

P50 Agile P153

Compact Feeder Protection Relay

The Agile P153 protection relay is the most compact offering from GE's P50 Agile series serving the distribution and industrial markets.

The compact P153 relays are the ideal choice for primary or back up protection and monitoring of feeders deployed in medium and low voltage applications.

The P153 offers non-directional overcurrent and earth-fault protection, with its functions designed to cover a wide range of applications in the protection of cables and overhead lines deployed in industrial installations, public distribution networks, and substations.

The P153 relays offer supervision features such as measurement, monitoring and recording functions. Communication protocols available are site selectable for transmitting relay data to a supervisory control system via communication networks. The operator interface allows reading of measured values and simple configuration of the relay. The setting software facilitates configuration and access to all the stored information for monitoring, maintenance and troubleshooting purposes. P153 relays are housed in a robust metal case suitable for panel mounting.

Applications

Feeder Protection for:

- Cables and Overhead lines deployed in MV/LV networks
- Backup in MV systems
- MV industrial installations, public distribution networks and substations



Protection and Control

- Optimised protection for feeder applications
- Measurement / protection / monitoring in one box
- Continuous self-diagnostics

Monitoring and Metering

- Metering for feeder applications including phase and neutral current, thermal state, positive and negative sequence current
- Circuit Breaker monitoring including operation counter, trip counter, operating time, and trip circuit supervision

Communications

- Front USB port for local communication
- Rear RS485 port for SCADA communication
- Flexible SCADA communication options supporting Modbus / IEC 60870-5-103 (user selectable)

Application Flexibility

- Standardised offering with minimum hardware variants
- CT 1 A/5 A selection by wiring
- Easy installation in panels thanks to compact form factor : 114 mm (H) x 137 mm (W) x 170.5 mm (D)
- Simple configuration and easy setup from front HMI



Measurements

- Metering of Phase currents
- Metering of Neutral currents-derived and measured
- Measurement of thermal state
- Positive and negative sequence current
- Ratio of negative to positive sequence current
- Breaker operation counter
- Breaker trip counter
- Breaker operating time

Protection and Control

General

- Timed and instantaneous phase and earth fault protection (3 independent stages)
- Wide range of IEC/IEEE curves
- Thermal overload
- Cold load pickup
- Inrush blocking
- Undercurrent/Loss of load detection
- Negative sequence overcurrent
- Broken conductor
- Circuit breaker fail
- Trip circuit supervision
- 4 Digital inputs
- 4 Digital outputs
- 1 A / 5 A CTs selection
- Latching of output contacts
- 2 Setting groups
- Password protection
- Self-supervision & internal diagnostics

Recording and Fault Analysis

- Up to 5 fault records
- Up to 512 time tagged event records
- Up to 5 disturbance records

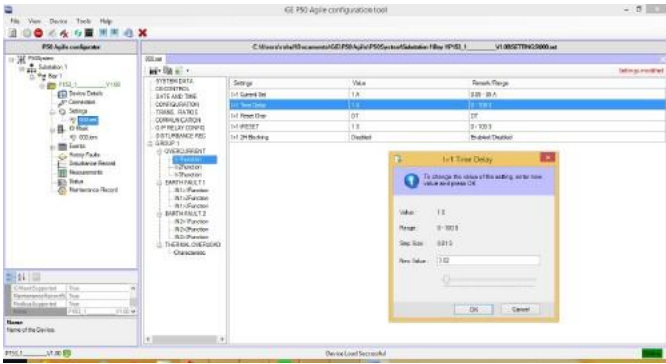
Functional Overview

ANSI	Function Overview	Feeder
Protection		
50	Definite time overcurrent	•
50N	Neutral / Earth definite time overcurrent	•
51	IDMT overcurrent	•
51N	Neutral / Earth IDMT overcurrent	•
68	Inrush blocking	•
49	Thermal overload	•
37	Undercurrent detection/Loss of load	•
46	Negative sequence overcurrent	•
46BC	Broken conductor	•
50BF	Circuit breaker fail	•
CLP	Cold load pick-up	•
86	Latching of output contacts (Lock out)	•
Control Functions		
74	Trip circuit supervision	•
	Watchdog function, Self monitoring & diagnostics	•
	Test / Commissioning facilities	•
HMI		
	Back-lit LCD display	•
	6 x Touch keys / 6 x Status LEDs	•
Communication		
	USB port	•
	Modbus / IEC 60870-5-103 (RS485)	•
Digital Input / Output		
	Digital Input / Output	4 / 4
Analogue input		
	Phase current input 3x 1 ph	•
	Earth current input 1x 1 ph	•
General		
	Setting groups	2
	Measurements	•
	Event / Fault records	•
	Disturbance records	•
	Configurable digital I/O and LEDs	•
Hardware		
	Auxiliary supply	24-50 VDC or 100-230 VAC/VDC
	Climatic conditions	Operating : -25°C to +55 °C Storage : -25°C to +70°C
	Housing	Front IP52 Rear IP20

• Standard

Relay Configuration Software

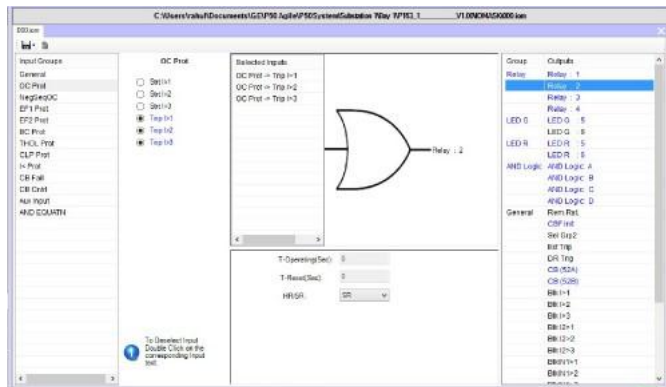
(For Setting, Viewing and Parameterisation)



Digital Inputs / Outputs / LED Assignment

P153 supports 4DI/4DO and 2 programmable LEDs. Operators can assign any of the logical/ physical statuses to DI/DO and programmable LEDs. This provides user the flexibility to program the relay as per the application requirements.

All the output contacts can be configured as SR (self-reset) or HR (hand reset) through the I/O configuration setting from the front panel or through relay setting software.



Front Panel Interface

- Six LEDs for status indication
- Back-Lit LCD display (16x2)
- Six keys for setting and interrogation



P153 Front Panel

Logic Equations

P153 supports up to 4 independent Boolean equations. Each equation offers the possibility to use an AND logical gate. The result of the equation can be time delayed, reused in another equation and assigned to any output relays, trip, trip latching and/or HMI LEDs. This function facilitates customisation of the product based on the customer's application.

Circuit Breaker Command

P153 supports a menu option to allow the operator to issue open/close command to the circuit breaker through the relay HMI.

Communications

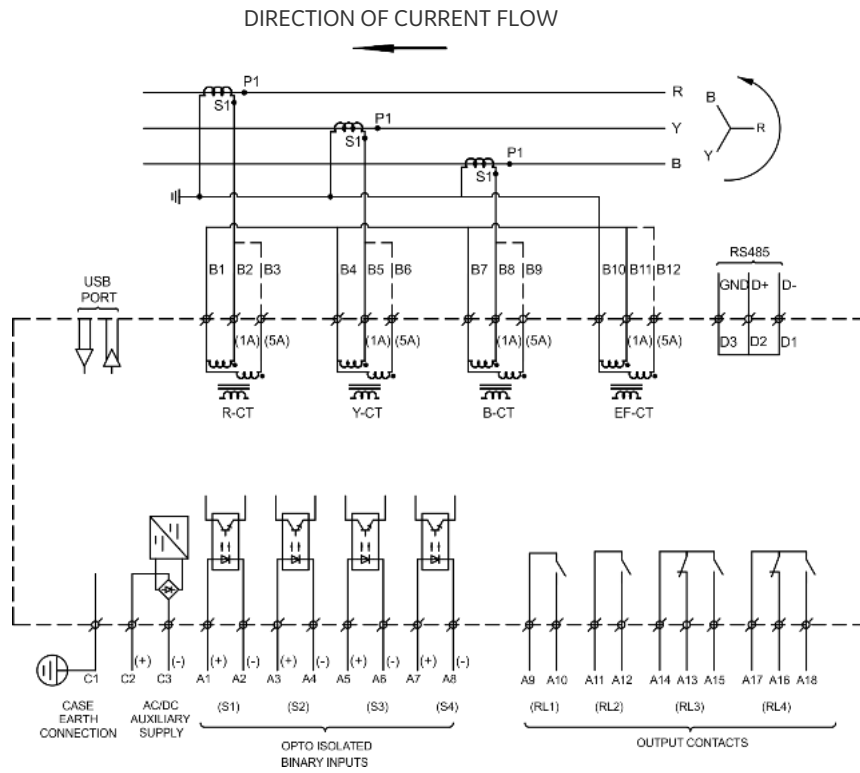
- Front USB port for viewing, parameter setting, downloading
- Rear RS485 port for SCADA communication
- Multiple protocol - Modbus / IEC 60870-5-103 (user selectable)

Commissioning

P153 provides facility to test relay operation during commissioning/maintenance activity. Facilities include:

- Digital inputs /outputs status monitoring
- Test mode- allows secondary injection testing to be performed on the relay without operation of the trip contacts
- Digital output contacts test
- LED test

Typical Wiring



P50 Agile Family

- P15D Dual Powered Overcurrent relay
- P154 Non Directional Overcurrent & Earth-fault relay
- P253 Motor Protection relay
- P652 Transformer Protection relay

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Imagination at work