ASHIDA Smart Solutions for Power Protection & Control

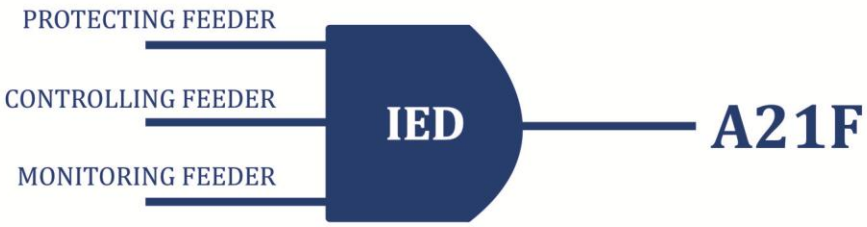
DESIGNED DEVELOPED MANUFACTURED MADE IN INDIA ASHIDA

A21 SERIES

A21F

ASHIDA has designed economical & reliable Multifunction A21F Protection & Control System. The simple and compact construction of A21 series, A21F relay provides integrated Protection, Control and Monitoring functions for Over head Transmission Lines, Underground cables, and Distributed Feeders.

A21F numerical multifunction relay designed for Transmission line protection, Underground cable & feeder protection, Machine protection, and shunt capacitor bank protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system. A21F relay apply for protection, control & monitoring of radial and ring main feeder to achieve sensitivity and selectivity on phase and ground faults.



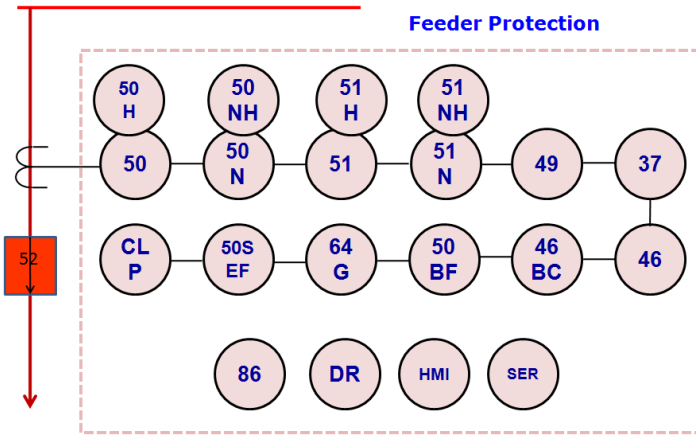
Functional Overview: Key Protection & Control Functions:

- Two Independent Settings Groups
- Thermal Overload Protection (49)
- Non Directional Phase & Ground Over Current Function (50/51/51N/50N)
- Three Independent Stages for Non Directional Phase Over Current Protection.
- Three Stages of Non Directional Ground Over Current Protection
- Internally Derived / Externally measured Ground Over Current (3I0>) Protection.
- Sensitive earth fault Protection (50SEF)
- Inverse time Over Current Protection (IEC & IEEE curves)
- Harmonic blocking and unblocking feature.
- Cold load pick up
- Switch ON To Fault
- High Impedance Restricted Earth Fault Protection (64R)
- Inverse & Definite time Negative Sequence Over Current Protection (46)
- Broken Conductor Protection (46BC)
- Breaker Failure detection (50BF)
- Trip circuit supervision function
- Programmable Inputs & Outputs, Watchdog Contact
- CB Close / Trip from HMI
- Programmable & Target LEDs for indication with dual colours (8 nos.)
- Self Supervision of relay
- Metering function.
- Disturbance Recording (5 nos.)
- Event Recording (512 nos.)
- Fault Recording on HMI display (5nos.)
- Non-Volatile memory
- Fully communicable with IEC standard open protocol IEC60870-5-103, MODBUS & DNP
- Separate communication port for SCADA Communication
- PC front port communication for convenient relay settings
- User friendly local operation with key pad
- Liquid crystal display (16x2) with backlight
- Password Protection.

ANSI CODE	Description
CLP	Cold Load Pick Up
SOTF	Switch ON To Fault
37	Under Current Protection
46	Negative Phase Sequence Protection
46BC	Broken Conductor Detection
49	Thermal Overload Protection
50	Instantaneous/Definite Time Phase Over Current Protection
51	Inverse Time Phase Over Current Protection
50N	Instantaneous/Definite Time Ground Over Current Protection
50SEF	Sensitive Ground Over Current Protection
51N	Inverse Time Ground Over Current Protection
64G	High Impedance Restricted Earth Fault Protection
50BF	Breaker Failure
86	Lockout (Trip Command)

Applications:

A21F numerical multifunction relay designed for Transmission line protection, Underground cable & feeder protection, Machine protection, and shunt capacitor bank protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system. A21F relay apply for protection, control & monitoring of radial and ring main feeder to achieve sensitivity and selectivity on phase and ground faults.



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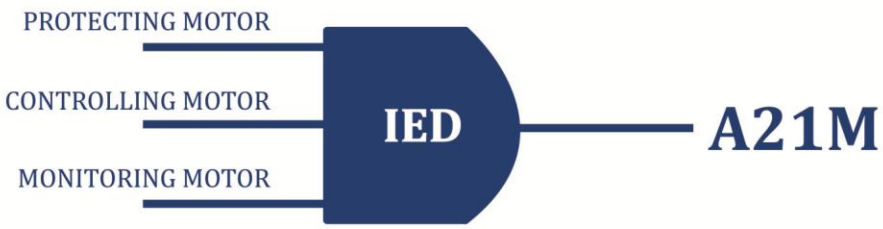
A21 SERIES

A21M

ASHIDA has designed economical & reliable Multifunction A21M Protection & Control System. The simple and compact construction of A21 series, A21M relay provides integrated Protection, Control and Monitoring functions for Electric Motors.

A21M numerical multifunction relay designed for electric motor protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system. A21M relay apply for protection, control & monitoring of radial and ring main feeder to achieve sensitivity and selectivity on phase & ground faults as well as on abnormal conditions.



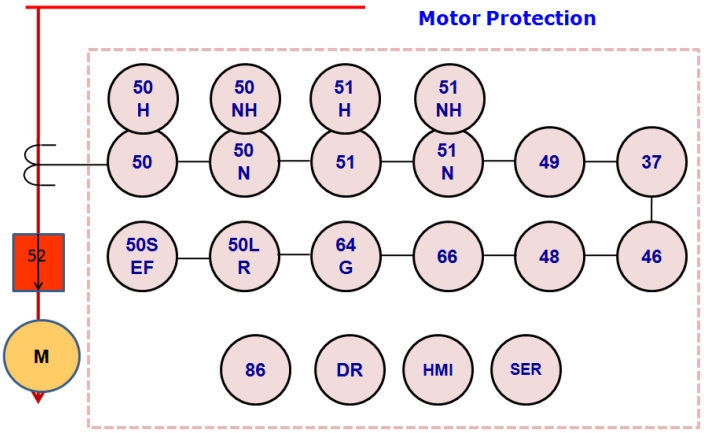
Functional Overview: Key Protection & Control Functions:

- Two Independent Settings Groups
- Thermal Overload Protection (49)
- Non Directional Phase & Ground Over Current Function (50/51/51N/50N)
- Three Independent Stages for Non Directional Phase Over Current Protection.
- Three Stages of Non Directional Ground Over Current Protection.
- Internally Derived / Externally measured Ground Over Current (3I0>) Protection
- Sensitive earth fault Protection (50SEF)
- Inverse time Over Current Protection (IEC & IEEE curves)
- Cold load pickup.
- High Impedance Restricted Earth Fault Protection (64R)
- Inverse & Definite time Negative Sequence Over Current Protection (46)
- Locked rotor / Motor stall Protection (50LR)
- Prolong start Protection (66)
- Too many starts / Number starts function
- Phase reversal Protection (47)
- Under current Protection (37)
- Breaker Failure detection (50BF)
- Speed Switch Input
- Emergency Start
- Trip circuit supervision function
- Programmable Inputs & Outputs, Watchdog Contact
- CB Close / Trip from HMI
- Programmable & Target LEDs for indication with dual colours (8 nos.)
- Self Supervision of relay
- Metering function
- Disturbance Recording (5 nos.)
- Event Recording (512 nos.)
- Fault Recording on HMI display (5nos.)
- Non-Volatile memory.
- Fully communicable with IEC standard open protocol IEC60870-5-103, MODBUS & DNP3.
- Separate communication port for SCADA Communication
- PC front port communication for convenient relay settings
- User friendly local operation with key pad
- Liquid crystal display (16x2) with backlight
- Password Protection.

ANSI CODE	Description
37	Under Current Protection
46	Negative Phase Sequence Protection
50	Instantaneous/Definite Time Phase Over Current Protection
51	Inverse Time Phase Over Current Protection
50N	Instantaneous/Definite Time Ground Over Current Protection
51N	Inverse Time Ground Over Current Protection
50H/NH	Harmonic Blocking/Unbloking
50SEF	Sensitive Ground Over Current Protection
64G	High Impedance Restricted Earth Fault Protection
50BF	Breaker Failure
49	Thermal Overload Protection
50LR	Locked Rotor Protection
48	Prolong Start Protection
66	Number Of Starts
86	Lockout (Trip Command)

Applications:

A21M numerical multifunction relay designed for electric motor protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system. A21M relay apply for protection, control & monitoring of radial and ring main feeder to achieve sensitivity and selectivity on phase & ground faults as well as on abnormal conditions.



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A21 SERIES

A21T

ASHIDA has designed economical & reliable Multifunction A21T Protection & Control System. The simple and compact construction of A21 series, A21T relay provides integrated Protection, Control and Monitoring functions for Transformers.

A21T numerical multifunction relay designed for Transformer, Generator, Motor & Reactor protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system.

PROTECTING TRANSFORMER

CONTROLLING TRANSFORMER

MONITORING TRANSFORMER

IED A21T

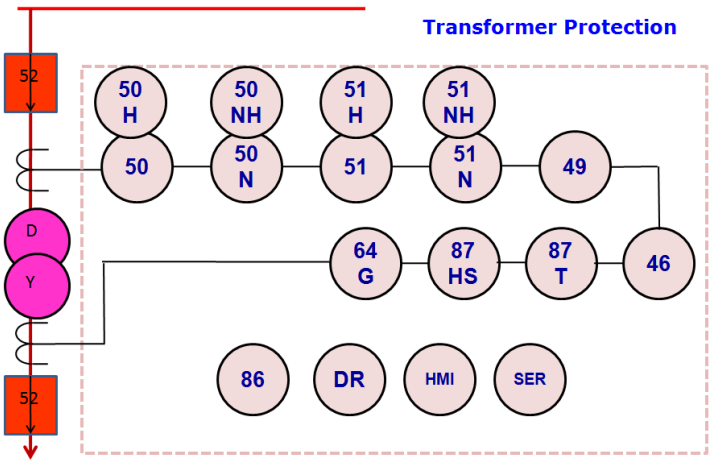
Functional Overview: Key Protection & Control Functions:

- Two Independent Settings Groups
- Two Winding Transformer Phase Differential Protection (87T)
- Non Directional Phase & Ground Over Current Function (50/51/51N/51)
- Three Independent Stages for Non Directional Phase Over Current Protection
- Three Stages of Non Directional Ground Over Current Protection.
- Internally Derived / Externally measured Ground Over Current (3I0>) Protection
- Inverse time Over Current Protection (IEC curves)
- Harmonic blocking and unblocking feature
- High & Low Impedance Ground Differential Protection (REF-64R)
- Inverse & Definite time Negative Sequence Over Current Protection (46)
- Breaker Failure detection (50BF)
- Trip circuit supervision function
- Programmable Inputs & Outputs, Watchdog Contact
- CB Close / Trip from HMI
- Programmable & Target LEDs for indication with dual colours (8 nos.)
- Self Supervision of relay
- Metering function
- Disturbance Recording (5 nos.)
- Event Recording (512 nos.)
- Fault Recording on HMI display (5 nos.)
- Non-Volatile memory
- Fully communicable with IEC standard open protocol IEC60870-5-103, MODBUS, DNP3.
- Separate communication port for SCADA Communication
- PC front port communication for convenient relay settings
- User friendly local operation with key pad
- Liquid crystal display (16x2) with backlight
- Password Protection

Applications:

A21T numerical multifunction relay designed for Transformer, Generator, Motor & Reactor protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system.

ANSI CODE	Description
46	Negative Phase Sequence Protection
49	Thermal Overload Protection
50	Instantaneous/Definite Time Phase Over Current Protection
51	Inverse Time Phase Over Current Protection
50N	Instantaneous/Definite Time Ground Over Current Protection
51N	Inverse Time Ground Over Current Protection
64G	High Impedance Restricted Earth Fault Protection
50BF	Breaker Failure
86	Lockout (Trip Command)
87T	Two Winding Phase Differential Protection



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TRANSFORMER PROTECTION RELAY TYPE ADR233B

Introduction:

ASHIDA has designed economical & reliable Multifunction ADR233B Protection & Control System. The simple and compact construction of ADITYA series ADR233B relay provides integrated Protection, Control and Monitoring functions for Transformers.

Applications:

ADR233B numerical multifunction relay designed for Transformer, Generator, Motor & Reactor protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system.

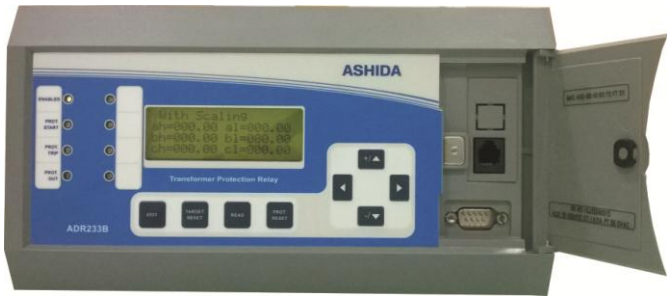
PROTECTING TRANSFORMER

CONTROLLING TRANSFORMER

MONITORING TRANSFORMER

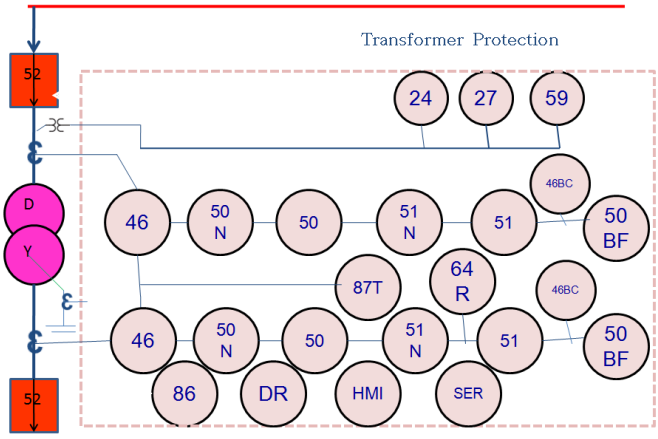
IED — ADR233B

Functional Overview: Key Protection & Control Functions:



- Two Independent Settings Groups
- Two Winding Transformer Phase Differential Protection (87T)
- Non Directional Phase & Ground Over Current Function (50/51/51N/51)
- Three Independent Stages for Non Directional Phase Over Current Protection
- Three Stages of Non Directional Ground Over Current Protection
- Internally Derived / Externally measured Ground Over Current (3I0>) Protection
- Inverse time Over Current Protection (IEC/IEEE curves)
- Harmonic blocking and unblocking feature
- High Impedance Ground Differential Protection (REF-64R)
- Inverse & Definite time Negative Sequence Over Current Protection (46)
- Broken conductor protection (46BC)
- Breaker Failure detection (50BF)
- Under and Over Voltage Protection (27/59)
- Over Excitation Protection (99)
- Trip circuit supervision function
- Programmable Inputs & Outputs
- Programmable & Target LEDs for indication with dual colours (8 nos.)
- Self Supervision of relay
- Metering function
- Disturbance Recording (10 nos.)
- Event Recording (512 nos.)
- Fault Recording on HMI display (10 nos.)
- Non-Volatile memory
- Fully communicable with IEC standard open protocol IEC61850, IEC60870-5-103, MODBUS, DNP3.
- Separate communication port for SCADA Communication
- PC front port communication for convenient relay settings
- User friendly local operation with key pad
- Liquid crystal display (20x4) with backlight
- Password Protection

ANSI Code	Description
27	Under Voltage Protection
46BC	Broken conductor
46	Negative Phase Sequence Protection
50/51	Definite & Inverse Time Phase Over current Protection
50N	Instantaneous/Definite Time Ground Over current Protection
51N	Inverse Time Ground Over current Protection
59	Over Voltage Protection
64G	High / Low Impedance Restricted Earth Fault Protection
50BF	Breaker Failure
86	Lockout (Trip command)
87T	Two winding phase differential Protection



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LINE PROTECTION RELAY TYPE ADR239B

Introduction:

ASHIDA has designed economical & reliable Multifunction ADR239B Protection & Control System. The simple and compact construction of ADITYA series ADR239B relay provides integrated Protection, Control and Monitoring functions for Over head Transmission Lines, Underground cables, and Distributed Feeders.

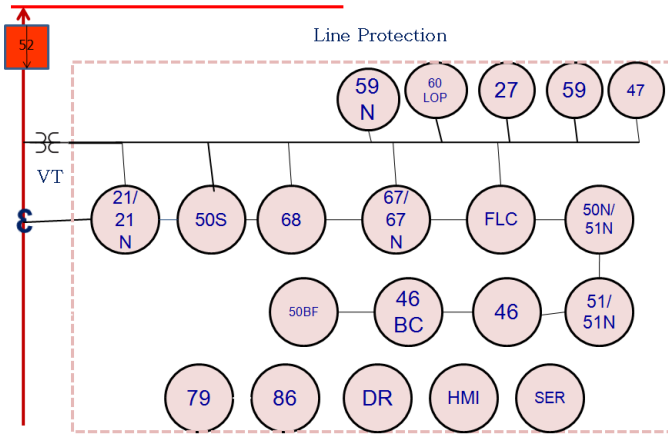
Applications:

ADR239B numerical multifunction machine terminal protection relay designed for Line, Feeder & Machine protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system. ADR239B relay apply for protection, control & monitoring of line radial and ring main feeder to achieve sensitivity and selectivity on phase and ground faults.

Functional Overview: Key Protection & Control Functions:

- Four Independent Settings Groups
- Directional / Non Directional Impedance Function (21/21N)
- Five Independent Impedance Zones (Polygon) settable in forward / reverse direction
- Six Independent Measuring Loop (AB/BC/CA/AN/BN/CN)
- Zone1 extension.
- Switch on to fault (SOTF) function
- Power swing function (68)
- Load encroachment function
- POTT / PUTT scheme
- Directional / Non Directional Phase & Ground Over Current Function (50/51/51N/50N/67/67N)
- Three Independent Stages for Directional/Non Directional Phase Over Current Protection
- Three Stages of Directional/Non Directional Ground Over Current Protection
- Inverse time Over Current Protection (IEC /IEEE curves according to IEC60255)
- Two Stages of Inverse & Definite time Negative Phase Sequence Over Current Protection (46)
- Broken Conductor Protection (46BC)
- Negative Phase Sequence Over Voltage Protection (47)
- Broken conductor Protection (I2/I1 – 46BC)
- Two Stages of Phase Under and Over Voltage Protections (27 /59)
- Positive Sequence Over Voltage Protection.
- Residual Over Voltage Protection (59N).
- Multi shots (4-shots) Auto-reclosing function.
- Breaker Failure detection (50BF)
- VT and CT supervision function
- Trip circuit supervision function
- Programmable Inputs & Outputs
- CB Close / Trip from HMI
- Programmable & Target LEDs for indication with dual colours (16 nos.)
- Self Supervision of relay
- Metering function.
- Disturbance Recording (10 nos.)
- Event Recording (1028 nos.)
- Fault Recording on HMI display (10nos.)
- Fault locator.
- Non-Volatile memory.
- Fully communicable with IEC standard open protocol IEC60870-5-103, MODBUS & IEC 61850.
- Separate communication port for SCADA Communication
- PC front port communication for convenient relay settings
- User friendly local operation with key pad
- Large Liquid crystal display (20X4) with backlight
- Password Protection.

ANSI CODE	DESCRIPTION
21	Phase Impedance Protection
21N	Ground Voltage Protection
27	Under Voltage Protection
46	Negative Phase Sequence Protection
46BC	Broken Conductor Detection
47	Negative Phase Sequence Over Voltage Protection
50	Instantaneous/Definite Time Phase Over current Protection
51	Inverse Time Phase Over current Protection
50N	Instantaneous/Definite Time Ground Over current Protection
51N	Inverse Time Ground Over current Protection
59	Over Voltage Protection
59N	Residual Over Voltage Protection
FLC	Fault locator
67P	Directional Phase Over current Protection
67N	Directional Ground Over current Protection
68	Out of Step Protection
50BF	Breaker Failure
VTS	VT Supervision Detection
CTS	CT Supervision Detection
79	Auto reclosing
86	Lockout (Trip command)



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FEEDER PROTECTION RELAY ADR241A

Introduction:

ASHIDA has designed economical & reliable Multifunction ADR241A Draw-out/Non draw-out Protection & Control System. The simple and compact construction of Aditya series, ADR241A relay provides integrated Protection, Control and Monitoring functions for Sub Transmission Lines, Underground cables, and Distributed Feeders. Draw-out/Non draw-out versions are available based on ordering information.

Applications:

ADR241A numerical multifunction relay designed for Sub Transmission line protection, Underground cable & Distributed feeder protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system. ADR241A relay apply for protection, control & monitoring of radial and ring main feeder to achieve sensitivity and selectivity on phase and ground faults.

PROTECTING FEEDER

CONTROLLING FEEDER

MONITORING FEEDER

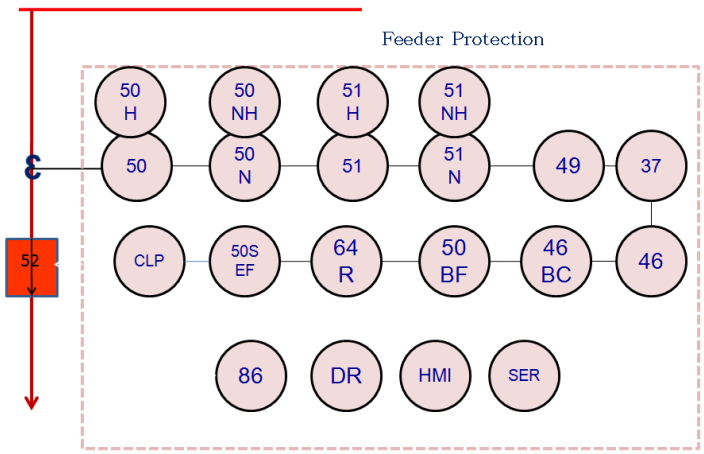
IED

ADR241A

Functional Overview: Key Protection & Control Functions:

- Draw-out / Non draw-out cabinet
- Two Independent Settings Groups
- Thermal Overload Protection (49)
- Non Directional Phase & Ground Over Current Function (50/51/51N/51)
- Two Independent Stages for Non Directional Phase Over Current Protection
- Two Stages of Non Directional Ground Over Current Protection
- Internally Derived / Externally measured Ground Over Current (3I0>) Protection
- Inverse time Over Current Protection (IEC & IEEE curves) + User define curve
- Harmonic blocking and unblocking feature.
- Cold load pick up.
- High Impedance Restricted Earth Fault Protection (64R).
- Inverse & Definite time Negative Sequence Over Current Protection (46)
- Broken Conductor Protection (46BC)
- Breaker Failure detection (50BF)
- Trip circuit supervision function
- Programmable Inputs & Outputs
- CB Close / Trip from HMI
- Target LEDs for indication with dual colours (4 nos.)
- Self Supervision of relay
- Metering function
- Disturbance Recording (10 nos.)
- Event Recording (512 nos.)
- Fault Recording on HMI display (10 nos.)
- Non-Volatile memory
- Fully communicable with IEC standard open protocol IEC60870-5-103
- Separate communication port for SCADA Communication
- PC front port communication for convenient relay settings
- User friendly local operation with key pad
- Liquid crystal display (16x2) with backlight
- Password Protection.

ANSI Code	Description
CLP	Cold load pick up
37	Under current Protection
46	Negative Phase Sequence Protection
46BC	Broken Conductor Detection
49	Thermal overload Protection
50	Instantaneous/Definite Time Phase Over current Protection
51	Inverse Time Phase Over current Protection
50N	Instantaneous/Definite Time Ground Over current Protection
50SEF	Sensitive Ground Over current Protection
51N	Inverse Time Ground Over current Protection
64G	High Impedance Restricted Earth Fault Protection
50BF	Breaker Failure
86	Lockout (Trip command)



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FEEDER PROTECTION RELAY TYPE ADR241C

Introduction:

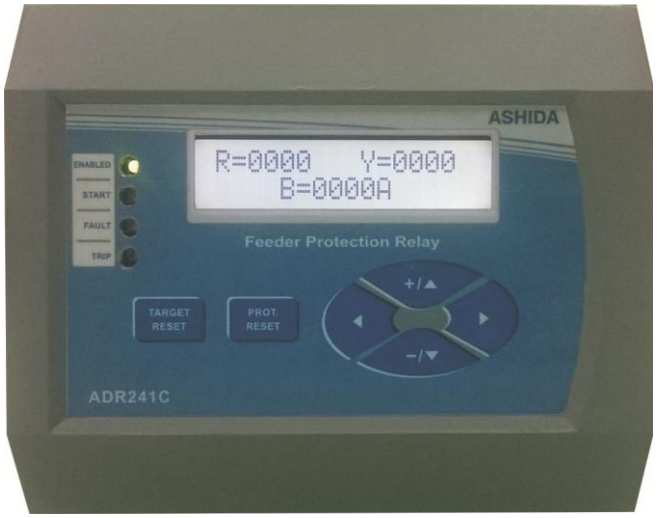
ASHIDA has designed economical & reliable Multifunction ADR141C/241C compact Protection relay. The simple and robust construction of Aditya series, ADR141C/241C relay provides integrated Protection and Monitoring functions for Distributed Feeders. ADR141C is non communicable version and 241C is communication version available based on ordering information.

Applications:

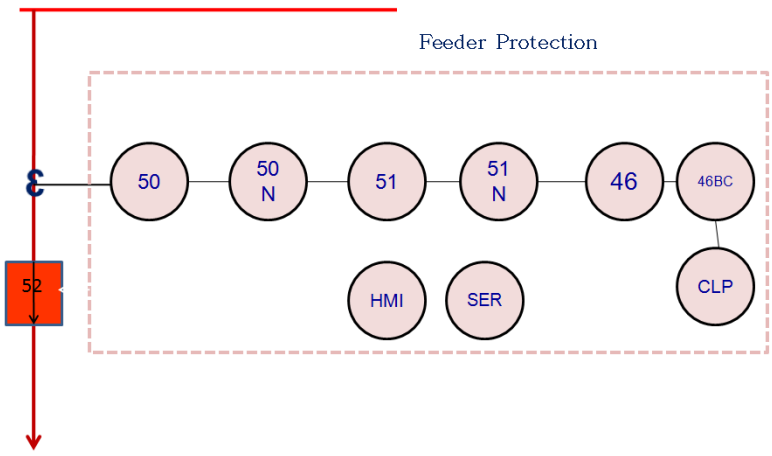
ADR141C/241C numerical multifunction relay designed for Distributed feeder protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical network. ADR141C/241C relay apply for protection & monitoring of radial and ring main feeder to achieve sensitivity and selectivity on phase and ground faults.

Functional Overview: Key Protection & Control Functions:

- Non Directional Phase & Ground Over Current Function (50/51/51N/51)
- Two Independent Stages for Non Directional Phase Over Current Protection
- Two Stages of Non Directional Ground Over Current Protection
- Internally Derived / Externally measured Ground Over Current (3I0>) Protection
- Inverse time Over Current Protection (IEC & IEEE curves) + User define curve
- Cold load pick up.
- Inverse & Definite time Negative Sequence Over Current Protection (46)
- Broken Conductor Protection (46BC)
- Trip circuit supervision function
- Programmable Inputs & Outputs
- Target LEDs for indication with dual colours (4 nos.)
- Self Supervision of relay
- Metering function
- Event recording (100 nos.)
- Fault Recording on HMI display (5 nos.)
- Non-Volatile memory
- Communicable with IEC standard open protocol IEC60870-5-103 and Modbus (available in 241C version)
- SCADA Communication (available in 241C version)
- PC communication for convenient relay settings (available in 241C version)
- User friendly local operation with key pad
- Liquid crystal display (16x2) with backlight
- Password Protection
- Light weight
- Compact size and suitable for LV feeder application



ANSI Code	Description
CLP	Cold load pick up
46	Negative Phase Sequence Protection
46BC	Broken Conductor Detection
50	Instantaneous/Definite Time Phase Over current Protection
51	Inverse Time Phase Over current Protection
50N	Instantaneous/Definite Time Ground Over current Protection
51N	Inverse Time Ground Over current Protection
86	Lockout (Trip command)



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MOTOR PROTECTION RELAY TYPE ADR244A

Introduction:

ASHIDA has designed economical & reliable Multifunction ADR244A Draw-out/Non draw-out Protection & Control System. The simple and compact construction of Aditya series, ADR244A relay provides integrated Protection, Control and Monitoring functions for Induction motors. Draw-out/Non draw-out versions are available based on ordering information.

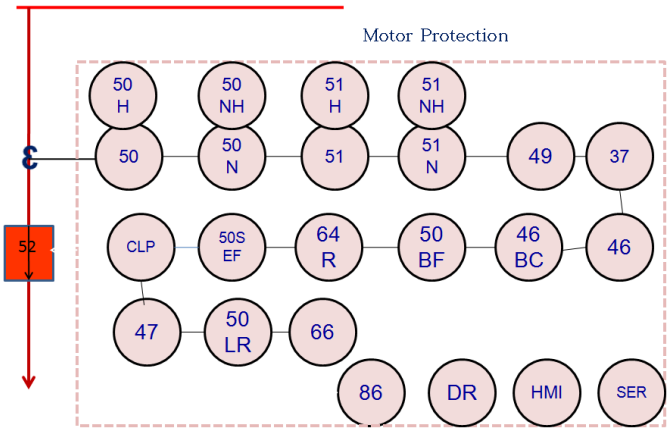
Applications:

ADR244A numerical multifunction relay designed for induction motor protection/feeder protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system. ADR244A relay apply for protection, control & monitoring of motor/radial and ring main feeder to achieve sensitivity and selectivity on phase, ground faults and unbalance load conditions.

Functional Overview: Key Protection & Control Functions:

- Draw-out / Non draw-out cabinet
- Two Independent Settings Groups
- Thermal Overload Protection (49)
- Non Directional Phase & Ground Over Current Function (50/51/51N/51)
- Two Independent Stages for Non Directional Phase Over Current Protection
- Two Stages of Non Directional Ground Over Current Protection
- Internally Derived / Externally measured Ground Over Current (3I0>) Protection
- Inverse time Over Current Protection (IEC & IEEE curves) + User define curve
- Harmonic blocking and unblocking feature.
- Cold load pick up.
- High Impedance Restricted Earth Fault Protection (64R).
- Inverse & Definite time Negative Sequence Over Current Protection (46)
- Broken Conductor Protection (46BC)
- Phase reversal Protection (47)
- Locked rotor / Motor stall Protection (50LR)
- Breaker Failure detection (50BF)
- Prolong start Protection (66)
- Too many starts / Number of starts function
- Trip circuit supervision function
- Programmable Inputs & Outputs
- CB Close / Trip from HMI
- Target LEDs for indication with dual colours (4 nos.)
- Self Supervision of relay
- Metering function
- Disturbance Recording (10 nos.)
- Event Recording (512 nos.)
- Fault Recording on HMI display (10 nos.)
- Non-Volatile memory
- Fully communicable with IEC standard open protocol IEC60870-5-103
- Separate communication port for SCADA Communication
- PC front port communication for convenient relay settings
- User friendly local operation with key pad
- Liquid crystal display (16x2) with backlight
- Password Protection.

ANSI Code	Description
CLP	Cold load pick up
37	Under current Protection
46	Negative Phase Sequence Protection
46BC	Broken Conductor Detection
47	Phase Reversal Detection
49	Thermal overload Protection
50	Instantaneous/Definite Time Phase Over current Protection
51	Inverse Time Phase Over current Protection
50N	Instantaneous/Definite Time Ground Over current Protection
50LR	Locked rotor/Motor stall Protection
51N	Inverse Time Ground Over current Protection
64G	High Impedance Restricted Earth Fault Protection
66	Number of starts
50BF	Breaker Failure
86	Lockout (Trip command)



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ASHIDA Smart Solutions for Power Protection & Control

DESIGNED DEVELOPED MANUFACTURED MADE IN INDIA ASHIDA

MOTOR PROTECTION RELAY TYPE ADR244B

Introduction:

ASHIDA has designed economical & reliable Multifunction ADR244B Protection & Control System. The simple and compact construction of ADITYA series, ADR244B relay provides integrated Protection, Control and Monitoring functions for Electric Motors.

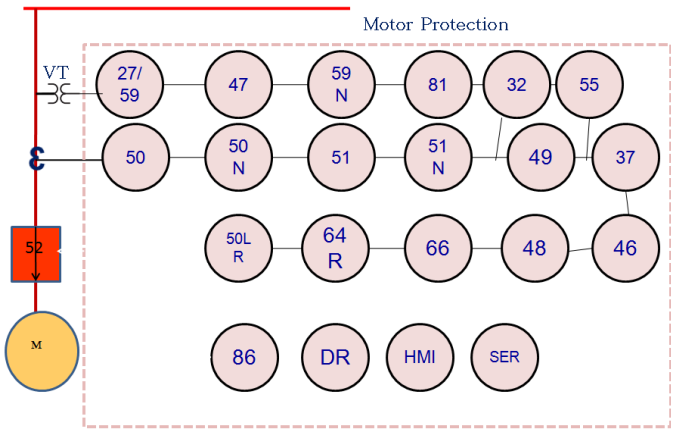
Applications:

ADR244B numerical multifunction relay designed for electric motor protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system. ADR244B relay apply for protection of motor feeder to achieve sensitivity and selectivity on phase & ground faults as well as on abnormal conditions.

Functional Overview: Key Protection & Control Functions:

- Two Independent Settings Groups
- Thermal Overload Protection (49)
- Non Directional Phase & Ground Over Current Function (50/51/51N/51)
- Three Independent Stages for Non Directional Phase Over Current Protection.
- Three Stages of Non Directional Ground Over Current Protection.
- Internally Derived / Externally measured Ground Over Current (3I0>) Protection
- Inverse time Over Current Protection (IEC & IEEE curves)
- Doubling feature
- High Impedance Restricted Earth Fault Protection (64R)
- Inverse & Definite time Negative Sequence Over Current Protection (46)
- Locked rotor / Motor stall Protection (50LR)
- Prolong start Protection (66)
- Too many starts / Number starts function
- Phase reversal Protection (47)
- Under current Protection (37)
- Under voltage Protection (27)
- Over voltage Protection (59)
- Residual over voltage Protection (59N)
- Negative sequence over voltage Protection (47)
- Under/Over Power Protection (32P)
- Reverse Power Protection (32R)
- Power factor Protection (55)
- Under and Over Frequency Protection (81U/O)
- Trip circuit supervision function
- Programmable Inputs & Outputs
- CB Close / Trip from HMI
- Programmable & Target LEDs for indication with dual colours (8 nos.)
- Self Supervision of relay
- Metering function
- Disturbance Recording (10 nos.)
- Event Recording (512 nos.)
- Fault Recording on HMI display (10nos.)
- Non-Volatile memory.
- Fully communicable with IEC standard open protocol IEC60870-5-103, MODBUS & DNP3.
- SCADA Communication
- PC front port communication for convenient relay settings
- User friendly local operation with key pad
- Liquid crystal display (20x4) with backlight
- Password Protection.

ANSI Code	Description
27/59	Under and over voltage Protection
32P	Directional Power Protection
37	Under current Protection
46	Negative sequence Protection
47	Phase reversal / Negative sequence over voltage Protection
50	Instantaneous/Definite time phase over current Protection
51	Inverse time phase over current Protection
50N	Instantaneous/Definite Time Ground over current Protection
51N	Inverse time ground over current Protection
64G	High Impedance restricted earth fault Protection
50BF	Breaker Failure
55	Power factor Protection
59N	Residua over voltage Protection
49	Thermal overload Protection
50LR	Locked rotor Protection
48	Prolong start Protection
66	Number of starts
81	Frequency Protection
86	Lockout (Trip command)



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ASHIDA Smart Solutions for Power Protection & Control

DESIGNED DEVELOPED MANUFACTURED — MADE IN INDIA — ASHIDA

FEEDER PROTECTION RELAY TYPE ADR245B

BASIC VERSION

ENHANCED VERSION

MODULAR VERSION

Introduction:

ASHIDA has designed economical & reliable Multifunction ADR245B Protection & Control System. The simple and compact construction of ADITYA series ADR245B relay provides integrated Protection, Control and Monitoring functions for Over head Transmission Lines, Underground cables, and Distributed Feeders. The ADR245B relay provides the options for three versions: basic, extended and modular versions. For hardware features of individual models refer the ordering information.

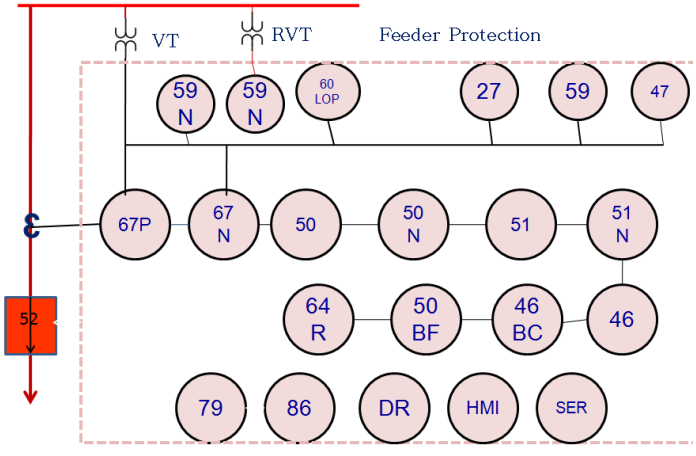
Functional Overview: Key Protection & Control Functions:

- Two Independent Settings Groups
- Directional / Non Directional Phase & Ground Over Current Function (50/51/51N/51/67/67N)
- Four Independent Stages for Directional/Non Directional Phase Over Current Protection
- Three Stages of Directional/Non Directional Ground Over Current Protection
- Internally Derived / Externally measured Ground Over Current (3I0>) Protection
- Inverse time Over Current Protection (IEC curves according to IEC60255)
- High Impedance Restricted Earth Fault Protection (64R)
- Inverse & Definite time Negative Phase Sequence Over Current Protection (46)
- Broken Conductor Protection (46BC)
- Negative Phase Sequence Over Voltage Protection (47)
- Under and Over Voltage Protections (27 /59)
- Externally measured / Internally calculated Residual Over Voltage Protection (59N)
- Multi shots (4-shots) Auto-reclosing function
- Breaker Failure detection (50BF)
- VT and CT supervision function
- Trip circuit supervision function
- Programmable Inputs & Outputs
- CB Close / Trip from HMI
- Programmable & Target LEDs for indication with dual colours
- Self Supervision of relay
- Metering function
- Disturbance Recording (10 nos.)
- Event Recording
- Fault Recording on HMI display (10nos.)
- Non-Volatile memory
- Fully communicable with IEC standard open protocol IEC60870-5-103, MODBUS & IEC 61850.
- SCADA communication
- PC front port communication for convenient relay settings
- User friendly local operation with key pad
- Large Liquid crystal display (20X4) with backlight
- Password Protection

ANSI CODE	DESCRIPTION
27	Under Voltage Protection
46	Negative Phase Sequence Protection
46BC	Broken Conductor Detection
47	Negative Phase Sequence Over Voltage Protection
50	Instantaneous/Definite Time Phase Over current Protection
51	Inverse Time Phase Over current Protection
50N	Instantaneous/Definite Time Ground Over current Protection
51N	Inverse Time Ground Over current Protection
59	Over Voltage Protection
59N	Residual Over Voltage Protection
64G	High Impedance Restricted Earth Fault Protection
67P	Directional Phase Over current Protection
67N	Directional Ground Over current Protection
50BF	Breaker Failure
VTS	VT Supervision Detection
CTS	CT Supervision Detection
79	Auto reclosing
86	Lockout (Trip command)

Applications:

ADR245B numerical multifunction relay designed for Transmission line protection, Underground cable & feeder protection, Machine protection, and shunt capacitor bank protection applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system. ADR245B relay apply for protection, control & monitoring of radial and ring main feeder to achieve sensitivity and selectivity on phase and ground faults.



ASHIDA Smart Solutions for Power Protection & Control

DESIGNED DEVELOPED MANUFACTURED — MADE IN INDIA — ASHIDA

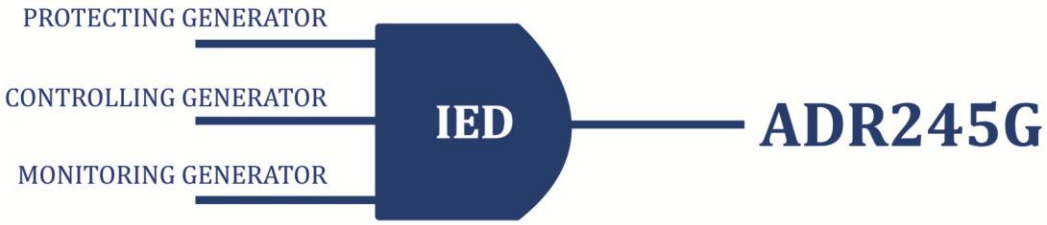
GENERATOR PROTECTION RELAY TYPE ADR245G

Introduction:

ASHIDA has designed economical & reliable Multifunction ADR245G Protection & Control System. The simple and compact construction of ADITYA series ADR245G relay provides integrated Protection, Control and Monitoring functions for Over head Transmission Line, Underground cable, and Distributed generator & Feeder.

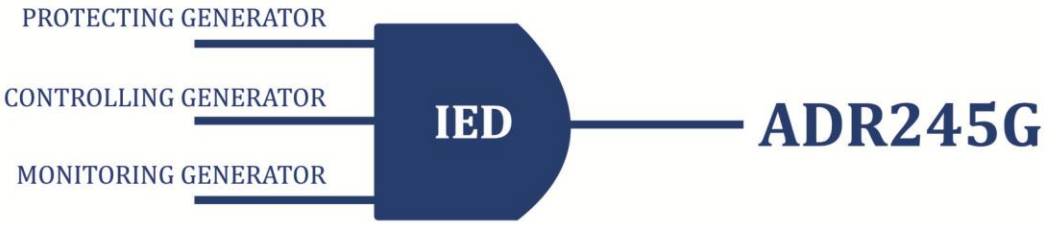
Applications:

ADR245G numerical multifunction machine terminal protection relay designed for rotating machine protection, applications. Relay designed with fast and selective tripping ensures the stability and availability of electrical power system. ADR245G relay apply for protection, control & monitoring of distributed generator to achieve sensitivity and selectivity on phase and ground faults.



Functional Overview: Key Protection & Control Functions:

- Four Independent Settings Groups
- Directional / Non Directional Phase & Ground Over Current Function (50/51/51N/50N/67/67N)
- Four Independent Stages for Directional/Non Directional Phase Over Current Protection
- Three Stages of Directional/Non Directional Ground Over Current Protection
- Harmonic blocking for phase and ground over current Protection
- Internally Derived / Externally measured Ground Over Current (3I0>) Protection
- Inverse time Over Current Protection (IEC /IEEE curves according to IEC60255)
- High Impedance Restricted Earth Fault Protection (64R)
- Two Stages of Inverse & Definite time Negative Phase Sequence Over Current Protection (46)
- Broken Conductor Protection (46BC)
- Negative Phase Sequence Over Voltage Protection (47)
- Broken conductor Protection (I2/I1 - 46BC)
- Two Stages of Phase Under and Over Voltage Protections (27 /59)
- Positive Sequence Over Voltage Protection
- Externally measured / Internally calculated Residual Over Voltage Protection (59N)
- Under & Over Frequency Protection (81U/81O)
- Directional Power Protection (32)
- Power factor Protection (55)
- Back up Impedance Protection (21)
- Voltage control over current Protection (51VC)
- Loss of Excitation Protection (40G)
- Out of Step Protection (78)
- 0-95% Stator earth fault Protection (64S)
- 100% Stator earth fault Protection (27TN)
- Inadvertent circuit breaker energization
- Multi shots (4-shots) Auto-reclosing function
- Breaker Failure detection (50BF)
- Programmable & Target LEDs for indication with dual colours (8 nos.)
- Self Supervision of relay
- Metering function
- Disturbance Recording (10 nos.)
- Event Recording (1028 nos.)
- Fault Recording on HMI display (10nos.)
- Non-Volatile memory
- Fully communicable with IEC standard open protocol IEC60870-5-103, MODBUS & IEC 61850.
- Separate communication port for SCADA Communication
- PC front port communication for convenient relay settings
- User friendly local operation with key pad
- Large Liquid crystal display (20X4) with backlight
- Password Protection



ANSI Code	Description
21	Back up Impedance Protection
24	Over excitation Protection
27	Under Voltage Protection
27TN	3rd Harmonic Under Voltage Protection
32	Directional Power Protection
40G	Loss of Excitation Protection
46	Negative Phase Sequence Protection
46BC	Broken Conductor Detection
47	Negative Phase Sequence Over Voltage Protection
50	Instantaneous/Definite Time Phase Over current Protection
51	Inverse Time Phase Over current Protection
50N	Instantaneous/Definite Time Ground Over current Protection
51N	Inverse Time Ground Over current Protection
51VC	Voltage control over current Protection
55	Power factor Protection
59	Over Voltage Protection
59N	Residual Over Voltage Protection
64G	High Impedance Restricted Earth Fault Protection
64S	0-95% Stator earth fault Protection
67P	Directional Phase Over current Protection
67N	Directional Ground Over current Protection
78	Out of Step Protection
81	Under & Over Frequency Protection
50BF	Breaker Failure
VTS	VT Supervision Detection
CTS	CT Supervision Detection
79	Auto reclosing
86	Lockout (Trip command)

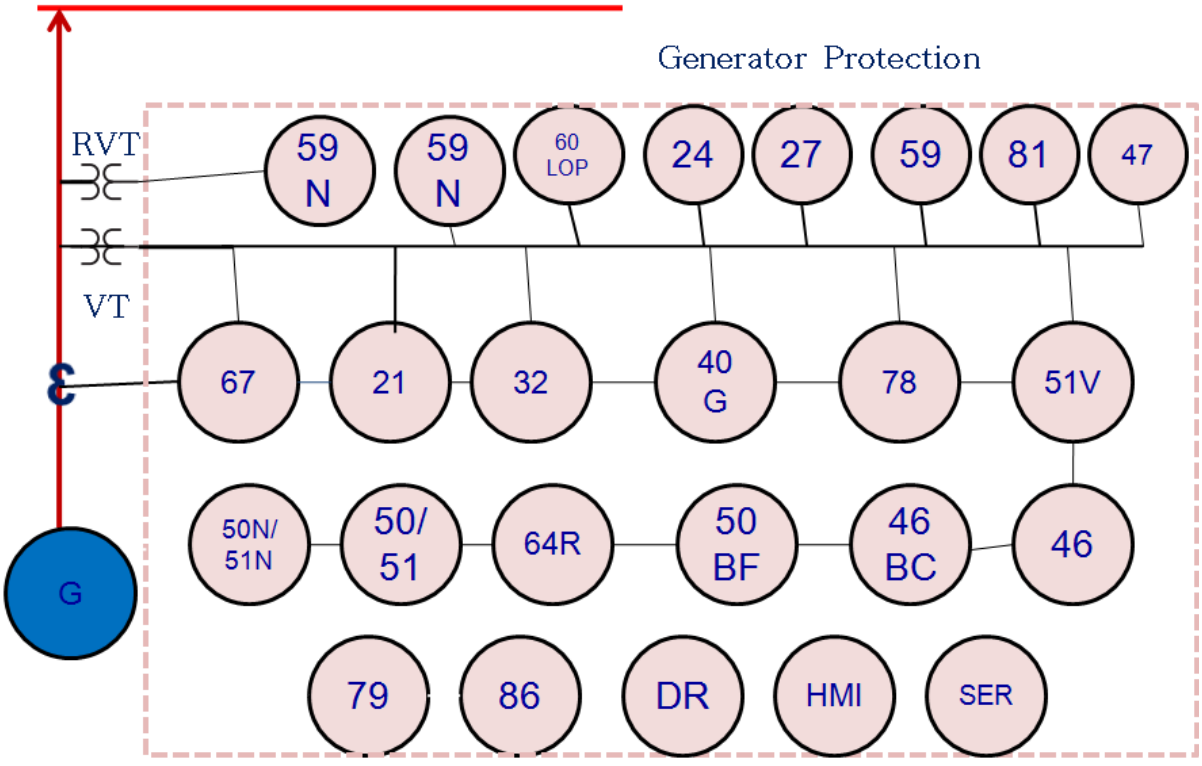
PROTECTING GENERATOR

CONTROLLING GENERATOR

MONITORING GENERATOR

IED

ADR245G



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