



## RELAY SELECTION GUIDE- TRANSFORMER DIFFERENTIAL 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.

## Models



- **P652** -Basic Transformer Protection Relay  
(ANSI Code-87T, 64R, 49, 50/51, 50N/51N, 46 , 50BF, TCS,)



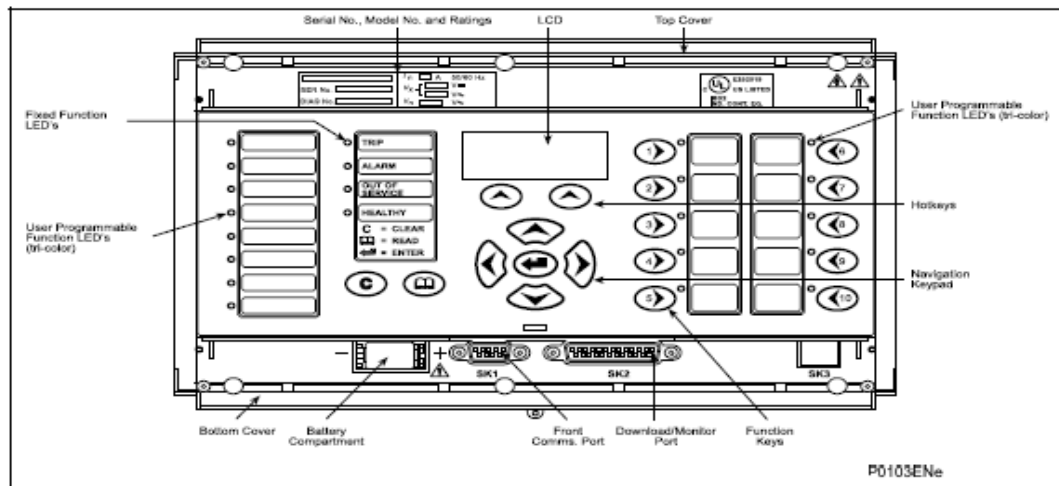
- **P642** -2 BIAS INPUT TRANSFORMER DIFFERENTIAL  
(ANSI Code- 87T, 64R, 49, 24, 50/51, 50N/51N, 46 , 50BF, CTS, TCS,)



- **P643** -3 BIAS INPUT TRANSFORMER DIFFERENTIAL  
(ANSI Code- 87T,64R,49,24,50/51,50N/51N,46,67/67N,50BF,27/59/59N,81U/81O,VTS,CTS,95,51S)



- **P645**- 5 BIAS INPUT TRANSFORMER DIFFERENTIAL  
(ANSI Code- P643 + Extra DI/DO + Extra CT input)



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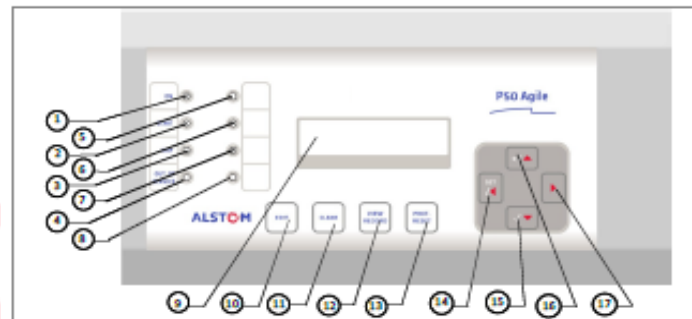
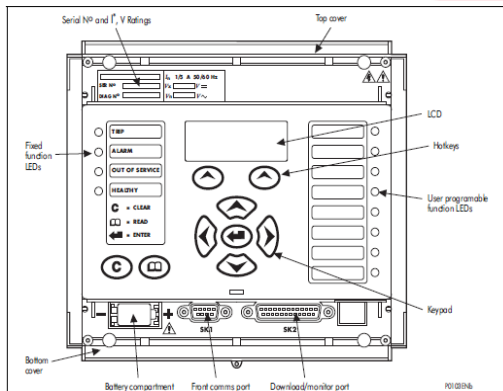



Figure 1: Front panel

SL no	Label	Function
1	ON	Green LED indicates that the LED is in correct working order, and should be ON at all times. It turns red if the unit's self-tests show there is an error in the hardware or software.
2	START	Amber LED flashes when the LED registers an alarm. This may be triggered by a fault, event or maintenance record. The LED flashes until the alarms have been accepted (read) by pressing VIEW RECORD function key, then changes to constantly ON. When the alarms are cleared, the LED switches OFF after pressing CLEAR key.
3	TRIP	Red LED switches ON when the LED issues a trip signal. When the faults are cleared, the LED switches OFF after pressing CLEAR key.
4	OUT OF SERVICE	Amber LED flashes when the LED's protection is unavailable (eg. Setting Error, ADC Error detected by unit's self-test etc)
5	L5	Programmable dual colour LED
6	L6	Programmable dual colour LED
7	L7	Programmable dual colour LED
8	L8	Programmable dual colour LED
9	LCD Display	The LCD display is used to view the settings and parameters of the relay.
10	EDIT	Feather touch key to edit parameter settings.
11	CLEAR	Feather touch key to clear the fault LED indications. Also used to discard the setting changes.
12	VIEW RECORD	Feather touch key to view fault records.
13	PROT. RESET	Feather touch key to reset the hardware. This key to be used along with EDIT key. The relay will reboot when PROT. RESET + EDIT is pressed simultaneously.
14	SET	Feather touch key SET to save the settings and / ← is used for navigating through the menus/submenus.
15	+ / ▲	Feather touch key [▲] is used to INCREASE the values and [▲] is used to change the menu level or change between settings in a particular menu.
16	- / ▼	Feather touch key [▼] is used to DECREASE the values and [▼] is used to change the menu level or change between settings in a particular menu.

Sr. No	Model of relay	Protocol	Input ( Min / Max)	Outputs ( Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
a	 Microm P 652	Modbus / IEC103	6	6	8	0	87T, 64R, 49, 50/51, 50N/51N, 46 , 50BF, CTS, TCS,

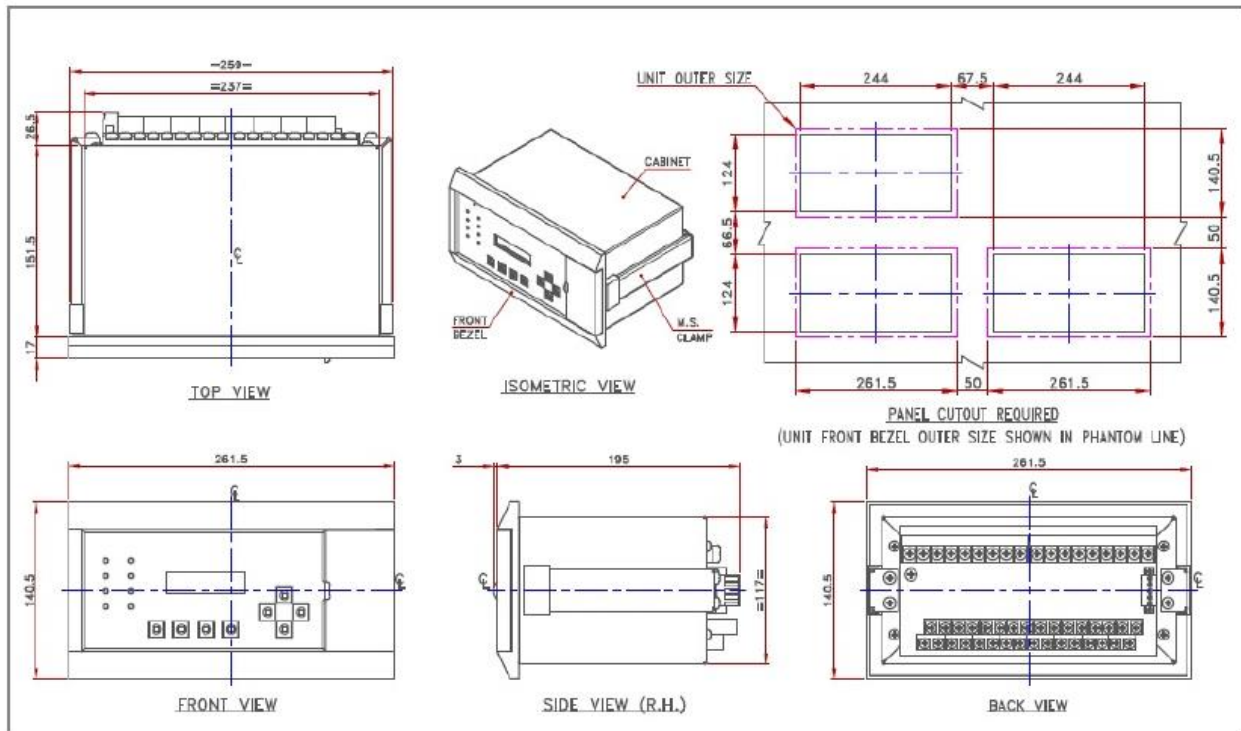
## P652 case dimensions

Design Flush mounting case

Weight 3.50 Kg approximate

The P652 hardware comprises of following main components:

- Housing, consisting of a front panel and connections at the rear
- Microcontroller module
- Analogue input module
- Digital input module
- Digital output module
- Communication module
- Power supply unit
- Human machine Interface (HMI) module



Sr. No	Model of relay	Protocol	Input ( Min / Max)	Outputs ( Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
b	Agile P642 (2-Winding)	Modbus / IEC103/61850	8	8	8	1	87T, 64R, 49, 24, 50/51, 50N/51N, 46 , 50BF, CTS, TCS,

## P642 case dimensions (40TE case)

Weight (40TE case) 7 kg – 8 kg (depending on chosen options)

Dimensions in mm (w x h x l) (40TE case) W: 206.0 mm  
H: 177.0 mm D: 243.1 mm

Mounting Panel, rack, or retrofit

### Case 40TE

Number of CT Inputs 8 (6 Bias, 2 EF)

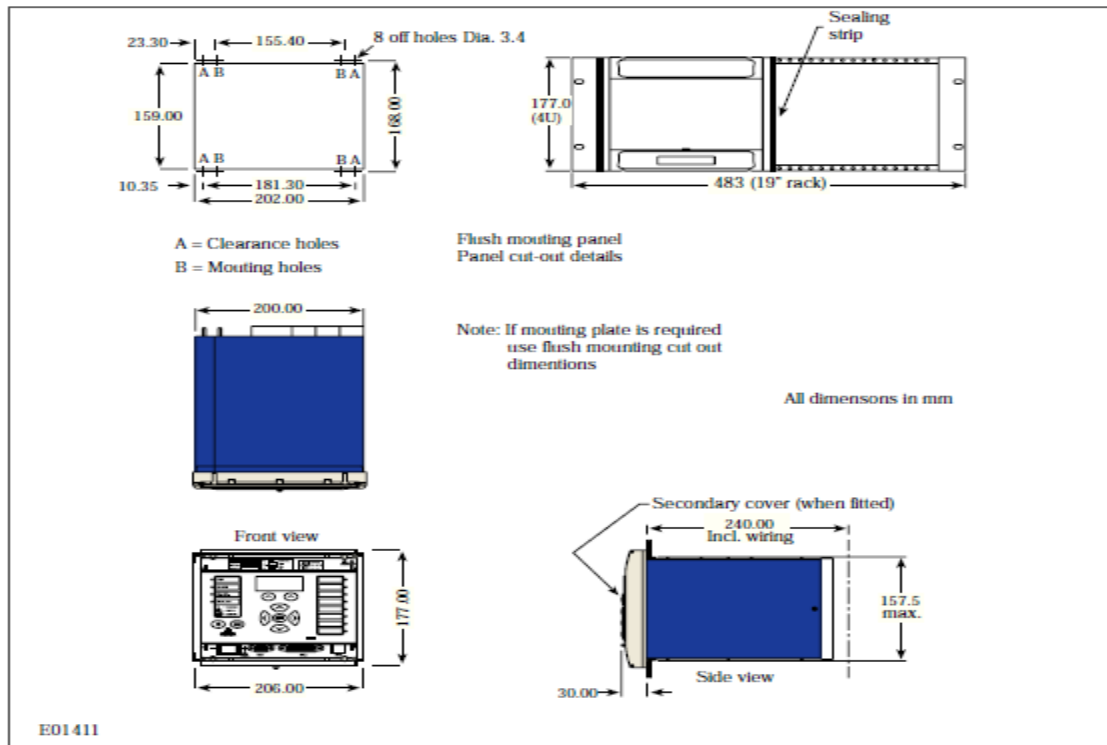
Number of VT inputs 1 or 2


Number of bias inputs (3-phase CT sets) 2

Optically coupled digital inputs 8 - 12

Standard relay output contacts 8 - 12

Programmable LEDs 8 red



Sr. No	Model of relay	Protocol	Input ( Min / Max)	Outputs ( Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
C	 Agile P643 (3-Winding)	Modbus / IEC103/61850	16 / 40	16 / 24	12	1 / 4	87T,64R,49,24,50/51,50N/51N,46,67/67N,50BF, 27/59/59N,81U/81O,VTS,CTS,95,51S

## P643 case dimensions (60TE case)

Weight (60TE case) 9 kg - 12 kg  
(depending on chosen options)

Dimensions in mm (w x h x l) (60TE case)  
W: 309.6 mm H: 177.0 mm D: 243.1 mm

### Case 60TE/80TE

Number of CT Inputs 12 (9 bias, 3EF)

Number of VT inputs 1 or 4

Number of bias inputs (3-phase CT sets) 3

Optically coupled digital inputs 16 - 40

Standard relay output contacts 8 - 24

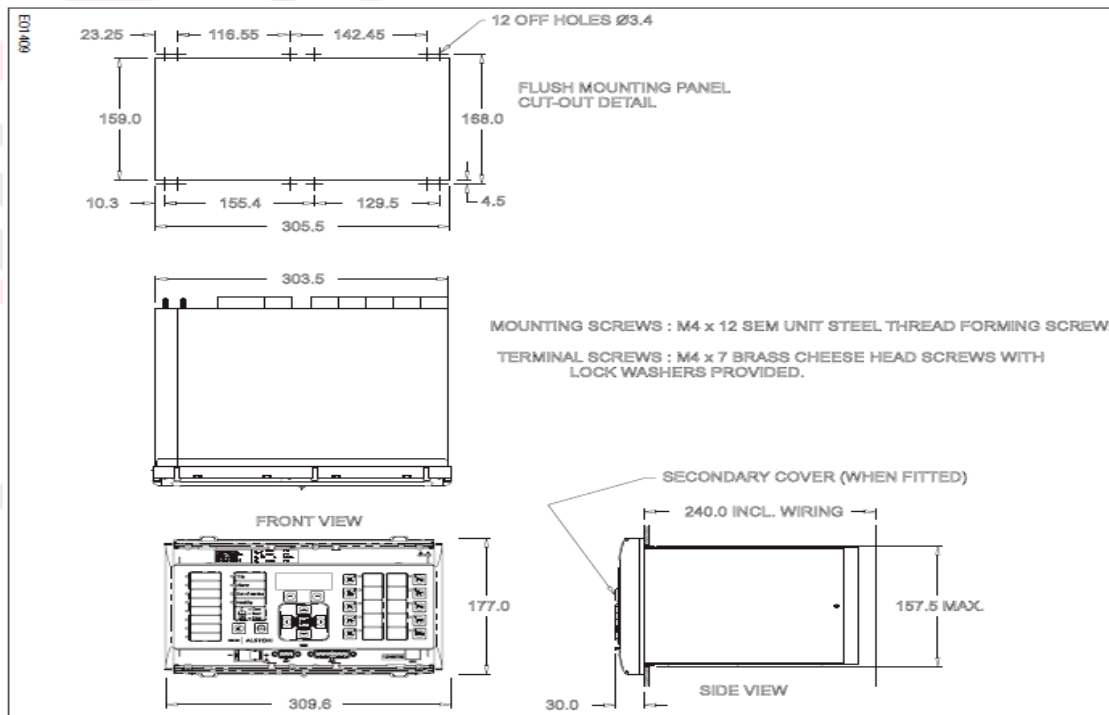
Function keys 10

Under voltage/Overvoltage/Residual voltage protection -Yes

Under frequency/Over frequency protection -Yes

Over fluxing protection 1-phase + 3-phase

Programmable LEDs 18 tri-colour



Sr. No	Model of relay	Protocol	Input ( Min / Max)	Outputs ( Min / Max)	CT INPUTS	VT INPUTS	ANSI Code
c	Agile P645 (5-Winding)	Modbus / IEC103/61850	16 / 40	16 / 24	18	1 / 4	P643 + Extra DI/DO + Extra CT input

## P645 case dimensions (80TE case)

Weight (80TE case) 13 kg - 16 kg  
(depending on chosen options)

Dimensions in mm (w x h x l) (80TE case)  
W 413.2 mm H 177.0 mm D 243.1 mm

Mounting Panel, rack, or retrofit

### Case 60TE/80TE

Number of CT Inputs 18 (15 Bias, 3EF)

Number of VT inputs 1 or 4

Number of bias inputs (3-phase CT sets) 5

Optically coupled digital inputs 16 - 40

Standard relay output contacts 8 - 24

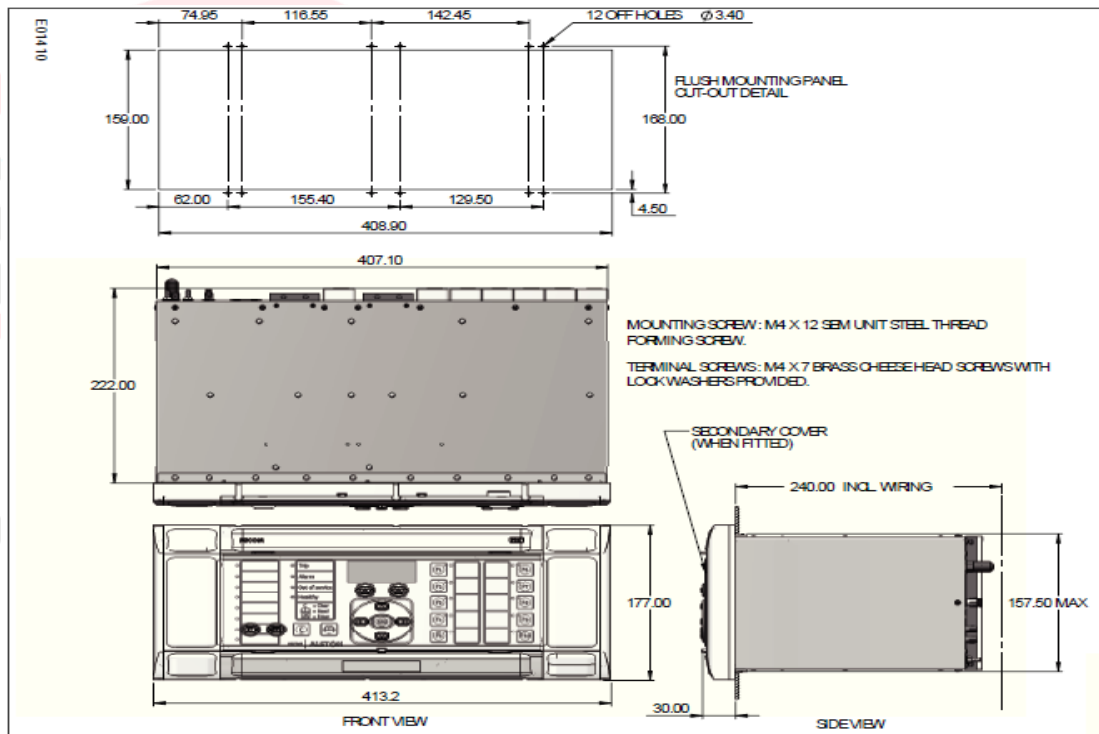
Function keys 10

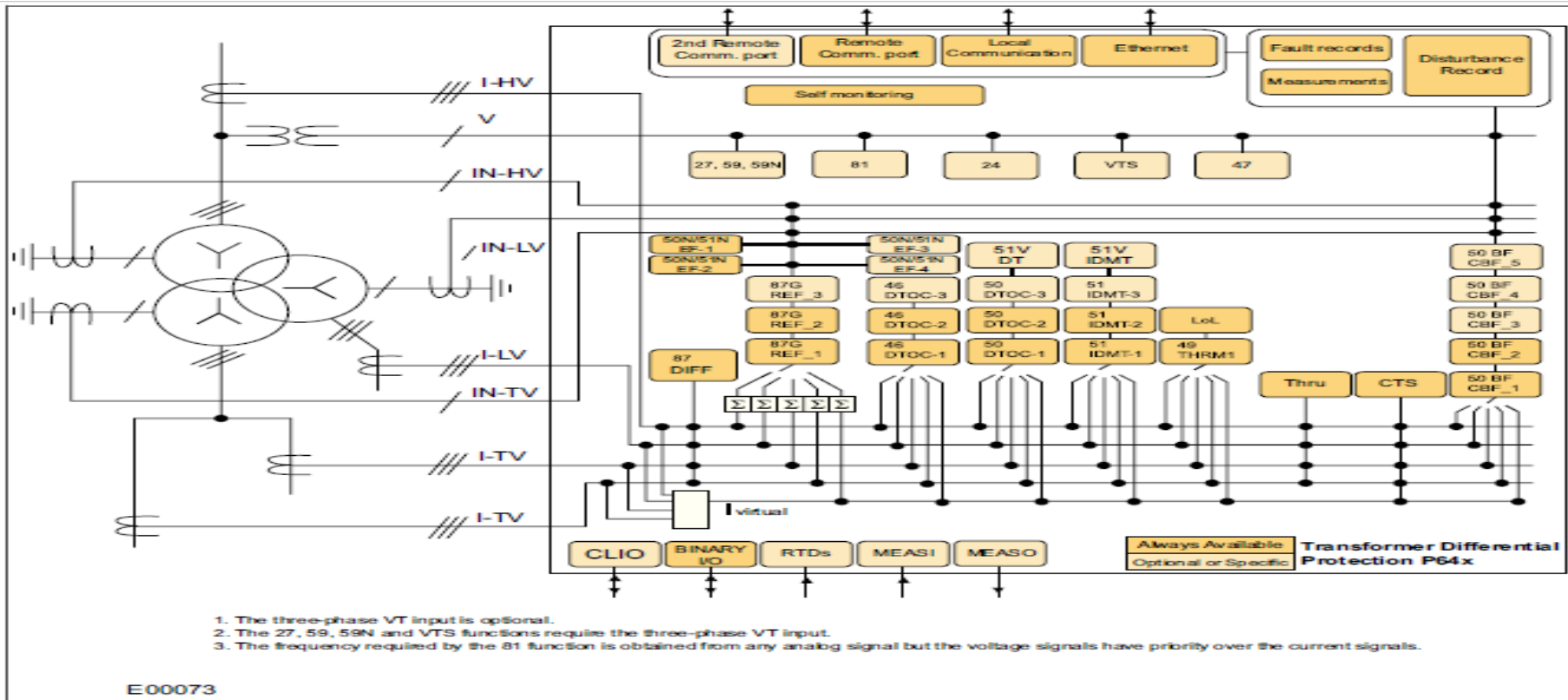
Under voltage/Overvoltage/Residual voltage protection-Yes

Under frequency/Over frequency protection -Yes

Over fluxing protection 1-phase + 3-phase

Programmable LEDs 18 tri-colour





### ❖ 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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