



RELAY SELECTION GUIDE-FEEDER PROTECTION





Overview

System controls & switchgears is one of the fastest growing companies in India. Established in 1983, a privately owned company has unrivalled experience in the distribution of electrical products. SCS business covers a broad range of Medium Voltage Switchgears, Low Voltage Switchgears, Power Capacitors, Internal wiring accessories, Lighting, Metal Detectors, Energy Management Products and other products. Over the last 3 decades history, we've developed strong relationships with customers. Our strength lives in all of our people, who have extended our tradition of service and integrity to customers in every location and situation, and who take pride in making us one of the most resilient resources in the products we deal.

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



Agile P153 Feeder Protection

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

Key Benefits:

- Cost effective, compact size
- Measurement / protection / monitoring in one box
- Continuous self-diagnostics
- Advanced communication including front USB, user selectable communication protocols
- Simple configuration and easy setup from front HMI

Agile P154 Feeder Protection

The Agile P154 relay provides non directional overcurrent and earth fault for MV/LV and HV backup feeder protection. The relay features a wide range of measurement, protection and monitoring functions and is easily customizable using programmable BI/BO/LEDs/AND logic. The P154 is economical, designed for deployment in volume in lower voltage systems, as a backup relay in HV systems, or as direct refurbishment of non-communicating overcurrent relays.

Key Benefits:

- Optimized protection for feeder applications
- Cost effective
- Front USB port for local communication
- Flexible SCADA communication options
- Universal, wide-range auxiliary supply
- Password protection for security





P50 Agile P153 Compact Feeder Protection

➤ P50 Agile P153

(ANSI Code- 50, 50N, 51, 51N, 68, 49, 37, 46, 46BC, 50BF, CLP, 86, 74)



P50 Agile P154 Feeder Protection

➤ P50 Agile P154

(ANSI Code- 50, 51, 50N, 51N, 46, 49, 50 BF, 64R, 86, 95, 68, 37, 46BC, CLP)

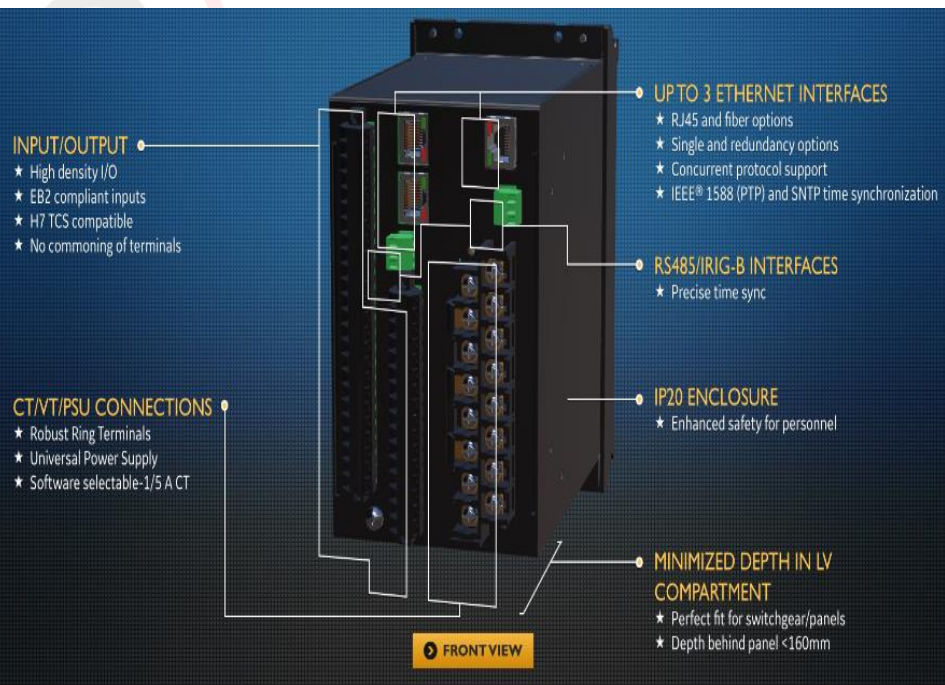
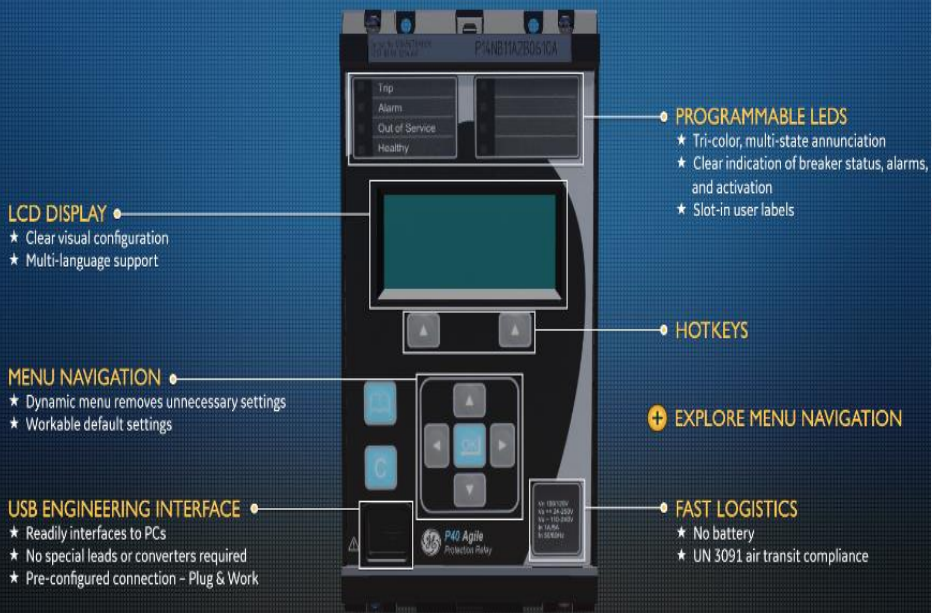


RELAY SELECTION GUIDE- FEEDER PROTECTION (P40 Agile Enhanced Compact Version)



P40 Agile Enhanced Compact Version

P40 Agile Enhanced is a compact feeder and voltage relay platform delivering highly-adaptable protection and control. Fast overcurrent, ground fault, voltage and frequency elements form the central core of performance. Advanced functionality includes programmable logic and flexible configuration capabilities, plus an extensive suite of communication protocols. Switchable communication protocols are supported for ease of integration into new or existing SCADA/DCS systems. The hardware is standardized, providing a universal power supply, multi-range inputs/outputs, and CT/VTs, to reduce order code variants and stocking / spares inventories.



Application Model Selection

MODEL	HARDWARE BASE	INTENDED APPLICATION	CASE
P14NB	P14N	Non-directional feeder	20TE
P14NL	P14N	Non-directional feeder with autoreclose	20TE
P14DB	P14D	Directional feeder	20TE
P14DL	P14D	Advanced directional feeder with autoreclose and check synchronizing	20TE
P94VB	P94V	Voltage and frequency	20TE
P94VP	P94V	Voltage and frequency with autoreclose and check synchronizing	20TE

Key features & benefits of this range include:

- Compact design for power distribution and industry applications, ideal for on-switchgear installation
- Draw-out construction for simplified testing, commissioning and maintenance
- High I/O density - up to 11 inputs / 11 outputs or 14 inputs / 9 outputs - in a case as small as 20TE (4 inch) width x 155mm depth
- Redundant Ethernet communication (PRP/HSR) ensuring uninterrupted data exchange
- CyberSentry™ Advanced Security, including AAA, role-based access control and Syslog
- Single setting file for relay configuration – fast set-up, simple as-installed record, full traceability
- Faster response to faults limits arcing energy and the duration of touch/step potential rise
- Uptime - condition monitoring of the relay and the entire primary equipment bay/cell
- Monitors renewables – harmonics imposed on the grid with THD measured up to the 21st order
- Extensive recording - 2048 events, 25 fault records, disturbance recording at up to 128 samples/cycle
- Accurate IEEE® 1588 (PTP), IRIG-B and SNTP time synchronization
- Precise fault location aids dispatching of troubleshooting crews
- Harsh environment coating as standard

Models-P40 Agile Feeder Management

➤ P40 Agile P14NB (Non-directional feeder)

(ANSI Code-50, 50N/G, 51, 51N/G, 50/51SEF, 68 (Inrush blocking & Cold load pick up), 46, 46BC (Broken conductor & Programmable curves), Blocking scheme, 37, 49, 64N, 50BF, 86, CT supervision, DC supply supervision, CB condition monitoring, Pole discrepancy, Trip circuit supervision (H7 scheme)

➤ P40 Agile P14NL (Non-directional feeder with auto reclose)

(ANSI Code-P14NB + 79 Auto reclose (number of shots)

➤ P40 Agile P14DB (Directional feeder)

(ANSI Code-50, 50N/G, 51, 51N/G, 50/51SEF, 68 (Inrush blocking & Cold load pick up), 46, 46BC (Broken conductor & Programmable curves), 67, 67N/G, 37, 49, 64N, 50BF, 27/59, 27V/59V, 59N, 47, 81O, 81U, 81V, 86, VT supervision, CT supervision, DC supply supervision, CB condition monitoring, Pole discrepancy, Trip circuit supervision (H7 scheme)

➤ P40 Agile P14DL (Advanced directional feeder with auto reclose and check synchronizing)

(ANSI Code-P14DB + 32 Phase directional power (Forward/Reverse/Under/Over) +21FL (Fault locator) +25 (Check synchronizing) + 81 df/dt + 79 Auto reclose (number of shots)

➤ P40 Agile P94VB (Voltage and frequency)

(ANSI Code-27/59, 27V/59V, 59N, 47, 81O, 81U, 81V, 81 df/dt, 86, DC supply supervision, CB condition monitoring

➤ P40 Agile P94VP (Voltage and frequency with auto reclose and check synchronizing)

(ANSI Code-P94VP+ 79 Auto reclose (number of shots) + 25 (Check synchronizing)





MiCOM Agile P14x Series

Feeder Protection Relay - P141, P142, P143, P145

Part of the MiCOM P40 platform, the Agile P14x feeder management relays provide an integrated solution for the complete protection, control and monitoring of overhead lines and underground cables, covering all distribution and transmission voltage levels. Providing all essential information to efficiently maintain complex power systems and their components, the P14x relay family is user-friendly and highly flexible, allowing application on any electrical network.

Key benefits:

- Full feeder management with efficient monitoring, control, recording and digital communications
- Supports all major digital control system protocols, easing integration into DCS, SCADA and engineering workstations
- Fast simple and reliable busbar protection as an alternative application: Numerical single-box solution with full scheme supervision
- Harsh environment protection extends the life of the product
- No internal batteries in GE-branded models – removes a maintenance item and eases air-freight logistics
- Advanced binary inputs comply with the harshest norms for surge withstand, plus the ESI 48-4 EB2 standard. Spurious wiring pickup is eliminated without the use of interposing relays, external resistors or time delays. Battery/wiring faults, switching noise, and induction from long parallel circuits are tolerated without misoperation.
- NERC CIP cybersecurity including role-based access control (RBAC), RADIUS and SysLog

Models



- **P141 is the most basic model providing a cost-effective solution for most applications**

(ANSI Code

50/51,50/51N,67P,67N,67N,64,51V,51R,46,49,37,27/59,59N,DV/DT,47,81O/U,86,32,50BF,60,68,85,21FL,87B)



- **P142 provides all the functionality of the P141, as well as four-shot three-pole auto reclose functionality**

(ANSI Code-P141 + 79 + Extra DI/DO)

- **P143 provides all the functionality of the P142, as well as a fourth VT for Check Synchronization functionality. Due to its choice of larger case sizes, the P143 can also provide significantly more I/O (opt inputs and relay outputs). Model P also provides switch status and control for disconnections, load break switches and earthing switches**

(ANSI Code-P142 + 25 + Extra DI/DO)



- **P145 provides all the functionality of the P143, but in addition has 10 function keys for integral scheme or operator control functionality such as circuit breaker control, auto reclose control and remote communications control. This makes it especially suitable where a complete scheme solution is required.**

(ANSI Code-P143 + Function keys)

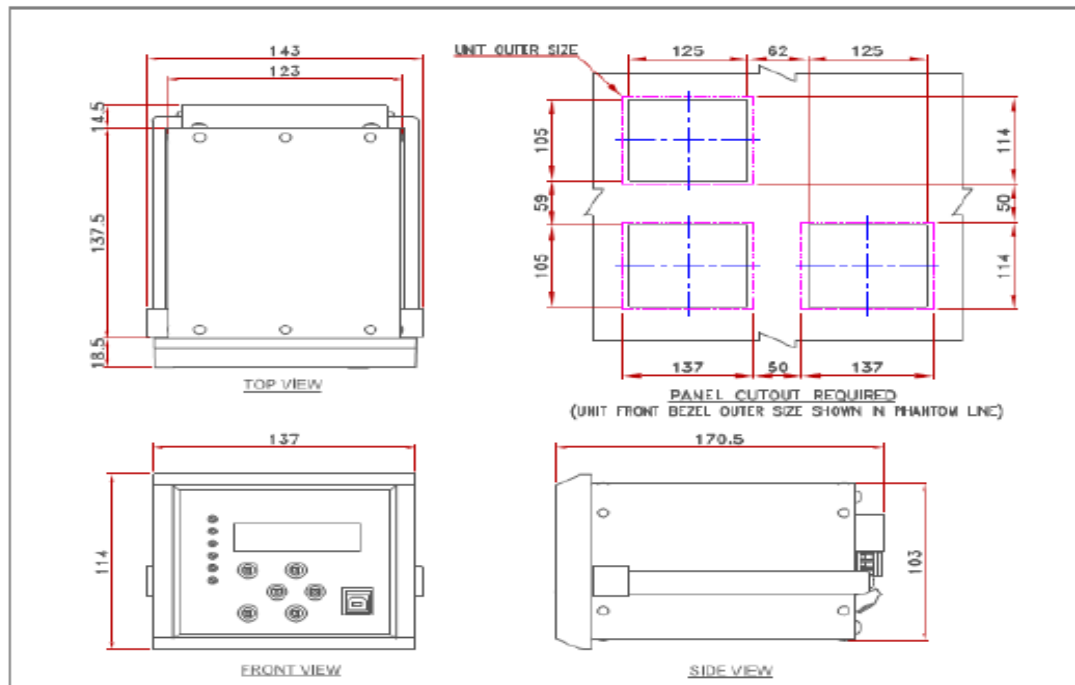
Sr. No	Model of relay	Protocol	Input (Min / Max)	Outputs (Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
A	Agile P153	Modbus/IEC103/ 60870	4	4	4	0	50, 50N, 51, 51N, 68, 49, 37, 46, 46BC, 50BF, CLP, 86, 74


MICOM P153



Design -Flush mounting case

Weight -1.9 Kg approximate



Sr. No	Model of relay	Protocol	Input (Min / Max)	Outputs (Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
B	 Agile P154	Modbus/ IEC103/ DNP 3	6	6	4	0	50, 51, 50N, 51N, 46, 49, 50 BF, 64R , 86, 95, 68, 37, 46BC, CLP

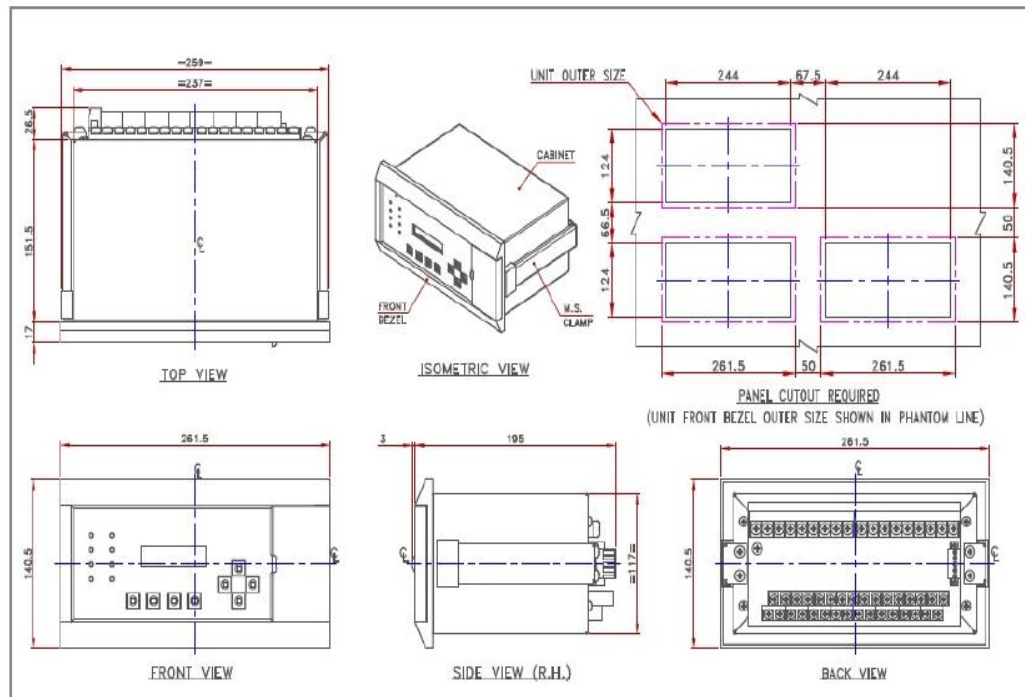
MICOM P154




P154 case dimensions

Design Flush mounting case

Weight 3.50 Kg approximate



Sr. No	Model of relay	Protocol	Input (Min / Max)	Outputs (Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
A	 P14NB Agile	IEC 103, Modbus, DNP3.0, Modbus TCP, DNP3 Ethernet, IEC 61850, IEC62439 (PRP/HSR) *	5/8/11/14	7/5/11/9	4	0	50, 50N/G, 51, 51N/G, 50/51SEF, 68 (Inrush blocking & Cold load pick up), 46, 46BC (Broken conductor & Programmable curves), Blocking scheme, 37, 49, 64N, 50BF, 86, CT supervision, DC supply supervision, CB condition monitoring, Pole discrepancy, Trip circuit supervision (H7 scheme)
B	Agile P14NL	IEC 103, Modbus, DNP3.0, Modbus TCP, DNP3 Ethernet, IEC 61850, IEC62439 (PRP/HSR) *	5/8/11/14	7/5/11/9	4	0	50, 50N/G, 51, 51N/G, 50/51SEF, 68 (Inrush blocking & Cold load pick up), 46, 46BC (Broken conductor & Programmable curves), Blocking scheme, 37, 49, 64N, 50BF, 86, CT supervision, DC supply supervision, CB condition monitoring, Pole discrepancy, Trip circuit supervision (H7 scheme), 79 Auto reclose (number of shots)

P14N Case Types- 20TE

Weight (20TE case)- 1.5 kg –2 kg (depending on configuration options)



Dimensions in mm (w x h x l) (20TE case)- W: 102.4mm H: 177.0mm D: 185.6mm

Mounting- Panel, rack



RELAY SELECTION GUIDE- FEEDER PROTECTION (P40 Agile Compact)



Sr. No	Model of relay	Protocol	Input (Min / Max)	Outputs (Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
C	 Agile P14DB	IEC 103, Modbus, DNP3.0, Modbus TCP, DNP3 Ethernet, IEC 61850, IEC62439 (PRP/HSR) *	5/8/11/14	7/5/11/9	4	4	50, 50N/G, 51, 51N/G, 50/51SEF, 68 (Inrush blocking & Cold load pick up), 46, 46BC (Broken conductor & Programmable curves), 67, 67N/G, 37, 49, 64N, 50BF, 27/59, 27V/59V, 59N, 47, 81O, 81U, 81V, 86, VT supervision, CT supervision, DC supply supervision, CB condition monitoring, Pole discrepancy, Trip circuit supervision (H7 scheme)
D	 Agile P14DL	IEC 103, Modbus, DNP3.0, Modbus TCP, DNP3 Ethernet, IEC 61850, IEC62439 (PRP/HSR) *	5/8/11/14	7/5/11/9	4	4	50, 50N/G, 51, 51N/G, 50/51SEF, 68 (Inrush blocking & Cold load pick up), 46, 46BC (Broken conductor & Programmable curves), 67, 67N/G, 37, 49, 64N, 50BF, 27/59, 27V/59V, 59N, 47, 81O, 81U, 81V, 86, VT supervision, CT supervision, DC supply supervision, CB condition monitoring, Pole discrepancy, Trip circuit supervision (H7 scheme, + 32 Phase directional power (Forward/Reverse/Under/Over) +21FL (Fault locator) +25 (Check synchronizing) + 81 df/dt + 79 Auto reclose (number of shots))

P14D Case Types- 20TE

Weight (20TE case)- 1.5 kg – 2 kg (depending on configuration options)


Dimensions in mm (w x h x l) (20TE case)- W: 102.4mm H: 177.0mm D: 185.6mm

Mounting- Panel, rack



RELAY SELECTION GUIDE- FEEDER PROTECTION (P40 Agile Compact)



Sr. No	Model of relay	Protocol	Input (Min / Max)	Outputs (Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
E	 Agile P94VB	IEC 103, Modbus, DNP3.0, Modbus TCP, DNP3 Ethernet, IEC 61850, IEC62439 (PRP/HSR) *	5/8/11/14	7/5/11/9	0	4	27/59, 27V/59V, 59N, 47, 81O, 81U, 81V, 81 df/dt, 86, DC supply supervision, CB condition monitoring
F	Agile P94VP	IEC 103, Modbus, DNP3.0, Modbus TCP, DNP3 Ethernet, IEC 61850, IEC62439 (PRP/HSR) *	5/8/11/14	7/5/11/9	0	4	27/59, 27V/59V, 59N, 47, 81O, 81U, 81V, 81 df/dt, 86, DC supply supervision, CB condition monitoring, 79 Auto reclose (number of shots) + 25 (Check synchronizing)

P94V Case Types- 20TE

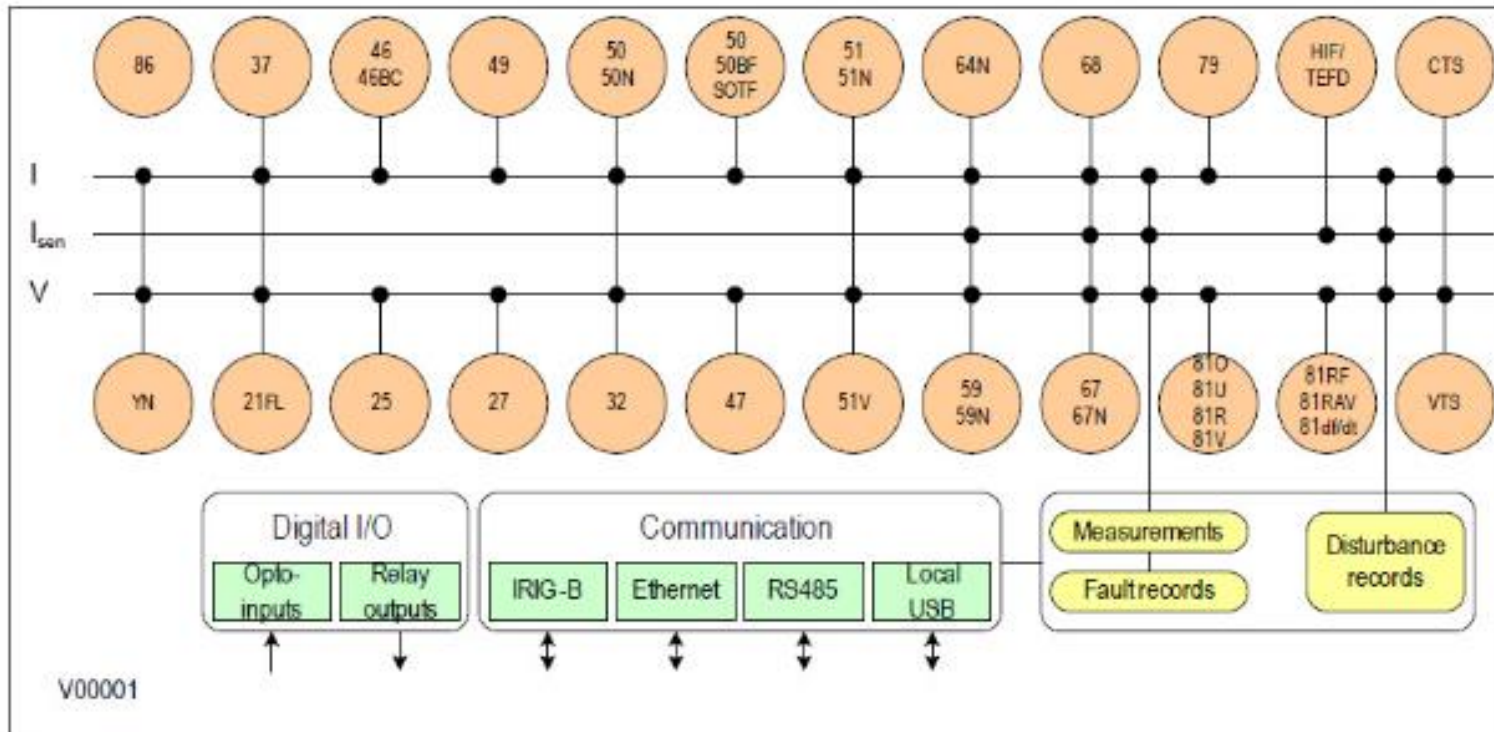
Weight (20TE case)- 1.5 kg –2 kg (depending on configuration options)


Dimensions in mm (w x h x l) (20TE case)- W: 102.4mm H: 177.0mm D: 185.6mm

Mounting- Panel, rack

Functional Overview

P14D Functional Block Diagram



Sr. No	Model of relay	Protocol	Input (Min / Max)	Outputs (Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
A	 Agile P141	Modbus / IEC103/61850	8	7	4	3	50/51,50/51N,67P,67N,67N,64,51V,51R,46,49,37,27/59,59N,DV/DT,47,81O/U,86,32,50BF,60,68,85,21FL,87B

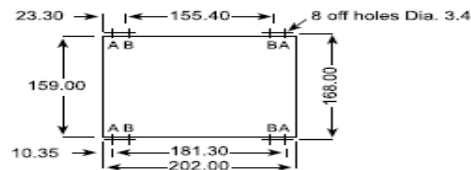
P141 case dimensions (40TE case)

DESIGN

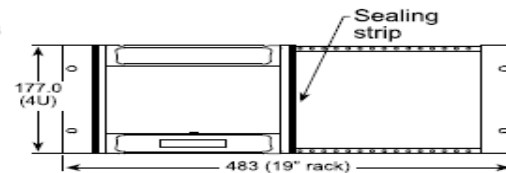
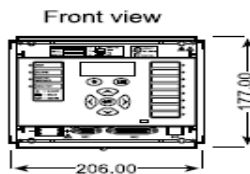
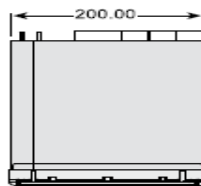
Modular MiCOM Px40 platform relay,
 W: 206.0 mm H: 177.0 mm D: 243.1 mm
 P141 in 40TE Mounting is front of panel flush mounting, or 19" rack mounted (ordering options).

WEIGHT

P141 40TE: 7 kg – 8 kg (depending on chosen options)



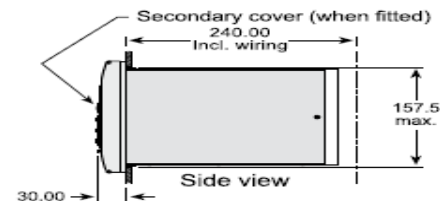
A = Clearance holes
 B = Mounting holes




Flush mounting panel
 Panel cut-out detail

Note: If mounting plate is required use flush mounting cut out dimensions

All dimensions in mm



Sr. No	Model of relay	Protocol	Input (Min / Max)	Outputs (Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
B	 Agile P142	Modbus / IEC103/61850	8 / 16	7 / 15	5	4	P141 + 79 + Extra DI/DO

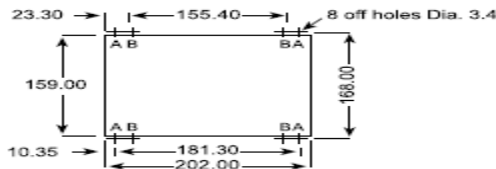
P142 case dimensions (40TE case)

DESIGN

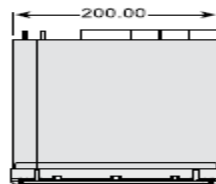
Modular MiCOM Px40 platform relay,
 W: 206.0 mm H: 177.0 mm D: 243.1 mm
 P142 in 40TE Mounting is front
 of panel flush mounting, or 19" rack
 mounted (ordering options).

WEIGHT

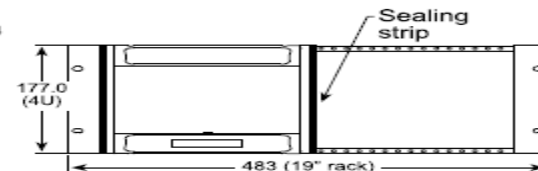
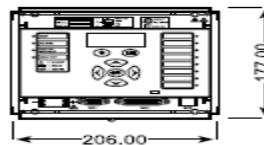
P142 40TE: 7 kg – 8 kg (depending on
 chosen options)



A = Clearance holes
 B = Mounting holes



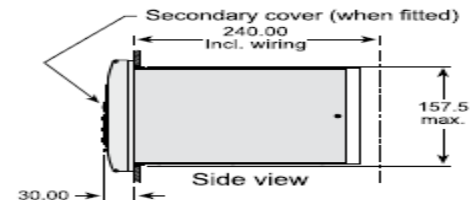
Front view




Flush mounting panel
 Panel cut-out detail

Note: If mounting plate is required
 use flush mounting cut out
 dimensions

All dimensions in mm



Side view

Sr. No	Model of relay	Protocol	Input (Min / Max)	Outputs (Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
C	 Agile P143	Modbus / IEC103/61850	16 / 32	14 / 32	5	4	P142 + 25 + Extra DI/DO

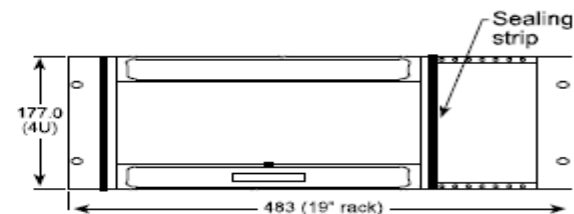
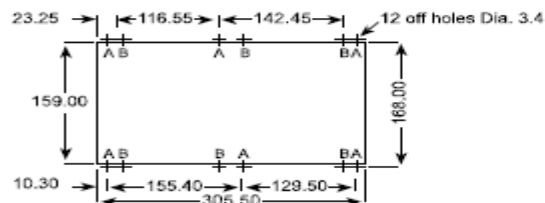
P143 case dimensions (60TE case)

WEIGHT

9 kg - 12 kg (depending on chosen options)

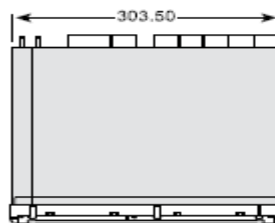
DESIGN

Modular MiCOM Px40 platform relay,
P143 60TE W: 309.6 mm H: 177.0 mm D:
243.1 mm or 19" rack mounted (ordering options).

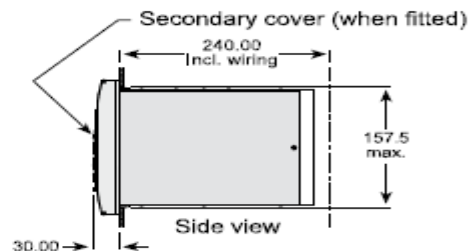
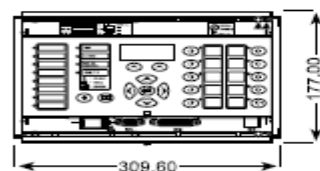


A = Clearance holes
B = Mounting holes


All dimensions in mm



Front view



Side view

Sr. No	Model of relay	Protocol	Input (Min / Max)	Outputs (Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
E	 Agile P145	Modbus / IEC103/61850	16 / 32	14 / 32	5	4	P143 + Function keys

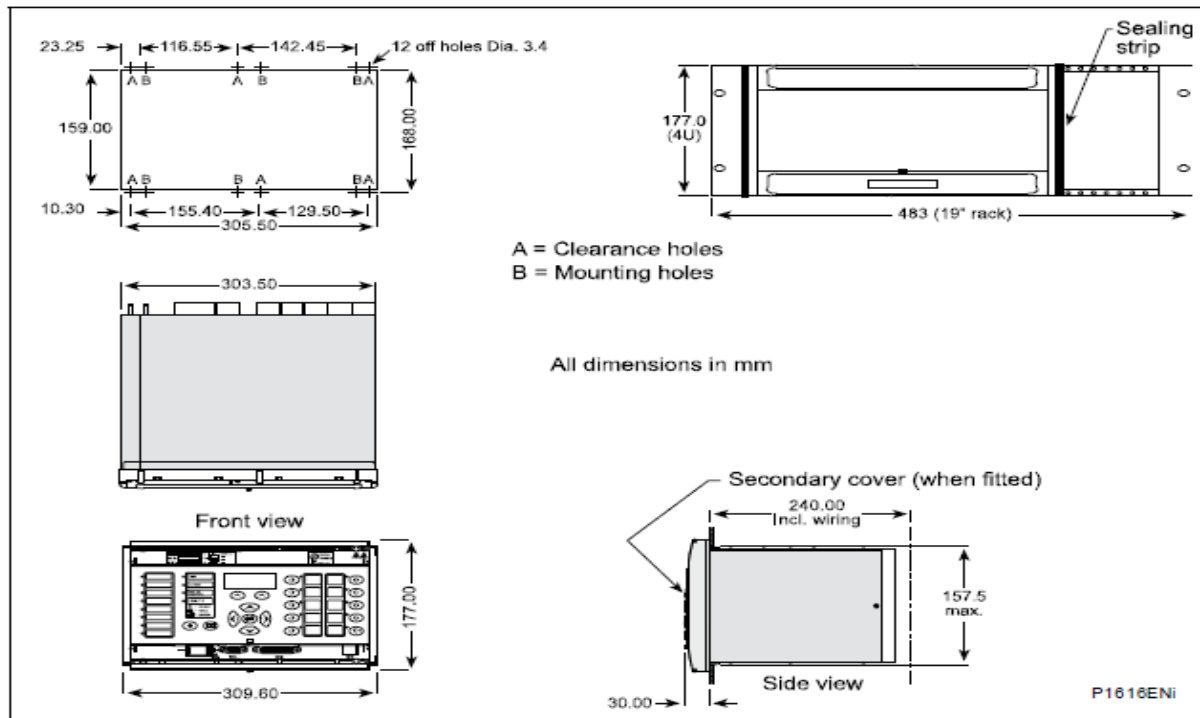
P145 case dimensions (60TE case)

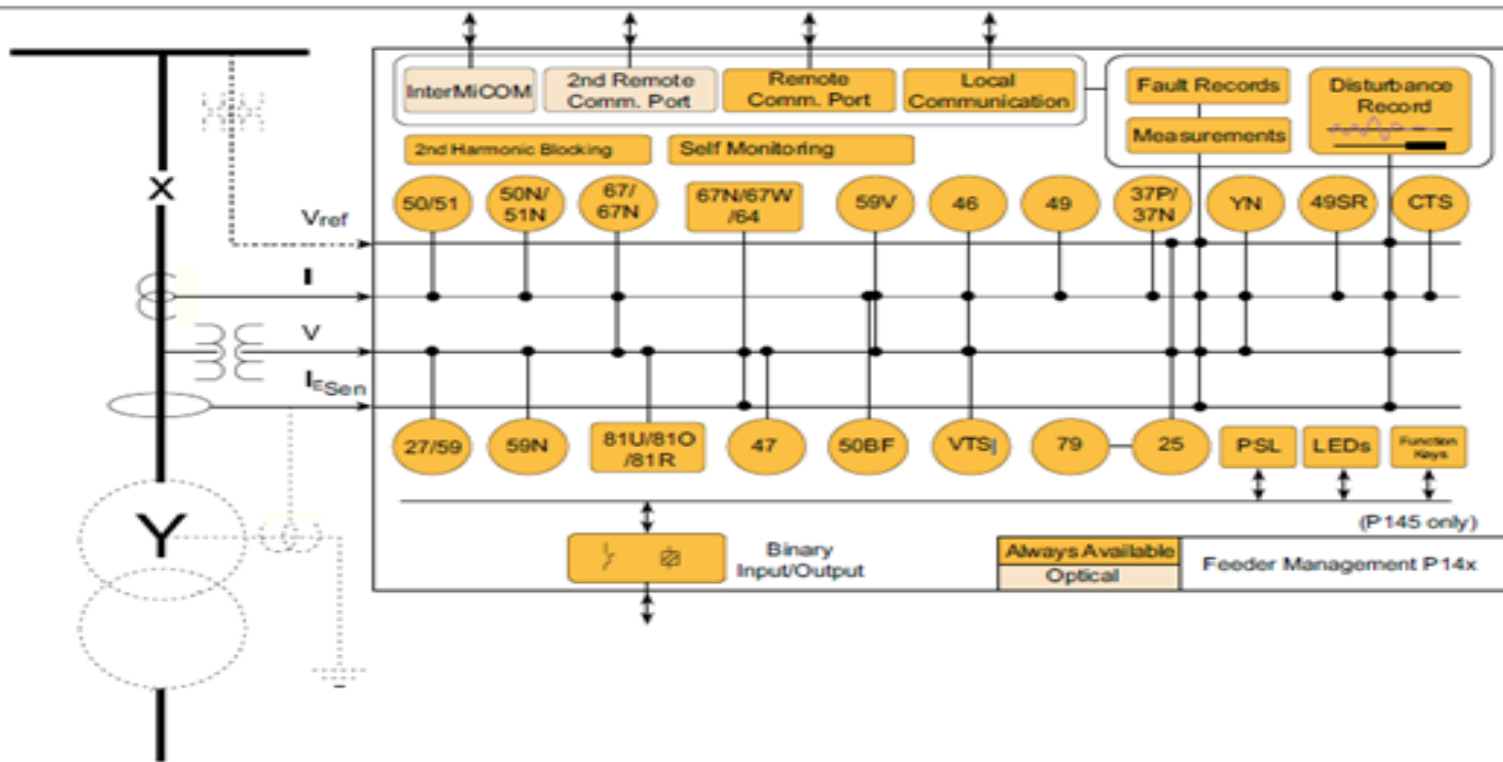
WEIGHT

9 kg – 12 kg (depending on chosen options)

DESIGN

Modular MiCOM Px40 platform relay,
 P145 60TE W: 309.6 mm H: 177.0 mm D:
 243.1 mm or 19" rack mounted (ordering options).





❖ **Disclaimer:-**

Info given herein is for ease of understanding. Customized tech info is for specific purpose SCS suggests you to take confirmation on technical details from GE experts SCS does not take responsibility or claim this will suit your needs.



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