

INDICATOR & ALARM UNITS

7HI & 7HK 1/8 DIN 4-Digit Horizontal Digital Indicators

Features:

- Four Digit LED Display
- Universal Input (T/C, RTD, mV, mA or V)
- NEMA 4X, IP65
- Up to 3 Independent Alarms (7HI)
- Configurable Automatic or Manual Reset
- High & Low Peak Reading Memory
- Measurement Offset Function
- Optional 24 Vac/Vdc Supply
- Analog Retransmission (7HK)



The 7HI/7HK 1/8 DIN horizontal indicators offer outstanding performance in a cost effective package. Designed specifically for equipment manufacturers who need process monitoring and alarm, the 7HI/7HK are easy to configure and use. Factory calibrated, they accept thermocouples, 3-wire Platinum RTD, and mV, mA and Vdc inputs, selectable from the front panel and programmable with filtering and sensor break indication. High or low process alarm setpoints can be programmed and password protected. Alarms can be acknowledged automatically, or manually from the keypad. A bright 4-digit LED display and 6 panel beacons provide process variable, alarm status and other important process information to the operator. Both models are NEMA 4X rated. Both have a peak high/peak low feature

that remembers the highest and lowest detected process variable readings. This sequence can be reset and restarted from the front panel.

7HI - The 7HI has up to 3 independent latching alarm relays (2 SPDT and 1 SPST) programmed for high or low process alarms. The 7HI is also available with an optional 24 Vac/Vdc supply.

7HK - The 7HK is available with 2 SPDT alarm relays for high or low process alarms. In addition, as a third output, the 7HK has a linear analog retransmission output of the process variable. This output is programmable for 0 to 20 mA or 4 to 20 mA and can have a programmable filter applied.

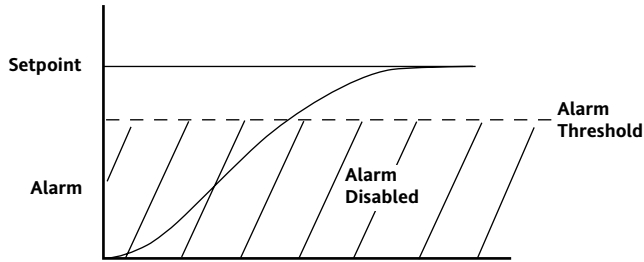
Specifications:

Supply Voltage:	100-240 Vac (+10%, -15%), 50/60 Hz or 24 Vac/Vdc ($\pm 10\%$)
Operating Ambient:	0-50°C, 20-85% RH non-condensing
Inputs:	T/C Types J, K, L, R, S, T and N (°C, °F); Pt 100 3W RTD (°C, °F) Ranges: See Table C, page 2-10; mA _{dc} , mV _{dc} , V _{dc}
Mounting:	Panel Mount

Output Ratings:	
Output 1:	Relay, 3A/250 Vac, 3A/30 Vdc, SPDT, Resistive Alarm 1, Direct or Reverse Acting
Output 2:	Relay, 3A/250 Vac, 3A/30 Vdc, SPDT, Resistive Alarm 2, Direct or Reverse Acting
Output 3:	Relay, 2A/250 Vac, 2A/30 Vdc, SPST, NO, Resistive (7HI) Optional Alarm 3, Direct or Reverse Acting
Output 3:	Isolated 0 to 20 mA or 4 to 20 mA, (500 Ω max.) (7HK) Isolated 0 to 10 Vdc (by solder jumper - recalibration required), (5k Ω min.) Optional Retransmission of PV

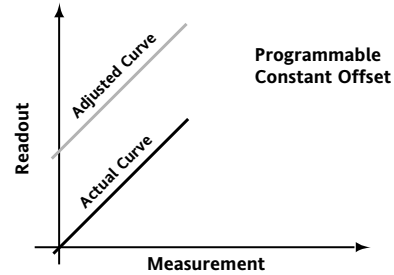
Alarm Standby Function

The 7HI/7HK have an Alarm Standby function to allow masking of the process low alarm condition if the process variable has not traversed the low alarm threshold for the first time.

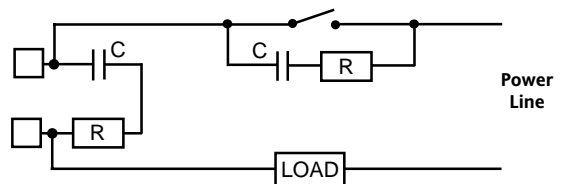
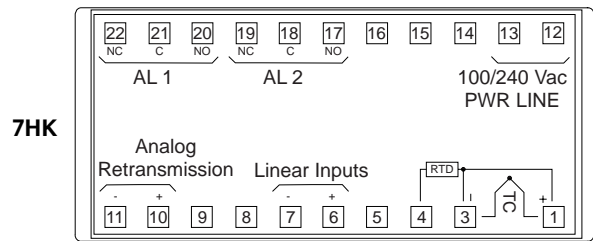
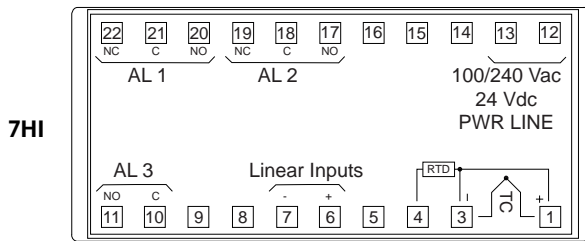


Measurement Offset

A programmable sensor offset is provided for instances when it is not possible to locate the sensor in the ideal location. This offset can be applied to all inputs and is programmable for °C or °F.



Terminal Connections and Mounting:



External Switch in Series with the Internal Contact
Snubber Part Number: CZ140398

Wiring

Do not run input wires with power cabling. Ground shields at one point only. Use compensating cable for thermocouple wiring. Relays are internally protected by a varistor. When inductive loads (such as mercury contactors) are used, or external switches are connected in series with internal contacts, high voltage transients may affect performance of the instrument. In this case it is recommended to install an additional RC snubber network across the contacts as shown. Contact Barber-Colman.

Mounting

Dimensions: 96W x 48H x 89D mm
 Cutout: 92W (-0, +0.8 mm) x 45H mm (-0, +0.6 mm)
 60 mm min. center-to-center vertical spacing
 125 mm min. center-to-center horizontal spacing
 Weight: 250 gm

Ordering Codes:

Model	Input	Reserved	Outputs	Power Supply	Reserved
		000			000

Model	Input	Outputs	Power Supply
7HI Digital Panel Indicator 7HK Digital Panel Indicator with Analog Retransmission	4 T/C Type J, K, L, N, R, S, & T (°C, °F) Pt100 3W RTD (°C, °F)* 8 T/C Type J, K, L, N, R, S, & T (°C, °F) Pt100 3W RTD (°C, °F)* 0 to 20 mAdc & 4 to 20 mAdc 0 to 60 mVdc & 12 to 60 mVdc 0 to 5 Vdc & 1 to 5 Vdc 0 to 10 Vdc & 2 to 10 Vdc	0 None 1 Two Alarm Relays 2 Two Alarm Relays plus 0 - 20 or 4 - 20 mAdc Analog Retransmission (7HK only) 3 Three Alarm Relays (7HI only)	3 100 to 240 Vac 5 24 Vac/Vdc (7HI only)

* Ranges - See Table C, page 2-10

INDICATOR & ALARM UNITS

7HL 1/8 DIN High Performance Digital Indicator

Features:

- Four Digit Display, 0.1% Accuracy
- 3 Color Backlit Liquid Crystal Display
- Universal Input (T/C, RTD, mV, mA or V)
- IP54 Protection
- Up to 2 Independent Alarms
- Configurable Automatic or Manual Reset
- High/Low Peak Reading Memory
- Configurable 10 Segment Linearizations
- Optional Analog Retransmission
- Optional Digital Communications
- Optional Auxiliary Power Supply

Designed specifically for equipment manufacturers who require high accuracy process monitoring and alarm, the 7HL is easy to configure and use. Factory calibrated, the 7HL accepts universal inputs selectable from the front panel and programmable with filtering and sensor break indication. Additionally, a 10 segment linearization can be programmed over the entire span. Display accuracy is 0.1% of span (± 1 digit). The 7HL has 2 independent latchable alarm relays, programmed with password protection for high or low process alarms with a hysteresis of 0.1 to 5% of span. Alarms can be acknowledged



automatically, or manually from the keypad. A bright 4-digit LCD numeric display, a 2-digit LCD alphanumeric display and 6 panel beacons provide process variable, engineering units, alarm status and other important process and configuration information to the operator. There is also a peak high/peak low detection feature that remembers the highest and lowest detected process variable reading. This sequence can be reset and restarted from the front panel. The 7HL is IP54 rated for dusty environments.

Specifications:

Supply Voltage: 100-240 Vac (+10%, -15%), 50/60 Hz

Operating Ambient: 0-50°C, 20-85% RH non-condensing

Inputs: T/C Types B, E, J, Fe-CuNi, K, R, S, T, Cu-CuNi, N, W, W3, W5, Ni/Ni-Mo and Platinel II (°C, °F); Pt 100 3W RTD (°C, °F)
Ranges: See Table D, page 2-10; mAdc, mVdc, Vdc

Logic Input: (Open = Local Front Panel; Closed = Remote Serial Link) requires contact rated at 0.5 mA, 5 Vdc minimum

Serial Communications: EIA RS-485 Modbus®, JBUS

Aux. Power Supply: Isolated 5, 10, 12 or 24 Vdc (Jumper Selectable), 25 mA dc max. current, Accuracy $\pm 5\%$ of nominal

Output Ratings:

Output 1: Relay, 2A/30 Vdc; 0.6A/110 Vdc; 0.5A/250 Vac SPST, NO or NC Jumper Selectable, Resistive
Relay, 0.3A/110 Vdc, SPST, NO or NC Jumper Selectable, Inductive
Alarm 1, Direct or Reverse

Output 1: Relay, 2A/30 Vdc; 0.6A/110 Vdc; 0.5A/250 Vac SPST, NO or NC Jumper Selectable, Resistive
Relay, 0.3A/110 Vdc, SPST, NO or NC Jumper Selectable, Inductive
Alarm 2, Direct or Reverse

Retransmission

Output: 0 to 20 mA or 4 to 20 mA, Isolated (500 Ω max.)
0 to 10 Vdc, Isolated (5k Ω min.)
Retransmission of PV

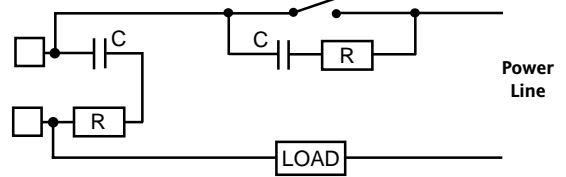
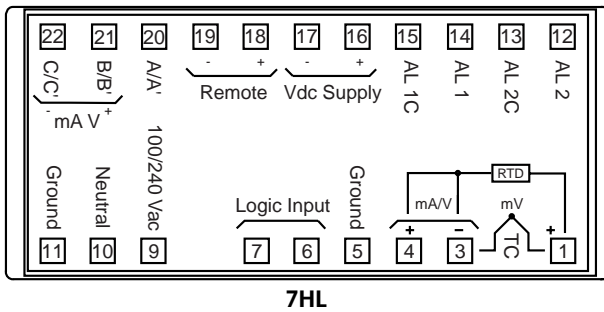
Mounting: Panel Mount

Optional Features

In addition to its standard features, the 7HL has 3 important optional features:

- Digital communications featuring an opto-isolated EIA RS-485 communications port with Modbus® or JBUS protocol (this option is not available with the retransmission output). A closed logic input enables remote operation from the serial link; an open logic input enables local operation from the front panel.
- An auxiliary power supply for powering external transducers. Jumper selected isolated outputs at 5, 10, 12 or 24 Vdc (25 mA max.) are available.
- A linear analog retransmission output of the process variable is available as an isolated, 0 to 20 mA, 4 to 20 mA or 0 to 10 Vdc signal. This output is programmable and can have a digital filter applied to the retransmission.

Terminal Connections and Mounting:



External Switch in Series with the Internal Contact
Snubber Part Number: CZ140398

Wiring

Do not run input wires with power cabling. Ground shields at one point only. Use compensating cable for thermocouple wiring. Relays are internally protected by a varistor. When inductive loads (such as mercury contactors) are used, or external switches are connected in series with internal contacts, high voltage transients may affect performance of the instrument. In this case it is recommended to install an additional RC snubber network across the contacts as shown. Contact Barber-Colman.

Mounting

Dimensions: 96W x 48H x 149D mm
Cutout: 92W (-0, +0.6 mm) x 45H mm (-0, +0.6 mm)
60 mm min. center-to-center vertical spacing
125 mm min. center-to-center horizontal spacing
Weight: 600 gm

Ordering Codes:

Model	Power Supply	Input	Reserved	Outputs	Options	Reserved
7HL	3	9	0	1		0000

Power Supply	Input	Outputs
3 100 to 240 Vac	9 T/C Type B, E, J, Fe-CuNi, K, R, S, T, Cu-CuNi, N, W, W3, W5, Ni/Ni-Mo & Platinel II (°C, °F) Pt100 3W RTD (°C, °F)* 0 to 20 mAdc & 4 to 20 mAdc 0 to 60 mVdc & 12 to 60 mVdc 0 to 5 Vdc & 1 to 5 Vdc 0 to 10 Vdc & 2 to 10 Vdc	1 Two Alarms, SPST Relays, NO or NC (Jumper Selectable)

Options
1 Auxiliary Power Supply: 5, 10, 12 or 24 Vdc
2 0 to 20 mAdc or 4 to 20 mAdc Retransmission plus Auxiliary Power Supply
3 RS-485 Communications plus Auxiliary Power Supply
4 RS-485 Communications
5 0 to 20 mAdc or 4 to 20 mAdc Retransmission

* Ranges - See Table D, page 2-10

INDICATOR & ALARM UNITS

7SI 1/16 DIN Compact Digital Indicator

Features:

- Four Digit Display
- T/C, RTD, mV, mA or V Input
- NEMA 4X, IP65
- Up to 2 Independent Alarms
- Logic Input for Alarm Reset
- Alarm Standby on Start-up
- Optional Digital Communications
- Optional 24 Vac/Vdc Supply



The 7SI is a compact 1/16 DIN digital indicator/ alarm unit with a 4-digit process variable display designed for equipment manufacturers who need these functions in a small package. Inputs are factory calibrated and selectable from the front panel. Fifteen thermocouple types, 3-wire Platinum RTD's and several ranges of linear mV, mA and voltage inputs are available. The 7SI has one standard alarm relay output and an optional second alarm relay output. Relays can be programmed to energize or deenergize in an alarm condition. Both alarms can be configured as process high or low at independent thresholds within the readout range

and with an adjustable hysteresis of 0.1 to 10% of span. Alarms can be acknowledged automatically or manually via a front panel key, optional logic input or RS-485 communications link. LED beacons for each alarm flash to annunciate new alarms. The alarm LED's stay steady ON for alarms that are present but acknowledged, and are OFF when no alarm is present. Optional RS-485 digital communications with Modbus® or JBUS is available for computer supervision. The 7SI is NEMA 4X rated for operation in severe environments.

Specifications:

Supply Voltage:	100-240 Vac (+10%, -15%), 50/60 Hz or 24 Vac/Vdc (±10%)
Operating Ambient:	0-50°C, 20-85% RH non-condensing
Inputs:	T/C Types B, C, D, E, G, L, J, K, N, Platinel II, R, S, T and U (°C, °F); Pt 100 3W RTD (°C, °F) Ranges: See Table A, page 2-10; mAdc, mVdc, Vdc
Logic Input:	for Alarm Acknowledgement, requires contact rated at 0.5 mA, 5 Vdc minimum

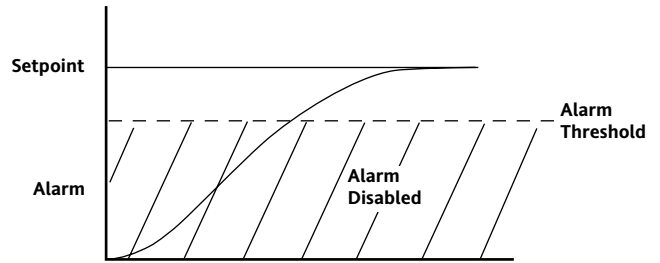
Output Ratings:	Output 1: Relay, 3A/250V, SPDT, Resistive Direct or Reverse operation
	Output 2: (Optional) Relay, 2A/250V, SPST, NO, Resistive Direct or Reverse operation
Serial Communications:	EIA RS-485 Modbus®, JBUS
Mounting:	Panel Mount

Alarm Standby Function

The 7SI can be programmed with an alarm masking function (Alarm standby), which puts the alarm in a standby condition during instrument powerup, when process low alarms are subject to false activation. Once the low alarm threshold is traversed for the first time the instrument reverts to standard operation.

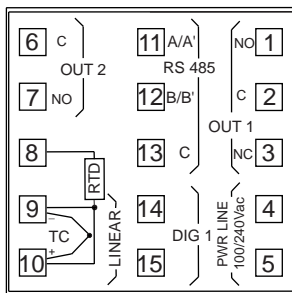
Data Memory Function

The 7SI also has a “data memory” function which is enabled at powerup. It is able to store in memory the minimum and maximum measured value, which, by pushbutton or serial link, can be displayed on the front panel. This function can also be reset by pushbutton or link, deleting the old values and starting a new memorization period.

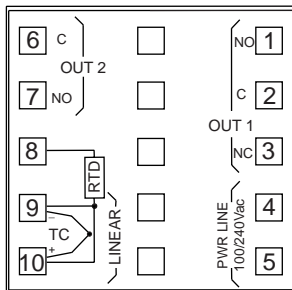


Alarm Standby

Terminal Connections and Mounting:



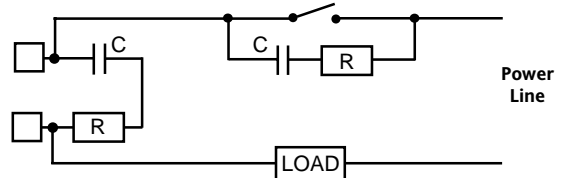
7SI with RS-485



7SI without RS-485

Wiring

Do not run input wires with power cabling. Ground shields at one point only. Use compensating cable for thermocouple wiring. Relays are internally protected by a varistor. When inductive loads (such as mercury contactors) are used, or external switches are connected in series with internal contacts, high voltage transients may affect performance of the instrument. In this case it is recommended to install an additional RC snubber network across the contacts as shown. Contact Barber-Colman.



External Switch in Series with the Internal Contact
Snubber Part Number: CZ140398

Mounting

Dimensions: 48W x 48H x 105D mm (without RS-485)
48W x 48H x 122D mm (with RS-485)
Cutout: 45W x 45H mm (-0, +0.6 mm)
60 mm min. center-to-center vertical spacing
75 mm min. center-to-center horizontal spacing
Weight: 250 gm

Ordering Codes:

Model	Input	Output 1	Output 2	Options	Power Supply	Reserved
7SI	9	1				0000

Input	Output 1	Output 2	Options	Power Supply
9 T/C Type B, C, D, E, G, L, J, K, N, Platinel II, R, S, T, & U (°C, °F) Pt100 3W RTD (°C, °F) 0 to 20 mAdc & 4 to 20 mAdc 0 to 60 mVdc & 12 to 60 mVdc 0 to 5 Vdc & 1 to 5 Vdc 0 to 10 Vdc & 2 to 10 Vdc	1 Relay	0 None 1 Relay	0 None 1 RS-485 Communications and Logic Input	3 100 to 240 Vac 5 24 Vac/Vdc

* Ranges - See Table A, page 2-10