

The Overview of Siemens Protective Relay



Understanding Basic function of Protective Relay

Relay Functions

◆ Monitoring

- CB, DS, ES, LOR Status / Alarms

◆ Metering

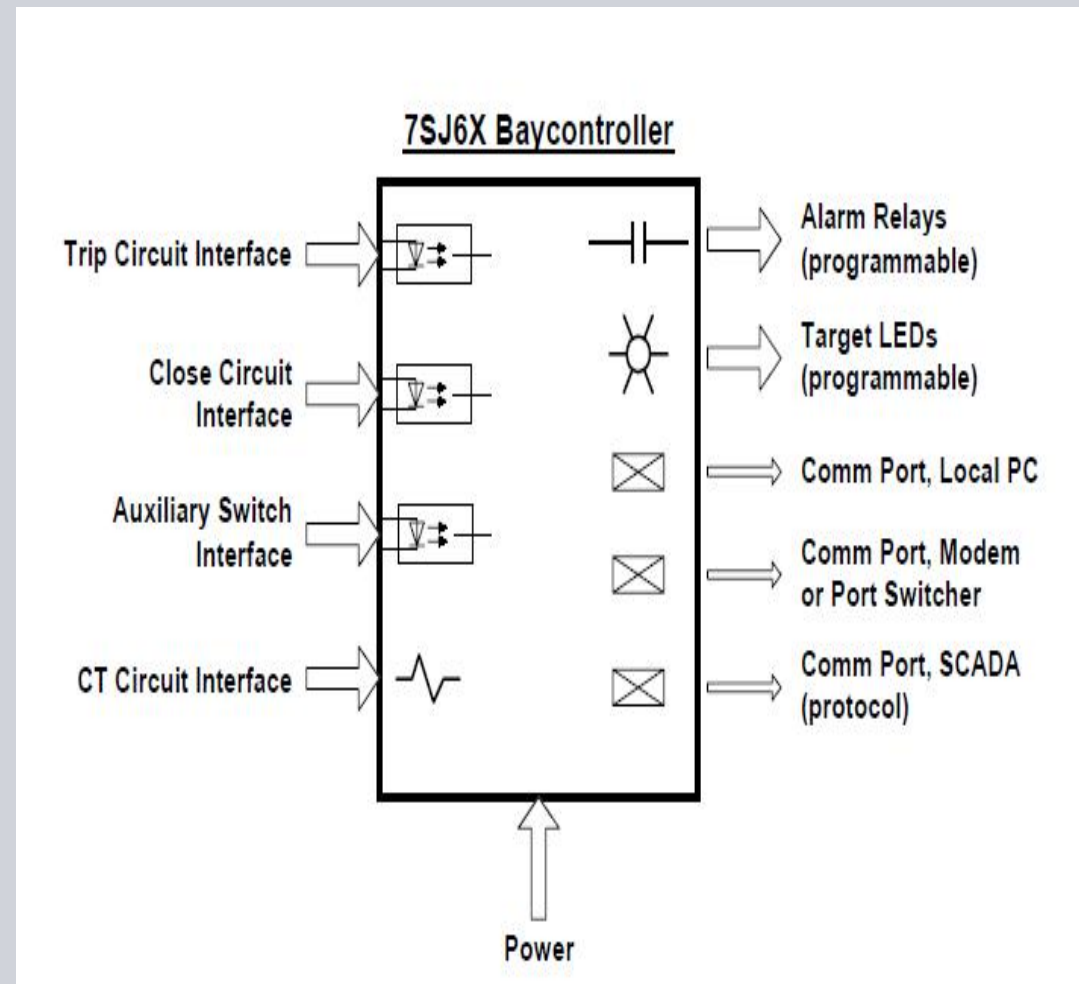
- V, I, P, Q, pf, Cos, Wh, etc

◆ Control

- Open/Close (CB, DS, ES)
- Raise/Lower (TR tap, EDG V / f)
- Start / Stop (EDG)

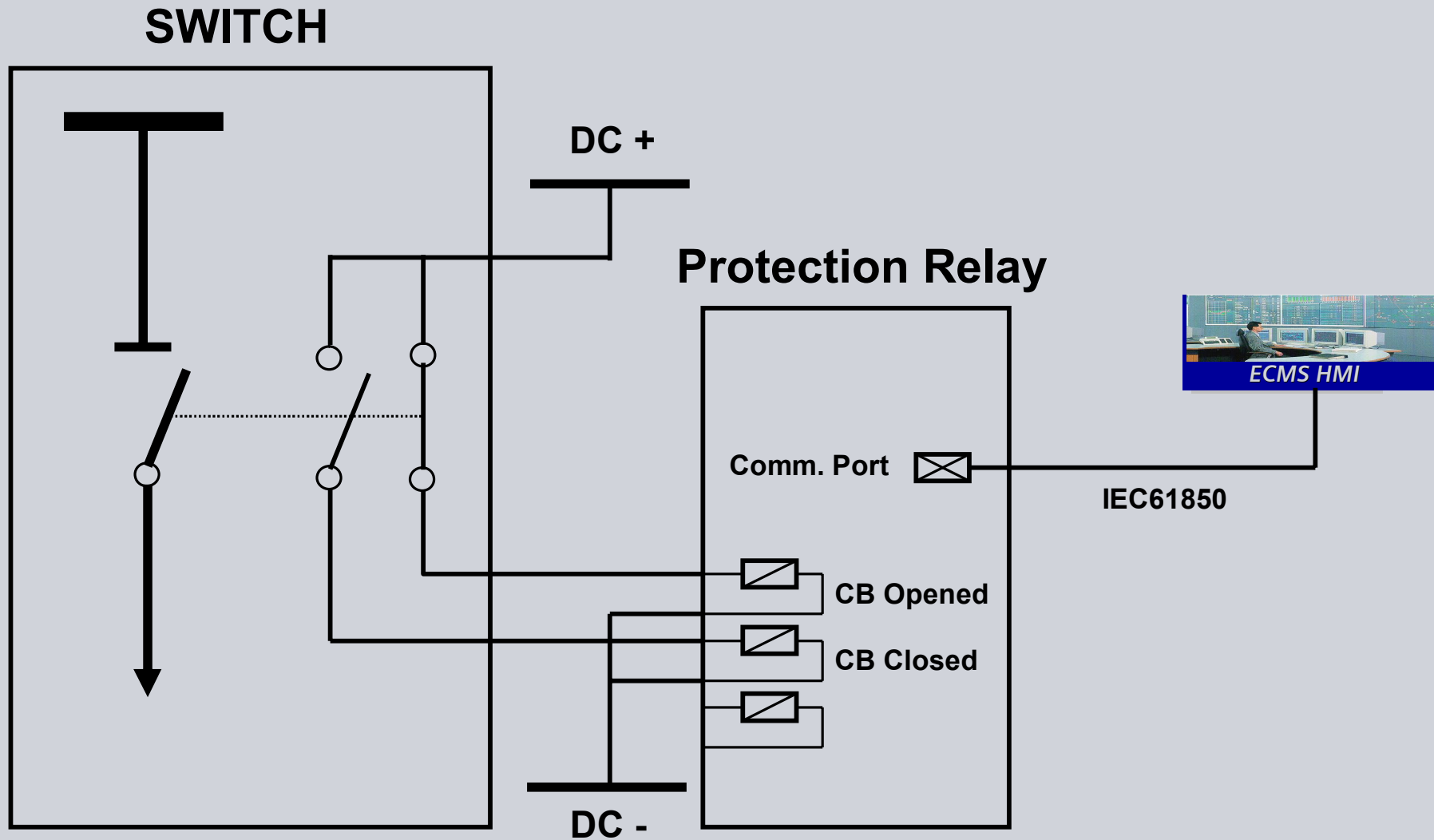
◆ Protection

- CT Input
- PT Input



Monitoring

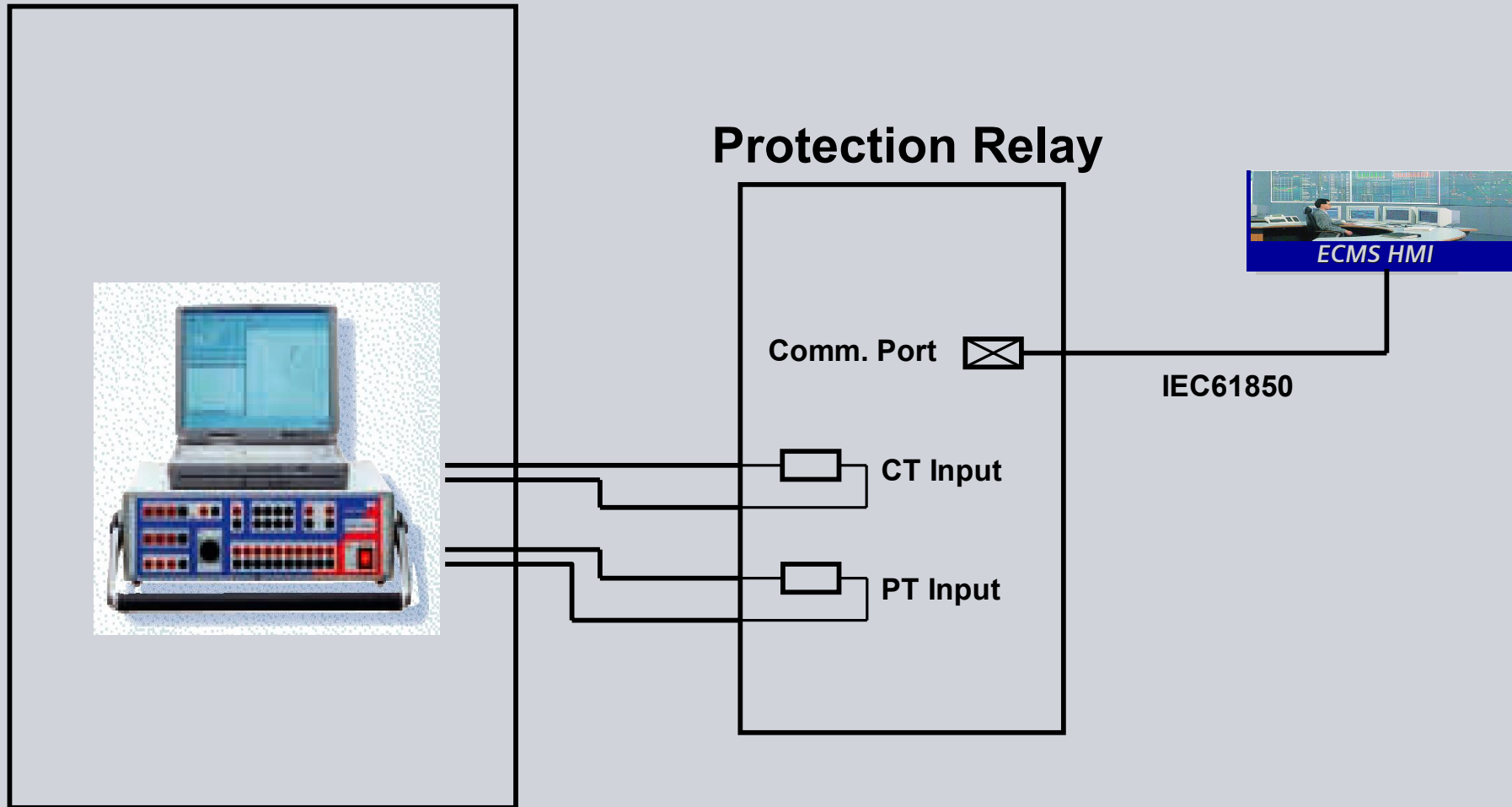
- Status, Alarm monitoring through BI (Binary Input)



Metering

V, I, P, Q, pf, cos, wh, etc through CT, VT

Current / Voltage Simulator



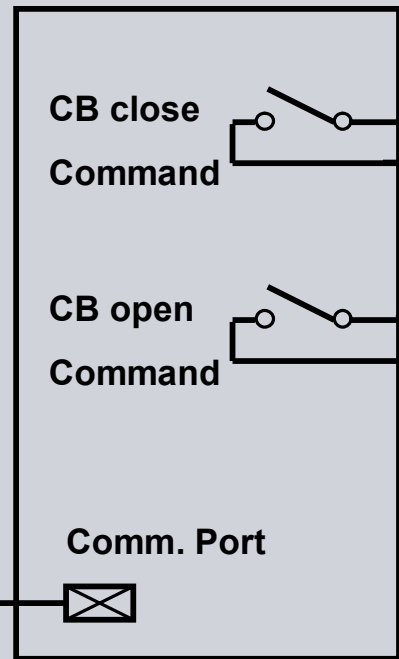
Control (with Logic)

- Open, Close through BO (Binary Output)

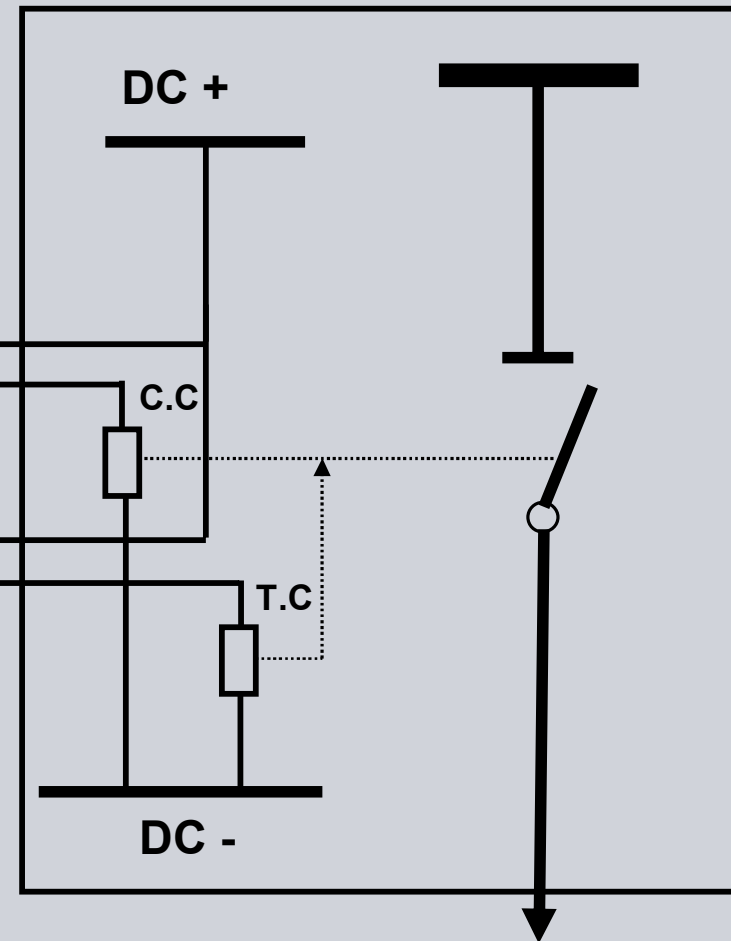


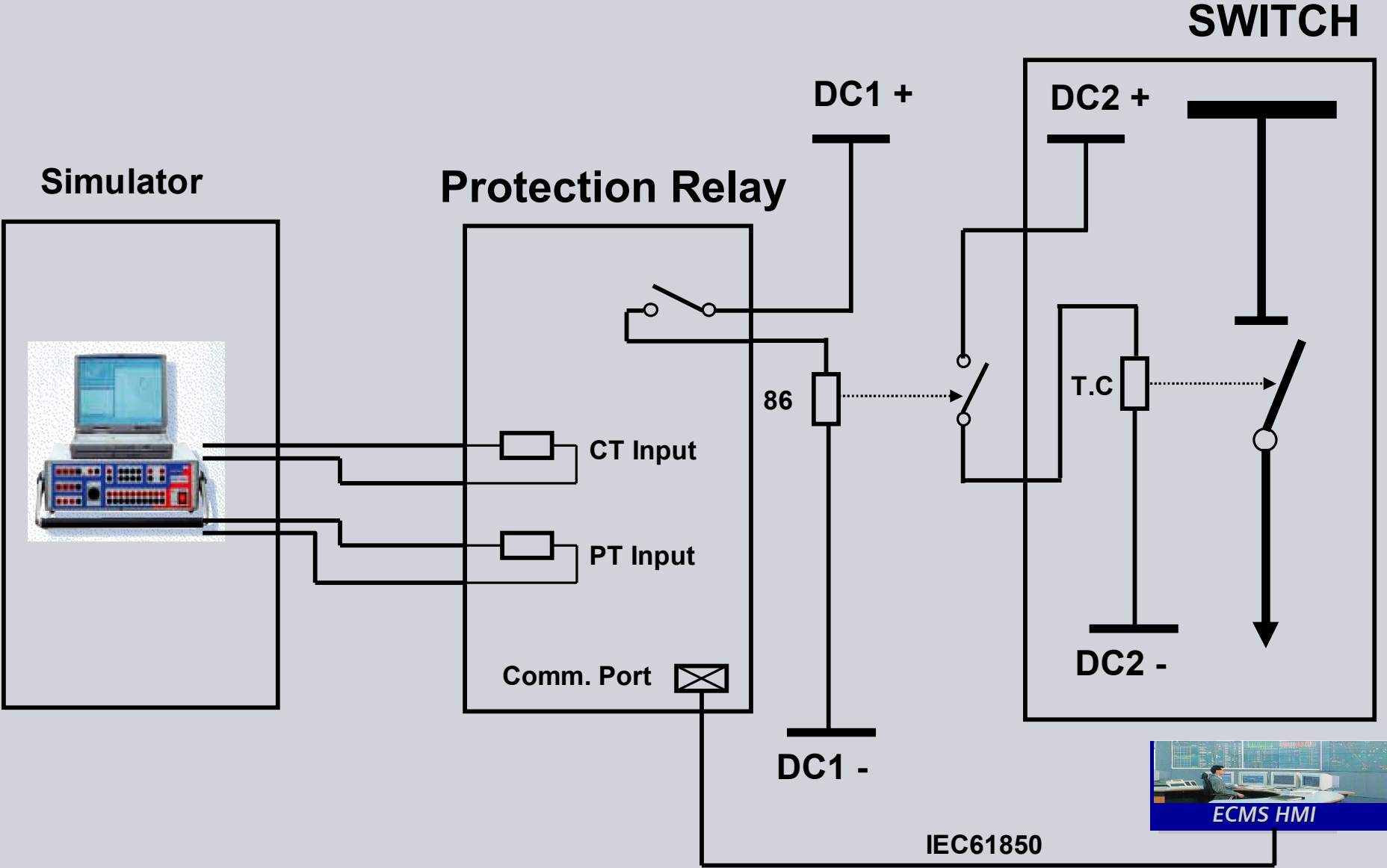
IEC61850

Protection Relay



SWITCH

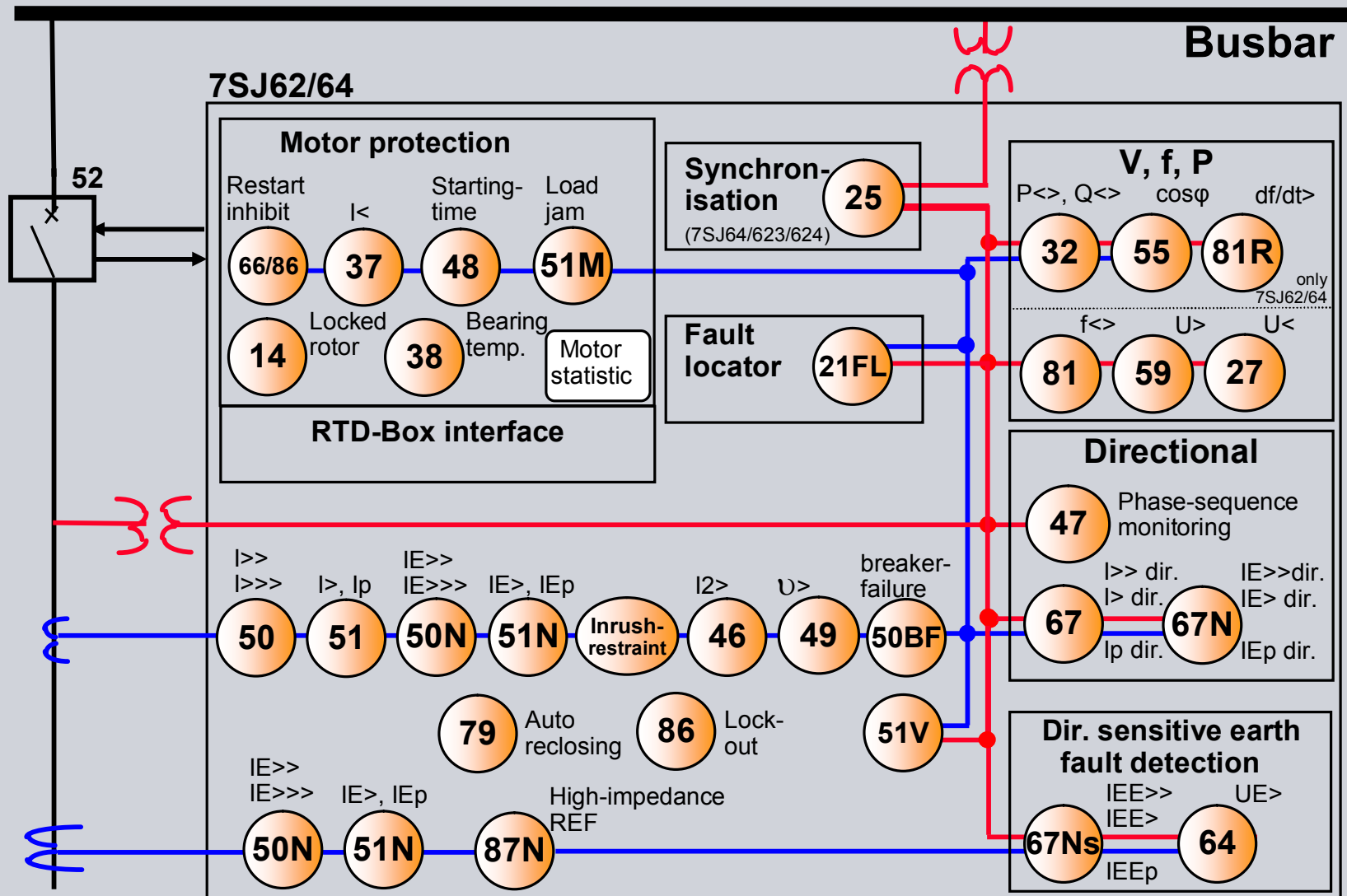




Overcurrent- / multifunctional relays

Multifunctional relay & all options

Protection Features



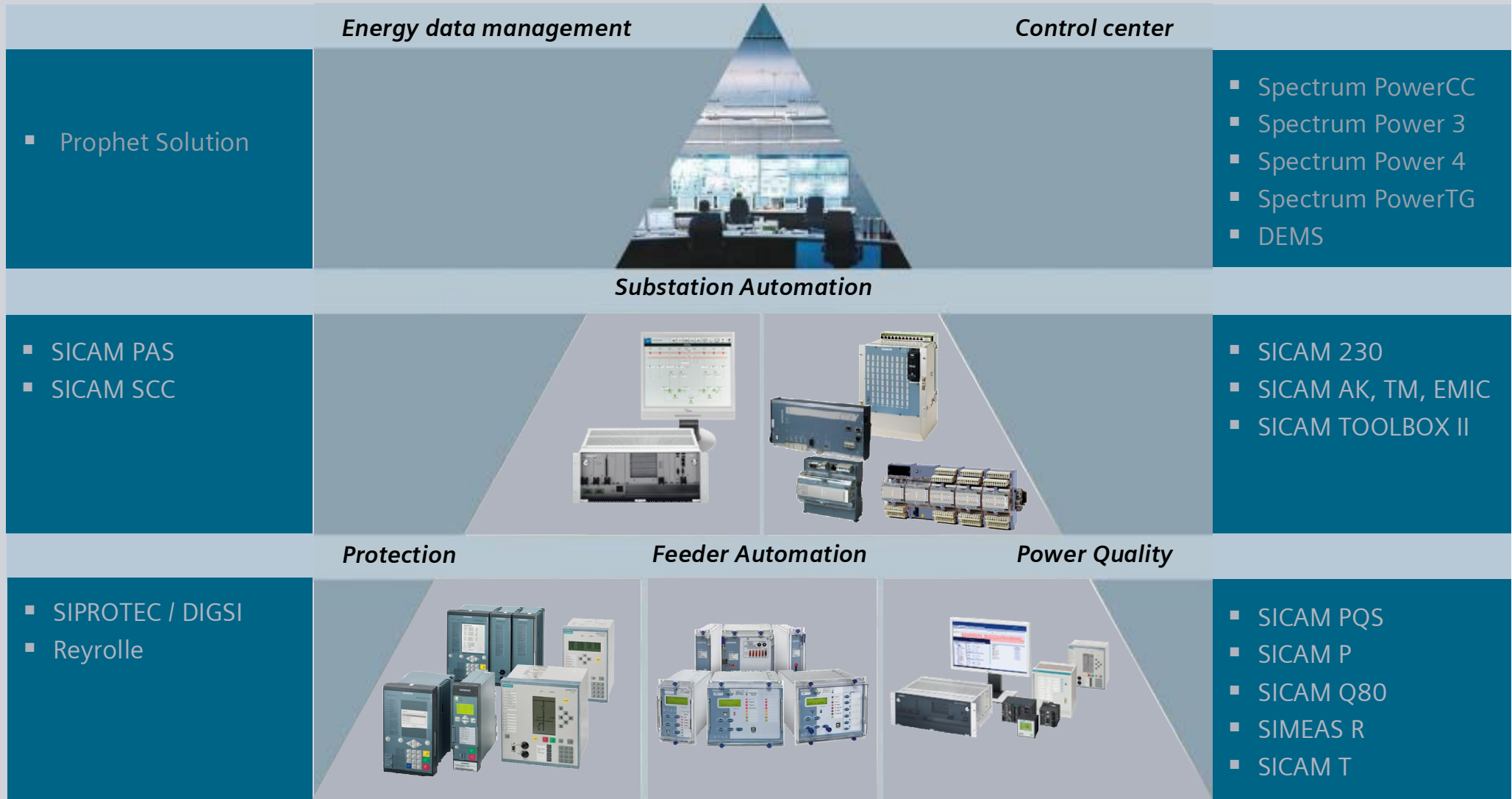


SIEMENS

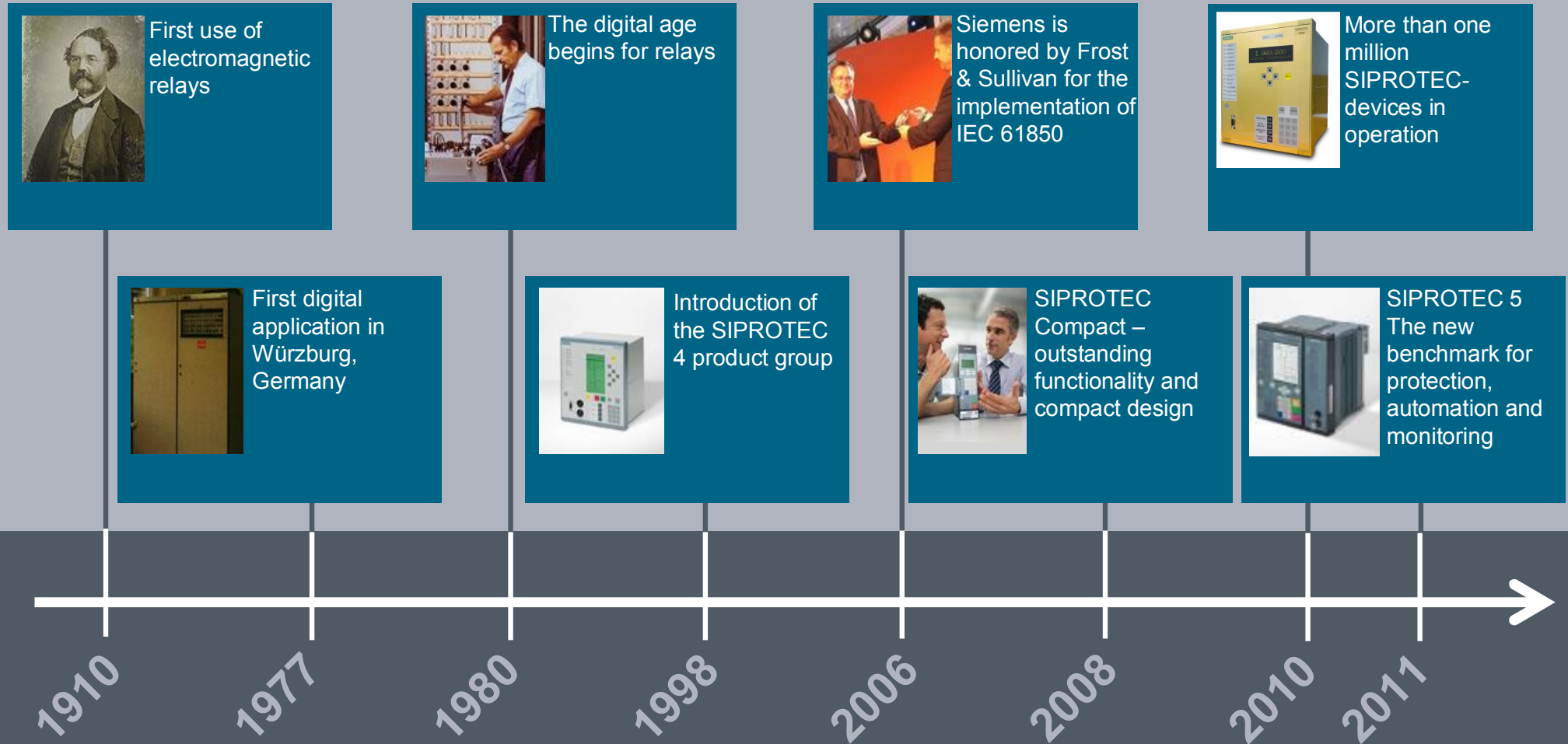
The portfolio of Siemens Product

Energy Automation

Broadest portfolio and strong brands



SIPROTEC – synonymous with the world's leading protection technology



Siemens protection portfolio



SIPROTEC 4



World's No 1 in protection

For all applications

Proven, reliable,
high experience in the region available

> 1.000.000 relays in the field

SIPROTEC 4 – the experienced, reliable and future proof relay

SIPROTEC 5



Based on 100 years of experience in protection technology

Targeting the transmission market

Trendsetting technology for the new electricity age

Pilot projects already started

SIPROTEC 5 – the new benchmark for protection, automation, and monitoring of transmission grids

Reyrolle



Simpler devices than SIPROTEC

Focus on distribution and industry

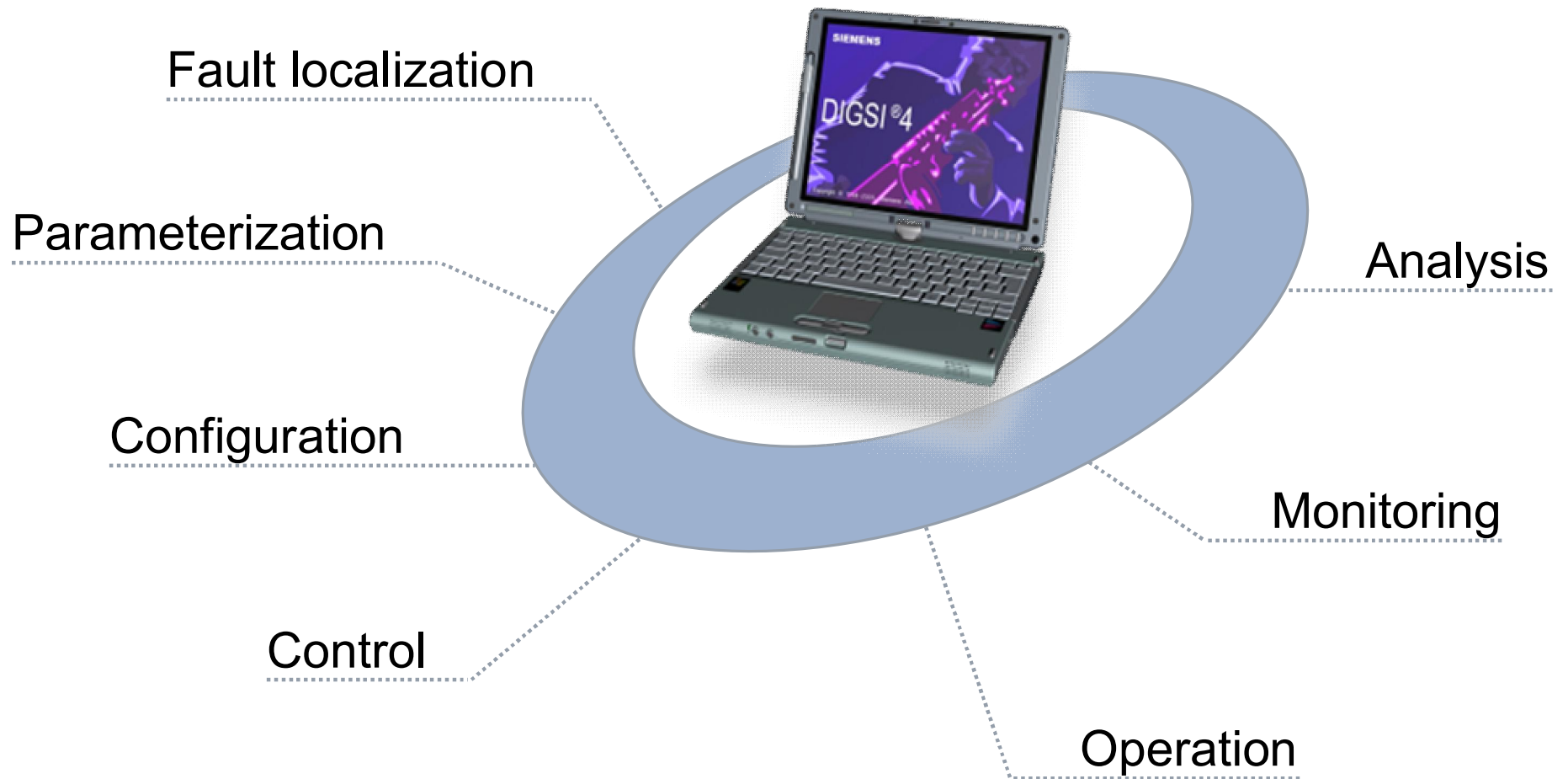
Strong position in UK influenced markets

Same quality standards

Reyrolle – with-drawable solutions for distribution grids

DIGSI 4
One DIGSI for All Tasks

DIGSI 4 is the complete software solution



Power quality detection

T

SICAM T
Digital transducer for
electrical measurands

P

SICAM P
Power meter for monitoring electrical
measurands

Q

SICAM Q80
Power quality recorder for analysis of grid
quality in accordance with EN50160

R

SIMEAS R
Fault recorder, power quality recorder,
and phasor measurement unit (PMU) in
accordance with IEEE C37.118



Over Current Protection Relay(50,51,50N,51,46,49,..) (Bay Incoming, Non Motor / Small Motor Feeder)



SIPROTEC3



- 7SJ600(3CT)
- 7SJ6021,5(4CT)
- 7SJ6022,6(3CT+1VT)

Protection

SIPROTEC Compact



- 7SJ80(4CT+0PT or 3PT)
3PT : 25(option)
- IEC61850 Available

Protection, Control
Monitoring

SIPROTEC4



- 7SJ61(4CT)
 - 7SJ62(4CT+3PT or 4PT)
 - 7SJ63(4CT+3PT)
 - 7SJ64(4CT+4PT)
4PT : 25(option)
- IEC61850 Available

Protection, Control
Monitoring

SIPROTEC4



- **7UM62x**
8CT(2x3CT+2CT) + 4PT

IEC61850 Available

**Protection, Control
Monitoring**

TR Protection Relay (87T, REF, 50, 51, 50N, 51N, 46, 49, 50BF, 86, 74TC, ...)



2 Measuring



- **7UT612**
(8CT, 3BI, 4BO)
- IEC61850 Available

Protection

3 Measuring



- **7UT613**
(13CT+4PT, 5BI, 8BO)
 - **7UT633**
(13CT+4PT, 21BI, 24BO)
- IEC61850 Available

**Protection, Control
Monitoring**

5 Measuring



- **7UT635**
(17CT, 29BI, 24BO)
- IEC61850 Available

**Protection, Control
Monitoring**

LINE Protection Relay(21, 87L)



21



- **7SA6(4CT+4PT)**
1 Channel for protection data interface
- **7SA522(4CT+4PT)**
2 Channels for protection data interface
IEC61850 Available

Protection

87L



- **7SD61(4CT+4PT, 5BI, 3BO)**
1 Channel for protection data interface

IEC61850 Available

Protection

87L + 21



- **7SD52/53(4CT+4PT)**
2 Channels for protection data interface

IEC61850 Available

**Protection, Control
Monitoring**

BUS Protection Relay(87B, 50BF)

High-Imp



- 7VH60(1CT Input)

Protection

Low-Imp. (Centralized)



- 7SS60
(2 Measuring Input)

Protection

Low-Imp. (Distributed)



Fig. 9/17 SIFROTEC-4
7SS52 busbar protection system

- 7SS522
(Central Unit)
- 7SS523/7SS525
(Bay Unit)
IEC61850 Available

Protection

Various Protection Applications



Motor Protection



- **7SK80**
4CT or
4CT + 3PT or
4CT + 5RTD or
4CT + 3PT + 5RTD
IEC61850 Available

Protection, Monitoring

V, f, Protection



- **7RW600**
2 PT Input

Protection

Breaker Management



- **7VK61**
25, 79, 59, 27, 86

IEC61850 Available

**Protection, Monitoring,
Control**

SIPROTEC 5: Modular Hardware Design

Base Module with Expansion Modules

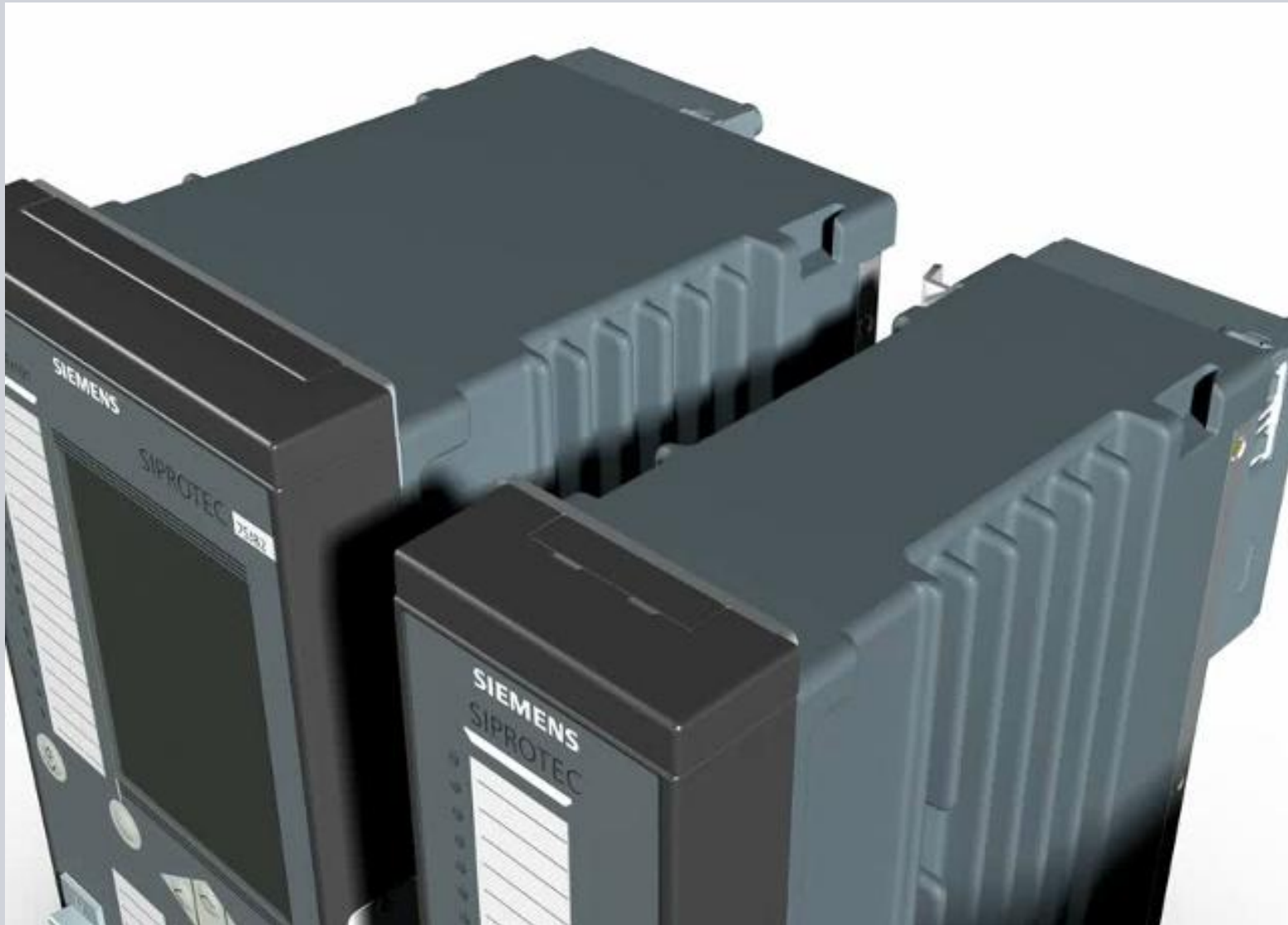
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SIPROTEC 5 Surface mounted device – front view



Mounting of an expansion module

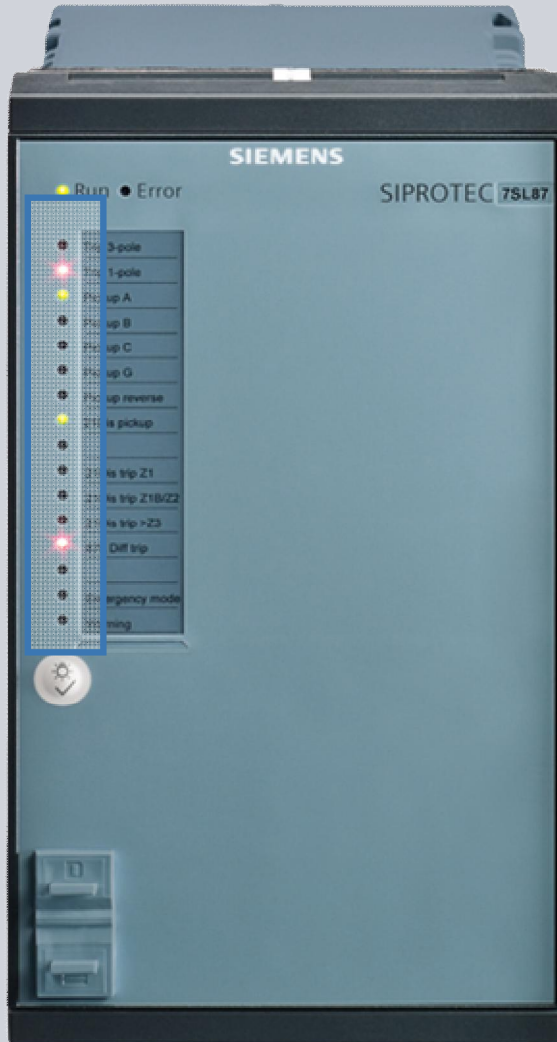


SIPROTEC 5

Different Types of Operator Panels for Base Module



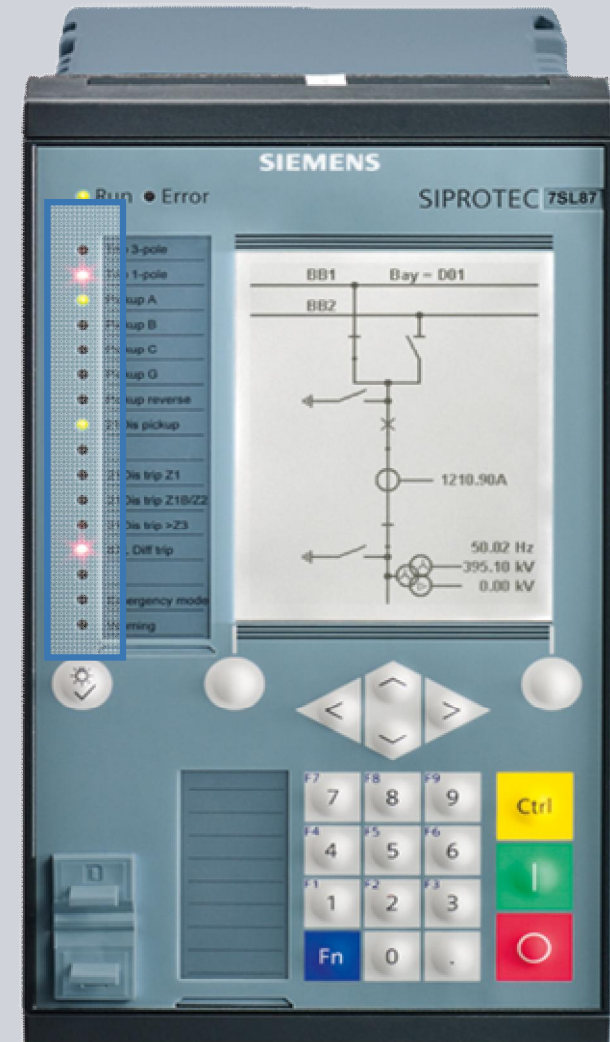
Dual Color LEDs (settable to green or red)



No Display



Small Display



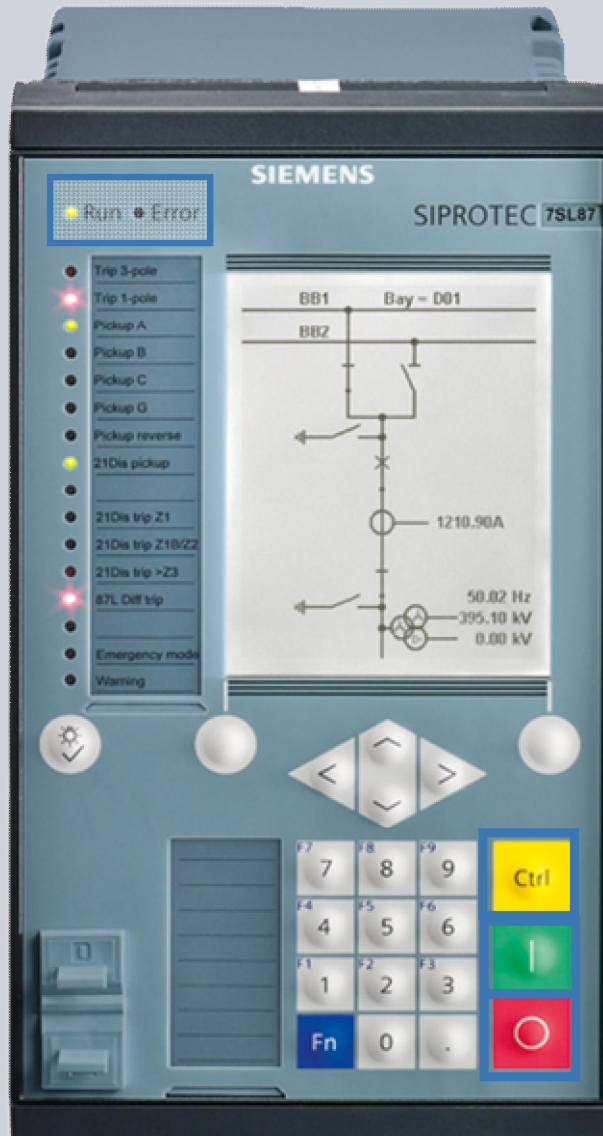
Large Display

SIPROTEC 5 Operator Panel „US english“



- Close / Trip Buttons not colored
- Red / green stickers are delivered for individual use

SIPROTEC 5 Operator Panel „Chinese“



- Chinese characters replace the marked symbols and texts.
- Operator Panel with small display and without display also available in Chinese language.

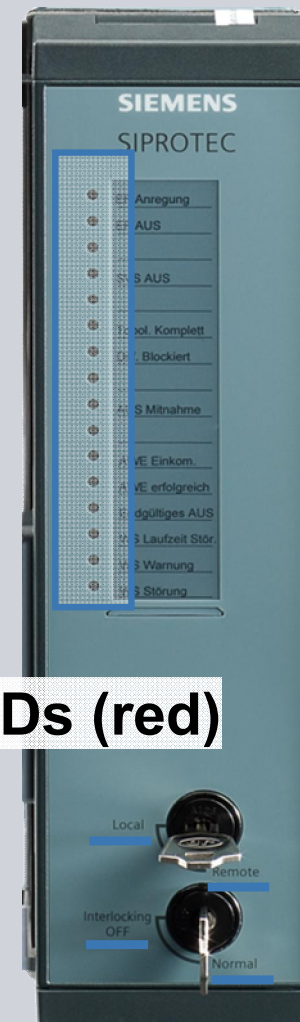
Operator Panels for expansion modules



Without LED



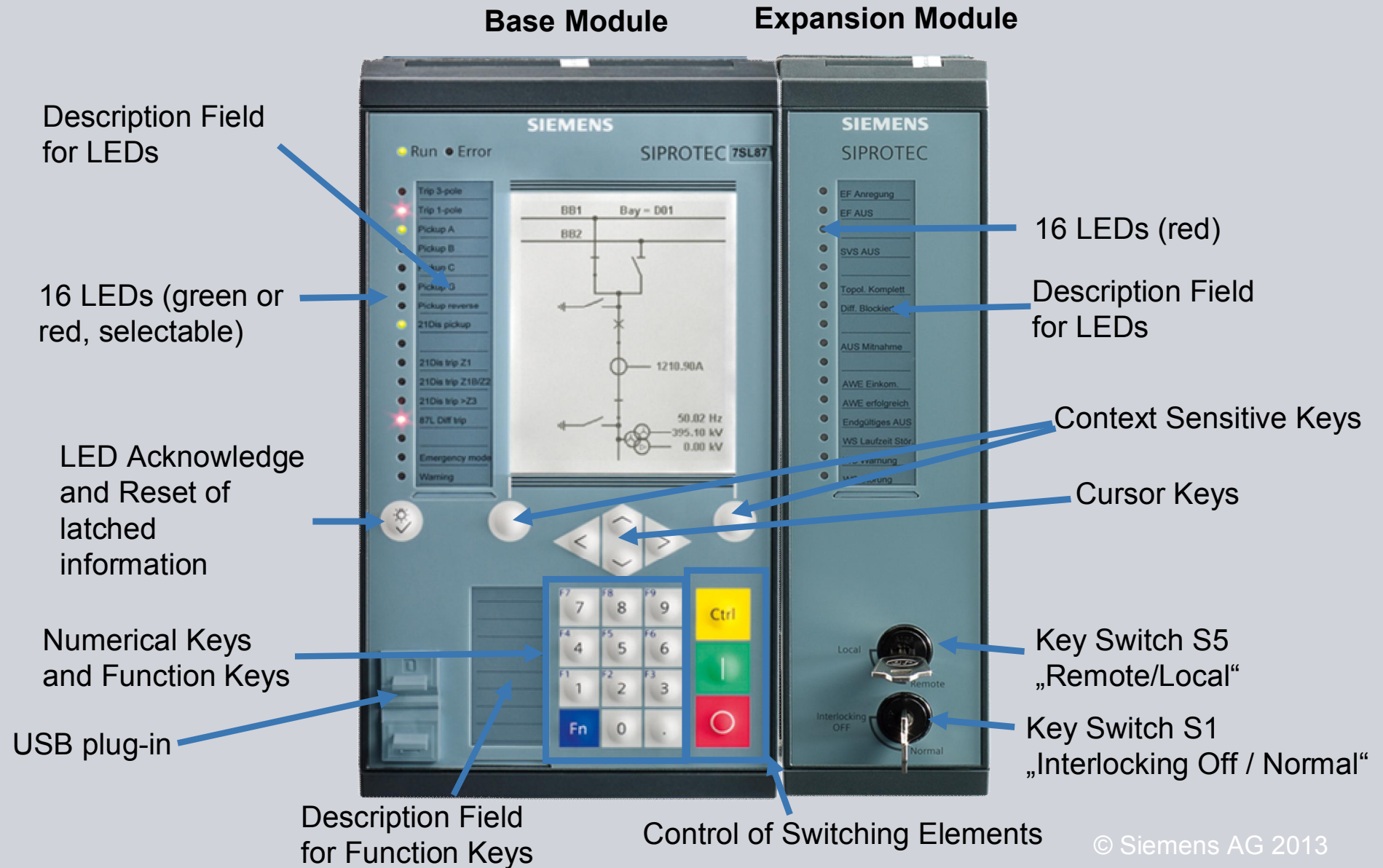
Single Color LEDs (red)



With LED and key switches

Chinese variant available

Operating Elements of HMI



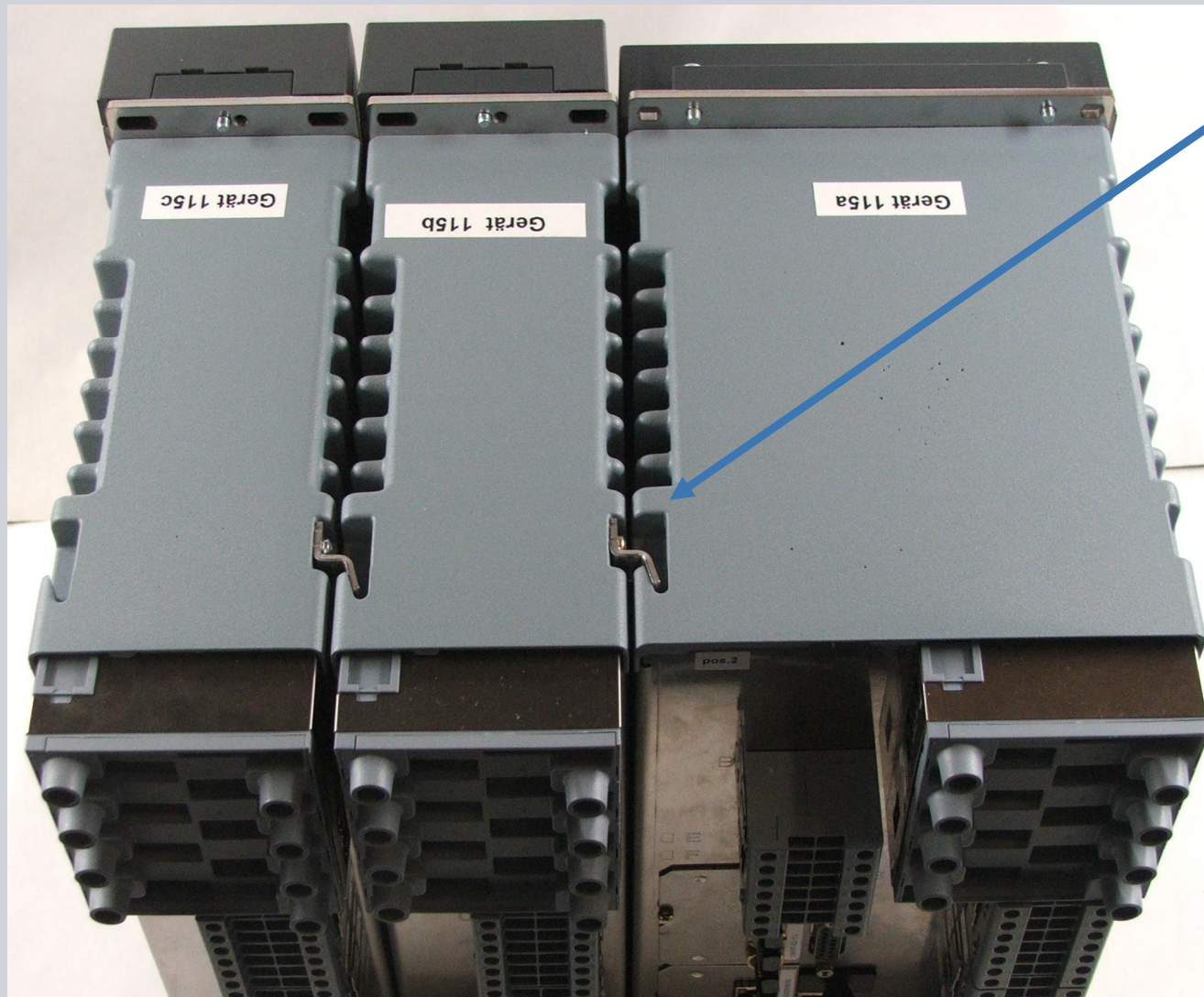
Two Types of Terminals

Change of Current Transformer



Impressions (1)

Detailed view on module connections



- Robust and stable connection between parts

Impressions (2) Back view

Label: Position
and type of IO



Battery

Impressions (3) change of modules



Web site downloading for Relay Data (http://siemens.siprotec.com)

The screenshot shows a web browser window with the URL http://siemens.siprotec.de/download_neu/index_e.htm. The page title is "SIPROTEC - Download Area - - Siemens AG". The browser's address bar and the URL are highlighted with a red box. The website header includes the Siemens logo and a navigation menu with "Deutsch" highlighted in a red box. The main content area is titled "SIPROTEC - Download-Area" and features a "Protection Devices Overview" section with a language selector "언어(English, Deutsch)변환". Below this, there are two columns of product links. The right column includes "Infrastructure & Cities in Internet" with "Protection and Accessories" highlighted in a red box, and "New 'Download Pool' in Internet" with "SIPROTEC Programs (DIGSI, SIGRA, Tools)" highlighted in a red box. The text "SIP5등 자료" and "Software자료" are visible next to these links.

SIPROTEC 4 Protection Devices and SIPROTEC Archive

- > General Information
- > SIPROTEC Compact [Link to SIPROTEC Compact \(Download Pool\)](#)
- > CAD-Diagrams [Connection diagrams for protection devices and accessories](#)

Actual devices	> Archive
> SIPROTEC Compact	Link to SIPROTEC Compact (Download Pool)
> 6MD61x	I / O Box
> 6MD63x	Medium Voltage Bay Unit
> 6MD662-664	Bay Control Unit
> 6MD665	Bay Processing Unit
> 7PA2 / 3	Relays for high responsibility applications
> 7RE28x	Voltage Balance Relay
> 7RW600	Voltage- / Frequency Protection
> 7SA522	Distance Protection
> 7SA6xx	Distance Protection and Control
> 7SD52x / 53x	Differential Protection for 2 - 6 Line-Terminals with Distance Protection
> 7SD600	Line Differential Protection for one pilot wire pair
> 7SD610	Universal Two-Terminal Differential Protection

Download News

- > New Documents
- > New DIGSI 4 Driver
- > All Documents for Communication

Infrastructure & Cities in Internet

- > Protection and Accessories **SIP5등 자료**
- > Power Quality
- > Substation Automation

New "Download Pool" in Internet

- > SIPROTEC Programs (DIGSI, SIGRA, Tools) **Software자료**
- > SIPROTEC Compact
- > SIPROTEC Accessories, Communication and Test Equipment
- > SIPROTEC Applications
- > Power Quality

Thank you for your attention