



# MK 2200L

## Features

- Multifunction numerical relay
- Three-phase, three stages setting for phase overcurrent
- Two stages setting for earth fault
- IDMT and definite time
- Thermal overload protection
- Two groups of protection settings
- Trip circuit supervision
- Circuit breaker failure protection
- RS232 and RS485 MODBUS-RTU communication
- Fault, alarm and tripping records with timestamp
- Multifunction programmable outputs
- Multifunction digital inputs
- Complies with IEC 60255 standard
- ANSI code : 49RMS, 50P, 50G, 51P, 51G, CLP, 50BF, 74TC

## Technical Data

### AUXILIARY SUPPLY

**Model MK2200L-150D**  
 Rated voltage : 30 ~ 120 V DC  
 Operating voltage : 24 ~ 150 V DC

**Model MK2200L-240AD**  
 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 (1 A)  
 : < 0.3 VA (5 A)  
 Thermal withstand : 4 x  $I_n$  continuous  
 : 40 x  $I_n$  for 2s  
 : 100 x  $I_n$  for 1s

### 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 10<sup>6</sup> operations

### RECORDS

Fault Record : Up to 50 records  
 Event Record : Up to 250 records  
 Alarm Record : Up to 30 records

### SETTING RANGES

#### GENERAL

Line CT primary : 1 to 10,000 A  
 Earth CT primary : 1 to 10,000 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)  
 \*(Variable Steps)  
 $I >$  Delay type : IDMT or definite time  
 $tI >$  : 0 to 100 s \*(Variable Steps)  
 $I >$  IDMT curve: NI, VI, EI, LI, NI 1.3/10  
 $ktI$  : 0.01 to 1.00 (Step 0.01)  
 $I >>$  : 0.5 to 40 x  $I_n$  \*(Variable Steps)  
 $tI >>$  : 0 to 100 s \*(Variable Steps)  
 $I >>>$  : 0.5 to 40 x  $I_n$  \*(Variable Steps)  
 $I >>>$  Sample : Yes or No  
 $tI >>>$  : 0 to 100 s \*(Variable Steps)

#### 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  
 $tI_0 >$  : 0 to 100 s \*(Variable Steps)  
 $I_0 >$  IDMT curve: NI, VI, EI, LI, NI 1.3/10  
 $ktI_0$  : 0.01 to 1.00 (Step 0.01)  
 $I_0 >>$  : 0.1 to 10 x  $I_{0n}$  \*(Variable Steps)  
 $tI_0 >>$  : 0 to 100 s \*(Variable Steps)

### THERMAL OVERLOAD

$I_{\theta} >$  : 0.1 to 3 x  $I_n$  \*(Variable Steps)  
 $T_{\theta}$  : 1 to 200 minutes (Step 1)  
 $k$  : 1 to 1.5 (Step 0.01)  
 $\theta$  Trip : 50 to 200% (Step 1%)  
 $\theta$  Alarm : 50 to 200% (Step 1%)

\* Variable Steps: 0.1-1.00: Step 0.01;  
 1.00-20: Step 0.1; >20: Step 1

### MEASUREMENT RANGES

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

Earth Current Secondary:  
 5 A input : 0 to 50 A  
 1 A input : 0 to 10 A

### 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: 2.2 kg

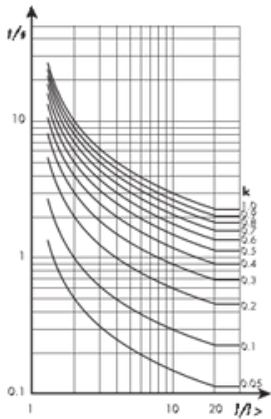
### ACCURACY

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

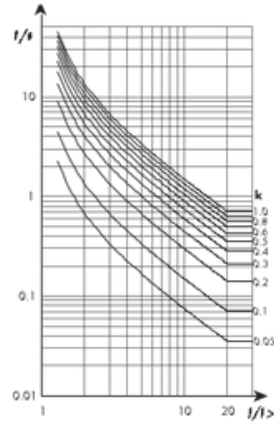
### COMMUNICATION

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

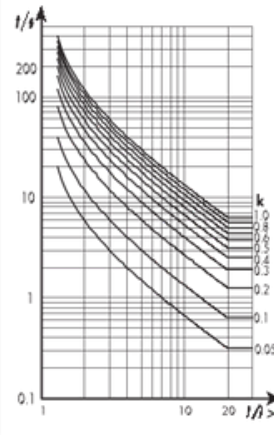
**Normal Inverse**



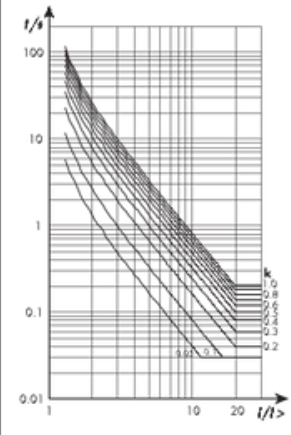
**Very Inverse**



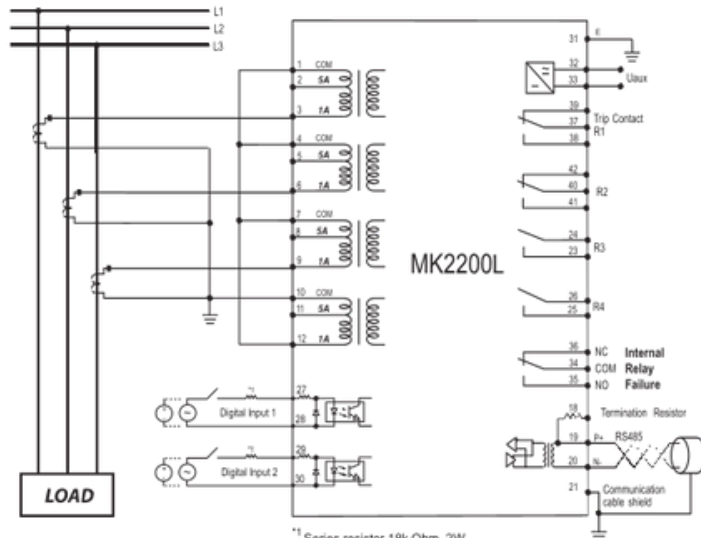
**Long Time Inverse**



**Extremely Inverse**

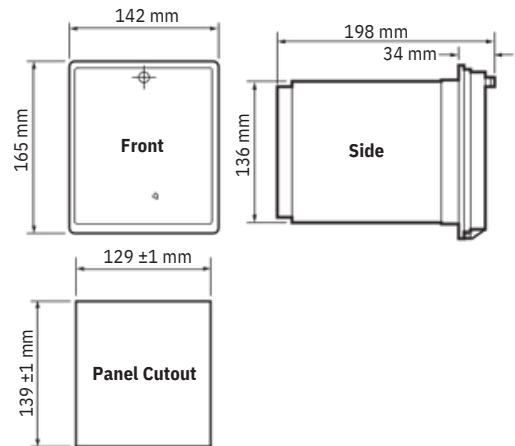


**Typical Application Diagram 1**

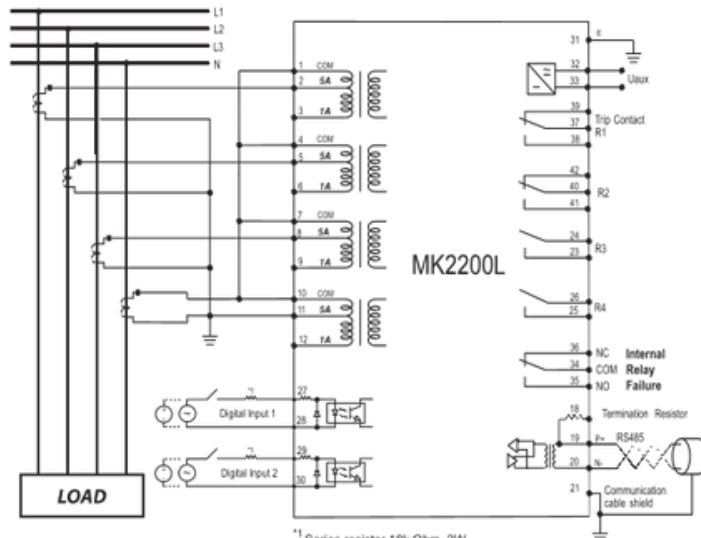


\*1 Series resistor 18k Ohm, 2W required for >170 Vac / 240 Vdc to 270Vac / 380Vdc

**Case Dimensions**



**Typical Application Diagram 2**



\*1 Series resistor 18k Ohm, 2W required for >170 Vac / 240 Vdc to 270Vac / 380Vdc

**Ordering Information**

MODEL	DESCRIPTION
MK2200L - 150D	For 50/60 Hz, auxiliary voltage 24 ~ 150 V DC
MK2200L - 240AD	For 50/60 Hz, auxiliary voltage 85 ~ 265 V A or 110 ~ 370 V DC