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CSFPI-V3

Short Circuit & Earth Fault Passage Indicator



Catalog

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1) Introduction

CSFPI, Fault Passage Indicator is designed to detect and indicate Earth Fault and Short Circuit on a cable system in RMU networks with one input/open ring arrangement. The product is powered by the Internal Battery. The unit will Indicate a fault condition when current is detected above set trip current settings. Fault current is sensed by cable mounted sensor, which gives signal to indication unit. Sensors must be mounted on screened cables and can be retrofitted on the cable.

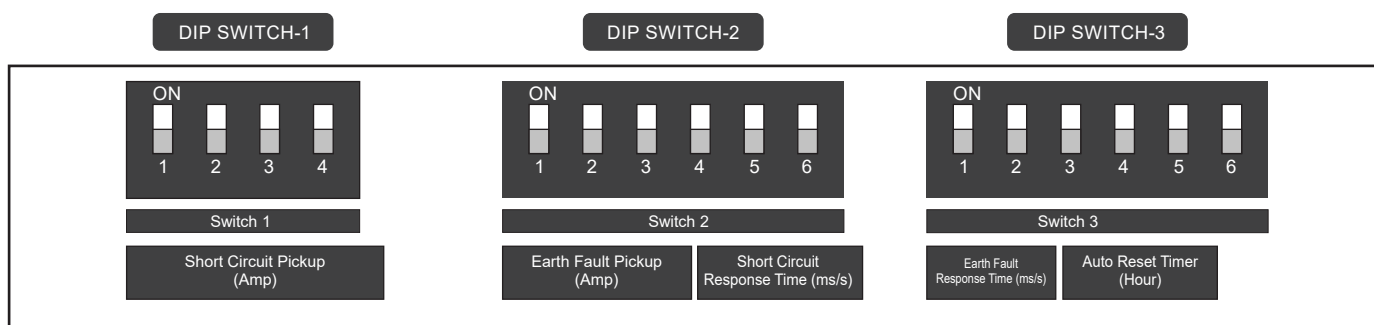
2) Features

- Programmable Short circuit pickup level (wide range) *
- Programmable Earth fault pickup level (wide range) *
- Indication of permanent earth-faults by blinking of Earth-fault LED
- Indication of a short-circuit by blinking of the Short-circuit LEDs
- Programmable response delay for short-circuits and Earth-faults (individually)
- Up-to Three potential free contacts to indicate earth-fault, short-circuits & low battery remote indication *
- Various Reset option for Fault Reset (Please refer specification table on page 9, 10)

3) Functional Description

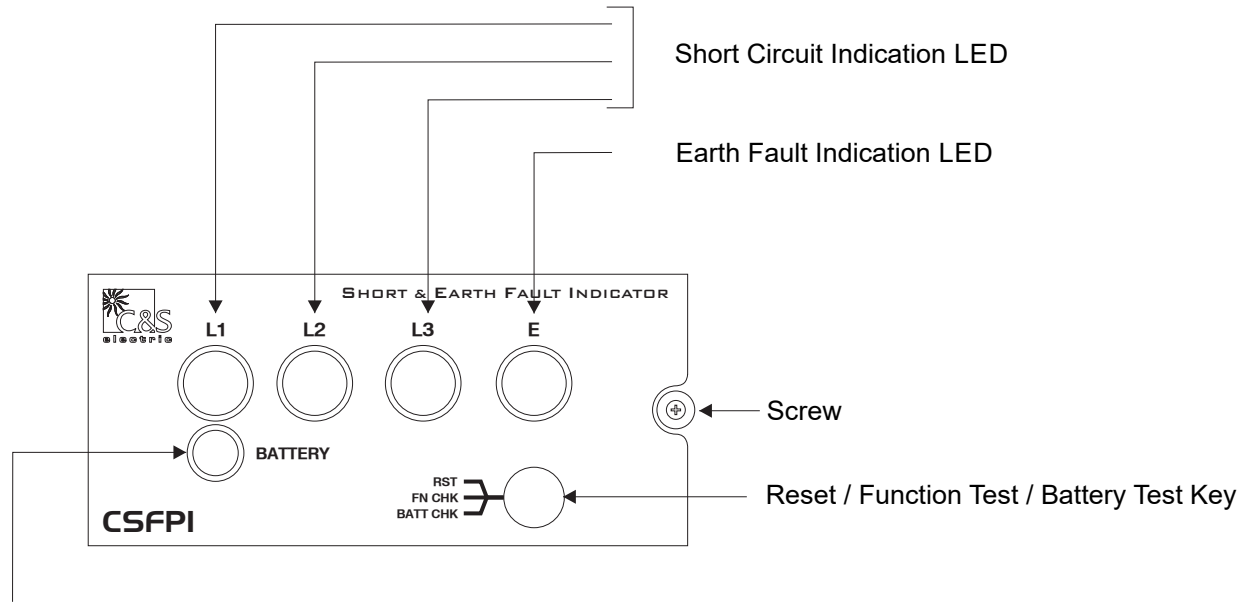
If the Phase /Earth current exceeds programmed set current for programmed response time the fault (Affected Phase in case of short circuit) will be indicated by red flashing LEDs and a relay contact will be activated. Reset occurs automatically by preset time passage or by a external potential free input or by recovering of voltage * (Not an Aux. Supply) or by manually via push button depending on the CSFPI variants. A Functional Test can also be carried out on field by pressing for more than 3 Sec and Battery Test by pressing the Push button for more than 6 Sec.

Programmable parameters can be set through DIP switches which are accessible by opening the Front Cover of the CSFPI indicator unit.



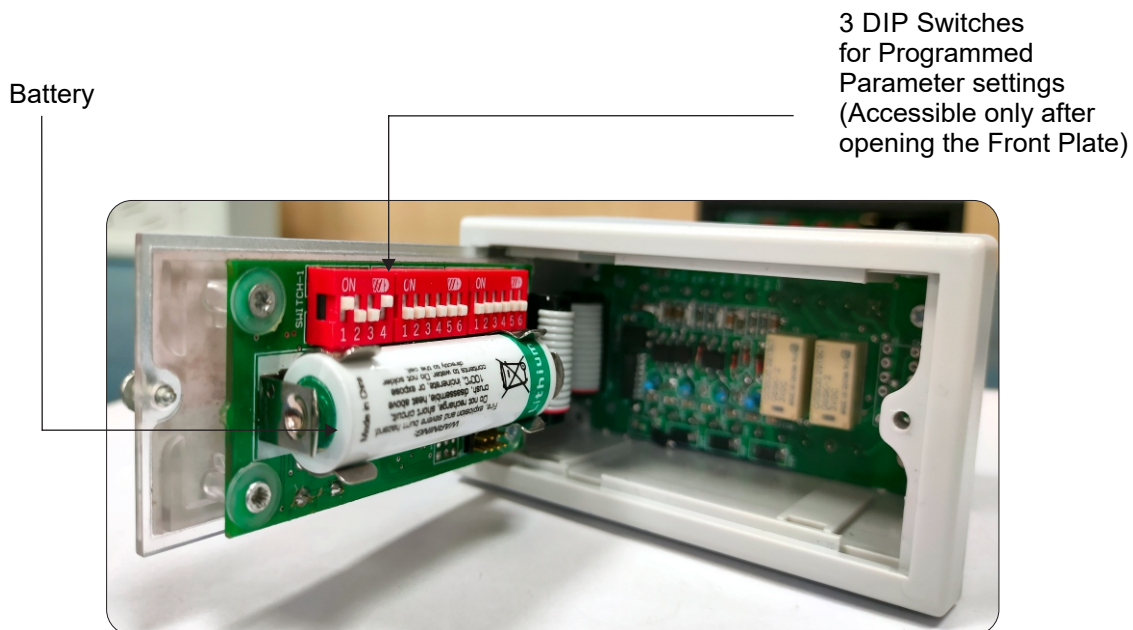
(Setting based on Model. Refer Specification Table on Page - 9, 10)

4a) Front Interface - CSFPI variants without Aux Supply (Standard / C1 / C5 / C6 / C7 / C13 / C16)

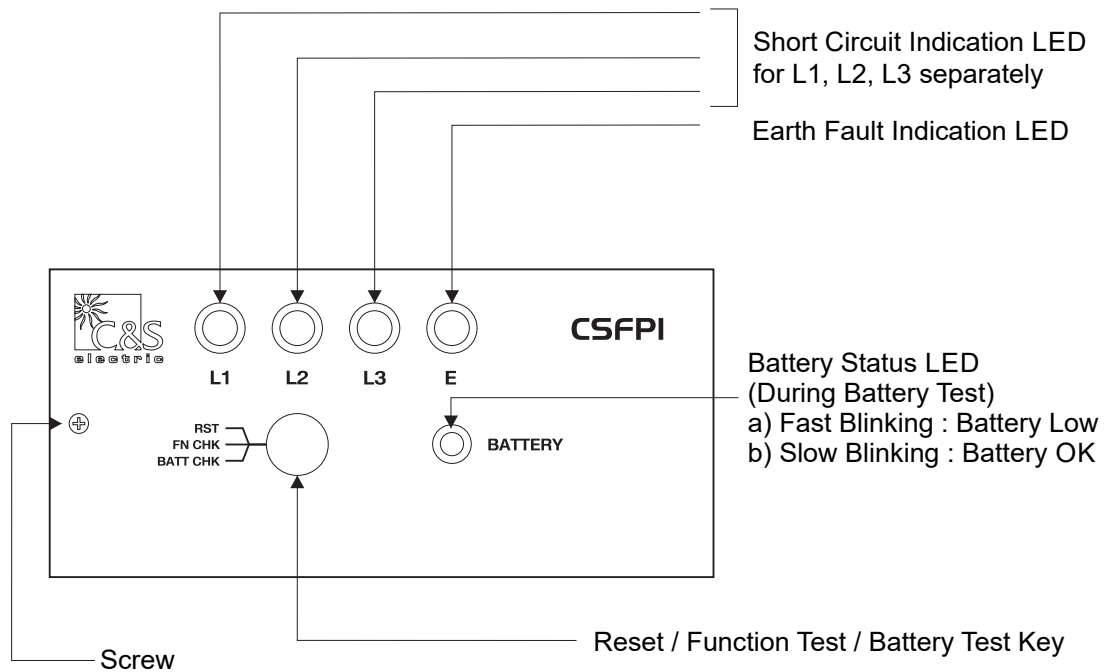


Battery Status LED
(During Battery Test)
a) Fast Blinking : Battery Low
b) Slow Blinking : Battery OK

Note: open the Front cover by removing the front screw to access the DIP switch setting.



4b) Front Interface - CSFPI variants with Aux Supply (C2 / C8 / C14)



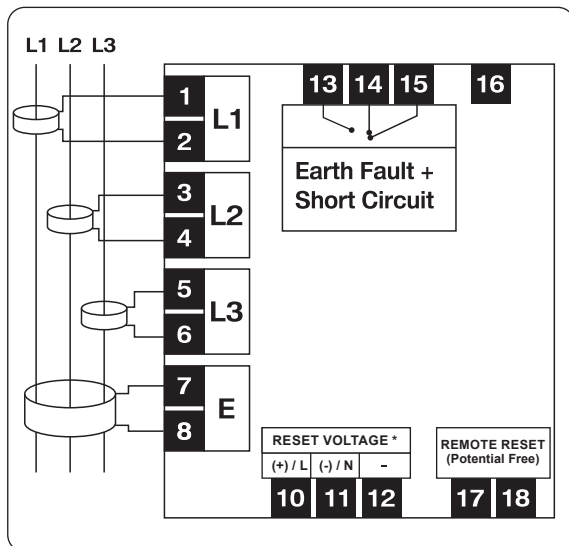
Note: open the Front plate by removing the front screw to access the DIP switch setting.

3 DIP Switches for Programmed Parameter settings (Accessible only after opening the Front Plate)

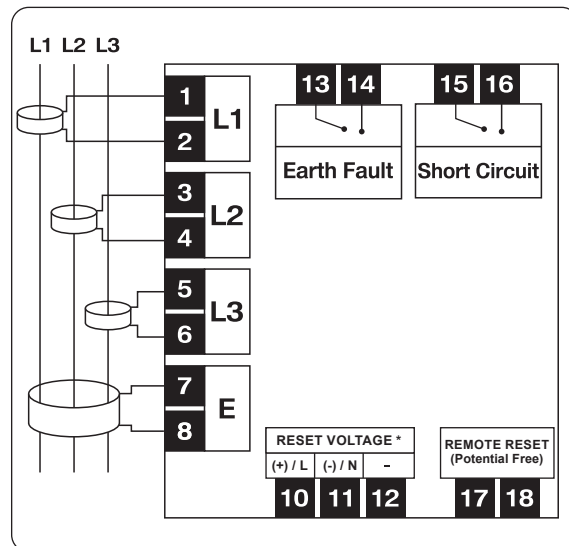
Battery



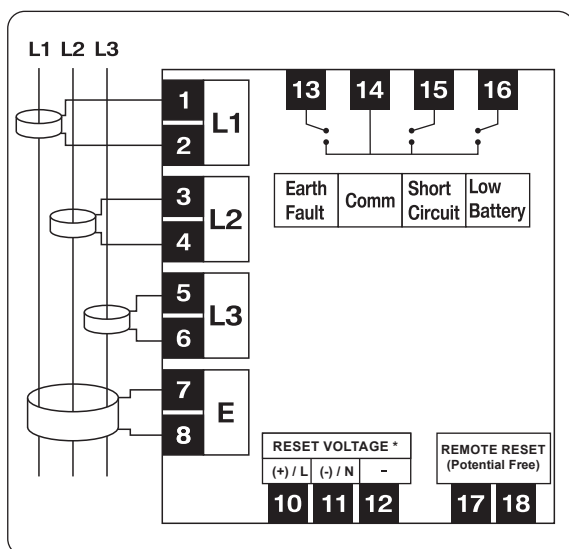
5a) Connection Diagram - CSFPI variants without Aux Supply (H Model)



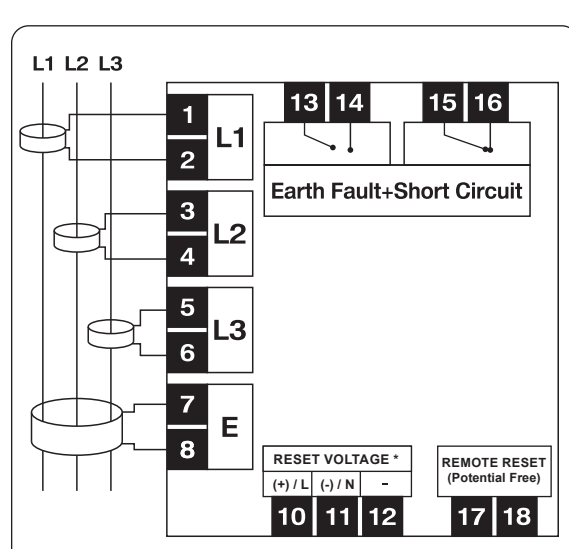
CSFPI-E-B-x



CSFPI-E-C-x



CSFPI-E-D-x



CSFPI-E-G-x

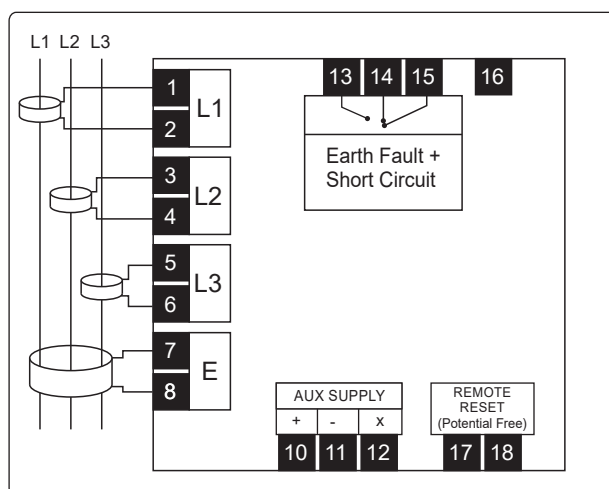
* Model Dependent

Note: Conn. diagram B, C, D, G are applicable for Standard, C1, C5, C6, C7, C13, C16 Models only

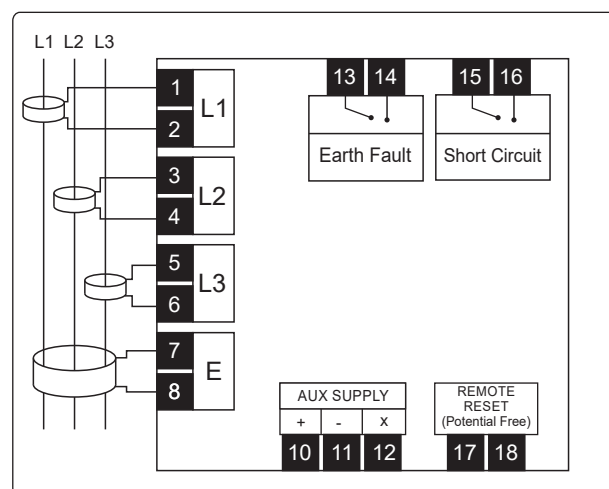


CAUTION : Remote Reset Signal requires 200msec pulse. Continuous signal can reduce battery life.

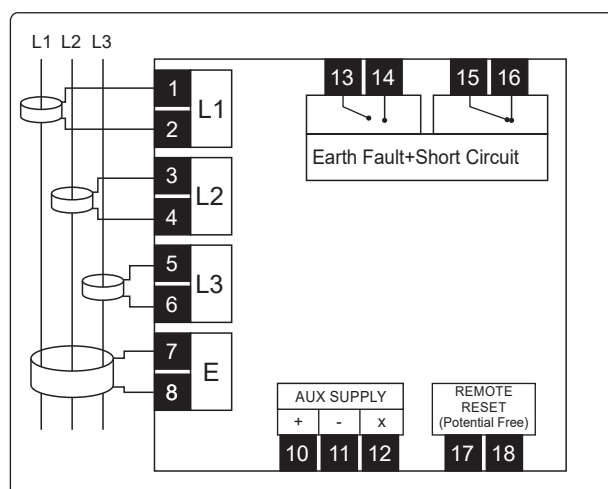
5b) Connection Diagram - CSFPI variants with Aux Supply (L Model)



CSFPI-E-B-x



CSFPI-E-C-x



CSFPI-E-G-x

* Model Dependent

Note: Conn. diagram B, C, G are applicable for C2, C8, C14 Models only



CAUTION : Remote Reset Signal requires 200msec pulse. Continuous signal can reduce battery life.

6) General Data

Subject	Value
Short-Circuit Trip Current (Phase to Phase)	: Adjustable: : For Range : Refer Table on Page - 9, 10 ($\pm 15\%$) **
Earth-Fault Trip Current (Phase to Ground)	: Adjustable: : For Range : Refer Table on Page - 9, 10 ($\pm 15\%$) **
Short-Circuit Response Time	: Adjustable: : For Range : Refer Table on Page - 9, 10 ($\pm 100\text{msec}$) **
Earth Fault Response Time	: Adjustable : For Range : Refer Table on Page - 9, 10 ($\pm 100\text{msec}$) **
Indication Unit	: Suitable for panel installation
Indication of a) Short-Circuit b) Earth-Fault c) Battery	: a) One Red LED for each Phase : b) One Red LED for Earth-Fault : c) One Yellow LED for Battery Low
Reset of the Indicator	: a) Manual by push-button : b) Automatic Reset by Time : For Range : Refer Table on Page - 9, 10 : c) Other Reset Function - Refer Table on Page - 9, 10 : d) Remote Reset (Potential Free Input) - Remote Reset Signal requires 200msec pulse. Continuous signal can reduce battery life.
On Site Function Test	: By Push-Button
Dimensions	: Refer Page No. 12 & 13 for dimension details
Protection Class	: Indication Unit - IP50 : Sensors - IP67
Type Test	: According to IEEE 495-2007
Operation Temp. Range	: -25°C to $+70^{\circ}\text{C}$
Aux Power Supply (model dependent)	: 18-40V DC
Aux Supply burden value (model dependent)	: $<1\text{ Watt}@24\text{V DC}$
Power Supply	: Lithium Battery 3.6V / 2.7 Ah (Mandatory)
SCADA Contact “	: Max. 3 Latch Contacts (Model Dependent) : Nominal Switching Capacity: 2A/30V DC, 0.25A/240V AC (Resistive Load) : Max. Switching Power: 60W, 60VA (Resistive Load) : Max. Switching Voltage: 220V DC, 250V AC
Short-Circuit Sensor (CT)	: Three Short Circuit Sensors Type CS-x-PS-x-x for Three Core Cable (One Sensor for each core) : Diameter : various option available (Based on ordering information)
Earth-Fault Sensor (CT)	: One Earth-Fault Sensor Type CS-x-ES-x-x for a Three-Core Cable : Diameter : various option available (Based on ordering information)
Connection & Mounting	: Screwed Terminal Connector at the rear side of the Unit. Panel mount.

** Accuracy claimed at 50Hz

CSFPI-V3 (SC+EFPI)

7a) Specification Table

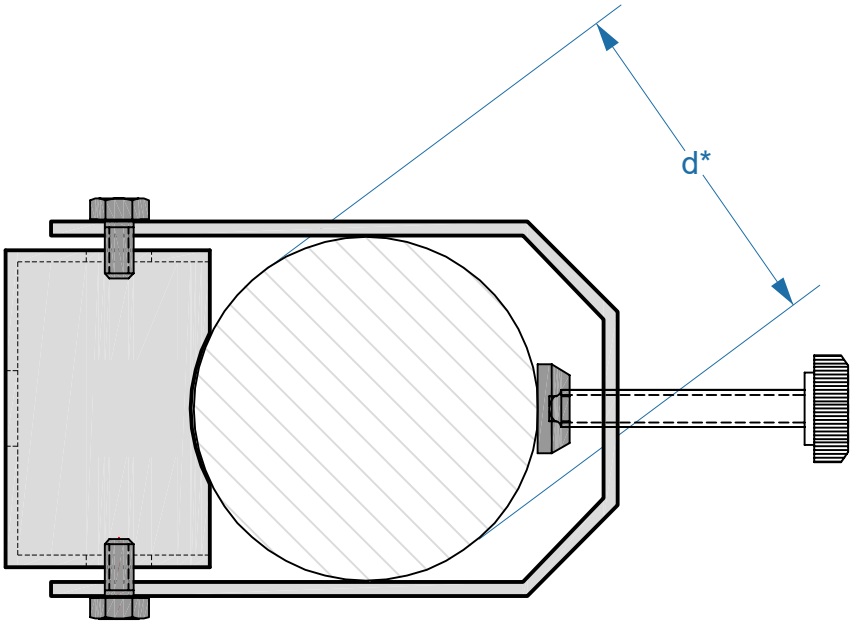
	CSFPI VARIANTS WITHOUT AUX SUPPLY						
Description	Standard	C1	C5	C6	C7	C13	C16
Short-Circuit	100/200/300	100/200/300	100/200/300	100/200/300	200/300/500/625	100/200/300	100/200/300
Trip Current (P-P) (A)	400/500/600	400/500/600	400/500/600	400/500/600		400/500/600	400/500/600
	700/800/900	700/800/900	700/800/900	700/800/900		700/800/900	700/800/900
	1000/1100/1200	1000/1100/1200	1000/1100/1200	1000/1100/1200		1000/1100/1200	1000/1100/1200
Earth-Fault Trip	10/20/30/40	10/20/30/40	10/20/30/40	20/40/60/80	40/60/80/100	10/20/40/80/	10/20/40/80/
Current (P-GND) (A)	60/80/100	60/80/100	60/80/100	100/150/200		100/120/150	100/120/150
Short-Circuit	40/60/80/100	40/60/80/100	40/60/80/100	40/60/80/100	40/60/80/100/120/140/160/180/	1/1.5/2/2.5/	40/60/80/100
Response Time	120/160/200	120/160/200	120/160/200	150/200/250	200/220/240/260/280/300/320/340/	3/3.5/4/5	150/200/250
setting	240 (ms)	500 (ms)	240 (ms)	300 (ms)	360/380/400/420/440/460/500 (ms)	(sec)	300 (ms)
Earth Fault	40/60/80/160	40/80/200/500	40/60/80/160	40/80/200/300	40/60/80/100/120/140/160/180	1/2/3/5	40/80/200/300
Response Time	(ms)	(ms)	(ms)	(ms)	200/220/240/260/280/300/320/340/	(sec)	(ms)
					360/380/400/420/440/460/500 (ms)		
Indication of LEDs for							
Short-Circuit - 3 RED LED	✓	✓	✓	✓	✓	✓	✓
Earth-Fault - 1 RED LED	✓	✓	✓	✓	✓	✓	✓
Battery Low - 1 YELLOW LED	✓	✓	✓	✓	✓	✓	✓
Reset Option							
Manual by push-button	✓	✓	✓	✓	✓	✓	✓
Remote Reset (Potential Free Input)	✓	✓	✓	✓	✓	✓	✓
Automatic Reset by time ± 5%	1/2/4/8 Hr	1/2/4/8 Hr	1/2/4/8 Hr	2/4/8/16 Hr	1/2/4/8 Hr	1/2/4/8 Hr	2/4/8/16 Hr
Automatic Reset after recovery of voltage	230V AC/DC	230V AC/DC	24V DC	230V AC/DC	230V AC/DC	230V AC/DC	230V AC/DC
Automatic Reset if current doesn't cut off within 3 sec after fault	x	✓	x	x	x	x	x
Automatic Reset recovering of operating current after fault	x	✓	x	✓	x	x	x
On Site Function Test By push button	✓	✓	✓	✓	✓	✓	✓
Power Source "Li Battery 3.6V / 2.7 Ah (Mandatory)	✓	✓	✓	✓	✓	✓	✓
Aux Supply	x	x	x	x	x	x	x
SENSOR INFORMATION							
Short-Circuit Sensor - 03 nos.	✓	✓	✓	✓	✓	✓	✓
Earth-Fault Sensor - 01 no.	✓	✓	✓	✓	✓	✓	✓
Phase Sensor Model	Refer Ordering Information for Sensor Selection						
Earth Sensor model	Refer Ordering Information for Sensor Selection						

7b) Specification Table

	CSFPI VARIANTS WITH AUX SUPPLY		
Description	C2	C8	C14
Short-Circuit	100/200/300/400/500/600/700/800/900/	100/200/300/400/500/600/700/800/900/	100/200/300/400/500/600/
Trip Current (P-P) (A)	1000/1100/1200	1000/1100/1200	700/800/900/1000/1100/1200
Earth-Fault Trip	100/130/160/	10/20/30/40/	50/100/150/
Current (P-GND)	180/200/240/300	60/80/100A	200/300/350/400
Short-Circuit	30/40/50/60/	40/60/80/100/	30/50/70/80/
Response Time	70/80/90/100	120/160/200/240	90/100/110/120
setting	(ms)	(ms)	(ms)
Earth Fault	30/60/80/100	40/60/80/160	30/60/80/120
Response Time	(ms)	(ms)	(ms)
Indication of LEDs for			
Short-Circuit - 3 RED LED	✓	✓	✓
Earth-Fault - 1 RED LED	✓	✓	✓
Battery Low - 1 YELLOW LED	✓	✓	✓
Reset Option			
Manual by push-button	✓	✓	✓
Remote Reset (Potential Free Input)	✓	✓	✓
Automatic Reset by time $\pm$ 5%	0.5/1/2/4 Hr	1/2/4/8 Hr	0.5/1/2/3/4 Hr
On Site Function			
Test By push button	✓	✓	✓
Power Source "Li Battery 3.6V / 2.7 Ah (Mandatory)	✓	✓	✓
Aux Supply	18-40 V DC	18-40 V DC	18-40 V DC
SENSOR INFORMATION			
Short-Circuit Sensor - 03 nos.	✓	✓	✓
Earth-Fault Sensor - 01 no.	✓	✓	✓
Wire Length from Sensor to Indicator (Meter)	Refer Ordering Information for Sensor Length		
Phase Sensor Model	Refer Ordering Information for Sensor Selection		
Earth Sensor model	Refer Ordering Information for Sensor Selection		

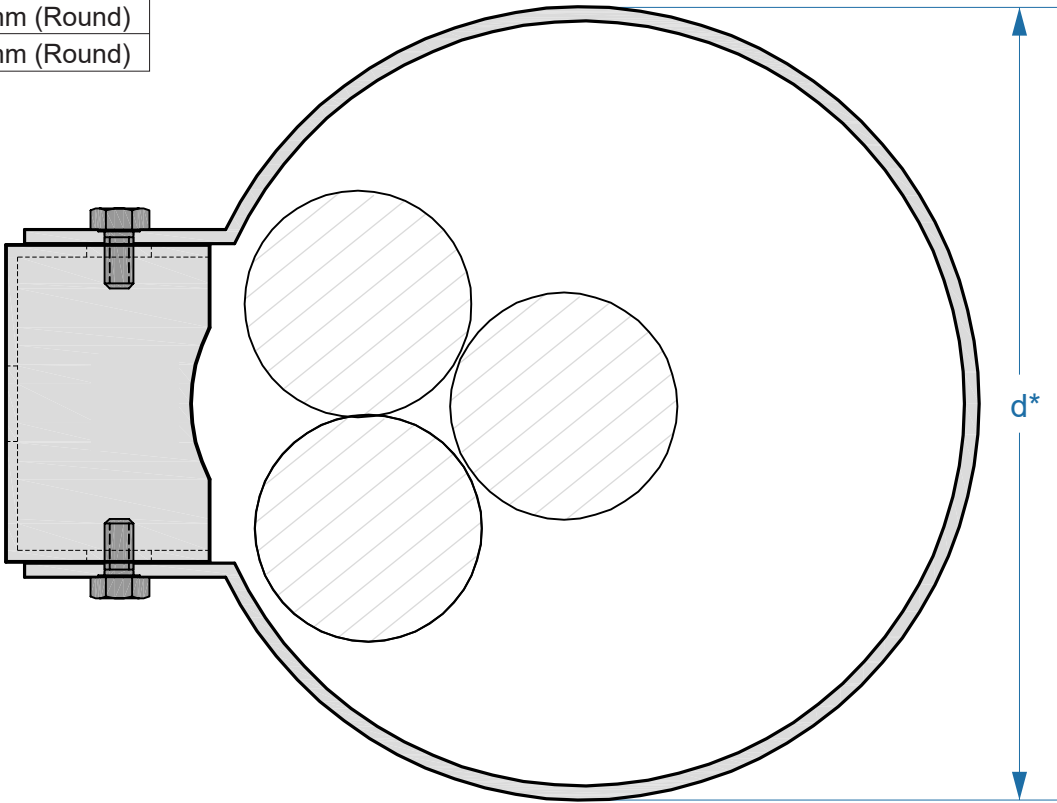
8) Short Circuit Sensor Type (CS-x-PS-x-x)

Sensor Dia (d)	Cable Dia
D2	18-44 mm (Round)
D3	40-60 mm (Round)



9) Earth Fault Sensor Type (CS-x-ES-x-x)

Sensor Dia (d)	Cable Dia
D1	80-100 mm (Round)
D3	120-140 mm (Round)
D4	180-200 mm (Round)

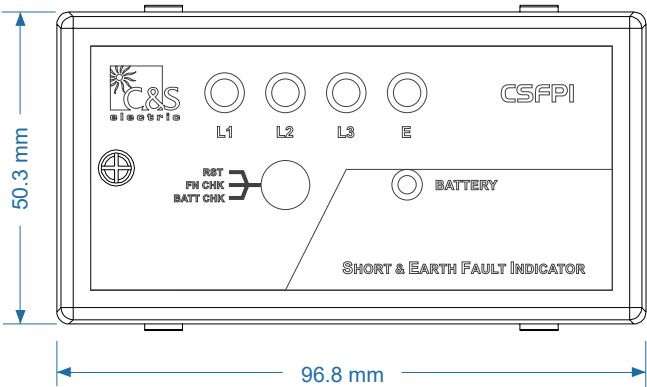


10a) Dimension Details - CSFPI variants without Aux Supply

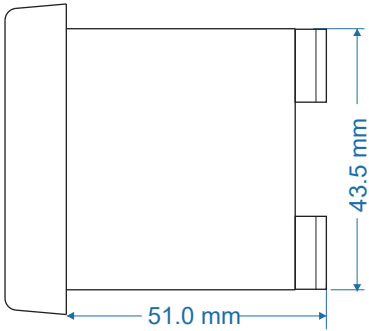
Overall Dimension	: WxHxD = 96.8x50.3x61.3 mm
Panel cut out Dimension	
Width	: 92.0 ^{+0.8}
Height	: 45.0 ^{+0.8}
Installation Depth	: 52.0

Recommended panel sheet thickness "1mm to 1.6mm"

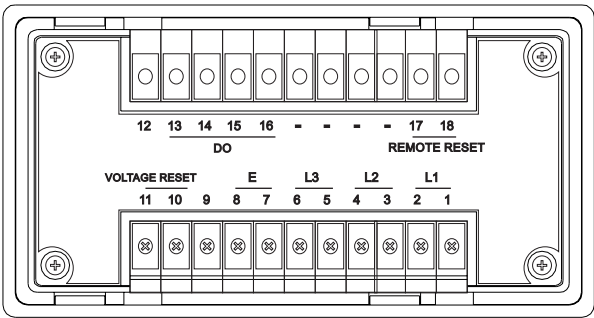
FRONT VIEW OF PHASE & EARTH FAULT INDICATOR



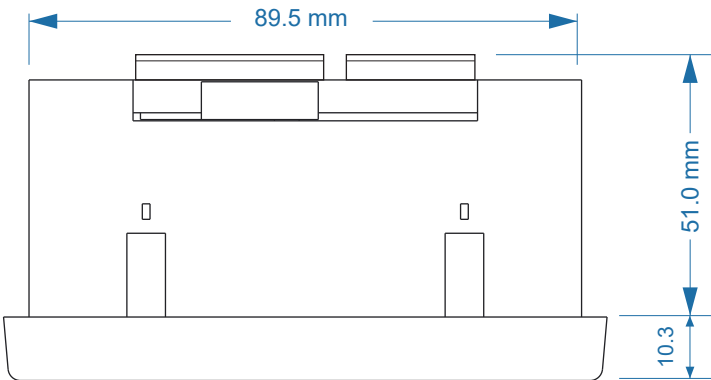
SIDE VIEW



BACK VIEW



TOP VIEW

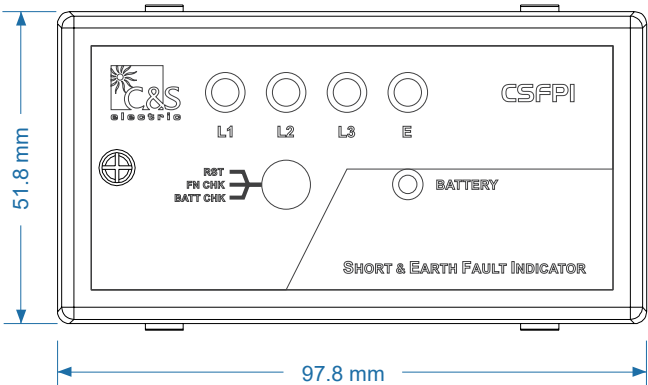


10b) Dimension Details - CSFPI variants with Aux Supply

Recommended panel sheet thickness "1mm to 1.6mm"

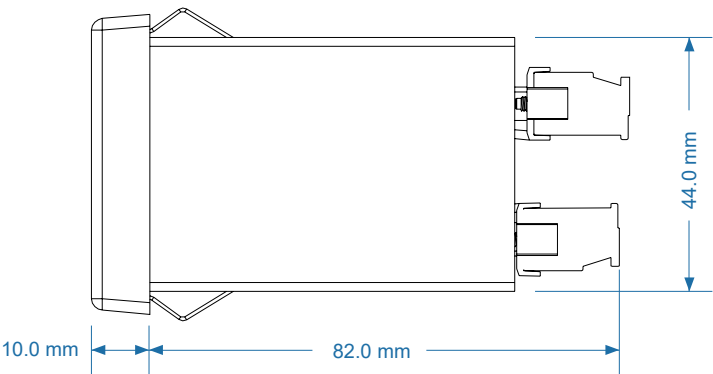
FRONT VIEW OF PHASE & EARTH FAULT INDICATOR

(Bezel Type - Standard, Refer ordering information)

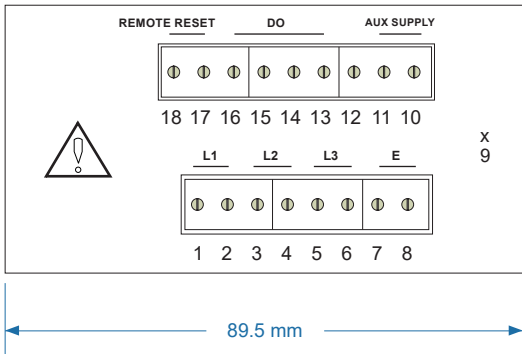


Overall Dimension	: WxHxD = 97.8x51.8x92 mm
Panel cut out Dimension	
Width	: 91.0 mm
Height	: 46.0 mm
Installation Depth	: 84.0 mm

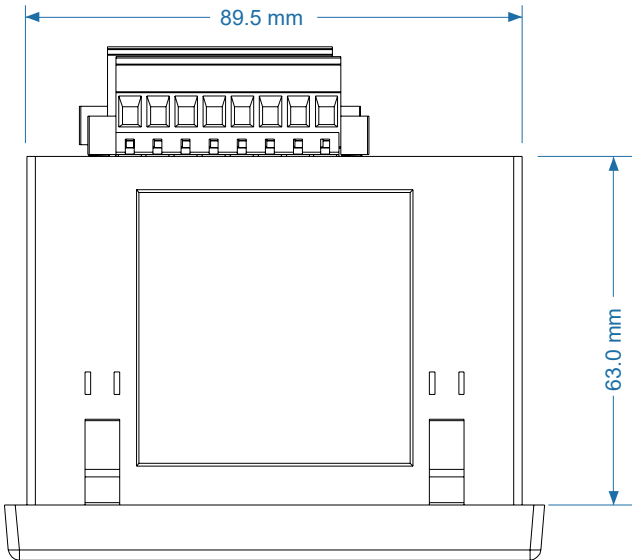
SIDE VIEW



BACK VIEW



TOP VIEW



11a) Ordering Information

- CSFPI variants without Aux Supply

CSFPI - E - X - H - X - X - X - X - V3

- B** : (Short ckt + Earth Fault) Indicator with 1 C/O Digital Output (Short ckt + Earth Fault)
- C** : (Short ckt + Earth Fault) Indicator with 2 Digital Output [1 N/O Digital Output (Short Ckt) + 1 N/O Digital Output (Earth Fault)]
- D** : (Short ckt + Earth Fault) Indicator with 3 Digital Output [1 N/O Digital Output (Short ckt) + 1 N/O Digital Output (Earth Fault) + 1 N/O Digital Output (Low Battery)]
- G** : (Short ckt + Earth Fault) Indicator with 1 N/O+1 N/C Digital Output (Short ckt+ Earth Fault)

Model variants

- : Standard

Cx : C1 / C5 / C6 / C7 / C13 / C16

Phase Sensor

- P2** : Phase Sensor Dia D2 (18-44mm) with Teflon cable
- P3** : Phase Sensor Dia D3 (40-60mm) with Teflon cable
- P2C** : Phase Sensor Dia D2 (18-44mm) with PVC cable having shielded cable
- P3C** : Phase Sensor Dia D3 (40-60mm) with PVC cable having shielded cable
- P2S** : Phase Sensor Dia D2 (18-44mm) with Teflon having shielded cable
- P3S** : Phase Sensor Dia D3 (40-60mm) with Teflon having shielded cable
- Refer Sensor details

Earth Sensor

- E1** : Earth Sensor Dia D1 (80-100mm) with Teflon cable
- E3** : Earth Sensor Dia D3 (120-140 mm) with Teflon cable
- E1C** : Earth Sensor Dia D1 (80-100mm) with PVC cable having shielded cable
- E3C** : Earth Sensor Dia D3 (120-140mm) with PVC cable having shielded cable
- E4C** : Earth Sensor Dia D4 (180-200 mm) with PVC cable having shielded cable
- E1S** : Earth Sensor Dia D1 (80-100mm) with Teflon having shielded cable
- E3S** : Earth Sensor Dia D3 (120-140 mm) with Teflon having shielded cable
- Refer Sensor details

Sensor Cable Length

- : Cable Length 03 Meter
- 2** : Cable Length 02 Meter

Ordering Example :

- 1) **With 3 Meter cable Length** : CSFPI-E-C-H-C1-P2C-E1C-V3
- 2) **With 2 Meter cable Length** : CSFPI-E-C-H-C1-P2C-E1C-2-V3

All the models have internally Battery for Power.

11b) Ordering Information - CSFPI variants with Aux Supply

CSFPI - E - X - L - X - X - X - X - V3

B : (Short ckt + Earth Fault) Indicator with 1 C/O Digital Output (Short Ckt+ Earth Fault)
C : (Short ckt + Earth Fault) Indicator with 2 Digital Output [1 N/O Digital Output (Short Ckt) + 1 N/O Digital Output (EarthFault)]
G : (Short ckt + Earth Fault) Indicator with 1 N/O+1 N/C Digital Output (Short Ckt+ Earth Fault)

Model variants
Cx : C2 / C8 / C14

Phase Sensor
P2 : Phase Sensor Dia D2 (18-44mm) with Teflon cable
P3 : Phase Sensor Dia D3 (40-60mm) with Teflon cable
P2C : Phase Sensor Dia D2 (18-44mm) with PVC cable having shielded cable
P3C : Phase Sensor Dia D3 (40-60mm) with PVC cable having shielded cable
P2S : Phase Sensor Dia D2 (18-44mm) with Teflon having shielded cable
P3S : Phase Sensor Dia D3 (40-60mm) with Teflon having shielded cable
Refer Sensor details

Earth Sensor
E1 : Earth Sensor Dia D1 (80-100mm) with Teflon cable
E3 : Earth Sensor Dia D3 (120-140 mm) with Teflon cable
E1C : Earth Sensor Dia D1 (80-100mm) with PVC cable having shielded cable
E3C : Earth Sensor Dia D3 (120-140mm) with PVC cable having shielded cable
E4C : Earth Sensor Dia D4 (180-200 mm) with PVC cable having shielded cable
E1S : Earth Sensor Dia D1 (80-100mm) with Teflon having shielded cable
E3S : Earth Sensor Dia D3 (120-140 mm) with Teflon having shielded cable
Refer Sensor details

Sensor Cable Length
- : Cable Length 03 Meter
2 : Cable Length 02 Meter

- Ordering Example :
- 1) With 3 Meter cable Length : CSFPI-E-C-L-C8-P2C-E1C-V3
 - 2) With 2 Meter cable Length : CSFPI-E-C-L-C8-P2C-E1C-2-V3

All the models have internally Battery for Power.

Revision History

[illegible]

NOTE

The content in this document are not binding and is for general information.
C&S reserves the right to change the design, content or specification contained in this, without prior notice.

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We touch your electricity everyday!