# Data manager *memo-log s*

Measurement, transmission, remote control and analysis system for storage and documentation of various data in the water and process industry





















# **Application areas**

Sudden rainfall tends to cause a number of problems for the waste water industry. There is a specially high waste water quantity at the start of the rain flow. These flows are usually only for short time spans but can cause excessive work load for the treatment plant. Memo-Log S monitors, stores and documents the most important values at storm overflow points, storm tanks, storm settling tanks, channel flows and storm overflow tanks.

#### Advantages at a glance

- Multi-functional: Direct connection of all nominal measured signals using analogue and digital in- and outputs.
- Intelligent: Automatic readout, analysis and alarm output on limit infringement using modem connection.
- System compatible: Normed interfaces, PCMCIA standard memory card and ReadexR setting up and analysis software.
- User friendly: Easily readable text display and simple dialogue operation.
- Versatile: Relay and analogue output remote control.
- Reliable: Reacts to limit infringements and has some control functions.

Quality made by Endress+Hauser





# Function



Schematic display of the unit functions

## Analogue inputs

One to four analogue inputs enable continuous recording of various measurements, e.g. level, tank and product overflow, as well as events and quantities (Q/h curves) at storm overflow tanks.

# **Digital inputs**

The 7 digital inputs are presettabel to either operate as quantity counters from flow meter pulsed outputs or to monitor and record operation times of pumps, motors and control systems.

## **Quantity recording**

Quantity measurement and recording can be done using an impulse input, integration of an analogue signal or by means of a presettable linearisation table (Q/h curves). Also customer specific calculation of values from special types of flow systems such as tangential weirs, movable weir flaps with back up correction can be included on request.

## Setting up

Parameters can be selected and set up in dialogue with the unit. The settings are selected from various subject levels. **Display** 

An easy to read display shows the measured values digitally or in the form of a trend bargraph. A large number of further parameters can be displayed at the touch of a button.

## System integration

An RS232 serial interface and ReadexR software are available for swift setting up, remote value display as well as remote control of the relays and analogue outputs.

# Analogue outputs

As an alternative to the analogue inputs the Memo-Log S can be fitted with 1-3 analogue outputs,

e.g. for motor or penstock control.

# Impulse output

A quantity analogue input can be transmitted directly to an impulse output (e.g. 100l equally 1 impulse at the output).

# **Relay** outputs

4 relays (each with 1 changeover contact 230V/3A) can be freely selected for various tasks,

(e.g. limit alarms or remote control using the interface / modem).

# Limit monitoring

Analogue and digital values are monitored for limit infringement once per second. The individual settings and allocation of the output relays, telephone alarm and event recording ensure the highest operational security.

# Remote operation /remote monitor

Using the ReadexR software the values for the analogue output boards (e.g. penstock) and relays (e.g. pump control) can be changed. A fast condition overview of all instantaneous values, switch conditions and quantities can be seen on the PC screen as an on line operation using the serial interface link (direct or by modem).

# Self monitoring on storm overflow tanks

# Self monitoring

Treatment plants operating on a sewage network must be protected (e.g. with storm overflow tanks) from being overloaded or flooded. Using storm overflow tanks, which are positioned in front of the plant, sudden loading of untreated water at the outfall can be avoided or at least delayed. This is dependent on the rainfall time and intensity. So that the treatment plant can monitor itself it is suggested that all storm overflow tanks be fitted with the necessary measurement, monitoring and recording instrumentation.

## Values that require monitoring

- Back up frequency
- Back up time
- Overflow frequency
- Overflow time
- Overflow quantity
- Operation times
- Fault messages

By using precise measurement instrumentation for

- Tank contents
- Overflow
- Flow

and a Memo-Log S recorder ideal and economical operation of storm overflow tanks can be realised.

# Application example



Memo-Log S used to monitor and store sequences occurring at a storm tank. The unit has various ways to transmit the measured values

#### **Direct connection**

Measured data transmission can be done by direct connection of a PC to the Memo-Log S using the RS232 or RS 485/422 serial interface.

# Memory card

Data stored on the memory card (also SRAM card) can be directly read out at the PC using a PCMCIA drive.

#### Modem operation

Data transmission is done using the telephone network and a modem connected to both the Memo-Log S as well as the PC. When operating in modem mode alarm messages and/or city call (beeper) can be automatically transmitted to any of up to 10 different telephone numbers.

#### Graphic printout (front end)

A graphic event report printout can be initiated front end by connecting the Uni-Bit data printer to the Memo-Log S.

# Further data analysis using ReadexR software.



Graphic display of an event in graphic form

Endress + Hauser	Wetzer		READEX R	PRU00 V1.10
Event report on : 1 Time : 0 Peak value : +	Back up 0.08.94 16:15 002h55 0302 1	Meas point off ::	10.08.94 15	9:10
Plant overflow 10.08.94 17:00	10.08.94 18:10	Time Max.[c] 0001h10 +080 Time Max.[c]	bm∕h] Quantl ,8 00000	[cbm ] )0103,7
10.08.94 17:10	10.08.94 17:32	0000h22 +084	,4 00000	00042,1
Pump 1 10.08.94 17:09 10.08.94 17:55	10.08.94 17:43 10.08.94 18:16	Time 0000h34 0000h21		
Pump 2 10.08.94 18:22	10.08.94 18:33	Time 0000h11		
↑ - Back	↓ – Pre	P - Print	ES	3C – End
Endress + Hauser	Wetzer		READEX R	PRU00 V1.10
Endress + Hauser	Wetzer		READEX R	PRU00 V1.10
Endress + Hauser Remote monitor	Wetzer Memo-Log 80 M	eas point	READEX R	PRU00 V1.10
Endress + Hauser Remote monitor Back up Plant overflow Tank overflow Pump 1 Pump 2 Fault pump 1 Fault pump 1 Fault pump 2 Penstock valve Inflow 1	Wetzer Memo-Log 80 M Status Analogue off +0001 1/ on +200,0 cb off +000,4 cb off off off off off	eas point val. Event s +0000000000 m/h +000000011,8 m/h +000000000,0	Month +000000000 +000000000 +000000000	PRU00 V1.10 0347 l 011,8 cbm 000,0 cbm
Endress + Hauser Remote monitor Back up Plant overflow Tank overflow Pump 1 Pump 2 Fault pump 1 Fault pump 1 Fault pump 2 Penstock valve Inflow 1 Inflow 2	Wetzer Memo-Log 80 M Status Analogue off +0001 1/ on +200,0 cb off +000,4 cb off off off off	eas point val. Event s +0000000000 m/h +000000011,8 m/h +000000000,0	READEX R Month +000000000 +000000000 +000000000	PRU00 V1.10 0347 l 011,8 cbm 000,0 cbm
Endress + Hauser Remote monitor Back up Plant overflow Tank overflow Pump 1 Pump 2 Fault pump 1 Fault pump 2 Penstock valve Inflow 1 Inflow 2 A - Output relay B - Output relay	Wetzer Memo-Log 80 M Status Analogue off +0001 1/ on +200,0 cb off +000,4 cb off off off off off off 1 - 0 2 off 1 - 0	eas point val. Event s +0000000000 m/h +000000011,8 m/h +0000000000,0 utput Ch. 4 02	READEX R Month +000000000 +000000000 +000000000 +000000131 20,0 % ▲▼	PRU00 V1.10 )347 l )11,8 cbm )00,0 cbm 1,000 Ltr. End

Operations screen (on line) of a Memo-Log S with direct remote control of relays and analogue output.

Tabular listing of an event report.

# Software ReadexR

The ReadexR software package enables simple and comfortable further analysis of the stored measured data.

As well as graphic and tabular evaluation, e.g. event reports, all configuration parameters of up to 100 measurement points can be set up and stored.

Measured data printout using the Uni-Bit data printer (On line operation),



Graphic report printout of a storm event (Back up, overflow, pump)



# Front end operation and display



Dialogue operation and measured value display using the front mounted keypad Example: TREND BARGRAPH on rising measured value

# Installation



Standard unit dimensions



Standard unit with front cover (IP 54)

# **Electrical connection**



24V24mA power supply + -

+ -

+ -

+

20 mA 0 V, 0/4 mA 10 V

Rear panel connections

Terminal	Functi	on			
L/L+ N/N-	Line Neutral Earth p	otential (hous	sing)		
41 42 43	Norma Commo Norma	lly closed (nc) on (c) lly open (no)	) Relay 1 Relay 1 Relay 1		
44 45 46	Norma Commo Norma	lly closed (nc) on (c) lly open (no)	) Relay 2 Relay 2 Relay 2		
51 52 53	Norma Commo Norma	lly closed (nc) on (c) lly open (no)	) Relay 3 Relay 3 Relay 3		
54 55 56	Norma Commo Norma	lly closed (nc) on (c) lly open (no)	) Relay 4 Relay 4 Relay 4		
+ -	Auxilia Auxilia	ry voltage +24 ry voltage ear	4 V th		
80 (-)	Comm	on Digital in-/o	outputs		
81 (+) 82 (+) 83 (+) 84 (+) 85 (+) 86 (+) 87 (+)	Digital Digital Digital Digital Digital Digital Digital	input 1 input 2 input 3 input 4 input 5 input 6 input 7	Channel A Channel B Channel C Channel D Channel E Channel F Channel G		
88 (+) 90 (+)	Impuls Supply	e output to all digital i	n-/outputs		
Terminal	Channel	U/I/T.C.	Pt 100	Linear	2
111 112 113	1 1	+ -	A B Sense	  	I
211 212 213	2 2 2	+ -	A B Sense	20 mA 0 V, 0/4 r 10 V	mA
311 312 313	3 3 3	+ -	A B Sense	20 mA 0 V, 0/4 r 10 V	mA

CUID D 0 male goglest for DIN /	1 CE2 govial interfage

4 + 4 -4

A B Sense

bob b 5 poie socket for bit 41 052 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 pir	ns must not be conne	ected !)	

411 412 413

# **Technical data**

# Models

144x72x210 mm panel mounting Protection class front IP 20 D, IEC 529 Protection class rear IP 00, VDE 0470 Option: Front door IP 54, IEC529

#### Power supply

 $\begin{array}{l} 230/115 \; V_{AC} \; +10\% \; -15\%, \; 50/60 \; Hz \\ Option \; 24 \; V \; universal \; power \; supply: \\ \; 24 \; V_{AC} \; +10\% \; -15\%, \; 50/60 \; Hz \\ \; 24 \; V_{DC} \; +10\% \; -20\% \end{array}$ 

## Power consumption

max. approx. 15 VA (complete unit) min. approx. 8 VA (1 channel unit)

#### Fuses

At 230/115  $V_{AC}$  = 630 mA slow blow At 24  $V_{AC}$  = 1 A slow blow At 24  $V_{DC}$  = 1 A slow blow

#### Connections

Spade terminals (DIN 46224), 6.3 x 0.8 mm

#### Display

2 x 20 digit fluorescent display for digital measured value display and / or trend bargraph

#### Operation

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

#### Limit monitoring

All channels 1x/second 1 limit (analogue and digital) per channel, presettable value and allocation

#### Ambient operational conditions

0 °C...+50 °C, humidity to DIN 40 040

#### Storage temperature

-20 °C...+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 mains 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

#### Standard input over range

≤100 mA continuous ≤50 V continuous

#### Nominal mode noise rejection

40 dB at input range/10, 50/60 Hz  $\pm 0.5$  Hz

#### Common mode noise rejection

0.1 % measurement range at 160 V, 50/60 Hz  $\pm 0.5$  Hz

#### **Potential difference**

Channel to channel 100 V

#### Serial interface

RS 232 C (option: RS 422/485) including PC software for setting up, display and optional memory card

# Auxiliary voltage

Approx. 24  $V_{\text{DC}},\,100$  mA, for optional control inputs

#### Limits / alarm relays

4 relays, each with 1 x changeover contact, 3 A, 250  $V_{AC},$  insulation group A to VDE 0110

#### **Digital inputs**

7 counter / event inputs max. impulse frequency 25 Hz min. impulse length 20 ms

Connection to DIN 19 240: Logic 0 = -3 V...+5 V Logic 1 = +12 V...+30 V Input current 2-3 mA Bounce time  $\leq$ 5 ms Signal time  $\geq$ 100 ms

## Impulse output

1 Impulse output max. impulse frequency 12,5 Hz

## Options

# Universal inputs

 Ranges as in the standard inputs, additional ranges:

 Pt 100, -100 °C...+600 °C

 Ni 100, - 60 °C...+180 °C

 Basic accuracy:
 0.2 % FSD

 Long term drift:
 0.2 % FSD

 Power up drift up to 4 h: 0.2 % FSD

 Temperature drift:
 0.2 % FSD/10 K

 Pt 100 a :
 - 70...+170 °C

 Pt 100 b :
 - 20...+120 °C

 Pt 500 :
 -100...+600 °C

 Pt 1000 :
 -100...+600 °C

 with cable open circuit monitoring

±20 mV...±10 V selectable in 5 ranges Thermo couples: L,U,N,B,R,S,K,J,T Cold junction compensation including linearisation, galvanic isolation Basic accuracy: 0.2 % FSD + 2 K (absolute) using internal cold junction reference Long term drift: 0.2 % FSD Power up drift up to 4 h: 0.1 % FSD Temperature drift: 0.2 % FSD/10 K with cable open circuit monitor from approx. 50 K Ohm

#### Transmitter power supply

24 VDC, ±10 %, 24 mA, short circuit protection

#### Analogue output

0/4...20 mA, load  $\leq$  500  $\Omega$ 0...10 V, 2 mA Basic accuracy: 0.5 % FSD Long term drift: 0.5 % FSD Power up drift up to 4 h: 0.3 % FSD Temperature drift: 0.3 % FSD

### 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 temperature: -10 °C...+70 °C Ambient temperature: 0 °C...+60 °C Internal battery BR 2325, 3 V, 165 mAh

# PCMCIA/JEIDA card readout units

Various units are offered. Technical data is delivered with the unit ordered.

Technical alterations reserved

# **Order details**

Data manager Memo-Log S Order code dependent on order

#### 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.

# Data manager Memo-Log S

L	
IIni	it model type
1	Storm overflow tank controller
	without Q/h curve
	Storm overnow tank presettable quantity recording (35 point Q/n curves)
	Power supply
	F 115 V, 50/60 Hz
	D 24 VDC and 24 VAC, 50/60 Hz
	Housing type
	A 144x72 mm panel mounting, with bezel B 144x72 mm panel mounting, door and latch
	C 144x72 mm panel mounting, door and lock
	Operating language
	A German R Epolich
	C French
	Interfere
	1 BS 232 serial interface
	2 RS 422/485 serial interface
	Plug_in position 1
	1 Ch.1: Standard input 0/420 mA, 01/10 V
	7 Ch.1: Universal input for analogue signals
	Plug in position 2
	0 Not used, only 1-channel unit 1 Ch 2: Standard input 0/4 20 mA 0 1/10 V
	5 Ch.2: Linear analogue output 0/420 mA, 010 V
	7 Ch.2: Universal input for analogue signals
	Plug in position 3
	0 Not used, only 1-channel unit
	5 Ch.3: Linear analogue output 0/420 mA, 010 V
	6 Ch.3: Loop power supply 24 VDC, 25 mA 7 Ch.3: Universal input for analogue signals
	Plug in position 4
	0 Not used, only 1-channel unit
	1 Ch.4: Standard input 0/420 mA, 01/10 V 5 Ch.4: Linear analogue output 0/420 mA, 010 V
	6 Ch.4: Loop power supply 24 VDC, 25 mA 7 Ch.4: Universal input for analogue signals
	A No memory card required (display unit)
	B With Memory card, (SRAM), 64 kByte
	D With Memory card, (SRAM), 1024 kByte
	Internal temperature compensation
	0 Internal temperature compensation not require
	with memail emperature compensation
0102-	← Complete order code

# United Kingdom Export division

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