

Digital Indicator Solutions



Attachable Loop-Powered
Compact Loop-Powered
Compact Smart System
Smart System "Intelligent"
Dual Display



Options & Accessories

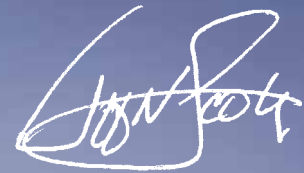


At NOSHOK, we pride ourselves on being innovators in the industry by continually offering the latest technology and measurement solutions, and providing the best customer support in the marketplace.

Established in 1967, NOSHOK was one of the first companies to offer liquid filled pressure gauges. We also took a bold step by backing our quality gauges with an extended 3-year warranty. That unwavering standard of quality has endured for over 50 years, and as we have expanded our product offering we continue to provide industry-leading warranties. NOSHOK also leads the industry as one of the first companies to offer corrosion-resistant zinc nickel plating standard on our carbon steel valves.

We have the capacity to put together special requirements which are so often hard to find. If you do not find what you need in this catalog, chances are we can still put a solution together.

NOSHOK is committed to providing excellence on every level. Thank you for choosing NOSHOK products.



Jeff N. Scott
President



NOSHOK Corporate Headquarters
Your Single Source Instrumentation Company

NOSHOK is a member and actively supports:



NOSHOK is an ISO 9001:2015 registered company.

www.mfcp.com

WARRANTY INFORMATION

NOSHOK's **One Year Warranty** applies to our 1800 Series Digital Indicators. NOSHOK's **Two Year Warranty** applies to our 1900, 1950, 2000/2100 and 2200 Series Digital Indicators and accessories. **NOSHOK guarantees all products** to be free from defects in material and workmanship, to remain within catalogued accuracy specifications, and to operate within the catalogued performance specifications. These products must be operated within the catalogued environmental and application parameters. Determination of failure will be made by NOSHOK, Inc.'s equipment and personnel or a certified test facility specializing in this type of evaluation.

T A B L E O F C O N T E N T S



DIGITAL INDICATORS

Attachable Loop-Powered:	
1800 SERIES	4-5
Compact Loop-Powered:	
1900 SERIES	6-7
Compact Smart System:	
1950 SERIES	8-9
Smart System "Intelligent":	
2000/2100 SERIES	10-11
Dual Display:	
2200 SERIES	12-13

OPTIONS & ACCESSORIES

Backlight & display, power supplies, enclosures, option cards, AC to DC Retrofit	14-15
Wiring Diagrams	16

In keeping with and for purpose of product and/or manufacturing process improvements, NOSHOK, Inc. reserves the right to make design changes without prior notice.

1800 SERIES



Unit with relay option.



- High accuracy 4 mA to 20 mA loop-powered indicators for NOSHOK 300, 600, 615, 616 and 800 Series transmitters
- Can be fitted to NOSHOK pressure transmitters utilizing a 4 mA to 20 mA output signal and the Hirschmann (DIN 43650A) connector
- Easily inserted between the transmitter body and the connector
- Programmable to display a range of -1999 to 9999; may be tilted for better viewing
- User selectable digital filtering improves readability in rapidly varying pressure applications
- All parameters are stored in non-volatile memory so that reprogramming is not necessary in the event of a power failure

APPLICATIONS

- Hydraulic and pneumatic systems
- Pumps and compressors
- Test equipment and systems
- Industrial machinery and machine tools
- HVAC systems
- Power generation
- Water and wastewater
- Stamping and forming presses

SPECIFICATIONS

Input signals	4 mA to 20 mA (optional 0 Vdc to 10 Vdc)	
Process display	4 digit, 0.4" liquid crystal display (-1999 to 9999)	
Key pad	3 programmable function keys for relay option only	
Power requirement	Loop powered by sensors excitation	
	Power consumption	40 mA max.
	Voltage drop	≤3 Vdc (1800) ≤5.5 Vdc (1800-1)
Electrical connection	Hirschmann, DIN EN 175301 803 form A	
Memory	EEPROM	
Accuracy	<0.2% of full scale, ±1 digit	
Humidity	<90%, non-condensing	
Update rate	200 msec	
Temperature ranges	Operating	32 °F to 122 °F (0 °C to 50 °C)
	Effect	≤ 0.1% of full scale/18 °F (10 °C)
	Storage	-22 °F to 176 °F (-30 °C to 80 °C)
Electromagnetic rating	CE compliant to EMC norm EN 61326-1 RFI, EMI and ESD protection	
Environmental rating	NEMA 4, 4X, IP65 (front of display only)	
Filtering	0.2 seconds to 1.5 seconds, selectable	
Relay option	1 transistor, n-switching	
Linearization	2 point	
Weight	3 oz.	



To install, remove the DIN 43650A plug and insert indicator on top of transducer and reinstall the plug. This indicator can be used with NOSHOK and some competitive transmitters with 2-wire 4 mA to 20 mA output, Hirschmann connector with the same pin configuration. (Pin 1 + supply, pin 2 + output)

Shown with 800 Series Temperature Transmitter

Shown with 300 Series Pressure Transmitter

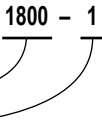
ORDERING INFORMATION	
SERIES	1800
OPTIONS	0 No options 1 With relay

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

Note: Indicate display range on order eg. 0-1,000 for 4 mA to 20 mA

EXAMPLE

Series1800 Series
 Option.....With relay



1900 SERIES



- Provides compact digital display of any desired unit of pressure, temperature, level, force, or flow measurement
- Dual range 4 mA to 20 mA or 10 mA to 50 mA
- 3-1/2 digit, 0.6" high display with a span range of 0 to 1999
- Positive image reflective LCD is standard; red or yellow/green back-lit versions optional
- Span and zero offset capabilities
- Negative pressure and overpressure indication
- Selectable decimal point position
- Compact, lightweight, impact-resistant NEMA 4X, IP65 housing with sealed front bezel
- Fits DIN standard cut-out 2.68" (68 mm) x 1.30" (33 mm)
- CE compliant to suppress RFI, EMI, and ESD

APPLICATIONS

Suitable for a wide variety of applications requiring pressure, flow, level, force and temperature measurement, including:

- Process indication
- On/off pump controls
- Compressor controls
- Safety or shutdown alarms

SPECIFICATIONS

Input signals	4 mA to 20 mA	
Process display	3½ digit, 0.6" liquid crystal display (-1999 to 1999)	
Power requirement	1900C-1/1900C-2	Loop powered by sensors excitation
	Power consumption	160 Ω max. @ 20 mA 65 Ω max. @ 50 mA
	Voltage drop	3.2 Vdc
	1900C-3/1900C-4	Main display loop powered by sensors excitation w/ PS3 power supply for back light (85-250 VAC required)
	Power consumption	160 Ω max. @ 20 mA 65 Ω max. @ 50 mA
	Voltage drop	4 Vdc
Electrical connection	Screw terminals at back of case	
Memory	EEPROM	
Accuracy	±(0.1% + 1 digit)	
Humidity	85% max., non-condensing	
Vibration	5-500 Hz, 5g	
Shock	30 g	
Normal rejection mode	60 dB 50/60 Hz	
Altitude	Up to 2,000 meters	
Update rate	400 msec	
Temperature ranges	Operating	32 °F to 140 °F (0 °C to 60 °C)
	Effect	100 ppm/°C
	Storage	-40 °F to 176 °F (-40 °C to 80 °C)
Electromagnetic rating	CE compliant to EMC norm EN 61326-1 RFI, EMI and ESD protection	
Environmental rating	NEMA 4X, IP65 (front of display only)	
Linearization	2 point	
Weight	3.3 oz.	

Note: See page 14-15 for more information on backlights & displays. See page 16 for 1900C wiring diagram, including the backlight feature.

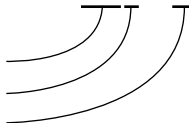
ORDERING INFORMATION	
SERIES	1900
INPUT SIGNALS	C Current
INDICATIONS	1 Positive image reflective LCD
	2 Positive image reflective LCD backlight
	3 Yellow/green backlight transfective LCD with backlight power supply
	4 Red backlight transfective LCD with backlight power supply

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

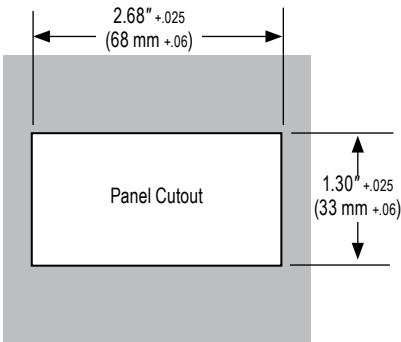
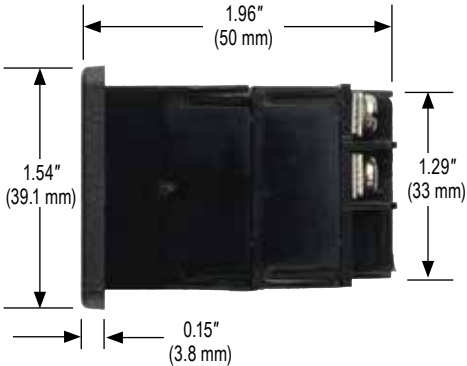
EXAMPLE

Series1900 Series
 Input signalCurrent
 OptionRed backlight LCD

1900C - 4



OPTIONAL POWER SUPPLIES		
MODEL	INPUT	OUTPUT
PS1	115 Vac	12 Vdc
PS2	115 Vac	24 Vdc



1900C-3/1900C-4: Loop Powered Display with backlight power supply

1950 SERIES



- Offers all the features of a full size panel meter in a compact digital display for pressure, flow, level, force, and temperature measurement
- 5 digit, 0.48" LCD display with a span range of -9999 to 99999
- Reflective LCD display; or green backlighting optional
- Display is fully expandable to accommodate applications requiring relays, dual sinking outputs, and serial communications by RS232 or RS485
- Fully scalable & field upgradable
- Simple programming through front panel
- Compact, lightweight, impact-resistant NEMA 4X, IP65 housing with sealed front bezel
- CE compliant to suppress RFI, EMI, and ESD
- Relay, communications and dual sinking output option cards available

APPLICATIONS

Suitable for a wide variety of applications requiring pressure, flow, level, force and temperature measurement, including:

- Process indication
- On/off pump controls
- Compressor controls
- Safety or shutdown alarms

SPECIFICATIONS

Input signals	4 mA to 20 mA, 0 Vdc to 10 Vdc (optional RTD and Thermocouple)	
Process display	5 digit, 0.48" liquid crystal display	
Key pad	2 programmable function keys	
Power requirement	9 Vdc to 28 Vdc Power consumption 10 mA typical, 95 mA with max. display intensity	
Electrical connection	Screw terminals at back of case	
Memory	EEPROM	
Accuracy	<0.1% of full scale	
Humidity	<85%, non-condensing	
Vibration	5-500 Hz, 5g	
Shock	30 g	
Normal rejection mode	60 dB 50/60 Hz	
Altitude	Up to 2,000 meters	
Update rate	500 msec	
Temperature ranges	Operating	-31 °F to 167 °F (-35 °C to 75 °C)
	Effect	≤ 0.1% of full scale /18 °F (10 °C)
	Storage	-31 °F to 185 °F (-35 °C to 85 °C)
Electromagnetic rating	CE compliant to EMC norm EN 61326-1 RFI, EMI and ESD protection	
Environmental rating	NEMA 4X, IP65 (front of display only)	
Filtering	0.25 seconds to 1 second, selectable	
Min/Max reading	Captures and stores min/max measurement	
User inputs	1 programmable, 28 Vdc max. continuous	
Linearization	2 point	
Weight	3 oz.	
Option cards	Serial communication (RS232 or RS485) Analog output (0-20 mA, 4-20 mA or 0-10 Vdc) Single or Dual Relay (NPN or PNP type) USB programming	

Note: See page 14-15 for more information on power supplies, enclosures, and option cards.

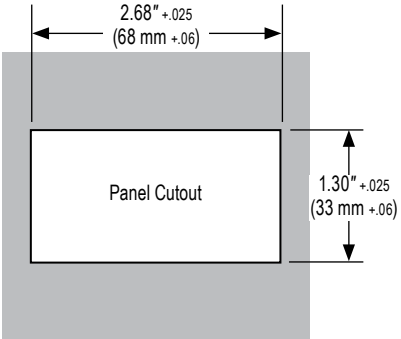
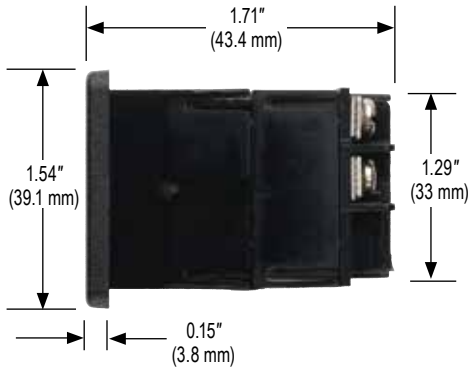
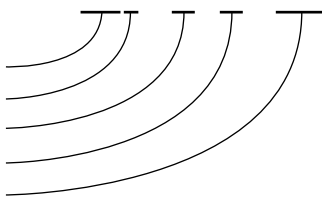
ORDERING INFORMATION			
SERIES	1950		
INPUT SIGNALS	C Current	V Voltage	R Resistance
DISPLAYS	1 Reflective	2 Backlight	
OPTION CARDS	0 None	2 Dual sinking open collector	7 RS485 comm
	1 Single relay	6 RS232 comm	
OPTIONAL ENCLOSURES	ENC1 Black painted steel	ENC2 Off-white fiberglass	

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE

Series1950 Series
 Input signalCurrent
 DisplayReflective
 Option cardSingle relay
 OptionBlack painted steel enclosure

1950C - 1 - 1 - ENC1



2000/2100 SERIES



- Accepts a variety of standard process signals and precisely scales them into any desired unit of measurement
- Single input or dual input
- Employs advanced technology for stable, drift-free readout
- Field upgradable with plug-in option cards; including 4 set point alarms, analog output and serial communication
- 16 point scaling for non-linear processes
- Max. and min. value display
- Easy menu-driven programming
- NEMA 4X/IP65 sealed front bezel
- Optional PC software available for configuration
- AC or DC input power
- Signal totalizer for batch weighing or other timed input processes
- Programmable signal response time
- Standard DIN panel cutout
- CE compliant to suppress RFI, EMI, and ESD

APPLICATIONS

- Process indication
- On/off pump controls
- Compressor controls
- Safety or shutdown alarms
- Local indication with signal
- Retransmission to computer control system

SPECIFICATIONS

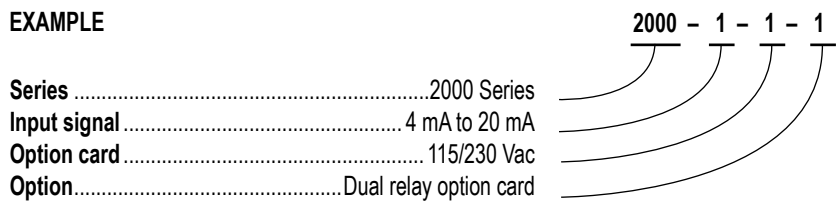
Input signals	4 mA to 20 mA, 0 Vdc to 10 Vdc (optional RTD and Thermocouple)	
Sensor excitation	Built-in 24 Vdc	
Process display	5 digit, 0.56" Red LED	
Key pad	3 programmable function keys, 5 total	
Power requirement	AC version	85 Vac to 250 Vac, 50/60 Hz, 15 VA
	DC version	11 Vdc to 36 Vdc, 11 W
Electrical connection	Screw terminals at back of case	
Memory	EEPROM	
Accuracy	<0.03% of full scale	64 °F to 82 °F (18 °C to 50 °C)
	<0.12% of full scale	32 °F to 122 °F (0 °C to 50 °C)
Humidity	<85%, non-condensing	
Vibration	5-150 Hz, 2 g	
Shock	25 g	
Normal rejection mode	60 dB 50/60 Hz	
Altitude	Up to 2,000 meters	
Update rate	200 msec	
Temperature ranges	Operating	32 °F to 122 °F (0 °C to 50 °C)
	Effect	≤ 0.1% of full scale/18 °F (10 °C)
	Storage	-40 °F to 140 °F (-40 °C to 60 °C)
Electromagnetic rating	CE compliant to EMC norm EN 61326-1 RFI, EMI and ESD protection	
Environmental rating	NEMA 4X, IP65 (front of display only)	
Filtering	0 seconds to 25 second, selectable	
Min/Max reading	Captures and stores min/max measurement	
User inputs	3 programmable, 30 Vdc max. continuous	
Totalizer	Time base	Second, minute, hour or day
	Batch	Can accumulate from user input
Linearization	2 to 16 points, selectable	
Weight	10.4 oz.	
Option cards	Serial communication (RS232 or RS485) DeviceNet communication MODBUS communication (RS485 RTU and ASCII MODBUS) Profibus communication Analog output (0-20 mA, 4-20 mA or 0-10 Vdc) Dual or Quad Relay (NPN or PNP type) USB programming	

Note: See page 14-15 for more information on enclosures and option cards.

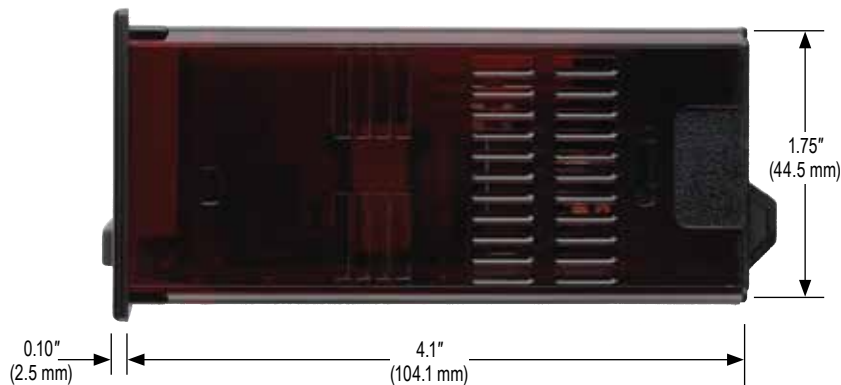
ORDERING INFORMATION										
SERIES	2000 (Single input)		2100 (Dual input)							
INPUT SIGNALS	1	4 mA to 20 mA	2	0 Vdc to 5 Vdc	4	1 Vdc to 6 Vdc	5	0 Vdc to 10 Vdc	6	1 Vdc to 11 Vdc
POWER REQUIREMENTS	1	115/230 Vac	3	11 Vdc to 36 Vdc						
OPTION CARDS	0	No option card	3	Quad NPN-OC option card		6	RS 232-C Serial communications option card			
	1	Dual relay option card	4	Quad PNP-OC option card		7	RS 485 Serial communications option card			
	2	Quad relay option card	5	Analog output option card						
OPTIONAL ENCLOSURES	ENC1 Black painted steel									

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE



OPTIONAL ACCESSORIES
 RS232C Mating connector
 RS485 Mating connector
 2000-50000 NEMA 4 enclosure



2200 SERIES



APPLICATIONS

- Pump control and monitoring
- Liquid level measurement
- Heating and cooling
- Force measurement
- Cycle counting
- Flow rate measurement

- Accepts a wide variety of input signals including thermocouples or RTDs, current, voltage, resistance and process signals
- Dual display with tri-color and variable intensity digits
- Universal AC/DC power input and 24 Vdc sensor excitation
- Built-in USB port for configuring with a computer
- Meter update rate up to 160/second
- Plug-in option cards available for field upgrading
- Interface software available on request

SPECIFICATIONS

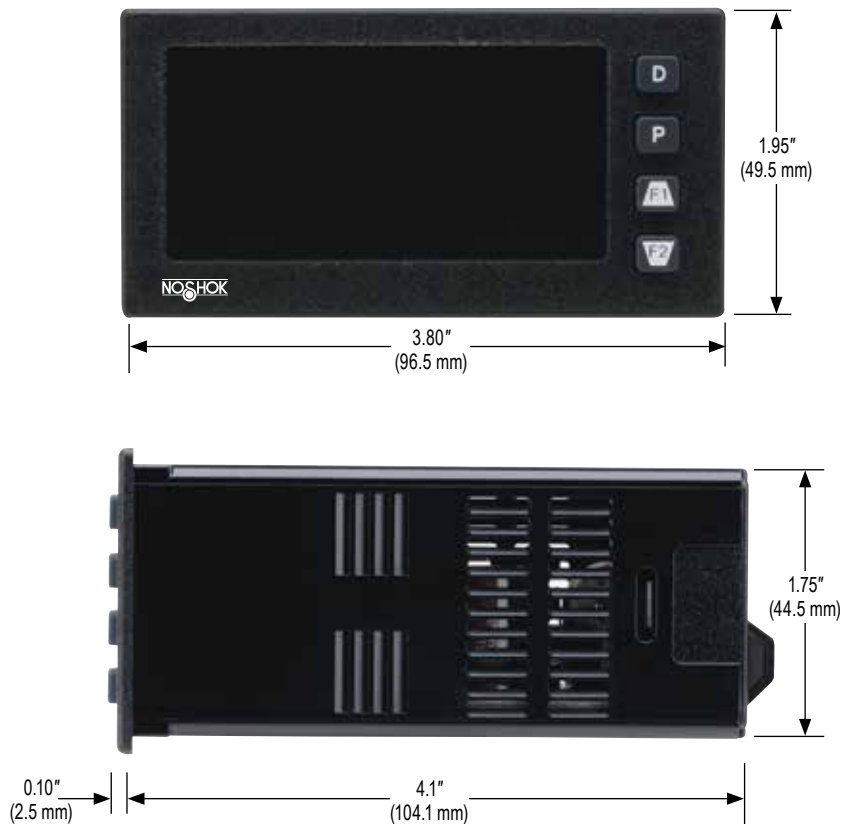
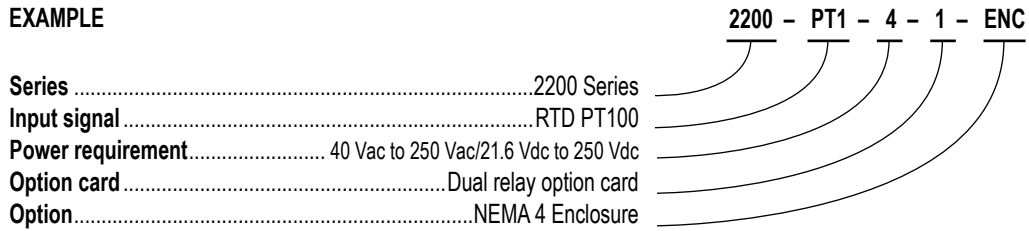
Input signals	4 mA to 20 mA, 0 Vdc to 10 Vdc (optional RTD and thermocouple)	
Sensor excitation	Built-in 24 Vdc	
Process display	Upper	6 digit, 0.71", tri-color LED (red, green, orange)
	Lower	9 digit, 0.35", green LED
Key pad	2 programmable function keys, 4 total	
Power requirement	AC input	40 Vac to 250 Vac, 50/60 Hz, 20 VA
	DC input	21.6 Vdc to 250 Vdc, 8 W
Electrical connection	Screw terminals at back of case	
	Built-in USB port for configuring with a computer	
Memory	FRAM	
Accuracy	<0.03% of full scale	64 °F to 82 °F (18 °C to 28 °C)
	<0.12% of full scale	32 °F to 122 °F (0 °C to 50 °C)
Humidity	<85%, non-condensing	
Vibration	5-150 Hz, 2 g	
Shock	25 g	
Normal rejection mode	60 dB 50/60 Hz	
Altitude	Up to 2,000 meters	
Update rate	160/sec	
Temperature ranges	Operating	32 °F to 122 °F (0 °C to 50 °C)
	Effect	≤ 0.1% of full scale/18 °F (10 °C)
	Storage	-40 °F to 140 °F (-40 °C to 60 °C)
Electromagnetic rating	CE compliant to EMC norm EN 61326-1	
	RFI, EMI and ESD protection	
Environmental rating	NEMA 4X, IP65 (front of display only)	
Filtering	0 seconds to 25 seconds, selectable	
Min/Max reading	Captures and stores min/max measurement	
User inputs	2 programmable, 30 Vdc max. continuous	
Totalizer	Time base	Second, minute, hour or day
	Batch	Can accumulate from user input
Linearization	2 to 16 points, selectable	
Weight	8 oz.	
Option cards	Serial communication (RS232 or RS485)	
	DeviceNet communication	
	MODBUS communication (RS485 RTU and ASCII MODBUS)	
	Profibus communication	
	Analog output (0-20 mA, 4-20 mA or 0-10 Vdc)	
	Dual or Quad Relay (NPN or PNP type)	
	USB programming	

Note: See page 14-15 for more information on enclosures and option cards.

ORDERING INFORMATION			
SERIES	2200		
INPUT SIGNALS	1 4 mA to 20 mA 2 0 Vdc to 5 Vdc 4 1 Vdc to 6 Vdc 5 0 Vdc to 10 Vdc	6 1 Vdc to 11 Vdc J Thermocouple Type J K Thermocouple Type K T Thermocouple Type T	E Thermocouple Type E PT1 RTD PT100
POWER REQUIREMENTS	4 40 Vac to 250 Vac/21.6 Vdc to 250 Vdc		
OPTION CARDS	0 No option card 1 Dual relay option card 2 Quad relay option card	3 Quad NPN-OC option card 4 Quad PNP-OC option card 5 Analog output option card	6 RS 232-C Serial communications option card 7 RS 485 Serial communications option card
OPTIONAL ENCLOSURES	ENC1 Black painted steel		

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE



Options & Accessories

BACKLIGHT & DISPLAY

- Available for 1900 Series
- Green backlight and red backlight versions available
- Display options shown to the right



Green backlight version
1900C-3

Red backlight version
1900C-4



1900C-3/1900C-4: Loop-powered
display with backlight
power supply

1900C-1/1900C-2:
Loop-powered

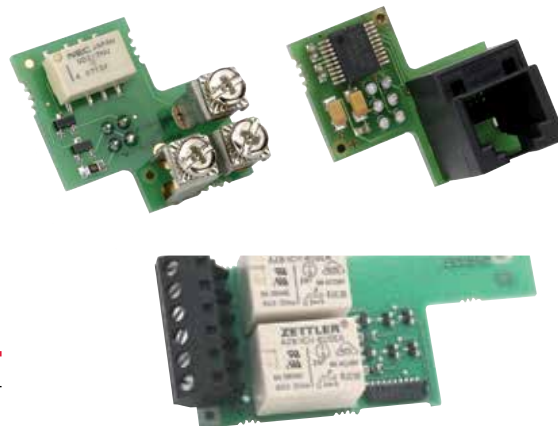
ENCLOSURES

- Black painted steel enclosures are available for the 1950, 2000/2100 and 2200 series. Off-white fiberglass enclosures are available for the 1950 Series.
- NEMA 4X/IP65 enclosures (sealed bezel only) standard on 1950 & 2000/2100 Series



OPTION CARDS

- Plug-in cards are available options for the 1950 Series, that provide alarm and setpoint relay outputs, analog and digital outputs, including RS 232-C and RS 485 functions.
- RS232 Comm, single relay, RS485 comm, dual sinking open collector option cards available for 1950 Series
- Dual relay, quad relay, quad NPN-OC, quad PNP-OC, analog output, RS232-C serial communications and RS 485 serial communications options cards available for 2000/2100 Series



Typical plug-in option card with on board terminals

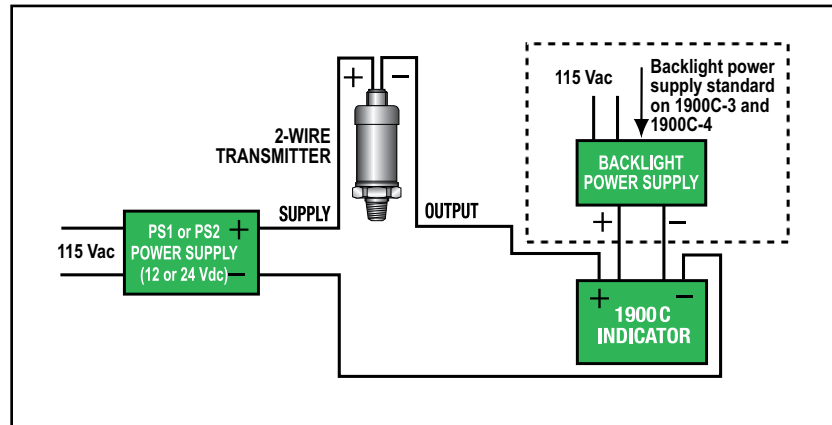
OPTION CARDS	
Relay option card	Type: single FORM-C relay Isolation to sensor & user input commons: 1400 Vrms for 1 min. Working voltage: 150 Vrms Contact rating: 1 amp @ 30 Vdc resistive; 0.3 amp @ 125 Vac resistive Life expectancy: 100,000 minimum operations Response time: Turn on time: 4 msec max. Turn off time: 4 msec max.
Communications option card	RS485 multi-point balanced interface (non-isolated) Baud rate: 300 to 38.4k Data Format: 7/8 bits; odd, even, or no parity Bus address: 0 to 99; max 32 meters per line Transmit delay: Selectable RS232 half duplex (non-isolated) Baud rate: 300 to 38.4k Data format: 7/8 bits; odd, even, or no parity
Dual sinking output option card	Non-isolated switched DC, N channel open drain MOSFET Current rating: 100 mA max. VDS ON: 0.7 V @ 100 mA VDS MAX: 30 Vdc Offstate leakage current: 0.5 mA max.
Dual relay option card	Two FORM-C relays. Rating: One relay energized; 5 amps @ 120/240 Vac/115/230 Vac or 28 Vdc (resistive load), 1/8 HP @ 120 Vac, inductive load. Total current not to exceed 5 amps with both relays energized
Quad relay option card	Four FORM-A relays. Rating: One relay energized; 3 amps @ 240 Vac or 30 Vdc (resistive load), 1/10 HP @ 120 Vac, inductive load. Total current not to exceed 4 amps with all four relays energized
Analog output option card	0 mA to 20 mA, 4 mA to 20 mA or 0 Vdc to 10 Vdc retransmitted signal
Quad NPN-OC option card	4 isolated open collector sinking transistors, 100 mA at maximum 30 Vdc
Quad PNP-OC option card	4 isolated open collector sourcing transistors, 24 Vdc with 30 mA total maximum
Communication option cards	RS232C or RS485

AC TO DC RETROFIT PACKAGE

- Easily integrates with non-metallic seal and transmitter/switch assemblies to operate with 110/240 VAC systems
- Solid state relay - 10A at 250 VAC
- DIN rail mountable with NEMA 4X enclosure



1900 SERIES WIRING DIAGRAM



Typical wiring for the 1900C including the optional backlight feature. .

NOTES

A series of horizontal lines for writing notes, overlaid with a large, faint watermark of the letters 'MFCP'.

TO DOWNLOAD OR ORDER CATALOGS,
VISIT WWW.NOSHOK.COM

Quality Policy

NOSHOK

is committed to providing a high degree of value and continually improving processes to improve customer satisfaction by focusing on customer requirements for the design, manufacture and distribution of pressure, temperature, and force measurement instruments along with needle and manifold valves including custom manifold systems for industrial applications.

All from world class technology.

Combined with real-world stamina.

The highest value with the industry's best warranty.

And all from a company with a 50+ year record of customer satisfaction.

All from your Single Source Instrumentation Company.



Corporate Headquarters

1010 West Bagley Road
Berea, Ohio 44017
Ph: 440.243.0888
Fax: 440.243.3472
E-mail: noshok@noshok.com
Web: www.noshok.com



Catalog NK14DIS