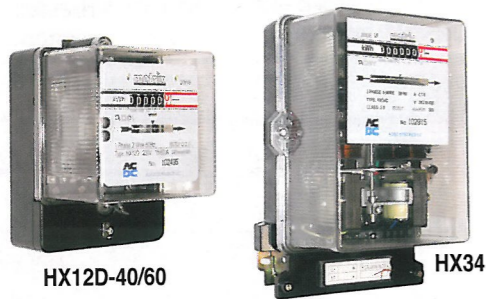


kWh METERS

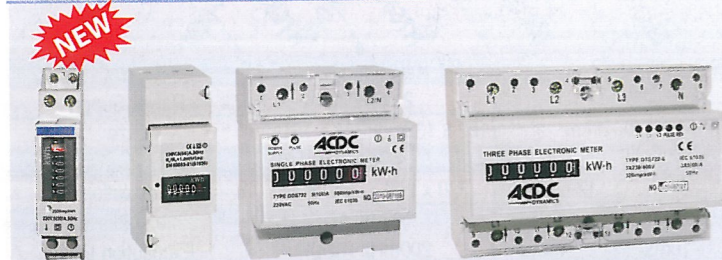


Rotating Disc kWh Meters 0142 Authorisation No. 0102402

1-Phase 230V	Range	3-Phase 380V+N	Range
HX12D-40	10-40A	HX34D-80	20-80A
HX12D-60	15-60A	HX34D-100	30-100A
HX12D-80	20-80A	HX34C	CT-5A

Size (mm): 160H x 122W x 126D
6 Digit register
Metal Base and Polycarbonate cover
Lower bearing is magnetic suspension type

Mechanical Counter kWh Meters



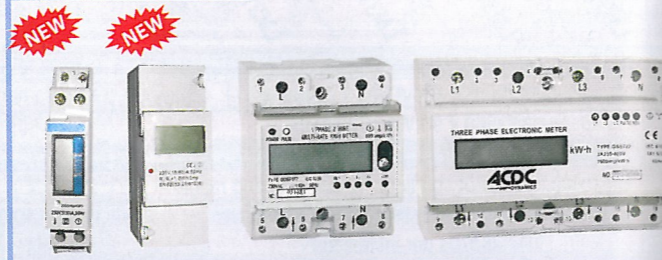
DDS223-30 DDS223-63 DDS722-100 DTS722-60/100

1-Phase 230V	Range	Size	Pulse/kWh
DDS223-30	5-30A	1m	2000
DDS223-63	5-63A	2m	2000
DDS722-100	5-100A	3m	800

3-Phase 400V+N	Range	Size	Pulse/kWh
DTS722-60	5-60A	6m	320
DTS722-100	5-100A	6m	160

1m=17.5mm Wide
• Pulsed output 3200 Imp/kWh • Class 1

Digital kWh Meters



DDSF223-30 DDSF223-63 DDSF722-60 DSS722-5/60/100

1-Phase 230V	Range	Size	Pulse/kWh
DDSF223-30	5-30A	1m	2000
DDSF223-63	5-63A	2m	2000
DDSF722-60	5-60A	3m	1600

3-Phase 400V + N	Range	Size	Pulse/kWh
DSS722-5	1.5-5A (CT)	6m	1600
DSS722-60	5-60A	6m	320
DSS722-100	5-100A	6m	160

PRE-PAYMENT kWh METERS

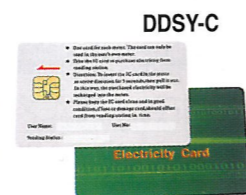
Pre-payment kWh Meters

Code	Description	Amps	Output Pulses/kWh
DDSY238-60	Single Phase	15-60A	1600
DTSY238-60	3-Phase 4 wire 400V+N	15-60A	200
DTSY238-80	3-Phase meter. 4wire 400V+N	20-80A	100

- Power failure memory
- Direction of power indication
- Anti-theft function
- Coded card for fraud protection
- Software requires Windows XP® or Windows 7®

Accessories

Code	Description
DDSY-C	Pre-payment Card
DDSY-P	Card readers. c/w program software



DDSY-P

POWER FACTOR METER

Digital Power Factor Meter

Code	Size	Operating Voltage	Accuracy	CT-Ratio	Range	Display
ECR-3-72	72 x 72	230VAC ±10%	1% ±1 digit	.../5A	0.00-0.99	4-digit 14.2mm high
ECR-3-96	96 x 96	230VAC ±10%	1% ±1 digit	.../5A	0.00-0.99	4-digit 14.2mm high

Non-flammable enclosure
Flush mounting with rear terminals



MODULAR ENERGY METER (kWh)

- DIN Rail Mount
- Operating Temp: -20 to 50°C



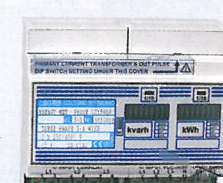
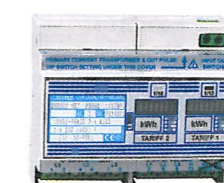
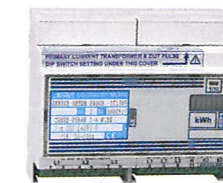
c/w tamper-proof terminal seal

c/w 80A CT



Code	ES-32L	ES-80L	CONTAX 2511	CONTAX 3221	CONTAX 6521
Supply Voltage Un	230VAC	230VAC	230VAC	230VAC	230VAC
Current, (I max)	5 (32)A	40 (80)A	5(25)A	5(32)A	10(63)A
Operating Current	0.02-32A	0.08-80A	0.02 to 25A	0.02 to 32A	0.04 to 65A
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Operating Voltage	230VAC	230VAC	195 to 253V	195 to 253V	195 to 253V
Power Consumption	<2VA	<2VA	0.5VA	0.5VA	0.5VA
Precision accuracy class	Class1	Class1	Class 1	Class 1	Class 1
Pulse transmission	1000Imp/ kWh	1000Imp/ kWh	Type SO	Type SO	Type SO
Recorded harmonics	-	-	Until 7kHz	Until 7kHz	Until 7kHz
Size: 1M = (17.5mm)	1m	1m	1m	2m	2m
Digits	6+1	6+1	5+1	5+1	5+1

kWh METERS



Code	1 x kWh 1C15WP	2 x kWh 1C15WP2	1C15WRP
W, Wh or VA, Vah or VAR, VARh or PF	3 Phase 400V + N kWh Meter C/T Ratio selectable by DIP Switch Selectable Primary CT Current: 5, 10, 15, 20, 25, 30, 40, 50, 60, 75, 80, 100, 120, 150, 200, 250, 300, 400, 500, 600, 750, 800, 1000, 1200, 1250, 1500, 1600, 2000, 2500, 3000, 4000, 5000, 6000		kWh and kVARh 3 Phase 400V + N Indication (Active and Reactive Power) • 7 Digit Electro-mechanical display • Accuracy: 2% (kWh) 3% (kVARh)
W, Wh, PF or VA, Vah, PF or VAR, VARh, PF	7 Digit Electro-mechanical display • Accuracy: 2% • Pulsed Output		
V, A, F	kWh Indicator		

kWh Indicator

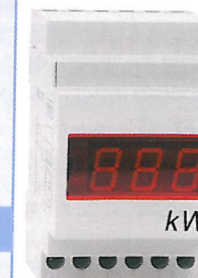


PM-KW1

- 0-99kW Indicator
- c/w 16A Plug & Socket
- Ideal to check your kW usage from generator etc.

Digital Power kWh Meter

Code	RIMD.W15
Supply Voltage Un	230VAC
Current, (I max)	CT.../5A
Operating Current	60, 100, 150, 250, 400, 600, 1000/5A
Frequency	50/60Hz
Operating Voltage	195 to 253V
Power Consumption	4VA
Size: 1M = (17.5mm)	2m
Digits	3



kWh METERS

Zaptronix kWh Meters

Features:

- Billing meter for active (kWh) import & export energy
- Low cost, no maintenance required
- Easy Meter Communication via Infrared flag port
- Engineering software included/ available for download at no charge
- 3 Phase, CT and VT connected Meter
- Large, Multi function LC -Display

Code	Type	Mounting	System	V Range	Amps	Accuracy
------	------	----------	--------	---------	------	----------

Single Phase High Load (100A) Direct Connect, Class 1 Accuracy Billing Meter

ZAP1CS	BS	DIN Rail	1ph, 2-wire, 230V	184-275V	100A	10-100, Class 1
ZAP1CS-R	BS	Din Rail	1ph, 2-wire, 230V with RS485 Serial Port	184-275V	100A	10-100, Class 1

• Remote automated meter reading ready (ZAP1CS-R)

Three Phase Active Energy Meter (CT-Connected)

ZAP03DS*	DIN	DIN Rail	3Ph, 4 wire, 230/400	184-275V (L-N)	5A	1-5/6, Class 1
ZAP03BS*	BS	Base Mount	3Ph, 4 wire, 230/400	184-275V (L-N)	5A	1-5/6, Class 1

*Add 110V for 3 phase system 3PH, 3 Wire, 88-132V (P-P)

kWh Meter + Maximum Demand

ZAP03BE-MD*	BS	Base Mount	3ph, 4-wire, 230/400V	184-275V (L-N)	5A	1-5/6, Class 1
-------------	----	------------	-----------------------	----------------	----	----------------

*Add 110V for 3 phase system 3PH, 3 Wire, 88-132V (P-P)

Features:

- | | | |
|---|-------------------------|------------------------|
| Measurement parameters | Energy & Maximum Demand | ZAP03BE-MD only |
| • Watt, VAR, VA (Import/Export & per phase) | • kWh, kVAh, kVAh | • Data & Event logging |
| • Volt, Amp, Power Factor, Frequency | • kW and kVA | • RS232 |
| | • Block & Moving window | • Pulse output |
| | | • Time of use |

kWh Meter + Maximum Demand + Load Management (Load Shedding)

ZAP03LM	BS	Base Mount	3ph, 4-wire, 230/400V (L-N)	5A	1-5/6, Class 1
---------	----	------------	-----------------------------	----	----------------

Features:

As per ZAP03BE-MD plus: I/O; 2 x I/P MD synch, E01, water or gas pulse (programmable); 4 x O/P load shedding, rated for 20mA @ 30VDC.

Additional Registers:

- | | | |
|-------------------------|-------------------|----------------------------|
| • Target demand | • Interlock timer | • Load priority setting |
| • Percentage Hysteresis | • Override | • Load switching frequency |

PI-Range Profiling - Energy Demand Logging Multi-tariff Meter - IEC 62053-21

ZAP3AM5/P	-	Base Mount	3Ph, 4 wire, 230/400	230V/400V	5A	1-5/6, Class 1
ZAP3AM100	-	Base Mount	3Ph, 4 wire, 230/400	230V/400V	100A	10-100, Class 1
ZAP3AM160	-	Base Mount	3Ph, 4 wire, 230/400	230V/400V	160A	10-160, Class 1

Features:

- Billing meter for active (Wh) and reactive (VARh) energy demand (VA)
- Flexible multi-tariff (TOU) billing meter with auto registration
- Profile logging of total energy and average energy demand
- Remote automated meter reading ready with ZAP-EDAT

Lambda-Range Logging - Energy Demand Logging Multi-tariff Meter - IEC 62053-21

ZAP3AM5 230V	-	Base Mount	3Ph, 4 wire, 230/400	230V/400V	5A	1-5/6, Class 1
ZAP3AM5 110V	-	Base Mount	3Ph, 3 wire, 110V (P-P)	110V-480V	5A	1-5/6, Class 1

Features:

- 4 Quadrant, billing meter for active (Wh) and reactive (VARh) energy demand (VA)
- Data storage of last 16 months energy and maximum demand for 4 tariffs
- Load profile with integration period 1, 5, 30, 60min
- Event registration of power outages, per phase voltage loss, under/ over voltage
- Full multi-tariff (TOU) billing meter with auto registration
- Extensive 6 channel logging from 32 readings and event recording
- Remote automated meter data acquisition via IP or GSM-GPRS/SMS

Accessories

- ZAP-EDAT**
- EDAT+g for GSM-GPRS AMR at multi meter (up to 128) Installations ZAP3AM, ZAP1CS, ZAP03LM
 - EDAT+e for Internet AMR at multi meter (up to 128) installations ZAP1CS, ZAP3AM
- ZAP-SOFT**
- Remit! Lite Programming Software CD. - download for free. Can be downloaded from www.zaptronix.co.za/downloads, This is for ZAP03DS, ZAP03BE, ZAP03BS
- ZAP-OPTO**
- Optocoupler RS232 for BS type housing
- ZAP-OPTO/USB**
- Optocoupler USB for BS type housing
- *ZAP-PRO**
- Factory programming for ZAP kWh meters (free service)
- ZAP-MPS**
- (MPS) Meter reading & configuration software. Free download from www.zaptronix.co.za This is for ZAP03AM, ZAP1CS



NEW



ZAP03DS



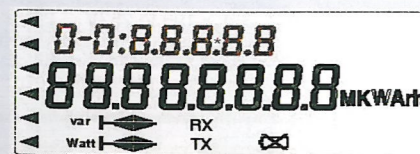
ZAP03BS / ZAP03BE-MD / ZAP03LM



ZAP3AM



ZAP-OPTO



*Note: All 3-phase meters must be programmed before use

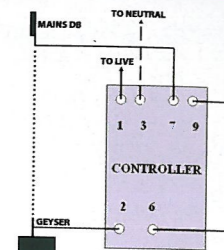
ENERGY SAVING CONTROLLER

Geysers Controller with Embedded Microprocessor

Geysers are the largest user of electricity in most households using up to 60%. GC-100 geysers controller will save 40%-60% of geysers usage.

Code	GC-100	Technical Info
------	--------	----------------

- | | | |
|-----------------|--|--|
| Features | <ul style="list-style-type: none"> • Immediate saving from first monthly bill. • Ensures geyser is off during peak periods • Back-up battery to retain memory • Override switch geyser off and on • 8 Pre-programmable time periods | <ul style="list-style-type: none"> • Input Voltage: 220/ 240VAC 50Hz • Mounting: Din Rail • Memory: 120 day battery • Current Sensor: 20Amps • Relay output 20A |
|-----------------|--|--|



NEW



NEW



MS15



ES100



ES300

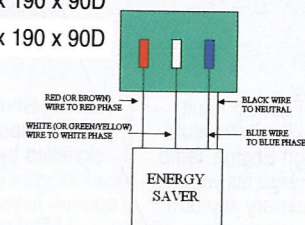
Passive Power Factor Correction

Power Factor Correction (PFC) is a technique of counteracting the undesirable effects of electric loads that create a power factor less than one. This range of passive (PFC) units can save 10%-20% of energy consumption.

Code	Description	Dimensions	Technical Info
------	-------------	------------	----------------

- | | | | |
|---------------|--|-----------------|---------------------------------------|
| ES15 | Single-Phase (1000kwh) 16A SA plug-in type | 95 x 56 x 56 | Single-Phase voltage: 220-240VAC 50Hz |
| ES100 | Single Phase (2000kwh) | 125 x 85 x 60 | Three-Phase voltage: 380-420VAC |
| ES300 | Three-Phase (6200kwh) | 190 x 140 x 70D | Operating temperature: 60°C (max.) |
| ES3001 | Three-Phase (10 000kwh) | 240 x 190 x 90D | |
| ES3002 | Three-Phase (15 000kwh) | 240 x 190 x 90D | |

- Features**
- Prolongs life of appliances
 - Stabilise electrical current
 - Available in single and three-phase
 - Suitable for home, shops, offices, restaurants, etc.



The three-phase energy saver can be wired either at the DB or the incoming Eskom box.
Note: As long as the black is connected to neutral, it does not matter which of the other wires connect to which phase.

NEW



Combination Geysers/ Power Factor Protection & Surge Protection

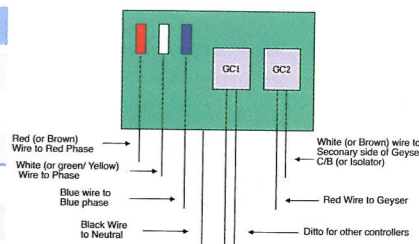
Combination units consist of both geysers controller and passive power factor (energy saving). These are parallel connection types, for single and three phase units, some available fitted with surge protection.

Code	Description	Dimensions
------	-------------	------------

- | | | |
|---------------------|--|-------------------|
| ES100-GC | Single phase power + Geysers controller | 170 x 200 x 85mm |
| ES100-GC-SS | Single phase power + Geysers + Surge protection | 170 x 200 x 85mm |
| ES100-2GC-SS | Single phase power + 2 x Geysers + Surge protection | 170 x 200 x 85mm |
| ES300-GC | Three phase power + Geysers controller | 210 x 215 x 100mm |
| ES300-GC-SS | Three phase power + Geysers + Surge protection (3ph+N) | 210 x 215 x 100mm |
| ES300-2GC-SS | Three phase power + 2 x Geysers + Surge protection (3ph+N) | 210 x 215 x 100mm |

Technical Info

Single-Phase voltage: 220-240VAC 50Hz
Three-Phase voltage: 380-420VAC
Surge Protection: 65kA



WIRELESS POWER DISPLAY UNIT

Monitor your own electricity and save power and money!

NEW



With the standard electricity In-Home-Display unit, you can clip the current sensor around the electricity meter's live feed supply such that it measures the total electrical power entering your home or office. Power consumption will be recorded and transmitted to the display unit wirelessly.

The following features are provided also:

- Dual battery system is used to extend operation period and to prevent data lost during battery changing
- Indicate existing cost alert level by Tri-color LED
- Display temperature and current time
- Clock alarm and cost alert level setting
- Monitor up to 8 sensors
- Support >30m RF transmission

(1-Phase) Monitoring System

Code	Kit Description
AML-1208	<ul style="list-style-type: none"> • 1 x Current sensor • 1 x Sender unit • 1 x Display unit • 4 x Batteries • 1 x User Manual • 1 x Desk Stand

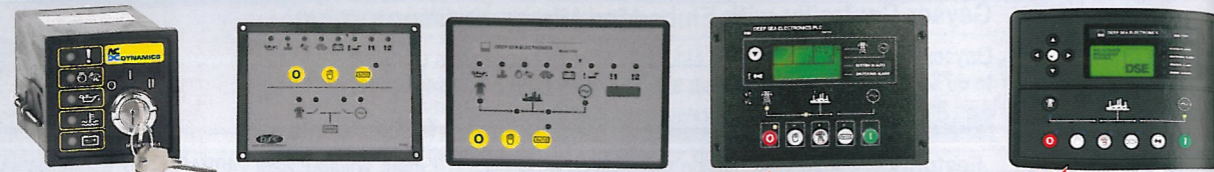
(3 Phase) Monitoring System

*Add 2 x Current Sensor (AML-CS) + AML-1208

Code	Description
AML-CS	Current Sensor

This product is a semi-portable communication product used in the household market. You can view the instant electricity consumption, cost-up-to-current-hour and records (eg. hourly, daily, weekly, and monthly) as well as estimated CO₂ emission produced. Transmitting frequency 433MHz with proprietary communication coding for different market segments.

GENSET CONTROLLERS



Code	DSE501K-1	704	4120	NEW DSE720	NEW DSE7320
Application	Manual Start/Stop	AMF	AMF	AMF	AMF
Relay outputs	Fuel on, Start solenoid Common Alarm Low oil Pressure	Fuel on, Crank 2 x Configurable	Fuel, Crank, Mains & Alt Contactor 2 x Configurable	Fuel, Crank, Mains & Alt Contactor 2 x Configurable	Standard Gen Controller Outputs + 4 x fully Configurable
Digital inputs	High Engine Temp. Auxiliary Shutdown Charge Fail	Low oil Pressure High Engine Temp. Auxiliary Shutdown +2 Configurable	Low oil Pressure High Engine Temp. Auxiliary Shutdown +2 Configurable	Low Oil Pressure, High Engine Temp, Emergency Stop, Remote Start (3 attempt) or Mains Stimulation, Charge Fail (D+) 2 Configurable 2 Inputs. Coolant temp. & oil pressure with the option of configuring these as digital inputs	Standard Gen Controller Inputs + 8 fully Configurable
Analog inputs	None	None	None	None	4 including pressure, temperature and fuel volume
Config. Method	None	Via front face	Via front face	Front face or PC via interface type P810	Limited front face, Fully via USB programming port
Event logging	None	None	None	None	250 most recent events
*Comms. Port RS232 or RS485	None	None	None	None	Type of events recorded can be selected. Fitted with both RS232 and RS485, but only one can be used at a time
Operator Display	First Up Fault *Low oil Pressure *High Engine Temp. *Charge fail warning *Auxiliary shutdown	Warning/Shutdown & active inputs are signalled by LEDs, load transfer (contactor control) have a mimic LED display	Hour counter + warning/ shutdown & active inputs are signalled by LED's Load transfer, (contactor control) have a mimic LED display	Backlit LCD scrolling Mains - Alternator voltage, Load Current, Oil Pressure, Engine Temperature, DC Volts, Hours Run, RPM and Hz, Alternator or Mains info, Common Alarm and Scroll Button. Mimic LEDs, Mode Selection	Multi Menu Access via front panel: Status, Engine, Generator, Mains, Alarms, Event log, Serial Port
Other Features					• Modbus RTU • IP65 gasket • USB connectivity & SCADA • Engine exercise Scheduler • Dummy load control plus load shedding up to 5 stages
Panel Cutout	68 x 68	149 x 109	154 x 98	182 x 137	220 x 160
CANbus	None	None	None	None	CANbus

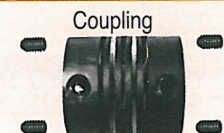
All controllers are suitable for 12 or 24V DC systems.
*For remote real time diagnostics and telemetry,
including SMS communications. PSTN or GSM modem not included.



Code P810 INTERFACE
USB Interface Module c/w cables and
software for programming Model 720

Autonics

ROTARY ENCODER



40mm Ø, Shaft type encoder
(Incremental Type)



NEW

50mm Ø, Shaft type encoder
(Incremental Type)



Code	E4DC-6/6
Code	E5DC-8/8
Code	E5DC-10/10

Type	Code	Supply Volts	Code	Supply Volts
Totem Pole Output (HTL)	E40S6*-3-1	12-24VDC	E50S8*-3-1	12-24VDC
NPN N/O Output (TTL)	E40S6*-3-2	12-24VDC	E50S8*-3-2	12-24VDC
Line Driver Output (TTL)	E40S6*-6-L	5VDC	E50S8*-6-L	5VDC
Pulses/Revolution	*Add to code: *100, 360, 500, 1000, 1024		*Add to code: *50, 100, 200, 250, 360, 1000, 1024, 1800, 2500, 3600	

Specifications

Shaft	6mm	8mm
Totem Pole Output	Low ϕ Load current: Max. 30mA, Residual voltage: Max. 0.4V High ϕ Load current: Max. 10mA, Output Voltage: Min. 1.5V	
NPN Open Output	Load Voltage: Max. 30V, Load current: Max. 30mA, Residual Voltage: Max. 0.4V	
Line Driver Output	Low ϕ Load current: Max. 20mA, Residual Voltage: Max. 0.5V High ϕ Load current: Max. -20mA, Output Voltage: Min. 2.5V	
Max. Response Freq.	180kHz	

GENSET CONTROLLERS 8-32 VDC

NEW RANGE



Model	EAOM-19	EAOM-09	EAOM-09F	EAOM-210FLS	EAOM-2FDS	MESSENGER with GSM
Size (mm)	72 x 72	96 x 96	144 x 204 x 37	144 x 204 x 37	144 x 204 x 37	144 x 204 x 37
Automatic engine start/stop and load transfer	Y	Y	Y	Y	Y	Y
Manual, Automatic and Test Mode control	Y	Y	Y	Y	Y	Y
User configurable inputs	2	2	2	6	6	6
User configurable outputs	N	1	1	4	4	4
Optional expansion board with user configurable 8 I/O EXOM-210.FL.EXR	N	N	N	Y	N	N
Speed sensing from alternator voltage	Y	Y	Y	Y	Y	Y
Speed sensing from magnetic pickup	N	Y	Y	Y	Y	Y
3 resistive sender inputs (oil, fuel, temp.)	N	N	N	Y	Y	Y
Load current measurement	N	N	N	Y	Y	Y
Generator Volts measurement	L1/N	L1/N	L1/N	L-L-N	L-L-N	L-L-N
Mains Volts measurement	L-L-N	L-L-N	L-L-N	L-L-N	L-L-N	L-L-N
Earth current measurement	N	N	N	Y	Y	Y
Exercise at programmed time intervals	N	N	N	Y	Y	Y
RS-232, Modbus ASCII Serial communication	N	Y	Y	Y	Y	Y
Available for Remote using by PC software	N	Y	Y	Y	Y	Y
Standard modem communication	N	Y	Y	Y	Y	Y
Generator Power measuring by kVA, kW, kVAh, kWh, kVAR, kWh	N	N	N	Y	Y	Y
Event logs	N	N	N	Last 50 events	Last 32 events	Last 32 events
Display	LED	LED	LED	LCD	LED	LCD
Mains contactor outputs	Y	Y	Y	Y	Y	Y
Generator contactor outputs	Y	Y	Y	Y	Y	Y
Programmable weekly working permit calendar	N	N	N	Y	Y	Y
Maintenance warning (working hour or elapsed month)	N	N	N	Y	Y	Y
Fully Programmable	Y	Y	Y	Y	Y	Y
Simple push button controlled operation	Y	Y	Y	Y	Y	Y

Automatic Transfer Switch **Manual Key Start Controller**



Model	EAOM-36	EAOM-7	EAOM-71	ATS-10	EAOM-3
Automatic engine Start/Stop	Y	Y	Y		
Automatic Shutdown on fault condition	Y	Y	Y		
Alternator voltage and frequency measurement	Frequency Measurement	Generator Voltage/ Power Measurement	Generator Voltage/ Power Measurement		
Load current measurement	N	3 Phase	1 Phase		
Remote Start/Stop input	Y	Y	Y		
3 resistive sender units	N	N	Y		
User configurable inputs	2	3	3		
User configurable outputs	1	2	2		
Speed sensing off Alternator	Y	Y	Y		
Speed sensing off magnetic Pickup	N	Y	Y		
RS-232 Serial Comms	Y	Y	Y		
Remote use from PC	Y	Y	Y		
Standard Modem Comms	N	Y	Y		
Display	LED	LED	LED		
Size (mm)	72 x 72	96 x 96	96 x 96	Size: 72 x 72mm	Size: 72 x 72mm

Controls	EAOM-3
Generator remote start	Fuel and stop solenoid
Load transfer to mains	Starter motor
Mains and generator contactor	Manual generator start/ stop
	Preheat (Glow Plug)
Monitors	Monitors
3 Phase mains voltage	Engine running time
Alternator voltage	Error Indication
Program parameters	Fail Monitoring
	Low oil pressure
	High temperature
	Over speed failure
	Charging fail

INSTRUMENTS

INSTRUMENTS

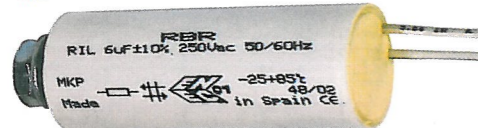
MOTOR STARTING & LIGHTING CAPACITORS

Specifications

- Dielectric material: Metalised polypropylene, low losses non inductive winding.
- Case and cover: self-extinguishing thermoplastic resin.
- Lead: 2 x 0.75mm². PVC 90°C.
- Reference standards: CEI 33-3; VDE 560-8; ASE 1029; VDE EN60252.

- Climatic category: 25/85/21.
- Standard tolerance: ±5%; -2+8%.
- Rated frequency: 50 – 60Hz.
- Voltage: 1.1 Un at 50Hz.
- Dissipation factor at 20°C, V = Un, 50Hz: ≤15:10-4

Lighting Capacitors – 250VAC



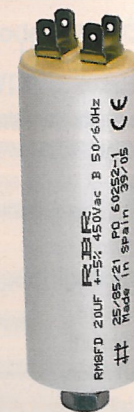
Supplied with 150mm flying leads and M8 mounting stud



Code	Capacitance (µF)	Size Ø x H mm	Code	Capacitance (µF)	Size Ø x H mm
CA-2MF	2	25 x 53	CA-13MF	13	35 x 73
CA-2.5MF	2.5	25 x 53	CA-13.5MF	13.5	35 x 73
CA-3MF	3	25 x 53	CA-14MF	14	35 x 73
CA-3.5MF	3.5	25 x 53	CA-15MF	15	35 x 73
CA-4MF	4	25 x 53	CA-16MF	16	35 x 73
CA-4.5MF	4.5	25 x 53	CA-17.5MF	17.5	35 x 73
CA-5MF	5	25 x 69	CA-18MF	18	35 x 73
CA-6MF	6	25 x 69	CA-20MF	20	35 x 96
CA-6.3MF	6.3	25 x 69	CA-25MF	25	35 x 96
CA-7MF	7	25 x 69	CA-30MF	30	40 x 95
CA-7.5MF	7.5	30 x 73	CA-32MF	32	40 x 95
CA-8MF	8	30 x 73	CA-35MF	35	40 x 95
CA-9MF	9	30 x 73	CA-40MF	40	50 x 100
CA-10MF	10	30 x 73	CA-45MF	45	50 x 100
CA-11MF	11	30 x 73	CA-50MF	50	50 x 100
CA-12MF	12	35 x 73	CA-55MF	55	50 x 100
			CA-60MF	60	50 x 100

Motor Run Capacitors – 480VAC

Code	Capacitance (µF)	Size Ø x H mm
CAR-1.5MF	1.5	25 x 55
CAR-2MF	2	25 x 55
CAR-3MF	3	30 x 63
CAR-4MF	4	32 x 73
CAR-5MF	5	32 x 73
CAR-6MF	6	32 x 73
CAR-8MF	8	32 x 73
CAR-10MF	10	32 x 73
CAR-12MF	12	35 x 75
CAR-14MF	14	35 x 75
CAR-16MF	16	35 x 75
CAR-18MF	18	35 x 98
CAR-20MF	20	35 x 98
CAR-25MF	25	35 x 98
CAR-30MF	30	40 x 94
CAR-40MF	40	50 x 100
CAR-50MF	50	50 x 100



With mounting stud M8

Motor Start Capacitors – 275VAC

Code	Capacitance (µF)	Size Ø x H mm
CAS-30MF	30 - 36	50 x 85
CAS-50MF	53 - 64	50 x 85
CAS-100MF	88 - 106	50 x 85
CAS-125MF	124 - 149	50 x 85
CAS-130MF	130 - 156	50 x 85
CAS-160MF	145 - 174	50 x 85
CAS-300MF	270 - 324	50 x 110
CAS-328MF	328 - 454	60 x 110



WARNING: all PFC systems require protection against harmonics, generated by such devices as variable speed drives and UPS's, and transient surges including lightning.

POWER FACTOR CORRECTION CAPACITORS

Technical Characteristics

- Capacitance tolerance: -5 +10%
- Frequency: 50Hz (60Hz on request)
- Temperature Range: -40°C + 55°C
- Dielectric Losses: ≤ 0.5 W/kVAr
- Maximum over voltage: 1.11 x Un
- Maximum over current: 1.5 x In
- Fuse ratings to be 1.5 to 1.8 times the nominal capacitor current

- Maximum THD in Voltage: 2%
- Maximum THD in Current: 25%
- Discharge Resistance: Incorporated
- Dielectric: Metalized polypropylene film
- Voltage test between terminals: 2.15 x Un 2sec
- Voltage test terminals to case: 3kV for 10 sec AC
- Standard EN60831-1/2

- Ideal for use with harmonic filters
- Terminals – clamp type
- Mounting via stud
- Overpressure disconnection
- Discharge resistors fitted
- Manufactured to EN60831-1/2



Cylindrical 3 phase power factor capacitors

Rated Voltage	kVAr at		Current per Phase	Wire Size	Ø x H mm	Code
	440V	400V				
440V	1	0.8	1.3A	2.5mm ²	70 x 215	C440-010
440V	1.5	1.2	1.9A	2.5mm ²	70 x 215	C440-015
440V	2	1.5	2.5A	2.5mm ²	70 x 215	C440-020
440V	2.5	2	3.2A	2.5mm ²	70 x 215	C440-025
440V	3	2.5	3.8A	2.5mm ²	70 x 215	C440-030
440V	4	3	5.0A	2.5mm ²	70 x 215	C440-040
440V	5	4	6.3A	2.5mm ²	70 x 215	C440-050
440V	7.5	6	9.7A	6mm ²	85 x 215	C440-075
440V	10	8.5	13A	6mm ²	100 x 215	C440-100
440V	12.5	10.5	17A	6mm ²	100 x 215	C440-125
440V	15	13	20A	10mm ²	100 x 300	C440-150
440V	20	17	26A	25mm ²	120 x 300	C440-200
440V	25	22	33A	25mm ²	120 x 300	C440-250
440V	30	26	39A	50mm ²	136 x 300	C440-300
440V	35	29	46A	50mm ²	136 x 300	C440-350
440V	40	36	58A	50mm ²	136 x 300	C440-400
440V	50	45	66A	50mm ²	136 x 300	C440-500

Rated Voltage	kVAr at		Current A	Wire Size	Ø x H mm	Code
	550V	400V				
550V	5	2.64	3.73A	4mm ²	70 x 215	D2800
550V	7.5	3.97	5.59A	4mm ²	85 x 215	C550-75
550V	10	5.29	7.46A	4mm ²	85 x 215	C550-100
550V	12.5	6.61	9.32A	4mm ²	100 x 215	C550-125
550V	15	7.93	11.19A	6mm ²	100 x 215	C550-150
550V	20	10.58	14.91A	6mm ²	100 x 300	C550-200
550V	25	13.22	18.64A	10mm ²	120 x 300	C550-250
550V	30	15.87	22.37A	10mm ²	120 x 300	C550-300
550V	40	21.15	29.83A	16mm ²	136 x 300	C550-400
550V	50	26.44	37.28A	25mm ²	136 x 300	C550-500

3 Phase Capacitors – Steel enclosed type

Rated Voltage	kVAr at		Current per Phase	Wire Size	Dimensions H x A x P(mm)	Code
	440V	400V				
440V	5	4	6.5A	2.5mm ²	300 x 115 x 115	R0440-050
440V	7.5	6	9.7A	4mm ²	300 x 115 x 115	R0440-075
440V	10	8.5	13A	4mm ²	300 x 115 x 115	R0440-100
440V	12.5	10.5	16A	6mm ²	300 x 115 x 115	R0440-125
440V	15	13	20A	10mm ²	300 x 115 x 115	R0440-150
440V	20	17	26A	10mm ²	425 x 165 x 150	R0440-200
440V	25	22	33A	10mm ²	425 x 165 x 150	R0440-250
440V	30	26	40A	16mm ²	425 x 165 x 150	R0440-300
440V	35	29	46A	16mm ²	425 x 165 x 150	R0440-350
440V	40	35	52A	25mm ²	425 x 165 x 150	R0440-400
440V	45	38	58A	25mm ²	425 x 165 x 150	R0440-450
440V	50	44	66A	50mm ²	425 x 165 x 150	R0440-500
440V	60	52	79A	70mm ²	425 x 320 x 150	R0440-600
440V	70	60	92A	70mm ²	425 x 320 x 150	R0440-700
440V	80	70	105A	95mm ²	425 x 320 x 150	R0440-800

- Ideal for use with harmonic filters
- Terminals – stud type
- Discharge resistors fitted

Manufactured to EN60831-1/2



Automatic PFC Panels – 400V

Size	kVAr	Steps	Code
800 x 600 x 400	60	20 + 20 + 20	VM-60
800 x 600 x 400	70	20 + 20 + 30	VM-70
800 x 800 x 400	90	10 + 20 + 30 + 30	VM-90
1115 x 800 x 400	100	20 + 20 + 30 + 30	VM-100
1115 x 800 x 400	120	30 + 30 + 30 + 30	VM-120
1575 x 600 x 400	150	30 + 30 + 30 + 60	VM-150
1575 x 600 x 400	180	30 + 30 + 60 + 60	VM-180
1838 x 600 x 400	210	30 + 60 + 60 + 60	VM-210

Other standard panels available: 240, 270, 300, 330, 360, 420, 480, 540, 600 and 660kVAr. Standard panels include incoming isolator, controller, protection fuses, contactors and capacitor banks.

kVAr Selection: See AC/DC Website. Energy audit service available



VM-100

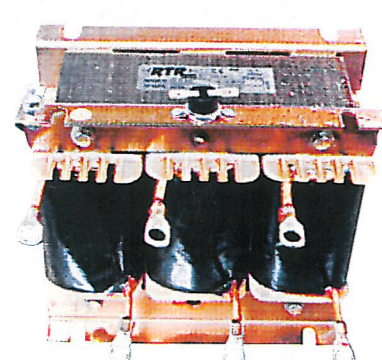
POWER FACTOR CONTROLLERS

NEW RANGE



Code	RG-8BS	RG3-12CS	ED8-96	RDM6	RDM12
Capacitor steps	8	12	8	6	12
Alarm output	✓	✓	1	1	1
Voltage measurement & supply	10-500 & 230±10%	10-300 & 230±10%	230/400V	380/415V	380/415V
Frequency	45/65Hz	50/60Hz	45/65Hz	50/60Hz	50/60Hz
Display type	LED	LED	LED	LCD	LCD
Size	96 x 96	144 x 144	96 x 96	96 x 96	144 x 144
External C.T.	x/5A	x/5A	x/5A	x/5A	x/5A
Programming	Auto/Man	Auto/Man	Man	Auto/Man	Auto/Man
Required COSφ	Programmable	Programmable	Programmable	Programmable	Programmable
Displays					
RMS voltage & current	✓	✓	✓	✓	✓
COS φ	✓	✓	✓	✓	✓
Output relay step	LED	LED	LED	LED	LED
Alarm displays					
High/low voltage	High Only	High Only		✓	✓
High/low current	-	-		✓	✓
Under/over compensation	✓	✓		✓	✓
Over voltage/current	Voltage Only	Voltage Only	✓		✓
Under compensation	✓	✓	✓	✓	✓
Current & voltage distortion	✓	✓	✓	✓	✓
Alarm memory	✓	✓	-	✓	✓
Temperature	✓	✓		✓	✓
Dual Target Cosφ	✓	✓		✓	✓
Energy Ratio Alarm	✓	✓		✓	✓
Harmonic Measurement & Protection	✓	✓		✓	✓
RS-485 Communication	✓	✓		✓	✓
Compensation Individual phases, separately	-	✓ (3 CTs)			

THREE PHASE HARMONIC FILTERS

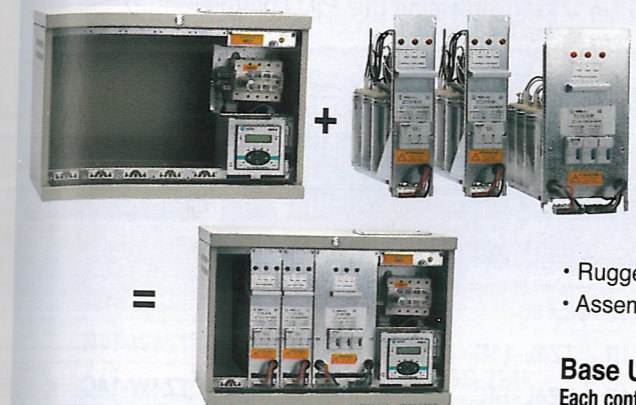


Power KVAR	Code	Power KVAR	Code
2.5	RTF-2.5	35	RTF-35
5	RTF-5	40	RTF-40
7.5	RTF-7.5	45	RTF-45
10	RTF-10	50	RTF-50
12.5	RTF-12.5	60	RTF-60
15	RTF-15	70	RTF-70
20	RTF-20	80	RTF-80
25	RTF-25	90	RTF-90
30	RTF-30	100	RTF-100

Harmonic Filters are designed to eliminate the 5th (250Hz) harmonic & higher, which can cause damage to three phase capacitors used for power factor correction.

Standards: IEC-289; IEC-076
 Tolerance "L": 3%
 Thermostat Protection: 90°C
 Heat Insulation Class: Class F (155°C)
 Insulation Voltage: 4kV
 Maximum Overload: 1.17 x In
 Maximum THD in current: 25%
 Voltage: 440V, 50Hz,
 Resonance Frequency: 189Hz

MODULAR POWER FACTOR CORRECTION SYSTEM



This compact modular system is both rugged and highly efficient. By ordering a base unit, the steps required plus an external CT, a complete automatic PFC system can be assembled in minutes for fast installation. The components can be stocked by PFC specialists and electrical wholesalers for immediate supply from stock. There is no need for custom engineering or workshop assembly.

- Simple ordering, assembly and installation for end users and contractors.
- A wide range of systems can be assembled from very few parts.
- Rugged 440V rated capacitors offer long life.
- Assembly is simply slide-in, plug-in and go!

Base Units IP31

Each contains incoming isolator, control fuses, controller plus terminals for external alarm and CT

Code	Max. kVAR	No. of Modules	Mounting	Size H x W x D	Max. Steps
LND-EV	25	3	Wall	380 x 425 x 360	4 Steps
LND1	62.5	5	Wall	390 x 565 x 360	6 Steps
LND2	137.5	11	Wall	720 x 565 x 360	6 Steps
LND3	200	16	Floor	1150 x 565 x 360	6 Steps

Capacitor Modules - 440V

Single Step - for LND1, 2 and 3 Base Units. Each complete with capacitors, contactor, fuses, neon fuse indicators and plug-in connections

Code	kVAR 400V	*kVAR 440V	Modular Width
JOL-025	2.5	2.1	1
JOL-05	5	4.1	1
JOL-10	10	8.2	1
JOL-12.5	12.5	10.3	1
JOL-15	15	12.3	2
JOL-20	20	16.4	2
JOL-25	25	20.5	2

3-Step Modules for LND-EV only

One module completes the system with LND-EV

Code	kVAR 400V	*kVAR 440V	Steps	*Modular Width
JOLEV-17.5	17.5	14.4	2.5+5+10	3
JOLEV-20	20	16.4	5+5+10	3
JOLEV-25	25	20.5	5+10+10	3

*Effective value at 400V

Recommended Combinations - Many other kVAR combinations can be created to suit application requirements

Nominal kVAR 400V	Max kVAR 400V	Max kVAR 440V	Steps	Base Unit Required	Modules Required	Free Modules
20	20.5	25	5+10+10	LND-EV	JOLEV-25 x 1	0
40	41	50	10+20+20	LND1	JOL-10 x 1 + JOL-20 x 2	0
50	51.25	62.5	12.5+25+25	LND1	JOL-12.5 x 1 + JOL-25 x 2	0
60	57.4	70	20+25+25	LND2	JOL-20 x 1 + JOL-25 x 2	5
75	73.8	90	15+25+25+25	LND2	JOL-15 x 1 + JOL-25 x 3	3
80	82	100	25+25+25+25	LND2	JOL-25 x 4	3
100	102.5	125	25+25+25+50	LND2	JOL-25 x 5	1
125	123	150	25+25+50+50	LND3	JOL-25 x 6	4
150	143.5	175	25+50+50+50	LND3	JOL-25 x 7	2
165	164	200	25+25+50+50+50	LND3	JOL-25 x 8	0

For external CTs, see page 167. For harmonic filters, see page 188.

Specifications

- Supply & control voltage Vn, 400V
- Capacitor rated voltage, 440V
- Maximum over voltage during a 24hr period
- Ambient -15 to +35°C
- Operating temperature
- Life expectation is 30 000hrs x (25 ÷ D)
- Standards: IEC 60439-1, IEC 60831-1
- For 5mins 528V
- For 1min 570V
- Maximum over current 1.3 x In
- Maximum current distortion (TDHI)
- - For 8hrs 484V
- - For 30mins 506V
- - Peak 55°C
- - Maximum 24hr average 45°C
- - Maximum yearly average Deg., 35°C
- Loss <0.4W/kVAR
- - Continuous 10%

PID TEMPERATURE CONTROLLERS

EXTENDED RANGE

Universal 4 digit temperature controller – Dual indication (full PID controller)



Size (H x W)	48 x 48	48 x 48	72 x 72 / 96 x 96	96 x 48	48 x 96
Control Relay & Alarm Relay	TZN4S-14R	TZ4ST-14R	TZN4M-14R TZ4L-14R	TZ4H-14R	TZ4W-14R
4-20mA output & Alarm Relay	TZN4S-14C	TZ4ST-14C	TZN4M-14C TZ4L-14C	TZ4H-14C	TZ4W-14C
Control Relay + 2 Alarm Relays	TZN4S-24R	TZN4S-24R	TZN4M-24R	-	TZ4W-24R

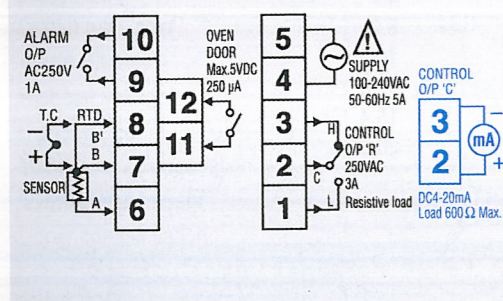
Features

- 2 x 7 digit LED displays:
 - PV (Process Value) **RED**
 - SV₁ (Set Point Value) **GREEN**
- Measure range: multi-range and pre-scalable
- Input types: TC (J, K, R, S, T,...)
 - RTD (PT100...)
 - 0-10V, 1-5V, 4-20mA
- SV₂ input for oven door interlock
- Indicating accuracy of $\pm 0.3\%$ (F - S)
- Dual PID function selectable fast response PID action (PIDF) or slow response PID action (PIDS)
- Control: ON/OFF, P, PI, PD, PIDF, PIDS control

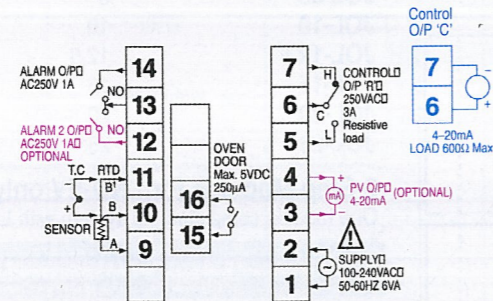
Specification

Multi-volt Supply: 100 to 240VAC
 Consumption: 5VA
 Control Relay output: C/O 3A @ 250VAC
 Sampling time: 250ms

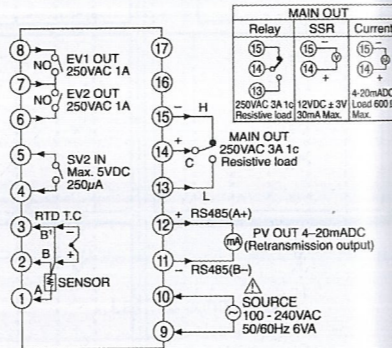
Connection Diagram for TZN4S



Connection Diagram for TZN4M



Connection Diagram for TZ4H



TEMPERATURE INDICATORS

Type	Indicator	Indicator	5 Sensor Input Indicator	Indicator	Indicator
Size	24 x 48mm	36 x 72mm	48 x 96mm	34 x 76mm	72 x 72mm 96 X 96mm
Supply Volts	12-24VDC	100-240VAC	110-240VAC	230VAC	110-230VAC
Code: PT100	T3NI-400P	T4YI-400P	T4WM-400P	MTR10-599P	SG-781*P SG-681*P
Code: J	-	T4YI-500J	T4WM-500J	MTR10-999J	SG-781*J SG-681*J
Code: K	-	T4YI-1200K	T4WM-1200K	MTR10-999K	SG-781*K SG-681*K
Temperature Range	-	-	-	-	*Add temp range 100, 200, 400°C

TEMPERATURE CONTROLLERS

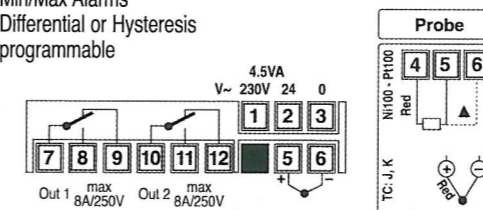
	Analog Setting	Analog Setting & Deviation Display	Analog Setting & Full Scale Display	Thumbwheel Setting & Digital Display	
ON/OFF Control					
Size 96 x 48	-	-	-	-	SG-861*
Size 72 x 72	SG-714*	SG-724*	-	SG-771*	-
Size 96 x 96	SG-612*	SG-622*	SG-632*	SG-671*	-
With alarm 72 x 72/96 x 96	-	-	-	SG-771A*/SG-671A*	SG-861A*
Range & Probe	*Add temperature 100, 200, 400 or 600°C and Probe type PT100., J or K e.g. SG-622 400J				
Higher Range 'K'	-	-	800 & 1200°C	-	-
Technical specification	Supply: 110/220VAC	Control: On/Off action	Output: Relay 1C/O	Connection diagram	
Input: Thermocouple	K, J and PT100	5A@250V	Hysteresis: 2.5% full scale		
Accuracy: 1% of full scale	Alarm: 10% of full scale				

	Digital 1 Set Point	Digital 2 Set Point	Thumbwheel 1 Set Point	Analog 1 Set Point	Digital
ON/OFF Control					
Size	72 x 72mm	72 x 72mm	48 x 48mm	48 x 48mm	34 x 76mm
Probe PT100	VM6251 -99° to 999°C	VM6269 -99° to 999°C	TP-48*P *100, 200, 400°C	TR-48*P *100, 200, 400°C	MTR11-150PTC*
Probe J & K	VM6392 -99° to 999°C	VM6400 -99° to 999°C	TP-48*J *200, 400°C	TR-48*J *100, 200, 400°C	-

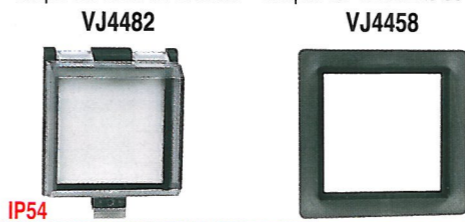
Technical specification

- Supply: 24 or 230VAC
- Input: Thermocouple K, J & PT100
- Accuracy: 1% of full scale
- Output: Relay C/O 8A@250V
- Min/Max Alarms
- Differential or Hysteresis programmable
- Direct/Reverse PWM & Neutral zone operation

Connection diagram



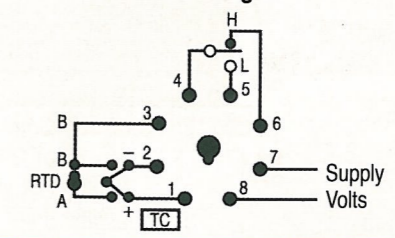
When using 2-wire PT100 Probe, short circuit terminals 4 and 5
 Transparent cover for 72 x 72 Adaptor for 72 x 72 to 96 x 96



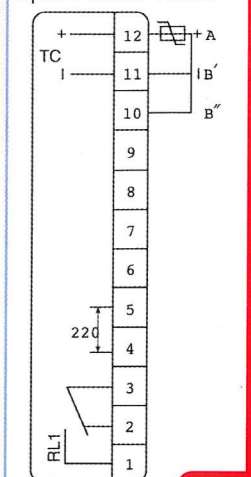
TP-48*K *200, 400°C

All supplied complete with Y-50 mounting bracket
 Specifications:
 Supply voltage 110-240VAC
 Hysteresis 2.5% full scale
 Relay output: 1 C/O @ 2A 250VAC
 Panel-mount or 8 pin plug-in.

Connection diagram



Reversed 8 pin P3G-08
 * Supply: 230VAC
 * C/W Probe
 Range: 50-150°C
 Spare Probe: PTC150

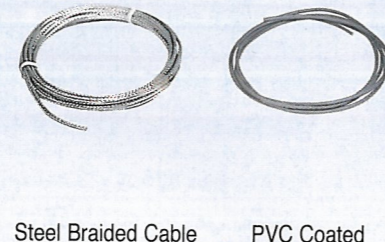
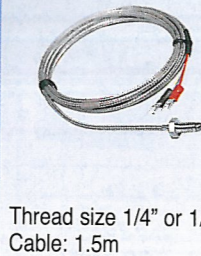
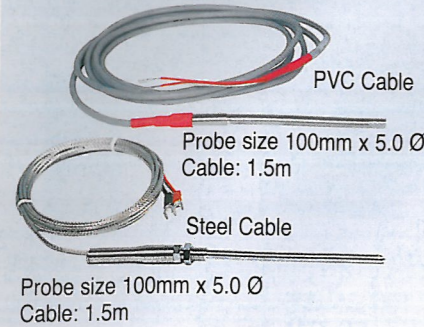


TEMPERATURE PROBES

Thermocouples

NOTE: Wire Colours
J: White & White with Yellow Stripe

K: White & White with Red Stripe
PT100: 2 x White, 1 x Red



Probe Type	Thermocouple Type	Temp Range	Cable Type	Screw Type Code	Temp Range	Code	Description	Head Type Code	Large Head Code	Compression Clamp
PT100	TC-P 100D	100°C	PVC	TC-P/S*	400°C	TC-P2 CABLE	200°C PVC coated Grey	KSE-P	KEN-P	1/2" Brass CC-02B
						TC-P4 CABLE	400°C Steel braided			1/4" Brass CC-04B
PT100	TC-P 200D*	200°C	PVC							1/2" S/Steel CC-02S
PT100	TC-P STEEL	400°C	Steel							1/4" S/Steel CC-04S
Type J	TC-J*	400°C	Steel	TC-J/S*	400°C	TC-J CABLE	400°C Steel braided	KSE-J	KEN-J	
Type K	TC-K*	400°C	Steel	TC-K/S*	400°C	TC-K CABLE	400°C Steel braided	KSE-K	KEN-K	

*Specify 1/4" or 1/2"

*Specify 1/4" or 1/2"

RHOMBERG Temperature Transmitter (2 wire)

Installation example



Fits into Head Type KEN-P, J or K

Code	Specification
TRT-PT100*	Output Signal: 4 - 20mA DC
TRT-J*	Power Supply: 12 - 40VDC
TRT-K*	Accuracy: ±0.15% F.S. (PT100) ±0.5% F.S. (J & K)

*Add Temperature range PT100: 50, 100, 150, 200, 400°C
J: 100, 150, 200, 400, 600°C
K: 100, 150, 200, 400, 600, 1000, 1200°C

RHE

Thermocouple Connectors

Female	Male
FPL-PT100	MPL-PT100
FPL-J	MPL-J
FPL-K	MPL-K

SCR HEATER ELEMENT REGULATORS

Voltage Control for Heaters Single Phase (230V)

Code	Current	KW	Ultra fast Fuse	Code	Current	KW	Ultra fast Fuse
SG-027	27A	6	30A	SG-100	100A	22	100A
SG-057	57A	12.5	60A	SG-132	132A	29.3	160A
				SG-162	162A	36	160A

Three Phase (400V)

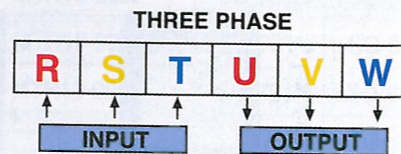
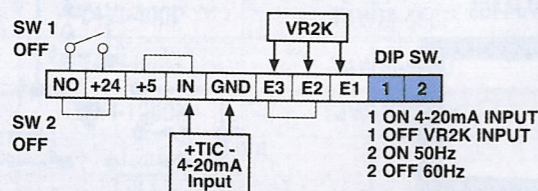
Code	Load Current	KW	Ultra fast Fuse	Code	Load Current	KW	Ultra fast Fuse
SG-325	25A	16.5	25A	SG-3100	100A	66	100A
SG-350	50A	33	50A	SG-3130	130A	86	160A
SG-375	75A	49	75A	SG-3160	160A	105	160A

Specifications

Input Signal: 4-20mA, 0-20mA, 1-5VDC, 0-5VDC
Control System: Phase control
Insulation Resistance: 500VDC (10g ohms)

Output Voltage: 0-100%
Constant- Voltage Characteristics: Output accuracy 1%
Ambient Temperature: -10/50°C Humidity 90% RH below
VR1: Min V output Ads.
VR2: Max V output Ads.

Connection Diagram



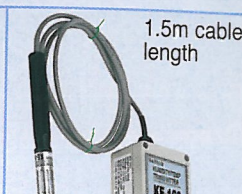
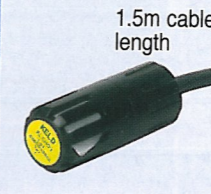
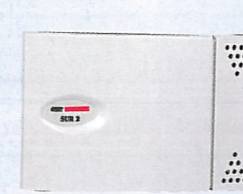
Benefits

- Small size, saving space
- High accuracy and fast response
- Eliminates contactor noise
- Extends heater life
- High efficiency, no maintenance
- Maintains stable process temperature

TC

HUMIDITY & TEMPERATURE CONTROLS

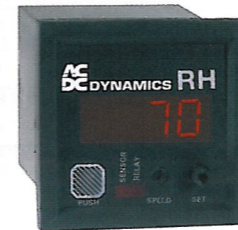
Humidity Sensors



Code	VN8736	KLSH03	TH-102W	TH-101D	TH-103S
Supply Voltage	9-30VDC / 12-24VAC	5VDC	12/24VDC	12/24VDC	12/24VDC
Range	20-90% RH	10-90% RH	-20-80% RH	-20-80% RH	-20-80% RH
Output	4-20mA or 0.1-10V	1 to 3VDC	4-20mA (2-wire)	4-20mA (2-wire)	4-20mA (2-wire)

HUMIDITY CONTROLLERS

TEMPERATURE & HUMIDITY CONTROLLER



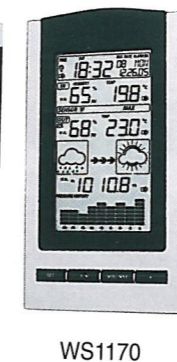
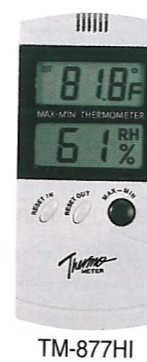
Code	DPM-RH	KLH11RH
Size	72 x 72 mm	76 x 36 x 60D mm
Supply	110VAC or 230VAC	110VAC or 230VAC
Input	4-20mA (VN8736)	0-1V, 1-3V KLSH03,
Range	0-100% RH	0-100% RH
Settings	Hysteresis Adj.	Differential or Hysteresis
Output	Relay C/O 8A	Relay C/O 8A

Code	KLTH43
Size	134 x 105mm
Cutout Size	130.5 x 100.5mm
Supply	230VAC
Temp. Range	-50°C to 150°C (0.5%)
Hum. Range	0-100% RH (5%)
Probes (excluded)	Temp 2 x PTC05 ±0.5% or PTC20 ±2% Humidity 1 x (0-1V) / (0-3V) 4-20mA probe
Outputs	4 SPDT Relays 8A @ 250VAC
Display	Red for temperature; Green for humidity

Features

- Red display for temperature and green display for humidity
- Temperature control can be ON/OFF, neutral zone or refrigeration
- Second temperature probe can be used for defrosting control
- Humidity control can be ON/OFF or neutral zone.
- Humidity probe (0-1V) / (0-3V) / (4-20mA) selectable by programme
- Resolution: Temp: 0.1°C Humidity: 1%

Indicators

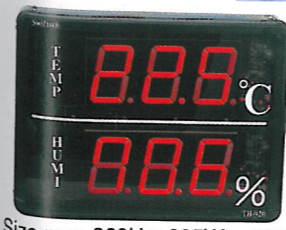


	In/Outdoor Thermometer	Indoor Thermometer	Wireless Weather Centre
Code	TM-877H	TM-877HI	WS1170

- Memory: Store/recall the max/min temperature and humidity
- Display: in °C or °F selectable
- Temperature Ranges: Indoor: -10°C to 50°C (14°F to 122°F)
- Sensor wire: 3 metres
- Humidity Range: 25%RH-95%RH
- Accuracy: ±3%RH (50%-80%RH) ±5%RH (Other Range)
- With back stand, on wall or table
- Battery: 1 x 1.5V AA size (included)
- LCD Size: 42mm x 20mm
- Display: in °C or °F
- Temperature Ranges: Indoor: 0°C to 60°C (built in) Outdoor: -40°C to 65°C (wireless x1)
- Humidity Range: 1%RH-99%RH
- Accuracy: ±1°C
- Battery: 3 x 1.5V AA (excluded)
- Sensor: 2 x 1.5V AAA (excluded)

Temperature & Humidity Indicator

Code	TH-920
------	--------



- 0-100°C Temp
- 0-100% Humidity
- Supply 85-265VAC
- Sensor TH-101/2/3 (see above) or VN8736
- Input: 4-20mA
- Digit size mm: 100H x 60W

Temperature Only Indicator

Code	TH-922
------	--------



- Size mm: 200H x 395W x 100D
- 0-100°C Temp
- Supply 85-265VAC
- Input: TC-P 100D

Glass Temperature Thermometer Indicator

Code	CS-120
------	--------

- 0-120°C/20-180°F
- 1/2" BSP thread
- Length: 150mm



TC

TEMPERATURE CONTROLLERS IP64

Size: 76 x 36mm
Cutout: 71 x 29mm
Display: 3 Digit + Sign



Code	KLT11BB-J (J Probe) KLT11BB-K (K Probe)	KLT11D	KLT11D2	KLT12D	KLT22D	KLT32
Range	J = 0 to 700°C K = 0 to 999°C	-50 to 150°C				
Supply	230VAC, 110VAC, 24VAC/DC or 12VAC/DC to be specified					
Probe (excluded)	J or K Probe Program Selectable	PTC or NTC Program Selectable		PTC or NTC Program Selectable		PTC20±2°C / PTC05±0.5°C
Output relay	1 Relay C/O 16A	C/O 16A	N/O 20A	N/O	16A N/O Control 8A C/O Defrost	N/O 16A Control, C/O 5A Defrost, N/O 8A Fan
Function	Control	Control		Control	Control & Defrost	Control for compressor, fan & defrost
Alarm	2 Alarm set points	-	-	-	-	-
Communication Card Output (KL-KEY)	Yes	Yes	Yes	Yes	Yes	Yes
Connection Diagram						
Specifications:	<ul style="list-style-type: none"> Cooling or heating Inside alarm buzzer Accuracy 1% 	<ul style="list-style-type: none"> Cooling or heating High & low value set point 	<ul style="list-style-type: none"> 1 or 2 Probe selectable Designed for refrigeration Able to program 23 different parameters, i.e. hysteresis, defrost time 	<ul style="list-style-type: none"> 1 or 2 Probe selectable Designed for refrigeration Able to program 52 different parameters, i.e. hysteresis, defrost time 		

Temperature Indicators



Code	TKTZ	DT-101S
Range	-50 to +99°C	-40 to +70°C
Supply	230VAC or 115VAC	Battery included
Probe	PTC20 (included)	1.1m cable (included)
Size	62(W)x29mm(H)	48(W)x28mm(H)

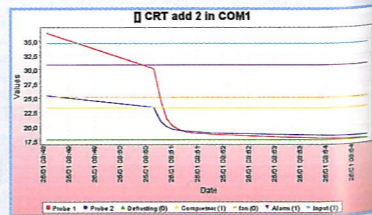
Accessories (Probes c/w 1.5m cable)



Code	Description
PTC20	PVC Cable. Accuracy ± 2°. Range -50°C / 105°C
PTC05	PVC Cable. Accuracy ± 0.5°. Range -50°C / 105°C
NTC20	PVC Cable. Accuracy ± 1°. Range -50°C / 105°C

KL-Manager:

- Supervision, control and logging software.
- Alarm detection.
- Alarm notification by e-mail and sms.
- Internet access by KLWebSpy.
- Basic mode or zone mode with real images configuration.
- Direct interface from PC to devices: Parameter set, direct command execution.
- Deferred order scheduler.
- Logging of inputs and outputs (probes, relays, ...).
- Chart generation of devices inputs and outputs.
- Report generation of alarms, parameters changes, events, ...
- Scheduling of reports weekly, daily, ...
- Import and export of parameter tables.
- User and access level definition control.



TEMPERATURE LOGGER

- Range: -40°C to 85°C
- Accuracy ±1%
- 50L x 35Ø (mm)



KLT-LOGGER	KLT-USB	KLT-SOFT
Battery powered Logger	USB PC Interface	Software
Features: Different data loggers can be read by one interface and software. Each data logger must be programmed with a different description name. • Battery powered. • Real time clock/calendar. • Start recording delay programmable from 0m up to 45 days 12h 15m. • Programmable alarm low and high trip points for events recording, up to 12 high and 12 low alarms. • Data logging up to 2048 temperature samples. • Sample interval time from 1 to 255 minutes. • Charts and reports. • Software connection to data recovery and setup conditions.		



DIGITAL DEFROSTING & TEMPERATURE CONTROLS

Temperature Controllers for Walk-in Freezers and Cooling Displays

Size: 71 x 28 x 71mm
Cut Out: 71 x 29mm
Display: 3 digit/ sign



Code	TC-900RI-CL	TC-900RI-P	TC-920RI	TC-940RI-P
Range	-50 to +75°C / -58 to 167 F	-50 to +75°C / -58 to 167 F	-50 to +75°C / -58 to 167 F	-50 to +75°C / -58 to 167 F
Supply	115 or 230VAC ±10%	90-264VAC	115 or 230VAC ±10%	115 or 230VAC ±10%
Probe	2 x SB19 NTC Sensor (Inc.) N/O 5A Refr N/O 5A Fans N/O 5A Defrost	2 x SB19 NTC Sensor (Inc.) N/O 16A Comp N/O 5A Fans N/O 8A Defrost	3 x SB19 NTC Sensor (2 Inc.) N/O 5A Refr N/O 5A Fans N/O 3A Defrost	2 x SB19 NTC Sensor (Inc.) N/O 16A Comp 3A N/O Alrm N/O 5A Defrost N/O 5A Fans
Relay Output	Yes	No	No	Yes
Coms Function	Control/ Ref/ Defrost	Control/ Ref/ Defrost	Control/ Ref/ Defrost	Control/ Ref/ Defrost
Connection diagram				
Remote management software	Real time clock, up to 8 defrost / day & internal battery			
Code:	SITRAD			

Refrigeration

Size: 71 x 28 x 71mm
Cut Out: 71 x 28mm
Display: 3 digit/ sign



Code	MT-512RI	MT-512RI-LOG	TC-900RG2
Range	0 to 50°C / 32 to 122°F	-50 to +75°C / -58 to 167 F	-50 to +75°C / -58 to 167 F
Supply	115 or 230VAC ±10%	115 or 230VAC ±10%	115 or 230VAC ±10%
Probe	1 x SB19 NTC Sensor (Inc) N/O 16(8)A/ 250VAC 1HP N/C 8A/ 250VAC	1 x SB19 NTC Sensor (Inc) N/O 16(8)A/ 250VAC 1HP N/C 8A/ 250VAC	2 x SB19 NTC Sensor (Inc) N/O 16(8)A/ 250VAC 1HP N/C 8A/ 250VAC
Relay Output	Yes	Yes	No
Coms Function	Refrigerate/Display coolers	Refrigerate	Control/ Comp/ Defrost/ FANS
Connection diagram			
Remote management software	With a timer for cooling & defrost times		
Code:	SITRAD		

Frozen

Display: 2 Digit/Sign



Temperature Controls

Size: 71 x 28 x 71mm
Cut Out: 71 x 28mm
Display: 3 digit/ sign



Code	MT-516RVTI	MT-518RI	MT-530SUPER
Range	-50 to 105°C	-50 to 105°C	-50 to 105°C
Supply	115 or 230VAC ±10%	115 or 230VAC ±10%	115 or 230VAC ±10%
Probe	1 x SB19 NTC Sensor (Inc) N/O 8A/ 250VAC 1HP N/O 8A/ 250VAC	1 x SB19 NTC Sensor (Inc) N/O 8A/ 250VAC 1HP N/O 8A/ 250VAC	1 x SB56 NTC Temperature and Humidity Sensor (Inc) 3 x N/O 5A @ 250VAC Temp/Humidity/Aux
Relay Output	Yes	No	Yes
Coms Function	Temperature Controller with over/under voltage protection	Temperature Controller/Cooling or Heating	Temperature/ Humidity Controller
Connection diagram			
Remote management software	For milk cooling	For air conditioning	For data centres & genl. aircon
Code:	SITRAD		

POWER MONITORS

Instrument for measuring and monitoring the major parameters regarding energy quality on three-phase electrical installations



Code	PHASE LOG PLUS
Supply	85 to 265VAC (50/60Hz)
Control Range	90-500VAC
Current	5A/ 250VAC 1/8hp
Dimensions	71 x 28 x 71mm
Operation Temp	0-50°C
Communication	yes, RS-485
Application	Electrical panels Other multi-phase equipment
Features	Over/ Under voltage (Adjustable) Phase Failure & Phase Sequence Data Logger Per Phase

TIMERS

Scheduler with real-time clock that allows configuring up to four events for each weekday, through the definition of start and end times for each one.



Code	PROGS-1
Supply	85 to 265VAC (50/60Hz)
Control Range	24hr, 365 days
Current	10A (resistive load)
Dimensions	70 x 28 x 60mm
Operation Temp	0-60°C
Communication	No
Application	Ovens, injection machine, defrost control

TEMPERATURE DISPLAY

The big therm is a digital thermometer. The dimensions and design of this instrument allow the temperature for long-distance visualization.



Code	TIC-17G
Supply	110 or 220VAC (50/60Hz)
Control Range	-55 - 90°C
Current	NTC with cable 1,5m
Dimensions	90 x 44 x 27mm
Operation Temp	0 - 50°C
Communication	No
Application	Refrigerating equipment greenhouse, ovens, climatized rooms.

Remote management software Code: SITRAD-*

More than just automating, sitrad innovates in the management of cooling, heating, air conditioning, and solar heating systems by means of its most distinguishing feature: connectivity. The user can continuously evaluate, configure and store data on temperature, humidity and pressure, among others

- *Local: must be installed in the computer to which the instruments are connected via interface
- *Remote: must be installed in the computer that will remotely manage the installation, via Internet
- *Mobile: manages facilities via cell phone, communicating with the local module

With mobile, the user has another option for remote management. Without using a computer, it provides even easier remote installation management. It is the connectivity allowing to take over the control, anytime, anywhere

TEMPERATURE/ PROCESS CONTROLLER

RHOMBERG

NEW RANGE



Code 230V (85-265V AC/DC)	TC-410-**-230 E-R	TC-515-UO-230-RR	TC-600-UO-230-BR	PC-100-UO-230-BR
Code 24V (21-53V AC/DC)	TC-410-**-024 E-R	TC-515-UO-024-RR	TC-600-UO-024-BR	PC-100-UO-024-BR
Control Method	PID or ON/OFF	PID or ON/OFF, Trip & Rec	PID or ON/OFF, Trip & Rec	PID or ON/OFF, Trip & Rec
Display	Process value: 3 digits (10mm) Set value: 3 digits (7mm)	Process value: 3 digits (10mm) Set value: 3 digits (7mm)	Process value: 4 digits (10mm) Set value: 4 digits (7mm)	Process value: 4 digits (10mm) Set value: 4 digits (7mm)
Control Relay	250VAC, 8A, SPDT	250VAC, 8A, SPDT	250VAC, 8A, SPDT	250VAC, 8A, SPDT
Outputs	Analogue: N/A	Analogue: N/A	Analogue: 0-20mA, 4-20mA 0-5V and 0-10V @ 10mA	Analogue: 0-20mA, 4-20mA 0-5V and 0-10V @ 10mA
Alarm Relay	N/A	N/O 8A @ 250VAC	N/O 8A @ 250VAC	N/O 8A @ 250VAC
Temp Display	-99°C to 999°C	-99°C to 999°C	-273°C to 9999°C	-273°C to 9999°C
Protection	Fast Blow Fuse	Fast Blow Fuse	Fast Blow Fuse	Fast Blow Fuse

** Add temperature probe type to code: PO (PT100), KO (Type K), JO (Type-J), UO (User Programmable PT100, E, J, K, R, ST, T, B, N Probe)

Features

- User friendly installation and operation.
- Full auto tune for PID control, calculating P, I, D and anti-reset wind-up terms.
- Adjustable Hysteresis for greater flexibility.
- Digital display for simultaneous indication of both process temperature and setpoint.
- Easy configuration via a simple text-based function menu.
- A plug connector system that allows quick and easy installation.
- Analogue and digital input filtering.
- Adjustable PID relay cycle time for precision control of fast or slow processes.

RHE

TC

THERMOSTATS

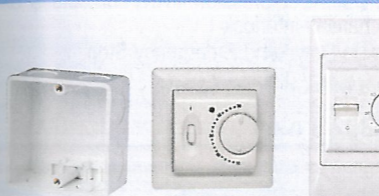


Code	Contact Rating	Control
Clima - Series 6-30°C		
Surface mount		
CLIMA ML	16A	Heating only
CLIMA MLI	10A	Heating only + on/off switch
CLIMA MLW	10A	Heating - Off - Cooling
CLIMA FC	10A	Heating - Off - Cooling, Speed 1/Speed 2

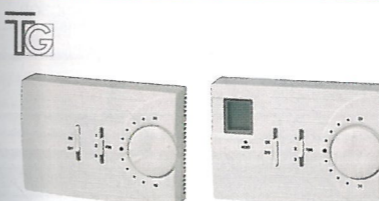
ORBIS energia intelligente



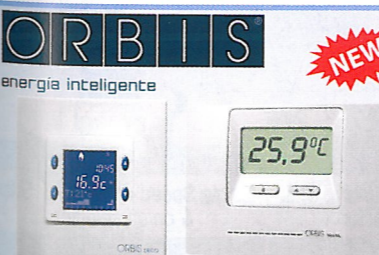
Code	Contact Rating	Control
Rio - Series 6-30°C		
Surface mount		
VN650800	15A	Heating only
VN652400	10A	Heating/Cooling + on/off switch
VN653200	10A	Heating/Cooling + on/off switch + on lamp



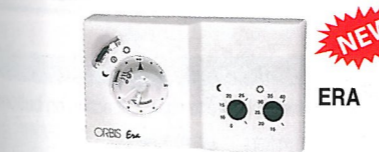
Code	Contact Rating	Control
Room Thermostats 10-30°C		
A7700	16A	Heating only 10 - 30°C with on/off 20A isolator mounting into standard 4 x 2 box. Max switching 3600W
BEL4118-A2	16A	Heating only 10-30°C with on/off switch mounting into 75 x 75mm box
BEL4118-B1	16A	Heating only 10 - 30°C with on/off switch mounting into 75 x 75mm box c/w remote sensor with 3m cable, adj between 10 - 50°C.
BEL4118-E1	16A	LCD Electronic Thermostat. heating only 10-30°C with 7 day timer programmable. 6 times, 6 temperature settings per day. Remote sensor with 3m cable
BEL-B1	-	75 x 75 x 32(D)mm Flush Mount Wall Box
BEL-B2	-	86 x 86 x 32(D)mm Surface Mount Box



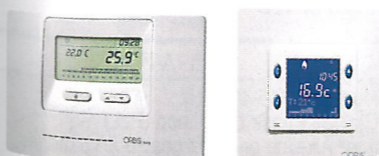
Code	Contact Rating	Control
Thermostats for Air Conditioning Systems (Surface Mount)		
Temp. Control 10-30°C		
BEL-3538/03A	5A	3 Speed Fan Switch with 10-30°C Temp. Control and on/off switch
BEL-3538/03LA	5A	As BEL-3538/03A with Digital Temp. Display



Code	Contact Rating	Control
Digital Room Thermostats		
NEO-ML	7A	Heating only for surface mounting. Temperature regulation 5 - 35°C
DECO-TERMO	8A	Heating and cooling, control with two programmable temperature levels, mounts into 75 x 75mm box. Temperature range 0-40°C







Code	Contact Rating	Control
Thermostats with Timing Function		
ERA	5A	Heating and cooling with comfort and saving settings. Daily timing. Temperature range 10 - 40°C.
NEO	5A	Heating and cooling with 2 temperature settings and anti ice setting. Weekly timing with 8 programs. Surface mounting. Temperature range 0 - 50°C
DECO-CRONO	8A	Heating and cooling with 2 temperature settings and anti ice setting. Weekly timing with 8 programs. Mounts into 75 x 75mm box. Temperature range 0 - 40°C.



NEO DECO CRONO

TC

HOIST PENDANT STATIONS IP65

			
Code COB61	Code COB62	Code COB21	Code COB22
2 way up/down @ 5A 250VAC	4 way up/down & left/right @ 5A 250VAC	2 way up/down direct operation @ 5A 250VAC	4 way up/down & left/right direct operation @ 2.2kW 500V

Features








- High quality ABS Housing
- Water-proof enclosure IP65
- Direct switching 5A @ 250VAC

COB802 2 Button Up/Down Single Depression
COB802-N80D 2 Button Double Depression 4 N/O contacts @ 5A with mechanical interlock
COB803 2 Button Up/Down and Emergency Stop
The above supplied standard with Up/Down Labels.






Accessories for COB802/3 only

N80D Momentary Buttons 2 speed with mechanical interlocking

Legends

COB-1 2-SPEED		COB-4 FWD	
COB-2 RAISE		COB-5 REV	
COB-3 LOWER		COB-6 LEFT	
		COB-7 RIGHT	

TELECRANE™ RADIO REMOTE CONTROL SYSTEMS IP65

2 Button 1 x motion	4 Button 2 x motion	6 Button 3 x motion	6 Button 3 x motion	12 Button 6 x motion
				
F21-2S	F21-4S	F21-E1B	F24-6S	F24-12S
Single Speed with Start button	Single Speed c/w Emerg. Stop & on/off selector	Single Speed with Start/Stop button	Single Speed c/w Emerg. Stop & on/off selector	Single Speed c/w Emerg. Stop & on/off selector
F21-2D	F21-4D		F24-6D	F24-12D
2-speed with Start button	2-speed c/w Emerg. Stop & on/off selector		2-Speed c/w Emerg. Stop & on/off selector	2-Speed c/w Emerg. Stop & on/off selector

Extras

Code	Description
OPT08	CD and cable. Software to change function of buttons
F21-*-TX	Spare Transmitters

*Add 2S, 2D, 4S, 4D or E1B

Specification

- Very low power consumption design using only 2 AA size Alkaline batteries with 4 months average battery life
- Integrates Hamming Code, Self-diagnosis and 4.3 billion ID Codes
- Easy programming via WIN95/98/2000/NT
- Operating distance: 50-100 metres (dep. on model)

Receiver

CRANE CONTROLS

Accessories

Contact Blocks 6A AC11 @ 250V	PKP	LAP
Single depression	1 N/O	DMK-10
Single depression	1 N/O + 1 N/C	DMK-11
Single depression	2 N/O	DMK-20
Double depression	2 N/O	DMK-20PR

Operators

E-Stop, twist to release	DPK-60	DLAE-M
Lamp holder	DPK-61	DLAP-L
Key-switch on/off	DPK-62	DLAK-S
Blanking plug	DPK-63	DLAS-39
Mechanical Interlock	DPK-64	DPK-64
Buttons <i>Can be fitted in any 90° Position</i>	<ul style="list-style-type: none"> Red - Stop Green - Start Yellow - Alarm Green - Alarm Black Black Black Black Black Black Black Black Black Black 	<ul style="list-style-type: none"> DLAS-34 DLAS-30 DLAS-32 DLAS-31 DLAS-16 DLAS-07 DLAS-08 DLAS-02 DLAS-12 DLAS-06 DLAS-22 DLAS-26 DLAGUA2

Single Row Pendant Stations LAP IP65

No. Ways	Single Row	Double Dep
2	LAP-2	-
3	LAP-3	-
4	LAP-4	-
4	LAP-4D	4
6	LAP-6	-
8	LAP-8	2
8	LAP-8D	8
10	LAP-10	4
12	LAP-12	4

Double Row Pendant Stations PKP IP65

No. Ways	Double Row	Double Dep
4	PKP-4	-
6	PKP-6	-
8	PKP-8	-
10	PKP-10	2
12	PKP-12	4
14	PKP-14	6

WORM DRIVE LIMIT SWITCHES IP65

Type FRS/FCN with failsafe positive opening microswitches

Ratio	Code 2 Contacts	Code 4 Contacts
1:25	BFRS25R2	BFRS25R4
1:50	BFRS50R2	BFRS50R4
1:100	BFRS100R2	BFRS100R4
1:150	BFRS150R2	BFRS150R4
1:175	BFRS175R2	BFRS175R4
1:200	BFCN200P2	BFCN200P4
1:400	BFCN400P2	BFCN400P4

Accessories

For BFCN	For BFRS	Description
-	FRS-R	Microswitch N/C 230V 10A (Standard for BFRS)
FCN-APINT	-	Microswitch N/C 230V 10A (Standard for BFCN)
FCN-DINT	-	Microswitch with deviation contacts 230V 10A
FCN-LEVA	FRS-LEVA	20° Tripping angle cam Type A
FCN-LEVB	FRS-LEVB	45° Tripping angle cam Type B
FCN-LEVC	FRS-LEVC	90° Tripping angle cam Type C
FCN-INNFC	FCN-INNFC	Male connection
FCN-AFLESFC	FCN-AFLESFC	Flexible shaft
FCN-POT	FRS-POT*	10kΩ pot & mounting kit

*BFRS Type switches can accommodate either the contacts or potentiometer, not both.

CRANE & VEHICLE CONTROLS

Joystick controllers

Code	Description
MW2-33	4 direction, 3 position open joystick (4 way, 3 step)
MW2-44	4 direction, 4 position open joystick (4 way, 4 step)
MW33-33*	4 direction, 3 position mobile control station (4 way, 3 step)
MW44-44*	4 direction, 4 position mobile control station (4 way, 4 step)

* Comprising two joysticks in box, three pushbuttons and shoulder belt

Accessories for MW2

MW-70	Knob and shaft	MW-72	Contact block 6A
MW-71	Rubber boot for shaft	MW-80	No. 1 CAM

High current DC plugs and sockets IP23

DC V 12-36-48-72-80-96

Fitted with an operating voltage codifier

Current	Cable size	Plug Code	Socket Code	Handle Code
80A	16 or 25mm	SBC80B	PBC80B	MAN80S
160A	16-25-35-50mm	SBC160	PBC160	M160320S
320A	35-50-70mm	SBC320	PBC320	M160320S

Connectors in accordance with standard EN1175-1

Volts	Colour	160A Code	320A Code
12V	Yellow	E78065	-
24V	Red	E78070	E78341
36V	Grey	E78050	E78331
48V	Blue	E78055	E78336
80V	Black	E78082	E78350
120V	Purple	-	E78359

160A Cable Size 50mm². 320A Cable Size 70mm²
NB: Two of the same type make a set

Accessories

	160A	320A
Spare Main Contacts	E78280	E78285
Handle - Red	E78291	E78298
Handle - Grey	E78290	E78297
Pilot contact - Male	E78078	E78078
Pilot contact - Female	E78077	E78077
Cable Clamp	E78000	E78000

DC Contactors - 1 N/O contact

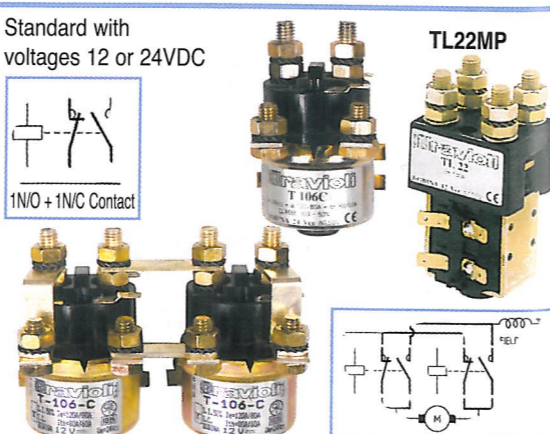
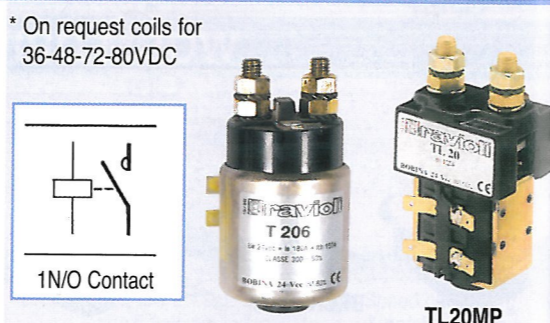
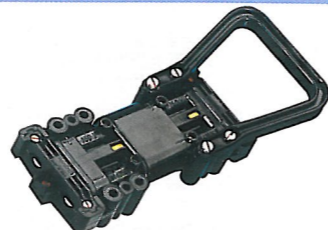
Contactor Code	T-106A*	T-156A*	T-206A*	100% Duty N/O TL20MP
Nominal operating current at 50% duty current ± 300 op/h	120A	150A	180A	150A
Nominal thermal current at 100% duty (continuous)	80A	100A	150A	150A
Operating voltage	12/24V	12/24V	12/24V	24/48/72V
Breaking capacity with 15ms time	480A	600A	720A	675A
Coil consumption 100% duty	11W	16W	20W	20W

*Add voltage to code: 12VDC, 24VDC, 36VDC

DC Changeover Contactors - 1 N/O + 1 N/C contacts

Contactor Code	T-106C*	T-156C*	T-206C*	100% Duty 2N/O TL22MP
Nominal operating current at 50% duty current ± 300 op/h	N/O 120A N/C 80A	150A 100A	180A	150A
Nominal thermal continuous current at 100% duty	N/O 80A N/C 60A	100A 80A	150A	100A
Operating voltage	12/24V	24V	12/24V	24/48/72V
Breaking capacity with 15ms time	480A	600A	720A	675A
Coil consumption 100% duty	11W	20W	20W	20W

*Add voltage to code: 12VDC, 24VDC



AIR LINE FILTERS & REGULATORS

	Filter	Regulator	Filter/Regulator	Oil Sprayer	TC Series Treatment Dual Regulator & Air Lubricator	TC Series Treatment Triplet Filter/Regulator/Lubricator
Code 3/4"	TF4000-06	TR4000-06	TW4000-06	TL4000-06	TC4010-06	TC4000-06
Code 1"	TF5000-10	TR5000-10	TW5000-10	TL5000-10	TC5010-10	TC5000-10

Specification:

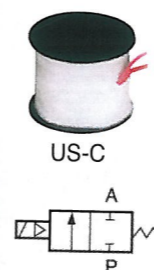
- Filtration: 5µm
- Applicable Pressure Range: 0-1.0MPa
- Applicable Temperature: 0-60°C
- Gauge Port Size: G1/4
- Material (Body): Aluminium Alloy Die-cast
(Bowl): Polycarbonate (PC)

Auto Drain Valve

Code 3/8"	TAD402-03
Code 1/2"	TAD402-04



SOLENOID VALVES



Code	US-10*	US-15*	US-20*	US-25*	UW-15*	UW-20*	UW-25*
Spare Coil Code	USC*				UWC*		
Spare Solenoid c/w Coil	USSC*				UWSC*		
*Add Voltage to Code: 12VDC, 24VDC, 24VAC, 110VAC, 230VAC							
Material of body	Brass				Brass		
Operating method	Plunger Pilot				Film Pilot		
Pipe size	ZG3/8"	ZG1/2"	ZG3/4"	ZG1"	ZG1/2"	ZG3/4"	ZG1"
Nominal diameter (mm)	16	20	20	25	20	20	25
Applicable fluid	Air, Water, Oil (50CST below) & Steam				Air, Water, Oil (50CST below)		
Pressure range	0.05 - 1.5Mpa				0 - 0.8Mpa		
Applicable temperature	-5 to 185°C				-5 to 99°C		
Operating voltage range					± 10%		
Minimum activating time					0.05S		



Pressure Switches

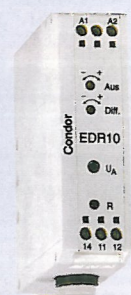
Pressure (Bar)	Contact Rating	Pipe Thread (NPT)	Code
Min. 1.4	2 Pole 20A N/C	1/4"	PS-02A 2.8
Max. 2.1	2 Pole 20A N/C	1/4"	PS-02A 3.5
2.8	2 Pole 20A N/C	1/4"	PS-02A 4.3
3.5	2 Pole 20A N/C	1/4"	PS-02B 5.6
4.9	2 Pole 20A N/C	1/4"	PS-02B 7.2

ELECTRONIC AIR PRESSURE SENSORS & SWITCHES



Electronic Air Pressure Controllers

- Accurate compressor and process control
- Electronic pressure switch with integrated pressure sensor
- Push-on connector for air tube inlet (Festo PAN 6 x 16mm)
- Adjustable relay set point and hysteresis
- Fail safe
- User friendly menu programming
- Relay output – (All models) 6A @ 250VAC
- 0-10V Analogue output and digital LED display (EDRA only)
- Din rail mounting



EDR & EDI

Code	Relay Output	Supply	Code	4-20mA Supply Output	Supply	Cut-out-pressure	Cut-in-pressure	Maximum pressure	Repeat Accuracy at 25°C
EDR-2	1C/O only	230VAC	-	-	-	0.2-2 bar	0-50% of cut-out pressure	3 bar	+/-0.05 bar
-	-	-	EDI-10	12-30VAC	-	0.5-10 bar		25 bar	+/-0.1 bar
EDR-16	1C/O only	230VAC	EDI-16	12-30VDC	-	1-16 bar	25 bar	25 bar	+/-0.15 bar

Note: 4mA = 0 bar. 20mA = measuring range highest value

Autonics

Electronic Pressure Sensor

Code	NPN N/O	PSA-01	PSA-1
Code	PNP N/O	PSA-01P	PSA-1P

Pressure Range: 0-100.0kPa (0-1.000 Bar) 0-1000.0kPa (0-10.00 Bar)

Specifications

- Power Supply: 12V to 24VDC ± 10%. 50mA
- Output Current: Max. 100mA 30VDC
- Analog Output: 1V-5VDC ± 2% F.S.
- Pressure Display: kPa, kg/cm², bar, psi
- Size: 30x30x38.5(D)mm
- Hysteresis: 1 digit (2 digit/psi) fixed ± 0.2% F.S. ± 1 digit
- Repeat Error: Selectable 2.5ms, 5ms, 100ms, 500ms
- Response Time: Built-in
- Short Circuit Protection:

Accessories

Code	Description
PS-01	Bracket for panel mount. Size of cutout 36X36mm
PS-02	Clear protection cover



2-Wire Electronic Air Pressure Transducer IP65

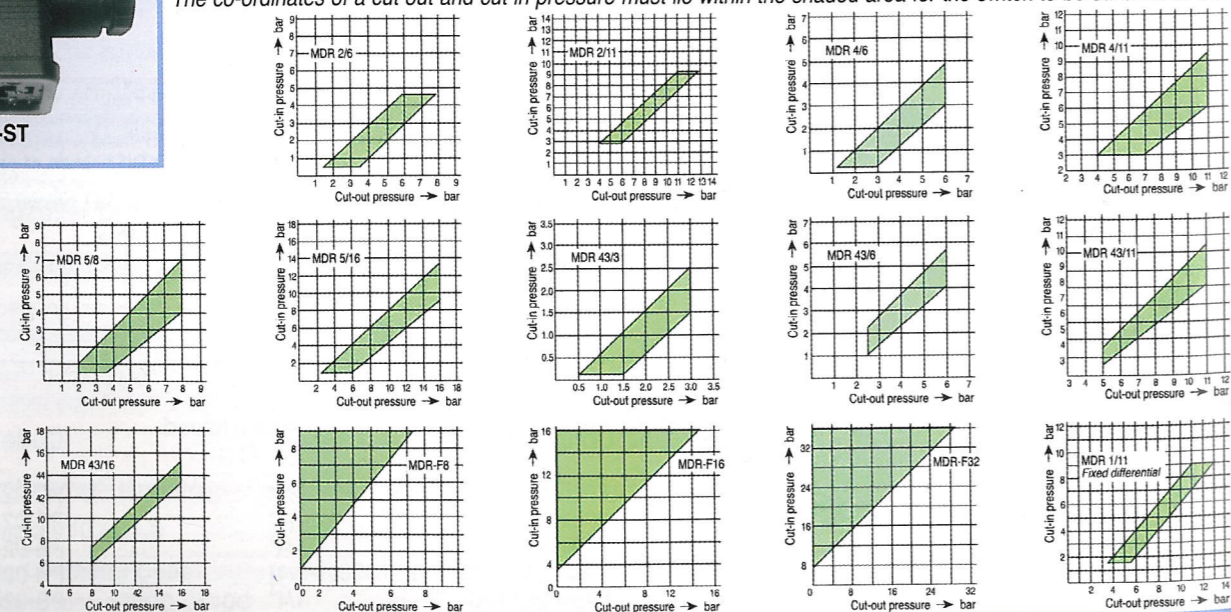
- Accurate process control
- 2-Wire device installs directly on the machinery
- Ceramic sensor technology
- Service friendly plug-in electrical connection
- Converts measured pressure to 4-20mA

Code	Description	Pipe Thread	Measuring Range	Output	Repeat Accuracy	Supply
EDS-16	Transducer	External G1/4"	0-16 bar	4-20mA	+/-1%	11-30VDC
EDS-ST	Connection plug	DIN3852 Form E				



Pressure Switch Diagrams

The co-ordinates of a cut out and cut in pressure must lie within the shaded area for the switch to be suitable for the application.



PRESSURE SWITCHES

Direct Motor Switching $U_i = 500V$

Cut-out Pressure (Bar)	Min	Max	Diff	Contacts AC3	Features	Pipe Thread	Code	Code with Auto-Off Switch
MDR1 For use with air, water, mineral oils, sea/salt water, butane, acetylene, carbon dioxide etc. Medium temperature: Air -5 to +80°C. Water +70°C max. IP44 Contacts 2 N.C. Ith 20Amps, 2,2/4kW @ 240V. Bursting strength $P_z > 35$ Bar.								
2.5	6.0	Adj	1ph	4.0kW	For Pumps only Factory set 1.5-3 Bar	1/4" BSP	MDR1/6/DIF	-
2.5	11.0	2 Bar	1ph	2.2kW	For Compressor only Factory set 6-8 Bar	1/4" BSP	MDR1/11	MDR1/11/EA
MDR2 For use with air, water. Medium temperature: Water +80°C max. IP44 Contacts 2 N.C. Ith 20Amps, AC3 2.2kW @ 240V. Bursting strength $P_z > 35$ Bar.								
1.5	7.0	Adj	1ph	2.2kW		1/4" BSP	MDR2/6	-
4.0	12.0	Adj	1ph	2.2kW		1/4" BSP	MDR2/11	MDR2/11/EA
MDR4 For use with air, water. Medium temperature: Water +80°C max. IP44 Contacts 3 N.C. Ith 20Amps, AC3 5.5kW @ 400V. Bursting strength $P_z > 35$ Bar.								
1.5	6.0	Adj	3ph	5.5kW		1/2" BSP	MDR4/6	MDR4/6/EA4
4.0	11.0	Adj	3ph	5.5kW		1/2" BSP	MDR4/11	MDR4/11/EA4
6.0	16.0	Adj	3ph	5.5kW	NEW	1/2" BSP	MDR4/16	MDR4/16/EA4
MDR5 For use with air, water, sea water, petrol, diesel, natural gas, butane, carbon dioxide etc. Medium temperature: Air -5 to +80°C. Water +80°C max. IP54 Contacts 3 N.C. Ith 25Amps, AC3 5.5kW @ 400V. Bursting strength $P_z > 40$ Bar.								
2.0	8.0	Adj	3ph	5.5kW		1/2" BSP	MDR5/8	
2.5	16.0	Adj	3ph	5.5kW		1/2" BSP	MDR5/16	
2.5	16.0	Adj	3ph	5.5kW	Fitted with Unloader Valve, Overload & Start/Stop Buttons	1/2" BSP	MDR5/16/4.2	
					Range: 2.4-4.2A	1/2" BSP	MDR5/16/7	
					4.0-7.0A	1/2" BSP	MDR5/16/7	
					6.1-10.3A	1/2" BSP	MDR5/16/10	
					9.0-14.0A	1/2" BSP	MDR5/16/14	
					11.0-18.0A	1/2" BSP	MDR5/16/18	



MDR1/11



MDR1/11/EA

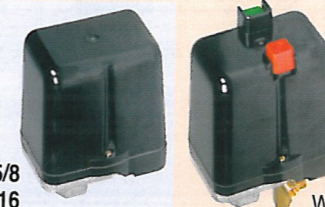


MDR2/6 or 11



MDR2 or 4/EA

MDR5/8 or 16



With Overload

Accessories



H5-COVER

Spare Covers

For MDR5: plain
with On/Off buttons

Code

H5-COVER
H5K-COVER



H5K-COVER



EV1S
EV2
EV4



EV5

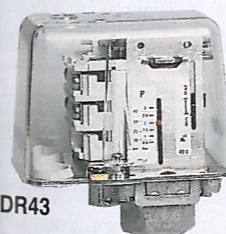
Unloader Valve

Code
For MDR1 EV1S
For MDR2 EV2
For MDR4 EV4
For MDR5 EV05

Control Circuit Switching 10Amp 250VAC $U_i = 400V$ IP65

MDR43 For use with a wide range of mediums including air, water, oils and refrigerants. Medium temperature: Air -25 to +100°C. Water +100°C max. IP54

Cut-out Pressure (Bar)	Min	Max	Diff	Contacts	Bursting Strength	Pipe Thread	Code
0.5	3.0	Adj	1 NO + 1 NC	$P_z > 60$ Bar	1/4" BSP	MDR43/3	
2.5	6.0	Adj	1 NO + 1 NC	$P_z > 60$ Bar	1/4" BSP	MDR43/6	
5.0	11.0	Adj	1 NO + 1 NC	$P_z > 60$ Bar	1/4" BSP	MDR43/11	
8.0	16	Adj	1 NO + 1 NC	$P_z > 60$ Bar	1/4" BSP	MDR43/16	



MDR43



MDR-F

MDR-F High pressure range – for use with air, water, sea water, petrol, diesel, natural gas butane, propane, nitrogen etc. Medium temperature: +70°C max. IP54

Cut-out Pressure (Bar)	Min	Max	Diff	Contacts	Bursting Strength	Pipe Thread	Code
0.5	8.0	Adj	1 C/O 10A	$P_z > 40$ Bar	3/8" BSP	MDR-F8H-S	
1.0	16.0	Adj	1 C/O 10A	$P_z > 48$ Bar	3/8" BSP	MDR-F16H-S	
2.0	32.0	Adj	1 C/O 10A	$P_z > 64$ Bar	3/8" BSP	MDR-F32H-S	
8.0	60.0	Adj	1 C/O 10A	$P_z > 120$ Bar	3/8" BSP	MDR-F60HH-S	

See page 198 for pressure diagrams.

LIMIT SWITCHES

Steel Type AH8 (28mm) IP65

• Contact: NC & NO 5A • Cable entry: Rubber Grommet

Code	AH8111	AH8112	AH8122	AH8104	AH8107	AH8108	AH8166	AH8101	AH8169

Steel Type WL5 (40mm) IP65

• Contact: NC & NO 10A • Cable entry: 20mm

	Pushbutton	Pushroller	Rollerball	180° Tilt	Wobble	180° Tilt	180° Tilt	Maintained	Pull Switch Hole centres: 20-22mm
Code	WL5101	WL5102	WL5103	WL5104	WL5106	WL5107-2	WL5108-2	WL5105	AP5-T98

Compact Enclosed Type AH-7 IP65

Code AH-7100	Code AH-7110	Code AH-7310	Code AH-7311
Code AH-7312	Code AH-7120	Code AH-7140	Code AH-7121
Code AH-7141	Code AH-7124	Code AH-7144	

Specifications

Contact resistance: 25mΩ max (initial)
Insulation resistance: 100MΩ min (at 500VDC)
Dielectric strength: 1 000VAC 50/60Hz for 1 min

Service life: Mechanically: 1 000 000 operations min
Electrically: 100 000 operations min
Current rating: 10A @ 250VAC C/O

LIMIT SWITCHES

Plastic Type AP1 – 30mm Width IP65

• EN50047 • Contact: NC & NO 10A@24VAC 3A@240VAC • Cable entry: M20x1.5									
Code	AP5T11	AP5T13	AP5T31	AP5T41	AP5T51	AP5T52	AP5T71	AP5T91	AP5T92

Plastic Type BP1 – 40mm Width IP65

• EN50041 • Contact: NC & NO 10A@24VAC 3A@240VAC • Cable entry: M20x1.5									
Code	BP5H12	BP5H19	BP5H33	BP5H43	BP5H53	BP5H54	BP5H91	BP5H92	BP5H93

Metal Pre-Wired • Type EM1 30W x 50H (mm) IP67 • Type EM2 33W x 70H (mm) IP67

• IEC 947-1 • EN60947-1 • Contact: 1N/O & 1N/C 5A@24VAC 1A@240VAC • Cable: 1m								
Code side cable	EM1G11Z	EM1G12Z	EM1G14Z	EM1G21Z	EM1G22Z	EM1G24Z	EM1G41Z	EM1G42Z
Code bottom cable	EM2G11Z	EM2G12Z	EM2G14Z	EM2G21Z	EM2G22Z	EM2G24Z	EM2G41Z	EM2G42Z

Plastic Type DP1 50mm Width IP65

• Contact: 1N/O & 1N/C 10A@24VAC 3A@240VAC • M20x1.5 Cable entry • 2 x cable entries									
Code	DP5T11	DP5T13	DP5T31	DP5T41	DP5T51	DP5T52	DP5T71	DP5T91	DP5T92

LIMIT & PRESSURE SWITCHES & SENSORS

LIMIT & PRESSURE SWITCHES & SENSORS

MICRO SWITCHES

General purpose Z-type

Code Z15G-1701	Z15G-1702	Z15G-1703	Z15G-1704
Code Z15G-1744	Z15G-1300	Z15G-1305	Z15G-1306
		<p>Specifications</p> <p>Contact resistance: 15mΩ max (initial)</p> <p>Insulation resistance: 100MΩ min (at 500VDC)</p> <p>Dielectric strength: 1 000VAC 50/60Hz for 1 min</p> <p>Service life: Mechanically: 1 000 000 operations p/min</p> <p>Electrically: 100 000 operations p/min</p> <p>Current rating: 15A @ 250VAC C/O</p>	
Code Z15G-1307	Z15G-1705		
		<p>Mounting holes</p> <p>Terminal Cover for Z-type Micro Switches</p> <p>Code AA8000</p>	
Code Z15G-1308	Z15G-1318		

Type VS Micro switch (High mechanical life)

Code VS15P01C	VS15P02C	VS15P03C	VS15P04C
		<p>Specifications</p> <p>Contact resistance: 15mΩ max (initial)</p> <p>Insulation resistance: 100MΩ min (at 500VDC)</p> <p>Dielectric strength: 1 000VAC 50/60Hz for 1 min</p> <p>Service life: Mechanically: 1 000 000 operations p/min</p> <p>Electrically: 100 000 operations p/min</p> <p>Current rating: VS: 1C/O 15A @ 250V</p>	
Code VS15P05C	VS15P06C		
		<p>Mounting holes</p>	
Code VS15P07C	P-CS-71		

Push Buttons NEW

Fitting onto VS15P01C Micro Switch
Hole Size 10mm

Code **VAQ-5*** **VAQ-4***

Hole Size 12mm

Code **AB6161*** **AB5151***

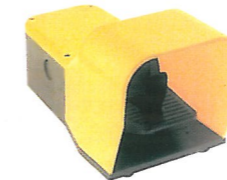
*Add colour of button: R, Y, G, B

LIMIT & FOOT SWITCHES

Code 1NO + 1NC	FS-1	FS-2	FS-3
Code 2NO + 2NC	-	-	-
Contacts	10A 250VAC (SPDT)	10A 250V (SPDT)	10A 250V (SPDT)
Enclosure material	Steel cover	Poly-carb	Aluminium
Cable/Entry	PVC 0.75mm x 3 core	PVC 0.75mm x 3 core	PVC 0.75mm x 3 core
IP rating	IP40	IP40	IP40
Spare contact 1NO + 1NC	-	-	-
			Heavy Duty
			FS-4 (SPDT)
			FS-4/DP (DPDT)
			15A 250VAC
			Aluminium
			Not supplied (16mm entry)
			IP54
			Z15G-1704

COMPEPI

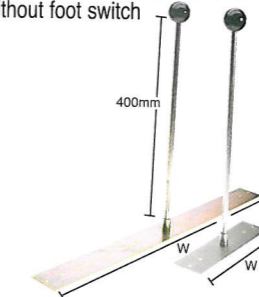
Footswitch with locking device in neutral position (Pedal in the up position)



Code NO + NC	FS-PS1211 (SPDT)
Code 2NO + 2NC	FS-PS1213 (DPDT)
Contacts	10A 250VAC
Enclosure material	Shock resistant ABS
IP rating	IP65
Cable/Entry	Not supplied (PG16 entry)
Spare contact 1NO + 1NC	Z11

Steel Mounting Frames

Without foot switch

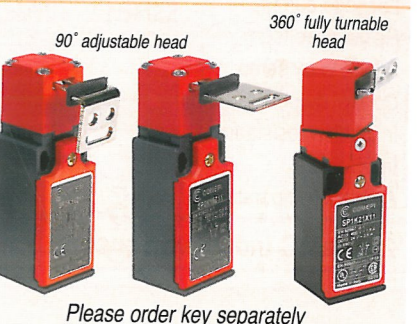
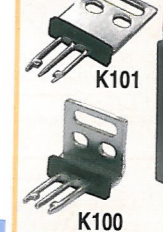


Code	Description	W
PD-1000	For 2 foot switches	350mm
PD-1002	For 4 foot switches	700mm

Safety Limit Switches

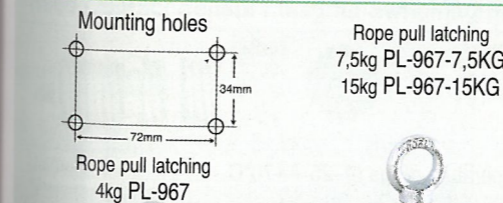
COMPEPI

Key fits front or top



Description	Code	Code
Limit Switch	SP5K20	SP5K120
Key	K101/K100	K101/K100
Contact	1NO + 1NC 3A@240VAC	
Enclosure	IP65 Plastic body	
Dimension	30 x 30 x 90 - M20 entry	

Rope Pull Switches



Code PL-967	PL-967-7.5KG	PL-967-15KG
Contacts 1NO + 1NC	Housing IP65 3A/400VAC	
Code	Description	
PL-967	4kg rope pull switch	
PL-967-7.5KG	7.5kg rope pull switch	
PL-967-15KG	15kg rope pull switch	

Safety Rope Break Switches

Complies to IEC-947-5-1. 1NO + 1NC positive action
AC-15 = 3A at 230V. ui = 690V
For cable lengths up to 6 metres

COMPEPI



	Not latching	Latching on rope break
With reset	SM5K98X11	SBM5K99X11
w/o reset	SM5K96X11	SBM5K97X11
	4.7kg 30 x 30 x 143 IP65 Die-cast Body M20 entry	6.7kg 40 x 44 x 162 IP66 Die-cast Body M20 entry

Rope Accessories

Description	Code
Steel Wire. PVC sheathed rope 100 metre Ø5mm Red	PWR
Thimble 6mm	SB209331/6
Clamp 6.5mm	SB209332/6.5
Eye bolt M8	SB209333/M8
Tensioner 8mm	SB209336/8



COMPACT RECTANGULAR/SQUARE INDUCTIVE SENSORS IP67

3 Wire DC Inductive Sensors



	PS17-5DN	PS17-8DN	PFI25-8DN	PSN25-5DN	PSN30-10DN	PSN30-15DN	PSN40-20DN	PS50-30DN	2 Wire DC Inductive
NPN NO	PS17-5DN	PS17-8DN	PFI25-8DN	PSN25-5DN	PSN30-10DN	PSN30-15DN	PSN40-20DN	PS50-30DN	NO Output
PNP NO	PS17-5DP	PS17-8DP	PFI25-8DP	PSN25-5DP	PSN30-10DP	PSN30-15DP	PSN40-20DP	PS50-30DP	PST17-5DO
NPN NC	PS17-5DN2	PS17-8DN2	PFI25-8DN2	PSN25-5DN2	PSN30-10DN2	PSN30-15DN2	-	PS50-30DN2	NC Output
PNP NC	-	-	PFI25-8DP2	PSN25-5DP2	PSN30-10DP2	PSN30-15DP2	PSN40-20DP2	PS50-30DP2	PST17-5DC
Switching distance	5mm ±10%	8mm ±10%		5mm ±10%	10mm ±10%	15mm ±10%	20mm ±10%	30mm ±10%	5mm ±10%
Hysteresis	Max. 10% of switching distance								
Standard detecting target	18 x 18 x 1mm (Iron)	25 x 25 x 1mm (Iron)			30 x 30 x 1mm (Iron)	45 x 45 x 1mm (Iron)	60 x 60 x 1mm (Iron)	90 x 90 x 1mm (Iron)	18 x 18 x 1mm (Iron)
Response frequency	700Hz	200Hz	300Hz	250Hz	200Hz	100Hz	50Hz		
Dimensions	17 x 17 x 31	26 x 10 x 49	25 x 25 x 39	30 x 30 x 53		40 x 40 x 53	53 x 53 x 35		17 x 17 x 31
Protection circuit	Surge protection circuit. Reverse polarity protection			Surge protection circuit. Reverse polarity protection. Overload & short-circuit protection					
Power supply (Operation voltage)				12-24VDC (10-30VDC)					
Leakage current				Max. 10mA					
Residual voltage				Max. 1.5V					
Affection by Temp.				-25 - +70°C					
Control output				200mA					
Insulation resistance				Min. 50MΩ (at 500VDC)					
Indicator				Operation indicator (Red LED)					
Ambient temperature				-25 - +70°C (at non-freezing status)					

2 Wire AC Inductive Sensors



	PSN25-5AO	PSN30-10AO	PSN30-15AO	PSN40-20AO
NO Output	PSN25-5AO	PSN30-10AO	PSN30-15AO	PSN40-20AO
NC Output	PSN25-5AC	PSN30-10AC	PSN30-15AC	PSN40-20AC
Switching distance	5mm ±10%	10mm ±10%	15mm ±10%	20mm ±10%
Hysteresis	Max. 10% of switching distance			
Standard detecting target	25 x 25 x 1mm (Iron)	30 x 30 x 1mm (Iron)	45 x 45 x 1mm (Iron)	60 x 60 x 1mm (Iron)
Dimensions	25 x 25 x 39	30 x 30 x 53	30 x 30 x 53	40 x 40 x 53
Power supply (Operation voltage)	100-240VAC (85-264VAC)			
Leakage current	Max. 2.5mA			
Response frequency	20Hz			
Residual voltage	Max. 10V			
Affection by Temp.	±10% Max. for detecting distance at +20°C within temperature range of -25 - +70°C			
Control output	5-200mA			
Insulation resistance	Min. 50MΩ (at 500VDC)			
Indicator	Operation indicator (Red LED)			
Ambient temperature	-25 - +70°C (at non-freezing status)			
Protection Circuit	Surge protection circuit			

AUTO DOOR SENSOR



Code	ADS-A
Supply Voltage:	24-240VAC
Relay Output:	0.1A @ 50VDC
Mounting Height:	2-2.7m (max. detecting distance: 3m)
Output Delay Time:	2/7/15 sec selectable by dip switch
Detection:	Four angles for front detection area, 7.5°, 14.5°, 21.5°, 28.5° Right/Left detection area elimination function

MAGNETIC PROXIMITY SENSORS IP67

Reed Contact Magnetic Sensors (Cable length 2m)



Nickel Plated Brass Housing

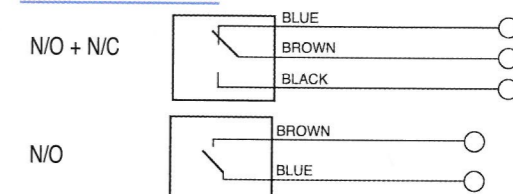
Diameter/Length	Code N/O	Amps		Code N/O+N/C	Amps		Code N/O	Amps		Code N/O + N/C	Amps	
		30VDC	250VAC		30VDC	250VAC		30VDC	250VAC		30VDC	250VAC
8 30mm	SM03	0.1A	0.01A	-	-	-	-	-	-	-	-	-
10 30mm	SM05	0.33A	0.04A	SM06	0.33A	0.04A	-	-	-	-	-	-
12 40mm				SM08	0.1A	0.01A	SM09	1.6A	0.2A	-	-	-
12 70mm							SM13	3A	0.4A	SM14	3A	0.4A
18 70mm							SM17	3A	0.4A	SM18	2A	0.25A

Plastic Housing	N/O	N/O+N/C		N/O		Bistable N/O			
6 38mm	-	SM02	0.1A	0.01A	-	-	-		
12 100mm	SM19	1.6A	0.2A	SM21	3A	0.4A	SM22	3A	0.4A

Specifications

Max Voltage	230VAC
Switching Frequency	200Hz
Delay on Activation	2mS
Repeatability	± 0.3mm
Temperature Limits	-20 to +60 °C
Cable section (N/O)	2 x 0.50mm ²
Cable section (N/O N/C)	3 x 0.50mm ²

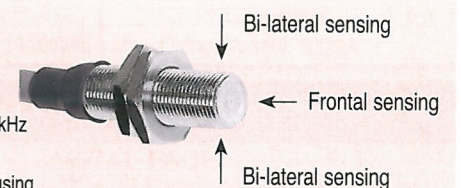
Wiring Diagrams



Hall Effect Magnetic Proximity Sensors 12-30VDC IP67

Type	Code Bi-lateral Sensing		Code Frontal Sensing	
	12mm	18mm	12mm	18mm
PNP N/O	HS03B	HS05B	HS03F	HS05F
PNP N/C	HS04B	HS06B	HS04F	HS06F

- Voltage 12-30VDC
- Fast 50µsec on/off
- LED yellow: output on
- LED green: supply on
- Switching frequency 10kHz
- Max output 200mA
- Nickel Plated Brass housing
- Cable length 2m



Reed Contact Sensor / Magnet Switching distances (mm)

	MG01	MG02	MG03	MG04	MG05	
	Distance	Hysteresis	Distance	Hysteresis	Distance	Hysteresis
Diameter 6	24	5	22	5	6	2.5
Diameter 8	24	5	22	5	6	2.5
Diameter 10	24	5	22	5	6	2.5
Diameter 12 (L=40mm)	24	5	22	5	6	2.5
Diameter 12 (L=70mm)	12	7	10	6	-	-
Diameter 18	12	7	10	6	-	-

Warning: The data specified in this table has an approximate value because they depend on the magnet position, the material on which it is applied (ferromagnetic or not) and because they are related to the magnet during the frontal approach. Reed contact sensors can also be activated laterally considering that switching distances are always influenced by the magnet position, orientation and the material on which it is applied (ferromagnetic or not).

Magnets Dimensions (mm)

