

# 2500 Multi PID Controller and Data Acquisition Unit



## Features

- alarm monitoring
- advanced PID control
- modular concept ensures optimum flexibility
- distributes I/O and signal conditioning

## Specifications

### PID blocks:

up to 8 loops per base, with simple loop, Cascade, Override and Ratio types.

### Analog inputs:

All common thermocouple types, PT100, 0-100mV, 0-10Vdc, 4-20mA, Potentiometric, 3 downloadable user linearizations

### Accuracy:

<0.2%

### Resolution:

<2 $\mu$ V, <0.2°C

### Alarms:

8 alarms per module, 4 high, 4 low

### Digital channels:

8 alarms

### Toolkit Blocks:

32 analog and 32 digital operations, timers, counters, totalizers

### I/O and PID sample rate:

9Hz (110mS)/acquisition (55mS)

### Communications:

Modbus RTU, Profibus DP & DPVI, DeviceNet, Modbus TCP/IP

### Supply voltage:

18.0 to 28.8Vdc

### Operating temperature:

0 - 55°C, 5 - 95%RH

### Dimensions:

<i>Vertical Height:</i>	180mm
<i>Width:</i>	2 I/O modules 87mm
	4 I/O modules 137mm
	8 I/O modules 239mm
	10 I/O modules 290mm
	12 I/O modules 340mm
	16 I/O modules 442mm
<i>Depth:</i>	105mm

## 2500 Communicating controller

The 2500 high performance multiple loop PID controller with self-tune provides simple loop, Cascade, Override and Ratio control functions as standard. The 2500 can perform combinational logic, remote data acquisition, monitoring and alarming on its analog and digital inputs and outputs. A library of Toolkit blocks performs Mathematical logic control and integration functions, providing a powerful calculations capability that adds power and versatility to the unit.

The 2500 communicates with any device supporting Modbus® RTU, Profibus®-DP, DeviceNet or Modbus TCP/IP master communications, such as 5000 Series Recorders, Eurotherm Visual Supervisor, PC based SCADA packages or PLC's.

Six base sizes allow for cost effective acquisition of up to 64 analog or 128 digital inputs. The base can be mounted on a DIN rail or panel mounted and takes between 2 and 16 plug-in I/O modules. This allows the 2500 to be mounted where the control action is required, reducing the cost of wiring since only twisted pair communication cable need be taken to the user interface. The 2500 can also be mounted directly onto the machine, saving the cost of central control cubicles.

## Benefits

**Advanced PID control:** Accurate, reliable, repeatable process control provides consistent product quality

**Loop integrity:** Greater fault tolerance - Simpler fault finding

**Physical distribution:** Reduce wiring costs

**Toolkit blocks:** Single solution for PID and logic control

**Local processing:** Minimize communications

**Quality measurements:** Direct interface, more accuracy, less cost

**Plug in modules (live):** Minimize downtime, low MTTR

**Expandable:** Pay only for the I/O you require

## Ordering codes

### 2500 Intelligent Alarm Monitor

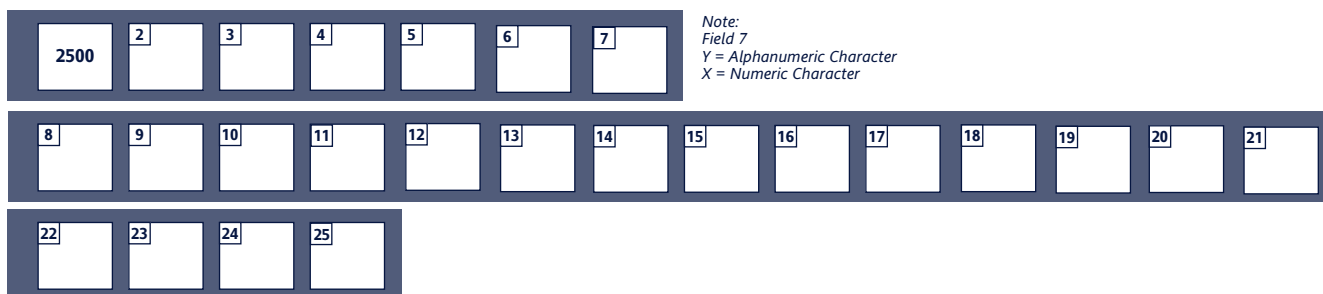
Alarm Outputs (contact trips) can be triggered based on sensed or calculated values. Calculated values can be derived from a comprehensive library of maths and Boolean functions. Alarms can be triggered upon violation of high or low threshold, deviation from a constant sensed input or from a calculated value. Rate of change alarms are also available.

### 2500 Remote I/O

The modularity of the 2500 makes it easy to create an I/O block with just the correct mix of Inputs and Outputs, enabling you to physically distribute the acquisition equipment, saving the cost of expensive multicore or compensation cables. Up to sixteen 2500 base units can be daisy-chained.

### Configuration tools

"iTools," a Windows based configuration package (see page 1-14) is used to set up the I/O and PID parameters using a graphical configuration tool. Inputs, Outputs, Alarms, PID and Toolkit functions are all internally wired using drag and drop techniques, allowing the user to solve complex control problems with simplicity.



Note:  
Field 7  
Y = Alphanumeric Character  
X = Numeric Character

2	Base Size
S02	2 module positions
S04	4 module positions
S08	8 module positions
S10	10 module positions
S12	12 module positions
S16	16 module positions

3	Earthing System
NONE	Two earth clamps fitted
C02	Earthing clamp for a 2 module base
C04	Earthing clamp for a 4 module base
C08	Earthing clamp for a 8 module base
C10	Earthing clamp for a 10 module base
C12	Earthing clamp for a 12 module base
C16	Earthing clamp for a 16 module base

4	Function
ACQIO	Remote IO acquisition
UW	Toolkit block + acquisition functions
4LOOP	Four PID blocks + acquisition
4LOOPUW	Four blocks + acquisition
8LOOP	Eight PID blocks + acquisition
8LOOPUW	Eight PID blocks + toolkit & acquisition
SYSIO Only available with Profibus or PBUSDPV1	
SYSIO	Remote IO acquisition

5	Comms Protocol
MODBUS	No extension memory fitted
DEVICENET	DeviceNet Comms
PROFIBUS	Profibus Comms
PBUS DPv1	Profibus DPv1 Comms
ENET MBUS	Modbus TCP/Ethernet

6	Comms Connector Type
RJ45	RJ45 connector for Modbus or Profibus
9Dtype	9 pin D connector for Profibus
DN	Standard DeviceNet screw connector
EN	Ethernet communications

7	Application
NONE	No application loaded
YYYYXX	Pre-configured application loaded

8-24	Module and Terminations
AI2-TC	2 ch. isolated universal analog input with CJC
AI2-DC	2 ch. isolated universal analog input for PT100, Hz and volts
AI2-MA	2 ch. isolated universal analog output - 5 ohm shunt fitted for mA
AI3	3 ch. isolated 4-20mA analog input with 24Vdc Tx PSU
AI3-DT	3 ch. isolated 4-20mA analog input with 24Vdc Tx PSU - Disconnects
AI4-TC	4 ch. non isolated T/C, with CJC
A14-MV	4 ch. non isolated mV input
A14-MA	4 ch. non isolated mA input
A02	2 ch. isolated analog output mA, volts
A02-DT	2 ch. isolated analog output mA, volts with Disconnects
DI424	4 ch. 24Vdc digital input
DI424	4 ch. 24Vdc digital input with disconnects
DI6-230V	6 ch. 230 volt ac. logic input
D16-115V	6 ch. 115 volt ac, logic input
D18L	8 ch. non isolated digital Input (Logic Inputs only)
D18C	8 ch. non isolated digital Input (Contact Inputs only)
D04L	4 ch. digital output
D04L-DT	Logic output 10mA max
D04L	4 ch. digital output
D04L	Logic output 10mA max with Disconnects
D0424	4 ch. digital output 24Vdc switched output
D0424-DT	4 ch. digital output 24Vdc switched output with Disconnects
RLY4	4 ch. relay output module
RLY4-FUSE	4 ch. relay output module with disconnects
BLANK	Blank terminal unit
NONE	No terminal unit or blank fitted

25	Configuration Tools
NONE	CD with manuals and latest version of iTools - No iTools product key
iTools	CD with manuals, iTools & STD iTools product key and 2500 configuration lead
NOCD	Shipped without CD

## Ordering codes

### IOC

2000E/S	3	4	5
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#### 3 Functions

<b>ACQIO</b>	Remote IO acquisition
<b>SYSIO</b>	Remote IO acquisition (55msec scan)
<b>UW</b>	Toolkit block + acquisition functions
<b>4LOOP</b>	Four local PID blocks + acquisition
<b>4LOOPUW</b>	Four local PID blocks + Toolkit & acquisition
<b>8LOOP</b>	Eight local PID blocks + Toolkit & acquisition
<b>8LOOPUW</b>	Eight local PID blocks + Toolkit & acquisition

1) SYSIO only available with Profibus or PBusDPv1

#### 4 Communications

<b>MODBUS</b>	Modbus communications
<b>DEVICENET</b>	DeviceNet communications
<b>PROFIBUS</b>	Profibus DP communications
<b>PBUS DPv1</b>	Eurotherm 'E' Suite comms (Profibus DPv1)
<b>ENET MBUS</b>	Modbus TCP/Ethernet

#### 5 Start-Up Key

<b>NONE</b>	No start-up key supplied
<b>CONFIGKEY</b>	RJ11 start up key - forces IOC to start in configuration mode after a power cycle

### IOC Terminal Units

2500T/IOC/S	4	5
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#### 4 5 Communications Protocol/Comms Connector Type

4	5	
<b>MODBUS</b>	<b>RJ45</b>	Modbus Comms RJ45 connection for Modbus
<b>DEVICENET</b>	<b>DN</b>	DeviceNet Comms Standard DeviceNet screw connector
<b>PROFIBUS</b>	<b>RJ45</b> <b>9Dtype</b>	Profibus or PBusDPv1 Communications RJ45 connector for Profibus 9 pin D connector for Profibus
<b>ENET MBUS</b>		MODBUS TCP/Ethernet

### Power Supplies

2500P	2	3
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#### 2 Rating

<b>1A3</b>	30 watt, 1.3 amp supply
<b>2A5</b>	60 watt, 2.5 amp supply
<b>5A0</b>	120 watt, 5.0 amp supply
<b>10A</b>	240 watt, 10.0 amp supply

#### 3 Manuals

<b>ENG</b>	English manuals
<b>FRA</b>	French manuals
<b>GER</b>	German manuals
<b>XXX</b>	No manual

### Modules

2500M	2	3
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#### 2 Module Type

<b>A12UNIV</b>	2 ch isolated universal analog input
<b>A13</b>	3 ch isolated 4-20mA analog input
<b>A14UNIV</b>	4 ch non isolated T/C, mV, mA input
<b>AO2</b>	2 ch isolated analog output mA, volts
<b>DI424V</b>	4 ch 24Vdc digital input
<b>DI6HVAC</b>	6 ch high voltage logic input
<b>DI8logic</b>	8 ch non isolated Digital input (Logic inputs)
<b>DI8contact</b>	8 ch non isolated Digital input (Contact input)
<b>DO4LOGIC</b>	4 ch digital output Logic 10mA max
<b>DO424V</b>	4 ch digital output 24Vdc switched output
<b>RLY4</b>	4 ch relay output

#### 3 Voltage Rating (DI6 Only)

<b>230v</b>	230Vac logic input
<b>115v</b>	115Vac logic input

### Terminal Units

2500T	2	3	4
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#### 2 3 4 Termination Type/Fuse/Disconnect Type

2 & 3	4	
<b>A12/TC</b>	<b>NONE SHUNT</b>	2 ch isolated TC with CJC
<b>A12/DC</b>		2 ch isolated mV For PT100, Hz inputs
<b>A13/UNIV</b>		50hms shunt fitted for mA inputs
<b>A14/UNIV</b>		3 ch. isolated 4-20mA analog input
<b>A14/TC</b>		4 ch. isolated TC input with CJC
<b>A14/mV</b>		4 ch. isolated mV input
<b>A14/mA</b>		4 ch. isolated mA input
<b>AO2/UNIV</b>		2 ch analog output
<b>DI4/UNIV</b>		Terminal unit for 4 ch digital input module
<b>DI6/UNIV</b>		Terminal unit for 6 ch. mains isolated digital input
<b>DI8/UNIV</b>		Terminal unit for 8 ch digital input
<b>DO4/UNIV</b>		2 ch isolated analog output module mA, volts
<b>RLY4</b>		4 channel relay OP

Disconnect option only available with A13, AO2, DI4 and DO4

<b>NONE DCONNECT</b>	Dummy cover fitted Disconnects
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Fuse option only available with RLY4

<b>NO FUSE FUSE2A</b>	Dummy cover fitted 4 off 3. 15A fuses
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### Base Units

2500B	2	3	4
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#### 2 Base Size

<b>S02</b>	IOC base, 2 module positions
<b>S04</b>	IOC base, 4 module positions
<b>S08</b>	IOC base, 8 module positions
<b>S10</b>	IOC base, 10 module positions
<b>S12</b>	IOC base, 12 module positions
<b>S16</b>	IOC base, 16 module positions

#### 3 Earthing System

<b>NONE</b>	Two earth clamps fitted
<b>C02</b>	Earthing clamp for a 2 module base
<b>C04</b>	Earthing clamp for a 4 module base
<b>C08</b>	Earthing clamp for a 8 module base
<b>C10</b>	Earthing clamp for a 10 module base
<b>C12</b>	Earthing clamp for a 12 module base
<b>C16</b>	Earthing clamp for a 16 module base

#### 4 Manuals

<b>ENG</b>	English manuals
<b>FRA</b>	French manuals
<b>GER</b>	German manuals
<b>XXX</b>	No manuals

### Accessories

2500A	2	3	4
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#### 2 Type

<b>CABLE</b>	Communications cable
<b>CFGPSU</b>	24Vdc Power supply for use with configuration lead
<b>TERM</b>	Terminator for end of RS 485 multi-drop link
<b>CFGKEY</b>	RJ11 start up key - forces IOC to start in Configuration
<b>BLANK</b>	Blank terminal assembly

#### 3 Cable Options

<i>Options with cable only</i>	
<b>CONFIG</b>	Used for configuration of 2500
<b>MODBUS</b>	Modbus screened cable (Base to multi-drop)
<b>PROFIBUS</b>	Profibus DP screened cable (Base to base multi-drop)

<i>Options with CFGPSU only</i>	
<b>NONE</b>	No mains lead supplied
<b>UKLEAD</b>	UK 5A mains lead

<i>Options with TERM only</i>	
<b>MODBUS</b>	Terminator for Modbus link - RJ45 only
<b>PROFIBUS</b>	Terminator for Profibus DP link - RJ45 only

<i>2500A cable length</i>	
<b>4</b>	Options with Modbus/Profibus
<b>RJ45/RJ45/0M5</b>	0.5m long
<b>RJ45/RJ45/3M0</b>	3.0 m long