

HIGH VOLTAGE SWITCHGEAR



Comprehensive solutions
from design to delivery



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TECHNOLOGY PARTNERS



SIEMENS



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CONTROL, RELAY & PROTECTION PANEL UP TO 400KV FOR TRANSFORMER FEEDER

Transformer protection and control panel consists of all sorts of control, protection, metering and monitoring of the transformer feeder. This panel is a combination of transformer differential protection, over current, earth fault and restricted earth fault relays associated with other auxiliary relays in the protection part of the panel. We have flexibility to customize the requirement for any special scheme requirement. In the control panel parts we are providing all sorts of metering like ampere, voltage, megawatt, mega var etc. We use standard annunciator module, discrepancy control switches and different types of control switches as per scheme requirements.

Remote monitoring capabilities are also available and transfer of analog and digital data from control panel to SCADA system is also possible.

Protection system:

Rating: 1A and 5A, 50/60Hz, auxiliary supply 48-250V DC & AC both.

| Relay Type | Manufacturer's name | Feature |
|---|---------------------|------------------------|
| Differential relay & over current earth fault relay (only for transformer feeder panel) | Siemens | Numerical programmable |
| | ABB | |
| | Schneider | |

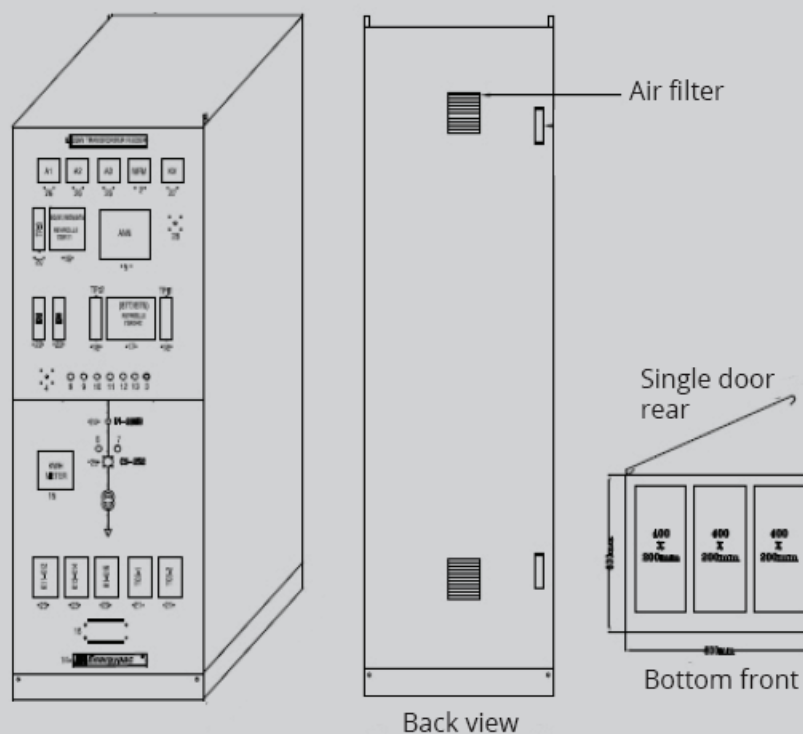


Fig.: Transformer feeder



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CONTROL AND PROTECTION PANEL UP TO 400KV FOR TRANSFORMER FEEDER

Transformer feeder general arrangement

1. 3nos ammeter (digitL / analogue)
2. 1no Voltmeter (digital / analogue)
3. 7 position voltmeter selector switch
4. Multifunction meter (digital) [optional, If required] a Multifunction can cover all kind of parameter, like-current, voltage, KW, KVAR, PF, HZ etc.
5. Over current / earth fault realy (both in transformer & line feeder)
6. Differential / REF realy (only in transformer feeder)
7. Master trip realy (2nos. in transformer feeder and 1no . in line feeder)
8. Trip curcuit supervision realy (2no . on each CRP)
9. Transformer auxiliary realy (1/2/3 Nos. as per requirement, only on transformer feeder)
10. Local / remote switch.
11. Annunciator (8/12/20 window)
12. Alarm
13. Test plug for realy (individual test plug for every O/C, E/F & Diff. realy)
14. Test terminal block for energy meter [if there is any energy meter]
15. Semaphore indicator (for isolator and earth switch)
16. Discrepancy switch (for VCB opreation)
17. Energy meter [optional if required]
18. Breaker on lamp
19. Breaker off lamp
20. Spring charge lamp
21. DC available lamp
22. Trip circuit healthy lamp
23. Master trip realy reset push buttom [optional, if required]
24. MCB (2A, 6A, 10 DP / TP)
25. Connector
26. Heater & thermostat
28. Air filter
29. Door lock
30. Name plate
31. TECHNO logo

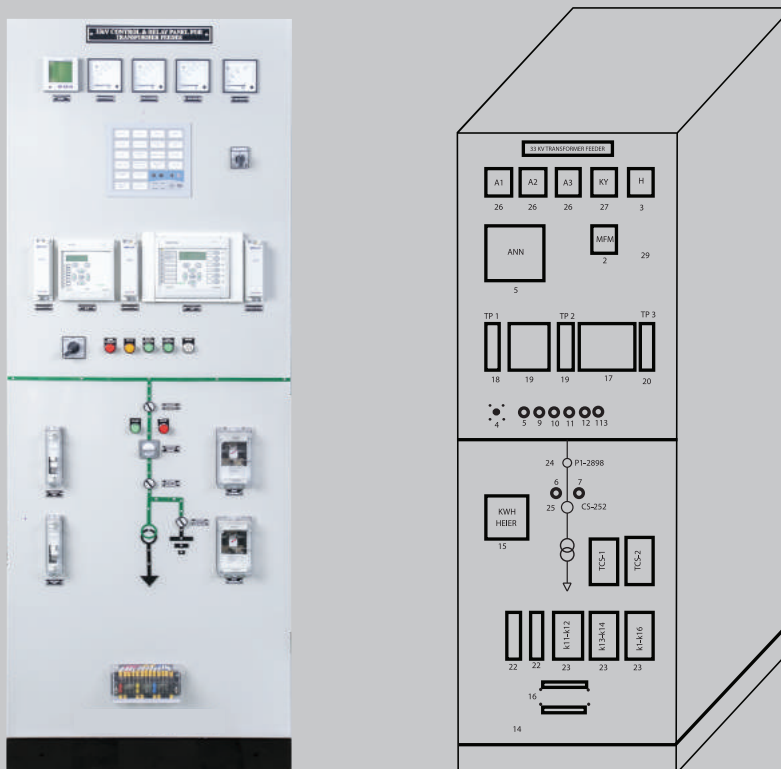


Fig.: General arrangement of transformer feeder



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CONTROL AND PROTECTION PANEL UP TO 400KV FOR INCOMING & OUTGOING FEEDER

Incoming and outgoing feeder protection and control panel consists of control, protection, metering, monitoring of the feeder. In the control panel parts we provide all kinds of metering like Ammeter, Voltmeter, Energy meter etc. We also use standard annunciator module, discrepancy control switches, MIMIC indication and different control switches as per scheme requirements.

Features of control & relay panel

1. Distance Protection.
2. Line Differential Protection.
3. Over Voltage & Under Voltage Protection.
4. Over Current & Earth Fault Protection.
5. Low & High Impedance Type Busher Protection.
6. IEC & ANSI Standard.

Protection system

IDMT-DMT Directional, Non directional, Over current, Earth fault protection. Differential protection, Distance protection, Bay controlling unit, Synchronization under voltage, Over voltage protection. We have been using above relay from the following manufacturer; Siemens/ Alstom/ Schneider/ SEL/ GE & ABB.

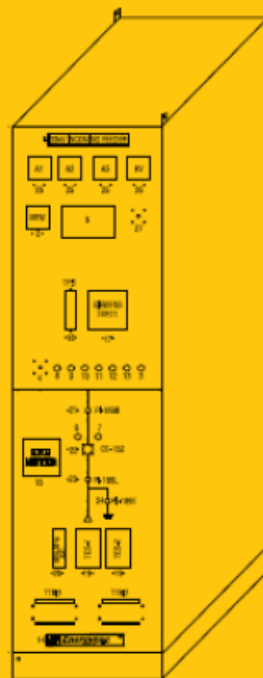


Fig.: Incoming & outgoing feeder



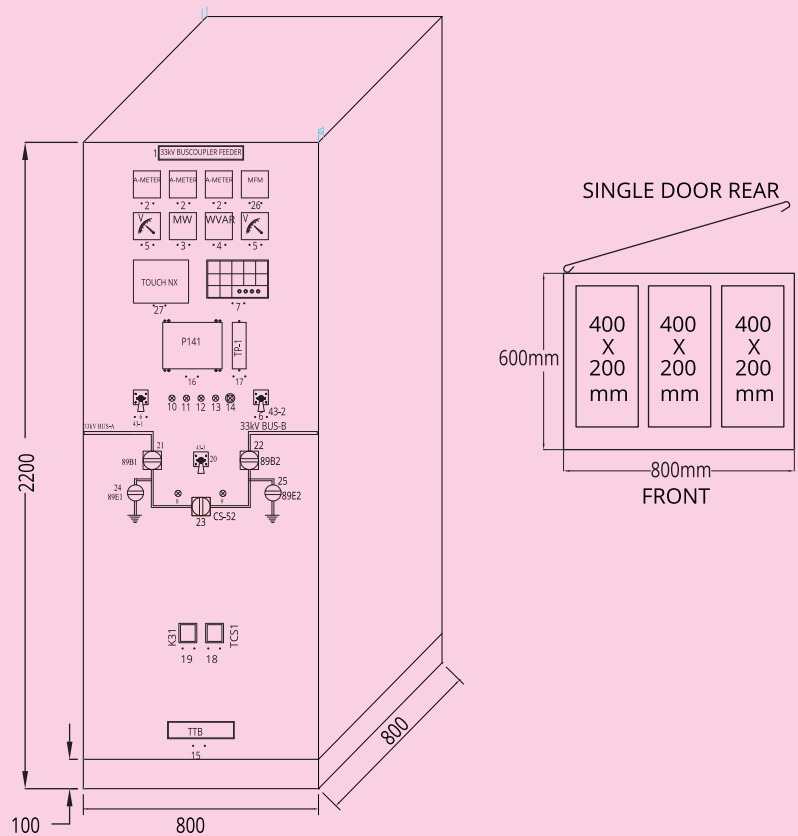
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CONTROL AND PROTECTION PANEL UP TO 400KV FOR BUS COUPLER

Bus coupler control and protection panel are used for control, monitoring and protection between two buses. The control panel contain all kinds of metering like ammeter, voltmeter, energy meter etc. We also use standard annunciator module, Discrepancy control switches, MIMIC indication and different control switches as per scheme requirements.

Protection systems:

Over current and earth fault relay are used as protection purpose. A synchronizing check relay is used to check synchronization for closing two buses.



BUSBAR PROTECTION PANEL

Busbar protection is a very vital protection in H.V power system for monitoring, system stability and reliability. Busbar protections are available in high impedance and low impedance types.



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AUTOMATION PANEL (M-RTU)

This is a data collecting device that obtains data from the electric equipment's in the field, analyzes and sends it to the host part. This helps efficient processing of measurement and control functions.

Equipment composition and functions:

- System configuration and complete SAS
- Disturbance recorder and metering data analysis.
- Remote transfer of data and remote operations via GPRS and optical network.

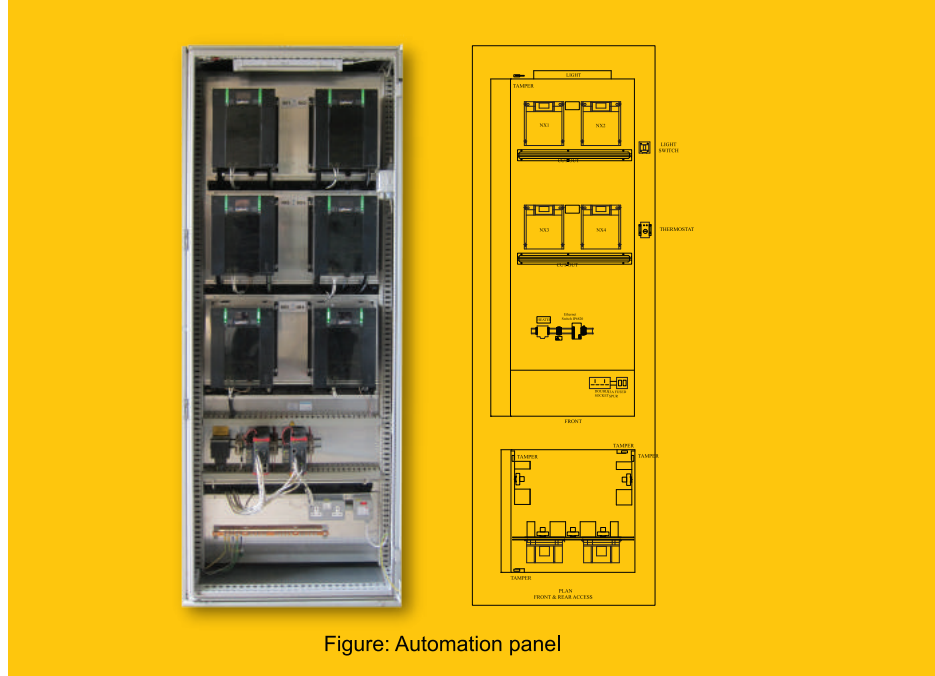


Figure: Automation panel

AC-DC DISTRIBUTION PANEL

Energypac manufactures AC & DC distribution panels with a wide range of various rating circuit breakers. Mainly we can provide any ratings of miniature circuit breakers (MCB) as well as moulded case circuit breakers (MCCB) with three pole, double pole or single pole combinations. To distribute electricity in a lower voltage level such as 415V or 220V these panels are most suitable solutions.

| DC distribution panel | | | |
|-----------------------|------------------------------------|-------------------|---------------------------------|
| Enclosure | Thickness of sheet steel | mm | 1.6-2(approx.) |
| | Dimension | mm x mm | 600mm(W) x 600mm(D) x 2200mm(H) |
| | | x mm | |
| Weight | Kg | 250-300 (Approx.) | |
| MCCB/MCB | a) Manufacturer's name and country | ABB, EU | |

| AC distribution panel | | | |
|-----------------------|--------------------------------------|--------------------|---------------------------------|
| Enclosure | Thickness of sheet steel (enclosure) | mm | 1.6-2(approx.) |
| | Dimension | mm x mm x mm | 800mm(W) x 600mm(D) x 2200mm(H) |
| | | | |
| Weight | Kg | 250- 300 (Approx.) | |
| MCCB/MCB | a) Manufacturer's name and country | ABB, EU | |



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REMOTE TAP CHARGER CONTROL PANEL

RTCC means remote tap changer control panel which is a programmable device to control the output of the transformer through OLTC unit fitted in the transformer through control cables. It is a panel consisting of the AVR (automatic voltage regulator), display for tap position, voltage, LEDs for raise and lower of taps relays, selector switches for auto manual selection etc. In Auto mode the voltage is controlled by the AVR. In manual mode the operator can Increase / decrease the voltage by changing the taps manually through the push button in the RTCC.



Fig.: Remote tap charger control panel

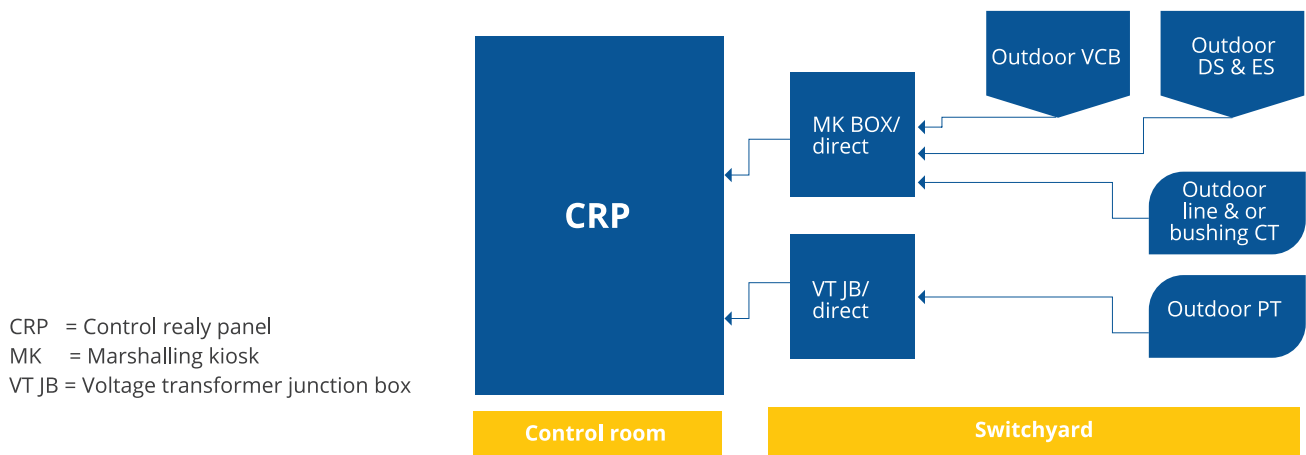


Fig.: Block diagram of CRP connection



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