F

POWER QUALITY

Scan to watch video

Automatic mains failure (AMF) gen-set controllers

- Engine protection
- Programmable inputs and outputs / alarm properties
- Automatic starting of generator and load switching to stand-by emergency source in case of mains failure
- Supervision in “open transition” for contactors, motorised circuit breakers and changeover switches

RGK600

type	digital inputs	digital outputs	description	price
RGK600 series		**IP40**	*144 x 144 mm panel mounting*	
- Universal supply:			7…33 VDC	
- Display:			Graphic LCD 128 x 80 pixels with backlight	
- Measurement voltage:			50…576 VAC / Rated voltage: 480 VAC L-L	
- Current Input:			3PH, /5A or /1A	
- Single, two and three phase voltage control - L1-L2-L3-N				
- IR programming port on front panel for communication with PC				
- 3 analog resistance input for oil pressure, engine temperature or fuel level control				
- Customisable alarm text *(8 alarms)*				
- Non-volatile memory for event storage				
- Modbus-RTU and Modbus-ASCII protocols (***RGK610***)				
RGK600	4	6	basic AMF gen-set controller *with “W” or magnetic “pickup”for engine speed reading (no CANbus)*	**10 212.54**
RGK601	4	6	basic AMF gen-set controller *with CANbus-J11939 (no “W” or magnetic “pickup”)*	**10 780.17**
RGK610*	4	6	basic AMF gen-set controller *with “W” or magnetic “pickup”for engine speed reading (no CANbus)*	**11 275.79**

* *1 slot to accept plug-in expansion modules **EXP1010/1011/1012,** see page **F-7***

RGK750

RGK700 series		**IP65**	*180 x 240 mm panel mounting*	
*As above **RGK600** but with following additional features:*				
- Measurement voltage:			30…600 VAC / Rated voltage: 480 VAC L-L	
– Rated voltage:			RGK700 - 600 VAC L-L / RGK750 - 480 VAC L-L	
- 1 USB/optical and Wi-Fi on front panel for programming and PC communication				
- PLC logic for inputs, outputs and internal status				
- Expansion bus with 2 slots for **EXP...** series expansion modules (***RGK 750** only)*				
- Calendar-clock (RTC) with backup reserve energy				
RGK700	6	7	grey AMF gen-set controller	**11 393.41**
RGK750	8	9	black AMF gen-set controller	**12 624.66**
RGK800 series		**IP65**	*180 x 240 mm panel mounting*	
*As above **RGK750** but with following additional features:*				
- RS-485 communication (+ CANBUS)				
- Neutral current measurement range: 0.050…6A or 1.2A				
- 400Hz frequency support				
- 1 programmable analog input				
- Current leakage control				
- Expandable with rear plug-in expansion *(up to 3)* modules *(see page **F -7**)*				
RGK800	8	10	fully featured AMF gen-set controller	**14 904.79**

Paralleling controllers for mains - mains and generator - generator

- Engine protection
- Mains-generator “closed transition” synchronising
- Mains-generator load sharing with source peak demand control
- Generator paralleling supervision *(island mode with load sharing)*

RGK900

RGK900 series		**IP65**	*180 x 240 mm panel mounting*	
*As above **RGK800** but with following additional features:*				
- Voltage measurement range:			50-720 VAC / Rated voltage: 480 VAC L-L	
- Frequency measurement range:			45…65Hz or 360…440Hz	
- Display:			Graphic LCD 128 x 112 pixels with backlight	
- Customisable alarm text *(16 alarms)*				
- Modbus-RTU, Modbus-ASCII and Modbus-TCP communication protocols				
- 2 analog outputs for engine speed control *(governor)* / voltage regulator (AVR)				
- Built-in buzzer, multi-level passwords, sleep function				
RGK900SA	12	10	full featured stand alone gen-set controller	**44 330.32**
RGK900	12	10	mains-generator paralleling control	**45 038.36**
Control of mains, automatic transfer switching and paralleling on multiple generators controlled *by RGK900SA*				
RGK900MC	13	10	Mains-ATS *(Automatic Transfer Switching)* controller	**34 405.81**


RGK400SA

NFC


RGK420SA

NFC


RGK600SA

Stand alone gen-set controllers

- Generator voltage and current control
- Engine protection
- Programmable inputs and outputs
- Programmable alarm properties

type	digital inputs	digital outputs	description	price
RGK400SA series		**IP40**	*96 x 96 mm panel mounting*	

RGK 400SA and RGK 420SA with NFC technology are suitable for simple applications where only control, motor starting and monitoring of the electrical power alternator *(stand-alone applications, i.e. without the presence of the network)* are required.

– Universal supply: 12 / 24 VDC
– Display: LCD icon display
– Measurement voltage: 5...576 VAC
– Rated voltage: 480 VAC L-L
– Current Input: 1PH, /5A or /1A
– Engine protection: *With "W" or magnetic "pickup"for engine speed reading*
– 1 analog resistance input for oil pressure / engine temperature or fuel level control
– Single, two and three phase voltage control - L1-L2-L3-N
– Customisable alarm text *(2 alarms)*
– IR programming port on front panel for communication with PC ***(CX01, see page F-7)***
– NFC technology for parameter setup via smartphone or tablet

RGK400SA	5+1 (E/stop)	5	stand alone gen-set controller	**4 681.46**
RGK420SA*	5+1 (E/stop)	5	stand alone gen-set controller	**5 318.68**

* *Incorporates 3 position key switch (OFF, local start, remote start)*

RGK400SA accessories

Expansion modules *(rear plug-in)*

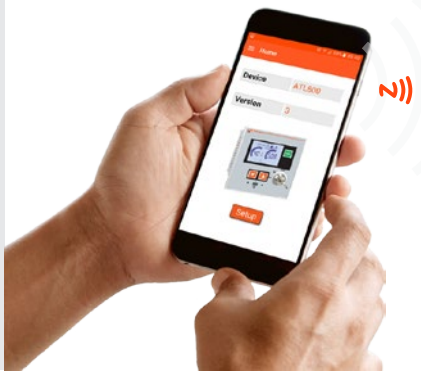
EXP1040	additional - 2 digital / resistance inputs, 2 static outputs	**3 032.57**
EXP1041	additional - 2 thermocouple inputs, 2 static outputs	**3 169.38**
EXP8005	housing gasket to increase protection to IP65	**174.02**

RGK600SA series		**IP40**	*144 x 144 mm panel mounting*	

*As above **RGK400SA** but with following additional features:*

– Universal supply: 12 / 24 VDC
– Display: Graphic LCD 128 x 80 pixels with backlight
– Measurement voltage: 50...576 VAC
– Rated voltage: 480 VAC L-L
– Current Input: 3PH, /5A or /1A
– Operating temperature: -30...+70°C
– 3 analog resistance input for oil pressure, engine temperature or fuel level control
– Customisable alarm text *(8 alarms)*
– No NFC technology
– Non-volatile memory for event storage
– Modbus-RTU and Modbus-ASCII protocols

RGK600SA	4	6	stand alone gen-set controller *with "W" or magnetic "pickup"for engine speed reading (no CANbus)*	**9 574.11**
RGK601SA	4	6	stand alone gen-set controller *with CANbus-J11939 (no "W" or magnetic "pickup")*	**10 141.74**



The app can be downloaded from Google Play Store and App Store

Available on the App Store

GET IT ON Google Play

Power quality


ATL100

Automatic Transfer Switch (ATS) controllers

- Tie-breaker management
- Remote control and supervision / Event logging
- Supervision of two or three three-phase power sources
- Automatic non-priority load management (ATL800, ATL900)
- Emergency demand supervision for stand-by generating sets
- Modbus-RTU, Modbus-ASCII and Modbus-TCP communication protocols
- IR programming port on front panel for communication with PC *(NFC on some models)*

Scan to watch video

type	digital inputs	relay outputs	description	price
ATL100 series (econo)	**IP40**	*(no display)*	*54 mm DIN mounting*	

ATL100 with its modular housing is suitable for monitoring two independent power sources and to manage switching between the two sources with single phase control.

- Supply voltage: 110...230 VAC • Rated voltage: 110..230 VAC L-L
- 2 single phase inputs and outputs L+N
- Response thresholds of min and max voltage: 80% and 120% of nominal setting
- LED indication: 2 x *(green)* presence of both input voltages, 1 x presence of output voltage
  1 x *(red)* indicates presence voltage out of limits on inputs

ATL100	2	3	single phase automatic transfer switch controller	**6 667.56**


ATL 500

NFC

ATL500 series (econo)	**IP40**	*(no display)*	*144 x 144 mm panel mounting*	

ATL500 is an automatic transfer switch that allows load commutation between two different source line, a main line (LINE 1) and a stand-by or emergency secondary line (LINE 2).

- Supply voltage: Self seeking power supply - 110...240 VAC LN
- Measurement inputs: 3-ph+N *(suitable for 1 and 2 phase lines)*
- Supported switching devices: Contactors and motorised changeovers
- Output relay: 2 NO for contactors / 1 NC to start genset
- Parameter setup: Via built-in NFC technology *(smartphone or tablet)*
- Monitoring functions: Overvoltage, Undervoltage Phase failure
  Wrong phase sequence, Asymmetry, Overfrequency
  Under frequency

ATL500	2	3	3-ph+N automatic transfer switch controller	**6 845.17**

ATL600 series	**IP40**	*(with LCD display)*	*144 x 144 mm panel mounting*	

- AC power supply 110...240 VAC • Rated voltage: 100...480 VAC L-L
- Management of two power sources
- Measurement inputs for 3-ph+N voltage values *(suitable for 1 and 2 phase lines)*
- 128 x 80 pixel backlit graphic LCD to view measurements, events and alarms

ATL600	6	7	automatic transfer switch controller for 2 sources	**13 176.70**
ATL601*	6	7	automatic transfer switch controller for 2 sources	**13 176.70**

* *With 12/24 VDC supply*


ATL601

ATL610 series

*As above **ATL600** but with following additional features:*

- Real time clock RTC
- Dual power supply *(110...240 VAC line and 12...24 VDC battery supply)*
- Expandable with I/O and communication modules

ATL610*	6	7	automatic transfer switch controller for 2 sources	**16 896.89**

* *2 slot to accept plug-in expansion modules **EXP1010/1011/1012/1013/1014,** see page **F-7***

ATL800 series	**IP65**	*(with backlit LCD display)*	*180 x 240 mm panel mounting*	

*As above **ATL610** but with following additional features:*

- Rated voltage: 100...600 VAC L-L
- With backlit graphic LCD display
- Management of 2 energy sources and 1 tie breaker
- Built-in NFC technology for parameter setup via smartphone or tablet
- Built-in RS-485 communication / Built-in programmable PLC logic
- Expandable with up to 3 rear plug-in expansion modules **EXP...** *(see page **F -7**)*

ATL800	8	7	automatic transfer switch controller for 2 sources	**35 005.84**

NFC

ATL900

ATL900 series	**IP65**		*180 x 240 mm panel mounting*	

*As above **ATL800** but with following additional features:*

- Management of 3 energy power sources and 2 tie breakers
- 4 current inputs for the three phases and neutral
- 14 preconfigured system layouts
- 128 x 112 backlit graphic LCD to view measurements, events and alarms

ATL900	12	11	automatic transfer switch controller for 3 sources	**110 741.79**

BCF...

Switching battery chargers

- For lead acid battery
- Switching technology
- Automatic reset at end of alarm conditions
- Charging cycle in accordance with DIN 41773 standards

type	output voltage	output current	max. power consumption VA	W	description	dimensions (mm) (H)	(W)	(D)	price
BCF series	**Modular automatic switching battery chargers**								
• Alarm output relay *(3A 250 VAC)* AC1 duty • Modular DIN rail mounting *(aligns with standard MCB's)* or chassis mount • Wide auxiliary supply range 100...240 VAC (±10%) 50/60Hz • Protection: - Mains input fuse *(non replaceable)* - Battery output fuse - Electronic lock in case of short circuit on battery terminals, reverse battery polarity and output overload • LED indication of: - Correct output voltage - Reverse battery polarity									
BCF025012	12V	2.5A	80	40	auto battery charger	96	90	56	**2 046.12**
BCF045012	12V	4.5A	150	70	auto battery charger	96	90	56	**2 535.74**
BCF012524	24V	1.25A	80	39	auto battery charger	96	90	56	**2 046.12**
BCF025024	24V	2.5A	150	77	auto battery charger	96	90	56	**2 535.74**

BCG ...

BCG series	**Rail mount switching battery chargers**								
• High efficiency • Alarm output relay *(5A 30 VDC duty)* • Wide auxiliary supply range 110...240 VAC (±10%) 50/60Hz • DIN rail or chassis mounting *(can be mounted vertically with adaptor)* • Boost signal controlled by external contact • Hiccup function for battery recharging when its voltage is lower than 50% rated value • Maximum charging current limiting trimmer 20...100% *(adjustable from front)* • Protection: - Mains input fuse - Electronic lock in case of short circuit on battery terminals, reverse battery polarity and output overload • LED indication of: - Power ON - Charging operation I>30% Ic - Overload or short circuit condition - Reverse battery polarity									
BCG0612	12V	6A	230	97	auto battery charger	150	162	63	**3 912.21**
BCG1212	12V	12A	284	290	auto battery charger	150	213	63	**7 582.00**
BCG0524	24V	5A	364	158	auto battery charger	150	162	63	**3 912.21**
BCG1024	24V	10A	630	311	auto battery charger	150	213	63	**7 582.00**
Accessories for above BCG battery chargers									
BCGX00	vertical side mount adaptor *(for space saving)* for ***BCG0612*** and ***BCG0524***								**129.62**
BCE series	**Linear battery chargers**								
• Linear technology • Auxiliary supply voltage: 220...240 VAC (±10%) 50/60Hz • Charging current: 30 - 100% Ie *(adjustable)* • Protection: - Mains input fuse *(except **BCE2V524** and **BCE0312**)* - Battery output fuse - Electronic lock in case of short circuit on battery terminals, reverse Battery polarity output overload (<0.5 Ue) and disconnected battery • LED indication of: - Power ON - Charge (I>0.2 Ic) - Alarm for protection tripping • Alarm output: Static NPN transistor BCE2V5 and BCE03 - others relay *(5A 250 VAC)*									
BCE0312	12V	3	117	–	auto battery charger	93	134	100	**5 105.08**
BCE0612	12V	6	222	–	auto battery charger	130	192	140	**8 234.84**
BCE1212	12V	12	400	–	auto battery charger	230	192	140	**12 144.64**
BCE2V524	24V	2.5	166	–	auto battery charger	93	134	100	**5 420.70**
BCE0524	24V	5	317	–	auto battery charger	130	192	140	**8 864.87**
BCE1024	24V	10	610	–	auto battery charger	230	192	140	**13 416.71**

BCE...

DCRL...

DCRL / DCRG Power Factor Controllers

DCRL/DCRG controllers incorporate latest technological advanced monitoring to provide accurate measurement and control of network parameters in power factor correction applications, providing total protection of capacitors and systems.

General features:

- Suitable for medium voltage systems (with VT's)
- High accuracy (TRMS) measurements with configurable alarms
- Wide voltage measurement range: 50...720 VAC L-L, 50....415 VAC L-N
- Expandable through clip-in expansion modules *(I/Os, Comm ports etc.)*
- Front mounted optic interface port for programming, data download, diagnostics

type	number of steps	expand to:	description	dimensions (mm) (H)	(W)	(D)	price
DCRL controllers 3, 5 and 8 step			*(one CT connection)*				
DCRL series power factor controllers with advanced functionality in a dedicated ultra compact housing, combine modern front design with ease of mounting and expendability.							
- Reactive power measurement per step installed - 3, 5 or 8 steps *(expandable with expansion module)* - Voltage and current THD with single harmonic analysis up to 15° order - Backlit icon LCD display *(alarm codes with scrolling text)* 128 x 80 pixels							
3 and 5 step controllers			*1 expansion slot*				
DCRL 3	3 step	6 step	panel mount power factor controller	96	96	65	**5 371.49**
DCRL 5	5 step	8 step	panel mount power factor controller	96	96	65	**6 217.53**
8 step controllers			*2 expansion slots*				
DCRL 8	8 step	14 step	panel mount power factor controller	144	144	44	**8 978.87**

Scan to watch video

DCRG 8

type	number of steps	expand to:	description	dimensions (mm) (H)	(W)	(D)	price
DCRG controllers 8 step			*single and three-phase CT connection*				
DCRG series power factor controllers are designed to satisfy technical characteristics of modern electrical installation requirements in all industries and working conditions, to detect critical operating conditions and offer total protection of power factor systems.							
- Recording of number of connections per step - Capacitor over-current protection on all three phases - Voltage and current THD with single harmonic analysis up to 31° order - 8 steps *(expandable by up to another 10 steps with plug-in expansion modules)* - Backlit graphic LCD display *(permits reading in bar-graph and wave form format)* - Configurable for fast dynamic *(thyristor)* switching or a combination of static and relay - Quick CT programming function / Automatic identification of direction of CT current flow - Calendar-clock (RTC) with backup reserve for event logging: Alarms, setup changes, etc. - Connection to 1/3 ph lines, 3 ph + N and co-generation systems with 4 quadrant operation - Three current inputs permit per phase analysis of all electrical parameters in the installation							
8 relay step controller			*4 expansion slots*				
DCRG 8	8 step	18 step	panel mount power factor controller	144	144	44	**11 437.81**
8 thyristor static step controller *(expandable up to 24 steps with expansion modules)*							
DCRG 8F	8 step	24 step	static step power factor controller	144	144	44	**13 296.70**

DCRG 8F

Expansion modules for controllers

EXP... series expansion modules add extra functionality to following panel mount products:

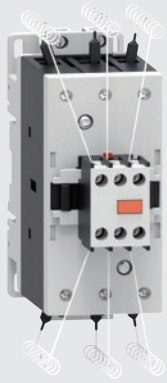
DMG 600/7500/8000/9000	- Digital multimeters and power analysers
DCRL and **DCRG**	- Automatic power factor controllers
ATL 600/800/900	- Automatic transfer controllers
RGK 400/600/750/800/900	- Generator controllers

type	inputs	outputs	description	price
EXP... Expansion modules			*(plug into rear of controller to add more functionality)*	
Inputs/Outputs				
EXP1006	–	2 relay	to increase number of capacitor steps	**1 066.87**
EXP1007	–	3 relay	to increase number of capacitor steps	**2 438.54**
EXP1000	4 digital	–	opto-isolated digital inputs	**2 068.92**

Note: *For more expansion modules options, see* ***F-7***

EXP...

BFK1810A



BFK11500A

G460

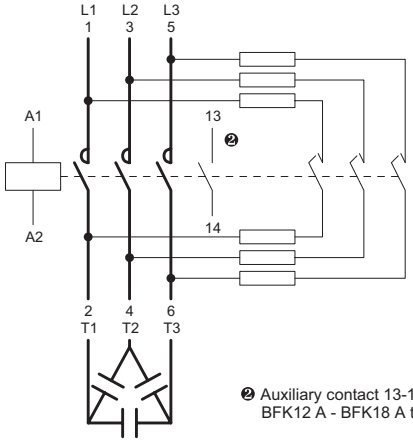
DCTLA...

Special capacitor switching contactors are equipped with early-make limiting resistors which limit in-rush currents initially before making contact. Resistors are disconnected from the circuit when contactor closing operation is complete.

type	kvar 400V	kvar 440V	rated current	auxiliary contact	description	price
Capacitor switching contactors						
BFK1210A...	12.5	14	18A	1NO	capacitor switching contactor	
BFK1810A...	15	17	23A	1NO	capacitor switching contactor	
BFK2600A...	20	22	30A	–	capacitor switching contactor	
BFK3200A...	25	27.5	36A	–	capacitor switching contactor	*see page* ***A-6*** *for pricing.*
BFK3800A...	30	33	43A	–	capacitor switching contactor	
BFK5000A...	40	45	58A	–	capacitor switching contactor	
BFK8000A...	50	56	75A	–	capacitor switching contactor	
BFK11500A...	75	85	115A	–	capacitor switching contactor	
BFK15000A...	100	115	144A	–	capacitor switching contactor	
Standard coil voltages (add to part number):				***AC*** *- 230/400 others available on request*		

Kit to assemble BFK contactors from standard contactors

type	description	for contactor	price
G460	kit to assemble standard contactors for capacitor switching	BF09…38	*see page* ***A-6*** *for pricing.*
BFX10K3	kit to assemble standard contactors for capacitor switching	BF50…80	
BFX10K4	kit to assemble standard contactors for capacitor switching	BF95 …150	



❷ Auxiliary contact 13-14 is found on BFK12 A - BFK18 A types only

Thyristor switching modules *(intelligent)*

DCTL series thyristor modules are ideal for dynamic correction of power factor. Zero cross switching guarantees very short switching times, reducing current peaks generated by capacitor insertion without voltage peaks on disconnection.
Integrated current transformers permit complete monitoring and protection of capacitor banks.

- Suitable for dynamic *(fast)* power factor correction
- Prevents high in-rush currents at capacitor switching
- Operational voltage: 400…480VAC *(690V available on request)*

Advanced communication functions

- NFC connectivity for programming via smart devices
- Optical port for frontal connection to a PC via USB or WiFi via ***CX01*** or ***CX02*** dongle
- Optional RS-485 card *(order code* ***EXC1042*** *- see page* ***A-14****)* for connection to DCRG8F controller

type	kvar 400V	kvar 480V	rated current	description	dimensions (mm) (H)	(W)	(D)	price
DCTLA4800180	15	18	22A	thyristor switching module	218	75	172	*see page* ***A-6*** *for pricing.*
DCTLA4800360	30	36	43A	thyristor switching module	218	75	172	
DCTLA4800600	50	60	72A	thyristor switching module	226	95	182	
DCTLA4801200	100	120	144A	thyristor switching module	301	212	216	


EXP...


CX02


CX01

Expansion modules for controllers

EXP... series expansion modules add extra functionality to following panel mount products:

DMG 600/700/800/900 - Digital multimeters and power analysers
DCRL and **DCRG** - Automatic power factor controllers
ATL 610/800/900 - Automatic transfer controllers
RGK 400/600/750/800/900 - Generator controllers

type	inputs	outputs	description	price
EXP expansion modules			*(plug into rear of controller to add more functionality)*	
Inputs/Outputs				
EXP1006	–	2 relay	to increase number of capacitor steps	**1 066.87**
EXP1007	–	3 relay	to increase number of capacitor steps	**2 438.54**
EXP1000	4 digital	–	opto-isolated digital inputs	**2 068.92**
EXP1001	–	4 static	opto isolated to increase static steps	**2 068.92**
EXP1002	2 digital	2 static	opto-isolated digital inputs and static outputs	**2 481.74**
EXP1003	–	2 relay	outputs rated 5A 250 VAC	**2 481.74**
EXP1004	2 analog	–	opto-isolated PT100, 0/4-20mA, 0-10V, 0…±5V	**7 439.20**
EXP1005	–	2 analog	opto-isolated 0/4-20mA or 0-10V or 0…±5V	**7 439.20**
EXP1016	3ph (A)	–	+ 2 x NTC for capacitor bank protection	**6 974.77**
Communication				
EXP1010	USB	–	opto-isolated USB interface	**3 721.41**
EXP1011	RS-232	–	opto-isolated RS-232 interface	**3 721.41**
EXP1012	RS-485	–	opto-isolated RS-485 interface	**1 532.49**
EXP1013	Ethernet	–	opto-isolated Ethernet with web server function	**3 577.39**
EXP1014	Profibus	–	opto-isolated Profibus-DP interface	**15 468.82**
Accessories				
51C2			PC - DCRL/DCRG connecting cable + **EXP1011** module	**1 197.67**
C9 cable			PC - Analog modem connecting cable	**3 134.57**
CX01			PC - controller USB dongle with connecting cable	**3 739.41**
CX02			PC - Controller Wi-Fi dongle for programming, data download, diagnostics	**9 343.70**

G - Communication

POLAR MONITORING

Remote monitoring solutions

Polar Monitoring offers comprehensive cloud solution that remotely monitors (RS-485) field devices from anywhere.

General features:

- Remote programming, monitoring, trending
- Alerts and notifications (SMS and email)
- Error codes and reporting
- Multiple user access rights
- Device agnostic *(Supports multiple types of devices and applications in one platform)*
- An ideal solution to monitor generator controllers and Power Factor Correction systems

new


PM-GW-LTE

Polar Monitoring gateways

Polar Monitoring Gateways are installed onto compatible RS-485 devices or sensors in the field to connect them to the Cloud platform. LTE Gateways use the GSM network to connect to the Cloud. Gateways have a pre-installed SIM Card, managed by Polar Monitoring. The Ethernet Gateway requires an on-site internet connection, directly into an existing network via DHCP

Each gateway includes:

- Three month trial subscription
- Plug and Play connection to Polar's Cloud
- The Gateways come in 2 variations depending on required Internet connectivity

LTE Gateways DIN mounting rail **IP40**

LTE Gateways use the GSM network to connect to the Cloud. Gateways have a pre-installed SIM Card, managed by Polar Monitoring.

- SIM: Pre-installed, no airtime/data required *(managed by Polar Monitoring)*
- Antenna Includes standard antenna (PM-A-2)

type	supply voltage	network connection	connector type	description
PM-GW-LTE	9-36 VDC	2G/LTE	terminal	LTE - Gateway *(within South Africa)*
PM-GW-LTE-G	9-36 VDC	2G/LTE	terminal	LTE - Gateway *(outside South Africa)*

*see page **G-1** for pricing.*

For more information, see page **G-1**

275.525-701400

275.186-405600

275.396-715401

275.100-10120

MKPg-275 series - Three-phase cylindrical capacitors

MKPg-275 three-phase power capacitors, dry self-healing dielectric, gas filled (N2) protecting windings from environmental influences extending life expectancy, permitting mounting in any position.

- Capacitance tolerance: -5...+10%
- Max. permissible current: 1.5...2 IN
- Max. inrush current: 300 x IN
- Dielectric losses: <0.25 W/kvar
- Impregnant *(filling):* Inert insulation gas (N2) completely harmless to the environment
- Mounting: M12 base mounted fixing stud *(any position)*
- Protection: Overpressure disconnection facility
- Standards: IEC/EN 60831, VDE 0560-46/47, CSA C22.2 - 190-M1985, UL - 810, GOST 1282-88

400...440V three-phase capacitors *Supplied with discharge resistors*

- Rated Voltage: 400...440V, 50 Hz
- Temp category: **-50/D** -50°C to +55°C Max. *(24 hr average 45°C - annual average 35°C)*
- Duty: Continuous *(life expectancy > 100.000 h)*

type	kvar at: 400V	440V	480V	CN µF 3 x	description	dimensions (mm) (H)	Ø	price
275.548-408200	**12.5**	15	–	82	3-ph cylindrical capacitor	245	75	**1 989.71**
275.269-416600	**25**	30	–	166	3-ph cylindrical capacitor	280	95	**2 991.76**
275.39B-527400*	**41**	50	–	274	3-ph cylindrical capacitor	295	136	**5 483.10**
275.105-10068*	discharge resistor module for **275.39B-527400** capacitor					3 x 68 kΩ		**93.62**

400...480V three-phase industrial capacitors

- For PFC equipment in mains with severe operating conditions or substantial voltage fluctuations.
- Temp category: **60** -50°C...+60°C Max. *(24 hr average 50°C - annual average 40°C)*
- Duty: Continuous *(life expectancy > 150,000 h)*
- Supplied with discharge resistors *(except * require separate discharge module)*

type	kvar at: 400V	440V	480V	CN µF 3 x	description	dimensions (mm) (H)	Ø	price
275.523-502800	**4.2**	5	6.1	33	3-ph cylindrical capacitor	196	60	**1 594.89**
275.545-504000	**6.2**	7.5	8.7	40	3-ph cylindrical capacitor	164	75	**1 856.51**
275.546-505800	**8.3**	10	12.5	58	3-ph cylindrical capacitor	230	75	**1 852.91**
275.546-506800	**10.0**	12.5	15.0	68	3-ph cylindrical capacitor	230	75	**2 023.32**
275.256-508300	**12.5**	15.0	18.0	83	3-ph cylindrical capacitor	230	85	**2 218.92**
275.266-511100	**16.8**	20.0	24.1	111	3-ph cylindrical capacitor	230	95	**2 760.16**
275.278-513700	**20.0**	25.0	30.0	137	3-ph cylindrical capacitor	245	100	**2 785.36**
275.279-516600	**25.0**	30.0	36.0	166	3-ph cylindrical capacitor	280	100	**2 910.16**
275.389-519900*	**30.0**	36.0	43.0	199	3-ph cylindrical capacitor	280	116	**3 540.19**
275.389-522100*	**33.3**	40.0	48.0	221	3-ph cylindrical capacitor	280	116	**3 943.41**
275.100-10120*	discharge resistor module for **275.389-519900** capacitor					3 x 120 kΩ		**80.42**
275.105-10100*	discharge resistor module for **275.389-522100** capacitor					3 x 100 kΩ		**93.62**

525V three-phase capacitors

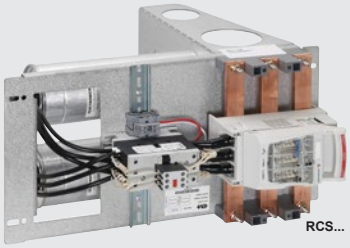
- Temperature category: **D** -40°C...+55°C (Max: 24 hr average 45°C - annual ave 35°C)
- Duty: Continuous *(life expectancy 480V >150000 h 525V >100000 h)*
- Supplied with discharge resistors *(except * require separate discharge module)*

type	kvar at: 400V	480V	**525V**	CN µF 3 x	description	dimensions (mm) (H)	Ø	price
275.525-701400	2.2	3.0	**3.6**	14	3-ph cylindrical capacitor	164	60	**1 448.49**
275.535-601900	3	4.1	**5**	19	3-ph cylindrical capacitor	164	65	**1 513.29**
275.546-703800	6.2	8.3	**10**	38	3-ph cylindrical capacitor	230	75	**1 880.51**
275.548-605800	9.4	12.5	**15**	58	3-ph cylindrical capacitor	245	75	**1 934.51**
275.266-607700	12.5	16.7	**20**	77	3-ph cylindrical capacitor	230	95	**2 624.54**
275.269-611500	18.6	25.0	**30**	115	3-ph cylindrical capacitor	280	95	**2 995.36**
275.396-715401*	25	33.4	**40**	154	3-ph cylindrical capacitor	230	136	**4 388.64**
275.105-10100*	discharge resistor module for 40 kvar 525V capacitor					3 x 100 kΩ		**93.62**

690V three-phase capacitors

- Temperature category: **60** -40°C...+60°C *(Max: 24 hr average 50°C - annual ave 40°C)*
- Duty: Continuous *(life expectancy > 150000 h)*

type	kvar at: **690V**	760V	400	CN µF 3 x	description	dimensions (mm) (H)	Ø	price
275.185-402800*	**12.5**	15	–	27.6	3-ph cylindrical capacitor	164	116	**3 032.57**
275.186-405600*	**25**	30	–	56	3-ph cylindrical capacitor	230	116	**3 572.59**
275.39B-411100*	**50**	60	–	111	3-ph cylindrical capacitor	295	136	**5 891.12**
275.100-10300*	discharge resistor module for 12.5/25 kvar 690V capacitor					3 x 300 kΩ		**80.42**
275.105-10180*	discharge resistor module for 50 kvar 690V capacitor					3 x 180 kΩ		**93.62**


RCS...

RC series - Power Factor Correction (PFC) rack system

RC series Power Factor racks (single and double step versions) are designed for direct panel mounting onto vertical supports within floor standing electrical panels. The 7% and 14% detuned harmonic capacitor bank are availble for networks with high level of harmonics.

RC series - Racks design incorporates the following:

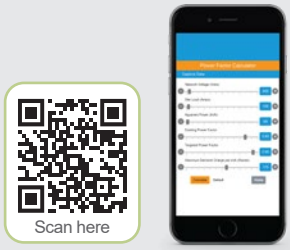
- Sheet metal mounting frame for easy panel mounting
- Electronicon heavy duty "gas filled" cylindrical capacitors *(with integrated discharge resistors)*
- Special capacitor switching contactors 400VAC coil *(230V on request)*
- Three-phase busbar mounted fuse disconnector with hinged fuse protection cover
- Suitably rated HRC fuses per phase of each capacitor bank
- Incorporated busbar, supports and inter-connecting busbar links

type	kvar at:			description	dimensions (mm)			price
	400V	440V	480V		(H)	(W)	(D)	
RC series - Racks (480V capacitors) *without harmonic reactors*								
Single step racks - 480V capacitors - fuse protection								
RCS01204	**12.5**	14	17	single step capacitor rack	270	545	320	**10 196.94**
RCS02504	**25**	28	34	single step capacitor rack	270	545	320	**12 816.68**
RCS05004	**50**	56	67	single step capacitor rack	270	545	320	**18 036.95**
Double step racks 480V capacitors - separate fuse protection for each bank								
RCD02524	**2 x 12.5**	2 x 14	2 x 17	double step capacitor rack	270	545	320	**15 600.82**
RCD05024	**2 x 25**	2 x 28	2 x 34	double step capacitor rack	270	545	320	**21 085.11**
RCD10024	**2 x 50**	2 x 56	2 x 68	double step capacitor rack	270	545	320	**31 489.65**
RCD03734	**12.5+25**	14 + 28	17 + 34	double step capacitor rack	270	545	320	**18 336.97**
RCD07534	**25 + 50**	28 + 56	34 + 68	double step capacitor rack	270	545	320	**26 233.38**


RCD...

type	kvar at:			description	dimensions (mm)			price
	400V	525V	**550V**		(H)	(W)	(D)	
Double-step racks - 690V capacitors *for use in 400/525/550V networks (230V coil)*								
RCD64026	2 x 17	2 x 30	**2 x 32**	double step capacitor rack	270	545	320	**34 477.81**
HR7 series - Racks (480V capacitors) with 7% detuned harmonic capacitor banks								
7% - 189 Hz De-tuned reactors *for networks with a high level of 5th and 7th Harmonics*								
type	kvar at:			description	dimensions (mm)			price
	400V	440V	480V		(H)	(W)	(D)	
Single step racks 480V capacitors - *fuse protection*								
HRS013074	**12.5**	14	17	capacitor + 7% reactor rack	310	740	538	**17 628.93**
HRS025074	**25**	28	34	capacitor + 7% reactor rack	310	740	538	**23 305.22**
HRS050074	**50**	56	67	capacitor + 7% reactor rack	310	740	538	**32 653.71**
Double step racks 480V capacitors - *separate fuse protection for each bank*								
HRD025274	**2 x 12.5**	2 x 14	2 x 17	capacitor + 7% reactor rack	310	740	538	**28 105.48**
HRD050274	**2 x 25**	2 x 28	2 x 34	capacitor + 7% reactor rack	310	740	538	**39 050.05**
HRD100274	**2 x 50**	2 x 56	2 x 68	capacitor + 7% reactor rack	310	740	538	**58 287.05**
HRD038374	**12.5+25**	14 + 28	17 + 34	capacitor + 7% reactor rack	310	740	538	**33 613.76**
HRD075374	**25 + 50**	28 + 56	34 + 68	capacitor + 7% reactor rack	310	740	538	**48 806.56**
HR14 series - Racks (525V capacitors) with 14% detuned harmonic capacitor banks								
14% - 134 Hz De-tuned reactors *for networks with a high level of 3rd Harmonics*								
type	kvar at:			description	dimensions (mm)			price
	400V	440V	480V		(H)	(W)	(D)	
Single step racks 525V capacitors - *fuse protection*								
HRS054144	**50**	56	68	capacitor + 7% reactor rack	310	740	538	**41 822.19**
Double step racks 525V capacitors - *separate fuse protection for each bank*								
HRD025144	**2 x 12.5**	2 x 14	2 x 17	capacitor + 14% reactor rack	310	740	538	**34 921.83**
HRD050144	**2 x 25**	2 x 28	2 x 34	capacitor + 14% reactor rack	310	740	538	**52 106.73**
HRD038144	**12.5+25**	14 + 28	17 + 34	capacitor + 14% reactor rack	310	740	538	**43 406.28**


HRD...



Scan above to try the PFC Calculator.

FMS series - Power factor Correction (PFC) *(automatic)*

For applications with varying capacitor requirements. An automatic reactive controller monitors the network and only switches capacitor banks when required, avoiding potential over or under compensation in a network.

FMS series - Floor standing systems

Complete ready-to-install system comprising following:

- Suitably ventilated floor standing enclosure *(thermostatically controlled roof mounted exhaust fan)*
- Mains isolator, door interlocking *(with early make/late break auxiliary contact)*
- **DCRG 8** high end reactive control relay *(incorporating digital display of all important network parameters)*
- Bottom cable entry *(top entry available on request)*
- RC series racks with heavy duty capacitors, fusegear, capacitor switching contactors and busbar system

Able to monitor all three phase voltage and current to providing accurate indication of:

- Active, Apparent Power as well as Active, Reactive, Apparent Energy monitoring
- Current and Voltage Harmonics analysis *(up to 31st harmonic)*
- Event logging: alarms, setup changes, events etc. *(internal memory stores last 250 events)*
- Internal panel temperature monitoring
- Expandable with up to 4 expansion modules for:
  Analog Inputs/Outputs, RS-323, RS-485, Ethernet, optional remote monitoring see ***G-1***

type	kvar at:		steps (kvar) at 400V				Expands	dimensions (mm)			price
	400V	440V	12.5	25	50	100	to (kvar)	(H)	(W)	(D)	
FMS series - Floor standing complete power factor systems *(480V capacitors)*											
• *Using 480V heavy duty capacitors with RC racks for use in 400V networks*											
400V floor standing complete power factor systems											
FMS13804	**138**	165	1	1	2	–	475	2180	600	630	**105 653.60**
FMS17504	**175**	210	–	1	3	–	475	2180	600	630	**113 369.90**
FMS21304	**213**	255	1	2	3	–	475	2180	600	630	**134 407.00**
FMS23804	**238**	285	1	1	2	1	475	2180	600	630	**139 687.30**
FMS27504	**275**	330	–	1	3	1	475	2180	600	630	**147 487.70**
FMS31304	**313**	375	1	2	1	2	475	2180	600	630	**165 848.70**
FMS33804	**338**	390	1	1	2	2	475	2180	600	630	**171 128.90**
FMS37504	**375**	450	–	1	3	2	475	2180	600	630	**179 049.40**
FMS43804	**438**	525	1	1	2	3	475	2180	600	630	**202 570.60**
FMS47504	**475**	570	–	1	1	4	–	2180	600	630	**211 571.10**
Double floor standing panels*											
FMS57524*	**575**	690	–	1	1	5	950	2180	1200	630	**287 655.00**
FMS67524*	**675**	810	–	1	1	6	950	2180	1200	630	**319 096.70**
FMS77524*	**775**	930	–	1	1	7	950	2180	1200	630	**351 738.39**
FMS87524*	**875**	1050	–	1	1	8	950	2180	1200	630	**384 380.00**

FMS...

FMS series - Floor standing complete PFC systems

• *Using 690V heavy duty capacitors with RC racks for use in 400/525/550V networks*

type	kvar at:			step kvar at 550V		Expands	dimensions (mm)			price
	400V	525V	**550V**	32	64	to (kvar)	(H)	(W)	(D)	
FMS12806	68	120	**128**	2	1	320	2180	600	630	**129 006.80**
FMS19206	102	180	**192**	2	2	320	2180	600	630	**163 448.50**
FMS25606	136	240	**256**	2	3	320	2180	600	630	**197 890.30**
FMS32006	170	300	**320**	2	4	–	2180	600	630	**232 332.20**
FMS38426*	204	360	**384**	2	5	640	2180	1200	630	**312 736.30**
FMS44826*	238	420	**448**	2	6	640	2180	1200	630	**348 378.20**
FMS51226*	272	480	**512**	2	7	640	2180	1200	630	**382 820.00**
FMS57626*	306	540	**576**	2	8	640	2180	1200	630	**417 261.70**
FMS64026*	340	600	**640**	2	9	–	2180	1200	630	**453 263.60**
FMS70426**	374	660	**704**	2	10	960	2180	1800	630	**532 227.80**
FMS76826**	408	720	**768**	2	11	960	2180	1800	630	**566 669.60**
FMS83226**	442	780	**832**	2	12	960	2180	1800	630	**601 111.30**
FMS89626**	476	840	**896**	2	13	960	2180	1800	630	**635 553.20**
FMS96026**	510	900	**960**	2	14	–	2180	1800	630	**670 114.90**

Note: *Larger systems are made up with two (*) or three (**) panels each incorporating an individual isolator requiring supply cable to be split between the isolators.*

DCRG 8 (Door mount)

FHS...

FHS series - Floor standing power factor systems *(with anti-harmonic de-tuned capacitor banks)*

- For networks with THDU ≤6% and/or THDI ≤40%

Growing use of power electronic devices such as: variable speed drives, inverters, UPS systems, battery chargers, LED lighting etc. is causing increasing levels of harmonic distortion in electrical networks, often leading to problems with capacitor installations.

Installation of detuned *(reactor-connected)* capacitors designed to force the resonant frequency of the network below the frequency of the lowest harmonic present *(usually the 5th)* thereby ensuring no resonant circuit or amplification of harmonic currents. Such an installation also has a partial filtering effect, reducing the level of voltage distortion on the supply.

Detuned capacitors are safer than non-detuned capacitors and future-proof for conditions of more and more deteriorating power quality in modern mains.

Complete ready-to-connect floor standing power factor system comprising:

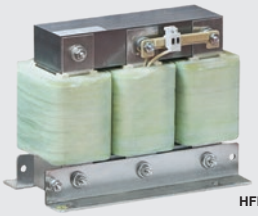
- Suitably ventilated floor standing enclosure with roof mounted exhaust fan
- Mains isolator, door interlocking *(with early make/late break auxiliary contact)*
- HR heavy duty racks comprising: capacitors, reactors, switchgear, fusegear and busbars
- High end reactive control relay DCRG 8 *(incorporating digital display of all important network parameters)*

  Configurable to monitor three voltage and current phases and provide accurate indication of:
  - Active, Apparent power as well as Active, Reactive, Apparent Energy monitoring
  - Current and Voltage Harmonics analysis (up to 31st harmonic)
  - Calendar-clock with backup reserve power
  - Event logging: alarms, setup, changes, ect. *(internal memory stores last 250 events)*
  - Internal panel temperature monitoring
- Expandable with up to 4 expansion modules for:
  - Additional steps, Analog I/O's, RS-323, RS-485, Ethernet, optional - remote monitoring- See page, **G-1**

type	kvar at:		steps (kvar) at 400V				Expands	dimensions (mm)			price
	400V	440V	12.5	25	50	100	to kvar	(H)	(W)	(D)	
Anti-harmonic systems incorporating 7% de-tuned capacitor banks *(480V capacitors)*											
• **7% - 189 Hz De-tuned reactors** *for 400V networks with a high level of 5th and 7th Harmonic*											
FHS138074	**138**	165	1	1	2	–	375	2280	900	600	**159 608.30**
FHS175074	**175**	210	–	1	3	–	375	2280	900	600	**174 369.10**
FHS213074	**213**	255	1	2	3	–	375	2280	900	600	**211 211.00**
FHS238074	**238**	285	1	1	2	1	375	2280	900	600	**220 691.50**
FHS275074	**275**	330	–	1	1	2	375	2280	900	600	**238 092.50**
FHS313074	**313**	375	1	2	1	2	375	2280	900	600	**271 694.20**
FHS338074	**338**	405	1	1	2	2	375	2280	900	600	**281 174.60**
FHS375074	**375**	450	–	1	1	3	–	2280	900	600	**296 655.50**
FHS438074*	**438**	525	1	1	2	3	775	2280	1800	600	**399 620.90**
FHS475074*	**475**	570	–	1	1	4	775	2280	1800	600	**414 861.70**
FHS538074*	**538**	645	1	1	2	4	775	2280	1800	600	**457 943.80**
FHS575074*	**575**	690	–	1	1	5	775	2280	1800	600	**473 184.70**
FHS638074*	**638**	765	1	1	2	5	775	2280	1800	600	**516 266.90**
FHS675074*	**675**	810	–	1	1	6	775	2280	1800	600	**531 387.80**
FHS738074*	**738**	885	1	1	2	6	775	2280	1800	600	**574 469.90**
FHS775074*	**775**	930	–	1	1	7	–	2280	1800	600	**590 790.80**
FHS838074**	**838**	1005	1	1	2	7	975	2280	2700	600	**678 875.40**
FHS875074**	**875**	1050	–	1	1	8	975	2280	2700	600	**707 916.90**
FHS975074**	**975**	1170	–	1	1	9	–	2280	2700	600	**766 120.00**
Anti-harmonic systems incorporating 14% de-tuned capacitor banks *(525V capacitors)*											
• **14% - 134 Hz De-tuned reactors** *for 400V networks with a high level of 3rd Harmonic*											
FHS138144	**138**	165	1	1	2	–	203	2280	900	600	**199 690.40**
FHS150144	**150**	180	–	2	2	–	203	2280	900	600	**208 450.90**
FHS200144	**200**	240	–	2	3	–	–	2280	900	600	**250 213.00**
FHS238144*	**238**	285	1	1	4	–	432	2280	1800	600	**342 137.90**
FHS288144*	**288**	345	1	1	5	–	432	2280	1800	600	**384 020.00**
FHS300144*	**300**	360	–	2	5	–	432	2280	1800	600	**392 660.50**
FHS350144*	**350**	420	–	2	6	–	432	2280	1800	600	**435 622.80**
FHS400144*	**400**	480	–	2	7	–	–	2280	1800	600	**477 384.90**
FHS450144**	**450**	540	–	2	8	–	648	2280	2700	600	**519 267.10**
FHS500144**	**500**	600	–	2	9	–	648	2280	2700	600	**619 832.30**
FHS550144**	**550**	660	–	2	10	–	648	2280	2700	600	**661 714.60**
FHS600144**	**600**	720	–	2	11	–	648	2280	2700	600	**703 476.70**

Note: *Larger systems are made up with two (*) or three (**) panels each incorporating an individual isolator requiring supply cable to be split between the isolators.*


WMS...


HFRA...


EXP1011


PM-GW-LTE

WMS series - Wall mount power factor systems *(automatic)* 400/440V

For applications with varying capacitor requirements. An automatic reactive controller monitors the network and only switches capacitor banks when required, avoiding potential over or under compensation in a network.

Complete ready-to-install system comprising following:

- Reverse-flow fan ventilated wall mount enclosure, bottom cable entry (top entry on request)
- Mains isolator, door interlocking (with early make / late break auxiliary)
- Heavy duty three phase capacitors (with internal discharge resistors)
- Reactive control relay DCRL 5 (digital display of all important electrical network parameters)
- "Special" capacitor switching contactors incorporating limiting resistors
- HRC fuse protection *(per capacitor bank)*

type	kvar at:		steps (kvar) at 415V			Expands	dimensions (mm)			price
	400V	440V	12.5	25	50	to (kvar)	(H)	(W)	(D)	
WM series - Wall mount complete power factor systems *(440V capacitors)*										
WMS03804	**37.5**	45	1	1	–	87.5	950	700	270	**35 485.86**
WMS05004	**50**	60	2	1	–	87.5	950	700	270	**40 310.11**
WMS06304	**62.5**	75	1	2	–	87.5	950	700	270	**43 118.26**
WMS07504	**75**	90	2	2	–	87.5	950	700	270	**47 930.51**
WMS08804	**87.5**	105	1	3	–	–	950	700	270	**51 638.70**
WMS10004	**100**	120	2	1	1	150	950	700	270	**55 982.92**
WMS11304	**112.5**	135	1	2	1	150	950	700	270	**59 427.11**
WMS12504	**125**	150	2	2	1	150	950	700	270	**62 787.29**
WMS13804	**137.5**	165	1	1	2	150	950	700	270	**66 039.46**
WMS15004	**150**	180	–	2	2	–	950	700	270	**69 939.65**

HFRA series - De-tuned anti-harmonic reactors 400V, 50Hz

Detuned reactors protect capacitors against harmonics, avoiding parallel resonance and amplification of harmonics flowing within the network.

- Insulation: F class insulation, 155°C
- Internal protection: Thermal cutout (125°C) incorporated *(on centre phase)*
- Reference standards: IEC/EN 60076-6, 61558-2-20

type	kvar at:		%	description	dimensions (mm)			price
	400V	440V			(H)	(W)	(D)	
7% - 189 Hz De-tuned reactors				*for networks with a high level of 5th and 7th Harmonics*				
HFRA1207	**12.5**	15	7%	anti-harmonic reactors	215	210	120	**5 175.88**
HFRA2507	**25**	30	7%	anti-harmonic reactors	190	240	170	**7 590.40**
HFRA5007	**50**	60	7%	anti-harmonic reactors	240	300	180	**10 834.18**
14% - 134 Hz De-tuned reactors				*for networks with a high level of 3rd Harmonic*				
HFRA1314	**12.5**	15	14%	anti-harmonic reactors	280	240	150	**7 798.02**
HFRA2714	**25**	30	14%	anti-harmonic reactors	250	330	220	**11 730.63**
HFRA5414	**50**	60	14%	anti-harmonic reactors	270	340	220	**14 772.78**

Communication modules for PFC systems

For remote monitoring and control of all electrical network parameters including harmonics, panel internal temperature, alarms, events and all setup parameters.

Communication modules simply plug-in to the controller and are automatically configured to offer various communication protocols.

EXP1011	opto-isolated	RS-232 plug-in communication	expansion module	**3 721.41**
EXP1012	opto-isolated	RS-485 plug-in communication	expansion module	**1 532.49**
EXP1013	opto-isolated	Ethernet with web server function	expansion module	**3 577.39**
EXP1014	opto-isolated	Profibus-DP plug-in communication	expansion module	**15 468.82**

Remote monitoring solutions for PFC systems

Polar Monitoring offers remote monitoring systems that enable (RS-485) devices to be securely viewed from anywhere via its comprehensive cloud platform. This provide an ideal solution to monitor generator controllers and Power Factor Correction systems.

General features:

- Remote programming, monitoring, trending
- Alerts and notifications (SMS and email)
- Error codes and reporting
- Multiple user access rights
- Device agnostic (Supports multiple types of devices and applications in one platform)

see page G-1 for pricing.

type	supply voltage	network connection	connector type	description
PM-GW-LTE	9...36 VDC	2G/LTE	terminal	LTE - Gateway *(within South Africa)*

For more information, see page **G-1**

Static Var Generator (SVG) systems

The increase of non-linear and other challenging loads in electrical grids today present unique power quality challenges. **SVG** (Static Var Generator) provides a cost effective, extremely fast solution to power quality problems, enhancing equipment operating life whilst improving overall power system capacity.

SVG is the new standard in reactive energy compensation, a highly accurate, reliable solution for today's networks characterised by significant increases in harmonics. SVG provides stable, accurate, real-time PFC *(without the drawbacks of traditional capacitor based systems)*

The **SVG** operates by detecting the load current, analysing the reactive content and then injecting the exact reverse reactive compensating current on an instantaneous real-time basis enabling perfect compensation on each phase for both inductive and capacitive loads.

Typical applications

- Highly dynamic loads requiring rapid reactive power compensation, e.g: electric arc furnaces, or in big steps like cranes, sawmill machinery, etc.
- Electrical welding systems
- Data centres — for correction of leading power factor
- UPS systems — enabling back-up generators to easily synchronise with network UPS systems,
- Renewable power generation — *(e.g. photovoltaics and wind turbines)*
- Plastic industry machinery — *(e.g. extruders, injection moulders)*
- Loads with low power factor: — Motors, cables, lightly loaded transformers, lighting, etc.

SVG an IGBT based compensation device with the following advantages:

- Is a controllable current source, avoiding harmonic amplification which may be present
- Can dynamically and continuously compensate power factor according to the change of load. The module exports reactive power and can absorb reactive power, completely eliminating reactive power reverse transmission.
- With response time of ≤ 5ms, and the conversion from conductive reactive power to inductive reactive power can be accomplished almost instantaneously and can be fully utilised for fast switching loads

Benefits include: Reduced maintenance, a considerably longer lifespan, compact size

new

SFR-SVG4...

- Complete power quality improvement solution including real-time elimination of harmonics and flicker mitigation
- Provides dynamic step-less compensation instantaneously in real-time to each phase individually
- Only injects the kVAr required in that moment with no possibility of over or under-compensation
- Can maintain a PF of 0.99 lagging or unity *(if required)* for both inductive and capacitive loads
- Voltage fluctuations *(flicker)* mitigation and reduction of voltage *(sag and swell)* variations
- Correcting phase imbalance *(reducing the peak current which reduces the peak demand tariff on electricity bills)*
- Immune to harmonics, resonance and voltage level and is maintenance free *(with no electromechanical components)*
- Expandable by paralleling up to 8 modules *(unnecessary to over-dimension capacity to cater for future needs)*
- Output current is unaffected by mains voltage fluctuations providing stable support for mains voltage

Static Var Generator (SVG) system

- Overall efficiency: ≥97%
- Overload capability: 120%
- Response time: ≥5ms
- Communication port: RS-485 - Modbus-RTU protocol
- Display interface: 4.3" LCD
- Operating temp: -20°C...45°C
- Cooling: Forced air cooling *(fan cooling)*

type	kvar	description	rated input (V)	dimensions (mm) (H)	(W)	(D)	price
Static Var Generator (SVG) - Wall mount system			*(3 phase 4 wire) 400V*				
SFR-SVG4-30/0.4B	30 kvar	Static Var Generator (SVG)	400V ± 15%	759	520	237	**141 487.39**
SFR-SVG4-50/0.4B	50 kvar	Static Var Generator (SVG)	400V ± 15%	759	520	237	**181 929.49**
SFR-SVG4-75/0.4B	75 kvar	Static Var Generator (SVG)	400V ± 15%	759	520	237	**222 371.61**
SFR-SVG4-100/0.4B	100 kvar	Static Var Generator (SVG)	400V ± 15%	759	520	237	**266 773.92**

Larger sizes can be made up by paralleling up to 8 wall mount systems.

Note: *External protection, a breaker is required.*

Above ZAR prices do not include VAT. E&OE

Active Power Filter (APF) systems

The increase of non-linear and other challenging loads in electrical grids today present unique power quality challenges. APF (Active Power Filter) provides a cost efficient solution to power quality problems, eliminating resonance problems, preventing amplified harmonic current and voltage, simultaneously compensating reactive power in real-time to maintain power factor at >0.99, enhancing equipment operating life whilst improving overall power system capacity.

APF systems provide multiple compensation functionality including:

- **Harmonic compensation** *(filtering any order from 2nd to 50th harmonic)*
- **Power Factor compensation** *(compensating in real-time to maintain power factor at >0.99)*
- **Phase Imbalance compensation** *(reducing the peak current demand tariff on electricity bills)*

APF is the new standard in harmonic filtering, a highly accurate, reliable solution for today's networks characterised by significant increases in harmonics, able to provide stable, accurate, real-time PFC *(without the drawbacks of traditional capacitor based systems)*

Typical applications

Malls, shopping centres, office blocks, hospitals, printing works, processing plants, Data centres, pumping stations and all applications where Harmonic generating equipment such as variable speed drives *(VSD's)* rectifiers, battery charges, UPS's, Power supplies, LED lighting is utilised.

- Plastic industry machinery
- Loads with low power factor:

Benefits include: Reduced maintenance, a considerably longer lifespan

- Complete power quality improvement solution including real-time elimination of harmonics and flicker mitigation
- Provides dynamic step-less compensation instantaneously in real-time to each phase individually
- Only injects the kVAr required in that moment with no possibility of over or under-compensation
- Voltage fluctuations *(flicker)* mitigation and reduction of voltage *(sag and swell)* variations
- Correcting phase imbalance *(reducing the peak current reducing peak demand tariff on electricity bills)*
- Maintenance free *(with no electromechanical components)*
- Expandable by paralleling up to 8 modules *(unnecessary to over-dimension capacity to cater for future needs)*
- Output current is unaffected by mains voltage fluctuations providing stable support for mains voltage

new

SFR-APF4...

Active Power Filter (APF) systems

- Harmonic compensation: 2nd to 51st order
- Response time: <5ms
- Efficiency: ≥97%
- Communication port: RS-485 - Modbus-RTU protocol
- Display interface: 4.3" LCD
- Operating temp: -20°C...45°C
- Cooling: Forced air cooling *(fan cooling)*
- Protection class: IP20

type	rated current	description	rated input (V)	dimensions (mm) (H)	(W)	(D)	price
Active Power Filters (APF) - Wall mount system *(3 phase 4 wire) 400V*							
SFR-APF4-30/0.4B	30A	Active Power Filter (APF)	400V ±15%	759	520	237	**125 286.54**
SFR-APF4-50/0.4B	50A	Active Power Filter (APF)	400V ±15%	759	520	237	**157 688.24**
SFR-APF4-75/0.4B	75A	Active Power Filter (APF)	400V ±15%	759	520	237	**189 969.91**
SFR-APF4-100/0.4B	100A	Active Power Filter (APF)	400V ±15%	759	520	237	**222 371.61**
SFR-APF4-150/0.4B	150A	Active Power Filter (APF)	400V ±15%	759	520	237	**303 135.82**

Larger sizes can be made up by paralleling up to 8 wall mount systems.
Note: *External protection, a breaker is required.*

Power quality

M - Tools

1000V CAT IV | IP 54 | 3 YEAR WARRANTY

P01157151

P01157150


P01157151 + P01102134


P01120580

Chauvin Arnoux - PEL103 Power & Energy Loggers *IP54 casing*

Portable, advanced yet simple to use Power and Energy logger, designed for energy audits (ISO 50001 standard) or one-off measurements of the Power and Energy values in low-voltage electrical networks (1000 V CAT III)

PEL100 series Power and Energy loggers provide a complete solution to measuring and identifying energy consumption in any industry, they can be used handsfree, remotely without interruption to the mains power. The logger tracks even the slightest consumption in an electrical network, providing all Power and Energy measurement recording on the internal 2GB SD card, while simultaneously permitting real-time monitoring on its backlit 4 line LCD display. Recordings are time/date stamped for ease of comparing measured gains achieved before and after installation modification. Easily transfer recorded data to a PC via the free PEL data transfer software and SD card with USB adaptor *(included)*.
Designed to fit inside most electrical cabinets thanks to its magnetic base or hook for easy mounting.

Key Features of the PEL103 include:

Measurements and display of:

- RMS frequency, voltage and current measurements
- Voltage measurement ranges 10 to 1000V AC/DC +/- 0.2 % + 0.5 V
- Current measurement ranges 5 mA to 10 kA AC / 50 mA to 1,4 kA DC ±0.5 %
- VA, W and var power values
- Power Factor (PF), cos φ, tan ϕ and crest factor
- Total Harmonic Distortion (THD) for currents and voltages
- DC, 50 Hz, 60 Hz and 400 Hz measurements
- Phase rotation indication and MIN/MAX indication of all parameters
- VAh, Wh *(source, load)* and varh *(4 quadrant)* energy values, total energy
- Harmonics: up to the 50th order for currents and voltages *(an essential feature to help identify problems)*

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- **Network types include:** Three phase *(with or without neutral)*, split phase, single phase
- **Automatic recognition:** Of the type of sensor connected
- **Communication / Data transfer:** USB, Ethernet and Bluetooth / PEL transfer PC software *(included)*
- **Records:** Measurements and calculation results on SD card *(included)*
- **Acquisition rate:** 128s/period

PEL 103 Power and Energy logger (KIT) *(created as a complete kit with following accessories)*

1 x PEL103 Power and Energy Logger: Analyser with backlit LCD screen
3 x MA193 (200 mm) flexible current clamps: MINIFLEX MA193 flexible current sensors - 200mA to 10 kA
4 x Measurement leads and crocodile clips: Robust high quality test leads for frequent use/built to last
1 x Set of coloured rings and Inserts: For easy identification of connections and leads
1 x 2GB SD card *(internal)*: SD card to USB adaptor

SD card to USB adapter, USB cable, mains cable, MultiFIX mounting system, operating manual (on CD)
PEL transfer PC software enabling data to be transferred to PC, all in a convenient canvas carrying bag.

type	model	description	dimensions (mm) (H)	(W)	(D)	price (ea)
PEL 103 Power and Energy logger (KIT)						
P01157151	PEL103 **(KIT)**	portable power and energy logger/analyser	256	125	37	
P01157150	PEL102 **(KIT)**	*as above, but without LCD display screen*	256	125	37	
Accessories for PEL103 Power and Energy logger						
P01120434B	MN 93A	compact tong clamps for PEL102/3	Ø20 mm	0.005 - 100A		
P01120323B	C193	compact tong clamps for PEL102/3	Ø52 mm	1 - 1000A		
P01120580	MA193-250	Ampflex 250 mm flexible current sensor	Ø70 mm	200mA - 10kA		*see page **M-11** for pricing.*
P01120526B*	A193-450	Ampflex 450 mm flexible current sensor	Ø140 mm	100mA - 10kA		
P01101959	CA833X-F	for reading from 5A secondary CT's		5A adaptor		
P01102134	self-power	mains adaptor for self powering PEL from supply		mains adaptor		
P01295174*	mains lead	mains power cable - (2P EUR)				
P01295476*	test leads	spare measurement leads (3m) with crocodile clips		KIT *(black)*		
P01102080*	set	ID rings and inserts *(for ends of leads and sensors)*		diff. colours		
P01298078*	bag no.23	canvas carrying bag for PEL analyser and access				

* *Items supplied with standard **PEL KIT**.*

Data processing software *power quality & installation supervision*

Automatically recognizes the instrument connected to the PC and opens the corresponding menu, providing direct access to the configuration and saved data. Includes many predefined report templates for quick generation in compliance with applicable standards.
Users can create personalised models to fit their requirements and add comments directly.

- Configuration of all the functions of instruments connected to a PC or via Bluetooth
- Recovery of the recorded measurement data and backup of measurement files
- Opening of saved files / processing and creation of reports (EN50160)
- Export into an Excel spreadsheet or PDF format / Database management

P01102095	DataView	powerful configuration/transfer/measurement data processing software

M - Tools

1000V CAT IV | IP 54 | 3 YEAR WARRANTY

P01651904

DIACAM 2 series - Thermal Camera IP54

DIACAM 2 is a high performance thermal camera making it simple to perform thermal inspections for energy audits, ensuring trouble-free industrial, electrical or mechanical maintenance.
The wide 2.8-inch screen with auto brightness adjustment provides comfortable reading with a field of view of 38° x 28° and the camera is focus-free. A built-in sliding cover protects the highly sensitive lens.
Contextual help guides users step-by-step, limiting the risk of errors. Particularly rugged, with IP54 ingress protection, the camera can withstand falls from 2 metres.

Features:

- Exceptional 9-hour continuous use
- Recovery of data from other measuring instruments *(current, humidity, dew point, etc.)*
- Recording and storage in memory of the configurations for each application
- Allows you to record voice comments directly on the image
- Comfortable grip, perfect balance with direct access to all functions with just one hand

Temperature Measurement

Temperature range:	-20°C to +250°C
Accuracy:	±2°C or ± 2 % of reading

Image Performance

Field of view:	38° x 38°
IFOV (spatial resolution):	4.1 mrad
Focus:	Fixed
Minimum focal distance:	30 cm
Display mode:	Thermal image, real image with automatic parallax compensation *(merging of both images possible with PC software)*

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Analytical functions

Measuring tools:	Manual cursor + automatic detection + Min Max Avg on adjustable area + temperature profile + isotherm
Parameter settings:	Emissivity, environmental temperature, distance, relative humidity
Vocal comments:	Yes via Bluetooth (earphones provided)
Data storage:	On 2 GB micro SD card *(approx. 4000 images)* replaceable up to 32 GB
Image format:	PNG *(320 x 240 pixels)* - thermal and real images recorded simultaneously
Laser pointer:	Yes

type	model	description	dimensions (mm) (H)	(W)	(D)	
P01651904	C.A 1954	high performance thermal camera	225	125	83	*see page **M-12** for pricing.*

Digital Power and harmonics clamp multimeter

General-purpose professional clamp-on measuring instrument with True RMS measurement accuracy, reliable an particularly resistant to falls.

Current 1000 A, Voltage 1000 V, power, harmonics and recorder

Clamping diameter:		**Ø48 mm**
Backlit screen display:		Large triple 10 000 count
Amp (RMS)	AC	150mA to 1000 A - 1%
	DC, AC+DC	150mA to 1500 A - 1%
Volt AC (RMS)	AC	100 mV to 1000 V - 1%
Volt DC	DC, AC+DC	100 mV to 1000 V - 1%
Automatic AC/DC detection:		Yes (V and A)
Resistance measurement:		100kΩ *(continuity buzzer)*
Audible continuity:		Yes (<40 Ω)
Frequency:		15Hz to 20kHz
PF and cos φ (DPF):		Yes
Power:		W, VA, var Yes - single-phase and total three-phase
Total Harmonic Distortion:		THDf % / THDr %
Harmonic decomposition:		Yes - up to 25th order
Crest factor (CF) / Motor InRush:		Yes
Current surge (True InRush):		Yes
"Min Max" / Peak function:		Yes / Yes
Auto power off / "Hold" function:		Yes
PC / Bluetooth interface:		Yes
Data logging:		Yes
REC storage function:		Yes - *(up to 3000 measurements)*
Electrical safety as per:		IEC 61010 CAT IV 1000V, CAT III 1000 V

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P01120925

Power and harmonics clamp multimeter IP54

type	model	description	
P01120947	F407	digital clamp multimeter/tong tester for all applications	*see page **M-10** for pricing.*

POLAR MONITORING DELTA Klemsan® Lovato electric