



# EWTR/HR/PR 920

controllers dual output 72x72

## WHAT IT IS

The EWTR 920 is a new series of micro-processor based and fully programmable process controllers for dual setpoint applications; the outputs provide ON/OFF control. Three different versions of this controller are available: EWTR 920 for Temperature, EWHR 920 for Relative humidity and EWPR 920 for Pressure control.

## 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 mm<sup>2</sup>; 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 (R<sub>i</sub> = 41 Ω) for EWTR 920, EWHS 28/31 for EWHR 920 and EWPA 007/030 for EWPR 920
- **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 920 is a new series of micro-processor based and fully programmable process controllers for dual setpoint applications; the outputs provide ON/OFF control.

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 920 for Temperature, EWHR 920 for Relative humidity and EWPR 920 for Pressure control.

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

## FRONT KEYPAD

**SET 1:** with this button the setpoint 1 value 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 1 value (Set Value) can be changed with the "UP" or "DOWN" button only, while the process temperature (Process Value) can be displayed with the "SET 1" button.

**SET 2:** with this button the setpoint 2 value can be displayed. To change the value, this button should be activated together with the "UP" or "DOWN" 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 but-

ton located under "PRG" and "SET 1", all at the same time.

**Led "OUT I":** status light of output 1.

**Led "OUT II":** status light of output 2.

**Led "SV" (Set Value):** to indicate that the Set Value (SV) is displayed. This occurs when "SET 1" 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 1", all at the same time.

The first parameter will appear and the "OUT I" status light will blink throughout the programming. Select the desired parameter with the "UP" and "DOWN" button. With the "SET 1" button, the actual setting of each parameter is displayed. To change a parameter setting, push the "SET 1" 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".

**d1:** differential setpoint 1.

The switching differential (hysteresis) can be set with positive value (make on rise) or with negative value (make on fall). See parameter "HC1".

**d2:** differential setpoint 2.

The switching differential (hysteresis) setpoint 2 must be set with positive value



## DEFAULT SETTINGS - STANDARD MODELS

Parameter	Description	Range	Default	Unit
d1	differential set 1	min / max	1 (C) / -1 (H)	°C / °F / %R.H. / Bar
d2	differential set 2	min / max	1 (C) / -1 (H)	°C / °F / %R.H. / Bar
LS1	Lower Set limit 1	min / max	min	°C / °F / %R.H. / Bar
LS2	Lower Set limit 2	min / max	min	°C / °F / %R.H. / Bar
HS1	Higher Set limit 1	min / max	max	°C / °F / %R.H. / Bar
HS2	Higher Set limit 2	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
OCO	Output COnection	di / in	in	flag
HC1	Heating / Cooling 1	H / C	/	flag
HC2	Heating / Cooling 2	H / C	/	flag
rP1	relay 1 Protection	ro / rc	ro	flag
rP2	relay 2 Protection	ro / rc	ro	flag
LF1	Led 1 Function	di / in	di	flag
LF2	Led 2 Function	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	/	/	/

(make on rise) or with negative value (make on fall). See parameter "HC2".

### LS1: Lower Set 1.

This is the lower limit below which the user cannot change the setpoint; normally set at the lowest value recommended for the sensor.

### LS2: Lower Set 2.

This is the lower limit below which the user cannot change the setpoint 2; normally set at the lowest value recommended for the sensor.

### HS1: Higher Set 1.

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

### HS2: Higher Set 2.

Similar to "LS2", however setting an upper limit for the setpoint 2.

### 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.

### 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".

### OCO: Output COnection.

Setpoint dependency.

di = set 2 dependent on set 1 (for 2-stage control);

in = set 2 independent from set 1.

**HC1:** Heating / Cooling output 1.

Relay switch function output 1.

H = Heating (humidification; reverse action);

C = Cooling (dehumidification; direct action).

**HC2:** Heating / Cooling output 2.

Relay switch function output 2.

H = Heating (humidification; reverse action);

C = Cooling (dehumidificat.; direct action).

**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.

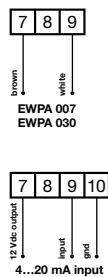
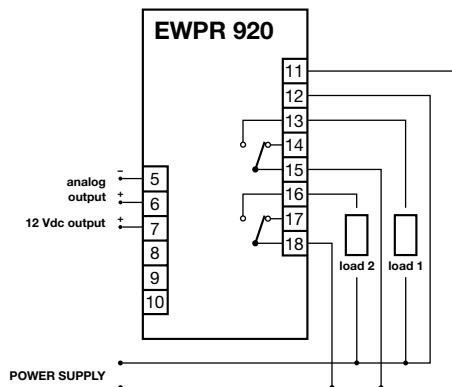
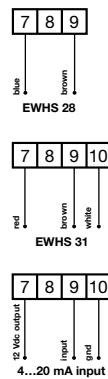
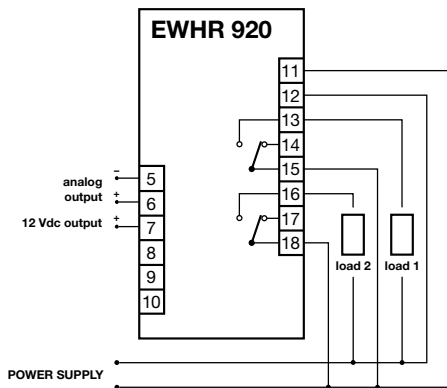
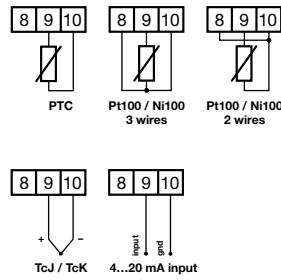
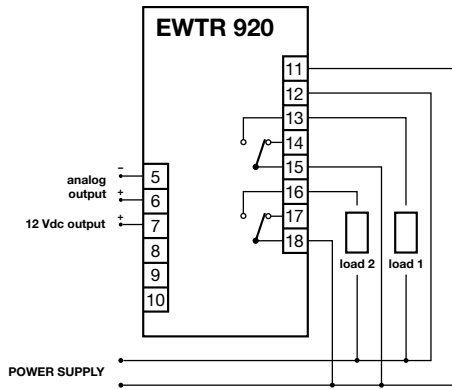
The right-most digit can be set to read-out

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.).

## CONNECTIONS



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, autoestinguish.

**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 mm<sup>2</sup>; 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).

**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 (Ri = 41 Ω) for EWTR 920, EWHS 28/31 for EWHR 920 and EWPA 007/030 for EWPR 920.

**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 ±15%; 220, 110, 24 Vac ±10%, 50/60 Hz.

**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).

### 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 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 ANNOUNCIATION

Any sensor input defect will be displayed

## **DISCLAIMER**

This manual and its contents remain the sole property of Invensys Climate Controls s.p.a., and shall not be reproduced or distributed without authorization. Although great care has been exercised in the preparation of this document, Invensys Climate Controls s.p.a., its employees or its vendors, cannot accept any liability whatsoever connected with its use. Invensys Climate Controls s.p.a. reserves the right to make any changes or improvements without prior notice.



**Invensys Climate Controls s.p.a.**

via dell'Industria, 15

Zona Industriale Paludi

32010 Pieve d'Alpago (BL)

ITALY

Telephone +39 0437 986111

Facsimile +39 0437 986066

Email [eliwell@invensysclimate.com](mailto:eliwell@invensysclimate.com)

Internet <http://www.climate-eu.invensys.com>

**11/2000 ing  
cod. 9IS40115**