



MK3000L

Features

- Multifunction numerical relay
- Three-phase, three stages setting for phase overcurrent and earth fault
- Negative sequence overcurrent
- IDMT and definite time
- Multi-shot autoreclose
- Thermal overload protection
- Two groups of protection settings
- Disturbance records
- Inrush blocking
- Trip circuit supervision
- Circuit breaker failure protection
- Circuit breaker monitoring and alarm
- Circuit breaker open/close control
- Programmable LED
- RS232 and RS485 MODBUS-RTU communication
- Fault, alarm and event records with timestamp
- Multifunction programmable outputs
- Multifunction digital inputs
- Complies with IEC 60255 standard
- ANSI code: 46N, 49RMS, 50P, 50G, 51P, 51G, CLP, 50BF, 74TC, 79

Technical Data

RATINGS

AUXILIARY SUPPLY

Model MK3000L-150D

Rated voltage : 30 ~ 120 V AC
Operating voltage : 24 ~ 150 V DC

Model MK3000L-240D

Rated voltage : 100 ~ 240 V AC or 140 ~ 340 V DC
Operating voltage : 85 ~ 265 V AC or 110 ~ 370 V DC
Rated frequency : 50 or 60 Hz
Operating frequency : 45 ~ 65 Hz
Power consumption : 8 VA max

CURRENT INPUTS

Rated current I_n , I_{0n} : 1 or 5 A by connection
Frequency : 50 or 60 Hz nominal
Burden : < 0.025 VA (1A)
 : < 0.3 VA (5A)
Thermal withstand : 4 x I_n continuous
 : 40 x I_n for 2 s
 : 100 x I_n for 1 s

DIGITAL INPUTS

Input type : Optically isolated
Rated voltage : 20 ~ 380 V DC
 : 50 ~ 270 V AC

OUTPUT CONTACTS

Trip Contact Relay (R1), R2, R3, R4, IRF Relay

Rated voltage : 250 V AC/DC
Continuous carry : 5 A
Expected electrical life : 100,000 operations at rated load
Expected mechanical life : 5 x 10⁶ operations

RECORDS

Fault Record : Up to 50 records
Event Record : Up to 250 records
Alarm Record : Up to 30 records
Disturbance : 6 x 3s, 4 x 4s, 3 x 5s, 2 x 7s, 1 x 9s
Record : Pre-Time 0.1s to [record length - 0.1s]

SETTING RANGES

GENERAL

Phase CT primary : 1 to 10000 A
Earth CT primary : 1 to 10000 A
Frequency : 50 or 60 Hz

PHASE OVERCURRENT

$I>$: 0.1 to 25 x I_n
(Recommended up to 2 x I_n for IDMT delay)
 $I>$ Delay type : IDMT or Definite Time
 $tl>$: 0 to 100 s
 $I>$ IDMT curve : NI, VI, EI, LTI, NI 1.3/10
 ktl : 0.01 to 1.00
 $I>>$: 0.5 to 40 x I_n
 $tl>>$: 0 to 100 s
 $I>>>$: Yes or No
 $I>>>$ Sample : Yes or No
 $tl>>>$: 0 to 100 s

EARTH FAULT

$I_{0>}$: 0.02 to 2 x I_{0n}
(Recommended up to 0.5 x I_{0n} for IDMT delay)
 $I_{0>}$ Delay type : IDMT or Definite Time
 $tl_{0>}$: 0 to 100 s
 $I_{0>}$ IDMT curve : NI, VI, EI, LTI, NI 1.3/10
 $ktl_{0>}$: 0.01 to 1.00
 $I_{0>>}$: 0.1 to 10 x I_{0n}
 $tl_{0>>}$: 0 to 100 s
 $I_{0>>>}$: 0.1 to 10 x I_n
 $I_{0>>>}$ Sample : Yes or No
 $tl_{0>>>}$: 0 to 100 s

NEGATIVE SEQUENCE OVERCURRENT

$I_{2>}$: 0.1 to 40 x I_n
(Recommended up to 2 x I_n for IDMT delay)
 $I_{2>}$ Delay type : IDMT or Definite Time
 $tl_{2>}$: 0 to 100 s
 $I_{2>}$ IDMT curve : NI, VI, EI, LTI, NI 1.3/10
 $ktl_{2>}$: 0.01 to 1.00
 $I_{2>>}$: 0.1 to 40 x I_n
 $tl_{2>>}$: 0 to 100 s

THERMAL OVERLOAD

$I_{\theta>}$: 0.1 to 3 x I_n
 T_{θ} : 1 to 200 minutes
 k : 1 to 1.5
 θ Trip : 50 to 200%
 θ Alarm : 50 to 200%

AUTORECLOSE

Dead Time $tD1-tD4$: 0.05 to 600 s
Reclaim Time tR : 0.02 to 600 s
Inhibit Time tI : 0.02 to 600 s
Phase Cycles : 0-4
Earth Cycles : 0-4

MEASUREMENT RANGE

Phase Current Secondary
5A input : 0 to 200 A
1A input : 0 to 40 A

EARTH CURRENT SECONDARY

5A input : 0 to 50A
1A input : 0 to 10A

ENVIRONMENTAL CONDITIONS

Temperature : -10°C to 55°C
Humidity : 5% to 95%, non-condensing

MECHANICAL

Mounting : Panel mounting
Dimension (mm) : 142(w) x 165(h) x 198(d)
Enclosure protection: IP54 at the panel
Approximate weight : 3kg

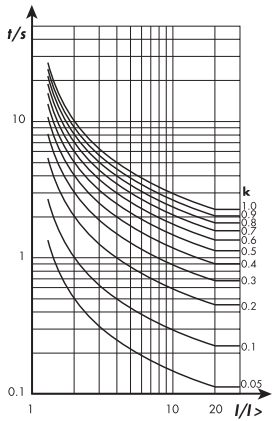
ACCURACY

Current accuracy : \pm 3% of the set value or 20mA secondary
Timing accuracy : \pm 5% or \pm 30ms

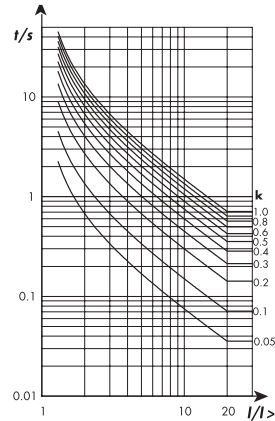
COMMUNICATION

RS232 (front) : MODBUS-RTU
RS485 (back) : MODBUS-RTU

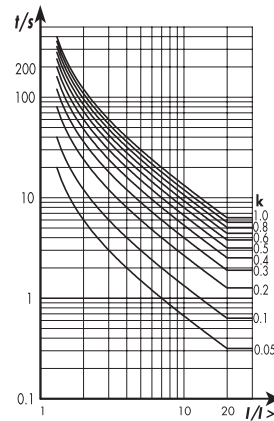
Normal Inverse



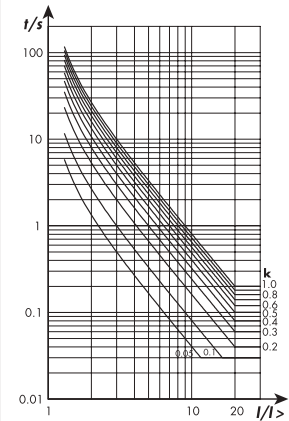
Very Inverse



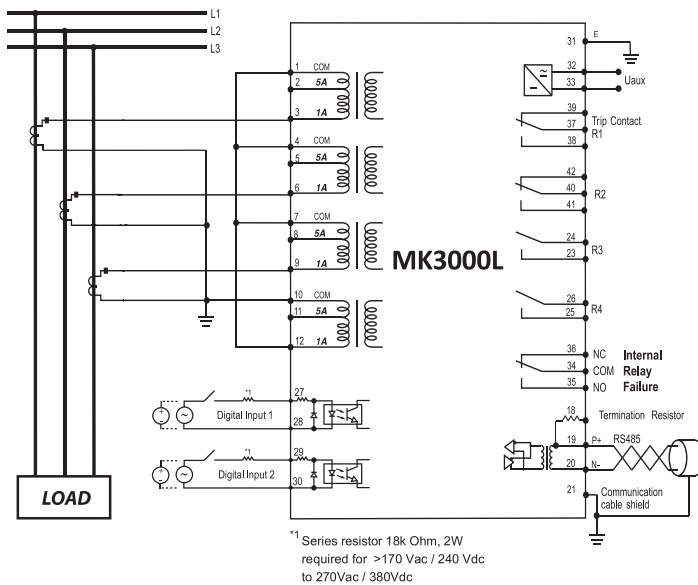
Long Time Inverse



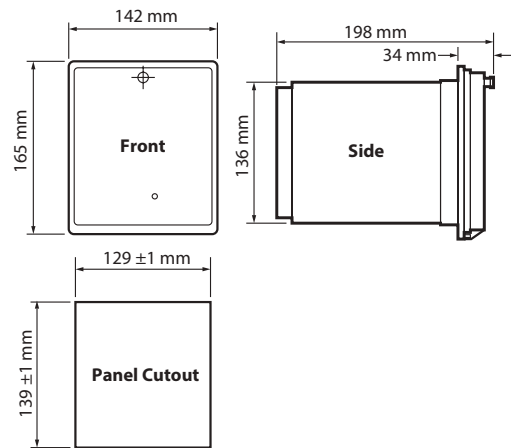
Extremely Inverse



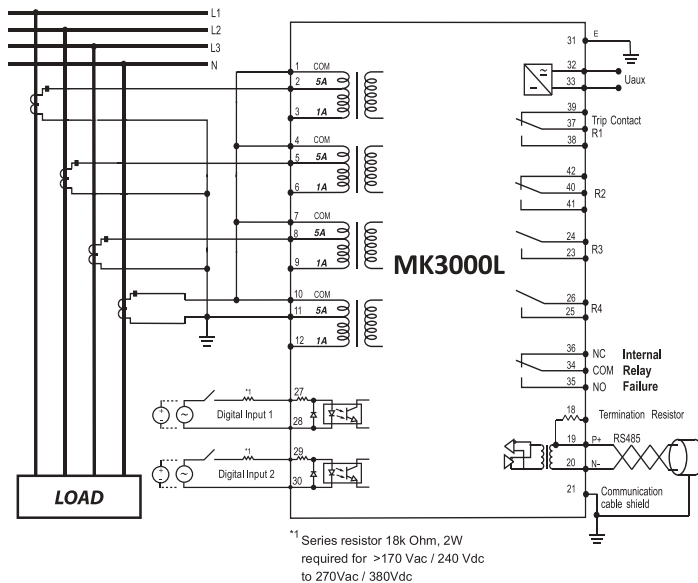
Typical Application Diagram 1



Case Dimensions



Typical Application Diagram 2



Ordering Information

| MODEL | DESCRIPTION |
|-----------------|---|
| MK3000L - 150D | For 50/60 Hz, auxiliary voltage 24 ~ 150V DC |
| MK3000L - 240AD | For 50/60 Hz, auxiliary voltage 85 ~ 265 V AC or 110 ~ 370 V DC |