

# Monitoring Relays

**CE** 7UG0  
IEC 60947-5-1



Please read and understand these instructions before installing, operating, or maintaining the equipment.



### DANGER

Hazardous voltage can cause death or serious injury. Disconnect power before working on equipment.



### CAUTION

Reliable functioning of the equipment is only ensured with certified components. Overvoltage category II (Refer IEC 60947-1)



### NOTICE

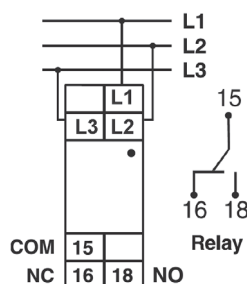
This product has been designed for environment A. Use of this product in environment B may cause unwanted electromagnetic disturbances in which case the user may require to take adequate mitigation measures.

## Technical Data

Designation	7UG0 712-1AA20	7UG0 818-1CA20	7UG0 753-1AA20	7UG0 841-1CB20	7UG0 842-1CD20
Type	Line monitoring relay		Voltage Monitoring relay	Earth leakage relay	
Supply voltage *	415V AC 3φ - 3W	415V AC 3φ - 3W, 3φ - 4W	415V AC 3φ - 3W	1φ - 2W, 3φ - 4W	
Operating band	154 - 480 VAC (L-L)	280 - 500 VAC (L-L) 160 - 288 VAC (L-N)	310 - 480 VAC	10mA--30A	
Control voltage	Built-in	Built-in	Built-in	110V AC	230V AC
Operating temperature	0 to 50°C				
Trip modes	Phase Sequence reverse Phase Missing Phase Failure trip : < 154Vac (L-L) Phase Imbalance : 30V fixed	Under Voltage Over Voltage Under frequency : 45 - 65Hz Over frequency : 45 - 65Hz Phase asymmetry: 5-99.9%	Phase Sequence reverse Phase Missing Under Voltage Over Voltage	Leakage Current : 10mA - 30A	
Trip Time delay	Instantaneous	0 - 99.9 sec	0.2 - 10 sec	0 - 99.9 sec	

### 7UG0 712...

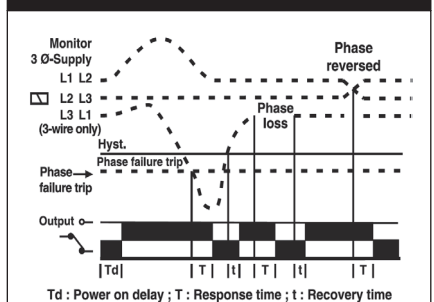
#### Terminal connections



### LED Indication Chart

Parameter	Green LED	Fail Safe Relay
Nominal Condition	ON	Energised
Phase reverse/ Phase fail	OFF	De-energised
Phase Imbalance	OFF	De-energised

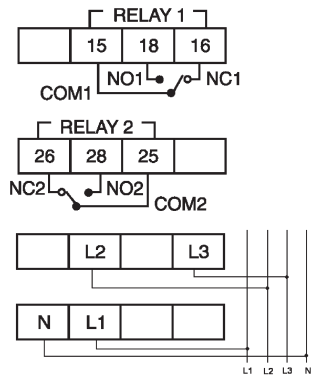
### Timing Diagram



\* To be used only for Star point Earthed Supply system

7UG0 818...

Terminal connections

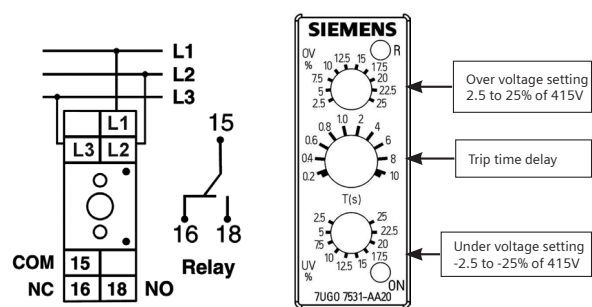


LED Indication Chart			
Various Conditions	Power LED	'R1' LED	'R' LED
No fault	ON	OFF	OFF
Trip (Relay 1)	ON	ON	OFF
Trip (Relay 2)	ON	OFF	ON
Trip (If programmed for both relays)	ON	ON	ON

7UG0 753...

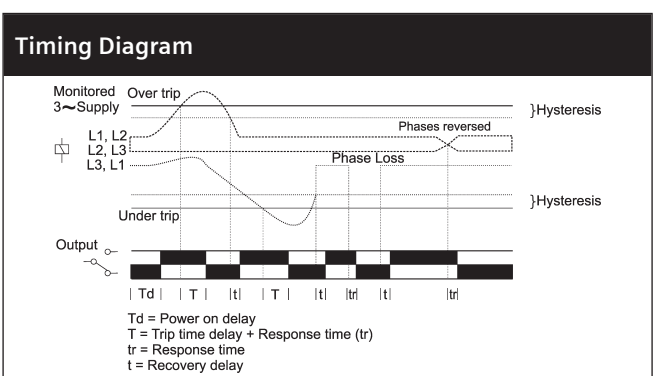
Terminal connections

Front panel description for 7UG0 753...



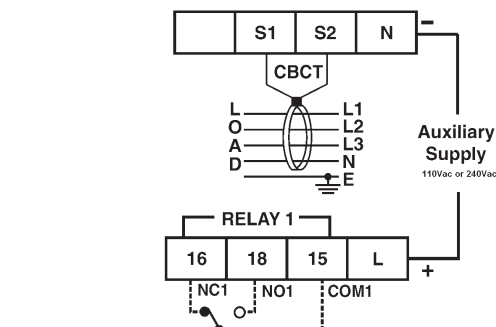
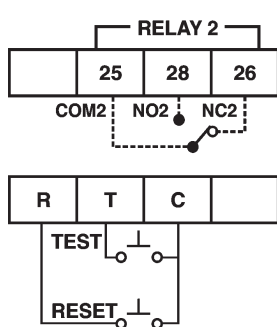
LED Indication Chart		
Parameter	Green LED	Fail Safe Relay
Nominal Condition	ON	Energised
Phase reverse/ Phase fail	OFF	De-energised
Under / Over Voltage	OFF	De-energised

	7UG0 7, 7UG0 9	7UG0 8...
	0.6 Nm	0.5 Nm
	1 x (0.75... 2.5) mm <sup>2</sup> 2 x 0.5 to 2 x 1.5 mm <sup>2</sup>	
	1 x (0.5... 2.5) mm <sup>2</sup> 2 x (0.5... 1.5) mm <sup>2</sup>	



7UG0 84...

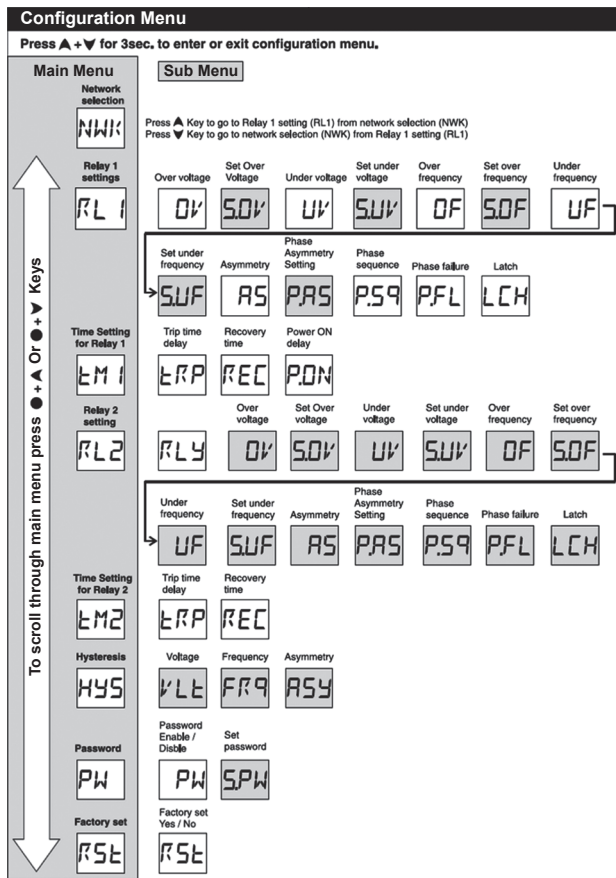
Terminal connections



LED Indication Chart		
Various Conditions	'R1' LED	'R2' LED
No fault	OFF	OFF
Trip (if programmed for Relay 1)	ON	ON
Pre-Alarm	OFF	ON
Trip (if programmed for both relays)	ON	ON
CBCT error	Blinking	Blinking

Note:		
CBCT (Core Balanced Current Transformer) is an accessory to be used with 7UG0 84...		
For single phase applications, only the live and neutral needs to be passed through the CBCT.		
The Earth MUST NOT pass through the CBCT.		
Use Screen, shielded cable or twisted pair cable between the unit and CBCT for long distance (Greater than 1m).		
Type	Designation	Inner diameter
CBCT	7UG0 9-96	35mm
	7UG0 9-97	70mm
	7UG0 9-99	120mm

## Menu Guide 7UG0 818...



Note : Appearance of shaded menus dependant on selection of other parameters

Display (For 1sec)	Description	Default Value	Range	Condition
PS9	Phase sequence	ON	ON / OFF	
PFL	Phase failure	ON	ON / OFF	
LCH	Latch	OFF	ON / OFF	If Latch is ON, user has to reset the unit manually when fault is removed
<b>Time Setting for Relay 1 (TM1)</b> Press ▲ to enter sub menu from main menu				
Press ▲ or ▼ to scroll through sub menu Press ● + ▲ or ● + ▼ to change parameter value				
Display (For 1sec)	Description	Default Value	Range	Condition
ERP	Trip time delay	3.0	0.0 - 99.9s	
REC	Recovery time	0.5	0.0 - 99.9s	
PON	Power ON delay	5.0	2.0 - 99.9s	Applicable for Relay 1 & Relay 2
<b>Relay 2 (RL2)</b> Press ▲ to enter sub menu from main menu				
Press ▲ or ▼ to scroll through sub menu Press ● + ▲ or ● + ▼ to change parameter value				
Display (For 1sec)	Description	Default Value	Range	Condition
RLY	Relay	RL1	RL1 / RL2	If RL1 is selected, all the settings done for RL1 & TM1 will be automatically set for RL2 and no other parameter of RL2 & TM2 will be prompted.
OV	Over voltage	ON	ON / OFF	
SOV	Set Over voltage	288	280 - 520V(Default : 498) [For 3P3W system] 160 - 300V(Default : 288) [For 3P4W system]	This option will be prompted only when OV option is made ON
UV	Under voltage	OFF	ON / OFF	
SUV	Set under voltage	192	280 - 520V(Default : 332) [For 3P3W system] 160 - 300V(Default : 192) [For 3P4W system]	This option will be prompted only when UV option is made ON

Note : Relay 2 (RL2) Default values shown are applicable when Relay 2 (RL2) selected as Relay 1 (RL1)

<b>Network Selection (NWK)</b> Press ▲ to enter sub menu from main menu				
Press ▲ or ▼ to scroll through sub menu Press ● + ▲ or ● + ▼ to change parameter value				
Display (For 1sec)	Description	Default Value	Range	Condition
NWK	Network selection	3P4	3P3 / 3P4	
<b>Relay 1 (RL1) settings</b> Press ▲ to enter sub menu from main menu				
Press ▲ or ▼ to scroll through sub menu Press ● + ▲ or ● + ▼ to change parameter value				
Display (For 1sec)	Description	Default Value	Range	Condition
OV	Over voltage	ON	ON / OFF	
SOV	Set Over Voltage	288	280 - 520V(Default : 498) [For 3P3W system] 160 - 300V(Default : 288) [For 3P4W system]	This option will be prompted only when OV option is made ON
UV	Under voltage	OFF	ON / OFF	
SUV	Set under voltage	192	280 - 520V(Default : 332) [For 3P3W system] 160 - 300V(Default : 192) [For 3P4W system]	This option will be prompted only when UV option is made ON
OF	Over frequency	OFF	ON / OFF	
SOF	Set over frequency	55	45.0 - 65.0Hz	This option will be prompted only when OF option is made ON
UF	Under frequency	OFF	ON / OFF	
SUF	Set under frequency	45	45.0 - 65.0Hz	This option will be prompted only when UF option is made ON
AS	Asymmetry	ON	ON / OFF	
PAS	Phase Asymmetry Setting	100	5.0 - 99.9%	This option will be prompted only when AS option is made ON

Display (For 1sec)	Description	Default Value	Range	Condition
OF	Over frequency	OFF	ON / OFF	
SOF	Set over frequency	55	45.0 - 65.0Hz	
UF	Under frequency	OFF	ON / OFF	
SUF	Set under frequency	45	45.0 - 65.0Hz	This option will be prompted only when UF option is made ON
AS	Asymmetry	ON	ON / OFF	
PAS	Phase Asymmetry Setting	100	5.0 - 99.9%	This option will be prompted only when AS option is made ON
PS9	Phase sequence	ON	ON / OFF	
PFL	Phase failure	ON	ON / OFF	
LCH	Latch	OFF	ON / OFF	If Latch is ON, user has to reset the unit manually when fault is removed

<b>Time Setting for Relay 2 (TM2)</b> Press ▲ to enter sub menu from main menu				
Press ▲ or ▼ to scroll through sub menu Press ● + ▲ or ● + ▼ to change parameter value				
Display (For 1sec)	Description	Default Value	Range	Condition
ERP	Trip time delay	3.0	0.0 - 99.9s	
REC	Recovery time	0.5	0.0 - 99.9s	

Hysteresis (HYS) Press ▲ to enter sub menu from main menu				
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
VLT	Hysteresis for voltage	10	1.0 - 99.9V	
FRQ	Hysteresis for frequency	0.2	0.2 - 2Hz	
ASY	Hysteresis for Asymmetry	20	2 - 20%	

Password (PW) Press ▲ to enter sub menu from main menu				
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
PW	Password	d15	ENB / DIS	Enable / Disable password protection option
SPW	Set password	000	000-999	Will be prompted only when Password option is enabled

NOTE : PW option will be asked when the user enter the config. menu if PW option is enabled in the config menu and the user has to enter the password which he has set in the S.PW (set password) option.

Factory set (RST) Press ▲ to enter sub menu from main menu				
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
RST	Reset (Factory set)	NO	YES / NO	

Trip Value Setting Press ▲ key for 3 sec. to enter or exit Trip Value Setting menu :				
Press ▲ or ▼ to scroll through main menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
LOCK	LOCK	YES	YES / NO	This option will prompted first when the user enters the trip setting menu. User has to set NO after which he can access the trip setting menu.

Press ▲ or ▼ to scroll through main menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
SOV	Set over voltage for Relay 1	288	280 - 520V (Default : 498) [For 3P3W system] (Default : 288) [For 3P4W system]	
SUV	Set under voltage for Relay 1	192	280 - 520V (Default : 332) [For 3P3W system] (Default : 192) [For 3P4W system]	
SOV	Set over voltage for Relay 2	288	280 - 520V (Default : 498) [For 3P3W system] (Default : 288) [For 3P4W system]	
SUV	Set under voltage for Relay 2	192	280 - 520V (Default : 332) [For 3P3W system] (Default : 192) [For 3P4W system]	
TRP	Trip time delay for Relay1	30	0.0 - 99.9s	
TRP	Trip time delay for Relay2	30	0.0 - 99.9s	
LOCK	LOCK	NO	YES / NO. (In this option if YES is selected by the user, then whenever the user enters the Trip Value Setting, initially LOCK option will be prompted. The user will have to set NO after which he can access the trip setting menu. If the user wants to disable LOCK option, he can set NO when LOCK option is prompted after TR2 option.)	

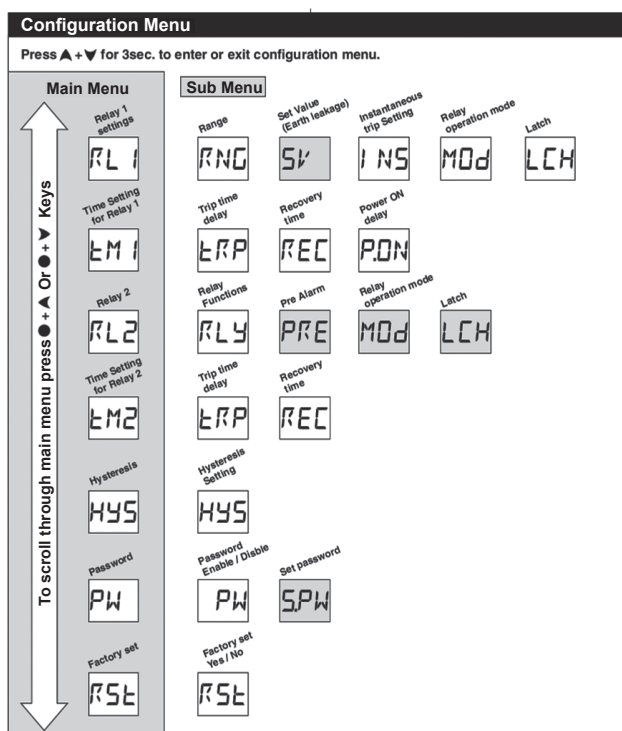
NOTE : If Values are changed, the same setting in config menu will also changed and vice versa, also if RL1 is selected for RL2 in config menu no parameter of Relay 2 will be prompted in the above trip value setting.

Online Keys Individual parameters can be viewed with every press of ▼ keys.

Parameter	Symbol
* Average Voltage	L1 L2 L3
Voltage (L1-phase)	L1
Voltage (L2-phase)	L2
Voltage (L3-phase)	L3
Voltage (L1-L2 phase)	L1 L2
Voltage (L2-L3 phase)	L2 L3
Voltage (L1-L3 phase)	L1 L3
Frequency	Hz
Phase Asymmetry	As %

\* For 3P4W system average of L-N voltages is shown.  
For 3P3W system average of L-L voltages is shown.

## Menu Guide 7UG0 84...



Note : Appearance of shaded menus dependant on selection of other parameters

Sub Menu				
Relay 1 (RL1) settings Press ▲ to enter sub menu from main menu				
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
RNG	Trip Current Range	550	33.0mA / 550mA / 5.50A / 30.0A	Depending upon this selection, the set trip value will be prompted. If this setting is changed the default trip value is loaded
SV	Set trip value for earth leakage	100	SV can be programmed between 10.0mA to 30A irrespective of the selected range. Default SV for different ranges are : 33.0mA : 30.0mA 550mA : 100mA 5.50A : 1.00A 30.0A : 10.0A	
INS	Instantaneous trip selection	ON	OFF / ON (5 times of set current)	If INS = ON and leakage current ≥ 5 times the set value, the relay trips instantaneously irrespective of trip time delay
MOD	Relay operation mode	ON	ON / OFF (In ON mode, contact will be in changed over state in normal condition )	ON : NC OFF : NO
LCH	Latch	OFF	ON / OFF	If Latch is ON, user has to reset the unit manually when fault is removed

Time Setting for Relay 1 (TM1) Press ▲ to enter sub menu from main menu				
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
TRP	Trip Time Delay	30	0.0 - 99.9s	
REC	Recovery Time	0.5	0.0 - 99.9s	
PON	Power ON Delay	50	0.5 - 99.9s	Applicable for Relay 1 & Relay 2

Relay 2 (RL2) <span style="float: right;">Press ▲ to enter sub menu from main menu</span>				
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
	Relay 2 Functions		RL1 / PRE	If RL1 is selected, all the settings done for RL1 will be automatically set for RL2 and no other parameter of RL2 will be prompted.
	Pre Alarm		50 to 100%	Will be prompted only when RL2 = PRE
	Relay operation mode		ON / OFF	ON : NC OFF : NO
	Latch		ON / OFF	If Latch is ON, user has to reset the unit manually when fault is removed

Time Setting for Relay 2 (TM2) <span style="float: right;">Press ▲ to enter sub menu from main menu</span>				
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
	Trip time delay		0.0 - 99.9s	
	Recovery time		0.0 - 99.9s	

Hysteresis (HYS) <span style="float: right;">Press ▲ to enter sub menu from main menu</span>				
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
	Hysteresis		5 to 40%	

#### Trip Value Press ▲ key for 3 sec. to enter or exit Trip Value Setting menu :

Press ▲ or ▼ to scroll through main menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
	LOCK		YES / NO	This option will be prompted first when the user enters the trip setting menu. User has to set NO after which he can access the trip setting menu.
	Set trip value for earth leakage		SV can be programmed between 10.0mA to 30A irrespective of the selected range. Default SV for different ranges are : 33.0mA : 30.0mA 550mA : 100mA 5.50A : 1.00A 30.0A : 10.0A	
	Pre Alarm		50 to 100%	This option will be prompted only when PRE is selected for Relay2 in the config. menu.
	Trip time delay for earth leakage		0.0 - 99.9sec.	

<b>Trip Indication</b>	Trip Indication on press of ▲ key : Trip value will be displayed till the key is pressed.
<b>Reset</b>	Press ● key for 3sec. to reset manually

**Master Password : 753**

In Trip value setting & configuration menu, if no key pressed for 30 sec, then unit resumes online mode.

Password (PW) <span style="float: right;">Press ▲ to enter sub menu from main menu</span>				
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
	Password		ENB / DIS	Enable / Disable password protection option
	Set password		0-999	Will be prompted only when Password option is enabled
	Main Menu Password		NOTE : PW option will be asked when the user enter the config. menu if PW option is enabled in the config menu and the user has to enter the password which he has set in the S.PW (set password) option.	

Factory set (RST) <span style="float: right;">Press ▲ to enter sub menu from main menu</span>				
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
Display (For 1sec)	Description	Default Value	Range	Condition
	Reset (Factory set)		YES / NO	

Display (For 1sec)	Description	Default Value	Range	Condition
	Trip time delay for Pre Alarm.		0.0 - 99.9sec.	This option will not be prompted if RL1 is selected for RL2 in config. menu.
	LOCK		YES / NO, (In this option if YES is selected by the user, then whenever the user enters the Trip Value Setting, initially LOCK option will be prompted. The user will have to set NO after which he can access the trip setting menu. If the user wants to disable LOCK option, he can set NO when LOCK option is prompted after TRP option.)	

#### Test & Reset Function

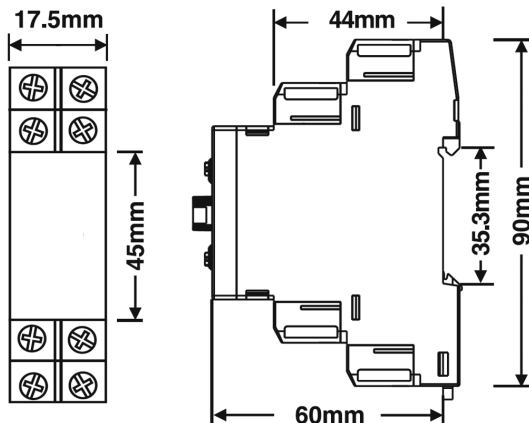
● LED ON ○ LED OFF

Key	Description	Display (For 1sec.)	LED's	Condition
For TEST	Press TST key for >2sec.		○ R1 ○ R2	Test is in Process.
Test passed			● R1 ● R2	If test is passed, OK will be displayed till reset button is pressed. If CBCT error is there, display will show CTE and all LED's will be blinking.
Test Failed			○ R1 ○ R2	---
RST	Press RST key for >2sec.	Actual Value	○ R1 ○ R2	If current is in mA then "mA" will be indicated.

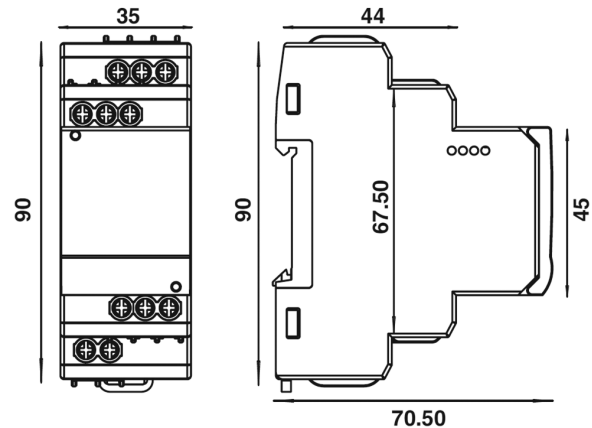


## Dimensional drawings

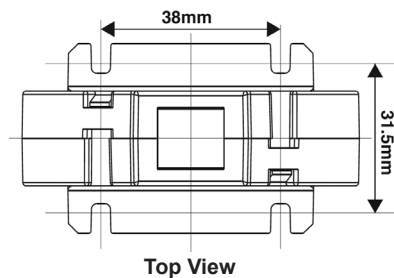
7UG0 7...



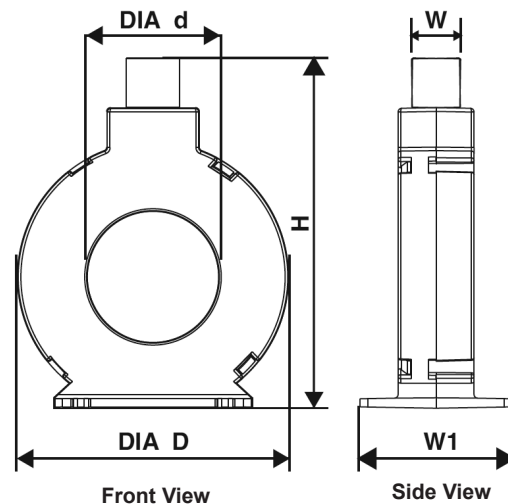
7UG0 8...



7UG0 9... (CBCT)



CBCT TYPE	Dimensions (mm)				
	D	d	H	W	W1
7UG0996	70	35	96	10	40
7UG0997	107	70	131	10	40
7UG0999	157	120	184	10	40
STD.TOL.	2 - 3	5 - 6	-	1.5 - 2	-



## Disposal

Siemens products are environment friendly, which predominantly consist of recyclable materials. For disposals we recommend disassembling and separation into following materials:

**METALS:** Segregate into Ferrous & Non Ferrous types for recycling through authorised dealer.

**PLASTICS:** Segregate as per material type for recycling through authorised dealer. Because of the long lifetime of Siemens products the disposal guidelines may be replaced by other national regulations when taking the product out of service.

The local customer care service is available at any time to answer disposal-related questions