

MULTIFUNCTION POWER PROTECTION RELAYS
CONTROL & RELAY PANEL
SCADA SYSTEM FOR SUBSTATION AUTOMATION
SMART GRID SOLUTIONS



FEEDER PROTECTION
TRANSFORMER PROTECTION
RMU PROTECTION
MOTOR PROTECTION
TRACTION PROTECTION



Protection Relays

Feeder Protection Relay

	ANSI Code	ADR 241C	ADR 241A	ADR 241B	ADR 245B	ADR 211C
IDMT/ DT Over current Protection	51	1	1	3	3	1
Instant /DT Over current Protection	50	1	1	1	1	1
Neutral/Ground IDMT/DT Over current Protection	51N	1	1	2	2	
Neutral/Ground Instant/DT Over current Protection (stages)	50N	1	1	1	1	
Negative Sequence Over current	46			■	■	
CB Failure	50BF			■	■	■
Under Voltage / Over Voltage	27/59				■	
Directional phase over current/ Neutral	67/67N				■	
Autocloser / 4 Nos of Shots	79			■	■	
Cold load pickup	CLP	■	■	■	■	

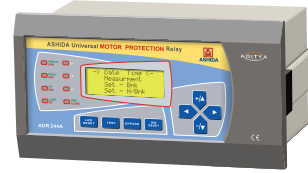
CONTROL FUNCTION

	ADR 241C	ADR 241A	ADR 241B	ADR 245B	ADR 211C
Trip circuit supervision		■	■	■	■
Self-monitoring(diagnostic)				■	■
Disturbance records:		■	■	■	■
Faults Records		■	■	■	■
Event Records/ Event logging		■	■	■	■

COMMUNICATION

	ADR 241C	ADR 241A	ADR 241B	ADR 245B	ADR 211C
Local HMI		■	■	■	■
Comm. Port		■	■	■	■
MODBUS / IEC-103 Protocols		■	■	■	■
IEC61850 available			■	■	
Programmable LEDs		■	■	■	■

Non Communicable Relay: ADR 141A / ADR 131A / ADR141C

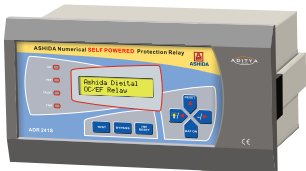


Motor Protection Relay

	ANSI Code	ADR 244A	ADR 244B
IDMT/ DT Over current Protection	51	2	2
Instant /DT Over current Protection	50	1	1
Neutral/Ground IDMT/DT Over current Protection (Stages)	51N	2	2
Instant /DT Neutral/Ground Over current Protection	50N	1	1
Negative Sequence Over current	46	■	■
Phase Reversal Protection	46R	■	■
Prolonged start (Excessive long start)	48	■	■
Locked Rotor during Starting	51S(51MS)	■	■
Stall Rotor/Locked Rotor Protection	51LR	■	■
Motor Re-Acceleration authorization	27LV		■
Excess No of starts (No. of start limitation)	66	■	■
Anti-backspin	ABS		■
Thermal Overload Protection	49	■	■
CB Failure	50BF	■	■
Under-Voltage/ Over-Voltage/ Residual overvoltage	27/ 59/59N		■
Directional Power Protection	32		■
Reverse Power Protection	32R		■
Out of step/ Power factor Protection	55		■
Under / Over frequency Protection	81U/81O		■
3 Ph Voltage Check			■
Latching output contacts	86	■	■

CONTROL FUNCTION

	ADR 244A	ADR 244B
Trip circuit supervision	74TC	■
Self-monitoring		■
Emergency restart	66/86	■
Disturbance records		■
Faults Records / Event Records		■
Communication Port		■
Digital Input synchronization		■
IEC-103 Protocols		■
Local HMI		■



Horizontal



Draw Out



Vertical



Vertical (Compact)

Self Powered RMU Protection Relays ADR 241S

	Vertical	Horizontal	Draw Out	Vertical (Compact)
Over Current IDMT/DMT Protection	■	■	■	■
Earth Fault IDMT/DMT Protection	■	■	■	■
In Rush Current Blocking	■	■	■	■
Cold Load Pick Up	■	■	■	■
Latching type relay for Ann.	■	■	■	■
Non Latching relay for Trip			■	
Contact Protection Healthy			■	
Internal Battery	■	■	■	■
External Battery			■	
Self Monitoring (Diagnostic)	■	■	■	■
Dual Power	■	■	■	■
Up to 5 Fault Memory	■	■	■	■
Local HMI	■	■	■	■
Mechanical Flag			■	
Serial Communication Port	RS 232	RS 232	USB	USB
Parallel Communication Port (RS 485)	■	■	■	■
Flush Mounting		■	■	
Bracket Mounting	■			■
Draw Out Cabinet			■	

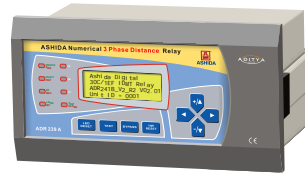
Self Powered Design Suitable for RMU Automation



Trip CIRCUIT Supervisory Relay ATSR31A

Control Supply	: 24 / 30 / 110 / 220 VDC
Aux. annunciation supply	: 24 / 30 / 110 / 220VDC.
Trip coll DC resistance	: To be less then 500 Ohms
Operating Time	: 1.0 sec
Control & aux. supply	: Can be made parallel
Supervision	: Pre Closing & Post Closing

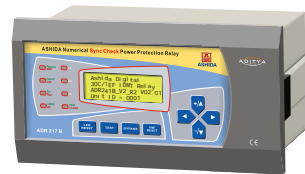
Note: Non Communicable Relays are also available.
For more details please visit www.ashidaelectronics.com



3 phase Numerical Distance Protection Relay ADR 239A

Independent Polygonal / Mho Characteristics for Phase to Ground & Ph-Ph fault

- Five Independent zone of Protection
- Power Swing Detection
- Load Encroachment
- Settable SOTF and Auto Recloser
- Backup Over/ Earth fault protection (DIR / NON DIR)
- Under/over voltage protection
- C B failure
- Disturbance Recorder
- IEC 60870-103 / IEC 103 Protocol
- Trip circuit supervision
- 1000 nos. Event Records
- Fuse Fail Detection
- Frequency 50 / 60 Hz
- Temperature Range -10 to 55°C



ASHIDA Numerical Sync Check Power Protection Relay ADR 217B

- Definite time sync check protection for paralleling two power sources.
- Adjustable phase angle limit
- Adjustable time delay
- Large LCD display for parameter & settings
- Online display of line voltage & bus voltage, CB status & all other digital & physical status.
- Self diagnostic
- Latching last 10 faults with real time



Flag Relay

- Suitable for interlocking, signalling etc. in protection, control and industrial systems
- High Voltage Insulation
- Low Power Consumption
- Medium or light duty operation and long mechanical life
- Indication Flags
- High resistance to shock and vibration
- Contacts conform to IS: 3231. Duty: 1250 VA
- Attracted armature type compact design with positive action
- Din Standard size compact cabinet
- Simple in construction



Transformer Differential Protection Relay

	ANSI Code	ADR 233A	ADR 233B
IDMT/ DT Over current Protection (stages)	51	-	2
Instant/DT Over current Protection(stages)	50	-	1
Neutral/Ground IDMT/DT Over current Protection	51N	-	2
Neutral/Ground Instant/DT Over current Protection (stages)	50N	-	1
Restricted Earth Fault	64N/87N		■
Negative Sequence Over current	46		■
CB Failure	50BF		■
UnderVoltage/Over Voltage	27/59		■
Transformer Differential	87T	■	■
Over Excitation	24		■
Self-monitoring (diagnostic)		■	■
Disturbance records		■	■
Faults Records / Event Records		■	■
Communication Port		■	■
Digital Input synchronization		■	■
MODBUS IEC-103 Protocols		■	■
IEC61850 availability			■
Local HMI		■	■



Under/ Over voltage Protection Relay

	ADR 232A	ADR 212A	ADR 212E
No of phase Under/Over voltage protection	3	1	
Neutral unbalance voltage protection		■	
1 phase Neutral displacement protection			■
Backlit LCD display for settings	■	■	■
Display of fault voltage / load voltage	■	■	■
Self supervision	■	■	■
Faults Latching	■	■	■
Wide under voltage range	■	■	
Wide over voltage range	■	■	
Password protection for settings	■	■	■
IEC 103 & MODBUS protocol support		■	
RS 232 & RS 485 ports for communication	■		



Auxiliary Relay

Model	Function
AVAJH 13	High Speed Master Trip Relay (1 Element)
AVAJH 23	High Speed Master Trip Relay (2 Element)
AVAJH 33	High Speed Master Trip Relay (3 Element)
AVAJHM 23	High Speed Tripping Relay (2 Element In Series)
AVAJHM 33	High Speed Tripping Relay (3 Element In Series)
AVA 11	Voltage Operated Aux. Relay (1 Element)
AVA 21	Voltage Operated Aux. Relay (2 Element)
AVA 33	Voltage Operated Aux. Relay (3 Element)
AVA 21D	DC Failure Alarm Relay

Note : For other models Please refer detail technical catalogues

Specification	
Operation Limits	: 50 to 120% of rating for AVAJH 70 to 110% for AVA
Operational Time	: 10 - 15 mS at normal rated voltage for AVAJH, 20 - 25 mS for AVA
Coil Rating	: 24V / 30V / 110V / 220V or AC
Burden	: 30/24V, 3VA, 110V, 2VA, 220V, 4VA
Operational Indicator	: Mechanical Flag (Red for Alarm, white for Normal)
Contacts	: 4 pair of Hand Reset
Conforms	: IS:3231 fully for all requirements
Contact Rating	

	Make & Carry Continuous	Make & Carry For 3.0 scc.	Break
AC	1250 VA with maxima of 5 A & 660 V.	7500 VA with maxima of 30 A & 660 V.	1250 VA with maxima of 5 A & 660V.
DC	1250 VA with maxima of 5 A & 660 V.	7500 VA with maxima of 30 A & 660V.	100W Resistive 50WInductive

Numerical U/O Frequency Monitoring Relay- AUOFMR2



- Specification**
- Accurate Frequency monitoring with Crystal Controlled references.
- Self-Calibration and check ON-Site facility inbuilt.
- Two independent set points programmable as Under or Over Frequency.
- Communication Port for remote SCADA.
- AC Input from 230 / 110 / 63 V AC PT for Frequency Sensing.

- Frequency setting Range :
Over Freq. 50.01 Hz to 65.00 Hz in steps of 0.01 Hz.
Under Freq. 40.00 Hz to 50.00 Hz in steps of 0.01 Hz.

Series Trip IDMT Relay (Type : SPR3H S/T, SPR3PH S/T, SPR3 S/T & SPR3P S/T)



- Feature**
- The relay is specially designed for situations where external battery power source is not available
- Wide range of TRIP point selections: 50 - 200% (O/C), 20 - 80% (E/F).
- Selectable Curve: 10 N - 3 Sec. or 10N - 1.3 Sec.
- 2OC + 1EF or 3OC relay is available in single cabinet.
- Draw-out Cabinet.
- Resetting Current : Less than 80% of set value.
- Control Contacts : The heavy-duty NC contact for tripping and two sets of NO contacts for Annunciation.



SCADA system for sub station Automation



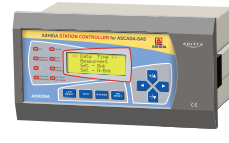
FCCM3



FCCM5



FCCM4B



Station Controller



FRTU

Bay level SCADA module for use in ASCADA based substation Automation			Serves as a single database for entire system	Suited for RMU Automation
Continuously monitors upto max 16 nos. digital inputs with 1 msec resolution	Continuously monitors upto max 8 nos. digital inputs & 8 digital outputs with 1 msec resolution	Continuously monitors upto max 4 nos. analog inputs with 1 msec resolution	SC has 2 RS 485 ports for communicating to slaves like FCCM & Relay units and Modbus devices & 2 RS232 ports for communicating with two independent masters	Supports max of 6 IO cards. Can be expanded using extension units
Any change is recorded with a time stamp with msec accuracy upto 500 events. This is stored in internal RAM until it is transferred to station controller			Data sent by the relays or FCCMs is sent to the control center	Clock of the FRTU can be time synced from remote master or GPS time server or through SNTP protocol.
Each card with independent microcontroller			Supports protocols like IEC 101/ SPORT,104 at master end and 1 IEC103 & Modbus at slave end	Supports communication on GSM/CDMA/GPRS
Highly stable design. Not affected by high tension switchgear operations			Highly stable design.	Specially Designed as per R-APDRP model



Digital Traction Protection



ASHIDA Digital Traction Protection Relays for Railways

Ashida Electronics is one of the major suppliers of Protection Relays and Control Panel for Traction Systems of Indian Railways using latest numerical technology and having IEC open protocol so that it can be connected to SCADA System. Ashida also supplies complete protection panels..

- ADR219A:** ASHIDA Numerical Integrated Digital Traction Feeder Protection Relay
- ADR221B:** ASHIDA Numerical O/C + REF Protection Relay For Transformer
- ADR213B:** ASHIDA Numerical Single Pole Differential Relay
- ADR213D:** ASHIDA Numerical Low Impedance Bus bar protection Relay for HT side
- ADR211E:** ASHIDA Numerical High Impedance BUS Bar Protection Relay
- ADR211B:** ASHIDA Numerical Definite Time Over Current Protection Relay
- ADR 212B:** ASHIDA Numerical Under/over voltage for Capacitor bank
- ADR216B:** ASHIDA Numerical Reverse Power Protection Relay
- ADR217B:** ASHIDA Numerical Sync-Check Power Protection Relay
- ADR219C:** ASHIDA Vectorial Delta-I Type high resistive fault selective relay.
- APFO/2 :** The APFO/2 is designed as pento flash over relay.



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