nanodac™ Record/Controller

Eurotherm by Schneider Electric

Life Is On | Eurotherm.
by **Schneider** Electric

bigger capability

Combined recording and control at its best

- Eurotherm control and Eurotherm recording in one box
- 50MB internal Flash memory for data recording
- High density, standard I/O
- On-board historical trending
- Ethernet port as standard
- Local & FTP data archives
- USB Port

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Bigger functionality

- More Output Options
  - Up to 3 isolated DC Outputs
  - Up to 2 Logic Outputs
  - Up to 5 Relay Outputs
- Toolkit Blocks
- Alarm Panel View
- Application Blocks
  - Steriliser
  - Relative Humidity
  - Zirconia
- USB Barcode Reader/Keyboard
- Adaptor Plate

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better recording strategy
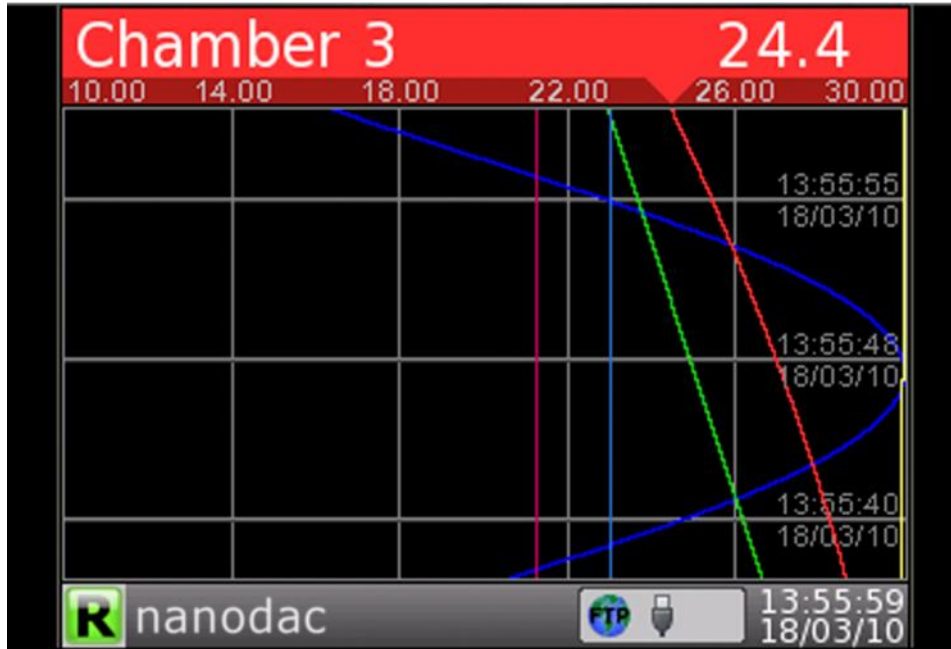
- Creates secure uhh files

- 4 universal input channels as standard (8 optional)

- Up to 34 channels of recording

- Comprehensive alarm strategy

- Multiple data archiving strategies keep data safe

  - Archive on demand
  - Archive automatically
  - Automatic data pull into Review
  - Archive to USB memory stick
  - Archive to FTP server

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better control algorithm

- 2 dual output loops

- Unique Eurotherm PID algorithm

- Autotune that actually works

- Overshoot inhibition (cutback)

- Automatic compensation for power supply fluctuations

- Linear, fan, oil, water cooling

# Packed with even bigger capability and even more features

- Optional Dual Channel Programmer supporting up to 300 programs

- EtherNet/IP client & server and Modbus TCP/IP Master

- Cascade with Autotune

- USB Save & Restore

- Easy clean wash down front

- OEM Security to protect your solutions

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a better input accuracy

Input process variable
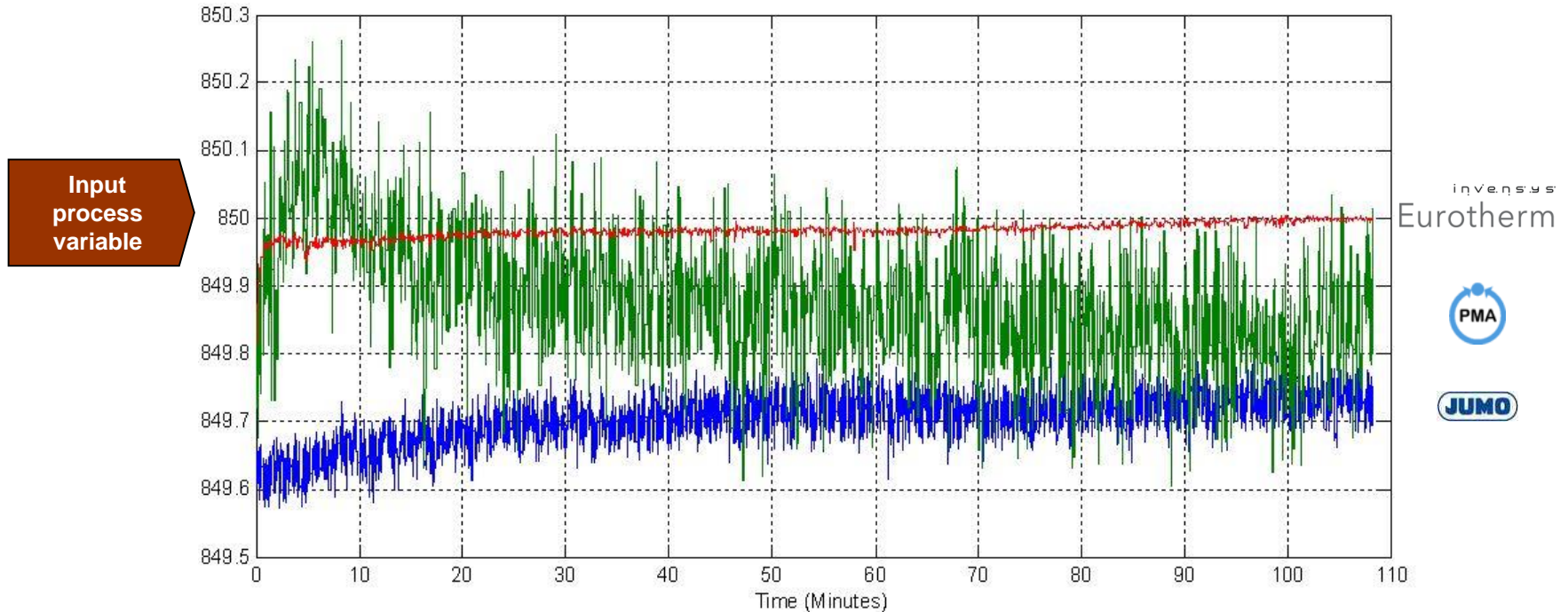
Ability to detect small changes ensures superior precision control:

- Accurate PV measurement
- 0.1% of reading (over full operating conditions)
- 125ms sample rate
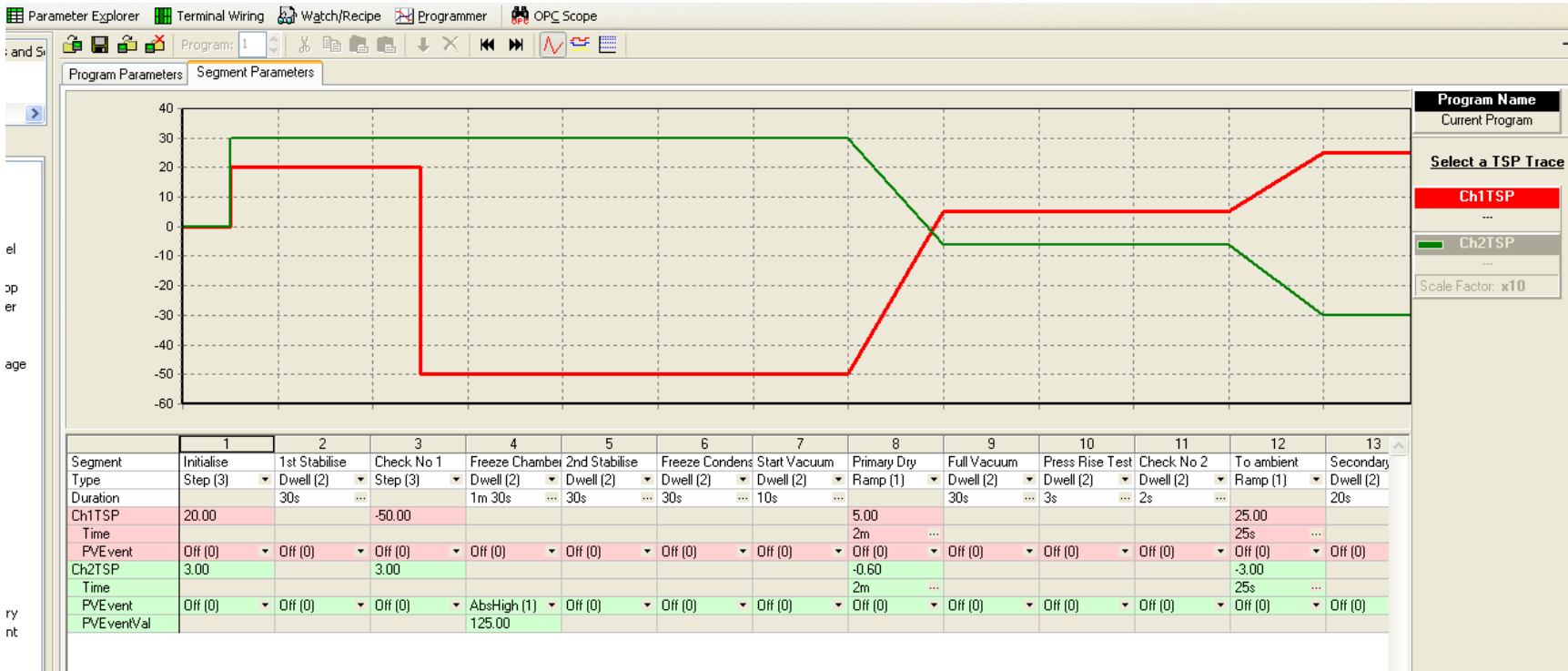- High noise rejection – detect $1\mu V$ change in PV

Intuitive easy to use screen

- Intuitive navigation

- Informative displays

- Help and guidance within configuration menus

- Clear naming for ease of use

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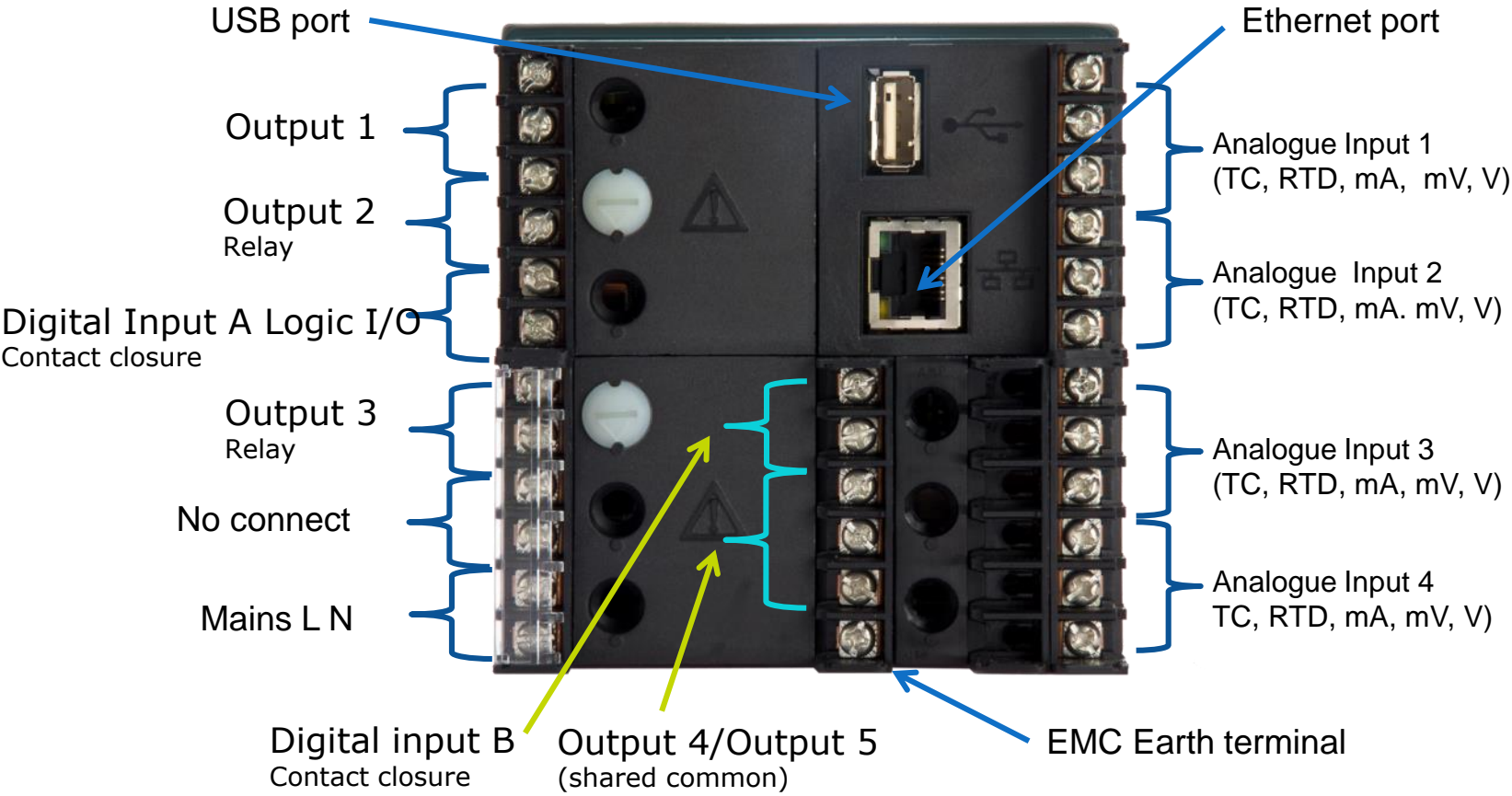
Better engineering tools

- User wiring from the front of the product

- iTools configuration including Graphical Wiring Editor -simplifying even the most sophisticated of configurations

- Reduced engineering and spares holding with iTools cloning facility

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A better display

- ¼ VGA crystal clear display

- Stunning full colour graphics

- 320x240 pixels for superior resolution

- Runtime & historical visualization

- Acute viewing angles

- Horizontal & Vertical trend views

- Visualization choice:
  - Trend line charts
  - Numeric screens
  - Bar graphs
  - PID Loop views

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Fully Equipped with Extensive IO

USB port

Output 1

Output 2
Relay

Digital Input A Logic I/O
Contact closure

Output 3
Relay

No connect

Mains L N

Ethernet port

Analogue Input 1
(TC, RTD, mA, mV, V)

Analogue Input 2
(TC, RTD, mA. mV, V)

Analogue Input 3
(TC, RTD, mA, mV, V)

Analogue Input 4
TC, RTD, mA, mV, V)

Digital input B
Contact closure

Output 4/Output 5
(shared common)

EMC Earth terminal

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Vary the process set point with ease
New Optional Dual Programmer

Current Segment Name

Traffic Light Indicator

Program Name

Segment Type Panel

Numeric Panel

Parameter Panel

Program Progress Bar

Segment Progress Bar

Traffic Light Indication

✓ Green – OK

i Amber – User Intervention

X Red – PV event has occurred

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Access up to 300 separate programs

New Optional Dual Programmer
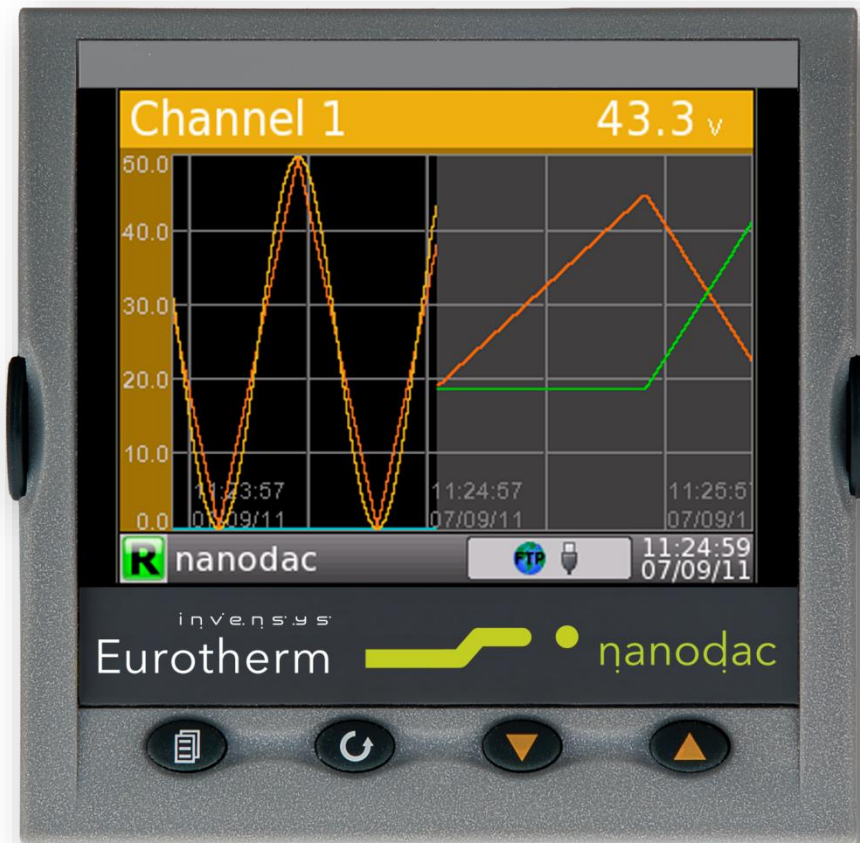
- Program Store
  - Internal (User) - 100
  - USB   - 100
  - FTP Server   - 100

- Programmer Modes
 - Single Channel
  - Dual Channel (Sync All)

Steriliser Application Block

- Suitable for Independent Monitoring of Sterilisers/single chamber washer/disinfectors

- Up to 4 Input Variables
  - Temperature/ Pressure / Conductivity / Flow

- Automatic Cycle Number

- Sterilisation band for each input

- Cycle Pass/Fail messages

- F-value (F_0/A_0)

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The Sterilising Cycle
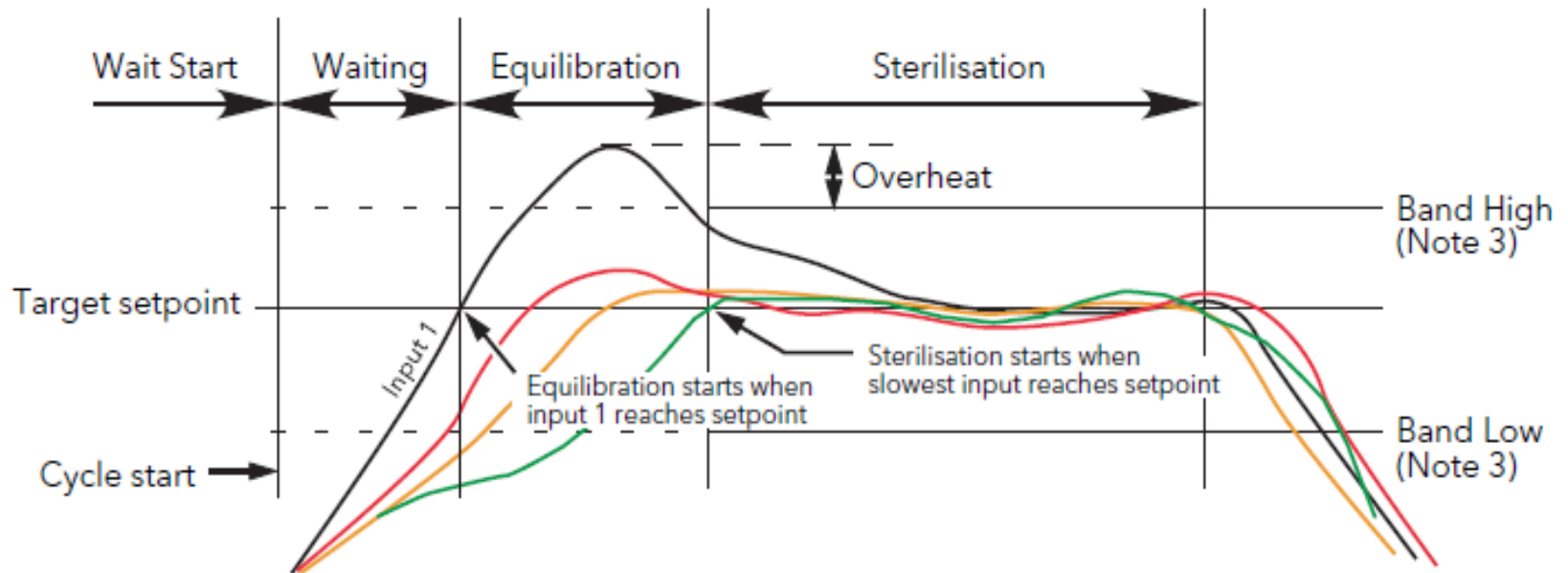
Relative Humidity

- Relative Humidity & Dew Point calculation

- Wet & Dry bulb

- Altitude compensation

- Standard I/O
  - for Valve/Solenoid Control

Humidity.	
Psychro Constant	6.66E-4
Pressure	1013.0
Wet Temperature	0
Wet Offset	0
Dry Temperature	0
Relative Hum.	100.00
Dew Point	0.18

Eurotherm nanodac

Bundle your communications

With one direct connection for better integration with your PLC and Instrumentation

EtherNet/IP Client

- Support for a Single Server

- Support for Tag based connectivity

- Configured via iTools

Bundle your communications

With one direct connection for better integration with your PLC and Instrumentation

EtherNet/IP Server

- Support for two generic objects

- Configured via iTools

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Bundle your communications

With one direct connection for better integration with your PLC and Instrumentation

Modbus TCP/IP Master

- Two Slaves

- Profiles, 6000, Mini8, EPower, 3000, etc

- 30 Data Points

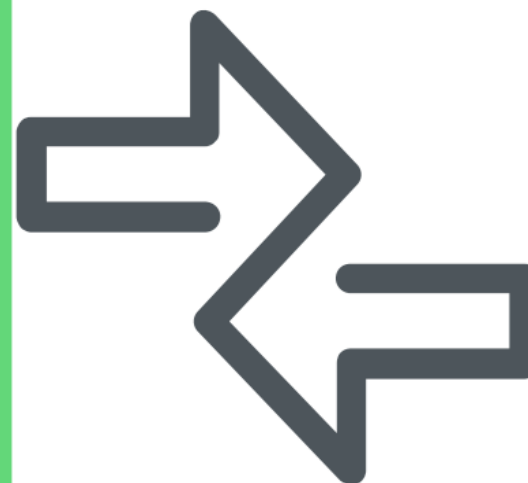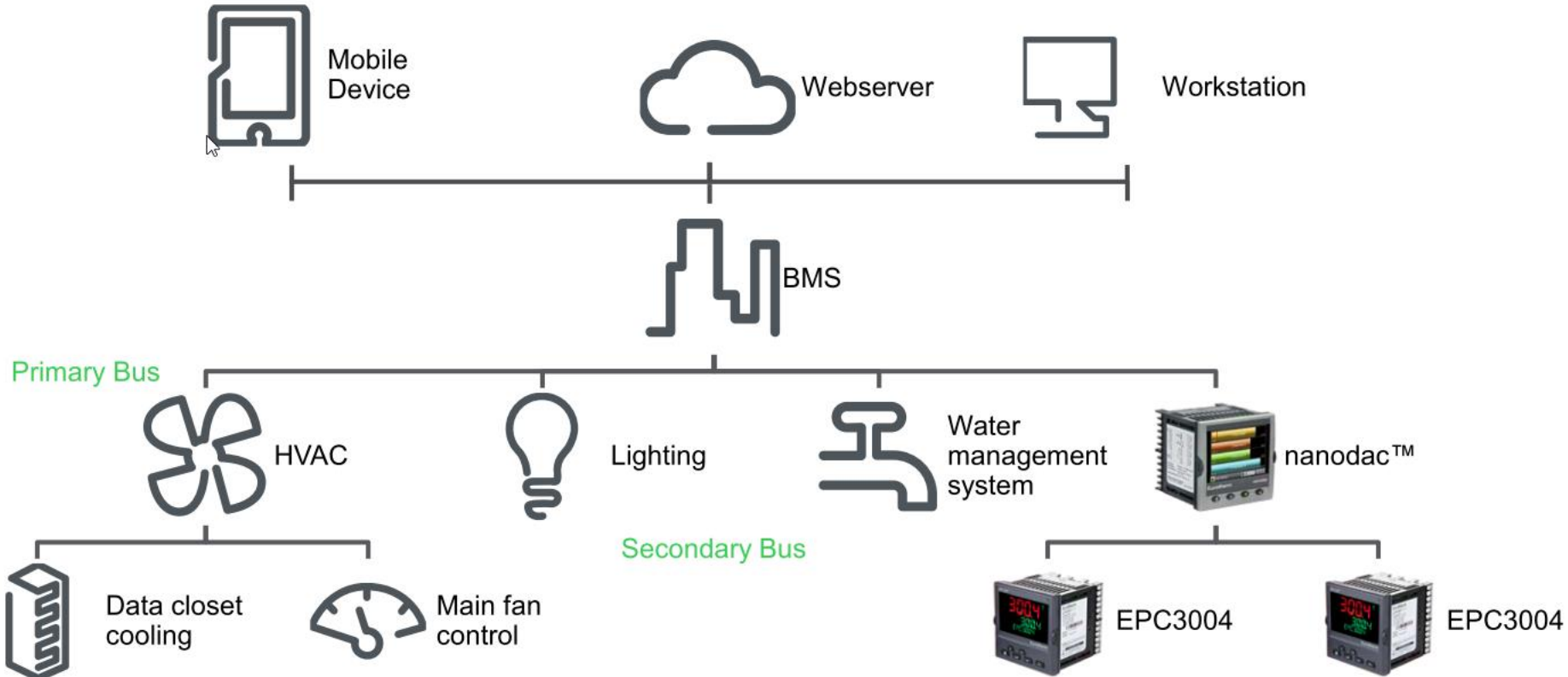- More Virtual Channels (30 total)

- Diagnostics page

What is BACnet?

Developed by American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), BACnet is an American national standard, a European standard, a national standard in more than 30 countries, and an ISO global standard.

- Open communications protocol

- ANSI/ASHRAE standard 135-2016

- International standard ISO 16484-5

- Allows integration of multiple product and service providers

- Adapts to emerging initiatives to ensure present and future needs are met

- Works over existing physical layers (Ethernet)

BACnet has been under active development since June of 1987 when the first meeting of Standard Project Committee 135P (SPC 135P) took place at the ASHRAE Annual Meeting in Nashville, Tennessee

ASHRAE **BACnet**™

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BACnet structure

Mobile Device

Webserver

Workstation

BMS

Primary Bus

HVAC

Lighting

Water management system

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Data closet cooling

Main fan control

Secondary Bus

EPC3004

EPC3004

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nanodac Batch

Batch features

Batch #
Work order
Part type
Part #

(Cycle diagram: Unprocessed batch → Product Loading → Chamber pre-filling → Pressurizing → Product unloading → Finished batch)
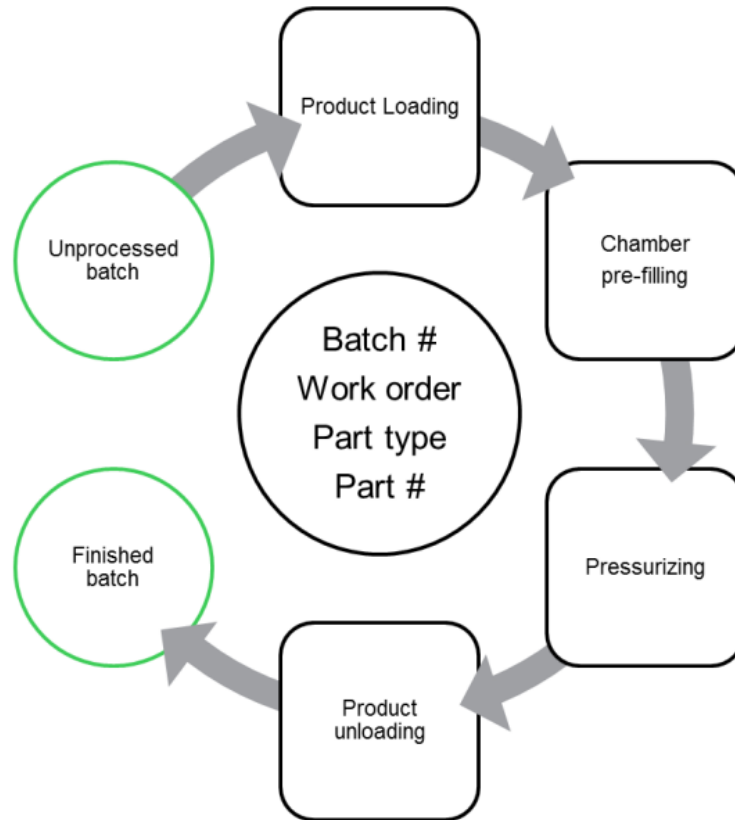
- Initiated by:
  - Operator
  - Specific PV
  - Communications
- Start/Stop or Continuous
- Audit Trail integration
- Review software for signing and authorizing

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Greater efficiency for slow moving processes

with the new Advanced Control Block – Cascade with Autotune

Feedforward
Steam temperature
F
T
Inlet flow
Heat output
Outlet temperature
Heat exchanger
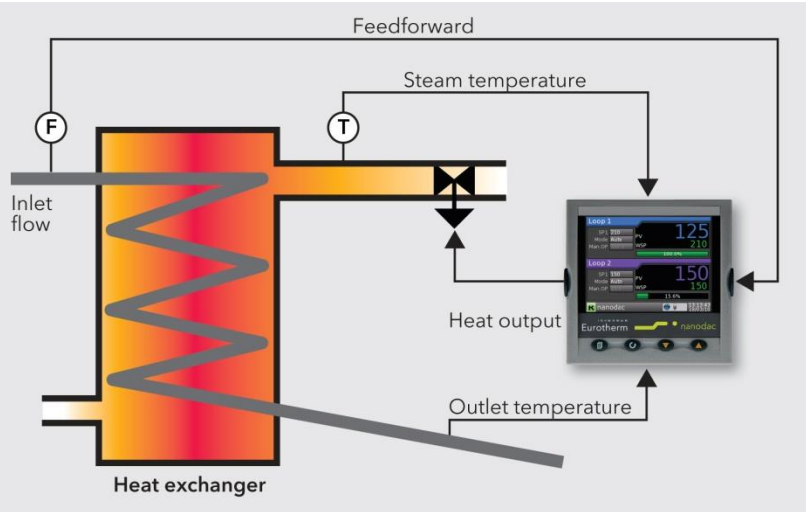
Enabled by feature security
Includes 2 standard Control Loops

Ideal for
- Autoclaves
- Reactor vessels
- Plastic extruder barrels
- Large ovens

Master PV — Master PID Loop — Output — Scale to Slave Span
Master SP
Remote Input — Feedforward select — Feedforward
None
Slave PV — Slave PID Loop — Control Output
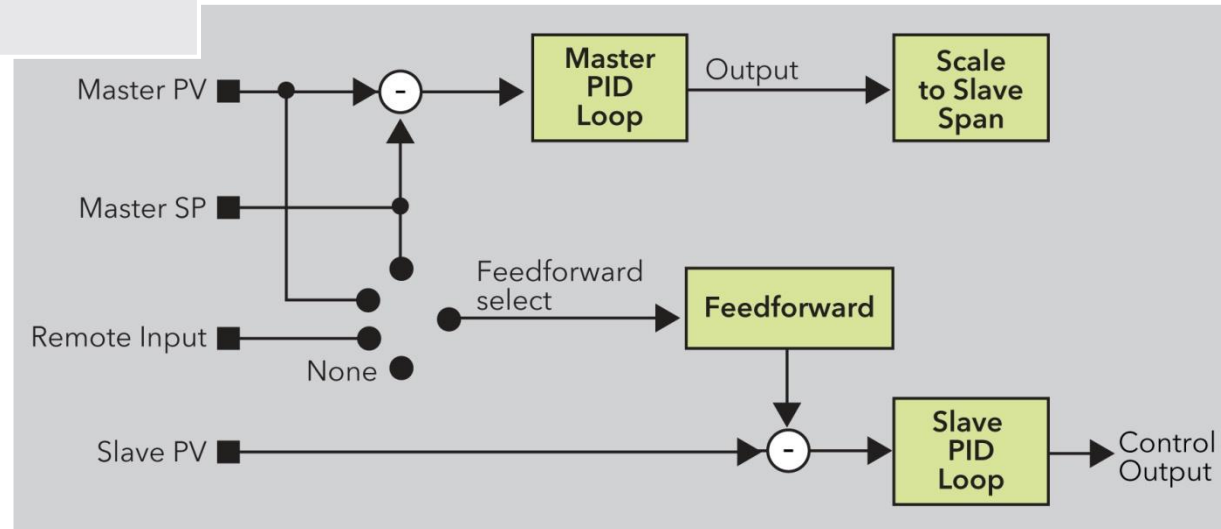
Toolkit Blocks

- User Values (12)

- BCD Input (2)

- 2 Input Logic (12)

- 8 Input Logic (2)

- 2 Input Maths (12)

- Timer (4)

- Multiplexor (2)

Select configuration menu

BCD Input
Logic (2 Input)
Logic (8 Input)
Multiplexor
Math (2 Input)
Timer
UsrVal

User value function block, provides storage of a user defined constant value. Can be used to connect to other operators for calculation purposes. May be used as a store for a value written over comms.

invensys
Eurotherm   nanodac

Panel View

- Alarm Status

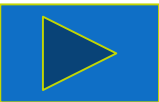- Green – No Alarm

- Amber – Alarm 1 Active

- Red – Alarm 1 & 2 Active

Protect all your hard work

Now with OEM Security

- Prevents Cloning of IP

- Password protected

- Wires read/write protected

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Save and access your valuable data easily with USB configuration Save/Restore

USB Peripherals

- Keyboard and Barcode readers

- Easy configuration/data input

- Batch processes

Easy to Clean Wash down Front

Ideal for

- Cookers/Sterilizers

- Refrigeration for blood/drugs

- Environmental Chambers

- CIP/SIP

- Food Machinery

- Laboratory/Clean room Machinery

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Cost benefits

As well as the obvious total box price saving for recording and control, this unit offers combined functionality and hence:

- Reduced overall purchase price

- Reduced application engineering costs

- Reduced integration costs

- Reduction in required panel space

- Reduction in panel wiring

Cost of ownership is also reduced by:

- No moving parts to break down

- No consumable costs such as chart pens and paper

- Reduced time to extract and evaluate process data archives

All these suitable applications

Extrusion (OEM and End User)
- Injection moulding
- Hot Runners
- Chillers (OEM)

Food & Beverage
- Pasteurisation
- CIP / SIP
- Food Machine Refurbs
- Cookers / Sterilisers

General Application
- Bench Mount Ovens
- Pottery Kilns
- Baking – Bread, Pizza, etc.
- Environmental Chambers

Healthcare/Pharma
- Sterilisers (Industrial Pharma & Hospitals)
- Small Autoclaves
- Refrigeration (Blood/Drugs)
- Blood Cell Incubation

Unique Selling Point Summary

- The clarity of the display is unsurpassed by its competition

- The flexibility of display options is unsurpassed by its competition

- User interface and engineering tools make this product easy to use and cost effective

- The combination of Eurotherm recording and control in one box provides unsurpassed performance in its class

- Input accuracy meets stringent Nadcap requirements

- This product always contains recording functionality and its recording strategy is the most secure in its class