



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, 50N, 51P, 51G, 51N, CLP, 50BF, 74TC, 79

Technical Data

RATINGS

AUXILIARY SUPPLY

Model MK3000L-150D

Rated voltage : 30 ~ 120 V DC

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

$t_{I>}$: 0 to 100 s

$I_{>}$ IDMT curve : NI, VI, EI, LTI, NI 1.3/10

$kt_{I>}$: 0.01 to 1.00

$I_{>>}$: 0.5 to 40 x I_n

$t_{I>>}$: 0 to 100 s

$I_{>>>}$: Yes or No

$I_{>>>}$: 0.5 to 40 x I_n

$I_{>>>}$ Sample : Yes or No

$t_{I_{>>>}}$: 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

$t_{I_{0>}}$: 0 to 100 s

$I_{0>}$ IDMT curve : NI, VI, EI, LTI, NI 1.3/10

$kt_{I_{0>}}$: 0.01 to 1.00

$I_{0>>}$: 0.1 to 10 x I_{0n}

$t_{I_{0>>}}$: 0 to 100 s

$I_{0>>>}$: 0.1 to 10 x I_n

$I_{0>>>}$ Sample : Yes or No

$t_{I_{0>>>}}$: 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

$t_{I_{2>}}$: 0 to 100 s

$I_{2>}$ IDMT curve : NI, VI, EI, LTI, NI 1.3/10

$kt_{I_{2>}}$: 0.01 to 1.00

$I_{2>>}$: 0.1 to 40 x I_n

$t_{I_{2>>}}$: 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 t_{D1-tD4} : 0.05 to 600 s

Reclaim Time t_R : 0.02 to 600 s

Inhibit Time t_I : 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

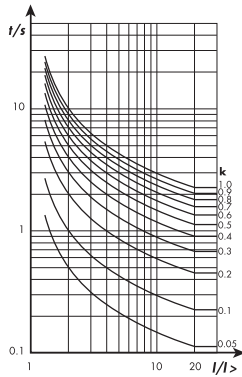
Timing accuracy : $\pm 5\%$ or ± 30 ms

COMMUNICATION

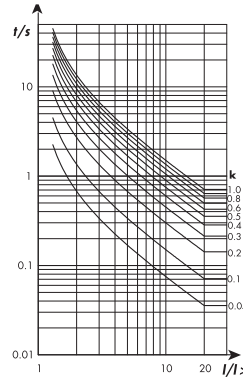
RS232 (front) : MODBUS-RTU

RS485 (back) : MODBUS-RTU

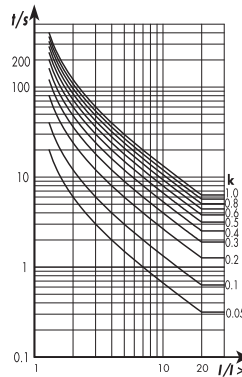
Normal Inverse



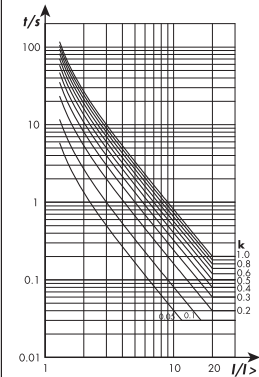
Very Inverse



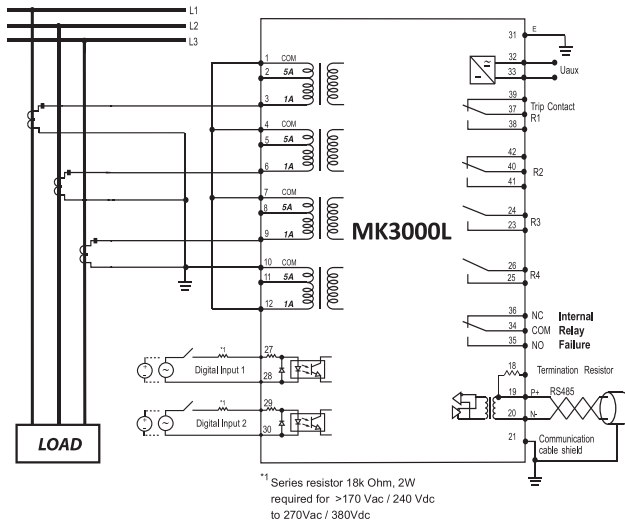
Long Time Inverse



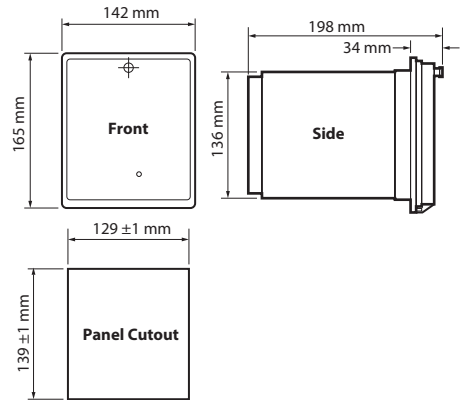
Extremely Inverse



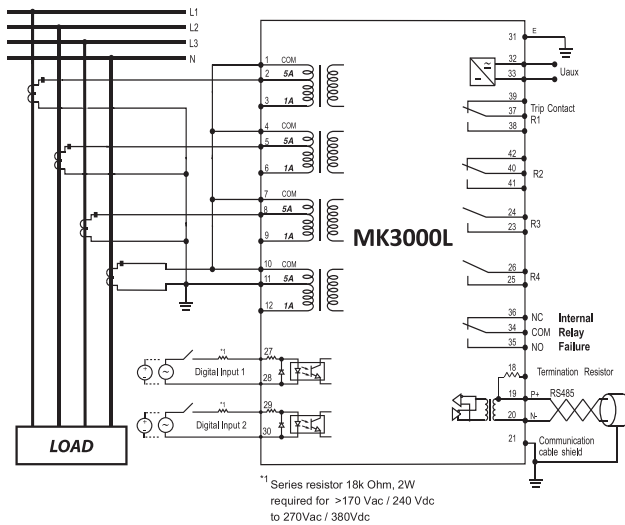
Typical Application Diagram 1



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