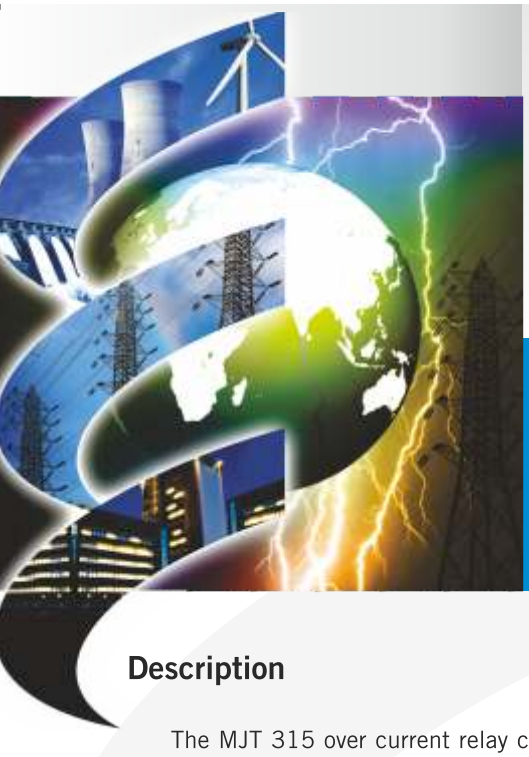


Numerical Overcurrent & Earthfault Protection

Genesis Range MJT 315

Description

The MJT 315 over current relay combines the power and flexibility of microprocessor technology with decades of experience in the field of protection. A wide range of protection elements and characteristics are supplemented by advance features such as metering, fault recorder and communication.

MJT 315 offers inverse time and definite time over current protection for phase fault and earth fault with communication.

Design

The MJT Protection unit consists of the following modules within its dimensions.

- Input Module
- Power Supply and Output Relay module
- Measuring Module & communication interface
- Front Fascia
- Status Input Module

The current inputs can be configured for operation with either 1A or 5A ratings. Appropriate connections are required on the relay terminal blocks.

The four modules viz. Input, Power supply Measuring and Status input modules are plugged into the Front fascia which houses switches, LEDs and LCD display for the human machine interface. All PCB s are well protected from one another and from external environment with best shielding for better electromagnetic compatibility and housed in the enclosed chassis, which is withdrawable from the outer case.

The draw-out case is provided with the required CT shorting contacts.

Applications

- Distribution feeders
- Transmission lines
- AC machines
- Capacitor banks
- Transformers

Key Features

- Trip circuit supervision is possible through status inputs
- Suitable for flashing faults
- Primary fault current values will be available on fault recorder menu
- Non Volatile memory for trip indication
- True RMS measurement
- Self diagnostics features
- Storage of five fault records
- Internal real time records
- 26 spontaneous events
- Time stamped spontaneous events for status inputs and output relays configurable pick up and Drop off
- Eight configurable status inputs
- Six configurable output relays
- Six configurable output LED's
- Each status input has both pick up and drop off time delay
- Inverted Status input is possible
- The output relays can be configured for self, hand or electrical reset (Through status inputs)
- Built-in CB Fail protection

Numerical Overcurrent & Earthfault Protection - MJT315

- Status input can be configured to operate O/P contacts or to block any protection functions
- Any output relay can be configured from any protection function
- LED's can be set for self or hand reset
- One fixed output relay for protection healthy
- One fixed status input for group change
- CT Ratio can be set in the relay upto 10,000/1 or 5
- Two Group settings
- Both 1A or 5A rating (Site selectable)
- Wide range of current setting
- Fault data can be retrieved form remote communication
- Data communication using IEC-60870-5-103 protocol
- RS 485 communication electrical terminals at rear
- The Outputs can be directly driven from remote communication
- No external resistor required for status inputs
- Low AC & DC Burden

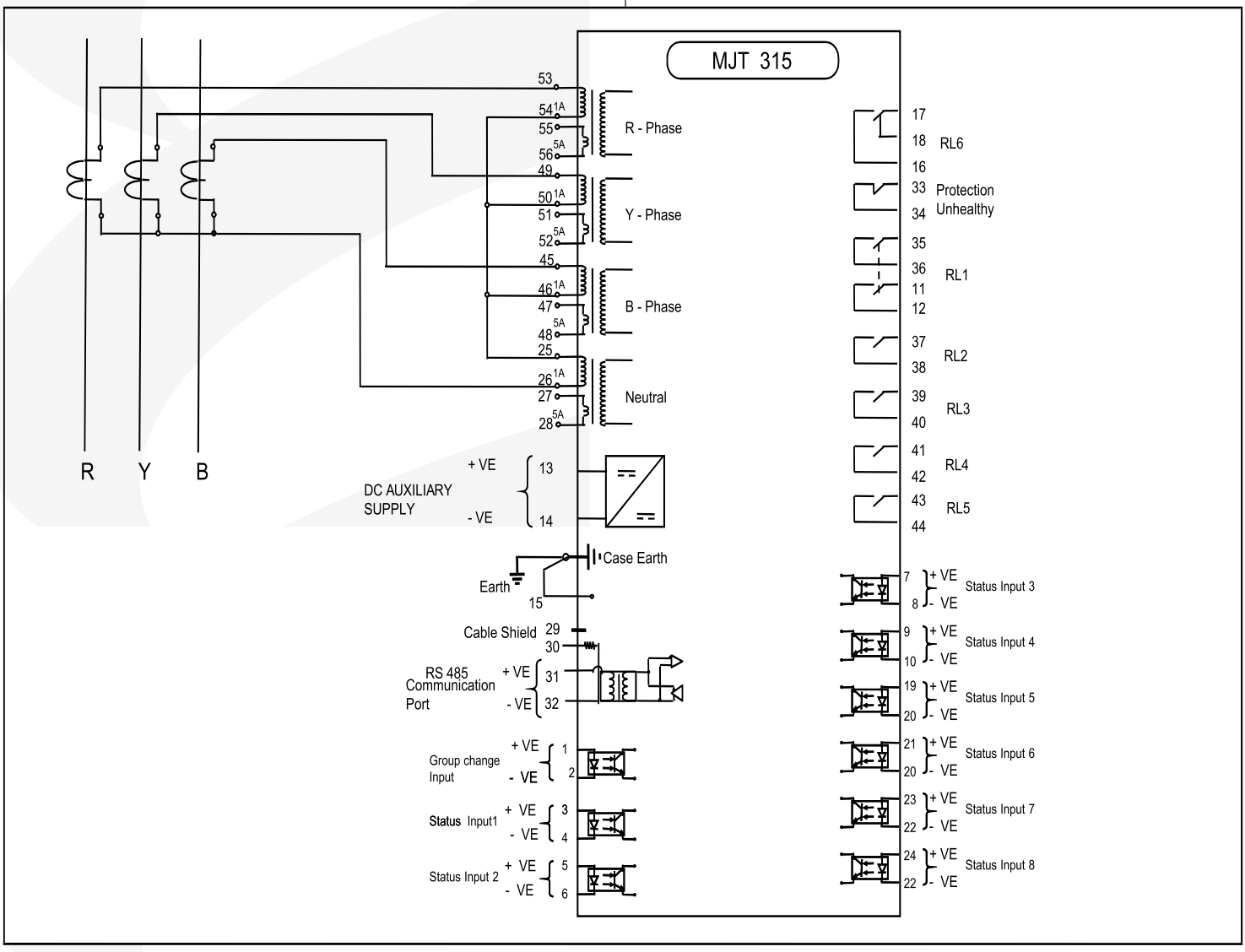
Metering

- Status of digital (Status) input and digital output (relays) can be knows by general Interrogation
- Currents - Ir, Iy, Ib, Ie & I_R, I_Y, I_B, I_E

User Interface

- Readable human machine interface with Backlit LCD display
- Configurable LED indications.
- Push buttons for viewing/editing the setting and resetting

Wiring Diagram



Typical Wiring Diagram for MJT315

Technical Information

CT Input Rating	1A/5A
Frequency	50Hz

Auxiliary supply

Nominal V_{AUX}	**Operating Range V_{AUX}**
30, 48, 110 V DC	24V to 135V DC
110, 220 V DC	48V to 280V DC

Digital (status) input

same as Auxiliary DC supply

Protection Settings

Phase Fault	0.05xIn to 2.5xIn Δ 0.01 In
Earth Fault	0.05xIn to 2.5xIn Δ 0.01 In
Highset1 Phase Fault	0.5xIn to 30xIn Δ 0.5 In, off
Highset1 Earth Fault	0.5xIn to 30xIn Δ0.5 In, off
Highset2 Phase Fault	0.5xIn to 30xIn Δ 0.5 In, off
Highset2 Earth Fault	0.5xIn to 30xIn Δ 0.5 In, off
P/F Time Multiplier	0.025 to 1.6 Δ 0.001
E/F Time Multiplier	0.025 to 1.6 Δ 0.001
P/F DTL	0 Secs to 20 Secs Δ 0.01 Secs
E/F DTL	0 Secs to 20 Secs Δ 0.01 Secs
P/F Highset1 DTL	0 Secs to 20 Secs Δ 0.01 Secs
E/F Highset1 DTL	0 Secs to 20 Secs Δ 0.01 Secs
Highset2	Shaped Instantaneous
Reset Time	0 to 60 Secs Δ 1 sec
Status input pickup delay	0 to 999.99 sec Δ 0.01sec or 0 to 999.99 min Δ 0.01 min
Status input Drop off Delay	0 to 999.99 sec Δ 0.01 sec or 0 to 999.99 min Δ 0.01 min

Inverse Characteristics

Operating time can be calculated as follows:

$$t = \frac{K}{\left[\frac{I}{I_S}\right]^{\alpha} - 1} \times Tm$$

where
I=fault current
Is=current setting
Tm=time multiplier

SI3 - k	= 0.14,	α = 0.02
SI1 - k	= 0.0613,	α = 0.02
VI - k	=13.5,	α = 1.0
EI - k	= 80.0,	α = 2.0
LTI - k	= 120.0,	α = 1.0

Output contacts

The relay has the following output contacts

- Protection Healthy 1 N/C fixed
- Change over contact 1 No (Configurable)
- Normally open contact 5 No (Configurable)

Contact Rating

Carry continuously	5A AC rms or DC
Make & Carry	20A for 0.2sec
Break	Resistive 75W DC Inductive 50W DC @L/R£40msec with a maximum of 300V DC

Indication

Green LED	Protection healthy
Orange LED	Starter
Red LED	Trip
Orange LED	4 Nos (Configurable)
Red LED	2 Nos (Configurable)

16x2 Alphanumeric LCD display for settings, readings and fault data

Burden

AC Current Input	
5 A Rating	⩽0.4 VA
1 A Rating	⩽0.05 VA
Auxiliary input	
Quiescent (typical)	5 W (DC) 12VA (AC)

Environmental

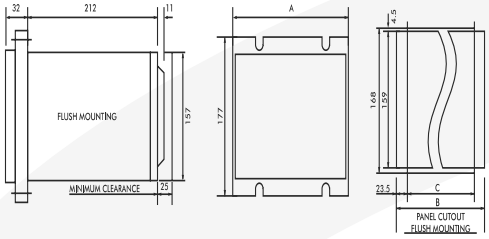
Temperature IEC 60068-2-1/2
Operating range -10° C to +55°C
Storage range -25° C to +70°C
Humidity IEC 60068-2-3
56 days at 40°C and 93%RH
Transient Overvoltage IEC 60255-5
5KV, 1.2/50us, 0.5J between all terminals and earth or between any two terminals without damage or flashover
Insulation IEC 60255-5
2.0 KVrms for 1 min between all terminals and earth
2.0 KVrms for 1 min between independent circuits
1.0 KVrms for 1 min across normally open contacts
High frequency Disturbance IEC 60255-22-1 Class III
2.5 KV Common (Longitudinal) mode
1.0 KV Series (Transverse) mode
Electrostatic Discharge IEC 60255-22 -2 Class III
6 KV Contact Discharge
8 KV Air Discharge
Radio Frequency Interference IEC 60255-22-3 Class III
20 MHz to 1000 MHZ, 10V/m

Fast Transient
KV, 5/50 ns, 2.5 kHz repetitive IEC 60255-22-4 Class III

Vibration (Sinusoidal) IEC 60255-21-1 Class I

Shock and Bump IEC 60255-21-2 Class I
Mechanical Classification
Durability 10^6 operations

Cutout Details



SIZE E6 CASE		
A	B	C
155	151	130.5

MODULAR CASES: SIZE E6

Note:

1. All dimensions are in mm
2. All dimensions are measured equidistant from centre line
3. Maximum depth of equipment inside panel : 200mm

Ordering Information

- Auxiliary Supply range

Qualification

ISO 9001-2008

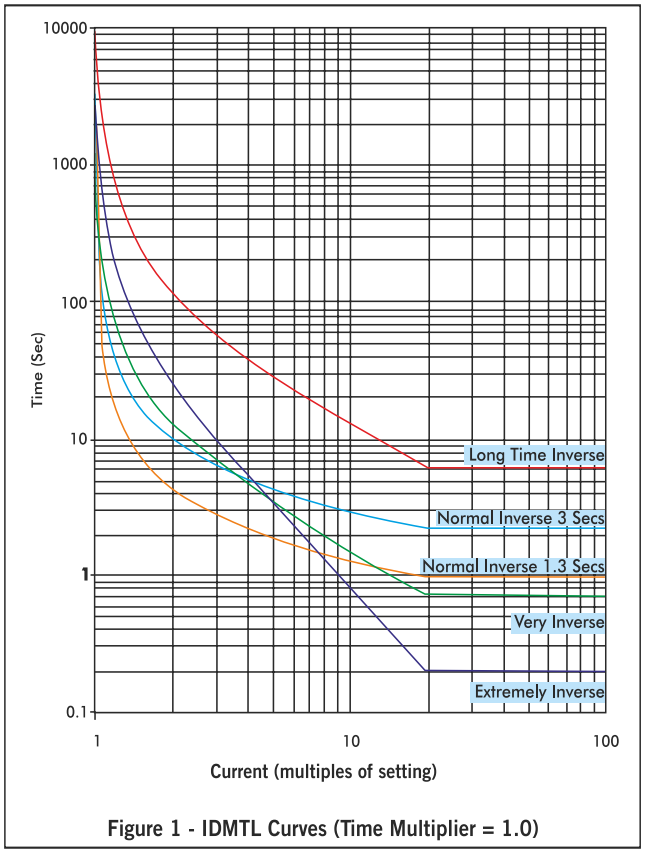


Figure 1 - IDMTL Curves (Time Multiplier = 1.0)

The policy of Easun Reyrolle is one of continuous improvement and development The company therefore reserves the right to supply equipment which may differ slightly from that described and illustrated in this publication

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