Capacitor Bank Protection Relay : A25R

Introduction:

ASHIDA has designed economical & reliable Multifunction A25R Protection & Control System. The simple and compact construction of ADITYA series A25R relay provides integrated Protection, Control and Monitoring functions for Capacitors Bank.

A25R Relay specially designed for Capacitor Bank Protection as per RDSO Specifications TI-SPC-PSI-PROTCT-7101.

Functional Overview:

Key Protection & Control Functions:

- Two Independent Settings Groups.
- Over Current Protection (50/51).
- Current Unbalance Protection.
- Inverse / DT Under & Over Voltage Protection (27/59).
- Voltage Unbalance Protection.
- Trip circuit supervision (TCS).
- Breaker Failure Detection.
- Programmable Inputs & Outputs.
- 16 nos. of Programmable & Target LEDs for indications with dual colours.
- Self Supervision of relay.
- Metering function.
- Event Recording (1024 nos.).
- Fault Recording on HMI display (10 nos.).
- Disturbance Recording (10 nos.)
- Fully communicable with IEC standard open protocol IE C60870-5-103 & IEC 61850.
- SCADA communication.
- Single/Dual Ethernet ports (RJ45), RS485 port.
- PC front port communication for convenient relay settings.
- User friendly local operation with key pad.
- Large Liquid crystal display (20X4) with backlight.
- Password Protection.

- Measurement of Voltage, Current magnitudes.

Software Support:

- Online / Offline Setting Editor.
- Programmable scheme logic Editor.
- Settings upload / download.
- Online Measurement.
- Disturbance analysis.
- Relay assistant for testing relay at site.

Applications:

The A25R is second generation Numerical Integrated Capacitor Bank Protection Relay for Traction Application. It consist all the necessary protection and monitoring functions required for Capacitor Bank.

The A25R provides protection for Capacitor Bank and various electrical network and electrical installation.

Over current Protection Function:

The A25R consist of two separate CTs (CT-1and CT-2) for which we monitor over current protection.

The over current logic checks the current is exceeds the pickup value (IP>n) and calculated operating time based on the curve selected in the IP>n Curve setting and IP>n TMS or tIP>n DT parameter settings. After satisfied all the above condition the IED generates the over current trip. Once the Pickup signal will be asserted then it will reset after the drop out time calculated by IDMT/DT Dropout characteristics. There are two sets of overcurrent protection settings avaliable Over Current1 and Over Current2.

Unbalance Protection:

There are two separate CTs (CT-3 and CT-4) which monitor current unbalance.

The unbalance logic checks the current is exceeds the pickup value (IUB>n) and calculated operating time based on the curve selected in the IUB>n. Curve setting and IUB>n TMS or tIUB>n DT parameter settings. After satisfied all the above condition the IED generates the unbalance trip. Once the Pickup signal will be asserted then it will reset after the drop out time calculated by DT Dropout characteristics. Two sets of these settings available. Unbalance protection-1 and unbalance protection-2.

Voltage Protection Function:

The primary application of this relay is in situations that require monitoring of supply voltage very critically such Over Voltage or under voltage may lead to damage the 25kV Shunt Capacitor Bank or the Over Head Line.

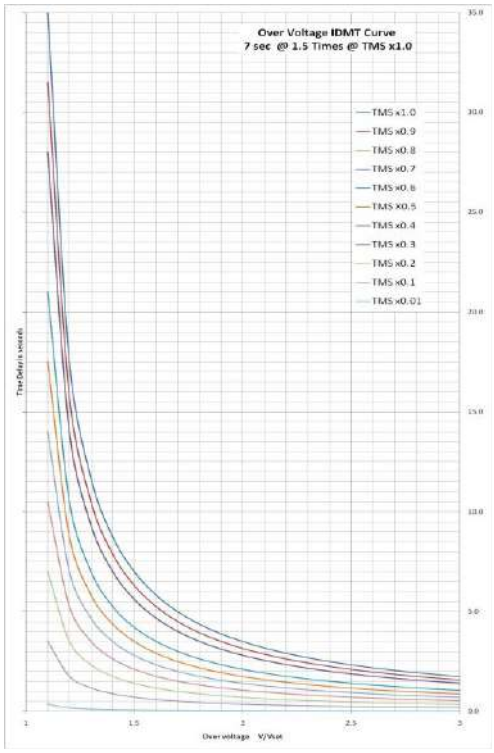
There are three separate elements that are provided for voltage protection with two stages as DT / IDMT.

Over Voltage:

The A25R is numerical discrete voltage verification Relay. It measures the line

voltage through PT. The CPU samples this voltage signal and calculates peak value. This signal is then compared with over voltage setting. If voltage is above set values then relay provides TRIP command after set time delay.

The range of Over voltage protection is 100% to 200% for IDMT and DT, where as 100% = 110V.

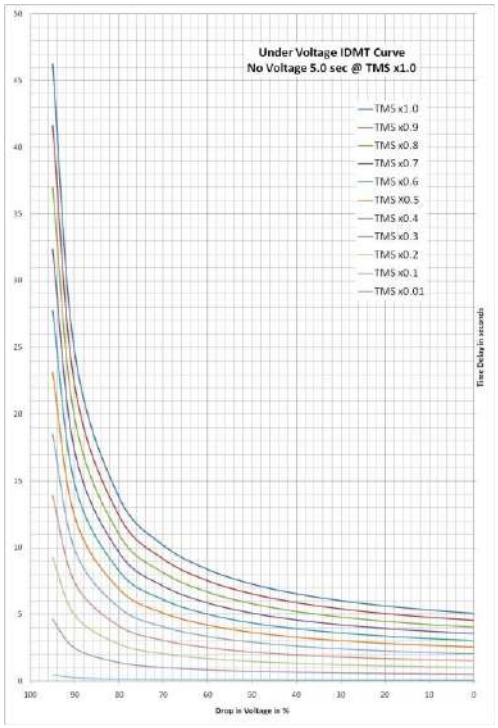


Over Voltage Characteristic Graph

Under Voltage:

The A25R measures the line voltage through PT. The CPU samples this voltage signal and calculates peak value. This signal is then compared with under voltage setting. If voltage is below the set values then relay provides TRIP command after set time delay.

The range of under voltage protection is 20% to 90% for IDMT and DT and, where as 100% = 110V.



Under Voltage Characteristic Graph

Unbalance Voltage Protection:

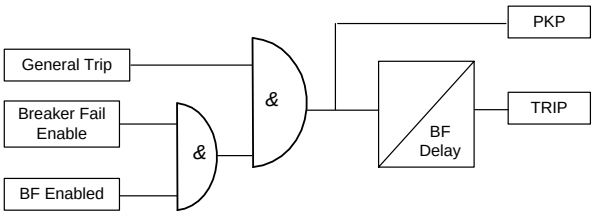
Relay is equipped with unbalance voltage protection of capacitor bank with the help of measuring residual voltage transformer connected across the group of capacitor unit.

The voltage is settable from 5% to 200% in the steps of 1% and operating time is settable from 0 - 99.9sec in the steps of 0.10sec.

These settings are visible if Vn protection is set as Unbalance

Breaker Failure Detection:

Normally after tripping current should become Zero within 100 – 200ms depend upon type of fault and breaker mechanism. After Fault A25R trigger internal timer (settable from 0s to 5.0s) If fault is not cleared during this time then relay declare as Breaker fail (LBB function) and operate assigned contacts. This contact can be used to trip back up breaker such as LV or can be used to generate ALARM signal.

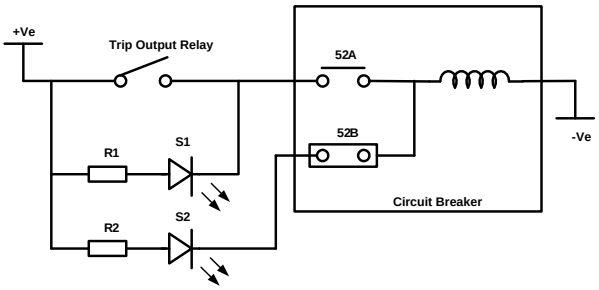


Breaker Failure Logic

Trip circuit super vision:

In A25R, we use two separate digital opto coupler status inputs in the XOR gate, which can be used to continuously monitor the continuity of the trip-circuit.

The following diagram explain the logic of trip circuit supervision function.

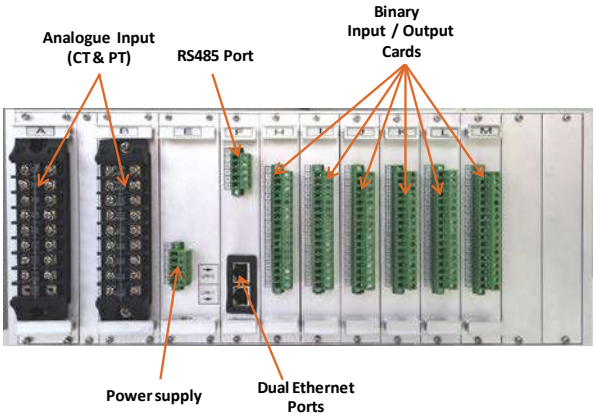


Trip Circuit Superversion Logic

It monitor continuity of trip circuit through either normally open (NO) or normally close (NC) contact of CB connected to opto isolator digital input assigned to TCS. If any discontinuity is observed, then the relay generates “TC Alarm” after a certain time delay.

Programmable Inputs, Outputs & Logic:

The relay is provided with tool known as AproLogic, in which user can program their logics as per the requirement. All type of gates such OR/ NOR/ NOT/ NAND/ AND/ XOR/ XNOR/ SR Flip-flop and Counters are available along with Operating and Resetting Timer. For more details please refer to Instruction Manual.



Back side Terminals A25R

Programmable LEDs and Pushbuttons:

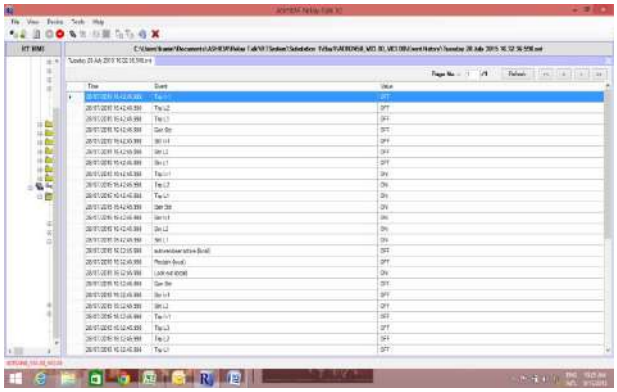
The A25R relay provides total 16 nos. of target and programmable LEDs with dual color indications. The LEDs can be programmed through PC software (RTV2 software).

The A25R also provides the programmable pushbuttons for circuit breaker CLOSE and

OPEN from HMI of relay. Pushbuttons can be programmed through HMI or through RTV2 software.

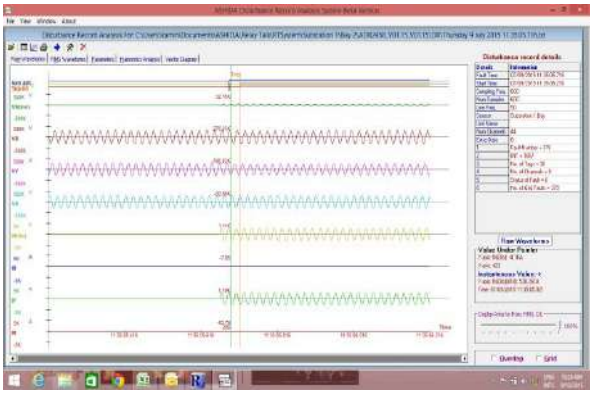
Event recording:

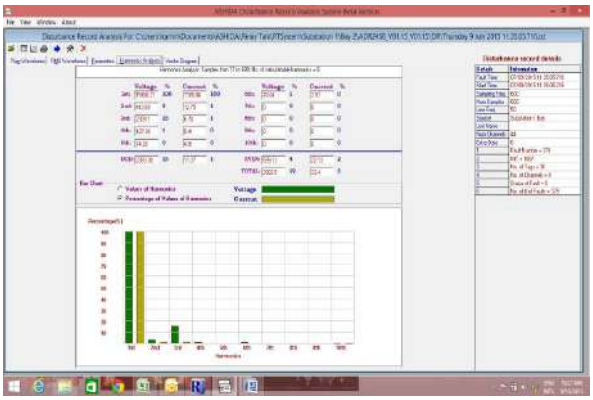
A25R relay provides a feature to record and store 1024 nos. of events (with event time stamping of 1mSec precision) in non-volatile memory through internally by protection and control functions and externally by triggering the digital inputs. And these can be extracted using communication port or can be seen on the LCD. The event can be triggered on time stamp through time synchronization or through internal clock setting.



Disturbance recording:

A25R relay provides built in disturbance recording facility for recoding analogue and digital channels. Relay records 10 nos. of disturbances of 1.5 sec each and stores it in non-volatile memory. Disturbance records can be saved in IEEE COMTRADE format and same can be analyzed in disturbance analysis software.





Fault recording:

A25R relay provides fault recording facility. The fault records can be display either on HMI displayed or in RTV2 software. The relay can record 10 nos. of fault records in non-volatile memory.

Metering:

Online metering feature of A25R relay provides metering of parameters of Current and voltage magnitude on HMI display or in RTV2 software.

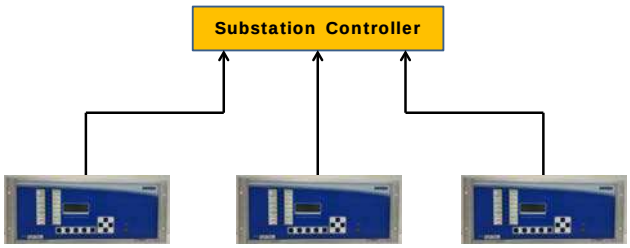
Independent Protection settings groups:

A25R relay provides two independent

setting groups which allows the relay to operate on different power system conditions.

IEC 60870-5-103 Protocol:

A25R relay provides internationally standardized protocol for communication via RS485 port of protection relays. IEC 60870-5-103 protocol is used worldwide and supported by relay manufacturers.



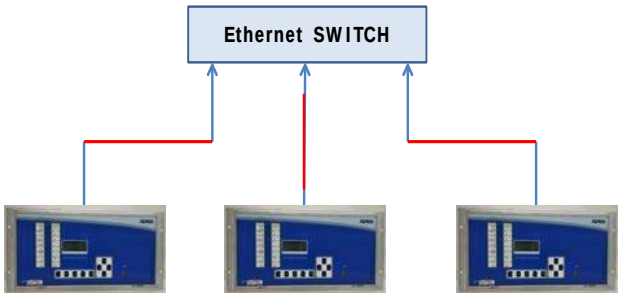
IEC 60870–5–103 star type RS232 copper conductor connection

Ethernate base Protocol:

A25R relay provides internationally standardized IEC61850 protocol for substation automation via Ethernet port of protection relays (Ref ordering information for details)

IEC61850 GOOSE and Interoperability:

A25R support standard GOOSE messaging for relay to relay communication. Any logical (pickup, trip, etc) and physical (Digital Optical Isolated signal such CBNO /NC etc) can be publish via GOOSE configurator. A25R support total 16 simultaneous GOOSE signal which can publish and received by other relays having IEC61850 protocol. Similarly A25R can able subscribed total 16 nos of simultaneous signal published by other relays and can be use for interlocks. The A25R is tested for most of other make relays.



Relay Settings:

Global:

Sr. No	Parameter	Setting / Ranges
1.	Password	0000 to zzzz / ZZZZ
2.	RID	-
3.	SID	-
4.	System Frequency	50Hz / 60Hz
5.	Opto I/P Supply	Read only
6.	Filter Time	0 to 100ms in steps of 1ms
7.	CB Operation	CB Open / CB Close / No Operation
8.	PB-1 Operation	Disabled/ Enabled / Time Enabled
9.	tPB-1 Pulse	0.10 to 50s in steps of 0.01s
10.	PB-2 Operation	Disabled/ Enabled / Time Enabled
11.	tPB-2 Pulse	0.10 to 50s in steps of 0.01s
12.	Config Port	PORT F/ PORT R / PORT 1
13.	Timesync Master	PORT F/ PORT R / PORT 1
14.	Description	Read only
15.	Model no	Read only
16.	Serial No	Read only
17.	Software Version	Read only
18.	Hardware Version	Read only
19.	Virtual Scheme 1	Disabled / Enabled
20.	Virtual Scheme 2	Disabled / Enabled
21.	Language	Read only

Settings Group

Sr. No	Parameter	Setting / Ranges
1.	Factory Defaults	No Operation / All Settings / Setting Group 1 / Setting Group 2
2.	Active Group	G1 / G2
3.	Copy From	G1 / G2
4.	Copy To	No operation / G1 / G2
5.	G1	Disabled / Enabled / Time Enabled
6.	GroupChange Delay	0 to 400.0s in steps of 0.1s
7.	G2	Disabled / Enabled / Time Enabled
8.	GroupChange Delay	0 to 400.0s in steps of 0.1s

PORT F

Sr. No	Parameter	Setting / Ranges
1.	Unit ID	Read only

2.	Baud Rate	Read only
3.	Set Parity	Read only

PORT 1

Sr. No	Parameter	Setting / Ranges
1.	Unit ID	1 to 250 in steps of 1
2.	IP address	Range 0 to 255 in steps of 1
3.	Subnet mask	Range 0 to 255 in steps of 1
4.	Default gateway	Range 0 to 255 in steps of 1
5.	Pri. SNTP	Range 0 to 255 in steps of 1
6.	Sec. SNTP	Range 0 to 255 in steps of 1
7.	Protocol	Disabled / Enabled
8.	Ethernet Mode	Dual / fixed
9.	Operating Mode	Fail over / Switch mode
10.	Primary	LAN1 / LAN 2

PORT R

Sr. No	Parameter	Setting / Ranges
1.	Unit ID	1 to 250 in steps of 1
2.	Baud Rate	9600 / 19200 / 38400 / 57600
3.	Set Parity	None / Even / Odd

Disturbance

Sr. No	Parameter	Setting / Ranges
1.	Post Trigger	5 to 95% in steps of 1%

DATE AND TIME

Sr. No	Parameter	Setting / Ranges
1.	Password	0000 to zzzz / ZZZZ
2.	Local Time Enable	Fixed / Flexible / Disabled
3.	Local Time Offset	-720 to + 720 in steps of 15 Mins
4.	RP Time Zone	UTC / Local
5.	SET Hours	0 to 23 Hrs in steps of 1.
6.	SET Minutes	0 to 59 Mins in steps of 1.
7.	SET Seconds	0 to 59 Sec. in steps of 1.
8.	SET Date	1 to 31 Days in steps of 1.
9.	SET Month	1 to 12 Months in steps of 1.
10.	SET Year	0 to 99 Years in steps of 1.

CB Control

Sr. No	Parameter	Setting / Ranges
1.	Password	0000 to zzzz / ZZZZ
2.	TCS Enable	Disabled / Logic Low / Logic High
3.	TCS Delay	0.1s to 10s in steps of 0.1s
4.	CB Open S'vision	Disabled / Enabled
5.	CB Open Time	50ms to 1000ms in steps of 10ms
6.	CB Open Alarm	Disabled / Enabled
7.	CB Oper. Counter	10 to 50000 in steps of 1
8.	Sigma I	Disabled / Enabled
9.	CB Rated I	1 to 5000A in steps of 1A
10.	M Constant	0.100 to 5.000 in steps of 0.001
11.	CB Control By	Disabled / Local / Remote / Local + Remote
12.	t CB Open Pulse	00.10 to 50.00sec in steps of 0.01s
13.	t CB Close Pulse	00.10 to 50.00sec in steps of 0.01s
14.	Invalid DPI Dur H	0.1 to 600s in steps of 0.01s
15.	Invalid DPI Dur I	0.1 to 600s in steps of 0.01s

REPORTING

Sr. No	Parameter	Display value on LCD
1.	Event	Display of all digital events with time stamping
2.	Status	Display Status of Digital Input & Digital Output
3.	Fault Record	Display the Records of fault i.e. parameter value, flag of fault & date and time of Fault
4.	Error Log	Display of error generated by Relay if any, in case of failure of hardware
5.	CB Data	Display of Trip Counter; Breaker Operation Counter; Breaker operating time, Recl Cnt
6.	Alarm Record	Display of latest Alarm Record

SYSTEM CONFIG

CT/VT RATIOS

Sr. No	Parameter	Setting / Ranges
1.	PH CT Secondary	1A / 5A
2.	PH CT Primary	10 to 30000A in steps of 1A
3.	CU CT Secondary	1A / 5A
4.	CU CT Primary	10 to 30000A in steps of 1A
5.	PT1 Secondary	Read-Only
6.	PT1 Primary	5 kV to 220kV in steps of 0.1 kV
7.	PT2 Secondary	Read-Only
8.	PT2 Primary	5 kV to 220kV in steps of 0.1 kV

9.	PT3 Secondary	Read-Only
10.	PT3 Primary	5 kV to 220kV in steps of 0.1 kV

PROTECTION

Sr. No	Parameter	Setting / Ranges
1.	Password	0000 to zzzz / ZZZZ
2.	Over Current1	Disabled / Enabled
3.	Over Current2	Disabled / Enabled
4.	Unbalance1	Disabled / Enabled
5.	Unbalance2	Disabled / Enabled
6.	V1 Protection	Disabled / Enabled
7.	V2 Protection	Disabled / Enabled
8.	V3 Protection	Disabled / Enabled
9.	Init Timer	Disabled / Enabled
10.	Breaker Failure	Disabled / Enabled

RECORD CONTROL

Sr. No	Parameter	Setting / Ranges
1.	Password	0000 to zzzz / ZZZZ
2.	Clear Events	Yes / No
3.	Clear Faults	Yes / No
4.	Clear Disturbance	Yes / No
5.	Clear Error Record	Yes / No
6.	CB Data	Yes / No
7.	Thermal State	Yes / No

OUTPUT & LED TEST

Sr. No	Parameter	Setting / Ranges
1.	Password	0000 to zzzz / ZZZZ
2.	Test Mode	Disabled/Test Mode/Contacts Blocked
3.	Test Output J	0 = Not Operated, 1 = Operated
4.	Test Output K	0 = Not Operated, 1 = Operated
5.	Test Output L	0 = Not Operated, 1 = Operated
6.	Test Output M	0 = Not Operated, 1 = Operated
7.	Test Apply	No Operation/Apply Test/Remove Test
8.	Test LEDs	No Operation / Apply Test

Group 1 Settings

Over Current 1

Sr. No	Parameter	Settings / Ranges
1.	IP1>1 Enable	Disabled / Enabled
2.	IP1>1 Curve	Definite Time / IEC S Inverse / ST Inverse 1.3S / IEC V Inverse / IEC E Inverse / UK LT Inverse / IEEE M Inverse / IEEE V Inverse / IEEE E Inverse / US Inverse / US ST Inverse / User Def Curve-1 / User Def Curve-2
3.	IP1>1	If DT 20% to 3000% in steps of 1% If IDMT then 5% to 400% in steps of 01%
4.	tIP1>1 DT Delay	0 to 1899.9s in steps of 0.01s
5.	IP1>1 TMS	0.01 to 1.5 in steps of 0.01
6.	IP1>1 Time Dial	0.01 to 100.00 in steps of 0.01
7.	IP1>1 D/O Char	Disabled / DT / IDMT
8.	tIP1>1 tD/O Delay	0s to 100s in steps of 0.01s
9.	IP1>1 D/O TMS	0.025 to 1.2 in steps of 0.005
10.	IP1>1 2H BLK	Disabled / Enabled
11.	IP1>1 2H Thresh	5% to 70% in steps of 1%
12.	IP1>1 UB2H	400% to 2800% in steps of 1%

NOTE: *Over Current1 settings for IP1>2 Enable and IP1>3 Enable are similar to IP1>1 Enable settings.*

Over Current 2

Sr. No	Parameter	Settings / Ranges
1.	IP2>1 Enable	Disabled / Enabled
2.	IP2>1 Curve	Definite Time / IEC S Inverse / ST Inverse 1.3S / IEC V Inverse / IEC E Inverse / UK LT Inverse / IEEE M Inverse / IEEE V Inverse / IEEE E Inverse / US Inverse / US ST Inverse / User Def Curve-1 / User Def Curve-2
3.	IP2>1	If DT 20% to 3000% in steps of 1% If IDMT then 5% to 400% in steps of 01%
4.	tIP2>1 DT Delay	0 to 1899.9s in steps of 0.01s
5.	IP2>1 TMS	0.01 to 1.5 in steps of 0.01
6.	IP2>1 Time Dial	0.01 to 100.00 in steps of 0.01
7.	IP2>1 D/O Char	Disabled / DT / IDMT
8.	tIP2>1 tD/O Delay	0s to 100s in steps of 0.01s
9.	IP2>1 D/O TMS	0.025 to 1.2 in steps of 0.005
10.	IP2>1 2H BLK	Disabled / Enabled
11.	IP2>1 2H Thresh	5% to 70% in steps of 1%

12.	IP2>1 UB2H	400% to 2800% in steps of 1%

NOTE: *Over Current1 settings for IP2>2 Enable and IP2>3 Enable are similar to IP2>1 Enable settings.*

Unbalance1

Sr. No	Parameter	Settings / Ranges
1.	IUB>1 Enable	Disabled / Enabled
2.	IUB>1	2% to 100% in steps of 1%
3.	tIUB>1 DT Delay	0 to 1899.9s in steps of 0.01s
4.	IUB>1 D/O Char	Disabled / DT
5.	tIUB>1 tD/O Delay	0s to 100s in steps of 0.01s

Unbalance2

Sr. No	Parameter	Settings / Ranges
1.	IUB>2 Enable	Disabled / Enabled
2.	IUB>2	2% to 100% in steps of 1%
3.	tIUB>2 DT Delay	0 to 1899.9s in steps of 0.01s
4.	IUB>2 D/O Char	Disabled / DT
5.	tIUB>2 tD/O Delay	0s to 100s in steps of 0.01s

Breaker Failure

Sr. No	Parameter	Setting / Ranges
1.	Password	0000 to zzzz / ZZZZ
2.	BF Enable	Disabled/Enabled
3.	BF Delay	0 s to 5s in steps of 0.01s

V1 Protection

Sr. No	Parameter	Settings / Ranges
1.	V1> Function	Disabled / DT/ IDMT
2.	V1>	100 to 200% in steps of 1%
3.	V1> TMS	0.01 to 1.00 in steps of 0.01
4.	V1> Time Delay	0.00 to 99.9 sec in steps of 0.1sec
5.	V1< Function	Disabled / DT/ IDMT
6.	V1<	20 to 90% in steps of 1%
7.	V1< TMS	0.01 to 1.00 in steps of 0.01
8.	V1< Time Delay	0.00 to 99.9 sec in steps of 0.1sec
9.	VUB1> Function	Disabled/Enabled
10.	VUB1>	5% to 100% in steps of 1%
11.	VUB1> Time Delay	0.00 to 99.9 sec in steps of 0.1sec

V2 Protection

Sr. No	Parameter	Settings / Ranges
1.	V2> Function	Disabled / DT/ IDMT
2.	V2>	100 to 200% in steps of 1%
3.	V2> TMS	0.01 to 1.00 in steps of 0.01
4.	V2> Time Delay	0.00 to 99.9 sec in steps of 0.1sec
5.	V2< Function	Disabled / DT/ IDMT
6.	V2<	20 to 90% in steps of 1%
7.	V2< TMS	0.01 to 1.00 in steps of 0.01
8.	V2< Time Delay	0.00 to 99.9 sec in steps of 0.1sec
9.	VUB2> Function	Disabled/Enabled
10.	VUB2>	5% to 100% in steps of 1%
11.	VUB2> Time Delay	0.00 to 99.9 sec in steps of 0.1sec

V3 Protection

Sr. No	Parameter	Settings / Ranges
1.	V3> Function	Disabled / DT/ IDMT
2.	V3>	100 to 200% in steps of 1%
3.	V3> TMS	0.01 to 1.00 in steps of 0.01
4.	V3> Time Delay	0.00 to 99.9 sec in steps of 0.1sec
5.	V3< Function	Disabled / DT/ IDMT
6.	V3<	20 to 90% in steps of 1%
7.	V3< TMS	0.01 to 1.00 in steps of 0.01
8.	V3< Time Delay	0.00 to 99.9 sec in steps of 0.1sec
9.	VUB3> Function	Disabled/Enabled
10.	VUB3>	5% to 100% in steps of 1%
11.	VUB3> Time Delay	0.00 to 99.9 sec in steps of 0.1sec

Init Timer

Sr. No	Parameter	Setting / Ranges
1.	Init Timer	0.10 to 600 sec in steps of 0.1sec

ACTIVE GROUP

Sr. No	Parameter	Setting / Ranges
2.	G1/ G2	Read only

Typical Tests Information:

The Relay Confirm to following standard

Sr. No.	Test	Standard
Electromagnetic Compatibility Type Test:		
1.	Damped Oscillatory Wave Test	IEC 60255-26 & IEC 61000-4-18
2.	Electrostatic Discharge Test	IEC 60255-26 & IEC 61000-4-2
3.	Electrical Fast Transient or Burst Requirements	IEC 60255-26 & IEC 61000-4-4
4.	Surge Immunity Test	IEC 60255-26 & IEC 61000-4-5
5.	Immunity to Conducted Disturbances Induces by Radio Frequency Field	IEC 60255-26 & IEC 61000-4-6
6.	Radiated, Radio Frequency, Electromagnetic Field Immunity Test	IEC 60255-26 & IEC 61000-4-3
7.	Power Frequency Immunity Test	IEC 60255-26 & IEC 61000-4-16
Auxiliary Supply Tests		
8.	Effect of DC Voltage Variation	IEC 60255-1 / IEC 60255-26
9.	A.C. Ripples in DC Auxiliary	IEC 60255-26 & IEC 61000-4-17
Insulation Tests:		
10.	High Voltage Test	IEC 60255-27
11.	Impulse Voltage Test	IEC 60255-27
12.	Insulation Resistance	IEC 60255-27
Environmental tests:		
13.	Cold test (Storage & Operational)	IEC 60255-1/ IEC 60068-2-1
14.	Dry heat test (Storage & Operational)	IEC 60255-1/ IEC 60068-2-2
15.	Damp heat steady state test	IEC 60255-1/ IEC 60068-2-78
16.	Damp heat cyclic test	IEC 60255-1/ IEC 60068-2-30
17.	Change of Temperature	IEC 60255-1/ IEC 60068-2-14
18.	Enclosure Protection Test (IP51)	IEC 60529
Mechanical tests		
19.	Vibration Endurance Test	IEC 60255-21-1
20.	Vibration Response Test	IEC 60255-21-1
21.	Bump Test	IEC 60255-21-2
22.	Shock Withstand Test	IEC 60255-21-2
23.	Shock Response Test	IEC 60255-21-2
24.	Seismic Test	IEC 60255-21-3

Accuracy & Functional Performance Tests		
25.	Making & Breaking Capacity Tests of Contacts	IEC 60255 – 1
26.	Mechanical Endurance Tests	IEC 60255 – 1

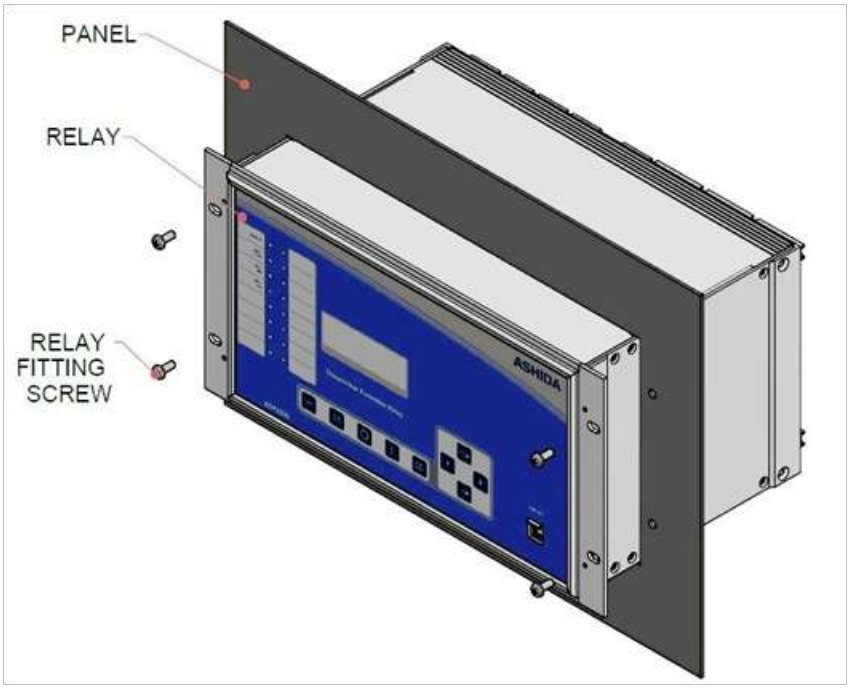
Thermal Withstand Tests		
27.	Over Current Test	IEC 60255-1
28.	Over Voltage Test	IEC 60255-1

*Detailed Type Test Reports are available on request

Drawings Information:

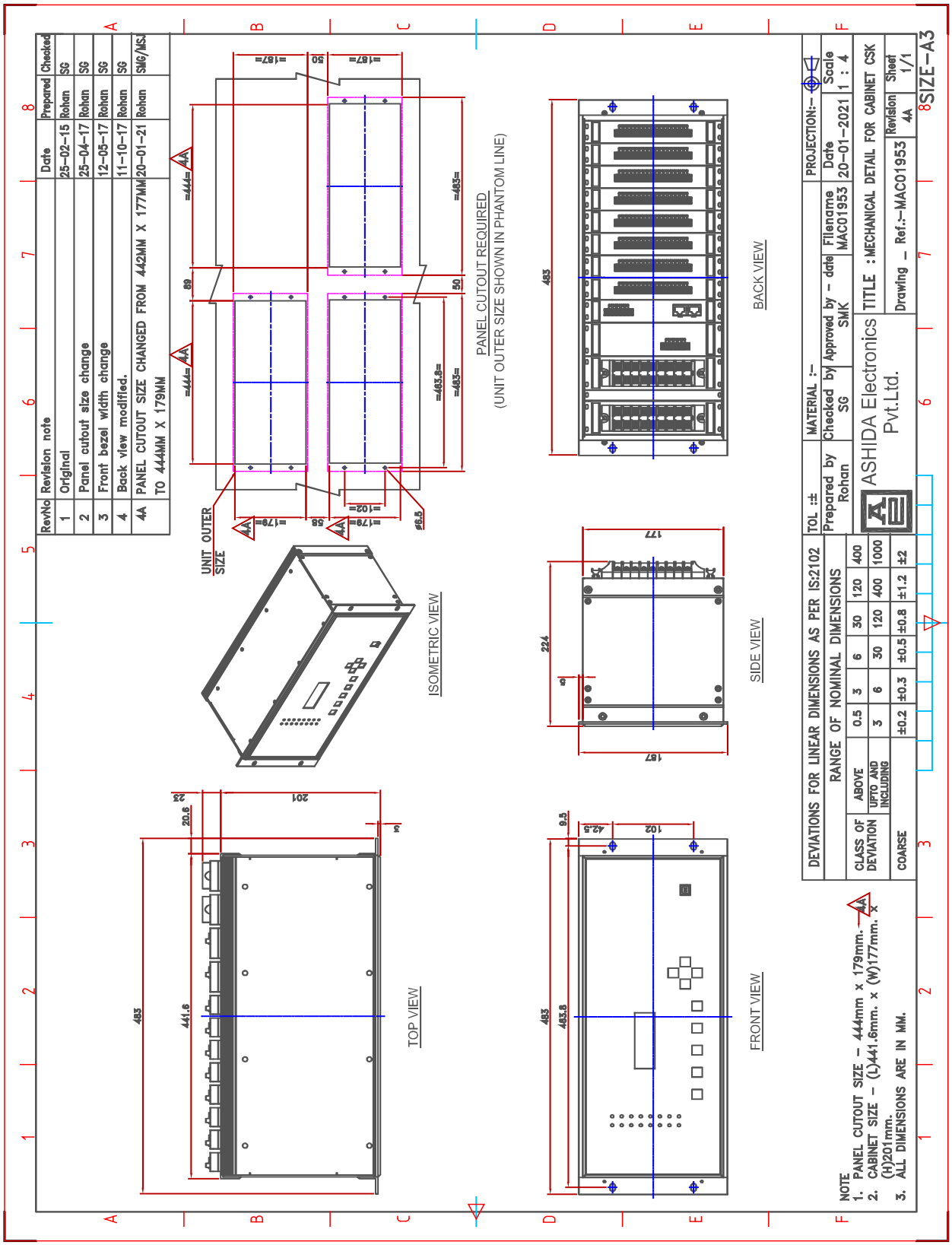
I.	Drawing References	: For Cabinet Type	MAC01953
		: For Back Connections	RLY07102
		: For Typical External Connections	ABD07102

Mounting Information:

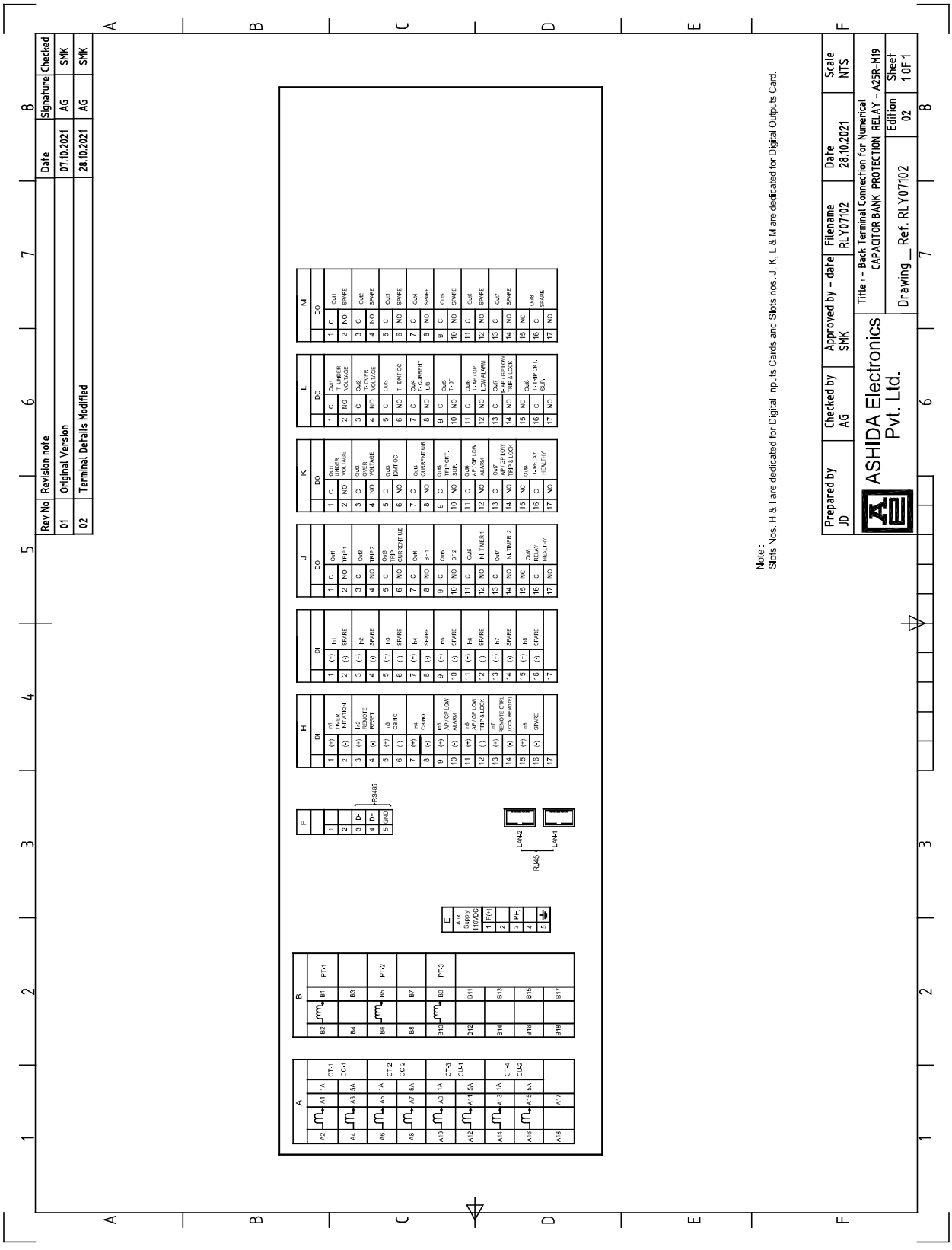


A25R 19” Modular – Rack mounting arrangement

Mechanical Details :

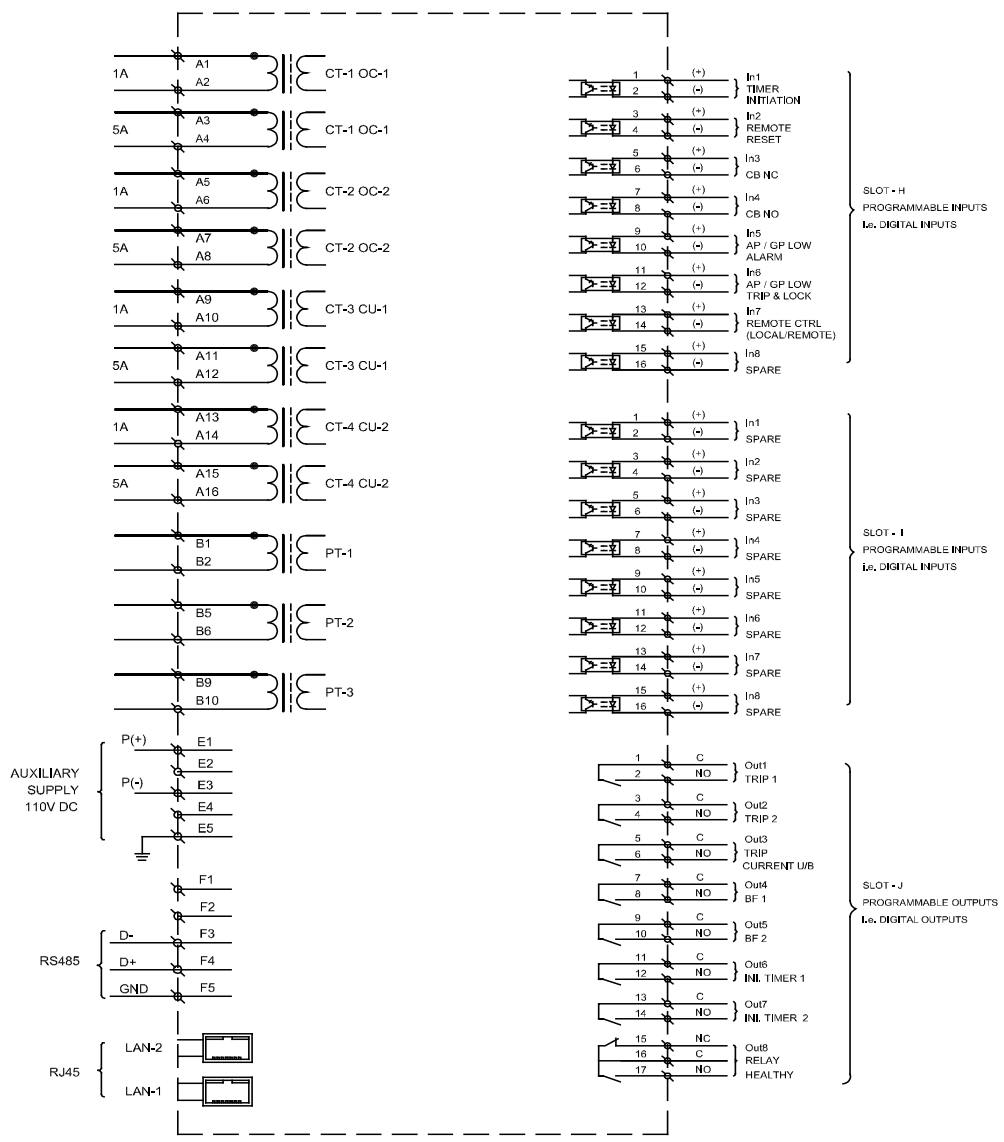


Back Terminal Details :



Electrical Connection Details :

Rev No	Revision note	Date	Signature	Checked
01	Original Version	07.10.2021	AG	
02	Terminal Details Modified	28.10.2021	AG	



Note :
Slots Nos. H & I are dedicated for Digital Inputs Cards and Slots nos. J, K, L & M are dedicated for Digital Outputs Card.

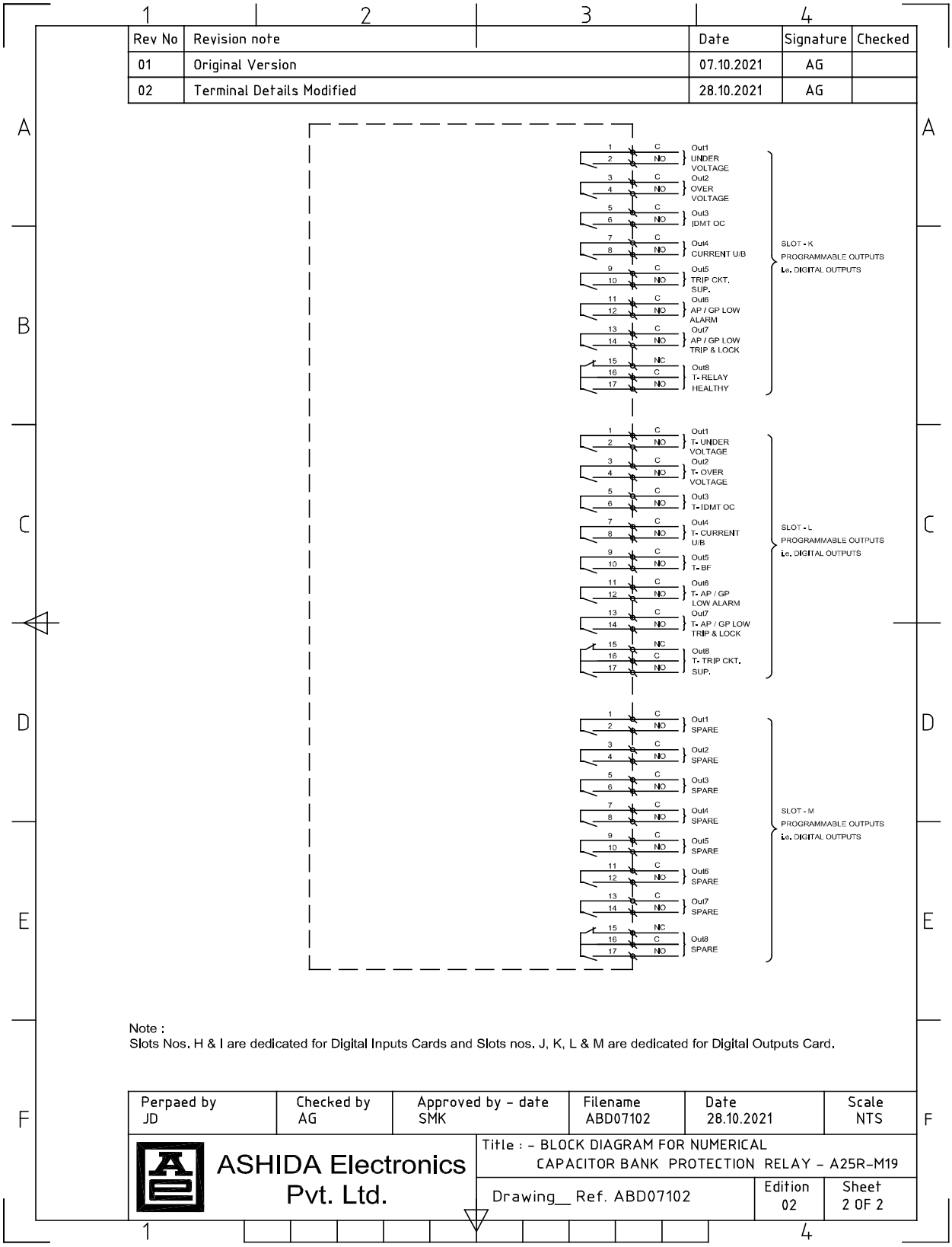
Perpaed by	Checked by	Approved by – date	Filename	Date	Scale
JD	AG	SMK	ABD07102	28.10.2021	NTS

ASHIDA Electronics Pvt. Ltd.

Title : – BLOCK DIAGRAM FOR NUMERICAL CAPACITOR BANK PROTECTION RELAY – A25R-M19

Drawing__ Ref. ABD07102 | Edition 02 | Sheet 1 OF 2

Rev No	Revision note	Date	Signature	Checked
01	Original Version	07.10.2021	AG	
02	Terminal Details Modified	28.10.2021	AG	



Note :
Slots Nos. H & I are dedicated for Digital Inputs Cards and Slots nos. J, K, L & M are dedicated for Digital Outputs Card.

Perpaed by	Checked by	Approved by – date	Filename	Date	Scale
JD	AG	SMK	ABD07102	28.10.2021	NTS

ASHIDA Electronics Pvt. Ltd.

Title : – BLOCK DIAGRAM FOR NUMERICAL CAPACITOR BANK PROTECTION RELAY – A25R–M19

Drawing__ Ref. ABD07102 | Edition 02 | Sheet 2 OF 2

General Specifications:

AC Current Inputs:

1A Nominal

5A Nominal

Thermal Withstand Capacity:

40 X In for 1s

4 X In for Continuous

Burden Rating:

< 0.2VA for 1A Nominal

< 0.2VA for 5A Nominal

AC Voltage Inputs:

1.15 X Vn for Continuous

1.5 X Vn for 10s

Over Voltage Category III

Pollution Degree 2

Rated Insulation Voltage: 2.5kV

Burden: <0.2VA

System Frequency:

50Hz / 60Hz

Frequency Tracking: 45 – 55Hz for 50Hz and 55 55 – 65Hz for 60Hz

Power Supply:

Range: 110 V DC +15%, -30%

Burden: < 20 Watt

Digital Outputs:

Continuous carry: 5A at 110V DC

Make: 30A for 200 ms at 110V DC

Breaking capacity: 1000 watts @ 110Vdc resistive, 30 watts @ 110Vdc inductive (L/R = 45ms)

Digital Inputs:

Operating range: 77 – 230 Vdc

Communication Ports:

Front Port – USB

Rear Ports – RJ45 (10-100/Base T Copper) & RS485

Fiber Optic Port (Optional)

Operating Temperature:

Operating Temperature: -25^{O}C to +65^{O}C

Storage Temperature: -25^{O}C to +70^{O}C

Humidity: 95% RH

Weight: < 7.5 kg Approximate

Ordering Information:

Ordering Information												
	1-4	5	6	7	8	9	10	11	12	13	14	15
Model	A25R	X	X	X	X	X	X	X	X	X	X	X
Example	A25R	M	0	0	2	0	3	1	2	3	3	H
CAPACITOR BANK PROTECTION												
Cabinet Details												
Modular Version		M										
Variant												
2x25			0									
Language												
English				0								
Protocol												
IEC 103 (for all other protocol 103 will native)					0							
IEC 61850					2							
CT / PT												
4CT, CT Selection: 1A/5A, 3PT: 110.0V						0						
Digital Outputs												
16 DO							1					
32 DO							3					
Digital Inputs												
16 DI								1				
32 DI								3				
DI Setting Threshold												
18VDC									0			
35VDC									1			
77VDC									2			
154VDC									3			
Auxiliary Supply												
24VDC – 230 VDC										2		
110VDC										3		
Cabinet Details												
Modular Version M-19											3	
Communication Ports												
Disable / No Rear Port												0
RS-485 Rear Port												B
10/100 Base-T Ethernet RJ45 Rear Port												C
10/100 Base-T Ethernet RJ45 Rear Port & RS-485 Rear Port												E

DUAL 10/100 Base-T Ethernet RJ45 Rear Port	F
DUAL 10/100 Base-T Ethernet RJ45 Rear Port & RS-485 Rear Port	H
DUAL 10/100 Base-T Ethernet RJ45 Rear Port & RS-485 Rear Port + IRIGB Port	M
DUAL FO Ethernet Rear Port & RS-485 Rear Port	N

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