Eurotherm®
PRODUCT RANGE SELECTION GUIDES

FLEXIBLE SOLUTIONS

invensys®
EUROTHERM®
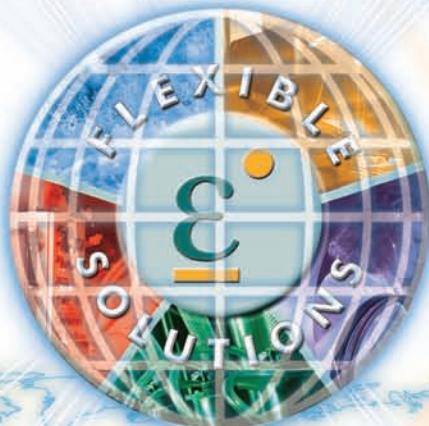
Eurotherm – Creating solutions that deliver measureable results

Eurotherm has a reputation for delivering process control and automation solutions that provide our customers with measureable financial advantages of saving time, money and resources. These savings are achieved by providing the solutions that can reduce energy costs, improve plant/process productivity while enhancing the quality of their products.

Started in 1965 by a group of enthusiastic and innovative engineers Eurotherm, now part of the Invensys group of companies, has grown and developed into a global business. We are the first choice supplier of proven innovative and scalable solutions to leading companies in the processing and manufacturing industries.

Eurotherm have established an effective global network of national Eurotherm group companies and approved business partners to provide worldwide customers with direct local access to our services.

With over 40 years of applications knowledge and experience designing, implementing and commissioning solutions for our customers, we have an

understanding of both the requirements and expectations of their own industries.

Eurotherm has earned a reputation for premium quality systems and solutions by offering an extensive and relevant range of integrated engineering capabilities, services and products.

These offerings are subjected to ongoing review and development in direct response to our customers' changing requirements and expectations.

The Eurotherm offering ranges from consultancy for requirement definition to solution and system design, project management and installation, commissioning and training. These services are supported by market leading products ranging from sensors, signal conditioning and indicators, through process and power controllers to graphical paperless data recorders, and integrated process automation equipment.

Our Aspirations

To continue to develop and strengthen our reputation for leadership in innovative solutions – precisely meeting customer requirements and exceeding their expectations in our chosen markets.

To form partnerships with industry leading customers to both sustain and enhance their competitive standing within their own industry.

To work together with our customers to drive cost out of their businesses.

To ensure our approach and outlook enables us to be agile and flexible in our response to the changing needs and demands of our customers.

To be an approachable and friendly team of people, who are open-minded and accessible, prepared to make that extra effort to provide the optimum solution to our customers' requirement.

Our Vision

"Eurotherm will be the leading supplier of automation solutions and services in our chosen markets, harnessing the passion that people feel for Eurotherm.

We will constantly search for competitive advantage and innovation to create value for our employees, customers and shareholders"
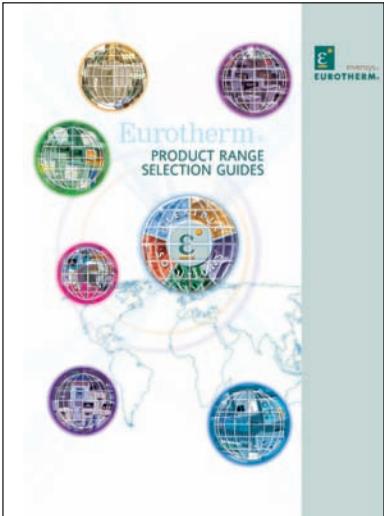
PID Controllers, Indicators & Alarm Units

Single Loop Controllers
Multi Loop Controllers
Indicator & Alarm Units
Software
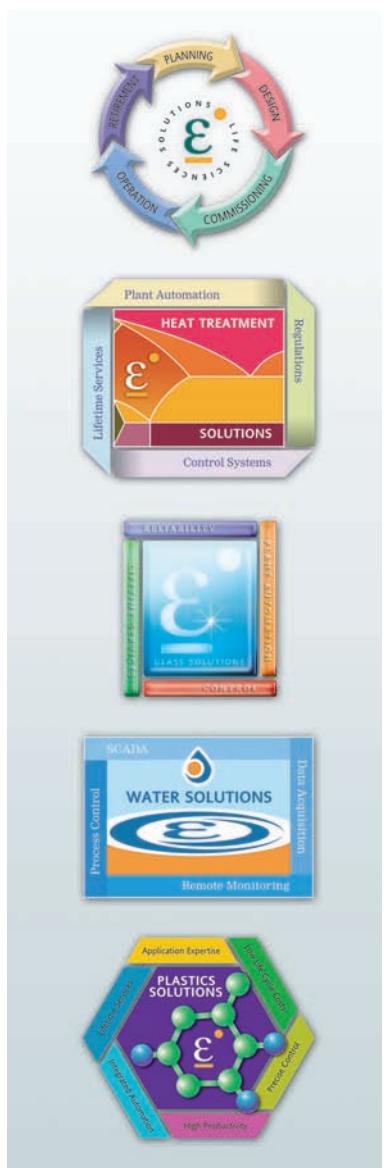
Recorders & Data Management

Paperless/Graphic
Paper
Software

Solid State Relays/Contactors & Power Controllers

Solid State Relays (SSRs)
Solid Stae Contactors (SSCs)
Power Controllers

Drives

AC Drives
Soft Starters
DC Drives
Software

DCS Solutions

Selection Guides
Software
Automation Systems Hardware
MACO Products

I/O Signal Conditioning, Probes, Thermosensors, Ancillary

I/O Signal Conditioning
Carbon/Oxygen Probes, Thermosensors, Ancillary
Valve Actuators
Sensors

PID Controllers

Single Loop

Features	2132	2116	2216e	2208e	2204e	2416	2408	2404	3216	3208	32h8	3204	3508	3504	RFS
Panel size (DIN)	1/32	1/16	1/16 DIN rail	1/8	1/4	1/16	1/8	1/4	1/16	1/8	1/8	1/4	1/8	1/4	DIN rail
IP Rating	IP65		IP65			IP65			IP65, Nema 4X				IP65, Nema 4X		IP20
Display Type	1 x 4 dig LED		2 x 4 dig LED			2 x 4 dig LED			Main: 4 digits Lower: 5 character starburst (3216/08/04) 9 character starburst (32h8)				Main PV: 5 digit plus 4 line alphanumeric		Remote
Supply Voltage	24V dc/ac 85-264V ac		85-264V ac			24V dc/ac 85-264V ac			24V dc/ac 85-264V ac				24V dc/ac, 85-264V ac		24V dc/ac
Input Type	TC, RTD, mV, mA, V		TC, RTD, mV, mA, Volts			TC, RTD, mV, mA, Volts			TC, RTD,mV, mA, CT				TC, RTD, mV, mA, Volts		TC, RTD, mV, mA, CT
PV Accuracy	<0.25%		<0.25%			<0.2%			<0.25%				<0.1%		±0.2%
Control Types	On/Off. PID		On/Off. PID, VP			On/Off. PID, VP			On/Off. PID, VP				On/Off, PID, VP		On/Off. PID
SP Programmer	none		none			20 x 16 segments			4 Ramp + 4 Dwell				50 Progs, 500 Segs max		none
Analogue IO	In: 1 Out: 0		In: 1 Out: 1			In: 2 Out: 3			In: 2 Out: 3				In: 5 Out: 6		In: 1 Out: 0
Digital IO	In: 1 Out: 2		In: 3 Out: 4			In: 11 Out: 11			In: 3 Out: 4				In: 40 Out: 41		In: 2 Out: 4
Comms	none		Modbus, DeviceNet			Modbus, DeviceNet, Profibus			Modbus				Modbus, DeviceNet, Profibus, Ethernet		Modbus
Alarms High	•		•			•			•				•		•
Low	•		•			•			•				•		•
Deviation	•		•			•			•				•		•
Sensor Break	•		•			•			•				•		•
Event	none		•			•			•				•		none
Heater Fail	none		•			•			•				•		•
PC Configuration	List based		List based			List based			Wizard				Graphical Wiring		Wizard

Multi Loop

Features	3508	3504	2604	2704	Mini8™ Controller	2500
Panel size (DIN)	1/8	1/4	1/4		DIN rail	DIN rail
IP Rating	IP65, Nema 4X		IP65		IP20	IP20
Display Type	Main PV: 5 digit plus 4 line alphanumeric		2 x 5 dig LED + 2 line text	Dot Matrix	Remote	Remote
Supply Voltage	24V dc/ac, 85-264V ac		24V dc/ac, 85-264V ac		24V dc	24V dc
Input Type	TC, RTD, mV, mA, Volts		TC, RTD, mV, mA, Volts		TC, mV, RTD, mA, CT	TC, RTD, mV, mA, Volts
PV Accuracy	<0.1%		<0.1%		<0.1%	<0.2%
Control Types	On/Off, PID, VP		On/Off, PID, VP		On/Off, PID	On/Off, PID, VP
Control Loops	2		3		16	8
Control Algorithms	Single		Single, Ratio, Cascade, Override		Single	Single, Ratio, Cascade, Override
Special Features	Carbon Potential, Humidity, Melt Pressure		Melt Pressure, Carbon Potential, Humidity	Melt Pressure, Carbon Potential, Vacuum, Boiler, Humidity	Humidity	Carbon Potential, Humidity
SP Programmer	50 Progs, 500 Segs max		50 Progs, 500 Segs max	60 Progs, 600 Segs max	8 Progs, 16 segments each	none
Analogue IP/OP	In: 5 Out: 6		In: 8 Out: 8		In: 32 Out: 8	In: 64 Out: 32
Digital IP/OP	In: 40 Out: 41		In: 44 Out: 43		In: 34 Out: 32	In: 128 Out: 64
Digital Comms	Modbus, DeviceNet, Profibus, Ethernet		Modbus, DeviceNet, Profibus	Modbus, DeviceNet, Profibus, Ethernet	Modbus, DeviceNet, Profibus, Ethernet, CANopen	Modbus, DeviceNet, Profibus, Ethernet
Maths Equation	24 Calculations		24 Calculations	32 Calculations	24 Calculations	32 Calculations
Combinational Logic	24 Operations		32 Operations		24 Operations	32 Operations
Timers/Counters/Totals	4 / 2 / 2		4 / 0 / 4		4 / 2 / 2	8 / 8 / 8
Real Time Clock	Day and Time		Day and Time		Day and Time	none
Alarms High	•		•		•	•
Low	•		•		•	•
Deviation	•		•		•	•
Rate	•		•		•	•
Sensor Break	•		none		•	none
Event	•		•		•	•
PC Configuration	Graphical Wiring		Graphical Wiring		Graphical Wiring	List based

Indicators & Alarm Units

Indicators and Alarm Units	2100			3200			2400
Features	2132i	2116i	2108i	3216i	32h8i	3204i	2408i
Panel size (DIN)	1/32	1/16	1/8	1/16	1/8	1/4	1/8
IP Rating	IP65			IP65, Nema 4X	IP65, Nema 4X	IP65, Nema 4X	IP65
Display Type	4 Digit LED			4 Digit LCD plus 5 character alphanumeric	5 Digit LCD plus 9 character alphanumeric	4 Digit LCD plus 5 character alphanumeric	Large 5 Digit LED
Supply Voltage	100-264V ac, 24V ac/dc			100-264V ac, 24V ac/dc	100-264V ac, 24V ac/dc	100-264V ac, 24V ac/dc	100-264V ac, 24V ac/dc
Safety Approvals	none			FM, DIN 3440	FM, DIN 3440	FM, DIN 3440	none
PV Inputs	1			1	1	1	2
Input Types	TC, RTD, mV, mA, Custom			TC, RTD, mV, mA, Custom	TC, RTD, mV, mA, Volts, Custom, Strain gauge	TC, RTD, mV, mA, Custom	TC, RTD, mV, mA, Volts, Custom
PV Accuracy	Better than 0.25% of reading			Better than 0.25% of reading	Better than 0.25% of reading (0.1% strain gauge)	Better than 0.25% of reading	Better than 0.2% of reading
User Calibration	2 point			5 point	5 point, Shunt, Load cell, Auto tare	5 point	15 point, Shunt, Load cell, Comparison, Auto tare
PV Input Selection	none			none	none	none	Hi, Lo, Select, Switchover, Derived
No of Alarms	3			4	4	4	8
Alarm Types	Hi, Lo, Dev, Sensor break			Hi, Lo, Dev, Sensor break, Rate of change			Hi, Lo, Dev, Sensor break, Rate of change, Event
No of Relay Outputs	2			3	2	2	7
Digital IP/Logic OP	1/2			2/0	2/0	2/0	2 plus possible further 9/9
Retransmission	none			Non isolated	Isolated	Isolated	Isolated
Recipes	none			5 with 19 tags	5 with 19 tags	5 with 19 tags	none
Custom Messages	none			128 Characters	128 Characters	128 Characters	none
Slave Comms	none			Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU, DeviceNet, Profibus DP
Melt Pressure	none			none	●	none	●
Transducer PSU	none			none	10V dc	none	5/10V dc
Transmitter PSU	none			none	24V dc	24V dc	24V dc
PC Configuration	List based			Graphical Wiring	Graphical Wiring	Graphical Wiring	List based

Software	Configuration Tools	
	iTools	

Recorders & Data Management

Paperless/Graphic	Paperless Graphic Recorders						5000 Series
Features	**6100A**	**6180A**	**6100XIO**	**6180XIO**	**6180AeroDAQ**	**6100E**	**5000B**
Inputs	18	48	*none*	*none*	48	6	12
Graphic Display	5.5"	12.1"	5.5"	12.1"	12.1"	5.5"	*none*
Protection	IP66	IP66	IP65	IP65	IP66	IP66	IP20
Relay Outputs	●	●	*none*	*none*	●	●	●
Annotation	●	●	●	●	●	●	●
Retransmission/Analogue Outputs	●	●	*none*	*none*	●	*none*	*none*
Contact Inputs	●	●	*none*	*none*	●	*none*	●
Modbus	Master/Slave	Master/Slave	Master/Slave	Master/Slave	Master/Slave	Slave	Master/Slave
Mathematics	●	●	●	●	●	●	●
Counters	●	●	●	●	●	●	●
Timers	●	●	●	●	●	●	●
Totalisers	●	●	●	●	●	●	●
PC Configuration	●	●	●	●	●	●	●
Ethernet/FTP	●	●	●	●	●	●	●
Auditor Features	●	●	●	●	●	*none*	●
Batch	●	●	●	●	●	*none*	●
Custom Screens	●	●	●	●	●	*none*	●
Remote Viewing	●	●	●	●	●	●	●
Recording Speed	8Hz	8Hz	8Hz	8Hz	8Hz	1Hz	8Hz
Trend Speed	8Hz	8Hz	8Hz	8Hz	8Hz	1Hz	*none*
Network Addressing	DHCP, Boot P Fixed IP	DHCP, Boot P Fixed IP	DHCP, Boot P Fixed IP	DHCP, Boot P Fixed IP	DHCP, Boot P Fixed IP	DHCP, Boot P Fixed IP	Boot P Fixed IP
USB	3	3	1	1	3	1	*none*
Reports	10	10	10	10	10	*none*	10
Groups	12	12	12	12	12	1	6
Review of History (on screen)	●	●	●	●	●	●	*none*
AMS2750D	*none*	*none*	*none*	*none*	●	*none*	*none*

Recorders & Data Management

Paper	Strip Chart						Circular	
Features	4101C	4101M	4102C	4102M	4103C	4103M	392	394
Inputs	4	6	4	6	4	6	4	6
Chart Width	100mm		100mm		100mm		10" circular	10" circular
Protection	IP54		IP54		IP54		Nema 4X	Nema 4X
Relay Outputs	●		●		●		●	●
Annotation	●		●		●		*none*	●
Retransmission/Analogue Outputs	*none*		*none*		●		●	●
Contact Inputs	*none*		*none*		●		●	●
Modbus (Serial)	*none*		*none*		Slave		*none*	Slave
Removable/Data Storage	*none*		*none*		●		*none*	●
Mathematics	*none*		*none*		●		●	●
Counters	*none*		*none*		●		*none*	●
Timers	*none*		*none*		●		●	●
Totalisers	*none*		*none*		●		●	●
Controllers	*none*		*none*		*none*		●	●
PC Configuration	●		●		●		*none*	●

Software	Visualisation Packages		Data Reporting & Manipulation				Applications
	Bridge	Eyris™ Software	Review	Review QuickChart	Dream Report	Report	Security Manager

Solid State Relays/Contactors

Solid State Relays/Contactors

Solid State Relays (SSRs) Features	Solid State Relays		DIN Rail Solid State Relays			I/O Series	
	SVDA SVAA	SVDD	RVD3 RVA3 RVM3	RVDA RVAA RVMA	RSDA RSAA	Input Module	Output Module
Heater Type Constant Resistance	•	•	•	•	•	•	•
Inductive/Coil	•	•	•	•	•	•	•
AC Output	•	none	none	none	none	none	•
Dc Output	none	•	none	none	none	•	•
Maximum Current (Amps)	75A	40A	25A	40A	100A	100mA	3A
Maximum Voltage (Volts)	600V	100V	600V	600V	600V	28V	60V dc/250V ac
Integrated Heatsink	none	none	•	•	•	•	•
Controlled Phases	1	1	3	1	1	1	1
Input Analogue	none	none	none	•	•	none	none
Logic dc	•	•	•	•	•	•	•
Logic ac	•	none	•	•	•	•	•
Firing Mode Zero Crossing	•	none	•	•	•	none	•
Burst Firing	none	none	•	•	none	none	none
Built-in Fuse	none	none	none	none	•	none	•
Overtemperature Alarm	none	none	none	none	•	none	none
CE Compliant	•	none	•	•	•	•	•
UL/CSA	•	none	•	•	•	•	•

Solid State Contactors (SSCs)

Features	Single Phase			Multi Phase		
	7100L	TE10S	7100S	7200S	7300S	TE200S
Heater Type Constant Resistance	•	•	•	•	•	•
SWIR (Short wave infrared)	none	•	•	•	•	•
Variable Resistance	none	none	none	none	•	none
Inductive/Transformer Coupled	none	none	none	none	•	none
True Power Control	none	none	none	none	•	none
Maximum Current (Amps)	100A	50A	250A	200A	160A	63A
Controlled Phases	1	1	1	2	3	2
Input Analogue	none	none	•	•	•	none
Logic	•	•	•	•	•	•
Firing Mode Phase Angle	none	none	none	none	none	none
Burst Firing	•	•	•	•	•	•
PLF and/or PLU	none	•	•	•	•	none
Current Limit	none	none	none	none	•	none
Plug in Construction	none	none	none	none	none	none
Diagnostics	none	none	•	•	•	none
Alarms	none	•	•	•	•	none

Power Controllers

Power Control	EPower™ Controller	Single Phase		Multi Phase				True Power
Features	EPower Controller	TE10A	7100A	7200A	7300A	TE200A	TE300	470 / 471 472
Heater Type Constant Resistance	•	•	•	•	•	•	•	•
SWIR (Short wave infrared)	•	•	•	•	•	•	•	•
Variable Resistance	•	•	•	none	•	none	none	•
Inductive/Transformer Coupled	•	•	•	none	•	none	none	•
True Power Control	•	none	•	none	•	none	none	•
Maximum Current (Amps)	400A	50A	250A	200A	160A	63A	63A	150A
Controlled Phases	1-4 x 1, 1-2 x 2 or 3	1	1	2	3	2	3	1
Input Analogue	•	•	•	•	•	•	•	•
Logic	•	•	•	•	•	•	•	•
Firing Mode Phase Angle	•	•	•	none	•	none	none	•
Burst Firing	•	•	•	•	•	•	•	•
PLF and/or PLU	•	none	•	•	•	none	none	•
Current Limit	•	•	•	none	•	none	none	•
Diagnostics	•	none	•	•	•	none	none	•
Alarms	•	none	•	•	•	none	none	•
Digital Communications	•	none	none	none	none	none	none	none
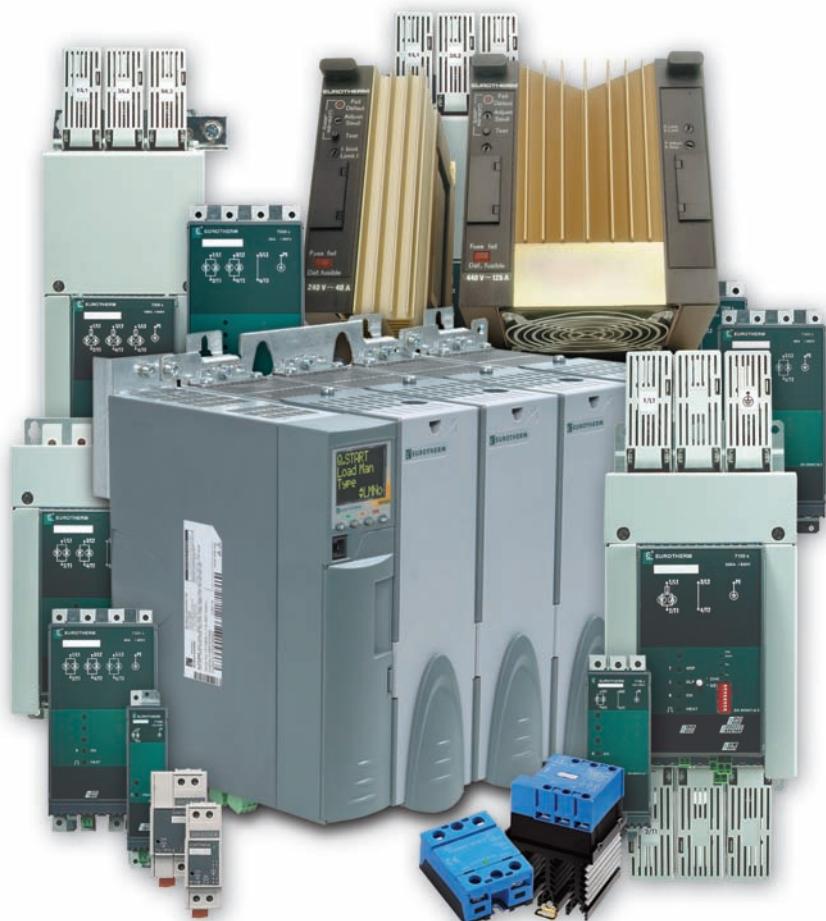
Drives

AC Drives	Variable Speed Drive		
Features	**ERCFW08**	**ERCFW09**	**ERCFW10**
Power Rating	0.18-15kW/0.25-20HP	0.1-1100kW/1.5-1500HP	0.18-2.2kW/1.5-3.0HP
Supply Voltage	200-240V 1-Phase and 3-Phase 380-480V 3-Phase	220-690V	110-240V
Display	Integral/Remote	Integral/Detachable	Integral
Phases	1-Phase or 3-Phase	3-Phase	1-Phase
Control Mode	V/Hz/Sensorless/Vector	V/Hz/Sensorless	V/Hz
Communication	Modbus RTU/CanOpen/DeviceNet	Profibus DP/DeviceNet/Ethernet IP/Modbus RTU	*none*
Configuration Software	ER SuperDrive Software	ER SuperDrive Software	*none*

Soft Starters			
Features	**ERSSW03/04**	**ERSSW05**	**ERSSW06**
Power Rating	37-1950kW/50-2600HP	0.55-55kW/0.74-75HP	22-475kW/30-75HP
Supply Voltage	220-575V	220-575V	220-575V
Display	Integral	Remote	Integral/Remote
Phases	3-Phase	3-Phase	3-Phase
Communication	Modbus RTU/Profibus DP/DeviceNet	RS232	Modbus RTU/Profibus DP/DeviceNet
Sizing/Configuration Software	ER SuperDrive Software & SDW Sizing Software	*none*	ER SuperDrive Software & SDW Sizing Software

Drives

DC Drives	Variable Speed Drive		
Features	**ER-340/-680/-1200**	**ER-3200i/3600XRi**	**ER-PL/ER-PLX**
Power Rating	0.55-1.8kW (at 180V armature voltage)	2.2-11kW (at 320V armature voltage)	15-265kW/15-225kW (at 460V armature voltage)
Supply Voltage	110/240V, 30/60V	240/2415V, 240/110V	110/240V, 30/60V
Display	*none*	*none*	Integral
Phases	1-Phase	1-Phase	3-Phase
Communication	*none*	*none*	Modbus TCP/Profibus DP
Armature Current	3.4-12.2A	4-48A	12-630A/12-530A
Configuration Software	ER-PL Pilot Software	ER-PL Pilot Software	ER-PL Pilot Software

Software	SuperDrive	Soft Starter Sizing	Configuration & Diagnostic
	ER	**SDW**	**ER-PL PILOT**

DCS & SCADA

Software	Configuration Tools	Network Support & I/O Drivers	Visualisation Packages		
	Project Studio/Developer	OPC Server	Process Viewer	Operations Server	Operations Viewer

	Data Reporting & Manipulation			Applications		
	Dream Report™ Software	Information Manager	Wonderware ActiveFactory™	Security Manager	Control Modules	Application Modules

Automation Systems Hardware	Eycon™ Visual Supervisor		T Series		OPtima Touch			T Series	
Features	Eycon 10	Eycon 20	T2550	T820	OPtima Intouch PC 10.4" SVGA	12.1" XVGA	15" XVGA	T640	T940X
Display Type	5.5" QVGA	12.1" XGA	Remote	128 x 64 Monochrome	10.4" SVGA	12.1" XVGA	15" XVGA	7 Segment	Remote
IP Rating	IP65	IP65	IP20	IP66	IP65		IP65	IP65	IP20
Input Type	Remote	Remote	mV, V, mA, T/C, RTD, Potentiometer	Remote	Remote			mV, V, mA, T/C, RTD	Remote
Analogue IP/OP	Remote	Remote	In: 64 Out: 32	Remote	none			In: 4 Out: 3	Remote
Digital IP/OP	Remote	Remote	In: 128 Out: 128	Remote	none			In: 4 Out: 4	Remote
SP Programmer	8 Progs, 40 Segments each		none	none	none			none	none
Batch	Yes	Yes	none	none	none			none	none
Recipe	Yes	Yes	none	none	none			none	none
Auditor Features	Yes	Yes	none	none	none			none	none
Control	Yes	Yes	Yes	Yes	none			Yes	Yes
Data Logging	Yes	Yes	Yes	Yes	none			none	none
Ethernet (ELIN)	10/100Mbps		10/100Mbps	10/100Mbps	10/100Mbps			none	Yes
Modbus (Serial & TCP)	Master/Slave		Master/Slave	Master/Slave	Yes			RTU Slave	Yes
Network Addressing	DHCP, Boot P, Link Local, Fixed		DHCP, Boot P, Link Local, Fixed	none	Yes			none	Yes

MACO® Products

MACO Control Systems	ASB/RS/SRS Systems					Compact Systems				Alpha Systems			
Features	DS1x	DS8x	DS4x	EM-3 Lite	EM-3	EM-3c	MCD2	MC4C	DSJ	47x0	49x0	6Cxx	6xxx
Description	MACO ASB	MACO RS	MACO SRS	Extrusion Control	Extrusion Control	Extrusion Control	Operator Station	Control System	Breeze II Parison Control	Custom 4, 5 & 6	Custom 40 & 50	MACO 4000, 5000 & 6000	MACO 4500, 5500 & 6500
Display Type	*none*	*none*	*none*	*none*	(DSE5) 15" TFT color LCD touch-screen XVGA	(DSD5) 12.1" TFT color LCD touch-screen XVGA	12.1"	*none*	(DSD5) 12.1" TFT color LCD touch-screen XVGA	*none*	*none*	*none*	*none*
Pixel Size	*none*	*none*	*none*	*none*	1024 x 768	1024 x 768	800 x 600	*none*	1024 x 768	*none*	*none*	*none*	*none*
Chassis	4-slot enclosed	8-slot open	4-slot open or enclosed	Custom 5	4-slot enclosed	4-slot enclosed	*none*	4-slot enclosed	4-slot enclosed	7-slot open	9-slot open	12-slot open	16-slot enclosed
Approvals	CE, cULus	cULus		CE, cULus	Display – cTUVus ABS – cULus	CE, cTUVus				cULus		CE, cULus	
Host Comms	Modbus Plus, Modbus TCP/IP	Modbus Plus Modbus TCP/IP, RS485		Modbus Plus, Modbus TCP/IP		Modbus TCP/IP			Modbus Plus Modbus TCP/IP, RS485	RS485, SPI, Modbus RS485 RTU			
IQ BUS	Modbus Plus, Modbus TCP/IP, RS232/485 Modbus RTU, Profibus, Interbus S, DeviceNet					Modbus TCP/IP	*none*	Modbus TCP/IP	Modbus Plus, Modbus TCP/IP, RS232/485 Modbus RTU, Profibus, Interbus S, DeviceNet	RS485 MACOnet			
Options	Application specific block (ASB)	*none*	*none*	ASB, Lite operator station	ASB	*none*	Microsoft CE	*none*	*none*	*none*	*none*	*none*	*none*

Operator Stations	OPtima/Lite Operator Stations			OPtima Touch PCs					
Features	41AC	41VC	41HC	DSC5	DSD5	DSE5	PCC5	PCD5	PCE5
Description	Dedicated operator station	Lite operator stations		PC based operator stations					
Display Type	10.4" TFT color VGA	6.4" TFT color VGA vertical	6.4" TFT color VGA horizontal	10.4" TFT color LCD touch-screen SVGA	12.1" TFT color LCD touch-screen XVGA	15" TFT color LCD touch-screen XVGA	10.4" TFT color LCD touch-screen SVGA	12.1" TFT color LCD touch-screen XVGA	15" TFT color LCD touch-screen XVGA
Pixel Size	640 x 480	640 x 480	640 x 480	800 x 600	1024 x 768	1024 x 768	800 x 600	1024 x 768	1024 x 768
Approvals	CE, cULus			CE, cTUVus, IP54	CE, cTUVus in process	CE, cTUVus, IP54		CE, cTUVus in process	CE, cTUVus, IP54
Host Comms	RS485 MACOnet			Modbus Plus, Modbus TCP/IP					
Options	*none*	*none*	*none*	With Wonderware® InTouch™			*none*	*none*	*none*

I/O Signal Conditioning, Thermosensors, Ancillary

I/O Signal Conditioning	Action Instruments						Eclipse Series
Features	**Ultra SlimPak II**	**Ultra SlimPak**	**Action I/Q (AC Powered)**	**Action I/Q (DC Powered)**	**Action I/Q (Loop Powered)**	**TransPak**	**AC Transducers**
Input Types	DC Volts/Current, RTD, mV, Thermocouple, Potentiometer, Strain Gauge, AC Volts/Current, Frequency	DC Volts/Current, RTD, mV, Thermocouple, Potentiometer, Strain Gauge, AC Volts/Current, Frequency	DC Volts/Current, RTD, mV, Thermocouple, Potentiometer, Strain Gauge, AC Volts/Current, Frequency	DC Volts/Current, RTD, mV, Thermocouple, Potentiometer, Strain Gauge, AC Volts/Current, Frequency	DC Volts/Current, RTD, mV, Thermocouple	DC Volts/Current, RTD, mV Thermocouple, Potentiometer, AC Volts/ Current, Frequency	AC Power, AC Current, AC Voltage, AC Frequency, Phase Angle, Potentiometer/ Tap Position
Output Types	0-10V dc, 0-20mA dc, 4-20mA dc or 2 SPDT relays	0-5V dc, 0-10V dc, 0-1mA dc, 0-20mA dc, 4-20mA dc or 2 SPDT relays	0-5V dc, 0-10V dc, 0-1mA dc, 0-20mA dc, 4-20mA dc or 2 SPDT relays	0-5V dc, 0-10V dc, 0-1mA dc, 0-20mA dc, 4-20mA dc, Frequency, or 1/2 SPDT relay(s)	4-20mA dc	4-20mA dc	0-1mA, 0-10mA, 0-20mA, 4-20mA, 0-10V plus others
Isolation	1800V Input/Output/ Power	1800V Input/Output/ Power	1800V Input/Output/ Power	1800V Input/Output/ Power	1800V Input/Output and channel/channel	Varies with product	2kV to IEC414
Power	9-30V dc via Terminals or jumpers	9-30V dc G448 18-30V	100-204V ac	Various power Product dependant 9-30V dc 18-30V dc 10.8-26.4V dc	10-35V ac	Varies by Model	Varies by Model
Mounting	High density DIN rail	High density DIN rail	IQRL power bus on DIN rail	DIN rail or IQRL power bus	DIN rail	Field mount housing or head or DIN rail	DIN rail
Wiring	Removable terminals	Fixed terminals	Removable terminals	Removable terminals	Removable terminals	Fixed terminals	Fixed terminals
Special Features	Smart power, Ethernet communications	ASIC reliability	2 ch versions, Signal splitters, Field configurable I/P type versions	2 ch versions, Signal splitter, Math functions, Field configurable I/P type versions	Multi channel versions	Optional display, HART, 2 I/P channels with math	Stand alone 4kV isolation (option)
Calibration via	TouchCal	Potentiometer	TouchCal	TouchCal	Potentiometer	Potentiometer or software	*n/a*

| Probes Thermosensors Ancillary (Other)	Probes		Thermosensors	Ancillary	
Features	**In-Situ Carbon Probe – AP1**	**In-Situ Oxygen Probe – AP3**	**Thermocouple & Resistance Thermometers (RTDs)**	**MEMOCAL 2000**	**Universal Isolated Interface Converter – KD485**
Output	1.00-2.00V dc	Up to 500mV	*n/a*	mA, V, TC, RTD	*n/a*
Readout	% carbon probe into 8MΩ	% oxygen probe 10MΩ	*n/a*	Multi function LCD	*n/a*
Power Supply	*n/a*	*n/a*	*n/a*	Battery	+7 - +35V dc
Power Consumption	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Accuracy	±0.05 weight % carbon in normal operating range	±0.02 PPM O_2 at 1 PPM O_2 ±1% of full scale mV output	*n/a*	0.015% of span	*n/a*
Response Time	Less than 1.0 second	Less than 1.0 second	*n/a*	*n/a*	*n/a*
Thermocouple	Type K, R & S	Type K, R S & B	General purpose	Type B, E, J, K, L, N, R, S, T, U, W, W3, W5, PLII	*n/a*
Isolation	*n/a*	*n/a*	*n/a*	*n/a*	2000V ac
Ports	*n/a*	*n/a*	*n/a*	EIA232	2 Asynchronous ports, TX & RX signals only
Port Parameters	*n/a*	*n/a*	*n/a*	Remote programming Data recording	-STD: 0-115200 baud, all character formats -ADE/PROG: 30-115200 baud, n/e/o/ parity,7/8 data bits, 1/2 stop bits
Mounting	*n/a*	*n/a*	*n/a*	Hand held	DIN Rail
Options	*n/a*	*n/a*	Sensor fittings, Connectors, Wires and cables	EIA232 comms Desk top adapter (with EIA485 comms)	Interface: Standard product Port 1 is RS232 Port 2 is RS422/485 Any combination of RS232, 422/485

Valve Actuators & Sensors

Valve Actuators — EA Series

Features	EA01/EA02	EA12	EA20 Series	EA31	EA40 Series	EA50 Series	EA60 Series	EA70 Series	MF-631x3
Output Types	24V ac 50-60Hz 120V ac 50-60Hz 240V ac 50-60Hz	24V ac 60Hz 120V ac 60Hz 240V ac 60Hz	120V ac 60Hz 240V ac 60Hz 240V ac 50Hz	24V ac 60Hz 120V ac 60Hz 240V ac 60Hz	120V ac 60Hz 240V ac 60Hz 240V ac 50Hz	24V ac 60Hz 120V dc 60Hz 120V ac 50Hz 240V ac 60Hz 240V ac 50Hz	120V ac 50-60Hz	120V ac 60Hz 120V ac 50Hz	24V ac 50-60Hz
4-20mA Input	Selected Models	No	Optional	No	Optional	Optional	Optional	Optional	Optional
Auxiliary Swithes	No	1 Optional	1 Standard additional 2 or 4 switches optional	1 Standard additional 2 or 4 switches optional	1 Standard additional 2 or 4 switches optional	1 Standard additional 2 or 4 switches optional	1 Standard additional 2 or 4 switches optional	1 Standard additional 2 or 4 switches optional	1 Standard
Position Signal	No	No	Potentiometer optional	Potentiometer optional	Potentiometer optional	Potentiometer optional	Potentiometer optional	Potentiometer optional	No
90° Stroke	●	none	●	none	●	●	●	●	none
180° Stroke	none	●	●	none	●	●	●	●	none
360° Stroke	none	none	none	●	none	none	none	none	none
Linear Stroke	none	none	none	none	none	none	none	none	●
Torque	150-300lb-in	60lb-in	50lb-in	220lb-in	50lb-in	60-220lb-in	450lb-in	550-1300lb-in	none
NEMA Rating	NEMA 4	NEMA 1	NEMA 4 (Selected Models)	NEMA 4 (Selected Models)	NEMA 3 (Selected Models)	NEMA 4 (Selected Models)	NEMA 4 (Selected Models)	NEMA 4 (Selected Models)	NEMA 1
UL Liisted	●	●	●	●	●	●	none	●	●
CUL or CSA	●	●	●	●	●	●	none	●	●
CE	Selected Models	none	none	none	none	none	none	none	●

Sensors

Features	Plastic Industry	Industrial	Resistance Temperature Detectors	MgO Insulated	Thermowell Assemblies	Oxygen Sensors	Carbon Sensors
Input Types	Thermocouple RTD Type J, K, E, T PT100 (.00385) JIS (.00391)	Thermocouple Type J, K, E, T, R, S, B	RTD PT100 (.00385) JIS (.00391)	Thermocouple Type J, K, E, T, S	Thermocouple RTD Type J, K, E, T PT100 (.00385) JIS (.00391)	O2 Cell plus Thermocouple Type R, S, B Zirconia	O2 Cell plus Thermocouple Type K, R, S Zirconia
Sheath or Protection Tube	304 S.S.	Steel pipe, 304 S.S., 316 S.S., Inconel, Cast iron, Silicon carbide, Mulite, Alumina, Others	304 S.S., 316 S.S., Inconel	304 S.S., 316 S.S., Inconel	304 S.S., 316 S.S., C-1018 Steel, Brass, Others	Alumina	3/4" NPT Schedule RA 330
Mounting Fitting	Bayonet fitting, Compression fitting	Welding bushing, Flange, Sleeve, Double-ended bushing	Compression fitting double-ended bushing, Spring loaded double-ended bushing	Compression fitting double-ended bushing, Spring loaded double-ended bushing	Male NPT threads, Weld in, Flange	Sliding flange 1" NPT, Compression fitting	Sliding flange 1" NPT, Compression fitting
Insulation	Fiberglass	Ceramic	Teflon, Fiberglass	Magnesium oxide	Ceramic, Magnesium oxide, Teflon, Fiberglass	Alumina	Alumina
Transmitter Available	No	No	Yes	Yes	Yes	No	No
Termination	Stripped leads, Spade terminals, Plug, Jack, Plug and jack	Cast iron head, Aluminum head, Explosion proof head	Stripped leads, Spade terminals, Plug, Jack, Plug and jack Cast iron head, Aluminum head, Explosion proof head	Stripped leads, Spade terminals, Plug, Jack, Plug and jack Cast iron head, Aluminum head, Explosion proof head	Cast iron head, Aluminum head, Explosion proof head	Aluminum head	Aluminum head

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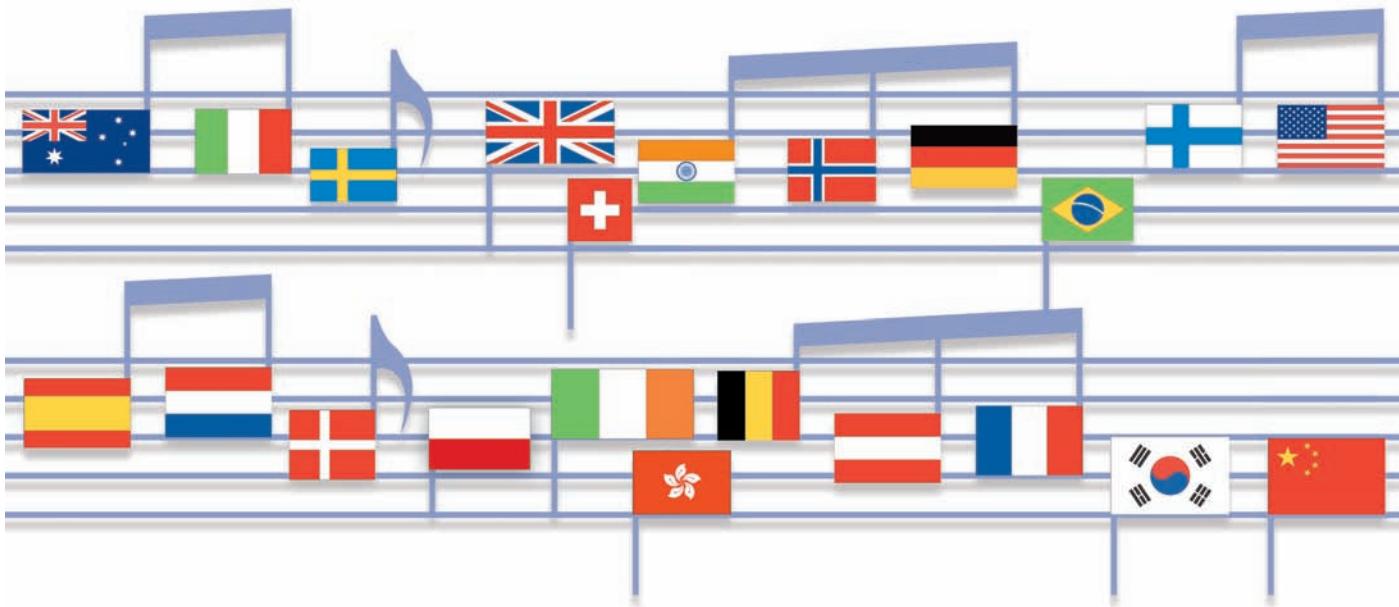
AUSTRALIA *Sydney*
Eurotherm Pty. Ltd.
T (+61 2) 9838 0099
F (+61 2) 9838 9288
E *info.au@eurotherm.com*

AUSTRIA *Vienna*
Eurotherm GmbH
T (+43 1) 7987601
F (+43 1) 7987605
E *info.at@eurotherm.com*

BELGIUM & LUXEMBOURG *Moha*
Eurotherm S.A/N.V.
T (+32) 85 274080
F (+32) 85 274081
E *info.be@eurotherm.com*

BRAZIL *Campinas-SP*
Eurotherm Ltda.
T (+5519) 3707 5333
F (+5519) 3707 5345
E *info.br@eurotherm.com*

CHINA
Eurotherm China
T (+86 21) 61451188
F (+86 21) 61452602
E *info.cn@eurotherm.com*
Beijing Office
T (+86 10) 63108914
F (+86 10) 63107291
E *info.cn@eurotherm.com*
Guangzhou Office
T (+86 20) 38106506
F (+86 20) 38106511
E *info.cn@eurotherm.com*

DENMARK *Copenhagen*
Eurotherm Danmark AS
T (+45 70) 234670
F (+45 70) 234660
E *info.dk@eurotherm.com*

FINLAND *Abo*
Eurotherm Finland
T (+358) 22506030
F (+358) 22503201
E *info.fi@eurotherm.com*

FRANCE *Lyon*
Eurotherm Automation SA
T (+33 478) 664500
F (+33 478) 352490
E info.*fr@eurotherm.com*

GERMANY *Limburg*
Eurotherm Deutschland GmbH
T (+49 6431) 2980
F (+49 6431) 298119
E *info.de@eurotherm.com*

HONG KONG
Eurotherm Hongkong
T (+85 2) 28733826
F (+85 2) 28700148
E *info.hk@eurotherm.com*

INDIA *Chennai*
Eurotherm India Limited
T (+91 44) 24961129
F (+91 44) 24961831
E *info.in@eurotherm.com*

IRELAND *Dublin*
Eurotherm Ireland Limited
T (+353 1) 4691800
F (+353 1) 4691300
E *info.ie@eurotherm.com*

ITALY *Como*
Eurotherm S.r.l
T (+39 031) 975111
F (+39 031) 977512
E *info.it@eurotherm.com*

KOREA *Seoul*
Eurotherm Korea Limited
T (+82 31) 2738507
F (+82 31) 2738508
E *info.kr@eurotherm.com*

NETHERLANDS *Alphen a/d Rijn*
Eurotherm B.V.
T (+31 172) 411752
F (+31 172) 417260
E *info.nl@eurotherm.com*

NORWAY *Oslo*
Eurotherm A/S
T (+47 67) 592170
F (+47 67) 118301
E *info.no@eurotherm.com*

POLAND *Katowice*
Invensys Eurotherm Sp z o.o.
T (+48 32) 2185100
F (+48 32) 2177171
E *info.pl@eurotherm.com*

SPAIN *Madrid*
Eurotherm España SA
T (+34 91) 6616001
F (+34 91) 6619093
E *info.es@eurotherm.com*

SWEDEN *Malmo*
Eurotherm AB
T (+46 40) 384500
F (+46 40) 384545
E *info.se@eurotherm.com*

SWITZERLAND *Wollerau*
Eurotherm Produkte (Schweiz) AG
T (+41 44) 7871040
F (+41 44) 7871044
E *info.ch@eurotherm.com*

UNITED KINGDOM *Worthing*
Eurotherm Limited
T (+44 1903) 268500
F (+44 1903) 265982
E *info.uk@eurotherm.com*
www.eurotherm.co.uk

U.S.A. *Leesburg VA*
Eurotherm Inc.
T (+1 703) 443 0000
F (+1 703) 669 1300
E *info.us@eurotherm.com*
www.eurotherm.com

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