

Temperature, Process, Strain Meters and PID Controllers

iSeries



i32 shown smaller than actual size



i16 shown smaller than actual size



i8 shown smaller than actual size



i8DV shown smaller than actual size

iSeries



- ✓ **Universal Inputs**
- ✓ **High Accuracy: 0.5°C (±0.9°F), 0.03% Reading**
- ✓ **Totally Programmable Color Displays (Visual Alarms)**
- ✓ **User-Friendly, Simple to Configure**
- ✓ **Full Autotune PID Control**
- ✓ **Embedded Ethernet Connectivity Optional**
- ✓ **RS232 and RS485 Serial Communications Optional**
- ✓ **Built-In Excitation**
- ✓ **2 Control or Alarm Outputs (Choice of DC Pulse, Solid State Relays, Mechanical Relays, Analog Voltage and Current)**
- ✓ **Output 3 Retransmission: Isolated Analog Voltage and Current Optional**
- ✓ **NEMA 4 (IP65) Front Bezel**
- ✓ **Temperature Stability: ±0.04°C/°C RTD and ±0.05°C/°C Thermocouple @ 25°C (77°F)**
- ✓ **Front Removable and Plug Connectors**
- ✓ **AC or DC Powered Units**
- ✓ **Ratiometric Mode for Strain Gages**
- ✓ **Programmable Digital Filter**
- ✓ **Free Software**

The NEWPORT® 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 and single loop PID controllers that are simple to configure and use, while providing tremendous versatility and a wealth of powerful features.

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

The universal temperature and process instrument 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 (iS models) measure inputs from load cells, pressure transducers, and most any strain gage sensor as well as process voltage and current ranges. The iS 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 iS model supports 4- and 6-wire bridge communications, ratiometric measurements. The iS 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 iSeries are 1/8, 1/16 and 1/32 DIN controllers featuring the big iSeries color-changing display. The digits are twice the size of typical 1/8 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 or MODBUS.

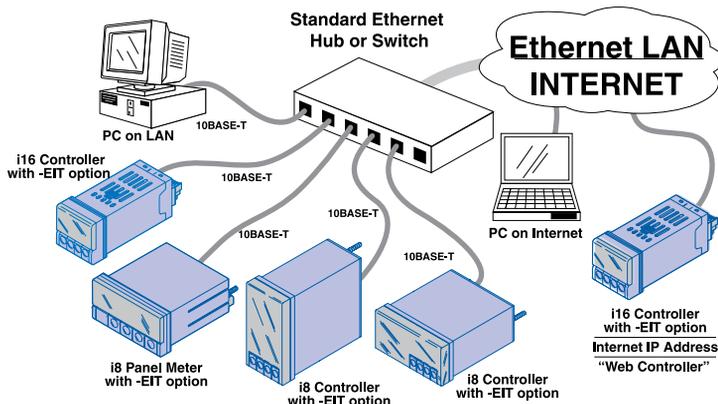
Control Functions

The iSeries can control simple manual operation to ON-OFF and full Autotune PID control. (Selectable preset tune, adaptive tune, PID, PI, PD control modes.) The dual control outputs can be configured for a variety of independent control and alarm applications such as heat/heat, heat/cool, heat/alarm, cool/cool, cool/alarm or alarm/alarm. The ramp-to-set-point feature allows the user to define the rate of rise to setpoint, minimizing thermal shock to the load during start-up. Maximum ramp time: 99.59 (HH.MM), Soak: 00.00 to 99.59 (HH.MM), Damping: 1 to 8 in unit steps.

For applications that do not require PID control, just simplified programming, there are 2 options available: -AL Limit Alarm and -SM Simplified Menu ON-OFF Control.

iSeries Embedded Internet

iSeries Meters and Controllers - Direct connection to Ethernet (Each device has own IP Address)



Get Internet E-mail Notification of Alarm Status on your cell phone or PDA.

Embedded Internet

The NEWPORT® iSeries devices can connect directly to an Ethernet network with a standard RJ-45 connector and can send and receive data in standard TCP/IP packets. (Please specify -EIT or -C4EIT option.)

The iSeries devices can serve Web pages over an Ethernet LAN or even over the Internet making it possible to monitor and control a process through a web browser (such as Microsoft Internet Explorer) from anywhere in the facility or anywhere in the world.

Remote Control

For example, using an iSeries 1/16 DIN temperature controller to control a heater, an engineer can monitor the temperature, change set points or alarm points, turn the heater on and off, or make other modifications from anywhere on the local network, or anywhere on the Internet.

The web pages are easily customized and secure password protected access to the devices is easily controlled. And it requires absolutely no special software on the engineer's computer to view the data and "supervise" the controller--nothing other than a Web Browser.

Email and Alarm

In fact, the iSeries controller can even send an email to the engineer (or anyone they choose) alerting them to an alarm condition or updating the status. Leveraging the technology of the Internet, the engineer could receive a message from the iSeries controller on an Internet enabled pager or cell phone. Most remarkable is that all this can be accomplished without a computer.

The iSeries device (meter or controller) connects directly to the Ethernet Network -- not to the serial port of a computer functioning as a "server" and "master" to "slave" instruments connected through serial communications. The iSeries devices are also available with RS232, RS422, RS485 and MODBUS® serial communications. (Specify the C24 option.) In fact, the iSeries are the first instruments of this type which include all these serial protocols on one device, selectable from a menu.

Internet Appliances

With the -EIT option, these small 1/8 DIN and 1/16 DIN instruments are stand-alone Web Servers. The Ethernet and Web Server capability is actually embedded in the device. (The smallest 1/32 DIN size device must be connected to an external iServer.)

The iSeries device is assigned an IP address on the network and can also be assigned an easily remembered name such as "Heater1". In fact, the device could be assigned an authorized Internet IP address from an Internet Service Provider and function as a World Wide Web Server delivering whatever specific information is called for.

(For an example, please see www.newportUS.com/iserver)

iServer

- ✓ A Web Server and an Ethernet bridge
- ✓ Serves up to 32 devices

The NEWPORT® iServer is a DIN rail device which can be a hub connecting up to 32 instruments to the Ethernet and Internet. The iServer is both a Web Server and an Ethernet-Serial bridge. To connect to the iServer, iSeries devices must feature the "-C24" Serial Communications option. The iServer is also compatible with the Newport® INFINITY® family of ultra high performance digital panel meters and the Newport® iDRX family of Signal Conditioners. The iServer can also connect almost any RS232 or RS485 Serial Device to Ethernet.

The iServer is an alternate way to connect iSeries devices to an Ethernet LAN or Internet. Instead of Connecting each iSeries device directly to the Ethernet network, with individual IP Addresses for each device, the iServer can be a HUB/Server for up to 32 devices.

To Order Visit newportUS.com/eit

Model No.	Description
EIT-D	iServer industrial MicroServer; Full RS-232 serial interface without I/O's
EIT-D-485	Industrial DIN Rail case with screw terminal serial ports; RS-485 (full and half duplex) serial interface with 3 I/O's, serves 32 devices
Options	
iDRN-PS-1000	Power Supply (switching), 95 to 240 Vac input, 24 Vdc output @ 850mA (power up to 7 units)

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

Universal Temperature and Process Input ("i" Models)

Accuracy: $\pm 0.5^{\circ}\text{C}$ temp; 0.03% rdg

Resolution: $1^{\circ}/0.1^{\circ}$; 10 μV process

Temperature Stability:

RTD: $0.04^{\circ}\text{C}/^{\circ}\text{C}$

TC @ 25°C (77°F): $0.05^{\circ}\text{C}/^{\circ}\text{C}$

Cold Junction Compensation

Process: 50 ppm/ $^{\circ}\text{C}$

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 M Ω for 100 mV 1 M Ω 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 ("iS" Models)

Accuracy: 0.03% reading

Resolution: 10/1 μV

Temperature Stability: 50 ppm/ $^{\circ}\text{C}$

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 M Ω for 100 mV; 1 M Ω 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 $\pm 1\%$ 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 $\pm 10\%$, 50 to 400Hz*, 110 to 375 Vdc, equivalent voltage

Low Voltage Power Option: 24 Vac**, 12 to 36 Vdc for i/iS; 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:

i/iS32, 16, 16D, 8C:

NEMA 4X/Type 4 (IP65) front bezel

i/iS8, 8DH, 8DV:

NEMA 1/Type 1 front bezel

Approvals: UL, C-UL, CE per EN61010-1:2001, FM (temperature units only)

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"), $\frac{1}{8}$ DIN

i/16 Series: 45 mm (1.772") square, $\frac{1}{16}$ DIN

i/32 Series: 22.5 H x 45 mm W (0.886 x 1.772"), $\frac{1}{32}$ 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.