



Relion® 605 series

Self-Powered Feeder Protection REJ603

Numerical Feeder Protection without Auxiliary Supply for Secondary Distribution

REJ603 is intended to be used for the selective short-circuit and earth-fault protection of feeders in secondary distribution networks and for protection of small transformers in utilities and industries.

REJ603 is a member of ABB's Relion® protection and control product family and its 605 series. The 605 series features basic devices that fulfill the essential protection needs in medium-voltage networks.

Application

REJ603 is a self-powered numerical relay, which requires no external supply voltage, making it an ideal choice for installation even in remote locations where auxiliary supplies are not available. The relay is primarily used in Ring Main Units and secondary distribution switchgear within distribution networks and it receives power from the primary current transformers. The relay can measure earth current by internal calculation and also by external core balance current transformer / split core CT input.

Reliable protection relays for distribution and sub-distribution applications

The protection relay provides 3 phase overcurrent and earth-fault protection functions. Low-set stages has selectable definite time / inverse characteristics. High-set stage has selectable definite time / Instantaneous element. Integrated protections with selectable curves, wide phase current input range, and extensive internal self-supervision provided in the relay makes it a simple and cost-efficient solution for the protection of secondary distribution network.

Selectable characteristics for better co-ordination

The low-set overcurrent and earth fault element of REJ603 relay has selectable definite time / inverse characteristics. Apart from 4 standard inverse characteristics - Normal inverse, Very inverse, Extremely inverse and Long inverse, relay also has special characteristics like RI, HR and FR fuse, which allows better co-ordination with the entire network protection. Both low and high-set elements have wide setting ranges. The relay also has short power up time which ensures fast operation during switch on to fault situation.

Transformer magnetizing inrush

When applying overcurrent protection to the MV side of the power transformer, it is necessary that the protection system remains inoperative during transformer energization, when a large primary current flows for a short period during switch on. The REJ603 employs the most proven technique of blocking based on measured value of second harmonic content to make the protection immune to magnetizing inrush.

Reliability by Extensive self-supervision

To ensure protection availability and security, extensive self-supervision of the electronics and software is provided in REJ603 relays. The self-supervision system manages run time fault situation and alerts the user to any internal relay faults. The relay has indication LED's for unit Ready and Internal Relay Failure (IRF). Additionally, the relay offers user selectable fail safe trip in the combined event of internal relay failure and phase currents exceeding twenty times the maximum nominal current value ($>20 \times I_{smax}$).

Tripping and Indications

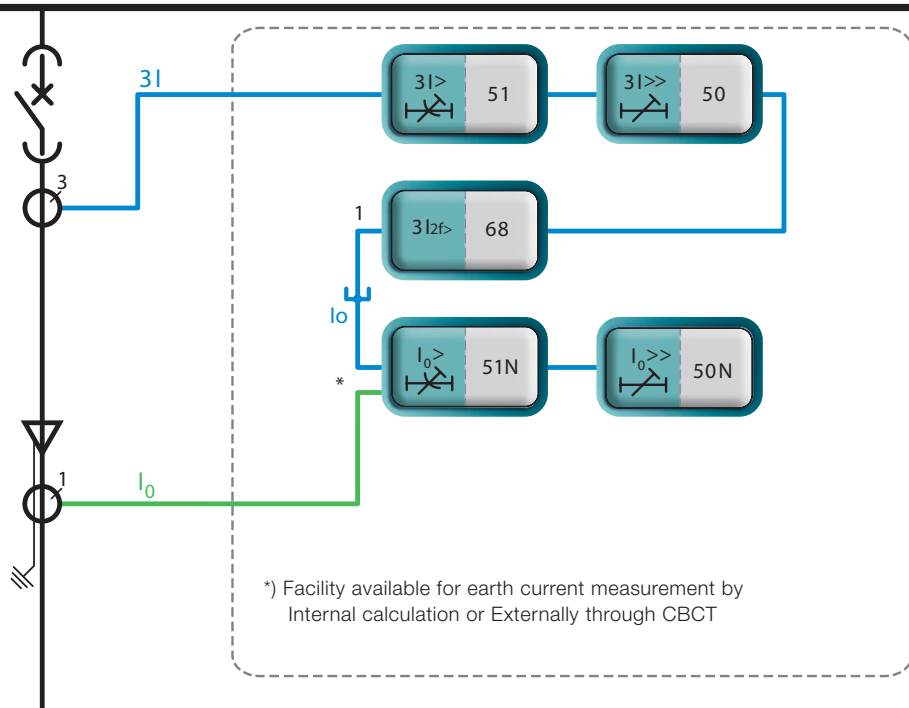
REJ603 relay is provided with capacitor discharge impulse output (24V DC, 100 mJ) for tripping circuit breaker with sensitive trip coil. Additional binary output is provided for external trip indication. Phase as well earth fault trip indication is provided through hand-reset electromagnetic flag which ensures availability of relay operation indication even in absence of primary CT current.

Testing

The special CT's for REJ603 have a test winding to inject a test current via primary current for testing of complete protection scheme including primary CT, relay, and trip coil. The test winding is directly accessible from relay ensuring safety while testing the relay.

Optional HMI

Advanced functionality like events with time stamp, fault records , display of primary values, fault code which helps in post fault analysis are made available with the battery powered HMI. The HMI module, features an innovative touch screen display which facilitates ease of use even with its compact size. In combination with DIP switches, finer settings can be done on the HMI.



Protection function overview of REJ603.

Supported functions with codes and symbols

Functionality		
Protection	IEC 60617	ANSI
Three phase overcurrent protection, low-set stage	3I>	51
Three phase overcurrent protection, high-set stage	3I>>	50
Earth protection, low-set stage	I ₀ >	51N
Earth protection, high-set stage	I ₀ >>	50N
Three phase transformer Inrush detection	3I _{2f} >	68

Current transformers for REJ603

CT type	Setting range of reference current I _s
REJ603-CT1	8-28 A
REJ603-CT2	16-56 A
REJ603-CT3	32-112 A
REJ603-CT4	64-224 A
REJ603-CT5	128-448 A

Other technical details

Energizing Inputs	
Three phase currents	8-448A with above specific current transformers (not compatible with conventional 1/5A CT's)
Earth current	Internally by calculation ; Externally by 1A Core Balance CT / Split core CT
Relay outputs	
Signal output	One output for trip indication to external circuit (48V DC, 5mA, 60 msec)
Trip impulse output	Capacitor discharge impulse (24V DC , 100mJ, 50 msec)
Trip Indication	Hand reset electromagnetic flag
LED Indication	Green = OK Red = Device has tripped
Dimensions	160mm(H) x 96mm(W) x 150mm(D)
Weight	~0.821 Kg (without HMI) / ~0.908 Kg (with HMI)

Contact us

For more information see REJ603 Product Guide
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