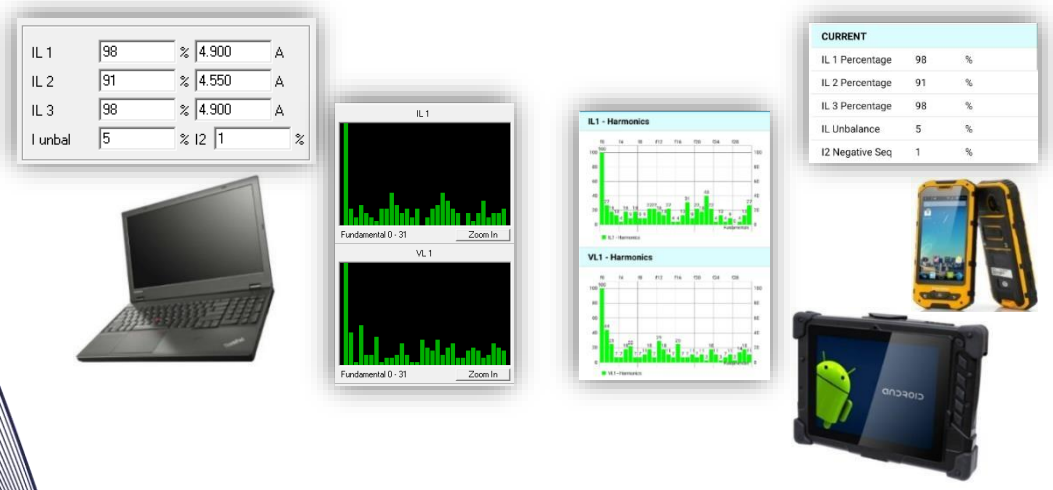
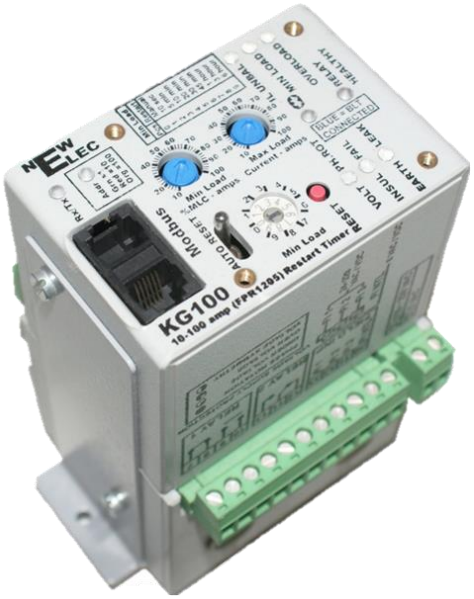
NEW ELEC

MOTOR PROTECTION & CONTROL TECHNOLOGY

KG/KH 3 Phase Protection Control and PQM Relay





Modbus RTU

A South African Company to be Proud of

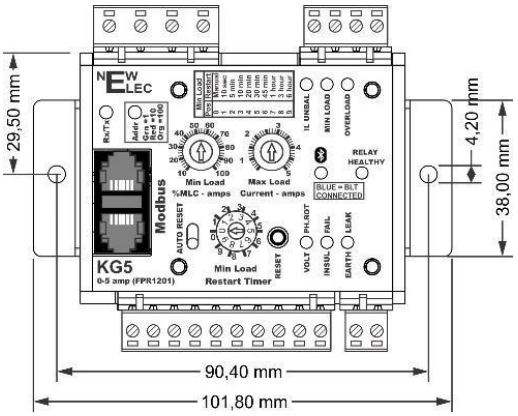
ISO 9001:2008

ISOQAR QUALITY ASSURED ISO 9001 — UKAS QUALITY MANAGEMENT 026

Certificate Number : 8707QMS001

KG/KH relay

KG/KH More protection, control, monitoring and industrial 4.0 ready



The KG / KH relay is a **P**ower **Q**uality **M**onitoring and **P**rotection **R**elay with individual configurable trip settings from 2nd to 31st harmonic levels as well as separate %THD on both Voltage and current levels.

The KG / KH can be configured as a Low Voltage 3 phase Feeder or Motor Protection Relay with integral starter protection and control logic.

A Smartphone Application for Bluetooth LE enables communication through closed flameproof steel enclosures from 10 meters enabling monitoring and configuration this standard feature makes the KG/KH a candidate for I*ndustrial* 4.0 integration.

Housed in a ruggedized enclosure for high vibration applications, with integral Modbus-RTU configured as multidrop configuration using dual RJ11 sockets with patch cables to assist with quick field connection without crimping tools or specialized skillset requirements, assisting the System integrator with a parametrization only task to interface to the PLC and or SCADA.

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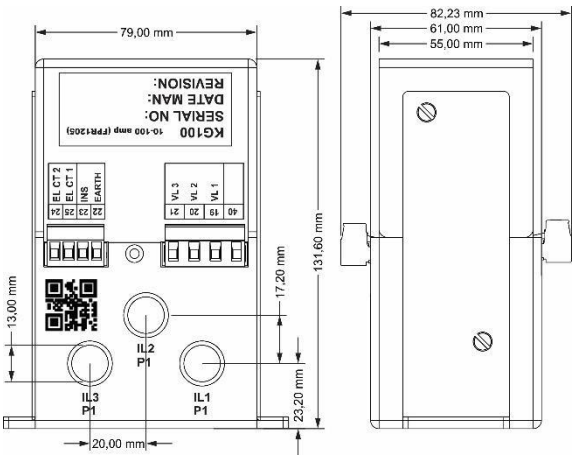


- Multiple overcurrent curves for feeder and motor protection.
- Wide current range selection.
- THD and specific harmonic protection up to 31st protection.
- Metering of power usage on individual phases.
- Modbus-RTU RS485 and Bluetooth LE build in.
- Time and date stamped **208** fault and **882** event recordings of 24 elements.
- 1 x dedicated trip or control DPST (NO NC) relay output.
- 1 x programmable SPDT (B-M) relay output.
- 3 x single end field inputs fully programmable.
- Small footprint and rugged design for high vibration.
- Smart phone App for close cubical monitoring and analysing.

KG/KH More communication

Communication Type	Usage
Modbus-RTU	• NewElec frontend on Windows™. • SCADA communication variable baud rate (19200 bps default). • Modbus-RTU enabled HMI's
Bluetooth LE	• NewElec Android app for Android OS smart phones and tablets. • Modbus-RTU protocol in Bluetooth LE for SCADA systems.

KG/KH relay

KG/KH Protection features

ANSI	
27	Under voltage.
37	Under current / power.
46	Phase negative sequence / power.
47	Phase sequence voltage / phase balance over voltage.
49	Machine or transformer thermal (I^2T).
50G	Ground instantaneous overcurrent.
50P	Phase instantaneous overcurrent.
51G	Timed ground overcurrent.
51LR	Locked rotor during running.
51LS	Locked rotor during startup.
51P	Phase timed overcurrent.
59	Overvoltage.
64	Ground or earth detection.
66	Starts per hour limiting.
81O	Over frequency.
81U	Under frequency.
LOP	Loss of power.
	THD and fundamental protection.
	I0 (Zero sequence) protection.
	Vacuum failure.
	Reset mask.
	4 x User configurable trips.

KG/KH Logic

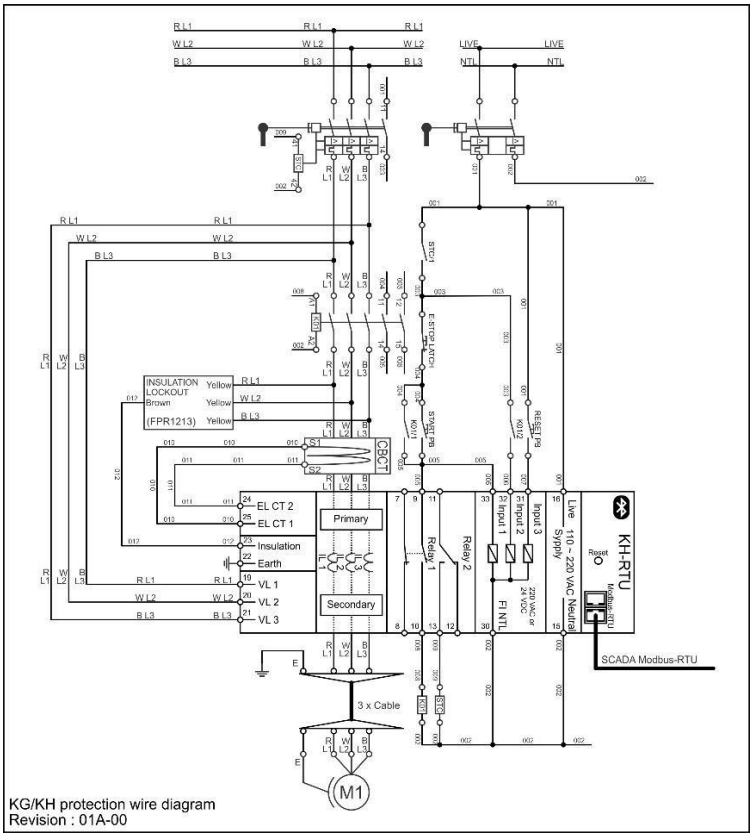
Qty	Logic
6	4 input and 1 output mask logic tables.
2	Comparators.
1	Thermal comparator.
2	Up / Down counters.
2	Latches.
1	Alarm mask.
1	Trip mask.
1	Pulse generator.
1	RTC start and stop timer.
2	Timers.
1	Starter logic.

KG/KH I/O

Qty	
1	DPST (NO NC) relay output. (5 Amp 220VAC)
1	SPDT (B-M) relay output. (5 Amp 220 VAC)
3	Single ended field inputs. (24 VDC to 220 VAC)

KG/KH Operational and monitoring

Feature
Current (pos. neg. and zero sequence). 1% resolution, 1 to 14000 % range MLC > 80% 1 to 16000 % range MLC <= 80%
Voltage (neg. sequence). 1 VAC resolution, 1 to 350 VAC range.
Earth leakage. 3 mA resolution, 3 milli amp to 30 Amp range.
Insulation level. 10 kilo Ohm resolution, 0 to 1 Mega Ohm range.
Power factor (Phase 1, 2 and 3). 1% resolution, 0 to 100% Cos Ø resolution.
% Voltage THD.
Voltage fundamental (Up to 31st harmonic)
% Current THD.
Current fundamental (Up to 31st harmonic).
882 Event records.
208 Fault records.
Minimum and maximum recordings.
Actual power usage.
Power accumulated.
Advance simulator.
All trip reaction times 80 milli Sec of trip time.



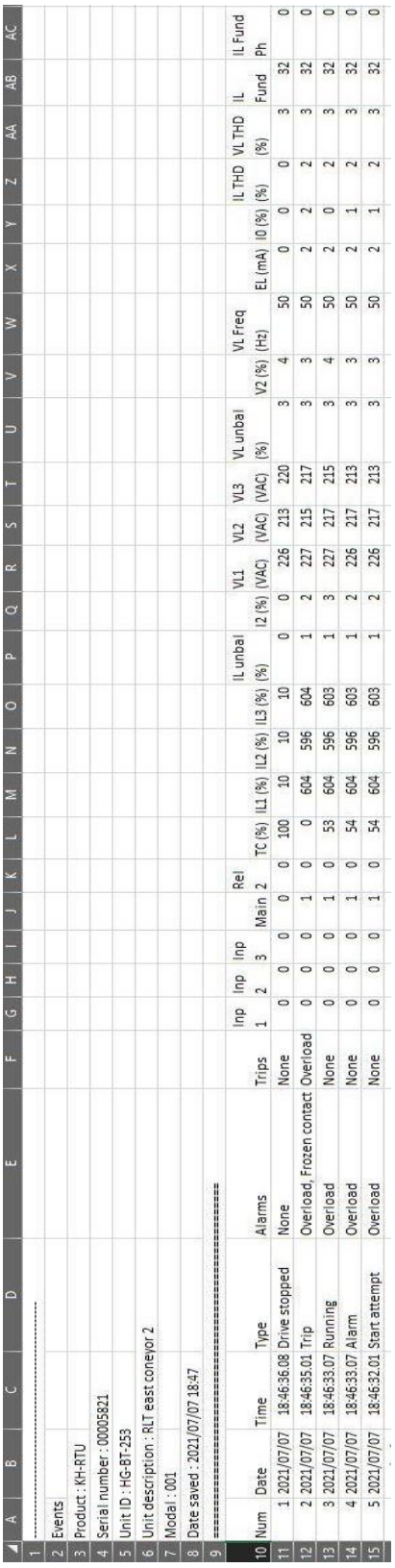
KG/KH protection wire diagram
Revision : 01A-00

KG/KH relay

KG/KH Ordering information

Relay models	Product Code
KG1 0,1 - 1 Amp	FPR1200
KG5 0,5 - 5 Amp	FPR1201
KG10 1 - 10 Amp	FPR1202
KG25 2,5 - 25 Amp	FPR1203
KG50 5 - 50 Amp	FPR1204
KG100 10-100 Amp	FPR1205
KH1 0,1 - 1 Amp	FPR1206
KH5 0,5 - 5 Amp	FPR1207
KH10 1 - 10 Amp	FPR1208
KH25 2,5 - 25 Amp	FPR1209
KH50 5 - 50 Amp	FPR1210
KH100 10 – 100	FPR1211
Accessories	
KG/KH MMI	FPR1212
KG/KH-Insulation lockout	FPR1213
KG/KH Voltage Converter (2:1 ratio 1100 VAC to 550 VAC)	FPR1214
C.B.C.T. 1000/1 MOH Steel 63 mm ID	BTX0001
C.B.C.T. 1000/1 MOH Steel 104 mm ID	BTX0002
C.B.C.T. 1000/1 MOH Steel 150 mm ID	BTX0003
C.B.C.T. 1100/1 MOH Steel 43mm ID	BTX0004
C.B.C.T MOH 1000/1 190 mm ID	BTX0005
C.B.C.T 400 X 110 mm Rectangular, 400 mm ID	BTX0006
C.B.C.T 200 X 110 mm Rectangular, 200 mm ID	BTX0007
Communication cables	
DB9 to RJ11 converter cable	CAB0112
USB to RS485 converter	CAB0113

Sample Event recording



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
1																													
2	Events															IL unbal					VL unbal		VL Freq			IL THD	VL THD	IL	IL Fund
3	Product : KH-RTU						Inp	Inp	Inp		Rel						VL1	VL2	VL3										
4	Serial number : 00005821						1	2	3	Main	2	TC (%)	IL1 (%)	IL2 (%)	IL3 (%)	(%)	I2 (%)	(VAC)	(VAC)	(VAC)	(%)	V2 (%)	(Hz)	EL (mA)	I0 (%)	(%)	(%)	Fund	Ph
5	Unit ID : HG-BT-253																												
6	Unit description : RLT east conveyor 2																												
7	Modal : 001																												
8	Date saved : 2021/07/07 18:47																												
9	==========																												
10	Num	Date	Time	Type	Alarms	Trips																							
11	1	2021/07/07	18:46:36.08	Drive stopped	None	None	0	0	0	0	0	0	100	10	10	0	0	226	213	220	3	4	50	0	0	0	3	32	0
12	2	2021/07/07	18:46:35.01	Trip	Overload, Frozen contact	Overload	0	0	0	1	0	0	604	596	604	1	2	227	215	217	3	3	50	2	2	2	3	32	0
13	3	2021/07/07	18:46:33.07	Running	Overload	None	0	0	0	1	0	53	604	596	603	1	3	227	217	215	3	4	50	2	0	2	3	32	0
14	4	2021/07/07	18:46:33.07	Alarm	Overload	None	0	0	0	1	0	54	604	596	603	1	2	226	217	213	3	3	50	2	1	2	3	32	0
15	5	2021/07/07	18:46:32.01	Start attempt	Overload	None	0	0	0	1	0	54	604	596	603	1	2	226	217	213	3	3	50	2	1	2	3	32	0

KG/KH Enviromental specifications

Specification	Standard
Measuring relays and protection equipment	IEC 60255
Electromagnetic compatibility requirement	IEC 60255-26
Product safety requirements	IEC 60255-27
Vibration test sinusoidal	IEC 60255-21-1
Vibration test shock	IEC 60255-21-2
Vibration test seismic	IEC 60255-21-3

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