आशिदा

ASHIDA Numerical OC / EF Protection Relay (4 Elements)

Type: ADR141A
ADR241A (Communicable)
(ADITYA Series)
Preliminary

Features:

- *4 Element (3 Phase + EF) over current IDMT with instant trip.*
- *Back - lit LCD display for settings.*
- *Display of Load current in terms of primary.*
- *Selection of Curve: Seven selectable curves Normal Inverse1 (C1), Normal Inverse2 (C2), Very Inverse (C3), Extremely Inverse (C4), Extremely Inverse (C4A) EE Equivalent, Long Time Inverse (C5) & Definite Time (C6).*
- *Separate curve selection for phase and EF.*
- ***Design using DSP technology.***
- *Latching of fault current up to last 5 faults with time stamping.*
- *Password protection for setting.*
- ***Site selectable CT secondary***
- *Relay can be made either IDMT or Define time*
- *Programmable operating time in instantaneous element*
- ***Cold Load pickup for prolong inrush current.***
- ***In Build Breaker Fail & Trip Circuit Supervision Function***
- ***Programmable Annunciation Contact***
- ***RS 232 (at front) and RS 485 (at rear side) Communication Port for remote SCADA (only for ADR241A i.e. communicable Relay).***

General:

The ADR141A is member of Ashida Numerical Relay family (***Aditya Series***) design to meet demand of low and medium switchgear control. The ADR141A is a 3 OC and 1 EF relay with Instantaneous high set and programmable output to simplify feeder protection wiring. The ADR141A continuously monitors all phases and earth current, through CT connections. The high-speed micro-controller **samples** this current through a **12-bit A/D converter**. The micro-controller performs powerful **Digital Algorithms** to find out Amplitude of current signal, and then this value is use for protection and metering function. All measurement is tuned to fundamental frequency. Each input current is also displayed on 16 x 2 LCD display for metering. The Relay is having main three functions 1) Protection 2) Self-Supervision 3) Measurement

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The Relay can be supplied with different model. It can be either Definite Time or IDMT.

1. Protection Functions:

The ADR141A give maximum benefit/cost ratio. The ADR141A give all the advantage of numerical relay at affordable cost. Following is summery of different protection functions provided by relay.

ANSI	*IEC*	*Protection Functions*
50	I >>	Instantaneous Over current Protection (OC-Inst.)
50N	I_E>>	Instantaneous Earth Fault Protection (EF-Inst.)
50,51	I>t, Ip	Time Over current Protection (Phase) (OC-IDMT.)
50N,51N	I_E>t, I_{EP}	Time Over current Protection (Earth) (EF-IDMT.)

1.1 Over current / EF protection:

Model: AM-110-01-01-xx-xx-xx-xx. & AM-120-01-02-xx-xx-xx-xx.

The relay has 4 sensing element 3 OC and 1 EF. The tripping current can be set from 5% to 250% for phase and 5% to 250% for Earth fault in steps of 1% by Keys provided on front panel. The unit has got selection of IDMT characteristic of international IEC standard Very inverse / Extremely Inverse / Long Inverse and Standard inverse (both 3.0 sec and 1.3sec at 10 times). The Time Multiplier Setting (TMS) for the IDMT delay multiplication is from x0.01 to x1.5 which can be adjusted in steps of x0.01. The instantaneous tripping function is having range of 50% - 3000% for phase and 50% - 3000% for EF and can be set in steps of 50%.

The high speeds CPU continuously monitor the all four current inputs and compare with IDMT as well as instantaneous setting. If anyone current is above instantaneous setting the relay provides immediate trip command bypassing IDMT delay. If is input current is less than instantaneous setting but more than IDMT setting, CPU calculate IDMT delay as per selected IDMT characteristic multiply it with TMS setting and provide trip command if fault is persist even after this time delay.

Model: AM-410-01-01-xx-xx-xx-xx. & AM-420-01-02-xx-xx-xx-xx.

The relay has 4 sensing element 3 OC and 1 REF, the EF is internally calculated from the 3 phase i.e. 3I/O. The tripping current can be set from 10% to 250% for phase, 10% to 250% for Earth fault (3I/O) and 5% to 100% for REF in steps of 1% by Keys provided on front panel. The unit has got selection of IDMT characteristic of international IEC standard Very inverse / Extremely Inverse / Long Inverse and Standard inverse (both 3.0 sec and 1.3sec at 10 times). The Time Multiplier Setting (TMS) for the IDMT delay multiplication is from x0.01 to x1.5 which can be adjusted in steps of x0.01. The instantaneous tripping function is having range of 50% - 3000% for phase and 50% - 3000% for EF and can be set in steps of 50%. The delay for REF operation can be set from 0 – 2.0s in steps of 0.01s.

The high speeds CPU continuously monitor the all current inputs and compare with IDMT as well as instantaneous setting. If anyone current is above instantaneous setting the relay provides immediate trip command bypassing IDMT delay. If is input current is less than instantaneous setting but more than IDMT setting, CPU calculate IDMT delay as per selected IDMT characteristic multiply it with TMS setting and provide trip command if fault is persist even after this time delay. Similarly when the REF current exceeds the REF settings the relay will sense the fault and gives the trip after completion for the set Delay.
All the settings are password protected to prevent unauthorised change.

1.2 Extra Alarm Contact:

Any Protection panel required extra contacts for provide visual ALARM and ANNUNCIATION indication for operator. Also some status contacts for SCADA or remote indications. Usually separate electromechanical relay used for contact multiplication of protection relay contacts. This added extra wiring and extra hardware. The ADR141A provide separate programmable ALARM contact for such application. Maximum 4 nos. of extra contacts can be provided. These contacts can be programmed as follows:

For Model No: AM-110-01-01-xx-xx-xx-xx.

	ANN. TYPE 1	ANN. TYPE 2	ANN. TYPE 3	ANN. TYPE 4
RELAY 1	OC1	OC HF	HF	COM. ALARM
RELAY 2	OC2	OC IDMT	IDMT	PROTH.
RELAY 3	OC3	EF HF	PHASE	PHASE
RELAY 4	EF	EF IDMT	EF	EF

For Model No: AM-410-01-01-xx-xx-xx-xx.

	ANN. TYPE 1	ANN. TYPE 2	ANN. TYPE 3	ANN. TYPE 4
RELAY 1	OC1	OC HF	HF	REF
RELAY 2	OC2	OC IDMT	IDMT	PROTH.
RELAY 3	OC3	3I/O HF	PHASE	PHASE
RELAY 4	3I/O	3I/O IDMT	3I/O	3I/O

2. Supervision Function:

2.1 Self-supervision:

The continuously keeping track on its internal hardware and the movement it detect any failure of any component, it give message on LCD display, This feature is very useful to give pre information to avoid any mall - operation. In such situation it uses some default setting and remains in protection mode.

3. Measurement Function:

In normal condition this display shows all settings. Via keyboard the display can be program to show the actual current flowing through the relay. If current excesses set value the relay gives trip command. The type of fault is displayed on LCD display. ***During the fault condition the relay measure the fault current and store in non-volatile memory. The fault current can be read via keyboard on LCD***

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display Last 5 fault values along with tripping counter can be view via key-board. All settings are save in electrically erasable read only memory and remain.

4. Breaker Fail Function (BF or LBB)

Normally after tripping current should be come Zero within 100 – 200ms time depend upon type of fault and breaker mechanism. After Fault Relay start one internal timer (settable from 0.05s to 0.8 s) If fault is not cleared during this time then relay declare as Breaker fail (LBB function)

5. Cold Load Pickup

Relay also equipped with cold load pick feature. During switching of load relay sense closing of CB by auxiliary contact of CB (through dedicated Status input marked as CB NO). Once CB closing is detected relay automatically switch settings to cold load setting (which independently adjustable) for pre define time (adjustable). After this cold load time relay switch back to original setting automatically and avoid wrong operation of relay.

6. Trip circuit Supervision & Status:-

The ADR141A is having 2 separate digital opto-coupler status input which can be used to continuously monitor continuity of trip-circuit. The general scheme is as shown in fig.

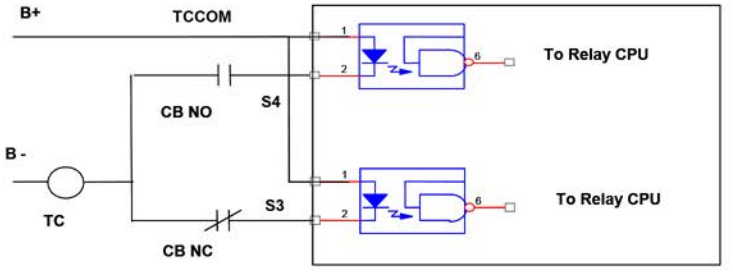

Fig. Trip Circuit Logic

Relay monitor Trip coil continuity through CB NO during close condition and through CB NC during Trip condition. If any discontinuity observed it generate Alarm signal. One changeover contact is provided for ALRAM and will operates when S3 and S4 both active and both inactive. i.e CB NO as well as CB NC are both close or open.

Along with this two general purpose Status inputs S1 and S2 are given for SCADA application

7. Ordering Information:

The relay is available with nos. of different option. The option is specified by model no. It is user responsibility to specify correct model no. while ordering.

While Ordering Specify the following Information for **ADR141A** Relay

Definition of Model No for ADR141A Relay

AM XXX – XX – XX – XX – XX – XX - XX

XX = CT.	
03	1/5 Amp.

XX = PT.	
00	Not Applicable

XX = Communication Protocol	
00	Not Applicable
02	IEC - 103

Note: Communication Protocol is applicable only for ADR241A.

XX = Cabinet Size	
01	CSA (138 x138mm)

XX = Cabinet Type	
01	Non Draw out
02	Draw out
03	Plug In

XX = Auxiliary Supply.	
06	18 – 52 VDC
07	77 – 250 VDC
08	18 – 250 VDC
28	18 – 250 VAC/DC

XXX = Sub Type	
110	**3OC + EF + HF Relay** **OC:**5 - 250 % in steps of 1%, **OC HF:**50 – 3000 % in steps of 50%, **OC TMS:** X0.01 – X1.5 in steps of X0.01 **EF :** 5 - 250 % in steps of 1%, **EF HF:** 50 – 3000 % In steps of 50% , **EF TMS:** X0.01 – X1.5 In steps of X0.01 **Contacts:** 2NO For trip, 4 NO for Ann., 1NO for BF, 1C/O for TCS. **Status:** 2 nos. Dedicated for TCS and 2 Nos. for Spare. With Cold Load function.
120	**3OC + EF + HF Relay** **OC:**5 - 250 % in steps of 1%, **OC HF:**50 – 3000 % in steps of 50%, **OC TMS:** X0.01 – X1.5 in steps of X0.01 **EF :** 5 - 250 % in steps of 1%, **EF HF:** 50 – 3000 % In steps of 50% , **EF TMS:** X0.01 – X1.5 In steps of X0.01 **Contacts:** 2NO For trip.
410	**3OC + 3I/O + REF Relay** **OC:**10-250 % in steps of 1%, **OC HF:**50–3000 % in steps of 50%, **OC TMS:** X0.01–X1.5 in steps of X0.01 **3I/O:** 10-250 % in steps of 1%, **3I/O HF:**50–3000 % in steps of 50%, **3I/O TMS:** X0.01–X1.5 in steps of X0.01 **REF:** 5 - 100 % in steps of 1%, **REF Delay:** 0 – 2.0 S in steps of 0.01S. **Contacts:** 2NO For trip, 4 NO for Ann., 1NO for BF, 1C/O for TCS. **Status:** 2 nos. Dedicated for TCS and 2 Nos. for Spare. With Cold Load function.
420	**3OC + 3I/O + REF Relay** **OC:**10-250 % in steps of 1%, **OC HF:**50–3000 % in steps of 50%, **OC TMS:** X0.01–X1.5 in steps of X0.01 **3I/O:** 10-250 % in steps of 1%, **3I/O HF:**50–3000 % in steps of 50%, **3I/O TMS:** X0.01–X1.5 in steps of X0.01 **REF:** 5 - 100 % in steps of 1%, **REF Delay:** 0 – 2.0 S in steps of 0.01S. **Contacts:** 2NO For trip,

Note: Universal Supply (18 -250 VDC) & Cold Load function are currently not available in Draw out model.

Ordering information:

ADR141A	-	AM	-	XXX	-	XX	-	XX	-	XX	-	XX	-	XX	-	XX

Available Models:

3OC + EF + HF Relay:

- ADR141A – AM-110-01-01-28-03-00-00. (Non draw out cabinet)
- ADR141A – AM-120-01-02-06-03-00-00. (draw out cabinet)

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- ADR141A – AM-120-01-02-07-03-00-00. (draw out cabinet)
- ADR141A – AM-110-01-03-28-03-00-00. (Plug In type cabinet)
- ADR241A – AM-110-01-03-28-03-00-02. (Plug in type cabinet)
- ADR241A – AM-110-01-01-28-03-00-02. (Non draw out cabinet)
- ADR241A – AM-120-01-02-06-03-00-02. (draw out cabinet)
- ADR241A – AM-120-01-02-07-03-00-02. (draw out cabinet)

3OC+3I/O + REF Relay:

- ADR141A – AM-410-01-01-28-03-00-00. (Non draw out cabinet)
- ADR241A – AM-410-01-01-28-03-00-02. (Non draw out cabinet)
- ADR141A – AM-410-01-03-28-03-00-00. (Plug In Type cabinet)
- ADR241A – AM-410-01-03-28-03-00-02. (Plug In Type cabinet)

8. Technical Specifications:

Sr. No.	Specification		Particulars
I.	Inputs		Suitable for CT secondary 1.0 Amp or 5.0 Amp. (Selectable)
II.	**Protection Settings:** **For Model AM-110-XX-XX-XX-XX-XX-XX.** **[3OC + 1EF relay]**		
		: Setting	For phase 5% - 250 % in steps of 1% For EF 5% - 250%
		: TMS setting	X0.01 – X1.5 in steps of X0.01 for Both (OC & EF)
		: Operating Time	Normal Inverse 1 (C1) Normal Inverse 2 (C2) Very Inverse (C3) Extremely Inverse (C4) Extremely Inverse (C4A) EE Equivalent Long Time Inverse (C5) Definite Tme (C6) 00(Inst) – 99.9Sec
		: Inst. Setting	For phase 50% - 3000%. or bypass In steps of 50% For EF 50% - 3000% or bypass In steps of 50%
		: Inst Operating Time	Inst = < 40ms and additional adjustable software Delay of 00 – 2.0Sec in steps of 10ms.
	Output contacts	: AM-110-01-01-xx-xx-xx-xx.	1) 2 NO Trip duty contact for Alarm and Trip 2) 4 NO ANN. Duty contacts (Programmable) 3) 1 NO for Breaker Failure 4) 1 C/O for Trip Circuit Supervision
		: AM-120-01-02-xx-xx-xx-xx.	1) 2 NO Trip duty contact for Alarm and Trip
	Cold Load Settings	:Cold Load Delay	0.1s – 10.0 Secs. In steps of 0.01s
		: Setting	For phase 5% - 250 % in steps of 1% For EF 5% - 250%
		: TMS setting	X0.01 – X1.5 in steps of X0.01 for Both (OC & EF)
		: Operating Time	Normal Inverse 1 (C1) Normal Inverse 2 (C2)

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		Very Inverse (C3)
		Extremely Inverse (C4) Extremely Inverse (C4A) EE Equivalent Long Time Inverse (C5)
		Definite Tme (C6) 00(Inst) – 99.9Sec
	: Inst. Setting	For phase 50% - 3000%. or bypass In steps of 50% For EF 50% - 3000% or bypass In steps of 50%
	: Inst Operating Time	Inst = < 40ms and additional adjustable software Delay of 00 – 2.0Sec in steps of 10ms.
For Model AM-210-XX-XX-XX-XX-XX-XX. [3OC+3I/O +REF relay]		
	: Setting	For OC 10% - 250 % in steps of 1% For 3I/O 10% - 250 % in steps of 1% For REF 5% - 100 % in steps of 1%
	: TMS setting	X0.01 – X1.5 in steps of X0.01 for OC & 3/O. REF Delay : 0 – 2.0 s in steps of 0.01s
	: Operating Time	Normal Inverse 1 (C1)
		Normal Inverse 2 (C2)
		Very Inverse (C3)
		Extremely Inverse (C4) Extremely Inverse (C4A) EE Equivalent Long Time Inverse (C5)
		Definite Tme (C6) 00(Inst) – 99.9Sec
	: Inst. Setting	For OC 50% - 3000%. or bypass In steps of 50% For 3I/O 50% - 3000%. or bypass In steps of 50%
	: Inst Operating Time	Inst = < 40ms and additional adjustable software Delay of 00 – 2.0Sec in steps of 10ms.
Output contacts	: AM-410-01-01-xx-xx-xx-xx.	1) 2 NO Trip duty contact for Alarm and Trip 2) 4 NO ANN. Duty contacts (Programmable) 3) 1 NO for Breaker Failure 4) 1 C/O for Trip Circuit Supervision
	: AM-420-01-02-xx-xx-xx-xx.	1) 2 NO Trip duty contact for Alarm and Trip
Cold Load Settings	:Cold Load Delay	0.1s – 10.0 Secs. In steps of 0.01s
	: Setting	For OC 10% - 250 % in steps of 1% For 3I/O 10% - 250 % in steps of 1% For REF 5% - 100 % in steps of 1%
	: TMS setting	X0.01 – X1.5 in steps of X0.01 for OC & 3/O. REF Delay : 0 – 2.0 s in steps of 0.01s
	: Operating Time	Normal Inverse 1 (C1)
		Normal Inverse 2 (C2)
		Very Inverse (C3)
		Extremely Inverse (C4) Extremely Inverse (C4A) EE Equivalent Long Time Inverse (C5)
		Definite Tme (C6) 00(Inst) – 99.9Sec

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		: Inst. Setting — For OC 50% - 3000%. or bypass In steps of 50% For 3I/O 50% - 3000%. or bypass In steps of 50%
		: Inst Operating Time — Inst = < 40ms and additional adjustable software Delay of 00 – 2.0Sec in steps of 10ms.
III.	Pickup Current	: Within 1.1 times of set current value.
IV.	Resetting Current	: 90% of set value.
V.	Time Accuracy	: Within class 5 As per IS: 3231.
VI.	Burden on CTs	: Less than 0.2VA.
VII.	Aux. Supply	: 18 – 52VDC or 77 – 250VDC. To be specified while ordering.
VIII.	Burden on Aux. Supply	: Less than 10VA on any supply.
IX.	Contact Rating Trip Duty	: Continuous: 5A : Make & carry for 0.5 sec : 30A : Make & carry for 3 sec : 15A
X.	Operational Indicators (Flags)	
	ON / Error	: Green LED indicates Relay OK : Red LED indicates Problem in relay Hardware.
	PKP / HF	: Green LED indicates relay Pickup. : Red LED indicates relay operated at HF.
	OC Fault / EF Fault	: Green LED indicates the relay tripped by OC, Hand Reset (HR) Type : Red LED indicates the relay tripped by EF, Hand Reset (HR) Type
	TRIP / BF	: Green LED Indicates that Trip pulse is being executed. SR type when TRIP contact selected as SR and HR type when TRIP contact selected as HR. When BYPASS P.B. is pressed, actual trip is not executed. : Red LED indicates BF operated. SR type when BF contact selected as SR and HR type when BF contact selected as HR.
XI.	Thermal Withstand Capacity	: X40 times the normal current for 3sec. : x2 Continuous
XII.	High Voltage Test	: IEC 60255-5 : Except DC Voltage – 2.0 kV (RMS), 50Hz : Only DC voltage - 2.8 kV DC : Between Open contact of TRIP / CLOSE 1.5kV (RSM) 50Hz : Between Open contact of ALARM – 1kV (RSM) 50Hz
XIII.	Impulse Voltage Test (all circuit class – III)	: IEC60255-5 : 5kV (peak) 1.2 / 50us, 0.5 J, 3 positive and 3 negative impulse at interval of 5 sec
XIV.	High Frequency test	: IEC 60255-22-1, Class III : 2.5 kV (peak) 1MHz , τ = 15μs 400 surges / s duration 2 s
XV.	Electro static Discharge	: IEC 60255-22-2 Class III and IEC 61000-4-2 class III : 4kV/6kV contact discharge, 8kV air discharge, both polarities 150pF, Ri 330 Ω
XVI.	Irradiation with radio frequency field, pulse-modulated,	: IEC 60255-22-3 and IEC 61000-4-2 class III : 10V/m; 80 to 1000MHz; 80%; 1kHz AM

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XVII.	Fast transient interference/bursts	: IEC 60255-22-3 and IEC 61000-4-3, class III : 4kV; 5/50ns; 5kHz burst duration = 15ms; : Repetition rate 300ms; Both polarities; Ri = 50Ω; duration 1 min.
XVIII.	Shock Test	: IEC 60255-21-2 class 1 : Semi-Sinusoidal : 5g acceleration, duration 11ms, : Each 3 shocks in both direction of the 3 axes
XIX.	Vibration Test	: IEC 60255-21-1 class 1 / IEC 60068-2-6 : Sinusoidal 10 to 60Hz ±0.035 mm : Amplitude, 60 to 150Hz, 0.5g acceleration : Sweep rate 1 octave/min; 20 cycle in 3 orthogonal
XX.	Seismic Test	: IEC 60255-21-3 : In single axis sine sweep in X-axis 01- sweep (@a sweep rate of 1 octave/minute) vibration in the frequency range (5-40 Hz) at amplitude of 3.5mm or 1.0gn (whichever is less) : In single axis sine sweep in Y-axis 01- - weep (@a sweep rate of 1 octave/minute) vibration in the frequency range (5-40 Hz) at amplitude of 1.5mm or 0.5gn (whichever is less)
XXI.	Bump Test	: IEC 60255-21-2 Class-1 : 1000 bumps of 10gn peak acceleration and 16ms pulse duration in each of the two opposite direction per axis as per IEC60255-21-2 class 1 No. of axes . 3.
XXII.	Shock Withstand	: IEC 60255-21-2 Clas-1 : 3 shocks of 15gn peak acceleration and 11ms pulse in each of two opposite direction. No. of axis : 3
XXIII.	Shock Response Test	: IEC 60255-21-2 Clas-1 : 3 shocks of 1gn peak acceleration and 11ms pulse in each of two opposite direction. No. of axis : 3
XXIV.	Vibration Endurance Test	: IEC60255-21-1 20-sweeps (@ a sweep rate of 1octave / minutes) vibration in the frequency range (10-150Hz) at 1 gn (9,8m/s2) acceleration in each of the 3 mutually perpendicular axes
XXV.	Environmental withstand (cold, Dry heat & steady state Damp Heat)	: IEC60068-2 Cold – 2 hours operational condition at –(40 +/- 3) deg C as per IEC60068-2-1 Dry – 2 Hours dry heat operational condition at(55+/2 2 deg. C as per IEC60068-2-2 Steady state damp heat - 2 hours steady sate damp heat operational condition at temperature at (55 +/- 2) deg. C & humidity 95% RH as per IEC60068-2-78

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XXVI.	Drawing References	: For Cabinet Type	CSA -150 (Non Draw out)	- MAC00101
			CSA -150 D (Draw Out)	- MAC00107
			CSA -150 (Plug In)	- MAC00108
		: For Operating Characteristics	C1	- APR02201
			C2	- APR01801
			C3	- APR05101
			C4	- APR05201
			C4A	- APR02801
			C5	- APR05301
		: For Electrical Connection	Model: AM110-01-01-xx-xx-xx-xx.	- APR06815_A
			Model: AM120-01-02-xx-xx-xx-xx.	- APR06815_B
			Model: AM110-01-03-xx-xx-xx-xx.	- APR06815_C
			Model: AM410-01-01-xx-xx-xx-xx.	- APR06817_A
			Model: AM410-01-03-xx-xx-xx-xx.	- APR06817_B

- **Datasheet Change Log for ADR141A**

Issue No. (Revision)	Date	Description /Changes
01	28.08.09	Original Revision
02	09.12.09	Settings Changed
03	26.12.09	New models added
04	01.08.10	Back Terminal arrangement changed
05	01.11.11	Model Definition changed and cold load added
06	10.12.11	C4A added

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RevNo	Revision note	Date	Signature	Checked
03	Drawing Format Updated	06.12.03		

IDMT Characteristics C1 (10 times 3.0 sec.) & Instantaneous Element Characteristics (HF).

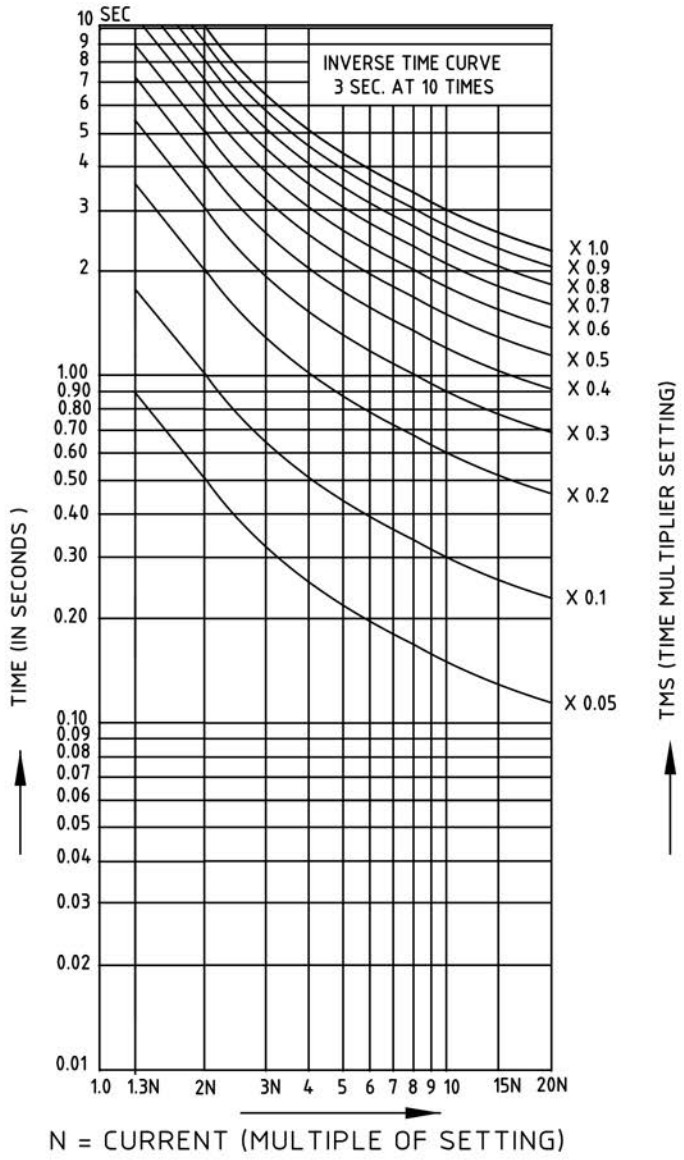

Fig3 : IDMT Characteristics C1 of 10 times 3.0 sec.

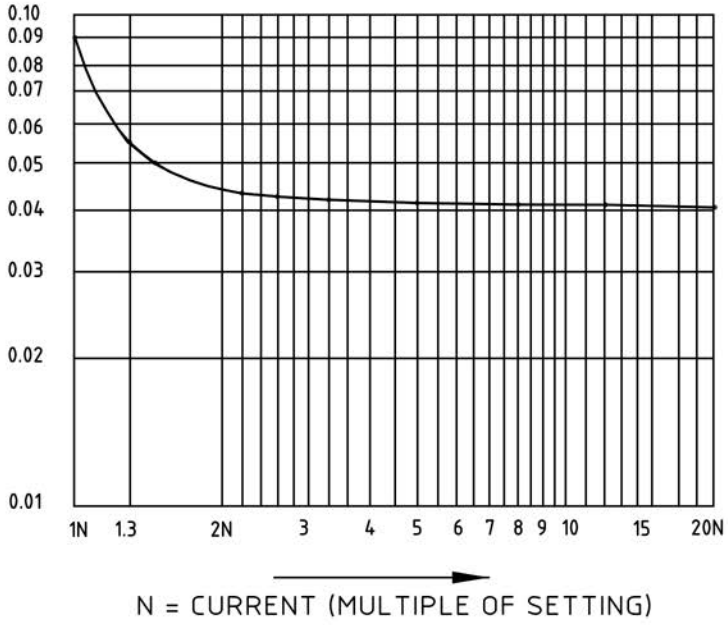

Fig4 : Characteristics of Instantaneous Element (HF).

DIM:MM	TOL:	FINISH :			MATERIAL	
Prepared by JD		Checked by SMK	Approved by – date SMK	Filename APR02201	Date 06.12.03	Scale NTS

ASHIDA Electronics Pvt. Ltd.

TITLE :-CI Type IDMT and HF Characteristic

Drawing __ Ref. :-APR02201 | Edition 03 | Sheet 1 OF 1

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RevNo	Revision note	Date	Signature	Checked
03	Drawing Format Updated	06.12.03		

IDMT Characteristic C2 (10 times 1.3 Sec.) & Instantaneous Element Characteristic (HF)

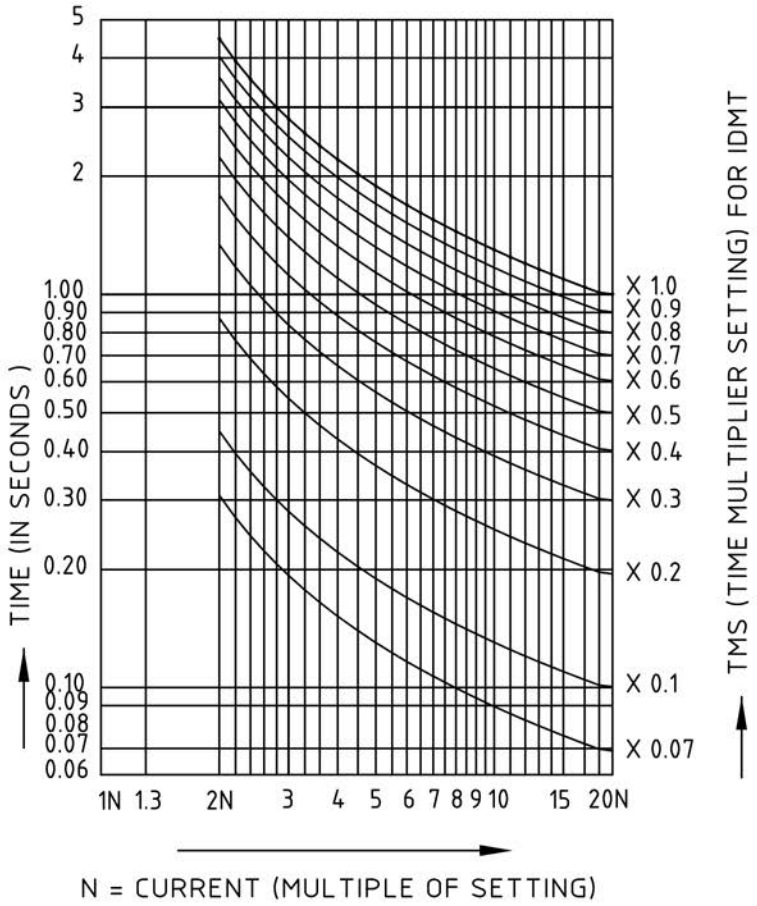

Fig1 : IDMT Characteristics C2 of 10 times 1.3 sec.

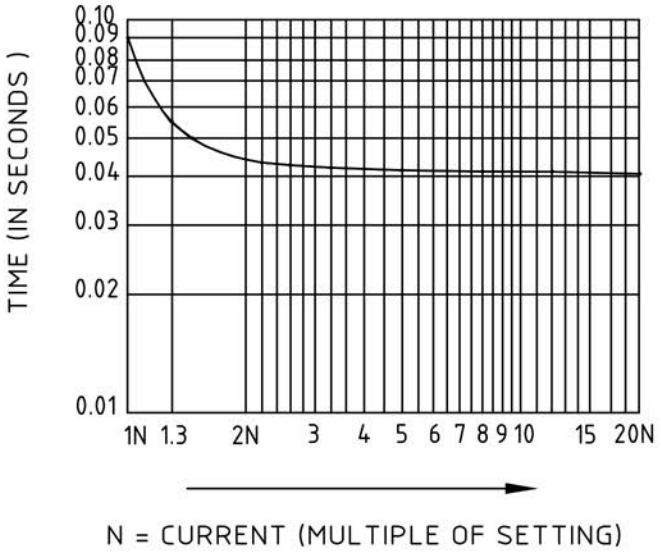

Fig2 : Characteristics of Instantaneous Element (HF).

DIM:MM	TOL:	FINISH :			MATERIAL	
Prepared by JD		Checked by SMK	Approved by - date SMK	Filename APR01801	Date 06.12.03	Scale NTS

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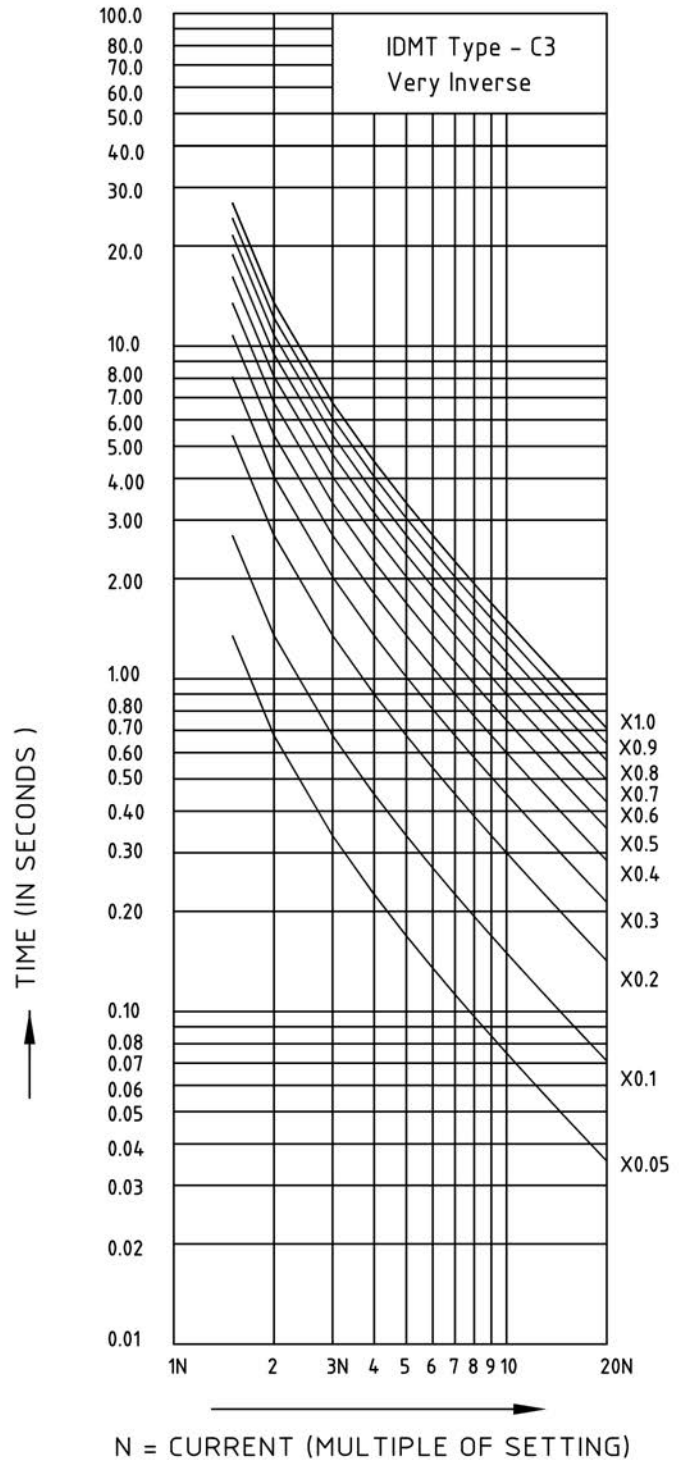
TITLE : - C2 Type IDMT and HF Characteristic

Drawing __ Ref. :-APR01801 | Edition 03 | Sheet 1 OF 1

RevNo	Revision note		Date	Signature	Checked
02	Drawing Format Updated		06.12.03		

IDMT Characteristic C3 – Very Inverse 10 Times 1.5 Sec



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Dim : MM	TOL :	FINISH:			MATERIAL:	
Perpaed by JD		Checked by SMK	Approved by – date SMK	Filename APR05101	Date 06.12.03	Scale NTS

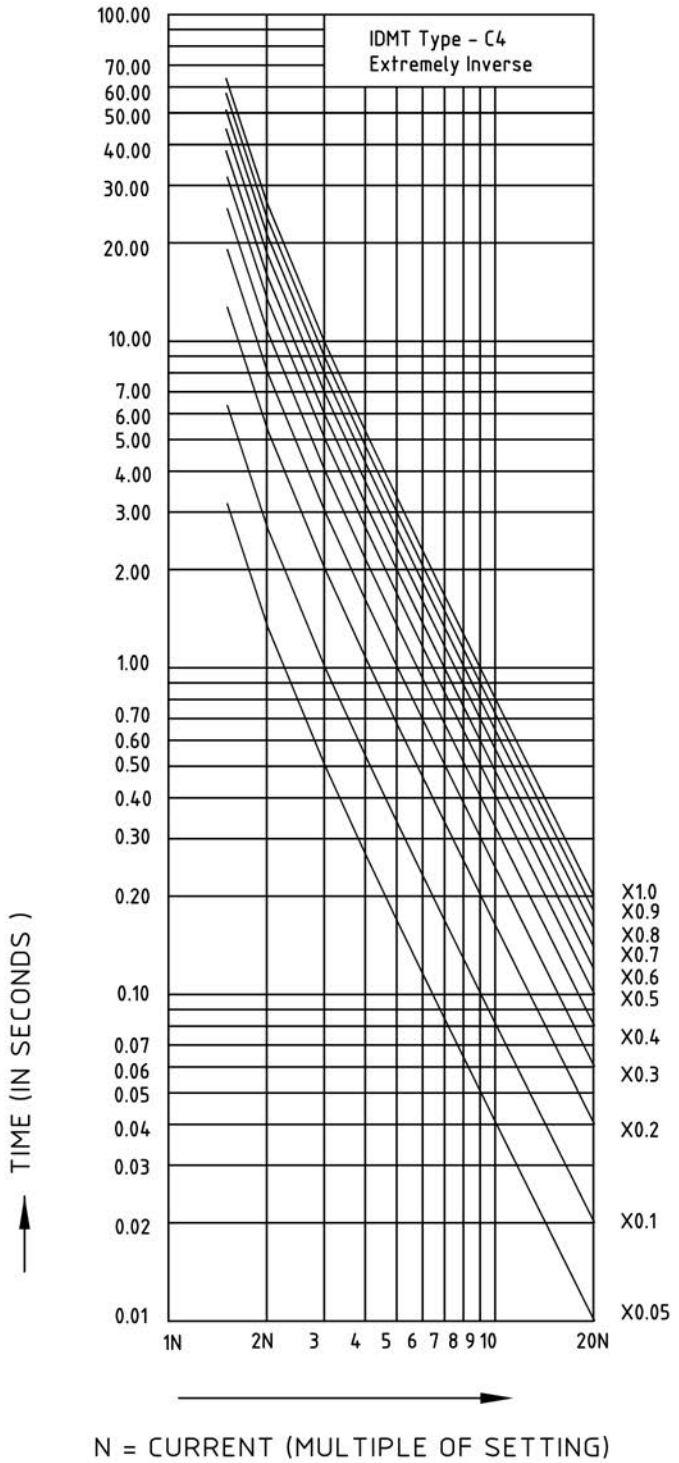
ASHIDA Electronics Pvt. Ltd.

TITLE :– IDMT Characteristic of TYPE C3 Very Inverse.

Drawing__ Ref. APR05101 | Edition 02 | Sheet 1 OF 1

RevNo	Revision note		Date	Signature	Checked
02	Drawing format Updated		06.12.03		

IDMT Charateristic C4 – Extremely Inverse 10 Times 0.8 sec



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Dim : MM	TOL :	FINISH:			MATERIAL:	
Perpaed by JD		Checked by SMK	Approved by – date SMK	Filename APR05201	Date 06.12.03	Scale NTS

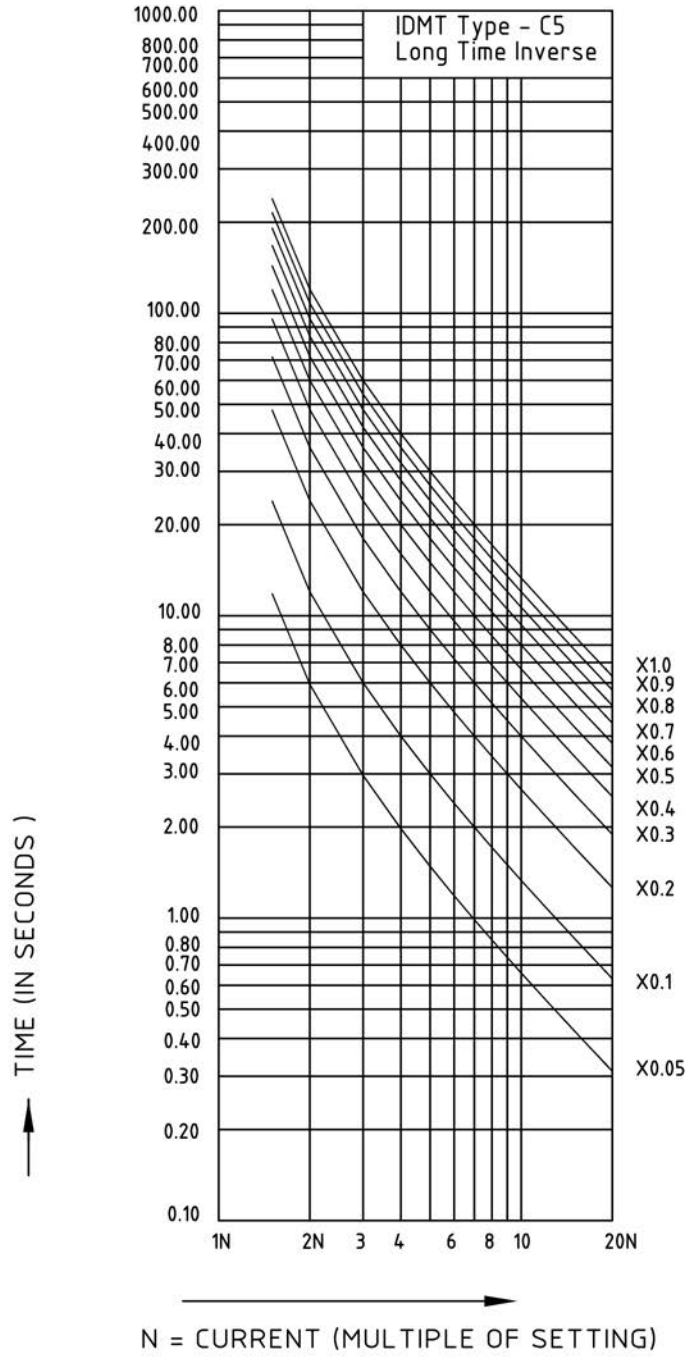
ASHIDA Electronics Pvt. Ltd.

TITLE :- IDMT Characteristic of TYPE C4 Extremely Inverse.

Drawing__ Ref. APR05201 | Edition 02 | Sheet 1 OF 1

RevNo	Revision note		Date	Signature	Checked
02	Drawing format Updated		06.12.03		

IDMT Characteristic C5 – Long Time Inverse of 10 Times 13.3 sec.



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Dim : MM	TOL :	FINISH:			MATERIAL:	
Perpaed by JD		Checked by FD	Approved by – date SMK	Filename APR05301	Date 06.12.03	Scale NTS

ASHIDA Electronics Pvt. Ltd.

TITLE :- IDMT Characteristic of TYPE C5 Long Time Inverse.

Drawing__ Ref. APR05301 | Edition 02 | Sheet 1 OF 1

Rev. No	Revision note	Date	Signature	Checked
1	Orignal Revision	28.09.09		
2	Terminal Arrangment changed	29.06.10		
3	Terminal Arrangment rearrange	01.08.10		

Typical External Connection for 3OC + 1EF IDMT Relay. ADR141A/ADR241A (Non Draw out Type)

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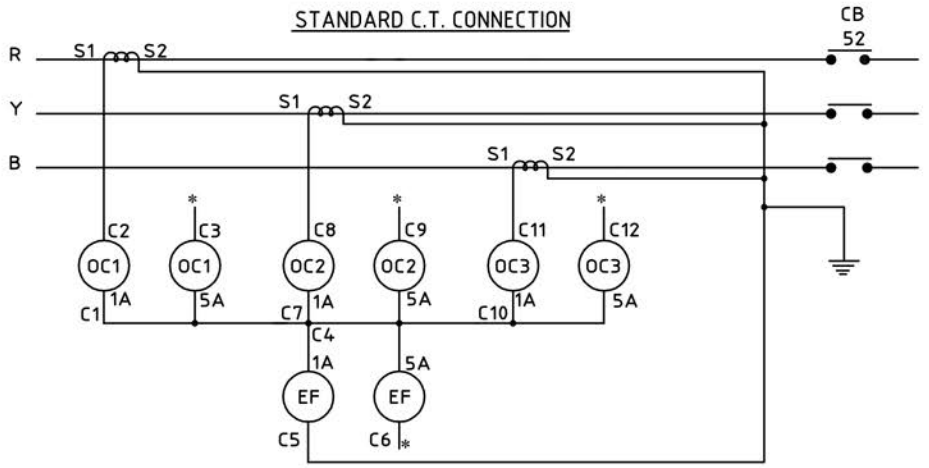
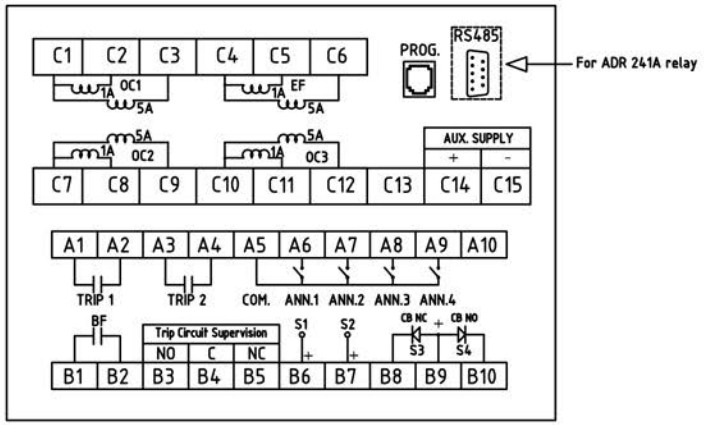
STANDARD C.T. CONNECTION

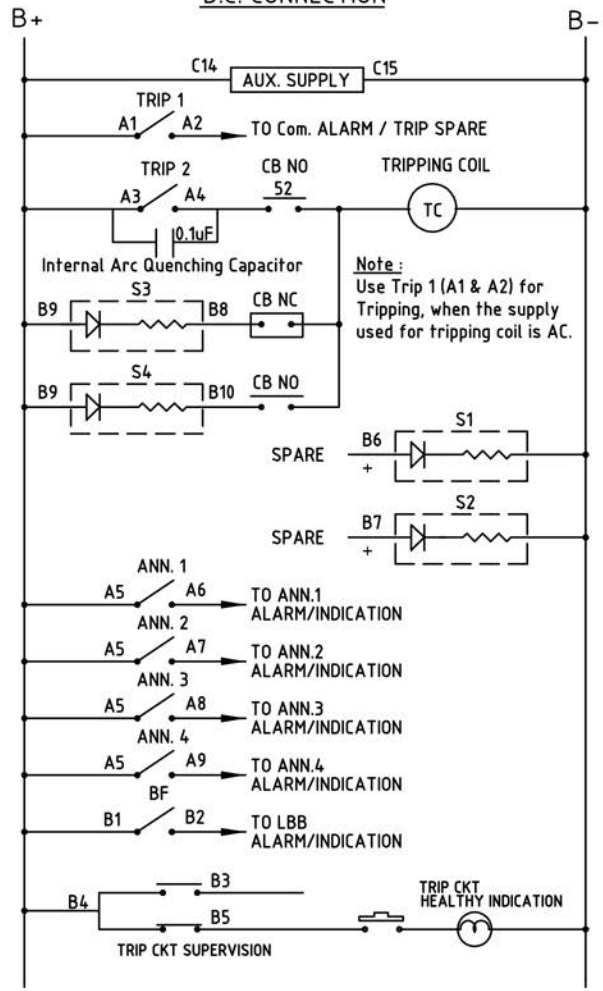


* TO BE CONNECTED IF CT SEC. IS OF 5 AMP.

BACK TERMINAL ARRANGEMENT



D.C. CONNECTION



Note:

1. Typical wiring diagram shown for guidance only.
2. Follow established standard engineering practices.
3. Connect Earth to cabinet.

DIM:MM	TOL:	FINISH			MATERIAL	
Prepared by PD		Checked by PD	Approved by - date SMK	Filename APR06815	Date 01.08.10	Scale NTS

ASHIDA Electronics Pvt. Ltd.

TITLE : -Typical External connection for 3OC + 1EF IDMT Relay

Drawing __ Ref.: - APR06815__A | Edition 03 | Sheet 1 OF 1

Rev. No	Revision note	Date	Signature	Checked
1	Orignal Revision	28.09.09		
2	Contacts Renamed	05.12.13		

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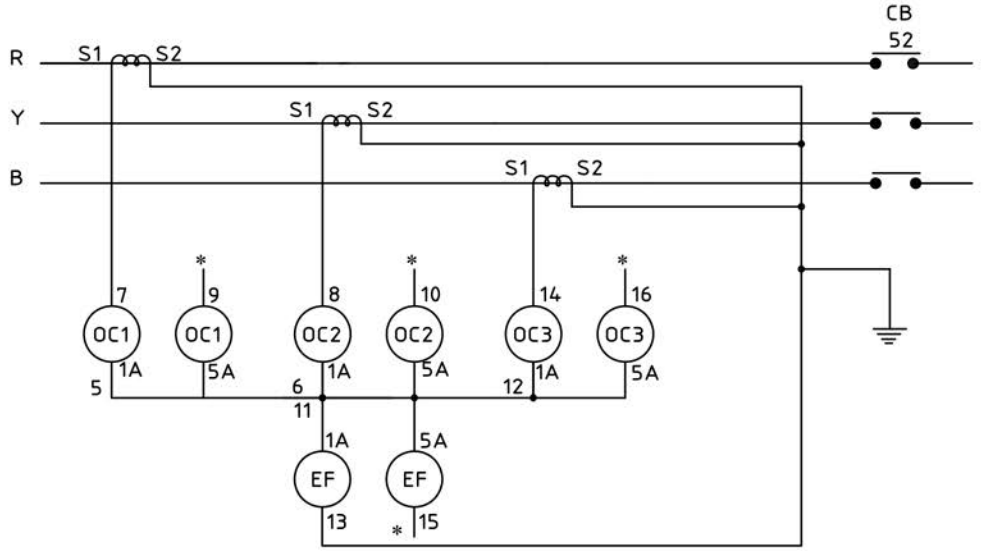
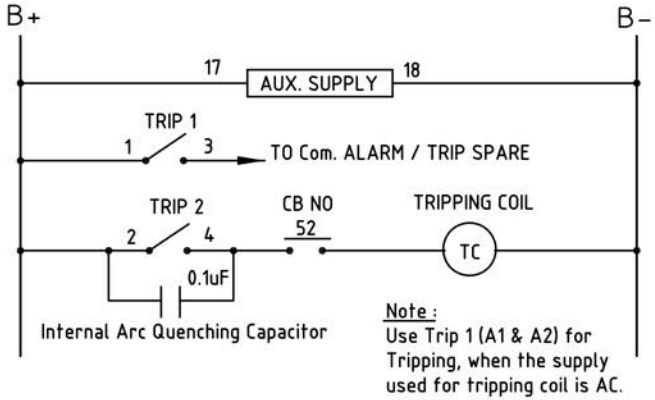
Typical External Connection for 3OC + 1EF IDMT Relay. ADR141A/ADR241A (Draw Out type)

STANDARD C.T. CONNECTION

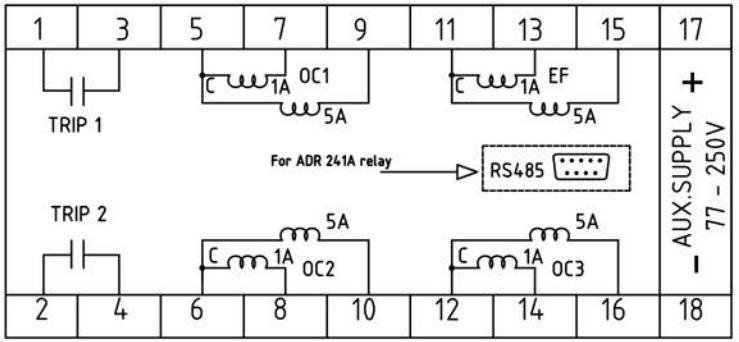


* TO BE CONNECTED IF CT SEC. IS OF 5 AMP.

D.C. CONNECTION



BACK TERMINAL ARRANGEMENT



Note:

1. Typical wiring diagram shown for guidance only.
2. Follow established standard engineering practices.
3. Connect Earth to cabinet.

DIM:MM	TOL:	FINISH			MATERIAL	
Prepared by PD		Checked by PD	Approved by - date SMK	Filename APR06815	Date 05.12.2013	Scale NTS

ASHIDA Electronics Pvt. Ltd.

TITLE : -Typical External connection for 3OC + 1EF IDMT Relay

Drawing __ Ref.: - APR06815__B | Edition 02 | Sheet 1 OF 1

Rev. No	Revision note	Date	Signature	Checked
1	Orignal Revision	01.04.10		

Typical External Connection for 3OC + 1EF IDMT Relay. ADR141A/ADR241A (Plug in type)

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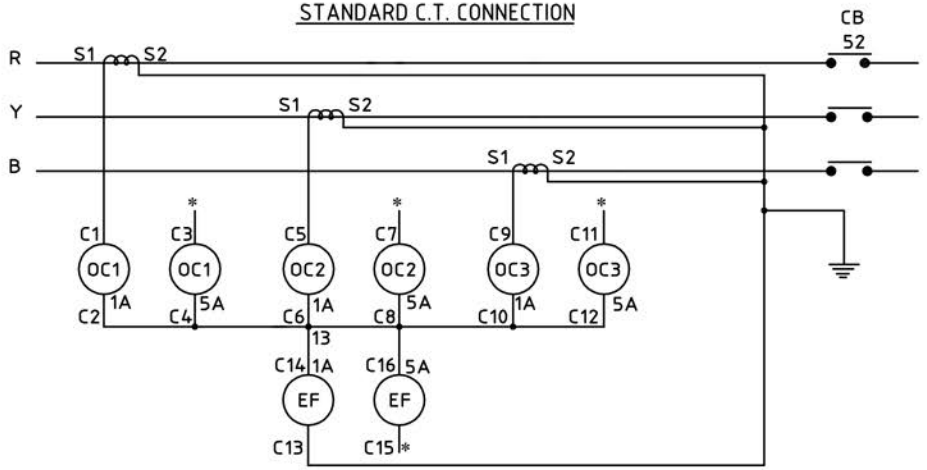
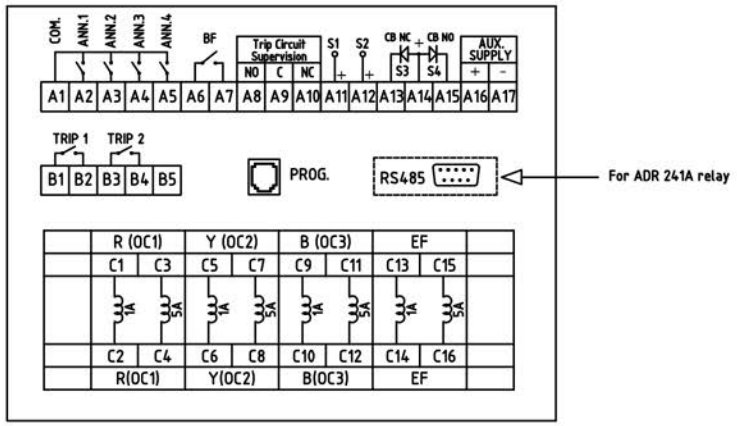
STANDARD C.T. CONNECTION

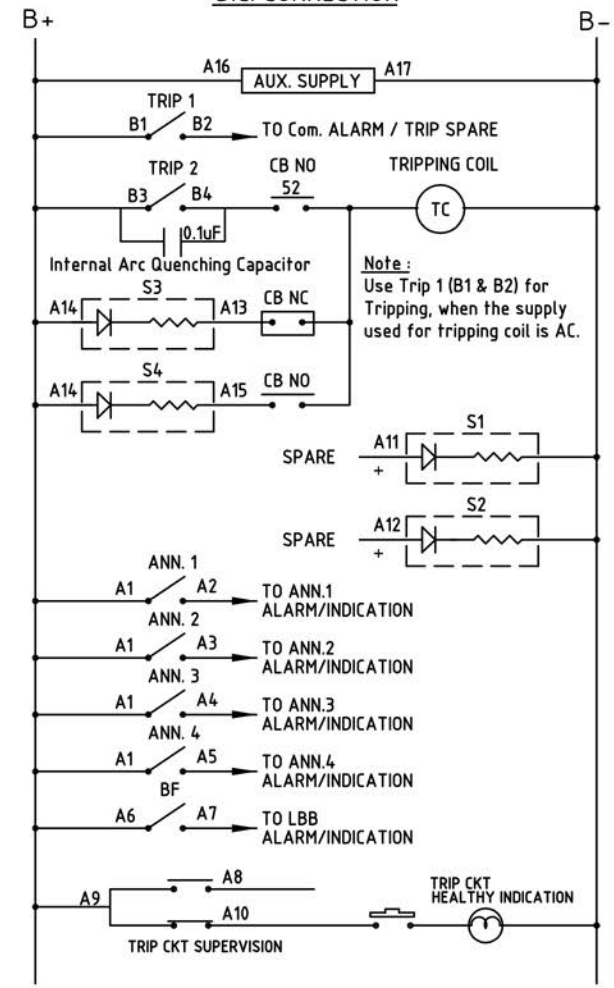


* TO BE CONNECTED IF CT SEC. IS OF 5 AMP.

BACK TERMINAL ARRANGEMENT



D.C. CONNECTION



Note:

1. Typical wiring diagram shown for guidance only.
2. Follow established standard engineering practices.
3. Connect Earth to cabinet.

DIM:MM	TOL:	FINISH			MATERIAL	
Prepared by PD		Checked by PD	Approved by - date SMK	Filename APR06815	Date 01.04.10	Scale NTS

ASHIDA Electronics Pvt. Ltd.

TITLE : -Typical External connection for 3OC + 1EF IDMT Relay

Drawing __ Ref.: - APR06815__C | Edition 01 | Sheet 1 OF 1

Rev. No	Revision note	Date	Signature	Checked
1	Orignal Revision	26.12.09		
2	Back Terminal Arrangement changed	01.12.10		

Typical External Connection for 3OC + 1EF(3I/O) + REF Relay. ADR141A/ADR241A (Non Draw out)

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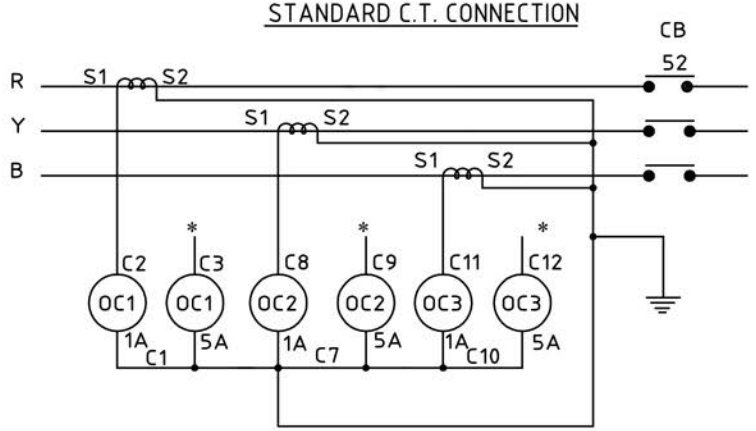
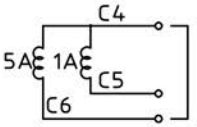
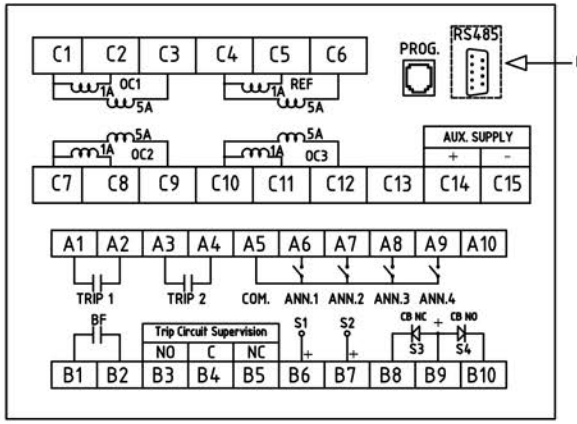
STANDARD C.T. CONNECTION



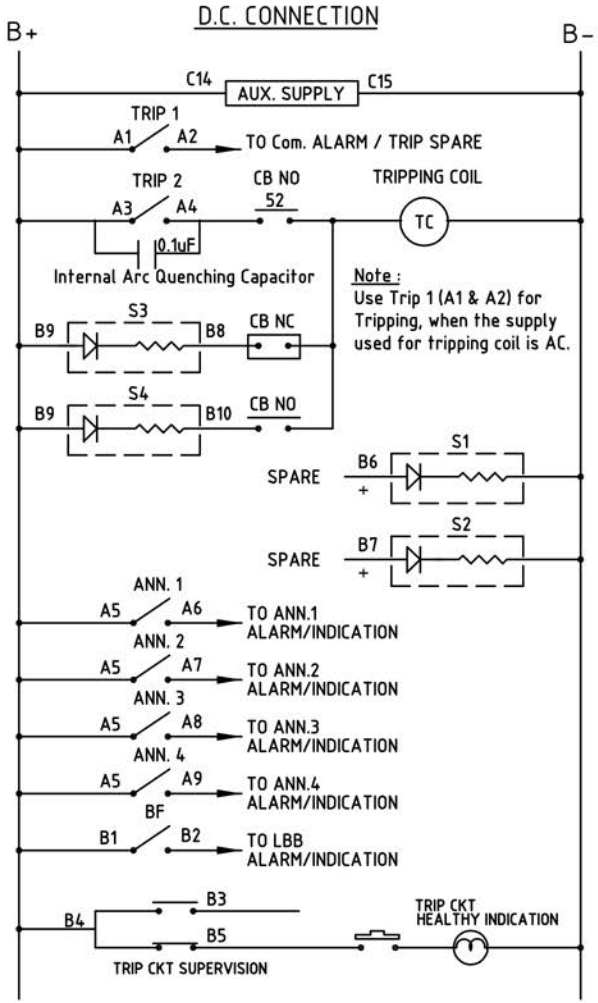
* TO BE CONNECTED IF CT SEC. IS OF 5 AMP.



MODEL : AM10301
BACK TERMINAL ARRANGEMENT



D.C. CONNECTION



Note:

1. Typical wiring diagram shown for guidance only.
2. Follow established standard engineering practices.
3. Connect Earth to cabinet.

DIM:MM	TOL:	FINISH			MATERIAL	
Prepared by PD		Checked by PD	Approved by - date SMK	Filename APR06817	Date 01.12.10	Scale NTS

ASHIDA Electronics Pvt. Ltd.

TITLE : -Typical External connection for 3OC + 1EF IDMT Relay

Drawing __ Ref.: - APR06817__A | Edition 02 | Sheet 1 OF 1

Rev. No	Revision note	Date	Signature	Checked
1	Orignal Revision	01.04.10		

Typical External Connection for 3OC + 1EF(3I/O) + REF Relay. ADR141A/ADR241A (Plug in Type)

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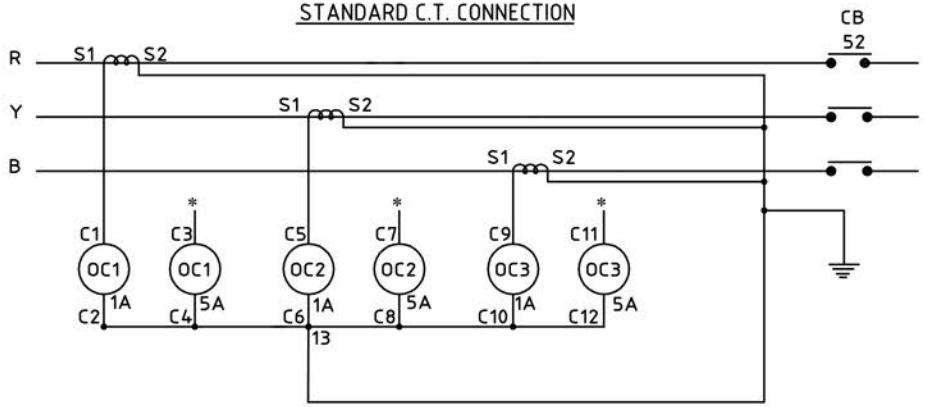
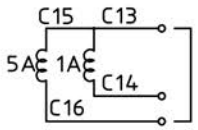
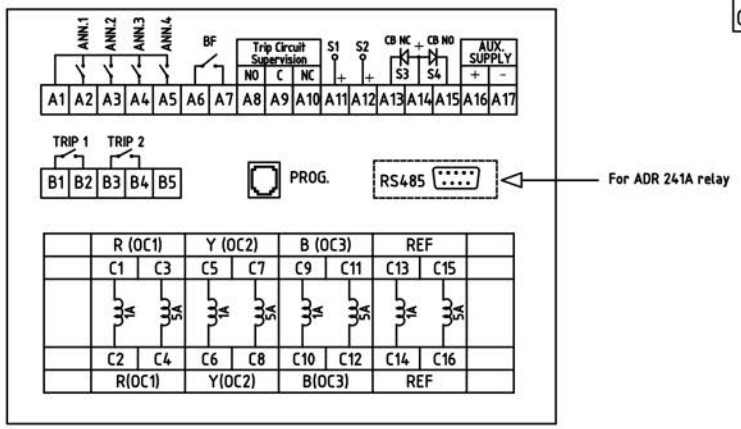
STANDARD C.T. CONNECTION



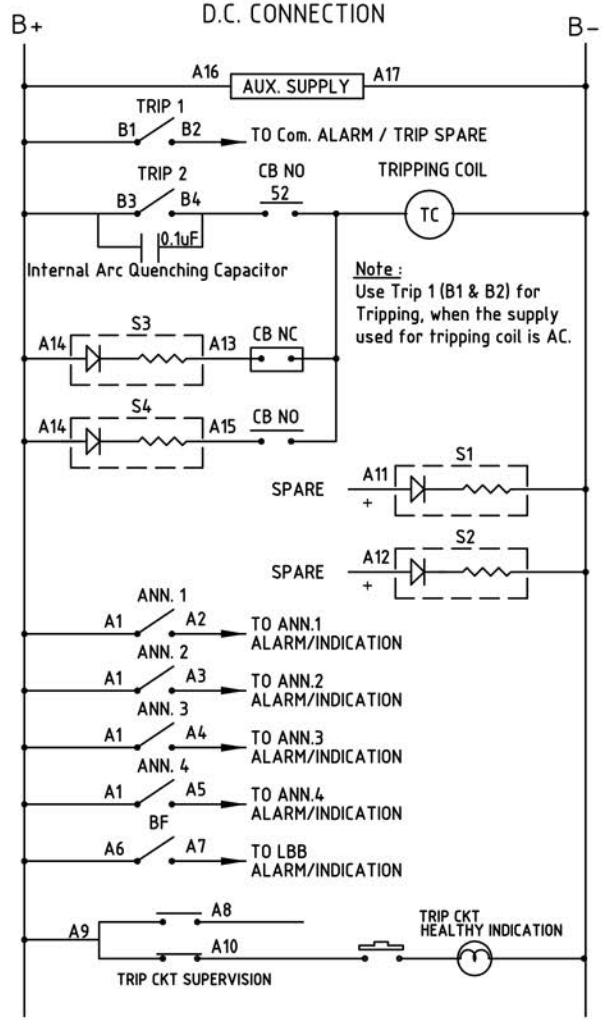
* TO BE CONNECTED IF CT SEC. IS OF 5 AMP.



MODEL : AM10303
BACK TERMINAL ARRANGEMENT



D.C. CONNECTION



Note:

1. Typical wiring diagram shown for guidance only.
2. Follow established standard engineering practices.
3. Connect Earth to cabinet.

DIM:MM	TOL:	FINISH			MATERIAL	
Prepared by PD		Checked by PD	Approved by - date SMK	Filename APR06817	Date 01.04.10	Scale NTS

ASHIDA Electronics Pvt. Ltd.

TITLE : -Typical External connection for 3OC + 1EF + REF IDMT Relay

Drawing __ Ref.: - APR06817__B | Edition 01 | Sheet 1 OF 1

Rev.No	Revision note	Date	Signature	Checked
01	ORIGINAL	28.09.2012		
02	Tolerence Removed	10.09.2015		

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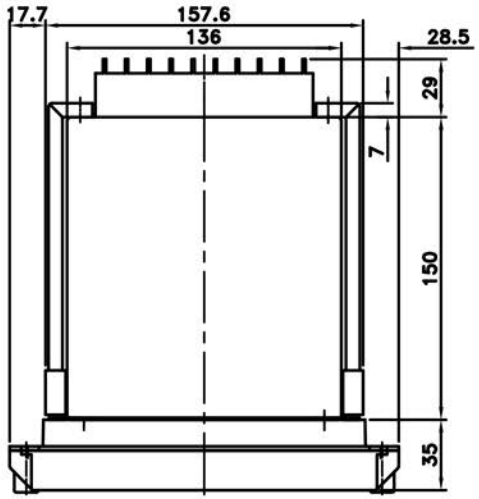
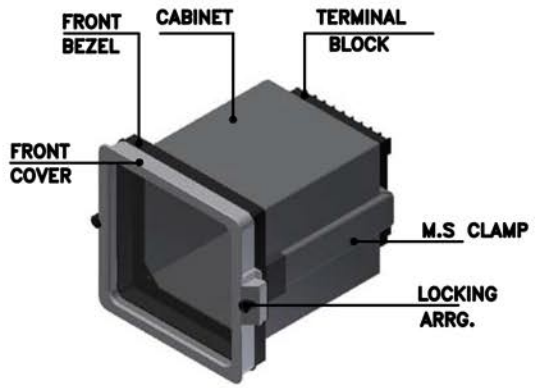
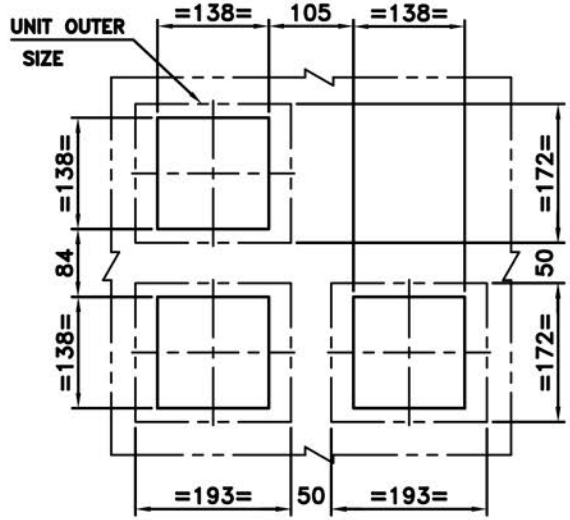


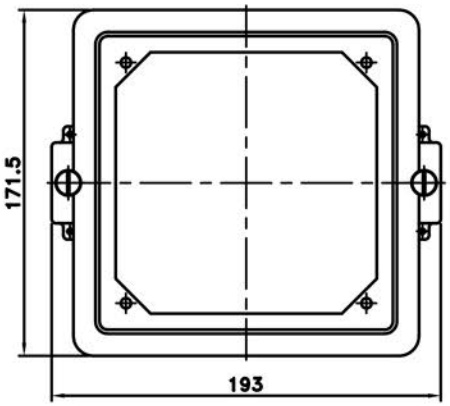


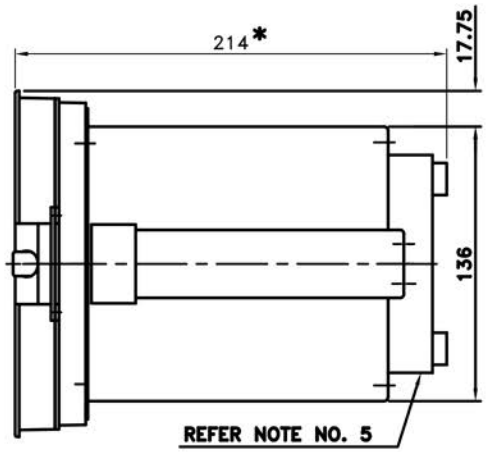
ISOMETRIC VIEW



PANEL CUTOUT REQUIRED

(UNIT OUTER SIZE SHOWN IN PHANTOM LINE)





NOTE:

1. PANEL CUTOUT 138mm x 138mm.
2. FRONT BEZEL SIZE 193mm x 172mm.
3. BOX SIZE WITH CLAMP 193mm x 172mm x 214mm.
4. THE DIMENSION MARK AS "*" IS HAVING TOLERANCE OF ±10mm.
5. THE TERMINAL BLOCK SHOWN IS FOR GUIDANCE ONLY. THE ACTUAL SIZE AND TYPE OF TERMINAL BLOCK DEPENDS UPON PRODUCT. REFER RESPECTIVE PRODUCT DETAILS.
6. ALL DIMENSIONS IN MM.

TOL :	MATERIAL :-			PROJECTION:-	
Prepared by RV	Checked by SG	Approved by-date SMK	Filename MAC00101	Date 28.09.2012	Scale 1:3.75

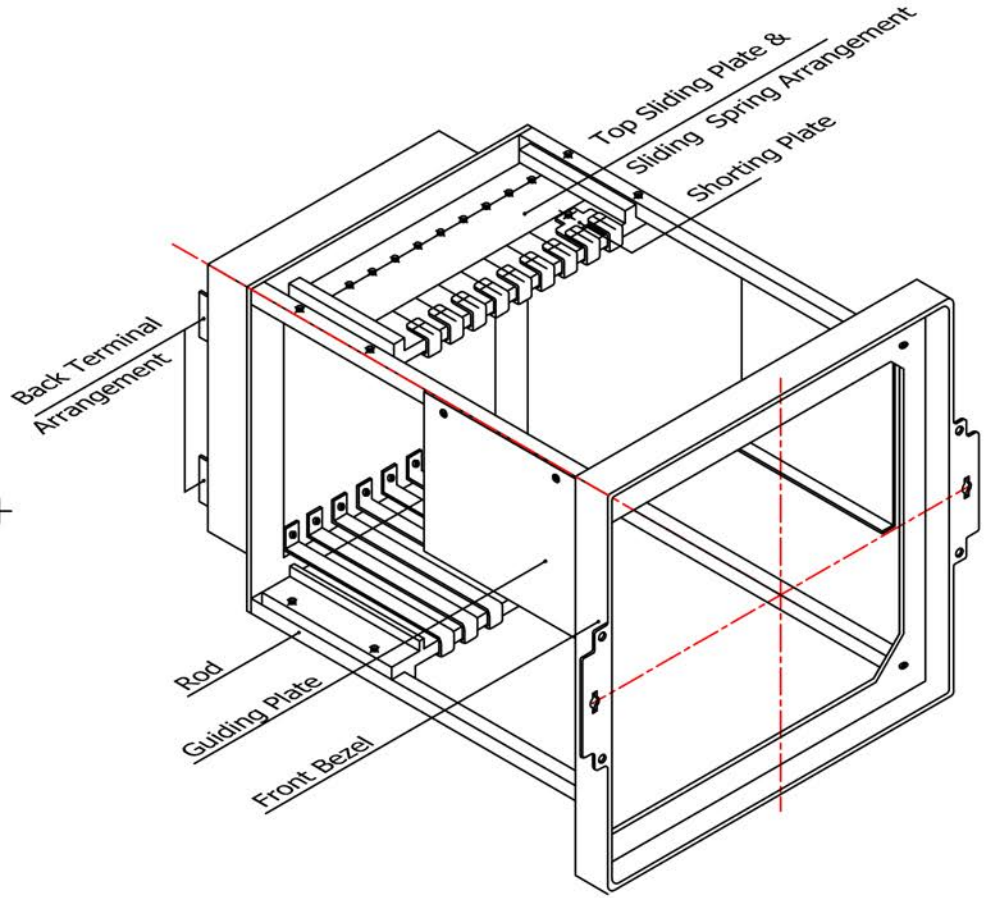
ASHIDA Electronics Pvt.Ltd.

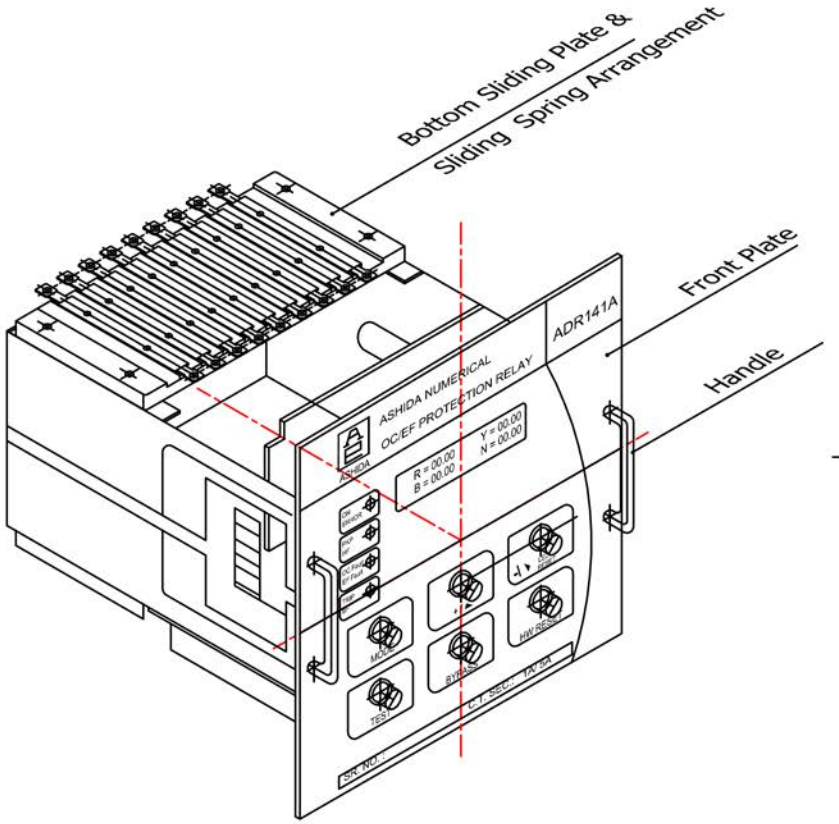
TITLE : MECHANICAL DETAIL FOR CABINET CSA

Drawing Ref.:- MAC00101 | Edition 00 | Sheet 1/1

Sheet Size- A4

RevNo	Revision note	Date	Signature	Checked
1	Original Revision	16.02.2011		
2	Front Bezel modified	01.12.2011		





DIM:MM	TOL:	FINISH :			MATERIAL	
Prepared by JEFFREY		Checked by SMK	Approved by - date SMK	Filename MAC00107	Date 01.12.2011	Scale NTS

ASHIDA Electronics Pvt. Ltd.

TITLE :- ISOMETRIC VIEW OF CSA CABINET (Drawout)

Drawing __ Ref.MAC00107 | Edition 02 | Sheet 1 OF 1

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RevNo	Revision note	Date	Signature	Checked

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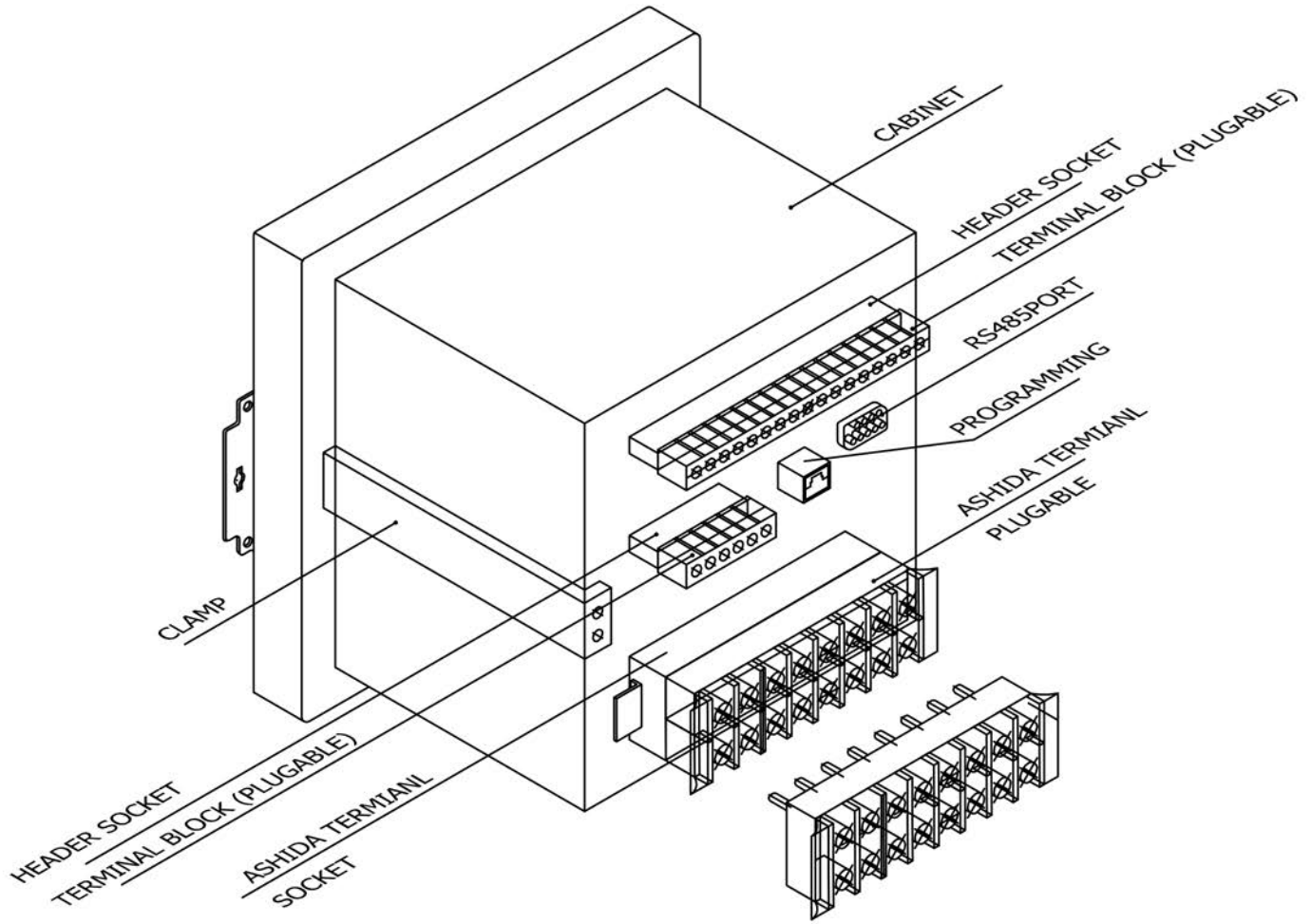
www.vingeo.in



BACK TERMINAL ARRANGEMENT

DIM:MM	TOL: ±0.5 MM				
Prepared by JEFFREY	Checked by SMK	Approved by - date SMK	Filename MAC00108	Date 16.02.1011	Scale NTS

ASHIDA Electronics Pvt.Ltd.

TITLE : ISOMETRIC VIEW FOR CSA CABINET (BACK TERMIANAL DETAILS)

Drawing __ Ref.:MAC00108 | Edition 00 | Sheet 1 of 2