EUROTHERM® FLEXIBLE SOLUTIONS

2604 2704

CONTROLLERS

... WITH UNIQUE LEVELS OF CONTROL AND FLEXIBILITY
**Eurotherm® 2604 – 2704**

Unique levels of flexibility

The Eurotherm® uncompromising design and willingness to listen to their customers has ensured the 2604 and 2704 provide an ideal solution, tailored to meet the needs of many markets. Unique levels of functionality are key to their unmatched versatility - features that Eurotherm has identified as essential requirements in a number of application areas, including furnaces, test chambers and autoclaves. The 2604 and 2704 combine Eurotherm’s proven PID control with functionality previously only found in PLCs. These controllers not only provide unsurpassed capabilities in highly compact units, but also offer the potential to reduce total hardware system costs by replacing several discrete pieces of control equipment.

## Setpoint Programmer

- Multi-loop Controller
- Maths and Logic Functions
- Precision Measurements
- Expandable I/O Option
- Open Communications

## Control SP Programs Maths + Logic Timer Functions Communications

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[www.eurotherm.com/2704](http://www.eurotherm.com/2704)
### CONTROLLED VARIABLES
- Temperature
- Pressure
- Flow
- Level
- Relative Humidity
- Dewpoint
- Carbon Potential
- Oxygen Concentration
- Total Dissolved Solids
- Melt Pressure
- pH

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### IO Expander

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[www.eurotherm.com/2704](http://www.eurotherm.com/2704)
Eurotherm 2604 - 2704
Optimised Control Performance

The 26/2704 are highly versatile products capable of operating a number of control strategies. Eurotherm’s control algorithm is based on more than 30 years of temperature and process control market leadership. A comprehensive range of modular I/O capability and functionality, including remote I/O, is available making them ideal for a wide range of applications.

Process measurement resolution to better than 0.25μV delivers unprecedented performance in applications demanding high accuracy and stability, such as semiconductor, materials testing and research. The three control loops can be totally independent or interactive, allowing difficult control solutions to be satisfied. Standard options allow classic control strategies such as Cascade, Ratio or Override to be implemented without the need for complex user configuration.

Multiple sets of tuning parameters can be used to optimise control performance over a wide range of process conditions. The real time trending facility in the 2704 provides the user with a graphical view of how the process is performing.

Dedicated application blocks have been created to allow easy implementation in a variety of key markets including atmosphere and vacuum heat treating, climatic control chambers and packaged boilers.
The setpoint programmer features are unmatched in a product of this size, allowing control loop setpoints to follow predetermined series of ramp and dwell segments. Coupled with its excellent user interface, the 2704 is ideal for applications such as heat treatment furnaces and environmental chambers where more than one process value needs to be profiled. Programmes can be created using the operator interface or via a user friendly software tool.

**SETPOINT PROGRAMMER**

- 60 Stored programs
- 600 Segments Capacity
- 3 Profiled Setpoints/Program
- 16 Digital Event Outputs
- Synchronous or Asynchronous Timebase
- Digital Input Functions

www.eurotherm.com/2704
The 2604 and 2704 provide a range of application blocks offering the ability to create custom solutions creating highly cost effective machine controllers, able to satisfy control applications which to date have not been possible in the 1/4 DIN format.

Flexible user pages in the 2704 provide the user with the option of defining how the process is viewed, therefore simplifying plant operation.

**COMMUNICATIONS**

- Modbus RTU
- Profibus DP
- Devicenet®
- Ethernet/Modbus TCP
- El-Bisync
- Master Modbus

Two communication ports are available. The modular build provides the user with a selection of slave communication protocols allowing easy integration into both PLC and PC supervisory systems.

Master Modbus communications significantly increases the applications open to the 2604 and 2704 by increasing its I/O flexibility. In particular, integration with Eurotherm’s Mini8™ controller allows systems of greater complexity to be controlled.
iTools is a complete configuration and monitoring package for the series 2000 controllers. It allows users to create configurations in a friendly, easy to use environment. In addition, a Setpoint programmer editor and real time trend plots of process values are provided.

iTools employs an OPC server which uses Modbus to communicate with the controllers. The server connects to the controllers via serial communications, Ethernet or a telephone modem. The OPC server may also be used by third party “client” software such as Wonderware and Labview.
Technical specifications

Quoted at 0 to 50°C unless otherwise stated

**CONTROL OPTIONS**

No. of loops Options Modes Applications
1, 2 or 3 loops Cascade, Ratio or Override PID, ON/OFF or Valve Position Carbon Potential, Humidity, Vacuum and Boiler TDS

**STANDARD I/O**

Precision PV input
- Range: ±0.1% mV, mA, volts or RTD (PT100)
- Thermostatic types: J, K, L, N, R, S, B, PII, C, plus others
- Cold junction: Ext 0°C, 45°C or 50°C

Analogue input
- Range: ±0.1% 
- Allocation: Slot 1, 3, 4, 5 or 6
- DC components: 1, 3, 5 or 6

Digital I/O
- Types: 2 digital inputs
- Bi-directional input/outputs: 1 Changeover relay

**MODULES - 5 PER INSTRUMENT**

Digital Outputs
- Types: Single relay, Dual Relay, Single Triac, Dual Triac, Single Logic and Triple Logic module
- Allocation: Slot 1, 3, 4, 5 or 6

Digital Inputs
- Types: Triple contact input, Triple Logic input
- Allocation: Slot 1, 3, 4, 5 or 6

Analogue Outputs
- Types: DC Control or DC Retransmission (5 Max)
- Allocation: Slot 1, 3, 4, 5 or 6

Dual Analogue Outputs
- Allocation: Slot 1, 3 or 4
- Range: 4-20mA or 24Vdc transmitter PSU

**SETPOINT PROGRAMMER**

High Resolution Analogue output
- Allocation: Slot 1, 4 or 5
- Range: 4-20mA and 24Vdc transmitter PSU

Transmitter PSU
- Allocation: Slot 1, 3, 4 or 5
- Range: 24Vdc @ 20mA

Transducer Supply
- Bridge voltage: 5 or 10Vdc
- Bridge resistance: 3000Ω to 15Kohms

Potentiometer input
- Range: PT100

Precision PV input (Module)
- Allocation: Slot 3 or 6
- Accuracy: ±0.1%

**I/O EXPANDER**

4-Wire RTD (Module)
- Allocation: Slot 3 or 6
- Accuracy: 0.01%

Total Dissolved Solids (TDS) input
- Expiration: 0.4ppm @ 1kHz
- Conductivity Range: 0 – 500mS

Dual Analogue output
- Allocation: Slot 3 or 6
- Accuracy: ±0.1%

**ADVANCED FUNCTIONS**

Types: Modbus RS485 (2-wire)
- Allocation: Slot H or J
- RS485 (4 wire) or RS232
- EI-Bios (subset of parameters)
- Profibus (Slot H only)
- DeviceNet® (Slot H only)
- Ethernet Modbus/TCP (Slot H only)

**SLAVE COMMUNICATIONS**

Allocation Types
- Slot H or J
- Modbus RS485 (2 wire)
- Slot 485 (4 wire) or RS232

**MASTER COMMUNICATIONS**

Allocation Types
- Slot J
- Modbus RS485 (2 wire)
- Slot 485 (4 wire) or RS232

**EUROTHERM: International sales and service**

Understanding and providing local support is a key part of Eurotherm’s business. Complementing worldwide Eurotherm offices are a whole range of partners and a comprehensive technical support team... to ensure you get a service you will want to go back to.

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**SETPOINT PROGRAMMER**

No profiles
- No. of programs: 60 programs max.
- No. of segments: 600 time to target segments (Max) or 450 ramp rate segments (Max)
- Event outputs: Up to 16

**I/O EXPANDER**

10 I/O Version
- 4 Changeover and 6 normally open relay contacts
- 10 Logic inputs

20 I/O Version
- 4 Changeover and 16 normally open contacts
- 20 Logic inputs

**ADVANCED FUNCTIONS**

Application blocks: 32 digital operations
- 32 analogue operations
- 50 user values
- 4 ON pulse, OFF delay, one shot and min-ON
- Timers: 4, trigger level and reset input
- Pattern generators: 16 patterns each with 16 bits
- Day of week clock
- Customisable screens: 8 user screens
- User switches: 8, toggle and momentary

**SLAVE COMMUNICATIONS**

Allocation Types
- Slot H or J
- Modbus RS485 (2 wire)
- Slot 485 (4 wire) or RS232

**MASTER COMMUNICATIONS**

Allocation Types
- Slot J
- Modbus RS485 (2 wire)
- Slot 485 (4 wire) or RS232

100 read/write

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