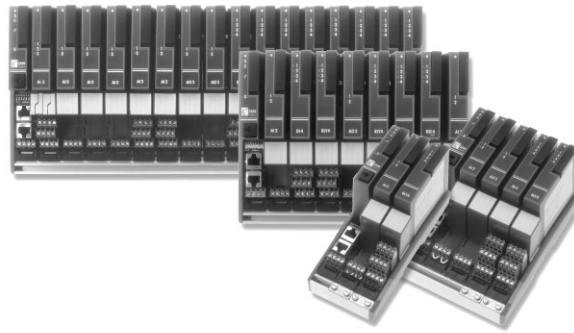


2500

MODEL



Unit Controller

Technical Specification

Ideal for:

- Remote I/O
- Alarm Monitoring
- Signal Conditioning
- Multi-loop PID
 - Single loop
 - Cascade control
 - Ratio control
 - Override control

Delivering key benefits:

- Seamless integration and communications with systems supervisory controllers
- Advanced PID control to deliver accurate control, independent of supervisory system scan time
- Physical distribution reduces wiring costs
- Local processing minimises communications to master
- Plug in modules that facilitate installation and maintenance and reduce downtime

High performance, high accuracy, high functionality in an I/O system that provides cost effective access to a wide range of advanced functions including PID control with auto tuning and gain scheduling.

Designed to communicate with Modbus RTU™, Profibus™, DeviceNet™ or Modbus TCP/IP masters, it can be used for signal conditioning, alarm monitoring, remote data acquisition or devolved control, for systems such as the Eurotherm Visual Supervisor, PC based SCADA packages and PLC's.

Eight PID blocks, provide an extensive range of control strategies. Each block offers one-shot auto tuning to optimise control performance without the need for specialist knowledge. Every PID block may be a Single PID, Cascade, Ratio or Override controller, each providing the choice of analogue, time proportioned or valve position output.

Six base sizes are available to take from 2 to 16 I/O modules each. Up to 16 bases may be daisy chained to provide acquisition and multiloop control solutions with up to 128 loops.

DIN rail mounting allows the 2500 to be located where the control action is required, minimising the cost of the cable used, as only the communications need be taken to the User Interface. The 2500 may also be mounted on part of the machine, saving the cost of centralised control cubicles.

A friendly Windows configurator package, 'iTools' is used to set up the 2500. 'iTools' parameterises and commissions the I/O points, the Toolkit and PID function blocks and interconnects the different variables, alarms, function blocks and I/O. 'Toolkit blocks' provide local combinational logic and mathematical calculation.



ANALOGUE INPUT MODULE

2500M/AI2 - Two channel analogue input

This analogue input module is used to monitor analogue signals from a wide range of plant sensors. The mA and TC inputs each require the appropriate Terminal Unit.

The second channel of the AI2 has a special high impedance range for use with zirconia probe inputs.

No of channels	2
Input types	TC, RTD, Volts, mA, mV, Potentiometer, Pyrometer, Zirconia probe
mV range	-150mV to +150mV at input impedance >100M Ω
mA range	-22mA to +22mA with 5 Ω burden in the Terminal Unit
Volts range	-10.2V to +10.2V at input impedance 303k Ω
RTD support	Support for 2, 3 and 4 wire resistance thermometer devices
Ohms range	0 to 60k Ω 3- or 4-wire lead compensation
Hi Ohms range	0 to 5k Ω 3- or 4-wire lead compensation
Pt α range	5% to 95% rotation of 10k Ω to 5k Ω pot
Resolution	Better than 0.001% of range
Linearity	Better than 0.003% of range
Input filtering	OFF to 999.9 seconds
Input accuracy	Electrical input factory calibrated to better than 0.1% of reading
System isolation	Reinforced, 264V ac max
Channel isolation	Reinforced, 264V ac max between thermocouple channels
Functional	264V ac max between RTD, volts and mA
Series Mode Rejection	60dB (50Hz to 60Hz, 1mA rms)
Common Mode Rejection	120dB (50Hz to 5kHz, 50V rms)
Current consumption	100mA max
TC Input specification	
Linearisation types	J, K, L, R, B, N, T, S, C, PL2, PT100, Linear, SqRoot, plus custom
CJC System	Measured by RTD fitted on Terminal Unit
CJC Accuracy	$\pm 0.5^{\circ}\text{C}$, over -10°C to $+70^{\circ}\text{C}$
CJC Rejection	Better than 30:1
Initial accuracy	$\pm 1^{\circ}\text{C}$ or $\pm 0.2\%$ of reading whichever is greater (standard thermocouples)

Note:
User Calibration options can improve performance, limited only by noise and non-linearity.

2500M/AI3 - Three channel analogue input

Provides three isolated current input channels specifically designed to meet the requirements of modern two wire transmitters. Each channel has its own isolated 24V supply for 3-wire transmitter excitation.

Each channel is protected against short circuit (with 24V dc supply on) and utilises a sophisticated trip and try system where the module senses over current and cuts the power, after a period the circuit checks for continued circuit malfunction.

The module can be optionally fitted with disconnects to allow isolation of an individual input to allow work on the loop to continue safely.

No of channels	3
Input range	-28mA to +28mA
Resolution	Better than 1uA (16 bits with 1.6 second filter time)
Linearity	Better than 10uA
Initial accuracy	Factory calibrated to better than $\pm 0.1\%$ of reading
Input filtering	OFF to 999.9 seconds
Burden resistance	10 Ω nom, 50mA max current
Channel PSU	22 to 25V dc, current limited 30mA nom, self-resetting
System isolation	Reinforced, 264V ac max
Channel isolation	Functional, 50V ac max
Current consumption	100mA max

Notes

1. User Calibration options can improve performance, limited only by noise and non-linearity.
2. Total burden can be increased to 250ohm. for HART by cutting a link track on the Terminal Unit.

AI2 ... ORDER CODE

Module	Two Channel ... isolated universal input
2500M/AI2UNIV	Terminal Unit
2550T/AI2/TC/NONE	Terminal unit for TC with CJC
2550T/AI2/DC/NONE	Terminal unit for Mv, V, PT100, Hiz inputs
2550T/AI2/DC/SHUNT	Terminal unit for 5 ohm shunt fitted for mA

AI3 ... ORDER CODE

Module	Three channel ... isolated 4-20mA analogue input with isolated 24V Tx PSU
2500M/AI3UNIV	Terminal Unit
2500T/AI3/UNIV/NONE	Terminal unit with dummy cover fitted
2550T/AI3/UNIV/DCONNECT	Terminal unit with disconnect

ANALOGUE OUTPUT MODULE

2500M/AI4 - Four channel analogue input

This analogue input module is used to monitor analogue signals from a wide range of plant sensors. The mA and TC inputs each require the appropriate Terminal Unit.

No of channels	4
Input types	TC, mV, mA, Pyrometer
mV range	-150mV to +150mV at input impedance >100M Ω
mA range	-22mA to +22mA with 5 Ω burden in the Terminal Unit
Resolution	Better than 0.001% of range
Input filtering	OFF to 999.9 seconds
Initial input accuracy	Electrical Input Factory Calibrated to better than 0.1% of reading
System Isolation	Reinforced, 264V ac max
Channel isolation	Functional, 264V ac max separating Ch1 and Ch2 from Ch3 and Ch4
Series Mode Rejection.	60dB (50Hz to 60Hz, 1mA r.m.s)
Common Mode Rejection	120dB (50Hz to 5kHz, 50V r.m.s)
Current consumption	100mA max
TC Input specification	
Linearisation types	J, K, L, R, B, N, T, S, C, PL2, linear, SqRoot, plus custom
CJC System	Measured by RTD fitted on Terminal Unit
CJC Accuracy	$\pm 0.5^{\circ}\text{C}$, over -10°C to $+70^{\circ}\text{C}$
CJC Rejection	Better than 30:1
Initial accuracy	$\pm 1^{\circ}\text{C}$ or $\pm 0.2\%$ of reading whichever is greater (standard thermocouples)

Note:

1. User Calibration options can improve performance, limited only by noise and non-linearity.
2. Wiring care and sensor choice should be used to prevent ground loops when using non-isolated TC's.

2500M/AO2 - Two channel analogue output

This analogue output module provides two isolated analogue output channels. Each output may be independently configured for current or voltage mode.

The module can be optionally fitted with disconnects to allow isolation of an individual output to allow work on the individual loop to continue safely

No of channels	2
Current output	-0.1 to 20.5mA; 10V dc max compliance with total burden less than 50 Ω
Voltage output	0 to 10V dc; 20mA max compliance with total load greater than 500 ohms -0.5 to 10.5 V dc; 20mA max compliance with total load greater than 1500 Ω
Resolution	Better than 1 part in 10,000 (15 bit typical)
System isolation	Reinforced, 264V ac
Channel isolation	Functional, 264V ac max
Current consumption	120mA max

AI4 ... ORDER CODE

Module	
2500M/AI4UNIV	Four channel ... T/C, mV, mA input
Terminal Unit	
2500T/AI4/TC/NONE	Terminal unit for 4 channel TC with CJC
2550T/AI4/mV/NONE	Terminal unit for 4 channel mV
2550T/AI4/mA/NONE	Terminal unit for 4 channel mA

AO2 ... ORDER CODE

Module	
2500M/AO2UNIV	Two channel isolated mA, volts
Terminal Unit	
2500T/AO2/UNIV/NONE	Terminal unit
2550T/AO2/DCONNECT	Terminal unit with disconnect
