Technical
Information
TI029R/24/ae

Data manager
memo-log

Multifunction paperless recorder memorizing, monitoring, compressing and displaying analog process data

Applications

- The Memo-Log data manager records up to 4 analog values. These channels can be mathematically combined, monitored for limit infringement, displayed, and stored on a Memory Card.
- Memo-Log can be universally applied in:
  – manned or unmanned measuring stations
  – continuous and repetitive processes
  – stationary and mobile measurement requirements

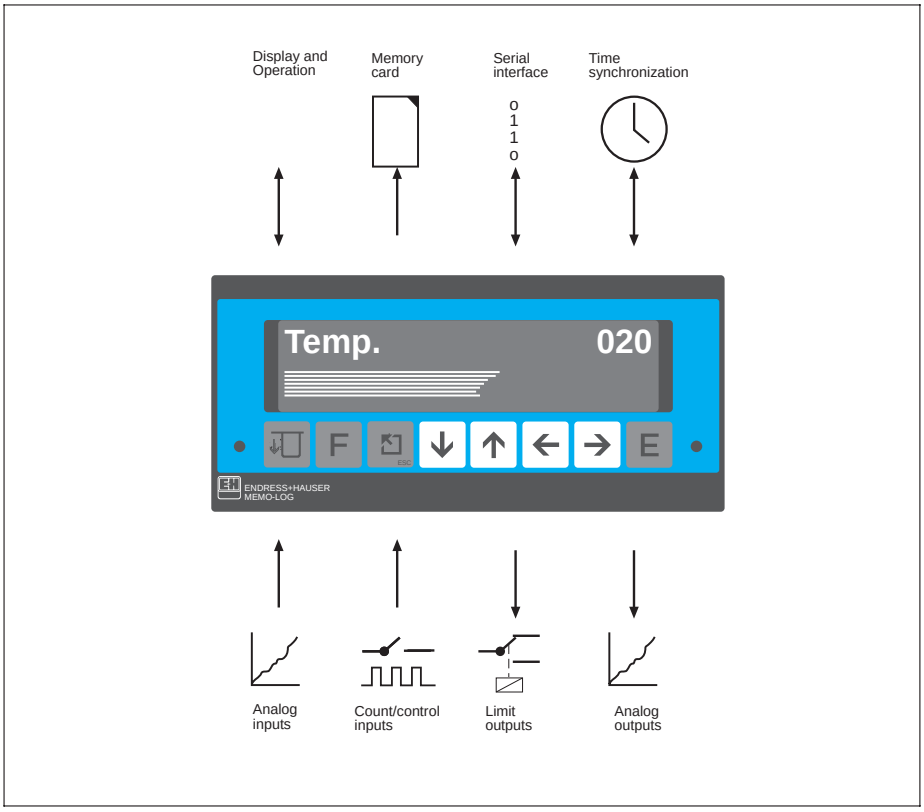
Features and Benefits

- Multifunctional: Direct connection of all nominal measured signals
- Intelligent: Automatic signal analysis, mathematical channel combinations and linearized analog outputs
- System compatible: Normed interfaces and PCMCIA Memory-Card
- User friendly: Easily readable text display and simple dialog operation
- Reliable: Wide range of limit and self-monitoring functions
- Interference security: Complies with NAMUR EMC recommendations

Endress+Hauser

Nothing beats know-how

Function principle



Schematic function diagram

Analog inputs
The signals connected to the analog inputs are measured 10 times per second, linearized, and calculated to the preset engineering units and amplitudes. Then they are displayed and automatically calculated to the min, max and average values of presettable time cycles. This compressed data form is then stored on exchangeable Memory Cards.

Limit monitoring
The measured signals are monitored for limit infringement every second. The individual settings (static/dynamic, upper/lower) and allocation to the built-in output relays ensures the highest security.

Count / control inputs
Count inputs make recording, storing, and display of impulses possible (e.g. for quantity recording). Operation times are calculated using control inputs. Measurement and memory time cycles can also be preset using the control inputs.

Channel combination
Recorded analog signals can be mathematically combined. These so called “virtual channels” are handled (display, limits, memory, etc.) the same way as all other real channels in the unit.

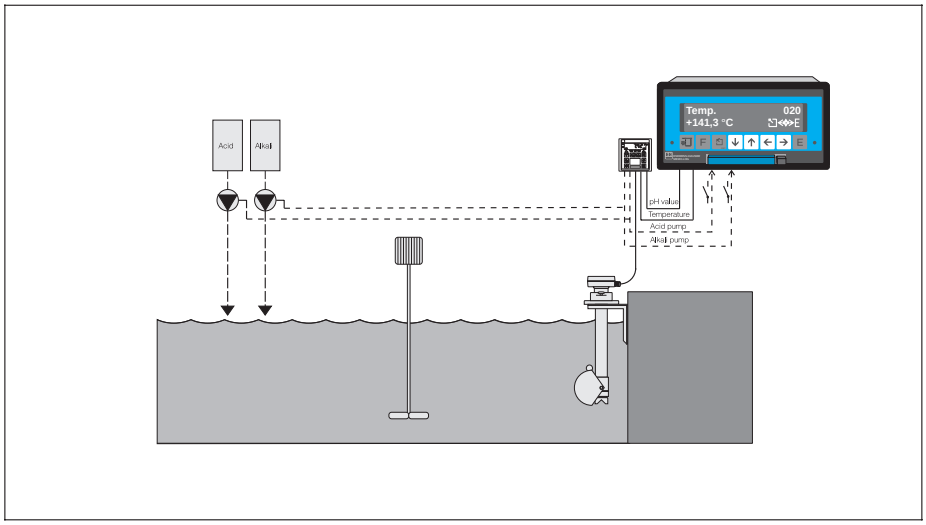
Time control
All time dependent functions are precisely controlled by an internal quartz clock. This clock can be synchronized with an external clock or a clock from another unit. The integrated timer enables the unit to record signals within a freely-selectable time interval.

System integration
A serial interface (standard: RS232 option: RS422/485) is available for quick set up and remote value display. ReadexT software is included with every Memo-Log. The information on the memory card is read out by drives that are connected to a MS-DOS compatible personal computer.

Display
An easy-to-read fluorescent display shows the measured values–digitally or in the form of a bar graph. Date, time, daily min, max, and average values, limits, unit status, and a large number of additional parameters can be displayed at the touch of a button.

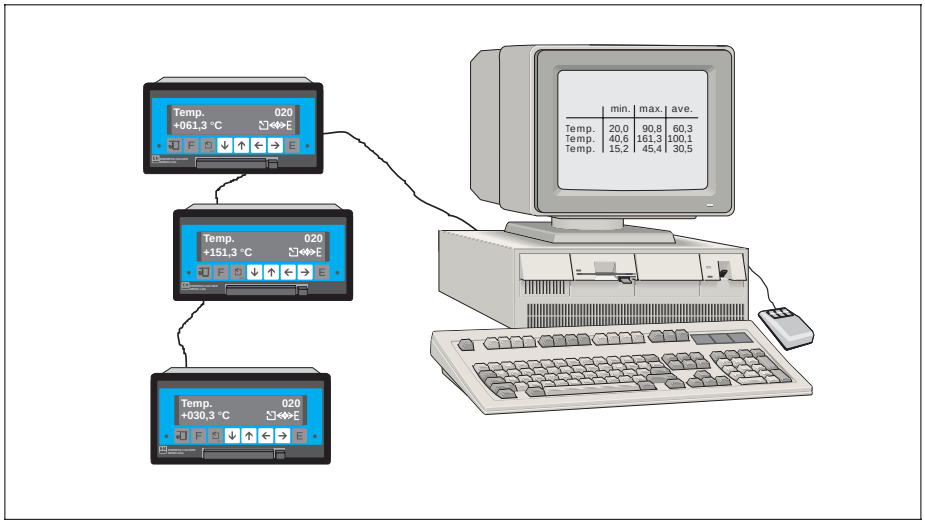
Unit set up
Parameters can be selected and set up using Memo-Log's eight function keys or remotely using ReadexT software, supplied free-of-charge with every Memo-Log.

Application example



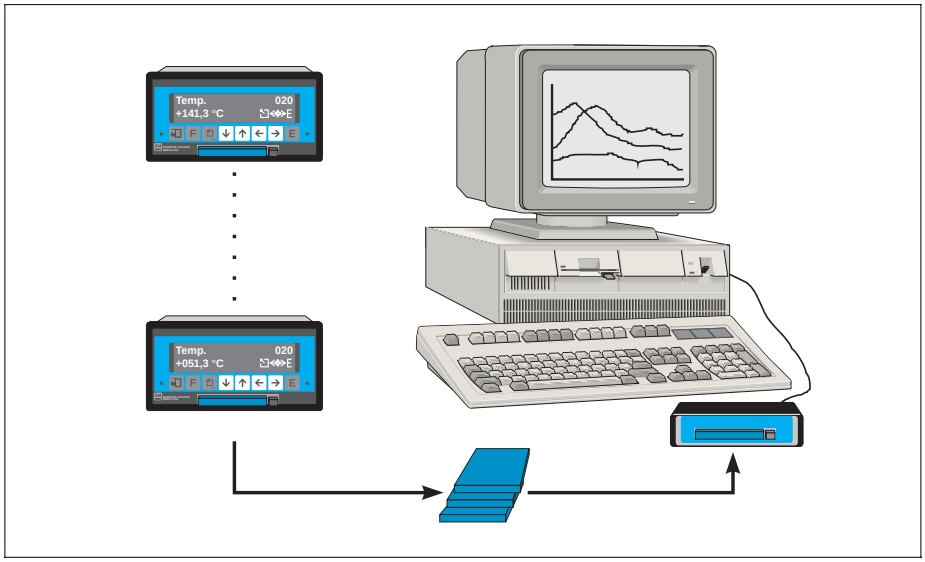
Memo-Log used for monitoring and storing process sequences in a neutralization system (Submersion armature with pH and temperature sensor, pH transmitter with integrated controller e.g. Mycom)

Operation and monitoring



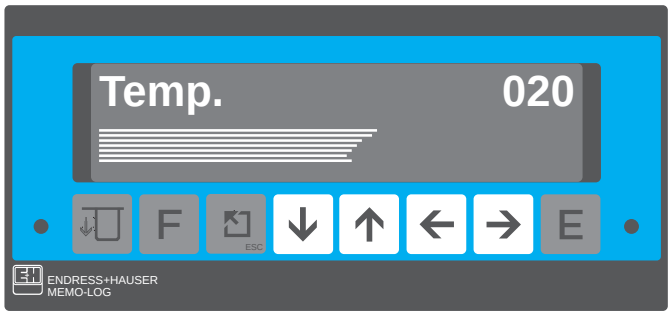
Remote configuration and instantaneous value read out using ReadexT system software.

Additional data evaluation



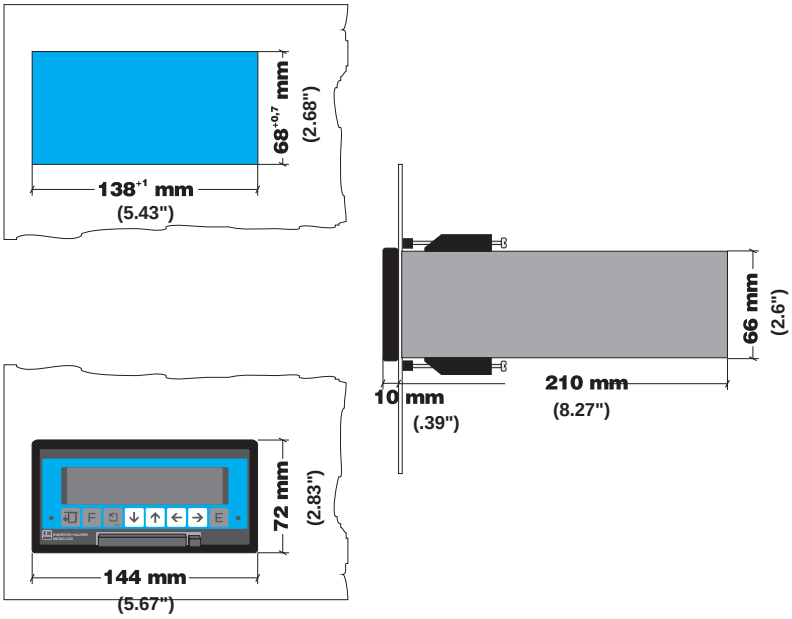
Transmission of measured data using the memory card for:
- Read into computer
- Evaluation using ReadexT or standard software
- Filling in the system

Front end operation / display

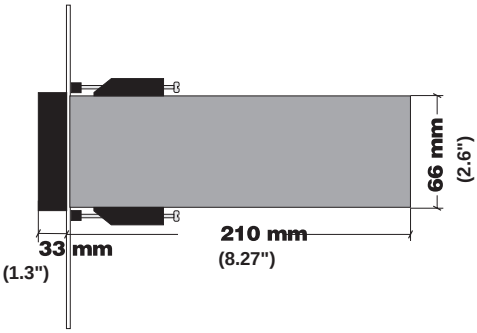


Menu structured operation and selection of display mode using front-mounted keypad. Example: TREND BAR GRAPH on rising value.

Installation

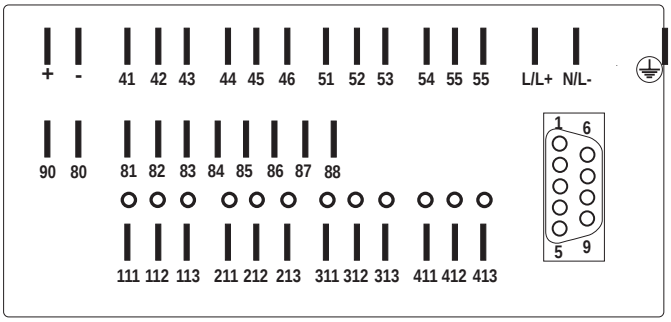


Standard unit dimensions



Standard unit with front door (IP 54)

Electrical connections



Rear panel connections

Terminal	Function		
L/L+	Line		
N/N-	Neutral		
⏚	Potential earth (housing)		
41	Normally closed	(nc)	Relay 1
42	Common	(c)	Relay 1
43	Normally open	(no)	Relay 1
44	Normally closed	(nc)	Relay 2
45	Common	(c)	Relay 2
46	Normally open	(nc)	Relay 2
51	Normally closed	(nc)	Relay 3
52	Common	(c)	Relay 3
53	Normally open	(no)	Relay 3
54	Normally closed	(nc)	Relay 4
55	Common	(c)	Relay 4
56	Normally open	(no)	Relay 4
+	Auxiliary voltage +24 V		
-	Auxiliary voltage earth		
80 (-)	Common control in/outputs		
81 (+)	Control input 1 (time counter 1)		
82 (+)	Control input 2 (time counter 2)		
83 (+)	Control input 3 (external measuring period)		
84 (+)	Control input 4 (external signal evaluation block, batch)		
85 (+)	Count input A		
86 (+)	Count input B		
87 (+)	Control input 7 (time synchronization)		
88 (+)	Control output 1 (time synchronization)		
90	+control output supply		

Terminal	Channel	V/I/T.C.	Pt 100	Linear output	24 V/24 mA power supply
111	1	+	A	--	+
112	1	-	B	--	-
113	1		Sense	--	
211	2	+	A	20 mA	+
212	2	-	B	0 V, 0/4 mA	-
213	2		Sense	10 V	
311	3	+	A	20 mA	+
312	3	-	B	0 V, 0/4 mA	-
313	3		Sense	10 V	
411	4	+	A	20 mA	+
412	4	-	B	0 V, 0/4 mA	-
413	4		Sense	10 V	

SUB-D 9 pole socket for DIN 41 652 serial interface

Pin	RS 485	RS 422	RS 232 C
1	Screen	Screen	Screen
2	-	-	TXD
3	RXD/TXD-B	RXD-B	RXD
4	-	TXD-B	-
5	GND	GND	GND
6	-	-	-
7	-	GND	-
8	RXD/TXD-A	RXD-A	-
9	-	TXD-A	-

(Free pins must not be connected !)

Order Code

RD10-	1	2	3	4	5	6	7	8a	8b	8c	9	0

1 Power supply
- D Multi supply 24 V AC/DC
- F 115 VAC, 50/60 Hz
- H 230 VAC, 50/60 Hz
- Y Special version

2 Model
- A 144x72 mm panel mounted, with bezel
- B 144x72 mm panel mounted, door and latch
- C 144x72 mm panel mounted, door and lock
- Y Special version

3 Operating language
- A German
- B English
- C French
- S English, without operating instructions
- Y Other versions

4 Signal calculation
- 1 Without signal calculation
- 2 MM = Mathematic module
- 3 INT = Integration
- 4 MM + INT
- Y Special version

5 Count inputs / control inputs
- A Without count and control inputs
- B CI = two count inputs
- C TMC = two time counters
- D REM = external release/measurement block
- E SYNC = remote time synchronization
- O CI + TMC
- P CI + REM
- Q CI + SYNC
- R CI + TMC + REM
- S CI + TMC + SYNC
- T CI + TMC + REM + SYNC
- I TMC + REM
- J TMC + SYNC
- K REM + SYNC
- N TMC + REM + SYNC

6 Interface
- 1 RS 232 C
- 2 RS 422/485

7 Plug-in position 1
- 1 Standard analog input 0/4...20 mA, 0...1/10 V
- 2 Multi voltage / thermo couple PCB
- 3 Pt 100/Ni 100 input
- 7 Universal input

8 Plug-in position for channels 2, 3, and 4
- 0 Not used
- 1 Standard analog input 0/4...20 mA, 0...1/10 V
- 2 Multi voltage / thermo couple PCB
- 3 Pt 100/Ni 100 input
- 5 Linear analog output 0/4...20 mA, 0...1/10 V
- 6 24 VDC, 25 mA power supply output
- 7 Universal input

9 Memory-Card
- A None
- B Memory card, 64 kByte
- C Memory card, 256 kByte
- D Memory card, 1024 kByte
- Y Special version

0 Internal temperature compensation
- 0 Without internal temperature compensation
- 1 With internal temperature compensation

Technical data

Models
144x72x210 mm panel mounted
Protection class front IP 20 D, IEC 529
Protection class rear IP 00, VDE 0470
Optional Front door IP 54, IEC529

Power supply
230/115 VAC +10% -15%, 50/60 Hz
Option 24 V universal power supply:
24 VAC +10% -15%, 50/60 Hz
24 VDC +10% -20%

Power consumption
max. ca. 15 VA (complete unit)
min. ca. 8 VA (1 channel unit)

Fuses
At 230/115 VAC = 630 mA slow blow
At 24 VAC = 1 A slow blow
At 24 VDC = 1 A slow blow

Connections
Spade connectors (DIN 46224),
6.3 x 0.8 mm

Display
2 x 20 digit fluorescent display for digital measured value display or trend bar graph

Operation
Menu structured matrix operation via 8 front-mounted keys or serial interface

Limit monitoring
All channels 1x/second
5 limit values (statistic/dynamic) per channel, presettable value and allocation

Ambient operational conditions
32...+122°F (0...+50 °C),
humidity to DIN 40 040

Storage temperature
-4...158°F (-20...+70 °C)

EMC/immunity
To NAMUR recommendations AK 4.6 without functional interference due to:
IEC 801-2/VDE 0843/2, level 3
IEC 801-3/VDE 0843/3, level 3
IEC 801-4/VDE 0843/4, level 3

Power failure
No functional loss due to main power loss up to 20 ms. Automatic start on longer power losses.

Electrical safety
IEC 348/VDE 0411, Protection class I

RF immunity
EN 55011/VDE 0875 Part 11, Class A

Standard input ranges
0...1/10 V, 1 MΩ
0/4...20 mA, via 50 Ω internal shunt

Basic accuracy:	0.2 % v.E.
Long term drift:	0.2 % v.E.
Power up drift up to 4h:	0.1 % v.E.
Temperature drift:	0.2 % v.E./10 K

Standard input over range
≤100 mA continuous
≤50 V continuous

Normal mode noise rejection
40 dB at input range/10, 50/60 Hz ±0.5 Hz

Common mode noise rejection
0.1 % measurement range at 160 V, 50/60 Hz ±0.5 Hz

Potential difference
Channel to channel 100 V

Serial interface
RS 232 C (Option: RS 422/485) incl. PC software for setting up, display and optional memory card

Auxiliary voltage
Approx. 24 VDC, 100 mA, for optional control inputs.

Limits / alarm relays
4 Relays, each with 1 x changeover contact, 3 A, 250 VAC, insulation group A to VDE 0110

Options
Multi voltage/thermo couple input
±20 mV...±10 V selectable in 5 ranges
Thermo couples: L,U,N,B,R,S,K,J,T

Cold junction compensation incl. linearization, galvanic isolation

Basic accuracy:	0.2 % v.E. + 2 K

(absolute) using internal reference

Long term drift:	0.2 % v.E.
Power up drift up to 4 h:	0.1 % v.E.
Temperature drift:	0.2 % v.E./10 K

No cable open circuit monitoring

RTD
Pt 100, -148...1112°F (-100...+600°C)
Ni 100, -76...356°F (- 60...+180°C)

Basic accuracy:	0.2 % v.E.
Long term drift:	0.2 % v.E.
Power up drift up to 4 h:	0.2 % v.E.
Temperature drift:	0.1 % v.E./10 K

No cable open circuit monitoring

Universal input
Measurement range same as Standard/multi voltage/RTD input ranges, additional ranges:
Pt 100 a: -94...338°F (-70...+170°C)
Pt 100 b: -4...248°F (-20...+120°C)
Pt 500 : -148...1112°F (-100...+600°C)
Pt 1000: -148...1112°F (-100...+600°C)
with cable open circuit monitoring

Transmitter power supply
24 VDC, ±10 %, 24 mA, short circuit protected

Technical data

Analog output
0/4...20 mA, load ≤ 500 Ω
0...10 V, 2 mA
Basic accuracy : 0.5 % v.E.
Long term drift: 0.5 % v.E.
Power up drift up to 4 h: 0.3 % v.E.
Temperature drift: 0.3 % v.E.

Count/control inputs
2 count inputs
max. impulse frequency 25 Hz
min. impulse length 20 ms
2 time counters
external release/blocking signal analysis
Time synchronization

Control in accordance to DIN 19 240:
Logic 0 = -3 V...+5 V
Logic 1 = +12 V...+30 V
Input current 2-3 mA
Bounce time ≤5 ms, Signal time ≥100 ms

Control output
Remote time synchronization
375 ms Fleeting contact

Memory-Card 64/256/1024 kByte
SRAM in accordance with PCMCIA and JEIDA 4.x
Card format 85,6x54x3,3 mm
Plug in cycles: min. 10.000
Storage temp: 14...158°F (-10...70°C)
Ambient temp: 32...140°F (0...+60°C)
Internal battery BR 2325, 3 V, 165 mAh

Memory capacity is dependent on the number of channels/options used.

The following theoretical values can be used as a guideline:
64 kByte 3 hrs.....1.4 years
256 kByte 13 hrs.....6.7 years
1024 kByte 57 hrs...27.6 years
Exact values can be calculated by a help program that can be found on the disks delivered.

PCMCIA/JEIDA card read out units
Various read out units are offered. Technical data is delivered with the unit ordered.

Accessories

External PCMCIA card read unit
for SRAM card
Desk top version, parallel interface
Order No. 50062456

Memory card
SRAM 64kByte Order No. 50060834
256kByte Order No. 50060833
1MByte Order No. 50060832

Trade names:
MS-DOS is a registered trade name for the Microsoft Corporation.

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