

Process Indicator *RIA 450*

Multi functional indicator, with integrated loop power supply, for monitoring and displaying analog process data



Application areas

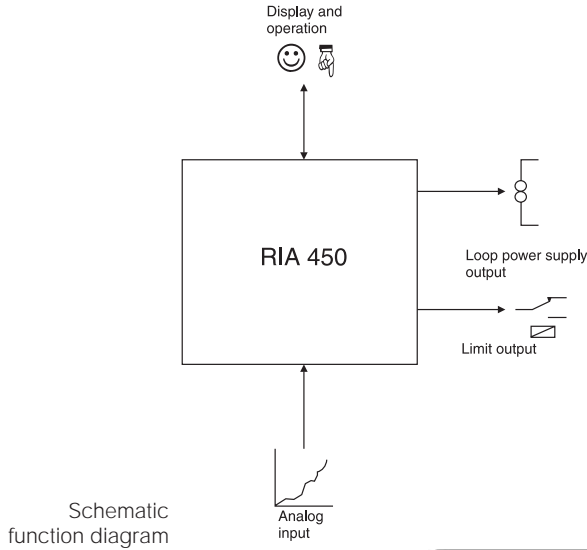
- The RIA 450 process indicator displays 1 analog measured value. This is also monitored for up to 4 individual preset limits. A loop power supply is also available.
- The process indicator can be applied in:
 - Control rooms
 - Control panels
 - Stationary or mobile measurement systems
 - Manned or unmanned measurement stations

Advantages at a glance

- Multi functional: All normal measurement signals can be directly connected (bipolar voltage, current, thermocouples, RTD)
- User friendly: Measurement range, engineering units and limits programmable via simple matrix operation
- Clear display: Multi colored display for a clear bargraph display, 4 digit measured value, engineering units and alarms
- Reliability: Complete limit monitoring function, 4 presettable limits with 4 relay outputs
- Interference security: Complies to EMC requirements to EMVG and NAMUR (with CE-Mark)
- Alternating pump control



Function

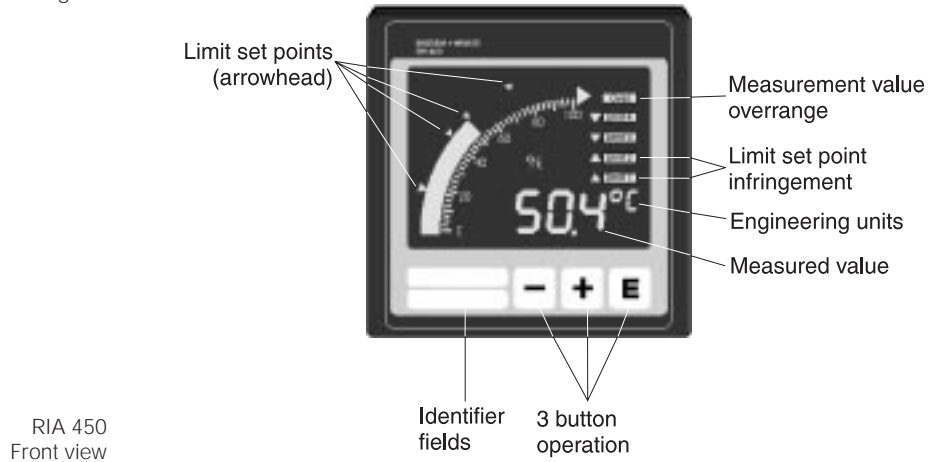


Analog Inputs

The analog signal at the input is converted to the preset engineering unit range and then displayed as an analog bargraph and digital measured value.

Limit monitoring

The converted signal is monitored 2.5 times every second for limit infringements. The presetability (upper/lower limit markings as well as max/min security) of the built-in relays guarantee highest security in the event of an alarm.



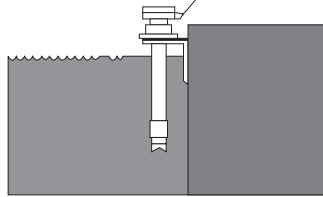
Display

A clear three color "black mask" LC display shows the measured value digitally with an analog bargraph. Preset limits, engineering units and limit infringements are continuously displayed.

Operation

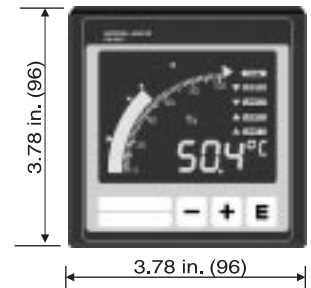
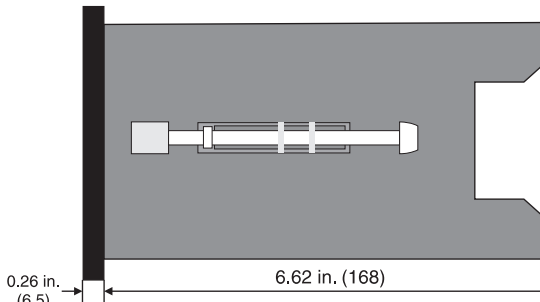
Parameters can be selected and set up by matrix programming. Here the setting up matrix is divided into channel and limit dependent levels.

RIA 450 for monitoring and displaying a measured value: e.g. Temperature



Required panel cut-out (to DIN 43700)
3.62 in. x 3.62 in.
(92^{+0.8} mm x 92^{+0.8} mm)

Install at eye level.
Optimum viewing angle:
up to 10° from above
up to 45° from below
up to 40° from left
up to 40° from right



Electrical connection/ Technical data

Model

Panel mounted 3.78 in. x 3.78 in. x 5.44 in.
(96x96x168 mm)
Protection class, Front IP 65, IEC 529

Power supply

90 to 253 V 48 to 440 Hz
Option: Low voltage supply 10 to 36 V DC or
20 to 27 V AC Low voltage security

Power consumption

max. 8 W

Terminals

Screw terminals 2 x 12 pole

Display system

LC display (black mask) 3 color rear illumination;
41 element bargraph with 41 limit arrows (yellow)
4 x 7 segment numeric value (orange)
4 x 14 segment engineering unit (orange)
4 x 1 segment limit infringement (red)
4 x upper, 4 x lower infringement (red arrow)

Operation

Structured menu with matrix operation using
3 front panel mounted push buttons

Limit

2.5 x / second (400 ms)
Alarm contact function:
Presettable minimum or maximum security:
Hysteresis variable
Upper or lower infringement presettable
Set points displayed by a limit arrow head
on the bargraph

Ambient operation temperature

32°F to +122°F (0°C to +50°C), to DIN 40040
relative humidity <=75 % on yearly average
without condensation

Storage temperature

-4°F to +158°F (-20°C to +70°C)

Influencing effects

Power failure:
≤20 ms, no effect
≥20 ms, automatic function resumption
Burst: to IEC 801-4 supply cable 2 kV
signal cable 2 kV
ESD: to IEC 801-2 6 kV contact discharge
Electromagnetic fields: to IEC 801-3 10V/m
HF immunity, conducted: to IEC 801-6 10 V
Surge (supply cables): to IEC 801-5
1.0 kV sym., 2kV unsym.
Surge (signal cables): to IEC 801-5.1 KV
unsym.
With external over voltage protection

Transmissions

RF protection to EN 55011/VDE 0875, Part
11, Class A (industrial areas)
Harmonics to IEC 555-2.

Standard input signals

0 to 1/10 V, Ri = 1 MΩm
0/4 to 20 mA, Ri = 50 Ωm
Basic accuracy: 0.25% FSD
Temperature drift: 0.25% /10 K
Overrange: 10%
Max. Input current: 100 mA
Common mode noise rejection:
0.1 % measurement
span at 63 V 50/60 Hz
Normal mode noise rejection:
40 dB at input
range/10, 50 to 60 Hz

Allowable input voltage range:
± 60 V (differential mode)
Allowable common voltage range:
± 100 V (common mode)
No dangerous voltages

Measurement system

System: U/f convertor
Integration time: 200 ms
Resolution: approx. 13 Bit

Transmitter power supply (loop power supply)

Quantity: 1
Output voltage: 24 V ± 10 %
Output current: 25 mA max. (internally
limited short circuit protected)

Limits / Alarm relays

Number of relays: 4
Limit output: One potential free relay
changeover contact per limit 3 A, 250 V AC,
Isolation group A to VDE 0110

Safety

To IEC 1010-1/EN 61010-1 protection class
1; Over voltage category II;
max. Allowable degree of soiling. II

OPTIONS

Multi function input

Voltage input ranges bipolar:
± 20 mV ± 50mV ± 100mV ± 200mV
± 1V, ± 2V, ± 5V, ± 10V Ri = 1 MΩm

Current input range:
0/4 to 20 mA; Ri = 50 Ωm

Thermocouple input ranges:
Type L -328°F to +1652°F (-200 to +900°C)
Type U -328°F to +1112°F (-200 to +600°C)
Type B 32°F to +3308°F (0 to +1820°C)
Type S 32°F to +3272°F (0 to +1800°C)
Type R -58°F to +3272°F (-50 to +1800°C)
Type K -328°F to +2502°F (-200 to +1372°C)
Type J -346°F to +2192°F (-210 to +1200°C)
Type T -454°F to +752°F (-270 to +400°C)
Type N -454°F to +2372°F (-270 to +1300°C)
Cable open circuit is evaluated.
Compensation point: Internal; Accuracy ± 5K
± 1°C/10K surrounding temperature
RTD input ranges:
Ni100 -76°F to +356°F (-60 to +180°C)
Pt100 -148°F to +1112°F (-100 to +600°C)
Pt500 -148°F to +1112°F (-100 to +600°C)
Pt1000 -148°F to +1112°F (-100 to +600°C)

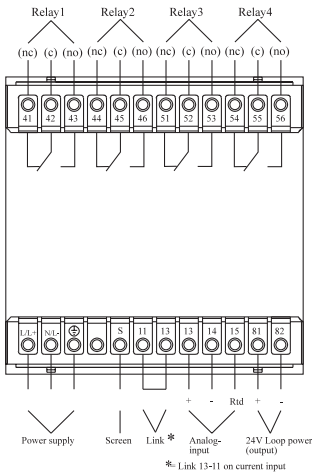
Base accuracy: 0.5 % FSD
Temperature drift: 0.2 % /10 K
Energizing current: approx. 1 mA
Cable comp.: up to approx. 100 Ωm
Over range: 10%

Allowable input
voltage range: 50 V
Max. Input current: 100 mA
Normal mode noise rejection:
0.1% FSD at
63 V 50/60 Hz
Common mode noise rejection:
40 dB at input
range/10, 50 to 60 Hz

No dangerous voltages

Measurement system

System: U/f convertor
Integration time: 200 ms
Resolution: approx. 13 Bit



Unit rear view showing 2 x 12 pole screw
plug on terminals

Technical alterations reserved

Ordering Information

Panel mounting 78 in. x 3.78 in. x 5.44 in.
(96x96x168 mm) with LC-display, 3 color back-ground illumination, 4-digit value/units and Bargraph-display with limit

- one channel
- transmitter supply, 24 VDC
- operation via 3 keys

plastic housing

- screw clips fixed to rear
- protection class to 40050: front IP 65, rear IP 20
- EC -certification of conformity as well as EC -conformity label CE

Options:

- Version with 4 limit -/control contacts as changeover 250V/3mA (-Alternating-Function-selectable)
- Version without 4 limit-/control contacts

Order Code: **Process Display RIA 450-**

1 2 3 4

1 Limit/Relays

- R Versions with 4 limit-/control contacts
- S Versions without 4 limit-/control contacts

2 Power supply

- 1 90 to 253 V, 48 to 440 Hz
- 2 10 to 36 V DC/20 to 27 V AC
not available with multi-function input

3 Input signals

- 1 0/4 to 20 mA, 0 to 1/10 V, transmitter power supply 25 mA
- 2 Multi-function input
(Current, Voltage, Thermocouple RTD)
- 3 0/4 to 20 mA, 0 to 1/10 V, transmitter power supply 100 mA

4 Version

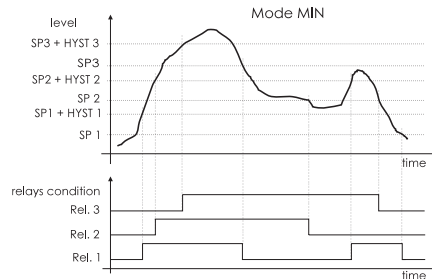
- 1 Standard version
- 5 Field housing IP 65
- Y Others

Presettable engineering units

"OFF", "%", "%FS", "A", "bar", "BBL", "BRIX", "C/kg", "cal", "cd", "cm", "2cm", "3cm", "dB", "F", "froz", "G", "g/h", "g/l", "g/m²", "g/m³", "g/ml", "g/s", "gal", "GPM", "GPH", "GPD", "GY", "hl", "hl/m", "hl/h", "hl/s", "HZ", "INCH", "K", "KG", "KG/s", "KG/h", "km/h", "kPa", "kV", "kVar", "kW", "kWh", "kΩ", "l", "l/h", "l/s", "lb/h", "lm", "m", "mA", "m/h", "m/s", "m/s²", "m³", "m³/d", "m³/h", "m³/s", "mbar", "mF", "mg/l", "mm", "2mm", "3mm", "mPa", "mR/h", "mS", "ms", "mΩ", "MΩ", "mV", "Mvar", "MW", "MWh", "N", "N/m²", "Nm", "3Nm", "NTU", "oz", "PA", "PH", "ppb", "ppm", "rem", "3Sm", "s", "t", "t/s", "t/mi", "t/h", "TEF", "V", "VA", "Var", "Vol%", "W", "Wh", "Ws", "Ω", "μA", "μF", "μm", "μs", "μS", "uΩ", "μV", "°F", "°C"

Alternating pump control application example

Equal use of more than one pump in level control application is done by alternately switching individual pumps. The condition for switching the pump is no longer a certain switch on point but the question which pump has not been used the longest. The same condition is valid for switching the pump off, except here the pump with the longest operation time is switched off.



"Alternating pump control"

Subject to change without notice

United States		Canada		Mexico
Endress+Hauser 2350 Endress Place Greenwood, IN 46143 Phone: (317) 535-7138 1-800-428-4344 FAX: (317) 535-8498	Regional Office Endress+Hauser 600 Kenrick, Ste. B-14 Houston, TX 77060 Phone: (281) 999-1991 FAX: (281) 999-1891	Endress+Hauser Canada, Ltd. 1440 Graham's Lane Unit 1, Burlington ON, L7S 1W3 Phone: (905) 681-9292 1-800-668-3199 FAX: (905) 681-9444	Endress+Hauser Canada, Ltd. 10453 - 178th Street, #100 Edmonton, AB T5S 1R5 Phone: (403) 486-3222 FAX: (403) 486-3466	Endress+Hauser Calle Camino Sta. Teresa 1384 C.P. 10200 Mexico D.F. Phone: (525) 568-9658 FAX: (525) 568-4183
Fogarty Engineering Sales Company Div. of Endress+Hauser P.O. Box 901 Harvey, LA 70059 Phone: (504) 366-3264 FAX: (504) 366-3816	Sterling IPC Div. of Endress+Hauser 68950 Powell Road P.O. Box 604 Romeo, MI 48065 Phone: (810) 752-0700 FAX: (810) 752-0705	Endress+Hauser Canada Ltée 6800 Côte de Liesse, Ste. 100 St. Laurent, Que H4T 2A7 Téléphone: (514) 733-0254 Télécopieur: (514) 733-2924		

