

EWTR/HR/PR 930 rel. 3/97 ing

controllers dual output and Neutral Zone 72x72

WHAT IT IS

The EWTR 930 is a new series of micro-processor based and fully programmable process controllers with dual output and Neutral Zone (Dead Band).

HOW IT IS MADE

- **Dimensions:** front 72x72 mm (2.84x2.84"), depth 102 mm (4.00")
- **Mounting:** flush panel mount with mounting bracket. Panel cut-out 67x67 mm (2.64x2.64")
- **Connections:** quick-disconnect screw terminal blocks (2.5 mm²; one wire each terminal only)
- **Display:** 12.5 mm LED (0.50")
- **Outputs:** two (2) SPDT relays 8(3)A 250V AC, or two (2) "static" (switched) outputs 0/12 Vdc 40 mA
- **Programmable analog output (optional):** 4...20 mA or 0...5 V, depending on model
- **Auxiliary output:** 12 Vdc/60 mA (for transducer power supply, e.g. temperature sensor, etc.; ground goes to terminal 10)
- **Inputs (depending on model):** PTC / RTD (Ni100, Pt100) / TC (J, K) / 4...20 mA (Ri = 41 Ω) for EWTR 930, EWHS 28/31 for EWHR 930 and EWPA 007/030 for EWPR 930
- **Resolution:** 1 °C (°F) or 0.1 °C (°F). The right-most digit can also be set to read-out in 0 or 5 only, or in all 10 digits
- **Accuracy:** better than 0.5% of full scale
- **Power supply (depending on model):** 220, 110, 24 Vac, 50/60 Hz; 12 Vac/dc

GENERAL DESCRIPTION

The EWTR 930 is a new series of micro-processor based and fully programmable process controllers with dual output and Neutral Zone (Dead Band).

The front keypad of these controllers offers several alpha-numeric menu prompts to configure the controller for each specific application (see further).

Three different versions of this controller are available: EWTR 930 for Temperature, EWHR 930 for Relative humidity and EWPR 930 for Pressure control.

The instrument is supplied in the standard EW 72x72 mm housing.

FRONT KEYPAD

SET: with this button the setpoint value (middle of the Neutral Zone) can be displayed. To change the value, this button should be activated together with the "UP" or "DOWN" button. In case parameter "dro" is set at "S", the setpoint value (SV) can be changed with the "UP" or "DOWN" button only, while the process temperature (PV) can be displayed with the "SET" button.

UP: used to increase the setpoint value, as well as the parameter when in programming. When held down for a few seconds, the change rate accelerates.

DOWN: same functions except to decrease a value.

PRG: programming access button. To access programming, this button must be pushed together with the concealed button located under "PRG" and "SET", all at the same time.

Led "<": status light of output 1.

Led ">": status light of output 2.

Led "=": ON when both outputs are OFF, i.e. system temperature is within the dead band.

Led "SV" (Set Value): to indicate that the Set Value (SV) is displayed. This occurs when "SET" is pushed (parameter "dro" set at "P"); it will stay on steady if parameter "dro" is set at "S".

PARAMETER PROGRAMMING

Access the programming by pushing "PRG", then the concealed button below "PRG" and "SET", all at the same time.

The first parameter will appear and the "<" status light will blink throughout the programming. Select the desired parameter with the "UP" and "DOWN" button. With the "SET" button, the actual setting of each parameter is displayed. To change a parameter setting, push the "SET" plus the "UP" (or "DOWN").

To exit the programming, push "PRG" plus the concealed button.

DESCRIPTION OF PARAMETERS

Any parameter which does not apply to a particular instrument version or configuration is automatically removed from the programming menu.

E.g.: a control for Thermocouple input will not offer parameters "Lci" and "Hci".

db: dead band (or Neutral Zone).

This is the temperature span above and below the setpoint beyond which relay 2, respectively relay 1 are energized; once an output is energized, the output remains ON until setpoint is reached.

LS1: Lower Set 1.

This is the lower limit below which the user cannot change the setpoint; normally set



DEFAULT SETTINGS - STANDARD MODELS

Parametro	Description	Range	Default	Unit
db	dead band	min / max	1	°C / °F / %R.H. / Bar
LS1	Lower Set 1	min / max	min	°C / °F / %R.H. / Bar
HS1	Higher Set 1	min / max	max	°C / °F / %R.H. / Bar
od	output delay	0 / 500	0	seconds
Lci	Low current input	min / max	min	°C / °F / %R.H. / Bar
Hci	High current input	min / max	max	°C / °F / %R.H. / Bar
LAO	Low Analog Output	min / max	min	°C / °F / %R.H. / Bar
HAO	High Analog Output	min / max	max	°C / °F / %R.H. / Bar
CAL	CALibration	min / max	0	°C / °F / %R.H. / Bar
PSE	Probe SElection	Ni / Pt / Fe / Cr	/	/
AOF	Analog Output Function	ro / Er	ro	flag
rP1	relay Protection 1	ro / rc	ro	flag
rP2	relay Protection 2	ro / rc	ro	flag
LF1	Led Function 1	di / in	di	flag
LF2	Led Function 2	di / in	di	flag
dP	decimal Point	on / oF	oF	flag
dro	display read-out	S / P	P	flag
AOS	Analog Output Security	Ao / AF	AF	flag
hdd	half digit display	n / y	n	flag
tAb	tAble of parameters	/	/	/

at the lowest value recommended for the sensor.

HS1: Higher Set 1.

Similar to "LS1", however setting an upper limit for the setpoint 1.

od: output delay.

This provides a delay selection for the outputs in applications where noise may cause brief erroneous signals from the sensor to the controller. Factory set at "0".

Lci: Lower current input.

Read-out corresponding to the "low end scale" input signal of 4 mA; only for models with current input.

Hci: Higher current input.

Read-out corresponding to the "high end scale" of 20 mA; only for models with current input.

LAO: Low Analog Output.

Low end of scale setting of analog output (only for models with this option; see parameter "AOF").

HAO: High Analog Output.

High end of scale setting of analog output (only for models with this option; see parameter "AOF").

CAL: CALibration.

This offers an adjustment up or down of the read-out, if needed.

Factory set at "0".

PSE: Probe SElection.

Input type (for RTD or Thermocouples only).

RTD models: Ni = Ni100; Pt = Pt100.

T/C models: Fe = TcJ; Cr = TcK.

AOF: Analog Output Function.

Analog output function (only for models with this option; see parameters "LAO" and "HAO").

ro (read-out) = proportional to the system

temperature, within the read-out values specified by parameters "LAO" and "HAO".

Er (Error) = proportional to temperature deviation from Setpoint, within the values specified by parameters "LAO" and "HAO".

rP1: relay Protection 1.

Determines the status of the relay in case of sensor defect. Factory set at "ro".

ro = relay open; rc = relay closed.

rP2: relay Protection 2.

Same as "rP1".

LF1: Led Function 1.

Determines whether the status light (">") is ON or OFF in relation to output 1.

di = direct = light ON when output 1 is energized;

in = reverse = light OFF when output 1 is energized.

LF2: Led Function 2.

Determines whether the status light ("<") is ON or OFF in relation to output 2.

di = direct = light ON when output 2 is energized;

in = reverse = light OFF when output 2 is energized.

dP: decimal Point.

Choose whether the resolution is required with or without decimal point.

oF = without decimal point;

on = with decimal point.

NOTES: (a) the decimal point of models with current or voltage input is shifted: the actual value of parameters "Lci" and "Hci" must be multiplied by 10; (b) on all versions, if a unit is changed from without decimal point to with decimal point, all parameter values expressed in degrees will automatically be divided by 10, including

the setpoint !! (c) the decimal point selection is not available on models for thermocouple input.

dro: display read-out.

Display read-out reversal.

P (Process value) = system temperature display.

S (Setpoint value) = setpoint temp. display.

AOS: Analog Output Security (only for models with this optional analog output). Sensor protection analog output.

Ao (Analog output on) = analog output ON (100%) in case of sensor defect;

AF (Analog output oF) = analog output OFF (0%) in case of sensor defect.

hdd: half digit display.

The right-most digit can be set to read-out in 0 or 5 only, or in all 10 digits.

hdd = n : e.g. 070, 071, 072 etc. (if without decimal point) or 70.0, 70.1, 70.2 etc. (if with decimal point);

hdd = y : e.g. 070, 075, 080, etc. (if without decimal point) or 70.0, 70.5, 71.0, etc. (if with decimal point). Useful when measuring values varying rapidly (e.g. %R.H.).

tAb: tAble of parameters.

This shows the configuration of the parameters as set in the factory; can not be modified (for factory identification and diagnostic purposes only).

NEUTRAL ZONE (DEAD BAND)

This band width is always such that the setpoint is at midpoint. Both output relays are OFF as long as the temperature remains within these two limits.

The total value of the dead band is twice the value set with parameter "db".

As soon as the process temperature exceeds the upper band limit or falls below the lower band limit, the corresponding output relay will be energized and stay on until the temperature comes back to the setpoint.

INSTALLATION

The instrument is designed for flush panel mounting; the required panel cut-out is 67x67 mm (2.64x2.64"). Insert the instrument from the front and tighten from the rear with the two mounting brackets provided.

The ambient temperature around the instrument should be kept between -5 and 65 °C (23 and 149 °F). Select a location which will not be subject to high humidity or condensation and allow some ventilation to provide cooling to the instrument.

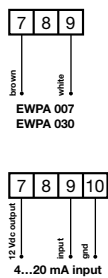
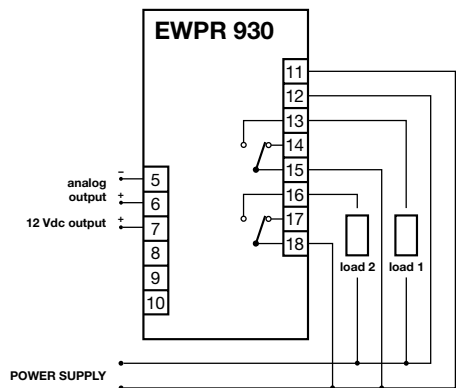
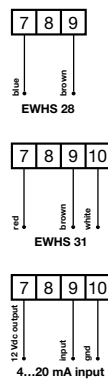
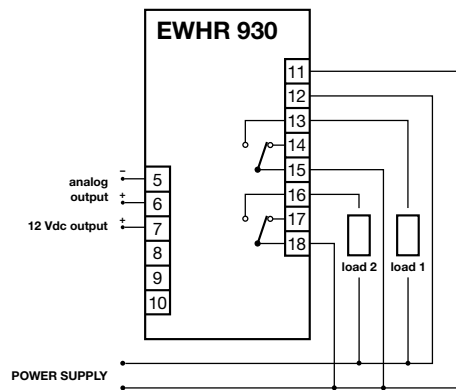
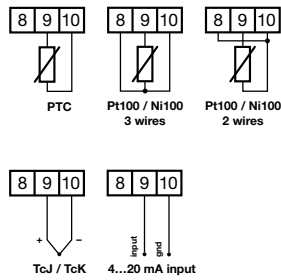
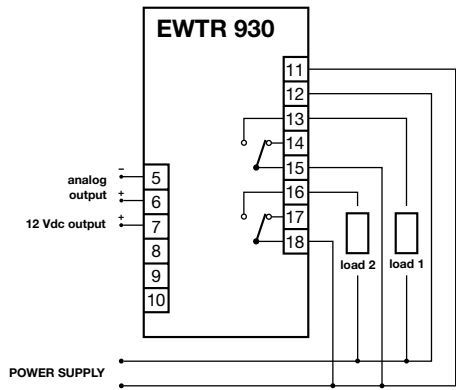
ELECTRICAL WIRING

Two quick-disconnect terminals are provided for easy and convenient wiring, even before the instrument is actually installed.

Make sure that the power supply corresponds with the rating shown on the instrument; the power supply must be kept within plus or minus 15% of the nameplate voltage.

Separate the wiring of the input signals from those of the power supply and

CONNECTIONS



Outputs: two (2) SPDT relays 8(3)A 250V AC, or two (2) "static" (switched) outputs 0/12 Vdc 40 mA.

Programmable analog output (optional): 4...20 mA or 0...5 V, depending on model.

Auxiliary output: 12 Vdc/60 mA (for transducer power supply).

Inputs (depending on model): PTC / RTD (Ni100, Pt100) / TC (J, K) / 4...20 mA ($R_i = 41 \Omega$) for EWTR 930, EWHR 28/31 for EWHR 930 and EWPA 007/030 for EWPR 930.

Resolution: 1 °C (°F) or 0,1 °C (°F). The right-most digit can also be set to read-out in 0 or 5 only, or in all 10 digits.

Accuracy: better than 0.5% of full scale.
Power supply (depending on model): 12 Vac/dc $\pm 15\%$; 220, 110, 24 Vac $\pm 10\%$, 50/60 Hz.

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switched output wiring.

The relay output contacts are voltage free and independent; do not exceed the resistive rating of 8 Amp at 250 Vac. For larger loads, please use an external contactor or relay.

ERROR ANNOUNCEMENT

Any sensor input defect will be displayed as follows: "---" in case of shorted sensor; "EEE" in case of sensor break, or sensor absence.

The "EEE" error message also appears in the event of overrange or underrange of the system temperature.

It is recommended to doublecheck the sensor wiring before diagnosing a probe as defective.

TECHNICAL DATA

Housing: black ABS plastic, autoextinguish.

Dimensions: front 72x72 mm (2.84x2.84"), depth 102 mm (4.00").

Mounting: flush panel mount with mounting bracket. Panel cut-out 67x67 mm (2.64x2.64").

Connections: quick-disconnect screw terminal blocks (2.5 mm²; one wire each terminal only).

Display: 12.5 mm LED (0.50").

Push buttons: located on front panel.

Data storage: non-volatile EEPROM memory.

Operating temperature: -5...65 °C; (23...149 °F).

Storage temperature: -30...75 °C; (-22...167 °F).