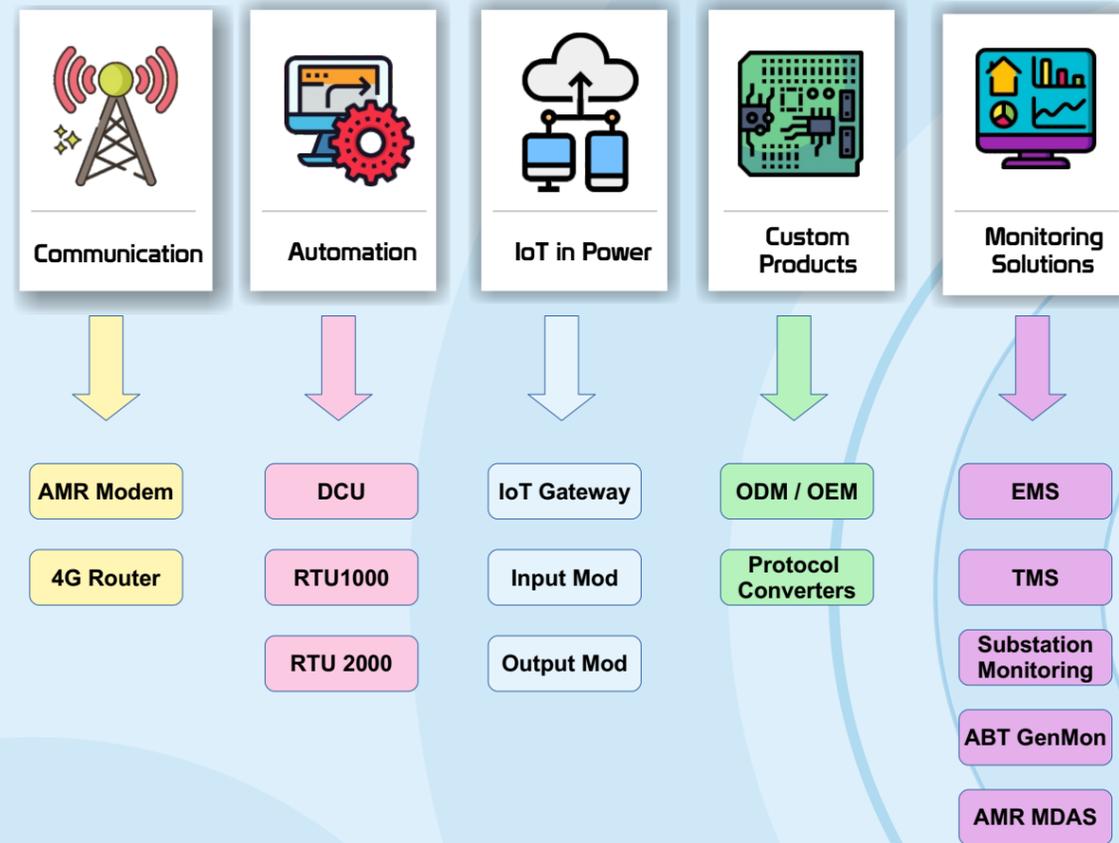


Distribution Transformer Monitoring

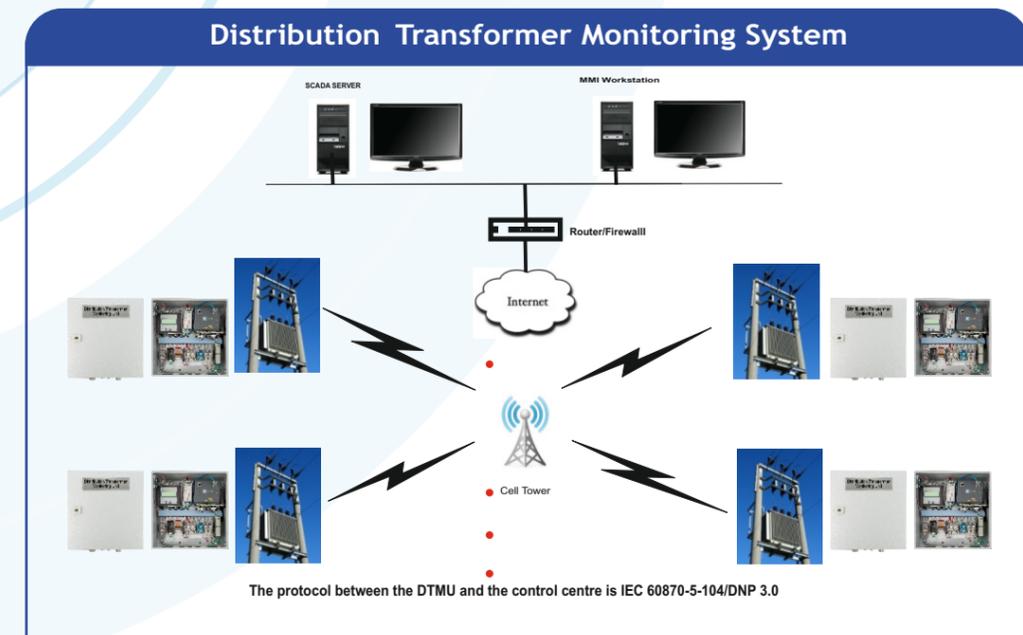


One of the key components in enabling a Smart Grid system is monitoring of Distribution Transformers (DTs). This is also the first step in distribution automation. Monitoring of distribution transformers improves the visibility into the low voltage (LV) network and provides insights that help the utility company to utilize the power network in an optimum way.

Transformer monitoring brings a lot of benefits for utility companies, including the capability to recognise when transformers are overloaded and take remedial measures. In many cases, the life of a transformer is curtailed due to lack information around the operation of the transformer. It improves the visibility into the low voltage power network and helps utility companies deliver high quality electricity to it's customers. This system provides real time information about voltage, power factor, current, harmonics and unbalance from the LV network; and based on this information, utility companies can initiate remedies to solve problems as they occur or in many cases carry out preventive measures that prevents outages.

Utilities can also use the reports generated by the system to make decisions on distribution network planning, capacity enhancement, etc by identifying critical points in the distribution network that require to be extended or upgraded.

CS-DTMU provides an end-to-end solution that comprises of monitoring, data acquisition, reporting and presentation. The CS-DTMU panels can report data to either the cloud-based web application or SCADA systems or both depending on the requirement of our end clients. We also provide a 'device-to-database(DB)' solution which essentially acquires data and provides it in a set of database tables for further processing by end-client applications.

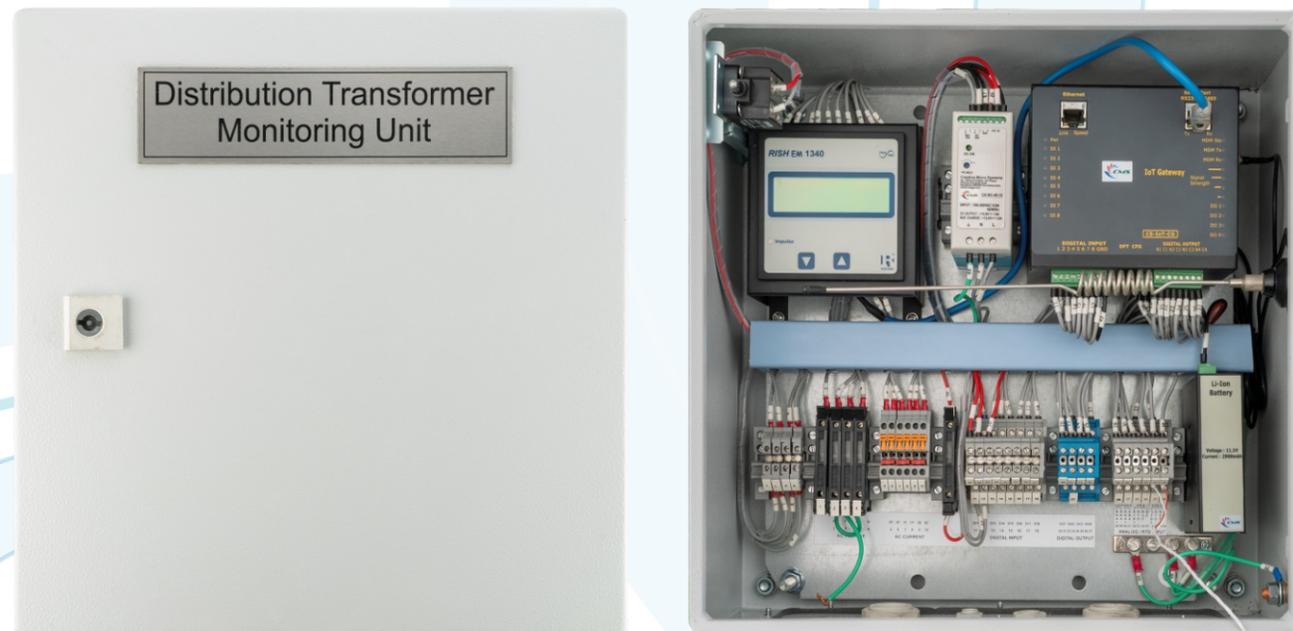


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Features

- Data can be used for carrying out Energy Audit, Load Survey and Fault Analysis
- Reporting of power quality values of the transformer
- Individual phase transformer loading
- Temperature monitoring of transformer
- Real-time alarms for power outage, tampering and power quality threshold exceedances
- Instantaneous alerts to Operator as well as field personnel (via email/SMS) describing alert incident e.g. oil level low threshold reached, monitored parameter crossing upper/lower threshold, etc.
- Reduce cost of scheduled and unscheduled maintenance
- Enhances the life of transformer assets
- Enables the utility to carry out better load management as it provides accurate real-time information on transformer loading
- Can be used to ascertain theft detection and localisation based on behavioural patterns of the transformer
- Decrease outage duration - detect transformer or outgoing LV feeder outages or problems and send outage events to the central system.
- Comprehensive reporting of monitored parameters in a consolidated manner for analysis. Over-capacity, threshold crossing, etc are highlighted in the reports.
- Real-time dashboard reporting overall transformer and communication status



• Digital Inputs

8/16 optically isolated status inputs: 24 VDC with 10% overload
LED indications
4-5 mA typical current burden per input indications
DIN Rail mounted terminal block for input

• Control Outputs

4/8 Trip / Close 1 Form B contacts
2 Amp current carrying capability
180 W breaking @ 30 VDC
35 W breaking @ 150 VDC
Optional Select-Before Operate (SBO) functionality
DIN Rail mounted terminal block for input

• Analog Inputs

4-Channel Analog card
2- RTD Input with Pt100
2- Analog input

• Multifunction Meter

True RMS measurement
Accuracy Class 1.0
THD for current and voltage
Individual harmonics upto 31st order
4 Line LED display
CT Input 1A or 5A
Frequency 45 to 65 Hz

• Modem - 3G Option

Dual band HSPA and dual band GPRS/EDGE
Upto 7.2Mbps Uplink and 21Mbps Downlink speed

• Modem - 4G Option

LTE-FDD: B1/B3/B5/B8
LTE-TDD: B34/B38/B39/B40/B41

• Communications

Protocols: IEC 60870-5-104/DNP3.0 Slave for SCADA connectivity
VPN protocol - IPSec
1 x RS232/RS485 Serial Port with Modbus RTU for multifunction meter connectivity
Ethernet port for configuration/local control
Built-in 3G/4G Modem for remote connectivity
Connectors: RJ45 for Ethernet, RJ45 for Serial port, SMA Connector 3G/4G Antenna

• Configuration

Web based configuration

• Auxiliary Power Supply

Input options: 100V to 264V AC
Maximum of 25 W power
Battery Back up : 2 Hours

• Physical

Dimension : 380mm x 380mm x 210mm
Mounting: Wall mount or Pole mount
Terminations: DIN Rail mounted Terminal blocks for Digital input, Control output, Power, SMA Connector for 3G/4G antenna.
Cable Glands for wire termination

• Environmental

Operating Temperature: 0°C to 60°C
Humidity : 95% non-condensing

• Standards and Protection

CISPR11 - Electromagnetic disturbance
EN61000-4-2 - ESD Immunity Test
EN61000-4-3 - Radiated immunity test
EN61000-4-4 - Electrical fast transient/burst test
EN61000-4-6 - Conducted immunity test
IEC 68-2-1 - Cold test
IEC 68-2-1 - Dry Heat test
IEC 68-2-6 - Vibration test
IEC 68-2-30 - Damp heat, cyclic (12+12 hour cycle)
IP65 Rated Panel for indoor or outdoor application