

92



**EUROTHERM
CONTROLS**

Alarm Unit



**Product
data**

92 Alarm Unit

The Model 92 is a full-featured safety alarm unit that provides affordable, back-up protection for plant equipment and personnel. The high reliability and integrity built into the Model 92 make it the solution to growing requirements for safety and overtemperature alarms.

Eurotherm Controls design and manufacturing of the Model 92 combine the latest technology and exceptional engineering to produce an alarm unit that satisfies a wide range of uses. A single universal version of the instrument enables the user to quickly set it up from the front panel for the specific application. Even with this flexibility, the user interface remains clear and straightforward while providing protection from inadvertent parameter changes.

Alarm unit configuration - Configuring the alarm unit sets up the instrument for the intended application. The user can specify the alarm function, input type and range, display units, etc. This information is presented in a 4 - digit configuration code (the same as in the Ordering Code shown over) viewable in the upper display for a few seconds after the instrument is powered up. The operator can modify the settings at this time if required. Configuring the Model 92 takes less than a minute.

Failsafe alarm - Each channel of the Model 92 can be configured to act upon one of 6 input alarm conditions including rate-of-change (see Specification). The relay outputs are failsafe (relay de-energized during an alarm condition) and independently configurable for latching or non-latching operation.

Red annunciation LEDs on the front panel flash whenever the measured value is in an alarm condition, and are OFF when the measured value is in the safe condition. A third state, where the LEDs are ON (steady), occurs for latching operation only. This signifies that the operator has acknowledged the terminals.

Sensor break alarm - If the alarm unit detects that the sensor circuit has failed, then the SnSr FAIL annunciation is displayed and the output relays (if enabled) go into the alarm state. If latching operation has been configured, the sensor fail alarm behaves like a latching alarm and requires operator attention.

Power fail alarm - The Model 92 can be configured to place both output relays into the alarm state upon powering up after a power failure. If this type of operation is not selected, the unit still remembers the alarm(s) existing before the power failure and appropriately sets the relays and the LEDs. (latching configuration only)

Linear inputs - The Model 92 offers 2 methods for entering and scaling linear inputs to accommodate various types of input sensors. The first method, "Linear a," involves entering co-ordinates for the 2 scaling points. The other, "Linear b," requires entering co-ordinates for only one point and then a span. With both methods, the unit can directly read the actual input signal, or the user can enter the equivalent signal value with the front panel pushbuttons.

Mechanical features - Neat, clean-cut design throughout is the hallmark of the Model 92. The trim, uncluttered front panel design enhances control panel installations and the splash-proof (IP54) front panel is easy to keep clean.

Installation of the Model 92 is a simple procedure. The panel mounting clip simply slides on from the rear. The rear terminal pressure plates rise up with the screw heads for fumble-free wire insertion in tight installations.

TECHNICAL SPECIFICATION Quoted at 25°C unless otherwise stated

Inputs

General	Sample Period Sensor Break Detection	5Hz 200mS Set within display range
Thermocouple	Standards Calibration Accuracy (Max error) For temperatures >0°C For temperatures <0°C Linearisation CJC Rejection Ratio CJC Loop Resistance	British BS4937 (1973) German DIN 43710 US ASTM E230 (1972) B,C, E, J, L, K, N, PLII, R, S, T See Input Sensor table ±0.25% of reading ±total offset error ±0.5 I.s.d. where total offset error (°C) = 0.25°C + (α25 + 12)/αT and α 25 (µV/°C) = Seebeck coefficient at 25°C αT (µV/°C) = Seebeck coefficient at input temperature Better than +/-0.25°C 15:1 (with internal detector) Internal Maximum resistance with no effect on reading is 1000Ω
RTD	Standards Calibration accuracy Linearisation Bulb Current Connection Maximum Lead Resistance	British BS1904 German DIN 43760 PT100 (maximum error) ±0.25% of reading ±1°C ±1/2 I.s.d. Better than 0.1°C 225µA typical 3 wire automatic lead resistance compensation 20Ω per lead
Linear	Range Calibration accuracy Scaling methods Recommended scaling Source impedance	-10 to 70mV without adaptor -20 to 200mV, -0.1 to 1 Volt, -0.5 to 5Volts, -1 to 10 Volts, -2.5 to 25 Volts, -2 to 20mA with input adaptor ±0.25% of reading ± 1/2 I.s.d. Non-interactive 2-point scaling, or single point and span (Front Panel entry) 1 I.s.d. ≥ 10µV 1000Ω including leads (Maximum)

Alarms

General	Relays	Maximum 264V 2A into resistive load Minimum load voltage 10V peak (isolated from all other circuits)
	Hysteresis	1°C or 1°F to upper range limit (1 process unit I.s.d. to upper range limit)
	Type	Full scale high/low, deviation high/low, band, Sensor break and Rate of change
	Relay action	Failsafe (alarm state affirmed by de-energised relay)
	Relay drive signal source	Independently selectable from one of the 6 measured value alarms, sensor break alarm or disabled
Measured value	Output test (for each output relay)	Front panel pushbutton sequence momentarily toggles relay from current state
	Range	Alarms may be set over complete configured instrument range
	Annunciation during Alarm	Flashing Red AL1 or AL2 light as appropriate. For latching operation, lamp becomes ON when acknowledged but not yet cleared.
Sensor Break	Alarm Action	Non-latching or latching
	Alarm Condition	Input open or measured value < -40mV or > +90mV
	Annunciation during Alarm	Flashing Snsr alternating with FAIL
	Reaction time	5 seconds Maximum
Rate of change	Alarm Action	Non-latching or latching
	Alarm condition	Absolute value of the change of the measured value exceeds the alarm setpoint, i.e: -the alarm trips on both positive and negative changes that exceed the setpoint
	Setpoint adjustment range	Temperature units, 1 to 3000°C/min or 1 to 5400°F/min Process units, 1 to 3000, 0.1 to 300.0 or 0.01 to 30.00 process units/min
	Annunciation during Alarm	Flashing Red AL1 or AL2 light as appropriate. For latching operation, lamp becomes ON when acknowledged but not yet cleared.
Power Fail	Alarm Action	Non-latching or latching
	Alarm condition	Loss of power to alarm unit
	Annunciation after power failure	Normal startup sequence, then flashing red AL1 and/or AL2 lights (for enabled outputs only)
	Acknowledgement and Reset	Front panel pushbutton sequence, or momentary contact pushbutton connected to rear terminals
Alarm Memory	Alarm Action	Latching
	Non-latching operation	Alarm annunciation disappears and relay energizes as soon as alarm condition has been cleared
	Latching operation (for all types of alarms, if selected)	Alarm annunciation disappears and relay re-energises only if the alarm condition has cleared and operator has acknowledged alarm by resetting channel. Order of operations unimportant. Alarms existing before a power failure are reaffirmed upon power reinstatement.
	Reset (acknowledgement)	Front panel pushbutton sequence, or momentary contact pushbutton connected to rear terminals
	Number of latching	25,000 operations (maximum)

Reset Input	Assignment	Configurable to channel 1 and/or channel 2
	Reset action	Momentarily shorting reset terminals (at rear)
	Contact resistance	50Ω maximum
	Required short circuit current	15mA
	Nominal terminal voltage	12 volts (Not isolated from sensor input)

Parameters

Offset adjustment range	-50.0 to +50.0°C (-90.0 to 90.0°F)
High/Low setpoint limits	As configured range for both setpoints

General

Display	Upper Display	4 x 7 segment 9mm high LED indicators
	Indicators	2 x LED's Alarm states
Environmental	Supply Voltage	85 to 264V ac
	Supply Frequency	48 to 52Hz or 58 to 62Hz
	Power Consumption	< 5W
	Common Mode Rejection	≥ 120dB at 50/60Hz (with respect to supply terminals)
	Series Mode Rejection	≥ 60dB at 50/60 Hz
	Max Common Mode Voltage	264V rms at 50/60Hz (with respect to supply terminals)
	Operating temperature	0 to 55°C
	Ambient temperature coefficient	Better than 100ppm of input span/°C
	Safety Standards	EN61010, installation category 2. (Voltage transients must not exceed 2.5kV)
	Atmosphere	Electrically conductive pollution must be excluded from the cabinet in which this controller is mounted. This product is not suitable for use above 2000m or in corrosive or explosive atmospheres without further protection.
	Isolation	PV input and relay outputs have reinforced isolation which provides protection against electric shock. The reset input is electrically connected to PV input.
	Electromagnetic Compatibility	Meets the general requirements of the generic industrial EMC standards - EN50081-2 and EN50082-2. See Installation handbook for more details
	Mechanical	Relative Humidity
Panel Sealing		The instrument fascia meets IP54 (NEMA 3) when mounted into a cutout as defined below and fitted with the optional gasket
Mechanical	Customer Connections	Screw terminals
	Dimensions	50mm(H) x 48mm(W) x 122.1mm(D)
	Mounting	Plug in with panel mounting sleeve - Panel cutout 45mm + 0.6 - 0.0, 45mm + 0.6 - 0.0
	Weight	0.28Kg including sleeve and clamp

Input sensor table

	Display range				Calibration accuracy specification				Accuracy (See key below)
	°C		°F		°C		°F		
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
thermocouples									
B - Pt-30%Rh/Pt-6%Rh	600	1820	1112	3308	600	999	1112	1831	B
					1000	1820	1832	3308	A
J - Fe/SAMA constantan	-200	1200	-328	2192	-200	-1	-328	31	*
					0	1200	32	2192	A
K - Chromel™/Alumel™	-250	1372	-418	2502	-250	-1	-418	31	*
					0	1372	32	2502	A
L - Fe/konstantan	-100	900	-148	1652	-100	-1	-148	31	*
					0	900	32	1652	A
N - Nicrosil/niSil	0	1300	32	2372	0	1300	32	2372	B
Platinel II™	-250	1395	-418	2543	-250	-1	-418	31	*
					0	1395	32	2543	A
R - Pt-13%Rh/Pt	0	1767	32	3213	0	399	32	750	C
					400	1767	751	3213	B
S - Pt-10%Rh/Pt	0	1767	32	3213	0	399	32	750	C
					400	1767	751	3213	B
T - cu/adams Constantan	-255	400	-427	752	-255	-1	-427	31	*
					0	400	32	752	A
RTD - 100ΩPt DIN43760/BS1904	-100	600	-148	1112	-100	600	-148	1112	*
	-99.9	600.0	-99.9	999.9	-99.9	600.0	-99.9	999.9	*
		Min.		Max.		Min.		Max.	
Linear		-999		9999		-999		9999	*
		-99.9		999.9		-99.9		999.9	*
		-9.99		99.99		-9.99		99.99	*

A = ±0.25% of reading ±1.5°C ±0.5 I.s.d. B = ±0.25% of reading ±2.5°C ±0.5 I.s.d. C = ±0.25% of reading ±3.5°C ±0.5 I.s.d.
* See specification (inputs)

ORDERING CODE

Calibration for Linear Inputs

Basic Product	Alarm 1 Function	Alarm 2 Function	Sensor	Display Units	Input Signal			Display Range		
					Lower Limit	Upper Limit	Units	Lower Limit	Upper Limit	Units
92	0	0								

Basic Product	Code
92 Standard configuration	92

Alarm 1 and 2 Functions	Code
Latching Operation	
Off (no alarm function)	0
Deviation low alarm	1
Deviation high alarm	2
Deviation band alarm	3
Full scale low alarm	4
Sensor break alarm	5
Full scale high alarm	6
Rate-of-change alarm	8
Non-latching Operation	
Deviation low alarm	9
Deviation high alarm	A
Deviation band alarm	B
Full scale low alarm	C
Sensor break alarm	D
Full scale high alarm	E
Rate-of-change alarm	F

Sensor Type	Code
RTD - 100ΩPt, DIN43760/BS1904	0
B-Pt - 30%Rh/Pt-6%Rh	1
C-W-5%Re/W-26%Re (Hoskins)	2
E-Chromel™/Adams constantan	3
J- Fe/SAMA constantan	4
K- Chromel™/Alumel™	5
L- Fe/constantan	6
N- NiCroSil/NiSiI	7
Platinel™	8
R-Pt-13%Rh/Pt	9
S-Pt-10%Rh/Pt	A
T-Cu/Adams constantan	B
Linear a -2 point entry scaling	C
Linear b- point and span entry scaling	D

Display nits, Remote Ack., Power Fail Alarm ⁽¹⁾			
Display	Rem Ack	Pwr Fail Alarm	Code
°C	AL1 & 2	no	0
°C	AL1 & 2	yes	1
°C	AL1	no	2
°C	AL1	yes	3
°C	AL2	no	4
°C	AL2	yes	5
°F	AL1 & 2	no	6
°F	AL1 & 2	yes	7
°F	AL1	no	8
°F	AL1	yes	9
°F	AL2	no	A
°F	AL2	yes	B

Accessories

CZ140398	RC snubber network ⁽²⁾
B0133297	1/16DIN front panel gasket
BD133125	Rear terminal cover ⁽³⁾
FY133264U001	Rear terminal cover, screw ⁽³⁾
CAG3R01	Input shunt resistor ⁽⁴⁾
SUB90/SPARE/ACCESSORY/92	Accessory kit ⁽⁵⁾

Coding example:

92/0/0/6/4/5/0

Alarm 1 - Full scale high (latching),

Alarm 2 - Full scale low (latching),

type K thermocouple input,

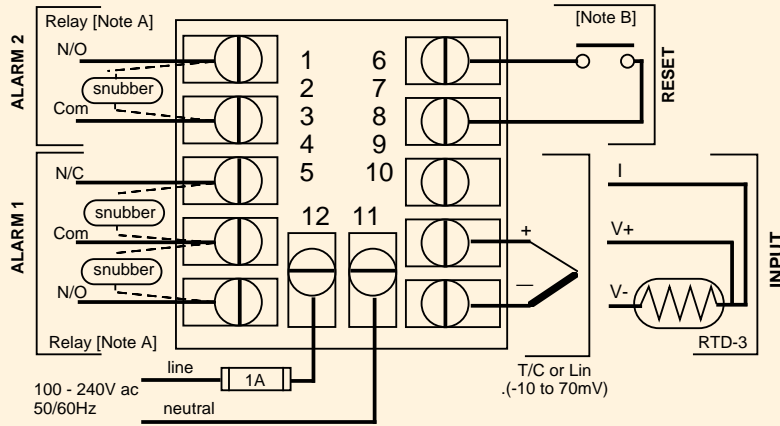
Remote Ack Alarm 1 & 2,

No power fail alarm

Notes:

- Display units selection for temperature inputs only
Remote Ack; selection irrelevant for non-latching alarms
- External RC snubber network required across relay contacts when driving ac inductive loads (mechanical contactors and solenoids). DO NOT USE SNUBBERS WHEN DRIVING HIGH IMPEDANCE LOADS!
- Order rear terminal covers and screws in sets one screw and cover required per unit.
- 3.01Ω, 1%, 0.25W, ±100ppm resistor required for 4-20mA or 0-20mA inputs.
- Includes 2 snubbers and 1 each of the other accessories.

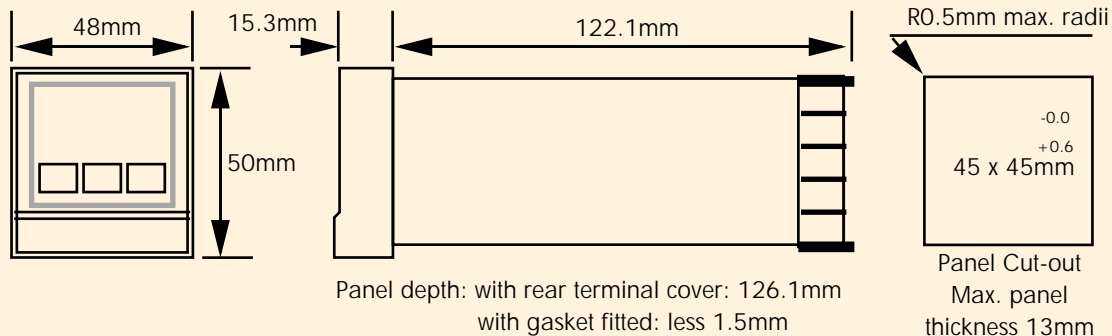
REAR TERMINAL CONNECTIONS



NOTES:

- A. N/C and N/O refer to the condition of the relay contacts when the relay is not energized; i.e. when the relay is in the alarm condition or when power is not applied to the controller.
- B. Optional momentary contact pushbutton to latching alarm reset. The reset input is not isolated from the measurement input and must NEVER be connected to ground or to any other circuit.

DIMENSIONAL DETAILS



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