop housing: **Dimensions field housing:**



Weight

Memo-Graph S with stainless steel or die-cast bezel: approx. 3.5 kg / 7.72 lb
Memo-Graph S with desktop housing: approx. 6.4 kg / 14.1 lb

Materials

Stainless steel casing
Die-cast version: Front bezel/door in pressure die-cast metal, sintered matt chrome coating (colour similar to RAL 9006), protective glass in front of screen
Stainless steel version: Front bezel in stailess steel, polycarbonate plastic display protection sheet

Display and operating system

Display elements

Display:
STN 145 mm (5.7") screen diagonal colour graphic display, 76,800 dots (320 x 240 Pixel)

Display modes:
Curves/plot sequences, curves in zones, columns/bargraph, digital display, events list / audit trail (alarm set points/power failures), condition display, historical display as curves with digital measured value display, date and time, signal analysis (min., max., average, quantities, times), coloured channel identification and individual text measurement point tag name.

Signal groups:
8 groups with 8 channels (analogue, calculated mathematics and digital inputs)

Operating elements

Push buttons:
Selectable operation from the front using 6 push buttons in interactive dialogue with the screen (push button functions are displayed on the screen).

Remote operation

PC:
Remote set-up using the front mounted RS232 serial interface (only at die-cast bezel version), the rear mounted RS232 interface (e.g. modem) or the RS485 interface together with the ReadWin® 2000 PC software.

Clock

Automatic switchable summer/normal time buffer > = 4 years (ambient temperature 15 to 25°C / 59 to 77 °F)

Mathematics package (option)

Eight additional, calculated channles; can be cascaded.
Mathematical calculation of analogue channels, basic mathematics functions (+, -, *, /), constants, integration (quantity totalisation from analogue inputs) and mathematical functions: log, ln, exp, abs, sqrt, quad, sin, cos, tan, asin, acos, atan.
Formula:
f = (g (y1)*a) ? (y2*b)+c;

Data storage

Selectable memory cycle per group (standard or event storage)

1s/2s/3s/5s/10s/15s/30s/1min/2min/3min/6min buffer >= 4 years for programme/measured value storage (internal memory chip: 1024 k, or 2048 k SRAM) using integrated Lithium battery (ambient temperature 15 to 25°C / 59 to 77 °F);
Cyclic copy of measured data for archiving to ATA flash memory card (max. 128 MB), selectable as barrel or ring memory; resolution depending on the selected storage cycle.
Permanent storage of all unit set-up parameters on a FLASH RAM (non-volatile).

Typical memory availability

Requirements for the following tables:
- No alarm set point condition/event storage
- Digital inputs are not used
- Signal analysis inactive

Note: The more entries made in the audit trail the lower the storage capacity

Internal memory 2048 kB

Analogue inputs	Memory cycle 6 min.	Memory cycle 1 min.	Memory cycle 30 s.	Memory cycle 10 s.	Memory cycle 1 s.
1	1304 days, 21 h	217 days 11 h	108 days 17 h	36 days 5 h	3 days 14 h
4	652 days 11 h	108 days 17 h	54 days 8 h	18 days 2 h	1 day 19 h
8	391 days 11 h	65 days 5 h	32 days 14 h	10 days 20 h	1 day 2 h
16	195 days 17 h	32 days 14 h	16 days 7 h	5 days 10 h	13 h

ATA flash 16 MB

Analogue inputs	Memory cycle 6 min.	Memory cycle 1 min.	Memory cycle 30 s.	Memory cycle 10 s.	Memory cycle 1 s.
1	11375 days	1895 days, 20 h	947 days, 22 h	315 days, 23 h	31 days, 14 h
4	5687 days, 12 h	947 days, 22 h	473 days, 23 h	157 days, 23 h	15 days, 19 h
8	3412 days, 12 h	568 days, 18 h	284 days, 9 h	94 days, 19 h	9 days, 11 h
16	1706 days, 6 h	284 days, 9 h	142 days, 4 h	47 days, 9 h	4 days, 17 h

ATA flash 32 MB

Analogue inputs	Memory cycle 6 min.	Memory cycle 1 min.	Memory cycle 30 s.	Memory cycle 10 s.	Memory cycle 1 s.
1	22752 days, 19 h	3792 days, 3 h	1896 days, 1 h	632 days	63 days, 4 h
4	11376 days,9 h	1896 days, 1 h	948 days	316 days	31 days, 14 h
8	6825 days,20 h	137 days, 15 h	568 days, 19 h	189 days, 14 h	18 days, 23 h
16	3412 days,22 h	568 days, 19 h	284 days, 9 h	94 days, 19 h	9 days, 11 h

ATA flash 64 MB

Analogue inputs	Memory cycle 6 min.	Memory cycle 1 min.	Memory cycle 30 s.	Memory cycle 10 s.	Memory cycle 1 s.
1	45508 days, 8 h	7584 days, 17 h	3792 days, 8 h	1264 days, 2 h	126 days, 9 h
4	22754 days, 4 h	3792 days, 8 h	1896 days, 4 h	632 days, 1 h	63 days, 4 h
8	13652 days, 12 h	2275 days, 10 h	1134 days, 17 h	379 days, 5 h	37 days, 22 h
16	6826 days, 6 h	1137 days, 17 h	568 days, 20 h	189 days, 14 h	18 days, 23 h

ATA flash 128 MB

Analogue inputs	Memory cycle 6 min.	Memory cycle 1 min.	Memory cycle 30 s.	Memory cycle 10 s.	Memory cycle 1 s.
1	91019 days, 11 h	15169 days, 21 h	7584 days, 22 h	2528 days, 7 h	252 days, 19 h
4	45509 days, 17 h	7584 days, 22 h	3792 days, 11 h	1264 days, 3 h	126 days, 9 h
8	27305 days, 20 h	4550 days, 23 h	2275 days,11 h	758 days, 11 h	75 days, 20 h
16	13652 days, 22 h	2275 days, 11 h	1137 days, 17 h	379 days, 5 h	37 days, 22 h

Certification

CE mark

The measurement system fulfils the legal requirements of the EU guidelines. Endress+Hauser acknowledges a successful test of the unit by applying the CE mark.

Electronic recording/ electronic signature

FDA 21 CFR 11:
Fulfils the requirements of the “Food and Drug Administration“ for electronic recording/electronic signatures

External norms and guidelines

EN 60529:
Housing ingress protection (IP code)

EN 61010:
Safety recommendations for electrical measurement, control and laboratory instrumentation

EN 61326 (IEC 1326):
Electromagnetic compatibility (EMC/immunity requirements)

Accessories

The following is included in the delivery

1 operating manual, 2 panel fixing jack screws, screw plug-on terminals for power supply, relays and input signals; PC operating and set-up software ReadWin® 2000

Accessories

Description	Order code
Ethernet module, RS232, 230 V_{AC} for DIN top hat rail mounting incl. interface cable	RSG12A-E2
Ethernet module, RS232, 115 V_{AC} for DIN top hat rail mounting incl. interface cable	RSG12A-E3
Ethernet module, RS485, 230 V_{AC} for DIN top hat rail mounting incl. interface cable	RSG12A-E4
Ethernet module, RS485,115 V_{AC} for DIN top hat rail mounting incl. interface cable	RSG12A-E5
IP65 field housing	RSG12A-H1
PROFIBUS-DP module, “slave“ operating mode for DIN top hat rail mounting	RSG12A-P1
Interface cable for PC connection	RSG12A-S1
Interface cable for modem connection	RSG12A-S2
Adapter set RS232 to RS485 for DIN top hat rail mounting, 230 V_{AC}	RSG12A-S6
Adapter set RS232 to RS485 in compact housing, 230 V_{AC}	RSG12A-S3
Adapter set RS232 to RS485 for DIN top hat rail mounting, 115 V_{AC}	RSG12A-S7
Adapter set RS232 to RS485 in compact housing, 115 V_{AC}	RSG12A-S5
RS232 interface cable, 3.5 mm / 0.138” jack plug for PC connection	RSG12A-VK
ATA flash card 16 MB	51004142
ATA flash card 32 MB	51002270
ATA flash card 64 MB	51003857
ATA flash card 128 MB	51004163

Further documentation

- ❑ Product Group brochure “Recorders“ (PG 002R/09/en)
- ❑ System Information “Memo-Graph S“ (SI 014R/09/en)
- ❑ Operating Manual “Memo-Graph S“ (BA 138R/09/)
- ❑ System Information “ReadWin®2000“ (SI 012R/09/en)

How to order

Safety Data Manager Memo-Graph S

In/outputs in slot 1
- A Slot 1 not used
- B 8 universal inputs (U, I, TC, RTD)
- C 15 digital inputs, 6 relays (closing contact)

In/outputs in slot 2
- A Slot 2 not used
- B 8 universal inputs (U, I, TC, RTD)
- C 15 digital inputs, 6 relays (closing contact)
- D 4 analogue outputs, 6 relays (closing contact)
- E 8 analogue outputs, 6 relays (closing contact)

Power supply with in-/outputs in slot 3
- 1 90-253 V AC +1 relay
- 2 20-30 V AC/DC +1 relay (in preparation)
- 3 90-253 V AC +7 digital / +5 relays / +1 open collector output
- 4 20-30 V AC/DC +7 digital / +5 relays / +1 open collector output (in preparation)

Interfaces
- 1 RS232
- 2 RS485 + RS232
- 3 With ext. PROFIBUS-DP slave module
- 4 With ext. PROFIBUS-DP slave module + RS485
- 5 PROFIBUS-DP monitor 45,45 kBaud
- 6 PROFIBUS-DP monitor 93,75 kBaud

Internal memory
- 1 2048 kByte memory capacity, secure on power failure

Exchangeable memory
- A No memory card required
- B 6 MB memory card
- C 32 MB memory card
- D 64 MB memory card
- E 128 MB memory card

Unit bezel/operation/interface cable
- A Die-cast, IP54, door, glass window, front mounted ATA flash, no cable
- B Stainless steel, IP65, no door, plastic screen, rear mounted ATA flash, no cable
- C Die-cast, IP54, door, glass window, front mounted ATA flash, with cable
- D Stainless steel, IP65, no door, plastic screen, rear mounted ATA flash, with cable

Models
- A Panel mounted unit without terminal, rear panel cover
- B Panel mounted unit with terminal cover
- C Panel mounted unit with rear panel cover
- D With desk top housing + Euro power cable
- E With desk top housing + Swiss power cable
- F With desk top housing + USA power cable
- G With IP65 field housing

Operating language
- A German
- B English
- C French
- D Italian
- E Spanish
- F Dutch
- G Danish
- H American English

Unit software
- A Standard software incl. mathematic package

Type
- A Standard E+H

RSG12-					1					A	A	⇐ **Order code**

Technical alterations reserved

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