

**Manual Scroll**

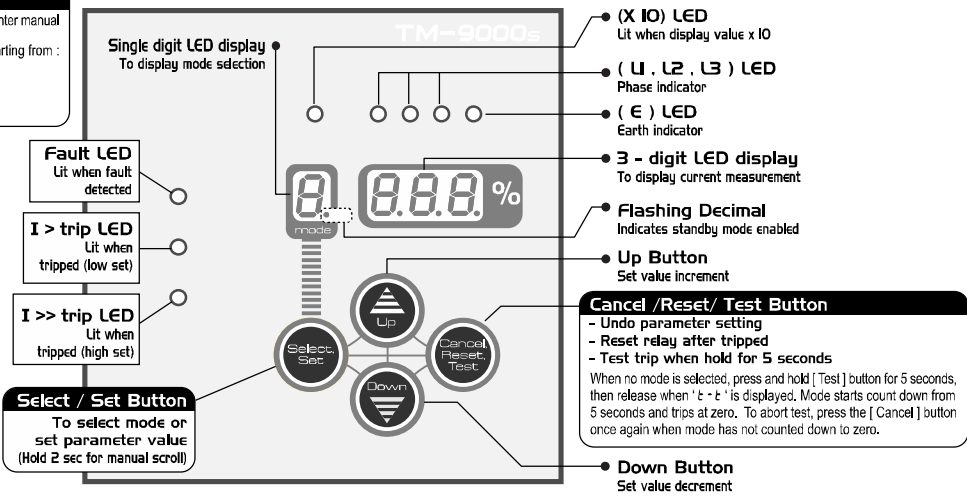
When no mode is selected, press and hold [select] button for 2 sec. to enter manual scroll mode. Mode [0] will be displayed. Press [Select] once to scroll thru individual phase current display starting from :

L1 → L2 → L3 → E

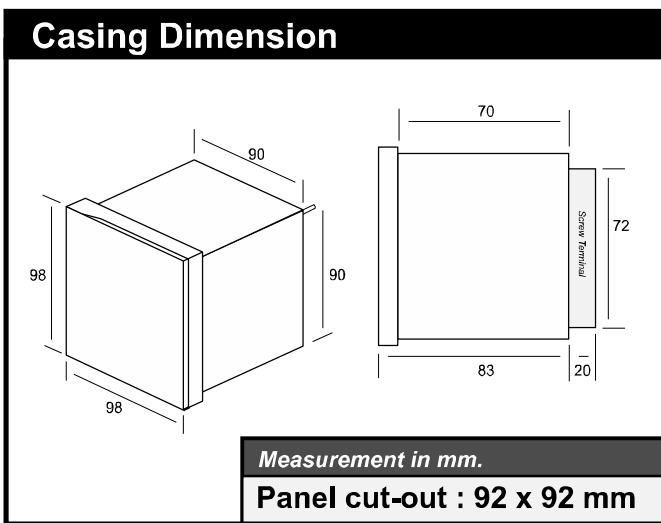
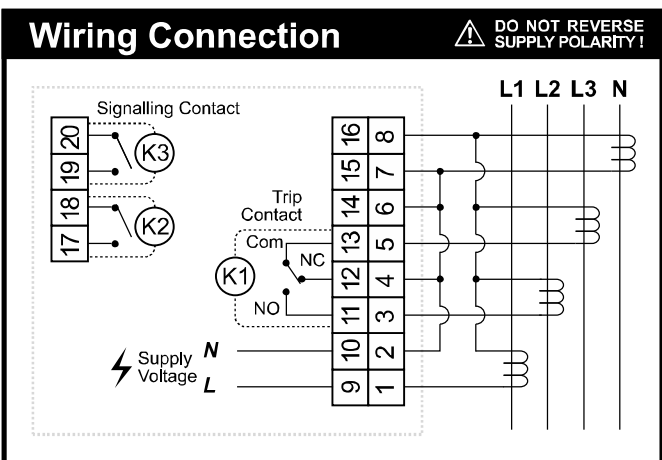
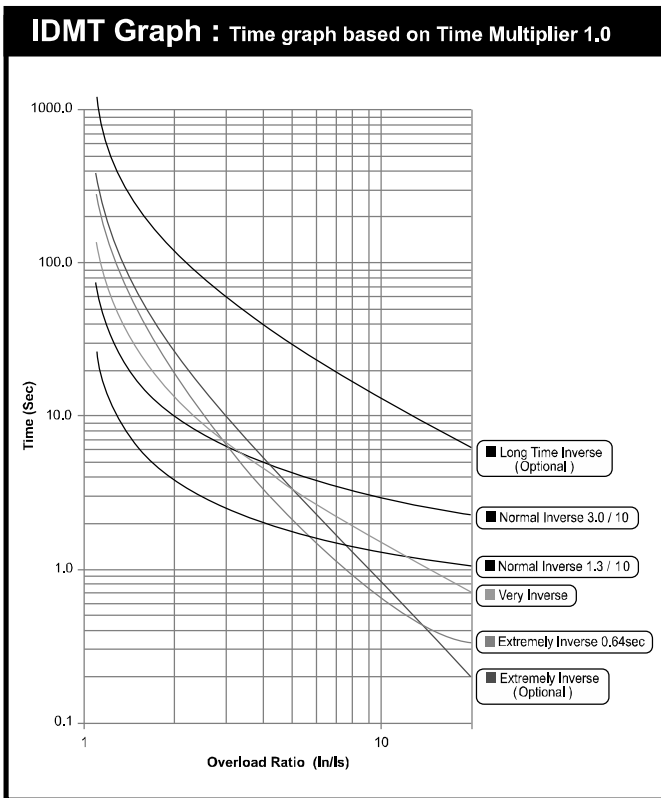
Press [Cancel] once to exit manual scroll mode.

- Modes**
- 1 : I >
  - 2 : Characteristic I >
  - 3 : TM<sub>I</sub> > or t<sub>I</sub> >
  - 4 : I >>
  - 5 : t<sub>I</sub> >> (sec)
  - 6 : I<sub>E</sub> >
  - 7 : Characteristic I<sub>E</sub> >
  - 8 : TM<sub>E</sub> > or t<sub>E</sub> >
  - 9 : I<sub>E</sub> >>
  - A : t<sub>E</sub> >> (sec)
  - B : I Trip (most recent)
  - C : I Trip
  - D : I start
  - E : Operation hr. x I000

- Special Setting Modes**
- L : Software lock setting
  - R : Relay K2 function
  - F : Signalling contact
  - S : Standby mode
  - N : Network frequency



| Technical Data   | Over Current                            | Earth Fault           |
|--|---|-----------------------|
| Measurement  | True RMS                                |                       |
| Current Rating (In)  | 5A                                      |                       |
| Current Setting Range (I >)                                | 20% ~ 200% (1% step)                    | 2% ~ 50% (1% step)    |
| High Set Range (I >>)                                      | 20 ~ 1000% (10% step)                   | 20 ~ 1000% (10% step) |
|  | 1000 ~ 2000% (100% step)                |                       |
| Time Setting Range (t <sub>I</sub> > or TM <sub>I</sub> >) | 0.05 ~ 1.00 (0.01 time multiplier step) |                       |
|  | 0.05 ~ 20.0 (0.1 sec step)              |                       |
| High Set Time Setting Range (t <sub>I</sub> >>)            | 0.05 ~ 20.0 (0.1 sec step)              |                       |
| <b>IDMT Graph</b>  | Normal Inverse : 3.0 / 10               |                       |
| - Definite Time  | Normal Inverse : 1.3 / 10               |                       |
| - Normal Inverse ( 3.0 / 10 )                              | Very Inverse                            |                       |
| - Normal Inverse ( 1.3 / 10 )                              | Extremely Inverse ( 0.64 sec )          |                       |
| - Very Inverse   |   |                       |
| - Extremely Inverse ( 0.64 )                               |   |                       |
| Relay Operation Level                                      | In / Is >= 1.10                         |                       |
| Display Range (In)   | 0.0% - 99.9% (0.1% res.)                |                       |
|  | 100% - 999% (1.0% res.)                 |                       |
|  | 1000% - 2000% (10.0% res.)              |                       |
|  | >2000% display 'out'                    |                       |
| Min. Sensitivity   | approx. 2.0%                            | approx. 0.5%          |
| Tripping Contact   | SPDT 5A / 240V AC                       |                       |
| Power Supply   | 240V AC, 50/60 Hz                       |                       |
| C.T. Input / Burden  | ... / 5A / <1VA                         |                       |
| Weight   | approx. 750g                            |                       |
| Ambient Temperature  | 0°C to +55°C                            |                       |
| Standard   | IEC 61000-4-2, 4-4 / 4-5 / 255-5:1      |                       |



\* Specifications subject to change without prior notice.

# Mode setting (TM-9000s)



Press 'Select' button when mode display is blank to access to Parameter Setting mode.

**mode 1** **Current setting ( I > )**  
To set over current

**Step 1:** Press [ Select ] once to enter mode **1**.  
Display shows: ' 80 ' ( Range : 20% ~ 200% )

**Step 2:** To modify value, use the [ Up / (+) ] or [ Down / (-) ] button.  
Newly selected value will flash.

**Step 3:** Press [ Select ] to store / confirm new value and advance to mode **2** or press [ Cancel ] to undo changes.

**mode 2** **Characteristics I**  
To select IDMT time graph based on time multiplier 1.0

**Step 1:** Press [ Select ] until mode **2** is displayed.  
Display shows: ' n 3.0 ' - (See IDMT Graph diagram)

**Step 2:** Select time graph by using the [ Up / (+) ] or [ Down / (-) ] button.  
Newly selected value will flash.

**Step 3:** Press [ Select ] to store / confirm new value and advance to mode **3** or press [ Cancel ] to undo changes.

**mode 3** **Time Setting ( TM<sub>I</sub> or t<sub>I</sub> )**  
To set over current trip time

**Step 1:** Press [ Select ] until mode **3** is displayed.  
Display shows: ' 0.10 ' - (Range : 0.05 ~ 10.0 sec) refer to technical data

**Step 2:** Set the desired delay time (sec.) using the [ Up / (+) ] or [ Down / (-) ] button.  
Newly selected value will flash.

**Step 3:** Press [ Select ] to store / confirm new value and advance to mode **4** or press [ Cancel ] to undo changes.

**mode 4** **High-Set ( I >> )**  
To set high-set over current

**Step 1:** Press [ Select ] until mode **4** is displayed.  
Display shows: ' 100 ' - (Range : Off or 20 ~ 2000)  
\*(100 : Factory default value showing 1000)

**Step 2:** Set the desired value using the [ Up / (+) ] or [ Down / (-) ] button.  
Newly selected value will flash.

**Step 3:** Press [ Select ] to store / confirm new value and advance to mode **5** or press [ Cancel ] to undo changes.

**mode 5** **High-set trip time ( t<sub>I</sub> >> )**  
To set high-set over current trip time

**Step 1:** Press [ Select ] until mode **5** is displayed.  
Display shows: ' 0.05 ' - ( Range : 0.05 ~ 10.0 sec.)

**Step 2:** Set the desired value using the [ Up / (+) ] or [ Down / (-) ] button.  
Newly selected value will flash.

**Step 3:** Press [ Select ] to store / confirm new value and advance to mode **6** or press [ Cancel ] to undo changes.

(Note: If High-set is set to 'OFF' in mode 4, the display will only shows: '-.-', no setting is allowed)

**mode 6** **Fault current setting ( I<sub>E</sub> > )**  
To set fault current (%)

**Step 1:** Press [ Select ] until mode **6** is displayed.  
Display shows: ' 10 ' ( Range : 2 % ~ 50 % )

**Step 2:** Set the value using the [ Up / (+) ] or [ Down / (-) ] button.  
Newly selected value will flash.

**Step 3:** Press [ Select ] to store / confirm new value and advance to mode **7** or press [ Cancel ] to undo changes.

**mode 7** **Characteristics I<sub>E</sub>**  
To select IDMT time graph based on time multiplier 1.0

**Step 1:** Press [ Select ] until mode **7** is displayed.  
Display shows: ' n 3.0 ' - (See IDMT Graph diagram)

**Step 2:** Select time graph by using the [ Up / (+) ] or [ Down / (-) ] button.  
Newly selected value will flash.

**Step 3:** Press [ Select ] to store / confirm new value and advance to mode **8** or press [ Cancel ] to undo changes.

**mode 8** **High-set trip time ( TM<sub>I<sub>E</sub></sub> > or t<sub>I<sub>E</sub></sub> > )**  
To set high-set fault trip time

**Step 1:** Press [ Select ] until mode **8** is displayed.  
Display shows: ' 0.10 ' - (Range : 0.05 ~ 1.00 sec.)

**Step 2:** Set the value using the [ Up / (+) ] or [ Down / (-) ] button.  
Newly selected value will flash.

**Step 3:** Press [ Select ] to store / confirm new value and advance to mode **9** or press [ Cancel ] to undo changes.

**mode 9** **High-set fault ( I<sub>E</sub> >> )**  
To set high-set trip time for earth fault

**Step 1:** Press [ Select ] until mode **9** is displayed.  
Display shows: ' 200 ' - ( Range : OFF or 20 ~ 1000% )

**Step 2:** Set the value using the [ Up / (+) ] or [ Down / (-) ] button.  
Newly selected value will flash.

**Step 3:** Press [ Select ] to store / confirm new value and advance to mode **9** or press [ Cancel ] to undo changes.

**mode A** **High-set fault trip time**  
To view Alarm warnings

**Step 1:** Press [ Select ] until mode **A** is displayed.  
Display shows: ' 0.05 ' - ( Range : 0.05 ~ 10.0 sec. )  
Display shows: ' --- ' - ( Disabled when mode **9** is set to OFF )

**Step 2:** Set the value using the [ Up / (+) ] or [ Down / (-) ] button.  
Newly selected value will flash.

**Step 3:** Press [ Select ] to store / confirm new value and advance to mode **9** or press [ Cancel ] to undo changes.

**mode B** **View trip memory** **Not adjustable**  
To view tripped memory

Press [ Select ] until mode **B** is displayed.  
Display will show the most recent tripped value for L1.  
Press [ Select ] button again to view L2 and so on. After phase E for memory **B** is viewed, pressing [ Select ] will go to memory **C**, then repeat as above.  
Press [ Cancel ] button each time to back track each individual phase tripped value.

Phase **L1, L2, L3** and **E** will flash once or twice depending on the tripping conditions :-

|             |                                    |
|-------------|------------------------------------|
| No Flash    | : Phase did not cause the tripping |
| Flash Once  | : Phase cause a low-set trip       |
| Flash Twice | : Phase cause a high-set trip      |

To advance to mode **C**, press [ Select ] button until phase E of mode **C** is viewed.

**mode C** **I - start** **Not adjustable**  
To view the starting fault current value

Press [ Select ] until mode **C** is displayed.  
Display will show the I-start fault current value.  
Press [ Select ] again and advance to mode **B** or press [ Cancel ] to exit mode.

**mode E** **Operation hour x1000** **Not adjustable**  
To view the device operated in hours

Press [ Select ] until mode **E** is displayed.  
Display shows: ' 0.00 ' - ( Indicates the no. of hours is in used.)  
Press [ Select ] again to exit mode.

## Special setting mode 0000-FF

User can lock the keypad on the device to avoid unauthorized or accidental adjustment to the settings by following the steps below:  
When **NO** mode is selected (single digit LED display mode display is blank),  
Press [ Select ] and [ Cancel ] button simultaneously and hold for 5 seconds.

**0** - mode is displayed. **Lock mode**  
Display shows: **OFF** - Factory Default Setting (OFF or ON).  
Press [ Up / (+) ] or [ Down / (-) ] button to select .  
Press [ Set ] button to confirm and proceed to next mode.

**0n** - To lock  
**0FF** - To unlock

**LC** - mode is displayed. **Relay output alarm mode**  
Display shows: **LC** - Factory Default Setting.  
Press [ Up / (+) ] or [ Down / (-) ] button to select.  
This programmable output is for relay function K1 only.  
Press [ Set ] button to confirm and proceed to next mode.

**nLC** - Non-latching Trip  
**LC** - Latching Trip

**ocE** - mode is displayed. **Signalling contact selection mode**  
Display shows: **ocE** - Factory Default Setting.  
Press [ Up / (+) ] or [ Down / (-) ] button to select.  
Press [ Set ] button to confirm and proceed to next mode.

**ocE** - relay K2 for over current trip signal  
- relay K3 for earth fault trip signal  
**Ht** - relay K2 for low set trip signal  
- relay K3 for high set trip signal

**0n** - mode is displayed. **Standby mode**  
Display shows: **ON** - Factory Default Setting.  
Press [ Up / (+) ] or [ Down / (-) ] button to select.  
Press [ Set ] button to confirm and proceed to next mode.

**0n** - Enable  
**0FF** - Disable

A flashing decimal on the mode display indicates standby mode is enabled. After about 3 minutes of idle and no fault is detected, running LED bar will be displayed instead of the real time fault current. Standby mode automatically exits on fault detection or when any button is pressed. When device trips, standby mode is temporarily de-activated until device is reset.

Alternatively, to enable / disable standby without entering standby programming mode, simply press [ Reset ] button when powering up the device.

**50** - mode is displayed. **Frequency selection mode**  
Display shows: **ON** - Factory Default Setting.  
Press [ Up / (+) ] or [ Down / (-) ] button to select.  
Press [ Set ] button to confirm and exit special setting mode.

**50** - 50 Hz  
**60** - 60 Hz