

NEW ELEC

MOTOR PROTECTION & CONTROL TECHNOLOGY

KE Series Electronic Motor Protection Relay



A South African Company to be Proud of

About

A comprehensive low voltage Electronic Motor Protection relay encompassing new and unique features. Designed for conveyor, compressor, crusher, fan and pump motor protection, these relays boast a wide range of user-selectable protection features.

Easy to setup via a man-to-machine interface or via computer with free setup software, the user-selectable settings are a pleasure to work with.

Thermal overload, earth insulation lockout, earth leakage and short-circuit protection, along with frequency and power factor measurement, are just some features which, combined with the 2000 event records and 60 last fault records, make this a worldclass protection relay.

Power Measurement (Real and Apparent) provide real time power utilisation monitoring, as well as power consumption monitoring over extended periods. All features and information can be accessed through an external Profibus communication unit.

Accessories include a door-mounted KE-FLED unit for indication, a Remote Programming Unit (RDU-420) and a portable HMI unit with infrared link.

Features Include:

- Thermal Overload Protection
- Locked Rotor Protection
- Running Stall / Jam Protection
- Vectorial Stall Detection
- Unbalanced Current / Single Phasing
- Minimum Load / Underload Protection
- Earth Leakage / Earth Fault Protection
- Short-circuit Protection
- Starts per Hour Limitation
- Over / Undervoltage / Phase Rotation
- Over / Under Frequency Protection
- Real & Apparent Power Measurement
- Insulation Lock-out
- 2000 Event Recording
- 60 Last Fault Records
- Three-Phase Current Recorder
- On-Board Simulator
- Profibus Communication
- All settings done via software



Accessories

<u>Model</u>	<u>Range</u>	<u>CTs</u>
KE 1	0,1 to 1 Amp	Not required
KE 5	0,5 to 5 Amp	Not required
KE 10	1 to 10 Amp	Not required
KE 25	2,5 to 25 Amp	Not required
KE 50	5 to 50 Amp	Not required
KE 100	10 to 100 Amp	100 : 5 or 100 : 1
KE 200	20 to 200 Amp	200 : 5 or 100 : 1
KE 400	40 to 400 Amp	400 : 5 or 100 : 1
KE HMI	Image 1	
KE FLED	Image 2	
KE RDU	Image 3	



Image 1



Image 2



Image 3

Management Tools

*Event Records - 2000 Events
Time and date stamped with I act, V act, Running Hours as well as Circuit Interruption Time.*

*Fault Records - Last 60 Faults
A typical display of the Fault Records which can be exported to an Excel spreadsheet.*

Grp	Status	Date	Time	Fault Description	Run Hrs	Imax %	Vmin	Brkr Clr
1	Sim	2010/04/26	09h21	Minimum Load	2	40	220	2550ms
2	Sim	2010/04/21	15h37	Minimum Load	2	40	220	2550ms
3	Sim	2010/04/21	15h34	Minimum Load	2	40	220	2550ms
4	Sim	2010/04/17	17h00	Minimum Load	2	40	220	2550ms
5	Sim	2010/04/17	16h22	Minimum Load	2	68	230	2550ms
6	Sim	2010/04/16	21h04	Earth Fault	2	0	0	0ms
7	Sim	2010/04/16	16h54	Overcurrent	0	220	220	0ms
8	Sim	2010/04/16	15h50	Low Frequency	0	84	220	2550ms

Status indicates whether the fault was a simulated fault (see on-board simulator) or an actual fault.

Technical Specifications

Input Converter

Class	: Class 1
Rating	: 0,1VA
Frequency Response	: 40 to 66Hz

Overload Trip Delay Curves

Class 3 - 40 to IEC 60255-8 Specification

Unbalance / Single-Phasing Setting

Level Setting	: 5 -50% Ie (M.F.L.)
Trip Delay	: 1 to 10 seconds

Underload Detection

Range	: 10 to 100% of Max Load Dial
Trip Delay	: 1 to 10 seconds
Priming Time Available	: 1 to 200 seconds
Power Factor Setting	: 0,1 to 1 on minimum load dial

Auto Reset Limiter

Auto Reset limited to only 3 times per hour

Maximum Load Current Setting

Level Setting Accuracy	: ± 2%
Linearity	: ± 2%
Repeatability	: ± 1%
Detection Level	: ± 2%
Calibration	: Amps

Main Trip Relay

Configuration	: 5 Amps 220 Volt AC
Terminals	: 1 N/O + 1 N/C : N/C 7 and 8 : N/O 9 and 10

Fault Indication

Operation	: Latch on trip
Resetting Fault Indication	: Latch

Running Stall Protection

Detection Level	: 110 to 300% of Maximum Load Dial Setting with a 1s Trip Delay
-----------------	---

Restart Timer

User-selectable range	: Manual only, 5sec, 10sec, 2min, 10min, 20min, 30min, 45min, 1hr, 3hrs OR 6hrs delay : $T_{reset} = Curve [2.33 (35,49 \times 4) 15 \log (100/70)] - Motor Standstill$
-----------------------	--

Overload Thermal Lock-Out Time to Recover 30% Capacity

Example shown for a 15sec

curve selection	: $T_{reset} = Curve [2.33 (35,49 \times 2) 15 \log (100/70)] - Motor Running$
-----------------	--

Environmental Specifications

Reference Standards IEC 255

Isolation N/O contact

1kV for 1 minute to IEC 255-5 C

Impulse Withstand

5kV to IEC 255-4 EIII

Isolation Separate Contacts

1kV for 1 minute to IEC 255-5 C

High Frequency

IEC 255-4 EIII

Measurement Specifications

Current

Three Phase Current

Range: 1 Amp to 400 Amps

Models: KE5 (5 Amp), KE10 (10 Amp), KE50 (50 Amp), KE100 (100 Amp), KE200 (200 Amp), KE400 (400 Amp)

Dynamic Range: 0% to 1000%

Voltage

Range: 110V, 400V, 525V and 1050V (1050V requires additional attenuator circuit)

Range Selection: Manual or Automatic selection at Power Up. (1050V is only Manual Selectable)

Earth Leakage

Range: 30 mA to 3 Amps

Trip Time: Inverse Definite Minimum Time (IDMT)

Instantaneous Definite Time (IDT)

Real Time Clock

24hr Clock (Year, Month, Day, Hours and Minutes)

Battery Backup (5 Days)

Time & Date Stamping (Fault and Event Records)

Breaker Fault Clearance Time

Measurement Range: 10ms to 1000ms

Resolution: 10ms

Insulation Resistance

Measurement Range: 1 to 199k Ohm

Resolution: 1k Ohm

Frequency

Range: 30Hz to 100Hz

Power Factor

Range: 0 to 100% (Phase Angle to 0 to 90°)

Power Dissipation

Type: Apparent power (kVA) and real power (kWatt);

Derived from line voltage, phase current and power factor (where applicable)

Real Power Consumption

It is the amount of energy consumed. The power factor is taken into account and is measured in kWatt/h.

Real Power Dissipation

It is the product of voltage and current. The power factor is included and it is measured in kWatt.

Approvals

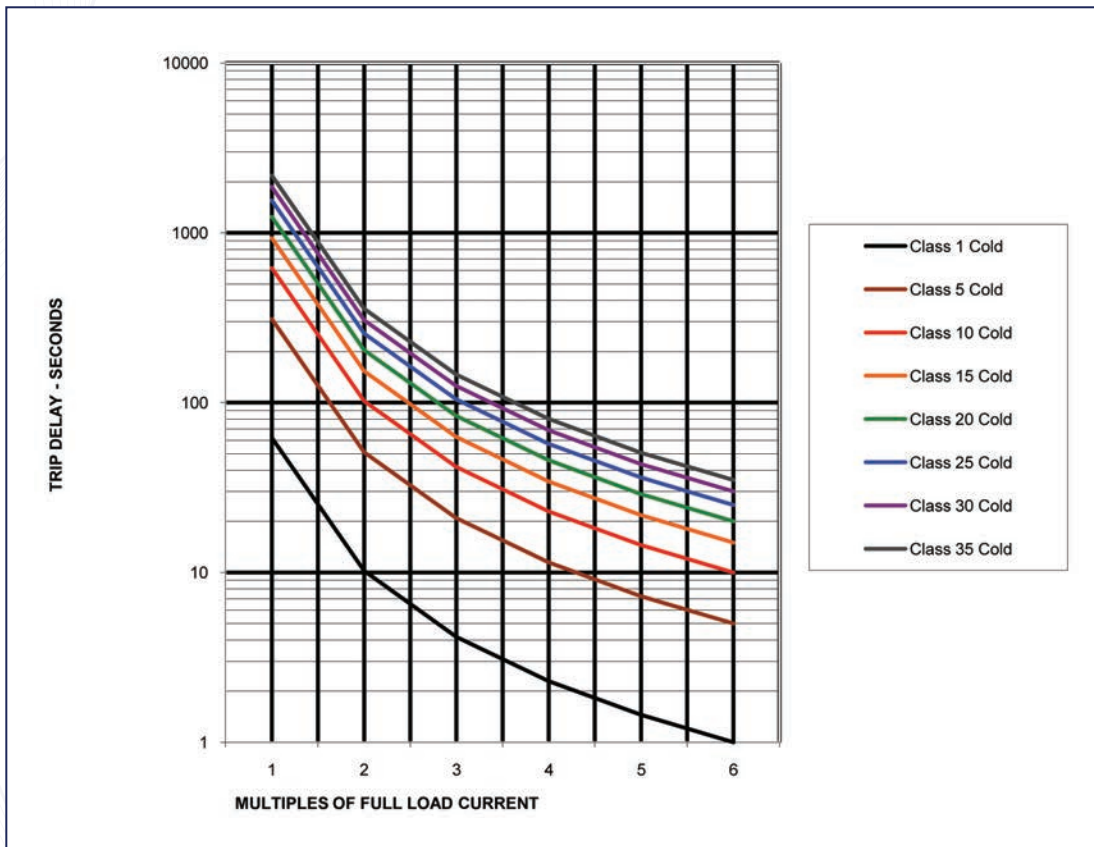
Manufactured to ISO 9001 : 2000 Standards

Copy of ISO certificate available on request

Eskom approval

KE Relays Approval for LV Applications

Thermal Curves



Frontend Actual Readings

NewElec KE Relay Frontend - Rev 1f

File Options Disconnect Bootloader

Recorder | Test | Event History | Calculator | Info

Actual | Settings | Control Logic | Real Time Clock | Fault History | Statistics

Drive ID: Demo 1 Drive Description: NewElec KE Demo Unit

Thermal Capacity Used	13 %	In Service (Motor Running)	<input type="checkbox"/>
Thermal Curve Class Setting	9 sec	Phase Voltages Present	<input type="checkbox"/>
Thermal Trip Time Remainder	78 sec	Line Voltage Selection	Auto V
Actual Current Level	202 %	Line Voltage (max)	397 V
Actual Phase Current Level	808 A	Supply Frequency	50 Hz
Actual Current Unbalance	8 %	Power Factor	92 %
Phase Voltage (red) Level	225 V	Running Hours	2
Phase Voltage (white) Level	229 V	Main Trip Relay	<input type="checkbox"/>
Phase Voltage (blue) Level	221 V	Relay 2	<input type="checkbox"/>
Voltage Symmetry	98 %	Date	2010/04/23
Apparent Power Dissipation	320.5 kVA	Time	09h47m55s
Real Power Dissipation	294.8 kWatt	Software	Rev 1f
Earth Leakage Current	125 mA	Model	KE 5
		Serial Nr	00182344
		Ext CT	500 : 5

Alarm and Trip Flags

Overcurrent	<input type="checkbox"/>	Short Circuit	<input type="checkbox"/>
Vectorial / Run Stall	<input type="checkbox"/>	Overvoltage	<input type="checkbox"/>
Current Unbalance	<input type="checkbox"/>	Undervoltage	<input type="checkbox"/>
Single Phasing	<input type="checkbox"/>	Voltage Symmetry	<input type="checkbox"/>
Minimum Load	<input type="checkbox"/>	Isolation Lockout	<input type="checkbox"/>
Low Frequency	<input type="checkbox"/>	Earth Leakage	<input type="checkbox"/>
High Frequency	<input type="checkbox"/>	Earth Fault	<input type="checkbox"/>
Phase Rotation Error	<input type="checkbox"/>	Starts per Hour Limit	<input type="checkbox"/>

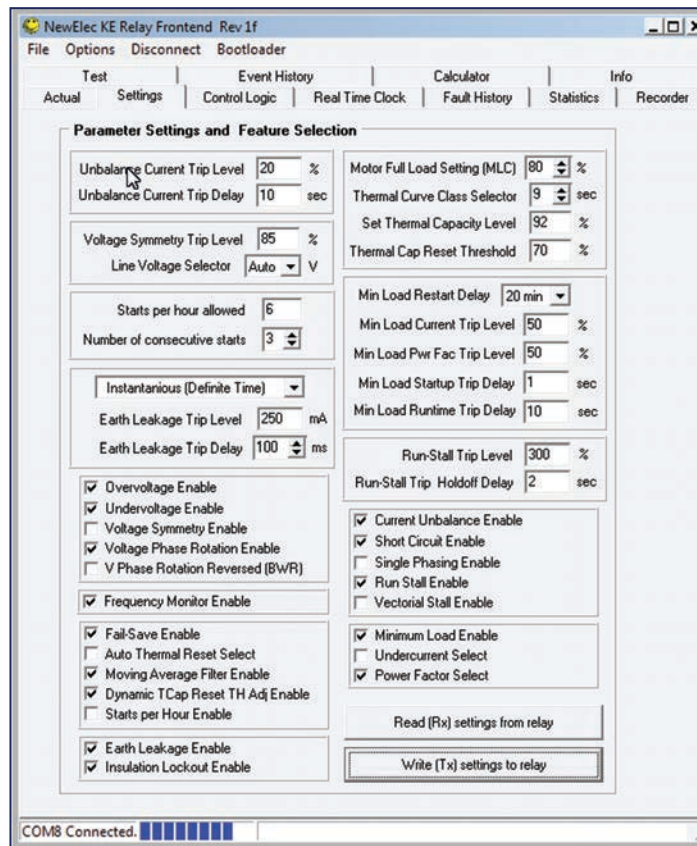
Relay Trip:

Thermal Capacity:

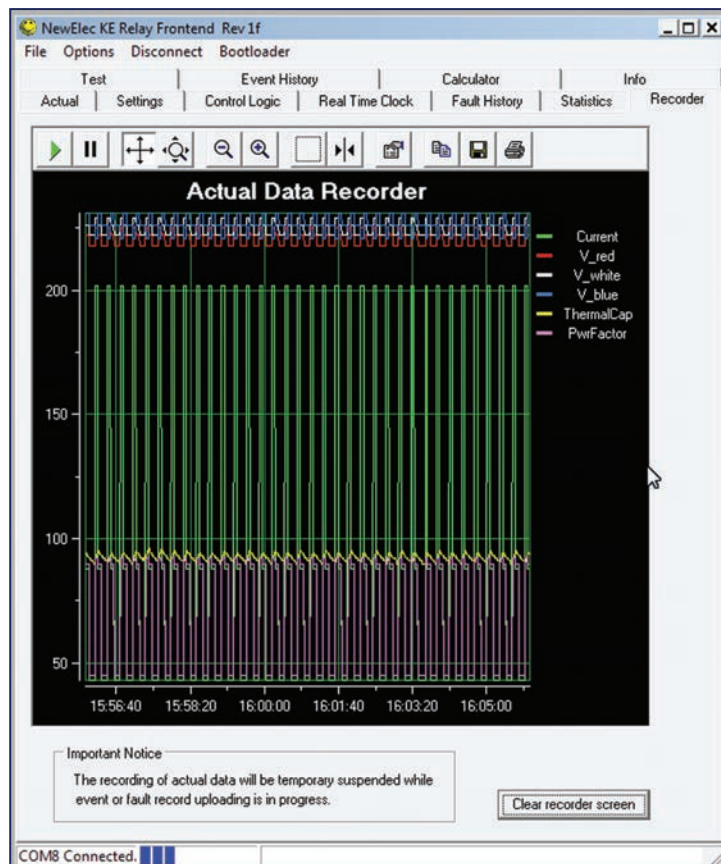
COM8 Connected. ■■■■■



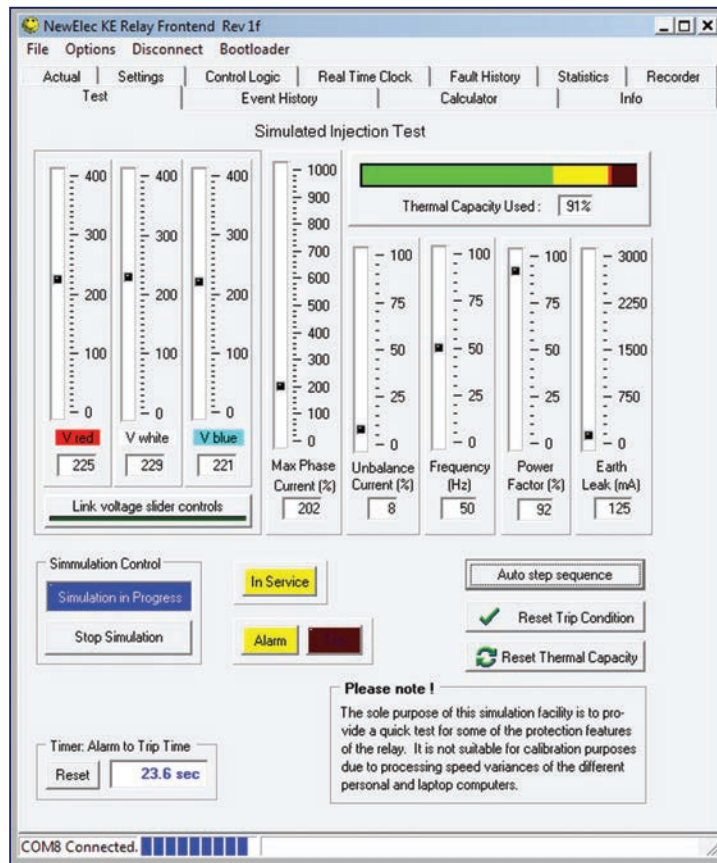
Frontend Settings



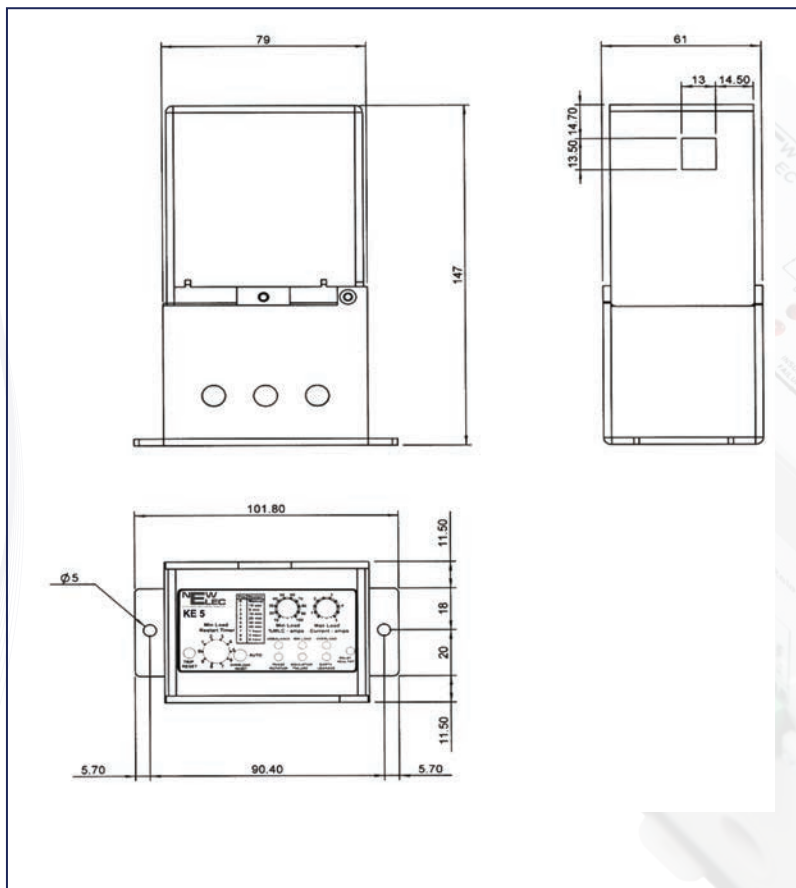
Three-Phase Measurements Recorder via Frontend



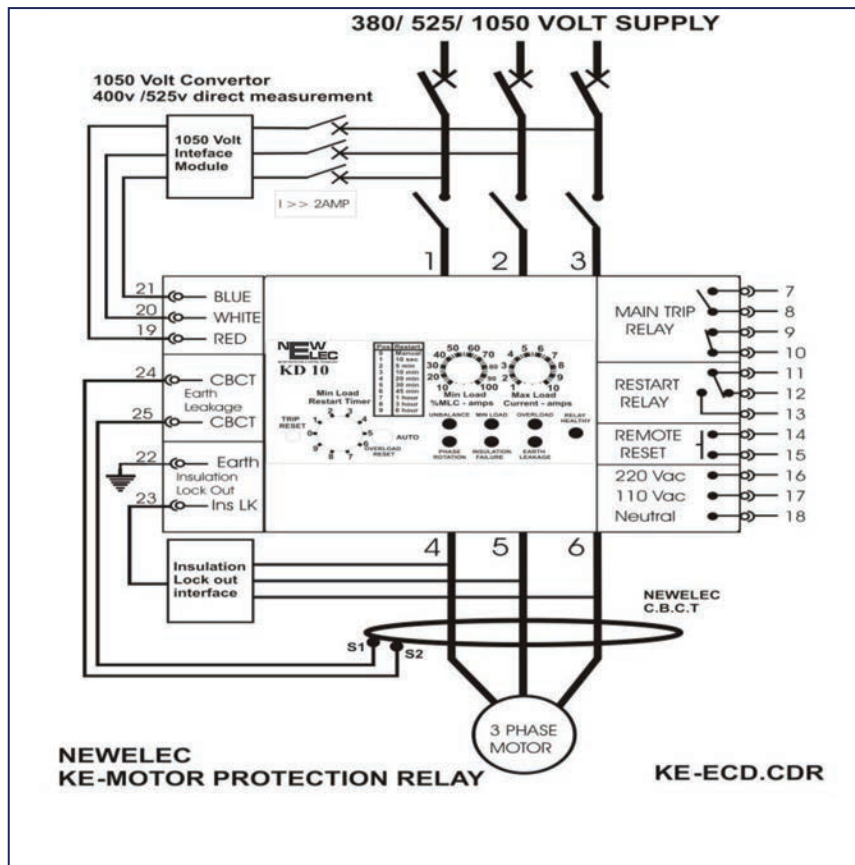
Frontend Simulator



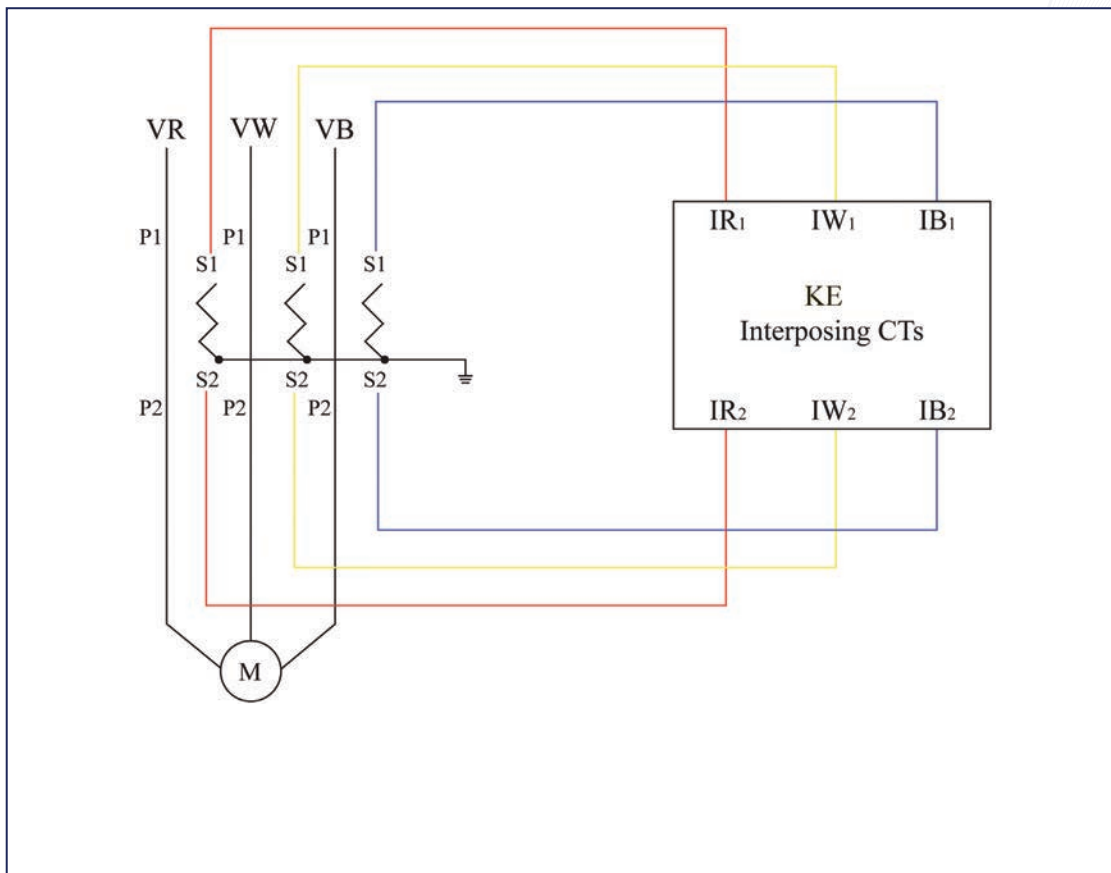
Dimensional Diagram



Wiring Diagram



Interposing CTs



NEW ELEC

MOTOR PROTECTION & CONTROL TECHNOLOGY

Physical Address:

298 Soutter Street,
Pretoria West

Tel: +27 12 327 1729

Fax: +27 (0)12 327 1733

Toll Assist: 0860 10 30 41

www.newelec.co.za

sales@newelec.co.za

KE Series

Electronic Motor Protection Relay

