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Version 6.8.0.0

March 7, 2022

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Eurotherm Driver User Manual

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# Configuration



The first time the system is configured it is necessary to enable and configure all devices you

require. To configure a particular device select the ***Devices*** option from the main menu

followed by the appropriate device.

This will launch an application to configure the device. You will be presented with a set of tab

dialogs as shown above.

To configure channels, select the type required by clicking on the appropriate channel tab.

From the list provided select a channel and double-click. Alternatively you can select a channel

and then click on the ***Configure Channel*** button. This will launch a channel configuration

dialog which enables you to configure individual channels.

# Channel Configuration (Analogs)



## Enable Channel

The Enable Channel check box must be checked to enable, and allow this channel to be

configured and ultimately included with all other configured channels in the overall system.

## Tag

The Tag field is a 12 character alphanumeric field that can contain channel information or

wiring schedule references.

## Description

The Description field is a 32 character alphanumeric field in which a description of the channel

can be detailed.

## Units

A 4 character field available to describe the units of the output.

## Scaling

NB. Scaling is only available to Analog channels that are not Output channels.

Some transducers give a number of pulses, or a frequency output proportional to their full

scale range. To enable the Scaling utility check the Scaling Check box. The Slope and Offset

values can be entered directly into the text boxes. The formula applied is:

y = mx + c where: m is SLOPE

 x is the measured value.

 c is the OFFSET

### Auto Scaling

Click On the Auto Scale button if you want the scale and offset values calculated

automatically. A dialog box will be displayed. Enter the values in the text boxes. The low

measured value, and the high measured value, the output range of the transducer. When the

fields have been completed, and assuming the System is enabled click on the Apply button.

Under the heading Current Values the actual measured value will be shown, as well as the

Engineering Value.

Click on OK to accept the scaling, or Cancel to abort the Auto Scaling feature.

NB. Scaling will not be applied to the channel, even if the system is enabled, until the system is

next enabled or the Device is reconfigured

## Significant Change

To enable the Significant Change feature check the Sig Change check box. This facility

allows filtering of data on channels on which significant change is of interest. Such changes

can cause an event, which can be logged.

The figure entered in the Value text box, is the rate of change that if the output level exceeds

per scan, either increasing or decreasing will cause the significant change event trigger. The

scan rate is determined in the Advanced Device configuration

If a logger is configured each time the significant change trigger operates information on the

channels defined in the logger will be recorded . A significant change event only lasts one

scan, unless the next reading also changes greater than the Significant change value

When monitoring channels, if the Significant Change is triggered, then the fact will be

annotated alongside the other channel information in the Channel Monitor. The significant

change events are in addition to those caused by an Event.

## Event Checking

Event checking is used, if required to trigger a logger to record information on a number of

channels during an event. Check the Event Checking check box if this channel is to trigger an

event.

### High Limit

A value, in engineering units, entered in this text box will define the level that, if exceeded, will

cause an event trigger.

### Low Limit

A value entered in this text box will define the level that if the channel result falls below will

cause an event trigger.

## Alarm Checking

Alarm checking is available on all channels throughout the system. Low Alarm and High

Alarm levels can be configured independent of each other. If the channel output exceeds the

High Alarm limit then an alarm will be triggered as it will if the output goes below the Low

Alarm limit.

When monitoring channels, if the high or low alarm is triggered, then the fact will be annotated

alongside the other channel information in the Channel Monitor. To configure the Alarm

Checking section of the device complete the options as follows for either or both the High

Alarm and Low Alarm checking.

### Enable Alarm Checking

Check either the Low Alarm Checking or High Alarm Checking or both check boxes to

enable the facility.

### Drive Common Alarm

A common alarm is a single digital output which will switch on when any channel with the

Drive Common Alarm enabled goes into an alarm state. Check this box if a link to the

Common Alarm is required.

### Alarm Limit

Specifies the value which will trigger this alarm. for Low Alarm Checking it will be any value

<= the Alarm Limit and for High Alarm Checking it will be any value >= the Alarm Limit.

### Warning and Limit (Analogue channel only)

If required, a warning can be displayed when a channel reaches a limit close to the alarm limit.

For low alarm checking, the limit must be less than the alarm limit. For high alarm checking,

the warning limit must be less than the alarm limit

### Hysteresis

Hysteresis can prevent 'noisy' channels from reporting multiple alarms when the average

reading is close to the alarm threshold. Check the box if this feature if needed. Enter the

value of the dead band in the corresponding value field.

### Priority

Enter or edit the number in the text box to allocate the priority of this alarm. Alarm priority

ranges are from 0 to 255.

### Alarm Delay

Enter the time, in seconds, between the channel value entering the alarm state and the system

flagging an alarm.

### Alarm Message

An Alarm Message can be defined to be displayed on the Status line of the Main Window

when a channel goes into an alarm state. Enter the message, up to 32 characters, that is to

appear in the event of an alarm.

### Alarm on Error Checking

Checking this section will enable the device to generate alarms when a channel goes into error.

## Device Specific Button

When the Device Specific Button is pressed the following dialog is presented.



### Channel Type

 Identifies the type of channel, which can be one of the following:

 Analog Input

 Digital Input

 Analog Output

 Digital Output.

### GID

Identifies the group identifier(GID). Valid Range 0-9.

### UID

Identifies the unit identifier(UID). Valid Range 0-63.

### Loop Required

Specifies that a loop is required.

### Loop Number

Specifies the number of loops required. This is only available if the Loop Required Check Box

has been checked.

### Mnemonic

Identifies the mnemonic in the Eurotherm instrument that contains the value of interest.

# Channel Configuration (Digitals)



## Enable Channel

The Enable Channel check box must be checked to enable, and allow this channel to be

configured and ultimately included with all other configured channels in the overall system.

## Tag

The Tag field is a 12 character alphanumeric field that can contain channel information or

wiring schedule references.

## Description

The Description field is a 32 character alphanumeric field in which a description of the channel

can be detailed.

## LowState Description

A 32 character field in which to enter a description of the low state of the channel.

## HighState Description

A 32 character field in which to enter a description of the high state of the channel.

## Event Checking

Event checking is used, if required to trigger a logger to record information on an event. If

this facility is required click on the drop down list box and select OFF, HIGHSTATE, or

LOWSTATE as appropriate

## Alarm Checking

### AlarmState

Alarm checking is available on all channels throughout the system. To configure alarm

checking on this channel click on the drop down box and select OFF, HIGHSTATE, or

LOWSTATE as appropriate. If the channel's output state changes to an AlarmState an alarm

will be triggered on the channel. When monitoring channels, if the alarm is triggered, the fact

will be annotated alongside the other channel information in the Channel Monitor .

### Alarm Priority

Enter the priority of the alarm triggered by this channel. Alarm priority ranges are from 0 to

255.

### Common Alarm

Channels can be configured to trigger a Common Alarm. A common alarm is a single digital

output which will switch on when any channel with the Drive Common Alarm enabled goes

into an alarm state.

### Alarm Delay

Enter the time, in seconds, between the channel value entering the alarm state and the system

flagging an alarm.

### Alarm Message

An Alarm Message can be defined to be displayed on the Status line of the Main Window

when a channel goes into an alarm state.

### Alarm on Error Checking

Checking this section will enable the device to generate alarms when a channel goes into error.

## Device Specific Button

When the Device Specific Button is pressed in the case of the Eurotherm device the

following dialog is presented.



### Channel Type

Identifies the type of channel, which can be one of the following:

 Analog Input

 Digital Input

 Analog Output

 Digital Output.

### GID

Identifies the group identifier(GID). Valid Range 0-9.

### UID

Identifies the unit identifier(UID). Valid Range 0-63.

### Loop Required

Specifies that a loop is required.

### Loop Number

Specifies the number of loops required. This is only available if the Loop Required Check Box

has been checked.

### Mnemonic

Identifies the mnemonic in the Eurotherm instrument that contains the value of interest.

# Advanced Device Configuration



## AutoEnable Device

To ensure that the device is enabled on the system check the Enable Device box.

## Scan Rate

To set the rate at which the device will scan, edit the text boxes associated with the Scan Rate field.

## Save Outputs

To enable this utility check the Save Outputs flag. All values in output channels are saved to

disk when the system is disabled. The next time the system is restarted the values which were

previously in output channels will be restored to the appropriate channel number.

**By Tag**

Channel values can be saved and restored to channels using the channel tag instead of the channel number. In this way, channels can be rearranged within the modules and as long as the channel tags remain the same, the correct channel values will be restored to the appropriate channel number.

## Device Specific Button

If the Device Specific Button is visible, then click on it to configure features that are specific only to this device. In the case of the Eurotherm the following dialog will appear.

****

### Port

Select the appropriate COMPort from the list provided.

### Baud-rate

Select the appropriate Baud Rate from the list provided for the Eurotherm device attached to

the COMPort specified above. This is normally 9600 baud.

### Parity

Select the appropriate Parity from the list provided for the Eurotherm device attached to the COMPort specified above. This is normally Even.

### Data Bits

Select the appropriate Data Bits from the list provided for the Eurotherm device attached to the COMPort specified above. This is normally 7.

# MONITORING THE SCANNER SOFTWARE

Once the channels have been configured and the device enabled, the next time the system is

enabled the system will communicate with the Eurotherm instruments. The channels used to

hold values read back from the Eurotherms can be monitored using the channel monitor or the

visual environment; see the system User Guide for details. Values from the Eurotherms can

also be logged and replayed via one of the standard replay options.

In normal operation, the scanner can retrieve about 8-10 values from a Eurotherm 800

network per second, and about 40 values per second from a Eurotherm 900 network

(communicating at 9600 baud). If several channels are configured to access the same

mnemonic from the same Eurotherm, for instance if several digital channels access different

bits from the same mnemonic, the system asks for the mnemonic only once, so the retrieval

rate per channel may be higher. Output channels are written to the Eurotherm only if they have

been changed, but when they are written, the retrieval rate will decrease.

If an error occurs retrieving a value from a Eurotherm, all channels dependent on that value

are set into error. If the current screen has an ERRORS field, a message is displayed in this

field. This message includes the number of the channel that caused the error.

If multiple errors occur during a scan, all the affected channels are put into error, however, the

displayed error message refers only to the first error that occurred.

If an error occurs while writing a value to a Eurotherm, attempts to write will be made on

subsequent scans, until the three successive failures have occurred. An error message is

displayed, this message taking precedence over messages reporting errors retrieving values

from Eurotherms. Until the write is successful or before three successive errors have occurred,

the value in the output channel is the value that is being written to the Eurotherm, not the

value currently in the Eurotherm. After this, the value is read back from the Eurotherm and

stored in the output channel. If, therefore, the attempt to write did not succeed, the value in

the channel will revert to what is was.

The following errors can be reported by the system:

|  |  |
| --- | --- |
| **Error Message** | **Explanation** |
| No response | No response was received from the Eurotherm. A system error code is included in the message. Check that the Eurotherm is turned on, connected to the system and has the correct address, baud rate and parity etc |
| Bad response | A response was received, but it was not what was expected. A system error code, and a code indicating where in the response the error occurred are included in the message. If this error occurs frequently in a multidropped RS485 network, it may be necessary to fit terminating resistors to the communication network |
| Bad Parameter | A Eurotherm was asked about a parameter mnemonic that it did not recognise. Check that the configured mnemonic is correct |
| Etherm C/sum failure | The parameter failed the Eurotherm internal checksum (Eurotherm 820 only) |
| Response too long | The reply received from the Eurotherm was longer than expected by the system. This may be indicative of a noisy communication line |
| Analog reading digital | An analog channel has been configured to read a digital status word. This cannot be done |
| Digital reading analog | A digital channel has been configured to read an analog parameter. This cannot be done |
| Bad Digital Value | An unrecognised character appeared in a response containing a digital status word |
| Value out of range | An attempt was made to write to a Eurotherm a value greater than 99999 or less than -9999 |
| NAK Setting Output | The Eurotherm rejected an attempt to write to it. This can occur for several reasons:- the value of the parameter is out of range- the parameter is not recognised by the Eurotherm- the parameter cannot be written (for instance OP if in automatic control) |
| Bad Write | A system error occurred writing to the Eurotherms. |

##### APPENDIX A

Refer to Eurotherm documentation for instructions on how to configure an instrument for

either RS485 or RS232 communications.

## MULTIDROPPED RS485 CONNECTIONS

1. Connect the Eurotherm instruments by connecting all the RX+ terminals together;

similarly, connect together all the TX+ terminals, the RX+ terminals, the RX- terminals and

the COM (common) terminals. In noisy environments, it may be necessary to connect

terminating resistors across the receive circuits, see Eurotherm manuals for details. Note that

the converter comes supplied with a terminating resistor across its receive circuits.

2. Connect the Eurotherms to the RS232 - RS485 converter as follows:

 Eurotherm Converter (RS485 side)

 -------

 RX+ --------------------------------------------- TX (pin 4)

 RX- --------------------------------------------- TX (pin 3)

 -------

 TX+ --------------------------------------------- RX (pin 5)

 TX- --------------------------------------------- RX (pin 6)

 COM --------------------------------------------- GND (pin 2)

1. Connect the RS232 - RS485 converter to a host computer with a 9 pin serial comms

port as follows:

 Converter (RS232 side) Host Computer

 25 Way D-Type 9 Way D-Type

 Male Female

 2 --------------------------------------------- 3

 3 --------------------------------------------- 2

 7 --------------------------------------------- 5

**OR**

1. Connect the RS232 - RS485 converter to a host computer with a 25 pin serial comms

port as follows:

 Converter (RS232 side) Host Computer

 25 Way D-Type 25 Way D-Type

 Male Male

 2 --------------------------------------------- 2

 3 --------------------------------------------- 3

 7 --------------------------------------------- 7

## POINT-TO-POINT RS232 CONNECTIONS

1. Connect the Eurotherm to a host computer with a 9 pin serial comms port as follows:

 Eurotherm Host Computer

 9 Way D-Type

 Female

 RX+ --------------------------------------------- 3

 TX+ --------------------------------------------- 2

 COM --------------------------------------------- 5

**OR**

1. Connect the Eurotherm to the host computer with a 25 pin serial comms port as

follows:

 Eurotherm Host Computer

 25 Way D-Type

 Male

 RX+ --------------------------------------------- 2

 TX+ --------------------------------------------- 3

 COM --------------------------------------------- 7