V3204 (1/4 DIN)
V32h8 (1/8 DIN Horizontal)
V3216 (1/16 DIN)

V3200i

Indicator and Alarm Units

Easy to Use, Versatile Units Provide
"Out of the Box" Performance

- Universal Input
- PV Retransmission
- Scrolling Text Messages
- Recipes
- Modbus Communications
- Optional PC Based Configuration

Description

Action's range of V3200i indicators offer accurate indication of temperature and process measurements. Process interlocks, including overtemperature furnace limits, are implemented using relay output channels.

The emphasis is on ease of use. A simple 'Quick Start' code is used to configure all the functions essential for indication and protection of your process, including input sensor type, measurement range and alarms, making 'Out the Box' operation truly achievable. In operation every parameter has a scrolling text message describing its function and is available in English, German, French, Spanish or Italian. More advanced features, including scrolling text messages, are configured using iTools, a PC based configuration wizard, which is an easy to use and instructive guide to all the functions available.

Universal Input

A wide range of temperature and process inputs can be selected using the front panel pushbuttons without the need for any hardware change. This provides easy on-site set up.

Strain Gauge Input

Melt pressure and weigh scale inputs can be energised from an internal 10Vdc transducer supply. An automatic shunt calibration routine is provided to remove zero and span offsets. The display on the V32h8i can show a full 5 digit value.

Process Alarms

Four internal alarm setpoints are provided. They can be used to energise up to three relay outputs, which can be latched if required. A special 'Alarm Blocking' mode is available which ensures that when the unit is powered up an alarm must first enter a good state before the alarm becomes active. This is particularly useful for low alarms which can be blocked while the process is warming up.

Custom Text Messaging

Custom messages can be created with iTools and downloaded to the V3200i to display when an event, alarm or process condition occurs. This provides the operator with good visibility of what is happening in the process and provides messages that they can understand and act upon.

Recipes

iTools recipes can be created that can be used to change the operating parameters of the V3200i simply by selecting a recipe using the V3200i pushbuttons. This is very useful where multiple products are processed but require different parameters to be set. It can also be used to change the set-up of a indicator therefore allowing one unit to be used as a spare for multiple applications.

Analogue Retransmission

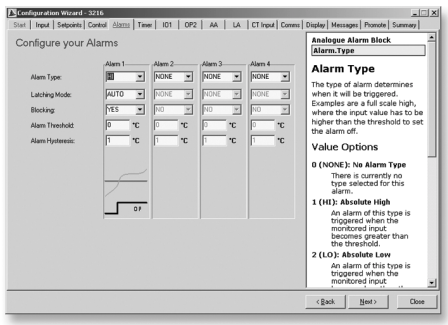
The measured process value can be retransmitted as either a mA or voltage signal with a selection of outputs including 4-20mA and 0-10Vdc. In the V32h8i this signal is isolated from all other electronics within the unit.

Digital Communications

All units support both EIA232 and EIA485 communication using the Modbus protocol as a slave device. It is also possible to digitally retransmit one parameter using a Modbus broadcast to all other Modbus devices on the network.

iTools Wizard

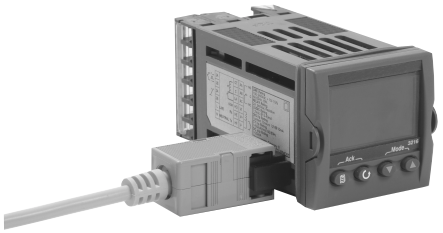
Used to simplify the set up of V3200i series indicators, the wizard guides the user through the configuration process with interactive help and graphical demonstrations of features.



invensys EUROTHERM action instruments

Configuration Adaptor

PC configuration to all 3200i indicators can be achieved by using a configuration adaptor. It provides iTools with the ability to communicate with and configure devices without any power being connected.



SPECIFICATIONS

General

Environmental performance

Temperature limits	Operation:	0 to 55°C
	Storage:	-10 to 70°C
Humidity limits	Operation:	5 to 90% RH non condensing
	Storage:	5 to 90% RH non condensing
Panel sealing:		IP65, Nema 4X
Shock:		BS EN61010
Vibration:		2g peak, 10 to 150Hz
Altitude:		<2000 metres
Atmospheres:		Not suitable for use in explosive or corrosive atmosphere

Electromagnetic compatibility (EMC)

Emissions and immunity:	BS EN61326
Electrical safety (BS EN61010):	Installation cat. II; Pollution degree 2

INSTALLATION CATEGORY II
The rate impulse voltage for equipment on nominal 230V mains is 2500V.

POLLUTION DEGREE 2
Normally, only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation shall be expected

Physical

Panel mounting	3216i:	1/16 DIN
	3204i:	1/4 DIN
	32h8i:	1/8 DIN, horizontal
Dimensions and weight	3216i:	48W x 48H x 90D mm, 250g
	3204i:	96W x 96H x 90D mm, 420g
	32h8i:	96W x 48H x 90D mm, 350g
Panel cut-out:	3216i:	45W x 45H mm
	3204i:	92W x 92H mm
	32h8i:	92W x 45H mm

Operator interface

Type:		LCD TN with backlight
Main PV display:	3216i, 3204i:	4 digits, green
	32h8i:	5 digits, green or red
Lower display:	3216i, 3204i:	5 character starburst, green
	32h8i:	9 character starburst, green
Status beacons:		Units, outputs, alarms
Power requirements	3216i:	85 to 264Vac, –15%, +10%, 48 to 62 Hz, max 6W 24Vac, -15%, +10%. 24Vdc, -15% +20% ±5% ripple voltage max 6W
	32h8i, 3204i:	85 to 264Vac, –15%, +10%, 48 to 62 Hz, max 8W 24Vac, -15%, +10%. 24Vdc -15% +20% ±5% ripple voltage max 8W

Approvals

CE, cUL listed (file E57766), Gost, FM, DIN 3440

Transmitter PSU (not 3216i)

Rating:	24Vdc, 20mA
Isolation:	264Vac double insulated

Communications

Serial Communications Protocol:	Modbus RTU slave Modbus RTU Master broadcast (1 parameter)
Isolation:	264Vac, double insulated
Transmission standard:	EIA232 or EIA485 (2 wire)

Process variable input

Calibration accuracy:	<±0.25% of reading ±1LSD (1)
Sample rate:	9Hz(110ms)
Isolation:	264Vac double insulation from the PSU and communication
Resolution (µV):	<0.5µV with 1.6s filter (mV range) <0.25mV with 1.6s filter (Volts range)
Resolution (effective bits):	>17 bits
Linearisation accuracy:	< 0.1% of reading
Drift with temperature:	<50ppm (typical) <100ppm (worst case)
Common mode rejection:	48-62Hz, >-120db
Series mode rejection:	48-62Hz, >-93dB
Input impedance:	100MΩ (200KΩ on volts range C)
Cold junction compensation:	>30/1 rejection of ambient change
External cold junction:	Reference of 0°C
Cold junction accuracy:	<±1°C at 25°C ambient
Linear(process) input range:	-10 to 80mV, 0 to 10V requires 100KΩ/ 806Ω external divider module (not 32h8i)
Thermocouple types:	K, J, N, R, S, B, L, T, C, custom download (2)
Resistance thermometer types:	3-wire Pt100 DIN 43760
Bulb current:	0.2mA
Lead compensation:	No error for 22 ohms in all leads
Input filter:	Off to 100s
Zero offset:	User adjustable over full range
User calibration:	2-point gain & offset

Notes

(1) Calibration accuracy quoted over full ambient operating range and for all input linearisation types

(2) Contact Eurotherm for details of availability of custom downloads for alternative sensors

Strain gauge input (32h8i)

Input type:	350Ω Bridge
Connection:	4 or 6 wire (6 uses internal shunt)
Calibration accuracy:	+0.1% of full scale
Sample time:	9hz (110ms)
Isolation:	264Vac double isolation from the PSU and communications
Excitation:	10Vdc +7%
Sensitivity:	1.4 to 4mV/V
Input span:	-27% to +127% of full scale (approx. –10mV to +5mV):
Zero balance:	+25% of full scale
Tare:	+25% of full scale
Resolution (mV):	0.3mV/V(typical) with 1.6s filter
Resolution (effective bits):	14.3 bits
Drift with temperature:	<100ppm/°C of full scale
Common mode rejection:	48-62Hz, >-120db
Series mode rejection:	48-62Hz, >-60db
Input filter:	Off to 100s

AA relay

Type:	Form C (changeover)
Rating:	Min 100mA@12Vdc, max 2A@264Vac resistive
Function:	Alarms, events

Digital input A/B (B not on 3216i, A not on 32h8i with SG or SD)

Contact closure:	Open >600Ω, closed <300Ω
Input current:	<13mA
Isolation:	None from PV or system; 264Vac double insulated from PSU and communications
Function:	Includes alarm acknowledge, keylock, alarm inhibit, freeze display, tare, auto zero, peak reset

Logic I/O module (3216i only)

Output

Rating:	ON: 12Vdc@<44mA, OFF: <300mV@100µA
Isolation:	None from PV or system. 264Vac double insulated from PSU and comms
Function:	Alarms, events

Input

Contact closure:	Open >500Ω, closed <150Ω
Isolation:	None from PV or system 264Vac double insulated from PSU and comms
Function:	Includes alarm acknowledge, keylock, alarm inhibit, freeze display, tare, auto zero, peak reset

Relay output channels

Type	3216i:	Form A (normally open)
	32h8i, 3204i:	Form C (changeover)
Rating:		Min 100mA@12vdc, max 2A@264Vac resistive
Function:		Alarms, events

Analogue output

OP1, OP2 (3216i only)

Rating:	0-20mA into <500Ω
Accuracy:	± (<0.5% of Reading + <100µA)
Resolution:	11.5 bits
Isolation:	None from PV or system 264Vac double insulated from PSU and comms
Function:	Retransmission

OP3 (not on 3216i)

Isolation:	264Vac double insulated
Function:	Retransmission
Current Output Rating:	0-20mA into <500Ω
Accuracy:	±(<0.25% of Reading + <50µA)
Resolution:	13.6 bits
Voltage Output Rating (not on 3204i):	0-10V into >500Ω
Accuracy:	±(<0.25% of Reading +<25mV)
Resolution:	13.6 bits

Software features

Alarms

Number:	4
Type:	Absolute high & low, Rate of change (rising or falling)
Latching:	Auto or manual latching, non-latching, event only
Output assignment:	Up to 4 conditions can be assigned to one output

Other status outputs

Function:	Sensor break, power fail, new alarm, pre-alarm
Output assignment:	Up to 4 conditions can be assigned to one output

Custom messages

Number:	15 scrolling text messages
No of characters:	127 characters per message max
Languages:	English, German, French, Spanish, Italian
Selection:	Active on any parameter status using conditional command

Recipes

Number:	5 recipes with 19 parameters
Selection:	HMI interface, communications or digital IO

Transducer calibration

Calibration types:	Shunt, load cell, comparison
Other features:	Auto-zero, tare

Other features

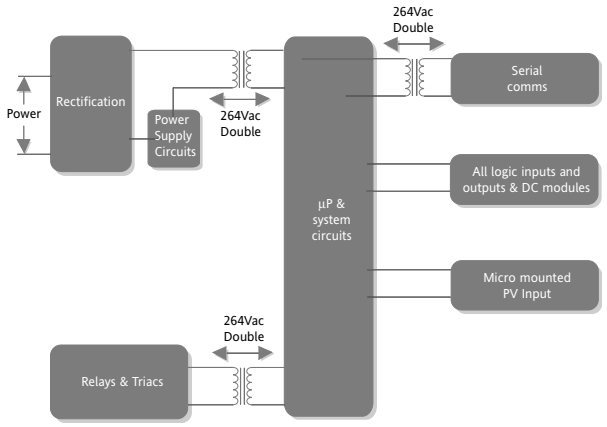
Display colour	(32h8i):	Upper display selectable green or red or change on alarm
Scrolling text:		Parameter help, custom messages
Display filter:		Off to zero last 2 digits
Peak monitor:		Stores high and low values

FM/DIN 3440

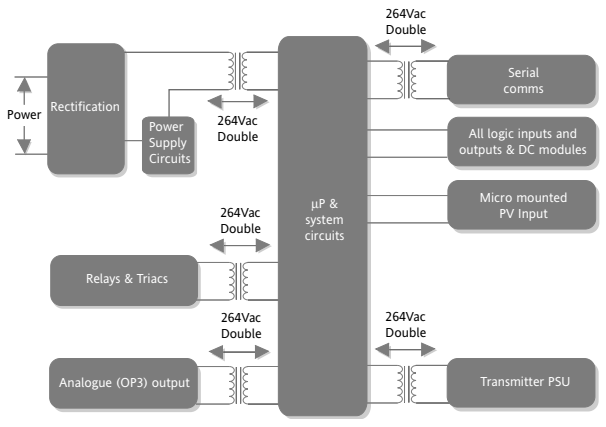
Alarm 1 configuration:	Absolute hi or lo, de-energised in alarm Latching output on Form C (AA) Relay All alarms active on sensor break and power fail
Alarm setpoint:	Adjustment protection via password
Configuration security:	FM/DIN 3440 option prevents reconfiguration of alarm config

Isolation Diagrams

3216i

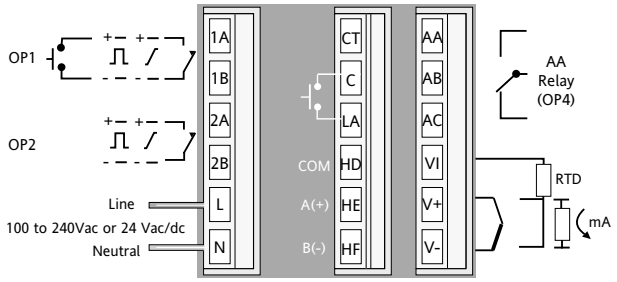


32h8i/3204i

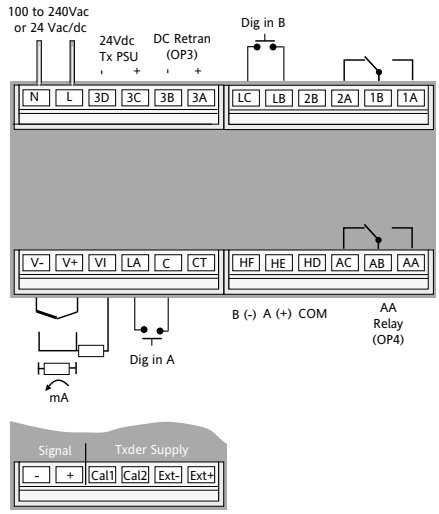


isolation Diagrams

3216i



32h8i/3204i



Ordering Code

Model	Function	Power Supply	Outputs	AA Relay	Options	Fascia Color	Product Language	Manual Language	Input Adaptor	Warranty	Calibration Certificate	Custom Label	Specials & Access

Model

V3216i	1/16 DIN Unit
V32h8i	1/8 DIN Horizontal Unit
V3204i	1/4 DIN Unit

Function

AL	Standard Unit
FM	FM Alarm Unit
DN	DIN 3440 Alarm Unit
SG	Strain Gauge Input (32h8i only)

Power Supply

VH	85-264 Vac
VL	20-29 Vac/Vdc

Outputs

3216i	OP1	OP2
LRXX	Logic	Relay
RRXX	Relay	Relay
LDXX	Logic	Analog
DRXX	Analog	Relay
32h8i/3204i	**OP1**	**OP3**
RXXX	Relay	None
RXDX	Relay	Analog

AA Relay

X	Disabled
R	Form C (changeover)

Options

XXX	Not Fitted
XXL	Digital Input A
2XL	RS232 + Digital Input A
4XL	RS485 + Digital Input A

Fascia Color

G	Green
S	Silver

Product Language

ENG	English
FRA	French
GER	German
SPA	Spanish
ITA	Italian

Manual Language

ENG	English
FRA	French
GER	German
SPA	Spanish
ITA	Italian

Input Adaptor

XX	None
V1	0-10 Vdc*
A1	mA Burden Resistor (2.49Ω, 0.1%)

*Not required for 32h8i

Warranty

XXXXX	Standard
WL005	Extended

Calibration Certificate

XXXXX	None
CERT1	Certificate of Conformity
CERT2	5 Point Factory Calibration

Custom Label

AX142	Action Instruments

Specials and Accessories

XXXXX	None
RES250	250Ω Resistor for 0-5Vdc OP
RES500	500Ω Resistor for 0-10Vdc OP

Accessories

User Guide HA029005
Engineering Manual HA029006
2.49Ω Precision Resistor SUB35/ACCESS/2.49R.1
Configuration Clip iTools/None/3000CK
0-10V Input Adaptor SUB21/1V10

Optional Quick Start Code

Input Type	Display Limits	Decimal Point	PV Color (32h8i Only)	Home Display	Range Low	Range High	OP1	OP2 OP3	OP4 AA Relay	Digital Input A (Not 32h8i/SG)	Digital Input B

Input Type

	Thermocouple
B	Type B
J	Type J
K	Type K
L	Type L
N	Type N
R	Type R
S	Type S
T	Type T
C	Type C
	RTD
P	Pt100
	Linear
M	0-80mV
2	0-20mA
4	4-20mA
	32h8i Only
0	0-10Vdc
1	1-5Vdc
3	2-10Vdc
6	0-5Vdc
G	Strain Gauge

Display Limits

X	None
C	Deg C Full Range
F	Deg F Full Range
K	Kelvin
P	Percentage

32h8i Only

Pressure		Flow Rate	
0	Pa	B	L-H
1	mPa	D	L-m
2	Kpa		General
3	Bar	E	%RH
4	mBar	G	%O2
5	PSI	H	%CO2
6	$Kgcm^2$	J	%CP
7	mmWG	L	V
8	inWG	M	Amps
9	mmHG	R	mA
A	Torr	T	mV
		U	Ohms
		W	ppm
		Y	RPM
		Z	m-s

Decimal Point

0	nnnnn
1	nnnn.n
2	nnn.nn
3	nn.nnn (32h8i only)
4	n.nnnn (32h8i only)

PV Color (32h8i Only)

X	Not Applicable
G	Green
R	Red
C	Change on any alarm (Green to Red)

Home Display

N	PV Only
A	First Alarm SP Only
1	PV + Alarm SP
2	PV + Alarm SP (read only)

Range Low

Enter Value

Range High

Enter Value

OP1

X	Unconfigured
H	High Alarm
L	Low Alarm
R	Rising Rate of Change
N	New Alarm
O	Sensor Break
P	Power Fail
	Combined with Sensor Break
7	High Alarm
8	Low Alarm
9	Rising Rate of Change
	Combined with Power Fail
A	High Alarm
B	Low Alarm
C	Rising Rate of Change
	Combined with Sensor Break and Power Fail
E	High Alarm
F	Low Alarm
G	Rising Rate of Change

3216i Only

Analog Output PV Retran

1	4-20mA
2	0-20mA

Digital Input Logic Input

W	Alarm Acknowledge
K	Keylock
U	Remote UP Button
D	Remote DOWN Button
J	Alarm Inhibit
M	Peak Reset
Y	Freeze Displayed PV
V	Recipe 1/2 Select

OP2 (3216i), OP3 (32h8i & 3204)

X	Unconfigured
	Analog Out PV Retran
1	4-20mA
2	0-20mA
	32h8i/3204i Only
3	0-5Vdc
4	1-5Vdc
5	0-10Vdc
6	2-10Vdc

3216i Only
Relay or Logic Out (Alarm 2)

Alarm 2		Combined with Power Fail	
H	High Alarm	A	High Alarm
L	Low Alarm	B	Low Alarm
R	Rising Rate of Change	C	Rising Rate of Change
N	New Alarm		**Combined with Sensor Break and Power Fail**
O	Sensor Break	E	High Alarm
P	Power Fail	F	Low Alarm
	Combined with Sensor Break	G	Rising Rate of Change
7	High Alarm		
8	Low Alarm		
9	Rising Rate of Change		

OP4 (AA Relay)

X	Unconfigured
H	High Alarm
L	Low Alarm
R	Rising Rate of Change
N	New Alarm
O	Sensor Break
P	Power Fail
	Combined with Sensor Break
7	High Alarm
8	Low Alarm
9	Rising Rate of Change
	Combined with Power Fail
A	High Alarm
B	Low Alarm
C	Rising Rate of Change
	Combined with Sensor Break and Power Fail
E	High Alarm
F	Low Alarm
G	Rising Rate of Change

Digital Input A (n/a 32h81/SG)

X	Unconfigured
W	Alarm Acknowledge
K	Keylock
U	Remote UP Button
D	Remote DOWN Button
J	Alarm Inhibit
M	Peak Reset
Y	Freeze Displayed PV
V	Recipe 1/2 Select

Digital Input B

X	Unconfigured
W	Alarm Acknowledge
K	Keylock
U	Remote UP Button
D	Remote DOWN Button
J	Alarm Inhibit
M	Peak Reset
Y	Freeze Displayed PV
V	Recipe 1/2 Select
	32h8i Strain Gauge
T	Tare Correction
Z	Auto Shunt (Melt Pressure) Calibration

Dimensions

3216i

32h8i

3204i

Eurotherm Controls, Inc
741-F Miller Drive
Leesburg, VA 20175-8993
703-443-0000
info@eurotherm.com or www.eurotherm.com/actionio

Factory Assistance

For additional information on calibration, operation and installation contact our Technical Services Group:

703-669-1318

actionsupport@eurotherm.com

721-0882-00-A 09/06 Copyright© Eurotherm, Inc 2006