Temperature, Process and Strain Meters

MONOGRAM®

iSeries®

DPi32, shown smaller than actual size.

DPi16, shown smaller than actual size.

DPi8, shown smaller than actual size.

DPi Series

5 YEAR WARRANTY

- **Universal Inputs**
- **User-Friendly, Simple to Configure**
- **High Quality**
- **Powerful Features**
- **Extended 5-Year Warranty**
- **Free Software Download**
- **Totally Programmable Color Displays**
- **Accuracy @ 25°C: ±0.5°C temp nominal 0.03% rdg ±0.03% range process and strain**
- **Both RS232 and RS485 Selectable from Menu Available**
- **Built-In Excitation**
- **Embedded Internet Connectivity Optional**
- **RS232 and RS485 Serial Communications Optional**
- **Temperature Stability ±0.04°C/°C RTD and ±0.05°C/°C Thermocouple @ 25°C (77°F)**
- **AC or DC Powered Units**
- **Ratiometric Mode for Strain Gages**
- **Programmable Digital Filter**

The OMEGA® iSeries is a family of microprocessor-based instruments offered in three true DIN sizes with NEMA 4 (IP65) rated front bezels. All of the instruments share the same set-up and configuration menu and method of operation, a tremendous time saver for integration of a large system. The iSeries family includes extremely accurate digital panel meters "DPi" and single loop PID controllers "CNi" that are simple to configure and use, while providing tremendous versatility and a wealth of powerful features.

The DPi Series covers a broad selection of transducer and transmitter inputs with 2 input models.

The Universal temperature and process instrument (DPi models) handles 10 common types of thermocouples, multiple RTDs and several process (DC) voltage and current ranges. This model also features built-in excitation, 24 Vdc @ 25 mA. With its wide choice of signal inputs, this model is an excellent choice for measuring or controlling temperature with a thermocouple, RTD, or 4 to 20 mA transmitter.

The strain and process instruments (DPiS models) measure inputs from load cells, pressure transducers, and most any strain gage sensor as well as process voltage and current ranges. The DPiS has built-in 5 or 10 Vdc excitation for bridge transducers, 5 Vdc @ 40 mA or 10 Vdc @ 60 mA (any excitation voltage between 5 and 24 Vdc is available by special order). This DPiS model supports 4- and 6-wire bridge communications, ratiometric measurements. The DPiS features fast and easy "in process" calibration/scaling of the signal inputs to any engineering units. This model also features 10-point linearization which allows the user to linearize the signal input from extremely nonlinear transducers of all kinds.

Programmable Color Display

The DPi Series are ⅛, 1/16 and 1/32 DIN digital panel meter featuring the big iSeries color-changing display. The digits are twice the size of typical ⅛ DIN panel meters. The iSeries meters feature the only LED displays that can be programmed to change color between **GREEN**, **AMBER**, and **RED**.

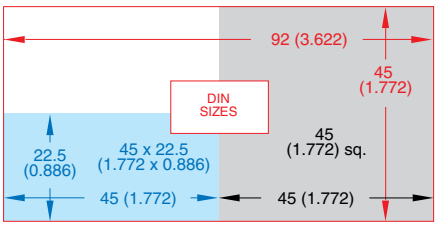
Embedded internet and serial communications featuring optional "embedded Internet" (specify "-EIT" option) the iSeries are the first instruments of their kind that connect directly to an Ethernet network and transmit data in standard TCP/IP packets, or even serve Web pages over a LAN or the Internet. The iSeries are also available with serial communications. With the "-C24" option, the user can select from the pushbutton menu between RS232, RS422, and RS485, with straightforward ASCII commands.

iSeries change color at any setpoint

PATENTED

Totally Programmable Color Displays

Dimensions: mm (inch)



Options

Ordering Suffix	Description
Network Options	
-EIT	Ethernet with embedded internet
-C24	Isolated RS232 and RS485, 300 to 19.2 KB
-C4EIT	Ethernet with embedded Web server + isolated RS485/422 hub for up to 31 devices
-DC	12 to 36 Vdc*, 24 Vac (standard power input: 90 to 240 Vac/dc, 50 to 400 Hz)
Factory Setup	
-FS	Factory setup and configuration
-FS(RTD-1N)	Customized DPiS model for MIL-T-7990B nickel RTD input, 0 to 200°C (32 to 392°F)
-FS(RTD-2N)	Customized DPiS for MIL-T-7990B nickel RTD input, -40 to 300°C (-40 to 572°F)
Software (Requires Network Option)	
OPC-SERVER LICENSE	OPC server/driver software license

***Note: "-DC", "-C24"** and **"-C4EIT"** not available with excitation. Models **"-EIT"** and **"-C4EIT"** are only offered on DPi8 and DPiS8 models.*
** 20 to 36 Vdc for DPi8A, DPi16A, -C4EIT or -EIT.*
***Ordering Examples: DPi8A**, 1/8 DIN meter with isolated scalable analog retransmission of process value. **DPi8C**, 1/8 DIN temp/process meter in compact case, **DPi32**, 1/32 DIN temp/process monitor.*

iSeries Controllers Also Available!

CNi Series Models with Control and Alarm Outputs, Visit OMEGA

CNi16D, shown actual size.

Input Type		Range	Accuracy
Universal Strain/Process Input Models			
Process Voltage		0 to 100 mV, 0 to 1V, ±100 mV, 0 to 10V	0.03% rdg
Process Current		0 to 20 mA (4 to 20 mA)	0.03% rdg
Universal Temperature/Process Input Models			
J	**Iron-Constantan**	-210 to 760°C (-346 to 1400°F)	0.4°C (0.7°F)
K	**CHROMEGA®-ALOMEGA®**	-270 to -160°C (-454 to -256°F) -160 to 1372°C (-256 to 2502°F)	1.0°C (1.8°F) 0.4°C (0.7°F)
T	**Copper-Constantan**	-270 to -190°C (-454 to -310°F) -190 to 400°C (-310 to 752°F)	1.0°C (1.8°F) 0.4°C (0.7°F)
E	**CHROMEGA®-Constantan**	-270 to -220°C (-454 to -364°F) -220 to 1000°C (-364 to 1832°F)	1.0°C (1.8°F) 0.4°C (0.7°F)
R	**Pt - Pt/13%Rh**	-50 to 40°C (-58 to 104°F) 40 to 1768°C (104 to 3214°F)	1.0°C (1.8°F) 0.5°C (0.9°F)
S	**Pt - Pt/10%Rh**	-50 to 100°C (-58 to 212°F) 100 to 1768°C (212 to 3214°F)	1.0°C (1.8°F) 0.5°C (0.9°F)
B	**Pt/30%Rh - Pt6%Rh**	100 to 640°C (212 to 1184°F) 640 to 1820°C (1184 to 3308°F)	1.0°C (1.8°F) 0.5°C (0.9°F)
C	**W/5%Re - W/26%Re**	0 to 2320°C (32 to 4208°F)	0.4°C (0.7°F)
N	**OMEGALLOY® Nicrosil-Nisil**	-250 to -100°C (-418 to -148°F) -100 to 1300°C (-148 to 2372°F)	1.0°C (1.8°F) 0.4°C (0.7°F)
L	**J DIN**	-200 to 900°C (-328 to 1652°F)	0.4°C (0.7°F)
RTD	**Pt, 0.00385, 100**	-200 to 850°C (-328 to 1652°F)	±0.5°C ±.02% rdg
RTD	**Pt, 0.00385, 500 ohm**	-200 to 850°C (-328 to 1652°F)	±0.6°C ±.02% rdg
RTD	**Pt, 0.00385, 1000 ohm**	-200 to 850°C (-328 to 1652°F)	±0.5°C ±.02% rdg
RTD	**Pt, 0.00392, 100 ohm**	-200 to 850°C (-328 to 1562°F)	±0.5°C ±.02% rdg
RTD	**Pt, 0.00392, 500 ohm**	-200 to 850°C (-328 to 1562°F)	±0.8°C
RTD	**Pt, 0.00392, 500 ohm**	-200 to 850°C (-328 to 1562°F)	±0.8°C ±.01% rdg
RTD-1N	**(Nickel MIL-T-7990B) (FS required)**	0 to 200°C (32 to 392°F)	0.1°C (0.2°F)
RTD-2N	**(Nickel MIL-T-7990B) (FS required)**	-40 to 300°C (-40 to 572°F)	0.3°C (0.5°F)
Process Voltage		0 to 100 mV, 0 to 1V, 0 to 10V	0.03% rdg
Process Current		0 to 20 mA (4 to 20 mA)	0.03% rdg

To Order

Model No.	Size/Cutout	Input Type	Other Features
DPi8	1/8 DIN	Temperature/process	—
DPi8A	1/8 DIN	Temperature/process	Analog output
DPiS8	1/8 DIN	Strain/process	—
DPi16	1/16 DIN	Temperature/process	—
DPi16A	1/16 DIN	Temperature/process	Analog output
DPiS16	1/16 DIN	Strain/process	—
DPi32	1/32 DIN	Temperature/process	—
DPiS32	1/32 DIN	Strain/process	—
DPi8C	1/8 DIN	Temperature/process	Compact depth
DPiS8C	1/8 DIN	Strain/process	Compact depth

Comes complete with operator's manual.

Accessory

Model No.	Description
DPP-5	1/8 DIN panel punch

M

i Series Common Specifications (All i/8, i/16, i/32 DIN)

Universal Temperature and Process Input (DPi/CNi Models)

Accuracy @ 25°C: ±0.5°C temp nominal; 0.03% rdg ±0.03% range process and strain

Resolution: 1°/0.1°; 10 µV process

Temperature Stability:

RTD: 0.04°C/°C

TC @ 25°C (77°F): 0.05°C/°C

Cold Junction Compensation

Process: 50 ppm/°C

NMRR: 60 dB

CMRR: 120 dB

A/D Conversion: Dual slope

Reading Rate: 3 samples/s

Digital Filter: Programmable

Display: 4-digit 9-segment LED 10.2 mm (0.40"); i32, i16, i16D, i8DV 21 mm (0.83"); i8 10.2 mm (0.40") and 21 mm (0.83"); i8DH **RED**, **GREEN,** and **AMBER** programmable colors for process variable, setpoint and temperature units

Input Types: Thermocouple, RTD, analog voltage, analog current

Thermocouple Lead Resistance: 100 Ω max

Thermocouple Types (ITS 90): J, K, T, E, R, S, B, C, N, L (J DIN)

RTD Input (ITS 68): 100/500/1000 Ω Pt sensor, 2-, 3- or 4-wire; 0.00385 or 0.00392 curve

Voltage Input: 0 to 100 mV, 0 to 1V, 0 to 10 Vdc

Input Impedance: 10 MΩ for 100 mV 1 MΩ for 1 or 10 Vdc

Current Input: 0 to 20 mA (5 Ω load)

Configuration: Single-ended

Polarity: Unipolar

Step Response: 0.7 sec for 99.9%

Decimal Selection:

Temperature: None, 0.1

Process: None, 0.1, 0.01 or 0.001

Setpoint Adjustment: -1999 to 9999 counts

Span Adjustment: 0.001 to 9999 counts

Offset Adjustment: -1999 to 9999

Excitation (Not Included with Communication): 24 Vdc @ 25 mA (not available for low-power option)

Universal Strain and Process Input (DPiS/CNiS Models)

Accuracy: 0.03% reading

Resolution: 10/1µV

Temperature Stability: 50 ppm/°C

NMRR: 60 dB

CMRR: 120 dB

A/D Conversion: Dual slope

Reading Rate: 3 samples/s

Digital Filter: Programmable

Input Types: Analog voltage and current

Voltage Input: 0 to 100 mVdc, -100 mVdc to 1 Vdc, 0 to 10 Vdc

Input Impedance: 10 MΩ for 100 mV; 1 MΩ for 1V or 10 Vdc

Current Input: 0 to 20 mA (5 Ω load)

Linearization Points: Up to 10

Configuration: Single-ended

Polarity: Unipolar

Step Response: 0.7 sec for 99.9%

Decimal Selection: None, 0.1, 0.01 or 0.001

Setpoint Adjustment: -1999 to 9999 counts

Span Adjustment: 0.001 to 9999 counts

Offset Adjustment: -1999 to 9999

Excitation (Optional In Place Of Communication): 5 Vdc @ 40 mA; 10 Vdc @ 60 mA

Control

Action: Reverse (heat) or direct (cool)

Modes: Time and amplitude proportional control; selectable manual or auto PID, proportional, proportional with integral, proportional with derivative and anti-reset Windup, and on/off

Rate: 0 to 399.9 s

Reset: 0 to 3999 s

Cycle Time: 1 to 199 s; set to 0 for on/off

Gain: 0.5 to 100% of span; setpoints 1 or 2

Damping: 0000 to 0008

Soak: 00.00 to 99.59 (HH:MM), or OFF

Ramp to Setpoint: 00.00 to 99.59 (HH:MM), or OFF

Auto Tune: Operator initiated from front panel

Control Output 1 and 2

Relay: 250 Vac or 30 Vdc @ 3 A (resistive load); configurable for on/off, PID and ramp and soak

Output 1: SPDT, can be configured as alarm 1 output

Output 2: SPDT, can be configured as alarm 2 output

SSR: 20 to 265 Vac @ 0.05 to 0.5 A (resistive load); continuous

DC Pulse: Non-isolated; 10 Vdc @ 20 mA

Analog Output (Output 1 Only):

Non-isolated, proportional 0 to 10 Vdc or 0 to 20 mA; 500 Ω max

Output 3 Retransmission

Isolated Analog Voltage and Current

Current: 10 V max @ 20 mA output

Voltage: 20 mA max for 0 to 10 V output

Network and Communications

Ethernet: Standards compliance IEEE 802.3 10 Base-T

Supported Protocols: TCP/IP, ARP, HTTPGET

RS232/RS422/RS485: Selectable from menu; both ASCII and MODBUS protocol selectable from menu; programmable 300 to 19.2 Kb; complete programmable setup capability; program to transmit current display, alarm status, min/max, actual measured input value and status

RS485: Addressable from 0 to 199

Connection: Screw terminals

Alarm 1 and 2 (Programmable)

Type: Same as output 1 and 2

Operation: High/low, above/below, band, latch/unlatch, normally open/ normally closed and process/deviation; front panel configurations

Analog Output (Programmable):

Non-isolated, retransmission 0 to 10 Vdc or 0 to 20 mA, 500 Ω max (output 1 only); accuracy is ± 1% of FS when following conditions are satisfied: input is not scaled below 1% of input FS, analog output is not scaled below 3% of output FS

General

Power: 90 to 240 Vac ±10%, 50 to 400 Hz*, 110 to 300 Vdc, equivalent voltage

Low Voltage Power Option: 24 Vac**, 12 to 36 Vdc for DPi/CNi/DPiS/CNiS; 20 to 36 Vdc for dual display, ethernet and isolated analog output from qualified safety approved source

Isolation

Power to Input/Output: 2300 Vac per 1 minute test

For Low Voltage Power Option: 1500 Vac per 1 minute test

Power to Relay/SSR Output: 2300 Vac per 1 minute test

Relay/SSR to Relay/SSR Output: 2300 Vac per 1 minute test

RS232/485 to Input/Output: 500 Vac per 1 minute test

Environmental Conditions:

All Models: 0 to 55°C (32 to 131°F) 90% RH non-condensing

Dual Display Models: 0 to 50°C (32 to 122°F), 90% RH non-condensing (for UL only)

Protection:

DPi/CNi/DPiS/CNiS32, i16, i16D, i8C: NEMA 4X/Type 4 (IP65) front bezel

DPi/CNi8, CNi8DH, i8DV: NEMA 1/Type 1 front bezel

Approvals: UL, C-UL, CE per 2014/35/EU.

Dimensions

i/8 Series: 48 H x 96 W x 127 mm D (1.89 x 3.78 x 5")

i/16 Series: 48 H x 48 W x 127 mm D (1.89 x 1.89 x 5")

i/32 Series: 25.4 H x 48 W x 127 mm D (1.0 x 1.89 x 5")

Panel Cutout

i/8 Series: 45 H x 92 mm W (1.772 x 3.622"), ⅛ DIN

i/16 Series: 45 mm (1.772") square, ¹⁄₁₆ DIN

i/32 Series: 22.5 H x 45 mm W (0.886 x 1.772"), ¹⁄₃₂ DIN

Weight

i/8 Series: 295 g (0.65 lb)

i/16 Series: 159 g (0.35 lb)

i/32 Series: 127 g (0.28 lb)

** No CE compliance above 60 Hz.*

*** Units can be powered safely with 24 Vac power, but no certification for CE/UL are claimed.*