Indicators

and Alarm Units

World class accuracy with clear,
user friendly, operator interfaces

Control Optimise Simplify

Eurotherm®

by **Schneider** Electric

Control

Optimise

Simplify

Easy to use technology so powerful it's simple

2000 Series / 3200 Series Indicator and Alarm Units

Our range of indicators provides world class accuracy with clear, user friendly, operator interfaces. Add to this, a strong sales team of qualified engineers who understand your process, an absolute commitment to innovation by continuously re-investing in research and development; we can and do imagine making the impossible possible for our customers

Simple, informative and flexible

Available in four standard DIN formats and complementing our range of world class PID controllers the Eurotherm® range of indicators and alarm units provide accurate temperature or process measurement, clear indication with alphanumeric messaging and versatile alarming strategies.

The latest additions to the range include products derived from our 3200 series controllers featuring new and advanced features not found before on indicators of this class. The emphasis being on simplicity and available in 1/16th, 1/8th and 1/4 DIN formats the 3200i products provide precise temperature or process measurement with a host of options.

Scrolling alarm and event messages is one unique feature that can be used to alert an operator of a change in plant conditions.

These messages can be customised with a PC tool, thereby providing terms and expressions familiar to the operator.

A simple 'QuickStart' code is used to configure all the essential functions required to monitor and protect your process and if required this can be preset by Eurotherm to your requirements. When accessing the indicator user interface you will find that every parameter is accompanied by a scrolling text message to describe its function.
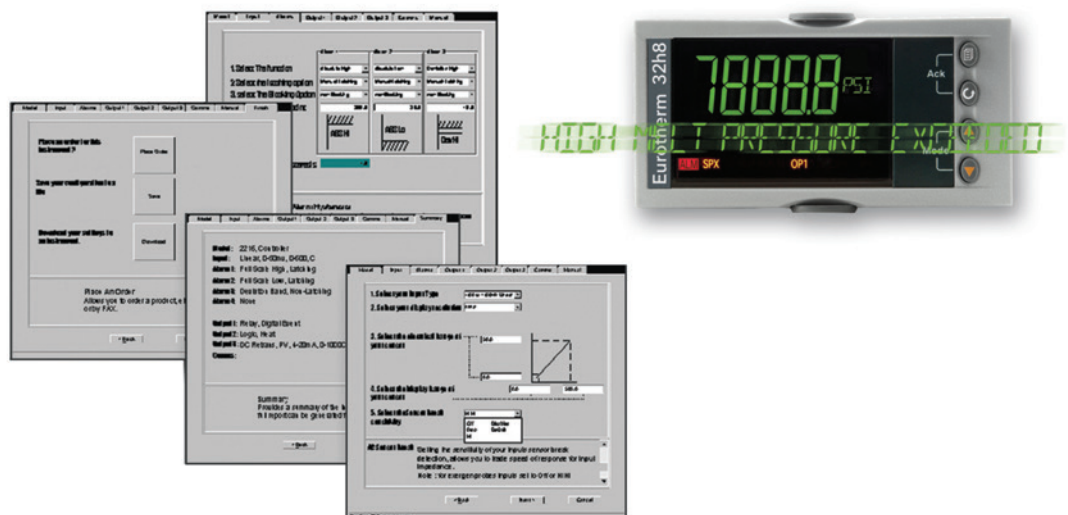
2000 Series

Universal Input
– Covers a wide range of temperature and process inputs without the need for any hardware change

Alarms
– Separate alarm setpoints can be set for warning and shutdown limits

Large 5 Digit Display
– Provides clear indication of process value in either red or green

Dual Process Input
– An optional second process input allow average, difference, minimum or maximum of two values to be displayed

15 Point Linearisation
– This function can be used to provide an accurate measurement for non standard signals

Relay Outputs
– Two available to provide safety interlocks for the plant

Front Panel Configuration
– Protected by password control it provides easy on-site setup without hardware change

Transmitter/Transducer PSU
– Transmitter and transducer power supplies can provide the sensor excitation voltage removing the need for any extra PSU to be used

Selection of Modules
– A range of input output modules can be fitted into the three module slots providing relay, logic and analogue signals

Communications
– Used to interface with supervisory and monitoring equipment the 2408 provides Modbus, Profibus and DeviceNet® connectivity

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3200 Series

Fast initial set-up using QuickStart code
– Enabling 'out of box' operation

Expert configuration by PC wizard
– On-line help explains each step

Easy, comprehensive operator information with custom messages, clear alarm information. 9 character display on 32h8i
– Provides clear information of plant conditions with scrolling text

Recipes can be selected from operator interface
– Easy to adapt for differing process needs

Alarms
– Alarms can be high, low or rate of change with delay and latching options

EN14597/TW and FM compliant
– Ideal for over temperature alarming and other safety critical applications

Universal Input
– Each model can accept either thermocouple, Pt100, mV or mA inputs. 32h8i can accept a 0-10V dc input directly

Strain Gauge
– 32h8i is capable of accepting inputs from load cells and melt pressure transducers

Colour Change
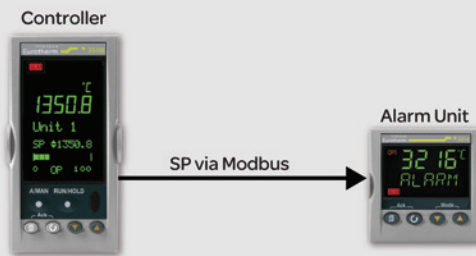– 32h8i has a configurable display colour. Red or green can be selected to remain constant or change on alarm

Real-world applications

Whether its superb accuracy, ease of use or its flexibility, the Indicator and Alarm Units can be used in many applications to solve problems and save time and money.
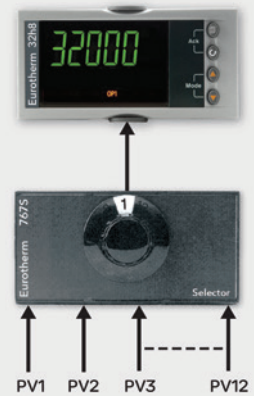
SP tracking policeman

Sometimes in applications with a setpoint that is frequently being adjusted possibly due to differing products or that the main PID controller is running a ramping setpoint it is also necessary to change the alarm setpoint. Using Modbus Master communications it is possible to send the controller setpoint to a slave alarm unit and for the slave to add a deviation setpoint referenced to the transmitted value.

Colour change in alarm

When viewing indicators from a distance it is often only required to know if any abnormal plant conditions are occurring. A convenient way of detecting such conditions is to make the display change colour from green to red when an alarm occurs. This feature alerts the attention of the operator who can then investigate the problem.

Square root extraction

Measurement display using square root extraction to display directly the flow from differential pressure measurements using, for example, an Orifice or Venturi meter.

Isolated retransmission

In many DCS installations local indication at plant level is required. Often the measurement sensor is connected to the local indicator and its linearised 4-20mA signal retransmitted to the DCS system. It is important that to minimise ground loops and earthing problems that the retransmitted signal is isolated from the sensor input.
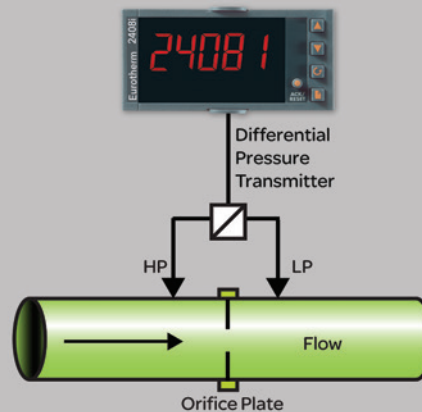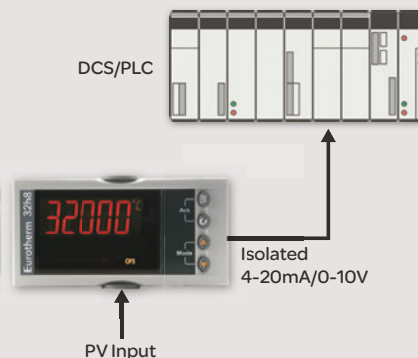
Multi-way input selection

When combined with the model 767S selector switch up to twelve thermocouples or 2-wire signals, and six Pt100 signals can be viewed using one indicator. Selection is made via a front panel rotary switch which includes clear indication of the channel selected.

Alarm messages

The User Interface on 3200: indicators are customisable to show plant information in the format that is most useful for the user. Customisable scrolling text can indicate event and alarm conditions, to trigger another function or instruct an operator of the current state of the process.

Success stories commercial benefits

The volume of liquid in a container can be determined by measuring its level. This works well where the relationship between height and volume is linear such as a vertical cylinder. There are many applications which use irregular shaped containers. Such applications include the measurement of fluid volume in a horizontal cylinder (road tanker) or in a spherical container for pressurised fluids.

Customer Challenge
One company came to us with a requirement for a highly accurate clear digital indicator for road tanker calibration. This need was driven by their goal to meet their newly implemented ISO 9001:2000 Management system.

Solution
The Eurotherm 32h8i digital indicator is available with a customised 5 point input linearisation which enables the user to compensate for the irregular shape by inputting height measurements against corresponding volumes.

Customer Benefits
- Accurate measurement provided by clear red or green 5 digit display to 3 decimal places
- Ability to customise different alarm strategies and scrolling alarm messages
- Ability to sample and hold peak high and peak low values
- Now, their calibration of tanks has helped many companies in achieving and maintaining ISO quality certification with the desired accuracy, traceability and standardization required by ISO.

Custom linearisation
Provides a method of linearising an input measurement using a curve defined by up to 15 points. The linearisation points may be continuously increasing or continuously decreasing.

This is particularly useful in level applications where the volume of liquid is not linear to the height dimensions of the vessel.
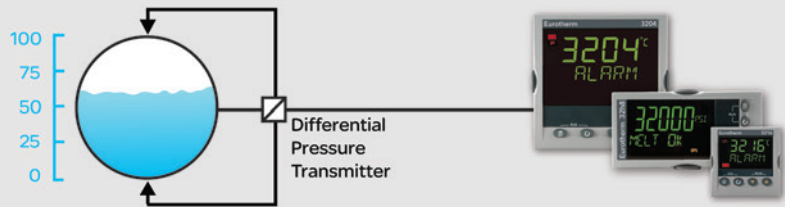
One customer chose Eurotherm for a complete refurbishment after costly damage to a furnace.

Customer Challenge
The thermocouple controlling the temperature of a furnace became accidentally withdrawn into the refractory of the oven, so that it no longer measured the true temperature. The result was that the controller continued to demand power causing overheating and consequent damage to both the furnace and the product loaded into it.

Solution
To provide an independent circuit consisting of a second thermocouple (placed in a different position from the main control thermocouple), an over-temperature alarm unit and a safety contactor to cut off the power to the furnace.

The Eurotherm 3216i indicator is ideal for this application since it is low cost, provides an independent safety alarm setting, provides independent temperature indication, and can be arranged as a back up to protect the product or the furnace itself.

Customer Benefits
A separate over temperature circuit provides protection against a number of different failure types whether it is in the sensor, controller, thyristor or contactor.

Over-temperature alarms
Compliant with the EN14597/TW and FM standards the 3216i, 32h8i or 3204i can be used as independent alarm units on ovens, furnaces and other processes. Their role is to provide a back-up to the main PID controller so that in event of a system fault whether it be in the sensor, controller or load they will remove power from the load, typically by cutting out the main heating contactor. Outputs are always configured to be de-energised in alarm therefore ensuring failsafe operation.
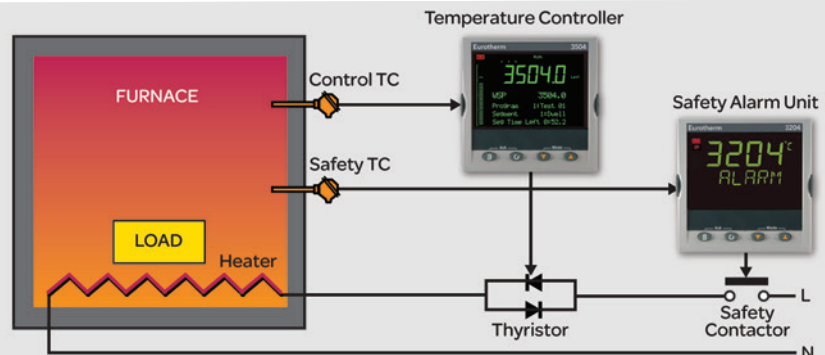
Plastics extrusion is a process in which raw plastic is melted and formed into a continuous profile, producing items such as pipe/tubing, window frames, plastic tape and wire insulation. To ensure they were working at maximum efficiency and operator safety is maintained at the highest levels, our customer needed to upgrade a number of extruders in his factory

Customer Challenge

Impurities in plastic need to be filtered out and this is performed by a screen fitted between the extruder output and the die. To minimise down time this customer fitted an automatic screen changer to every machine. This unit operates when the pressure at the extruder output rises beyond a set level, known as Melt Pressure and is a critical process variable. To operate the extruder safely and automatically a number of alarm points need to be defined.

Solution

The Eurotherm 32h8i digital indicator offers a cost effective solution; not only do they accept an input directly from a strain gauge transducer; they also provide the power to operate and calibrate it. These indicators have up to four internal alarm set points which can be configured for the following functions:

- High alarm to warn of impending build up of contaminants
- High alarm to cause the automatic screen changer to operate
- High alarm to warn of high pressure build up which could lead to dangerous conditions if not acted upon
- High-high alarm to cause immediate shut down of the extruder drive to prevent damage to the machine or injury to personnel

Customer Benefits

- All the required functions integrated in one convenient 1/8 DIN horizontal unit.
- A clear 5 digit readout of melt pressure.
- Scrolling customised messages provide an unambiguous view of the state of the machine at all times
- 32h8i device remote display can change from green to red to warn the operator when an alarm condition is reached.
- 32h8i device can be used as a remote display panel when production lines are long so operators can have process alarm messages reported all along the length of the production line
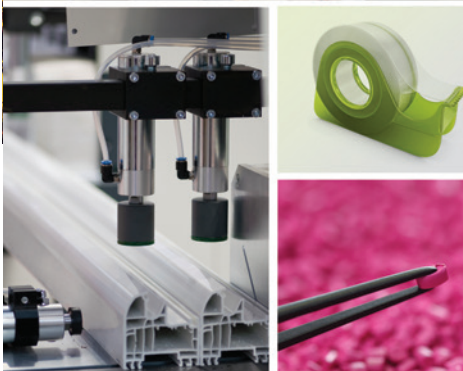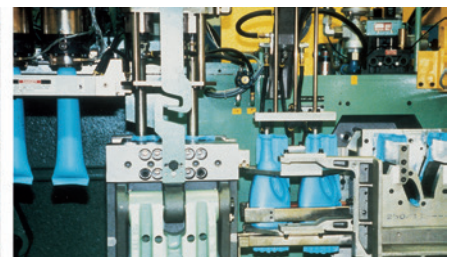
Strain gauge input

The strain gauge feature in the 32h8i and 2408i makes them ideal for melt pressure and other load cell inputs such as weighing applications. The 32h8i can accept one strain gauge input with transducer excitation and user calibration facilities. Additionally the 2408i can accept an additional strain gauge input therefore allowing differential alarms between inputs such as those required in melt pressure applications to indicate screen blockage.
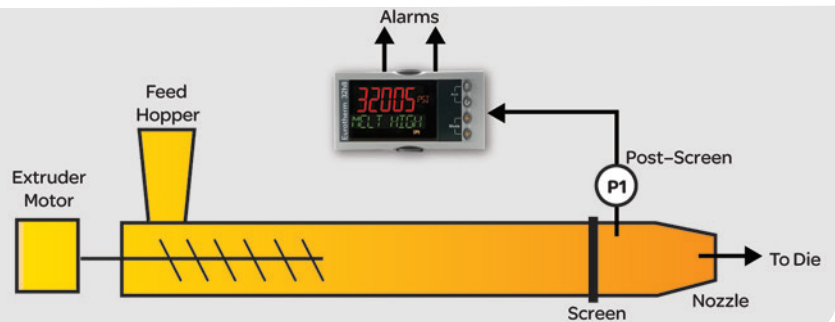
For the full stories and all our successes go to www.eurotherm.com/success

Selection guide

Indicators and Alarm Units	2100 Series	3200 Series			2400 Series
FEATURES	2132i	3216i	32h8i	3204i	2408i
Panel size (DIN)	1/32	1/16	1/8	1/4	1/8
IP Rating	IP65	IP65, NEMA12	IP65, NEMA12	IP65, NEMA12	IP65
Display Type	4 Digit LED	4 Digit LCD plus 5 character alphanumeric	5 Digit LCD plus 9 character alphanumeric	4 Digit LCD plus 5 character alphanumeric	Large 5 Digit LED
Supply Voltage	24V dc/ac 85-264V ac	24V dc/ac 85-264V ac	24V dc/ac 85-264V ac	24V dc/ac 85-264V ac	24V dc/ac 85-264V ac
Safety Approvals	none	EN14597/TW, FM	EN14597/TW, FM	EN14597/TW, FM	✘
Input Type	TC, RTD, mV, mA, Custom	TC, RTD, mV, mA, Custom	TC, RTD, mV, mA, Volts, Custom, Strain gauge	TC, RTD, mV, mA, Custom	TC, RTD, mV, mA, Volts, Custom
User Calibration	2 point	5 point	5 point, Shunt, Load cell, Auto tare	5 point	15 point, Shunt, Load cell, Comparison, Auto tare
PV Input Selection	✘	✘	✘	✘	Hi, Lo, Select, Switchover, Derived
No of Alarms	3	4	4	4	8
Alarm Types	Hi, Lo, Dev, Sensor break	Hi, Lo, Dev, Sensor break, Rate of change	Hi, Lo, Dev, Sensor break, Rate of change	Hi, Lo, Dev, Sensor break, Rate of change	Hi, Lo, Dev, Sensor break, Rate of change, Event
No of Relay Outputs	2	3	2	2	7
Digital IP/Logic OP	1/2	2/0	2/0	2/0	2 plus possible further 9/9
Retransmission	✘	Non isolated	Isolated	Isolated	Isolated
Custom Messages	✘	128 Characters	128 Characters	128 Characters	✘
Slave Comms	✘	Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU, DeviceNet, Profibus DP
Melt Pressure	✘	✘	✓	✘	✓
Transducer PSU	✘	✘	10V dc	✘	5/10V dc
Transmitter PSU	✘	✘	24V dc	24V dc	24V dc
PC Configuration	List based	Graphical Wiring	Graphical Wiring	Graphical Wiring	List based