NEW ELEC

MOTOR PROTECTION & CONTROL TECHNOLOGY

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

Overcurrent related problems

- 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
- Insulation Lock-out
- 2000 Event Recording
- 60 Last Fault Records
- Three-Phase Current Recorder
- On-Board Simulator
- Profibus Communication
- Full Load Current, Minimum Load and Min
- Load Reset done on the Front Panel

Accessories

Model	Range	CTs
KD 1	0,1 to 1 Amp	Not required
KD 5	0,5 to 5 Amp	Not required
KD 10	1 to 10 Amp	Not required
KD 25	2,5 to 25 Amp	Not required
KD 50	5 to 50 Amp	Not required
KD 100	10 to 100 Amp	100 : 5
KD 200	20 to 200 Amp	200 : 5
KD 400	40 to 400 Amp	400 : 5

KD RDU 420 in Toolbox

KD RDU 1 Display

KD RDU 420 MMI Programing Unit

Management Tools

Event Records - 2000 Events

Time and date stamped with I act, V act, Running Hours as well as Circuit Interuption Time.

Fault Records - Last 60 faults

A typical display of the Fault Records, which can be exported to an Excel spreadsheet.

File Options Disconnect Bootloader

Recorder | Test | Event History | Calculator | Info

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

Update faults from relay | Save fault records on disk | Clear fault history in relay

Grp	Status	Date	Time	Fault Description	Run Hrs	Imax %	Vmin	Brkr Cl
1	Sim	2010/08/16	15h16	Overcurrent	0	276	185	10 ms
2	Sim	2010/08/16	15h15	Voltage Symmetry	0	64	45	10 ms
3	Sim	2010/08/16	15h14	Undervoltage	0	92	195	10 ms
4	Sim	2010/08/16	15h13	Short Circuit	0	556	220	10 ms
5	Sim	2010/08/16	15h13	Run-Stall	0	324	220	10 ms
6	Sim	2010/08/16	15h12	Minimum Load	0	28	220	0 ms
7	Sim	2010/08/16	15h11	Short Circuit	0	616	220	10 ms
8	Sim	2010/08/16	15h10	Short Circuit	0	932	220	10 ms

Status indicates whether the fault was a Simulated Fault (see On-board Simulator) or an Actual Fault.

Technical Specifications

Input Converter

Class	: SP15
Rating	: 0,1 VA
Frequency Response	: 40 to 66 Hz

Overload Trip Delay Curves
Class 3 -40 to IEC 60255-8 Specification Full Thermal Load Current

Unbalance / Single Phasing Setting	: 5 - 50 % Ie (M.F.L.)
Level Setting	: Motor Full Load Current
Trip Delay	1 to 10 seconds

Underload Detection

Range	: 10 to 100% of Maximum Load Dial
Trip Delay	: 1 to 10 seconds
Priming Time Available	: 1 to 200 seconds
Power Factor Settings	: 0.1 to 1 on Minimum Load Dial

Auto Reset Limiter

Auto Reset limited to only 3 times per hour

Restart Timer

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

Overload Thermal Lock-out Time to Recover 30% Capacity

Example shown for a 15 sec curve selection	: T reset = Curve [2.33 (35,49 x 2) 15 log (100/70)] - Motor Running

Maximum Load Current Setting

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

Main Trip Relay

: 5 Amps 220Volt A.C.

Configuration	: 1 n/o + 1 n/c
Terminals	: n/c 7 and 8
	: n/o 9 and 10

Fault Indication

Operation	: Latch on trip
Resetting Fault Ind.	: Latch

Running Stall Protection

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

Environmental Specifications

Reference Standards IEC 60255
Isolation N/O contact
1kV for 1 minute To IEC 60255-5 C

Isolation Seperate Contacts
1kV for 1 minute To IEC 60255-5 C

Impulse Withstand
5kV To IEC 60255-4 EIII

High Frequency
IEC 60255-4 EIII

Measurement Specifications

Current

- Three Phase Current
- Range: 1 Amp to 400 Amps
- Models: KD5 (5 Amp), KD10 (10 Amp), KD50 (50 Amp), KD100 (100 Amp), KD200 (200 Amp), KD400 (400 Amp)
- Dynamic Range: 0 % to 1000 %

Breaker Fault Clearance Time

- Measurement Range: 10 ms to 1000 ms
- Resolution: 10 ms

Voltage

- Range: 110V, 400V, 525V and 1050V (1050V require additional attenuator circuit)
- Range Selection: Manual or Automatic selection at Power Up. (1050V is only Manual Selectable)

Insulation resistance

- Measurement Range: 1 to 199 kOhm
- Resolution: 1 kOhm

Earth leakage

- Range: 30mA to 3 Amps
- Trip Time: Inverse Definite Minimum Time (IDMT) or
- Instantaneous Definite Time (IDT)

Frequency

- Range: 30Hz to 100Hz

Real Time Clock

- 24hr Clock (Year, Month, Day, Hours and Minutes)
- Battery Backup (5 Days)
- Time & Date Stamping (Fault and Event Records) retained even with loss of Battery Power.
- Faults and Events Info Included: Load Current, Voltage,
- Breaker Clearance Time, Power Factor

Power Factor

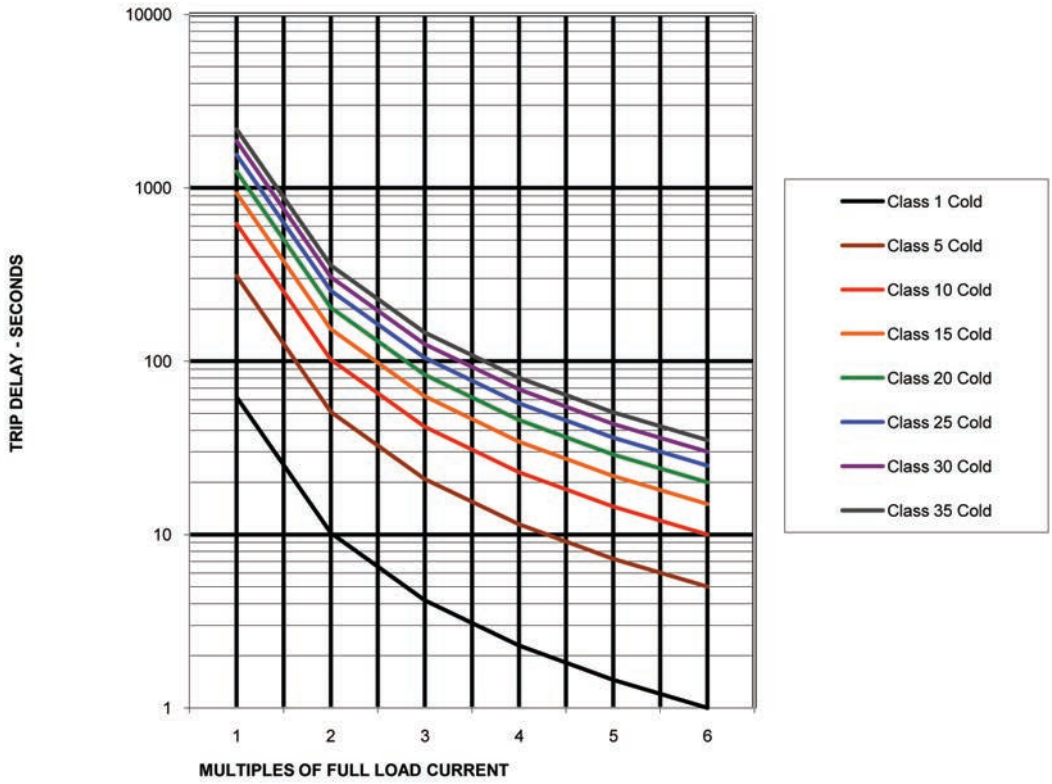
- Range: 0 to 100% (Phase Angle 0 to 90°)

Approvals

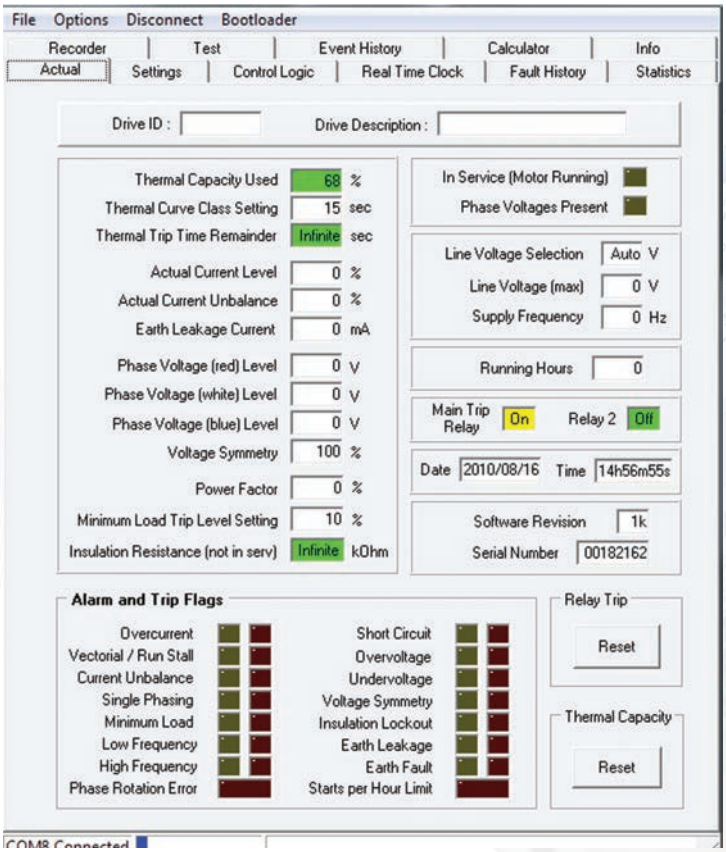
Manufactured to ISO 9001: 2000 Standards
Copy ISO certificate available on request

By Eskom Generations
KD - KE Relays Approval for LV Applications

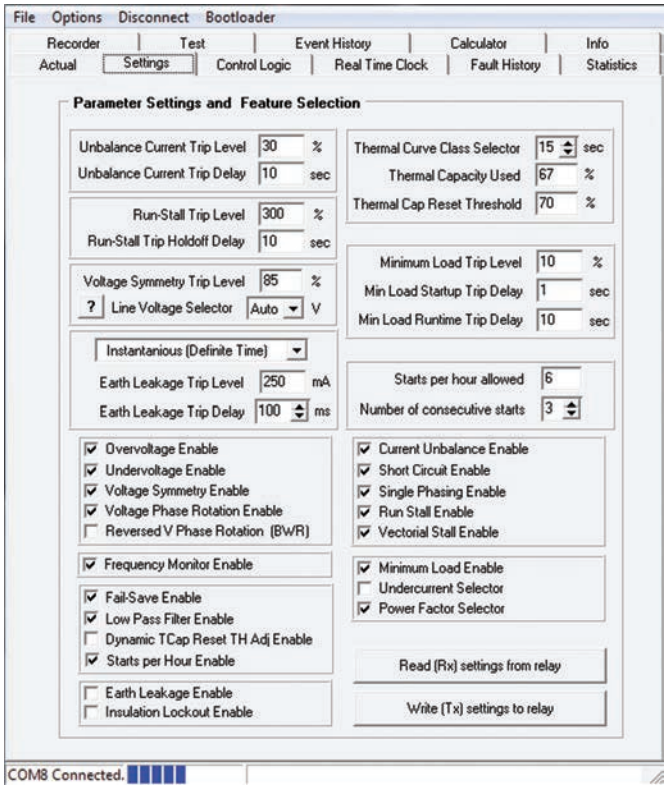
Thermal Curves



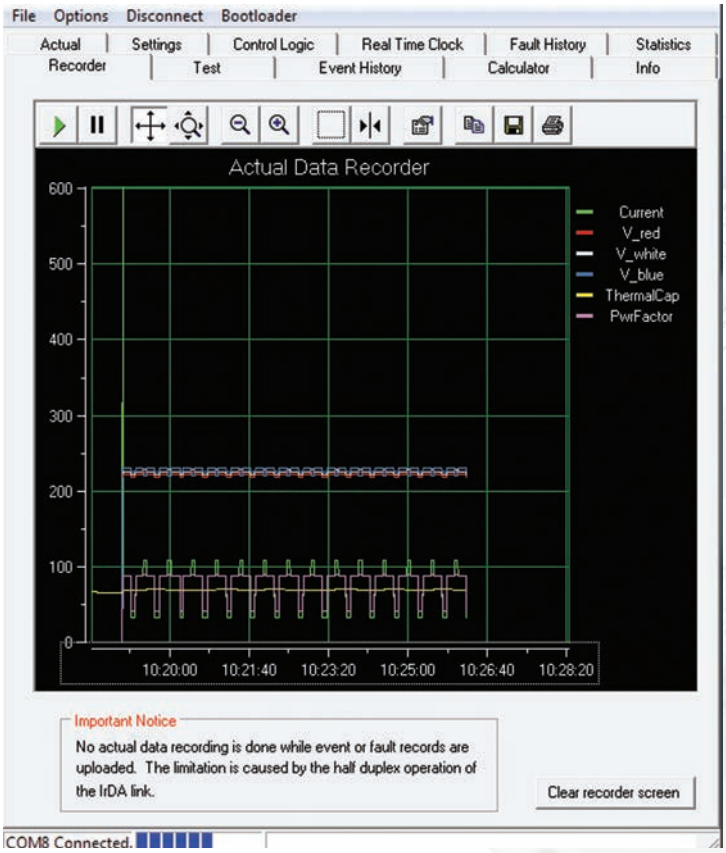
Frontend Actual Readings



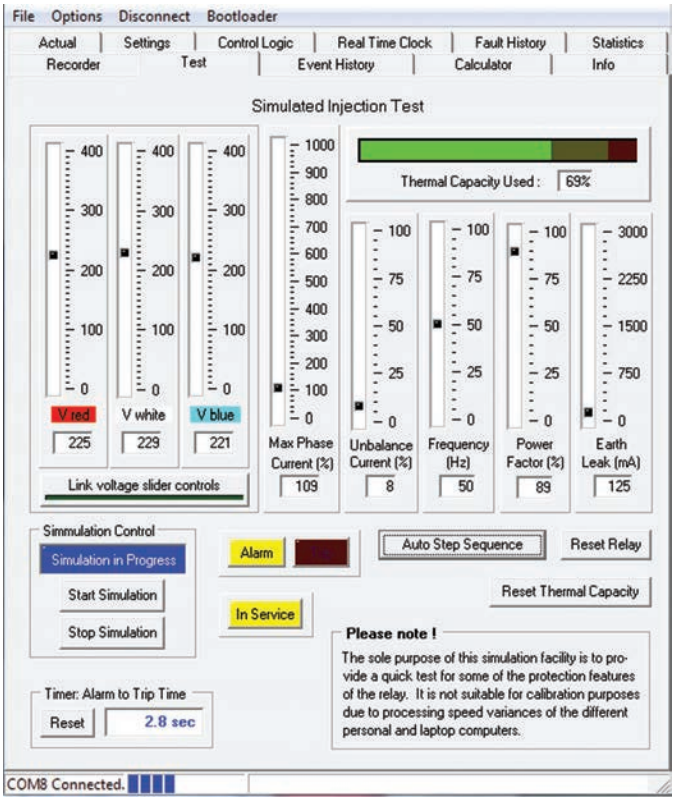
Fronted Settings



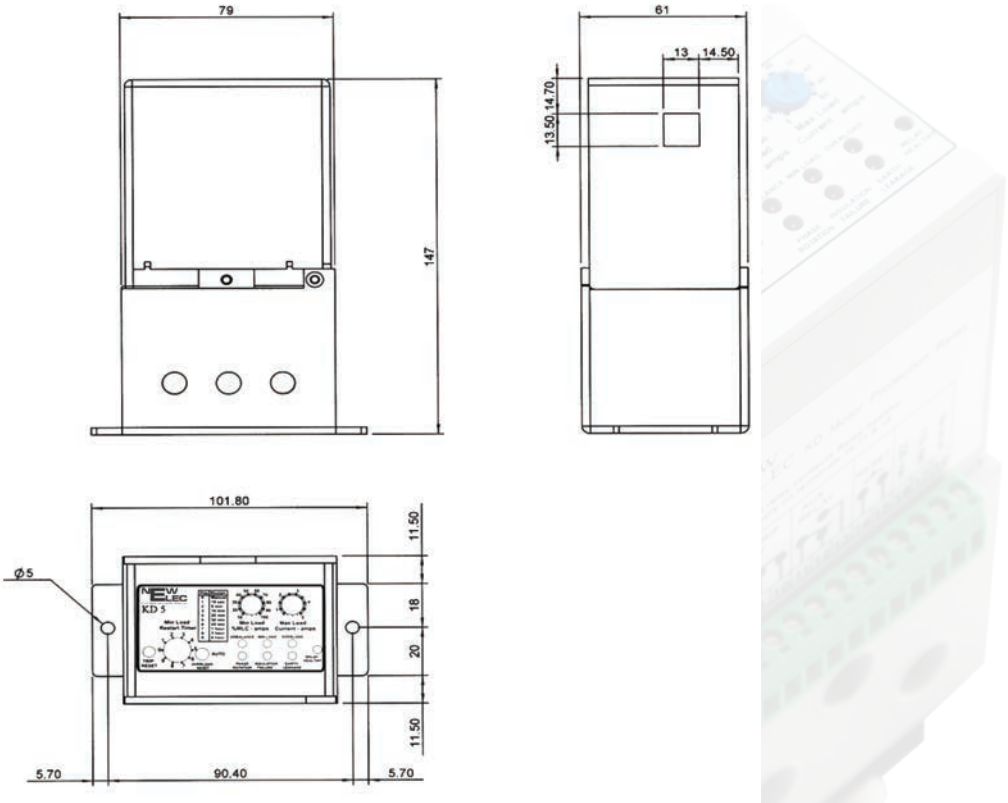
Three-Phase Measurements Recorder via Frontend



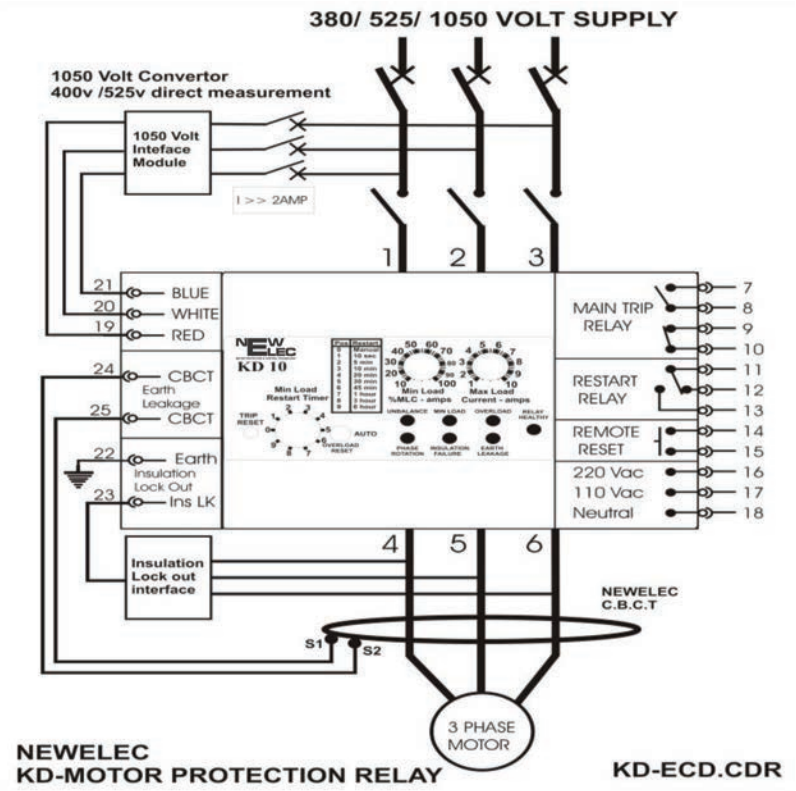
Frontend Simulator



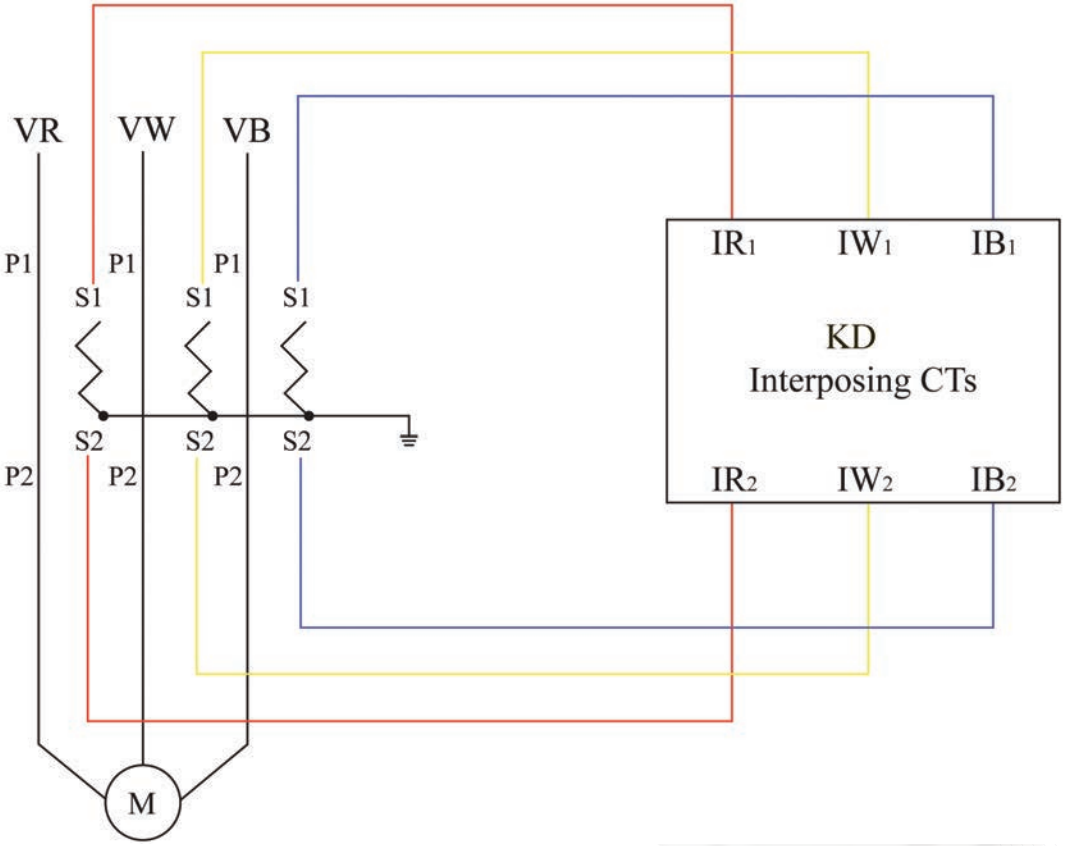
Dimensional Diagram



Wiring Diagram



Interposing CTs



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