

# IoTx - IE





## Features

- ✓ Online streaming of Transformer parameters
- ✓ Geotagging of the device.
- ✓ Detection of protection relay status change and alerts through email/SMS
- ✓ Real-time alert and notification
- ✓ Centralized monitoring of the transformer data
- ✓ Trend monitoring and predictive analysis based on monitored parameters
- ✓ Seamless integration to existing equipment
- ✓ Dynamic copper loss, hotspot temperature, aging rate, and residual life

## IoTx - IE

Transformer Monitoring device - Industrial with energy meter

CAT IV	IP	CE
600V	54	

IoT-X-IE is a transformer monitoring device that needs to be installed near a transformer to measure its vital parameters such as RYB voltage and current, active power, apparent power, reactive power, active energy, apparent energy, reactive energy, PF from the energy meter installed on the transformer LV side, oil temperature, winding temperature, and protection relay status. Through the Motware platform, one can easily monitor the streaming parameters of the transformer. The Motware platform allows you to do predictive analysis of the dynamic copper loss, hot spot temperature, aging rate, and the residual life of the transformer. The device includes a GSM module to transmit the data to our cloud-based Motware application every 5 minutes, or as per the customer specified, the transfer rate depending on the set parameters. The data transferred is stored in the memory of the device. In the event of a network failure, it will transfer the data back to the cloud once the network is established. The device operates in mains and battery and comes with a geotagging facility.

## Applications

The IoT-X-IE transformer monitoring device is a digital wireless and reliable solution, which is designed to monitor the distribution/transmission of the transformer's parameters. It helps to overcome the limitations of the current conventional transformer monitoring systems by sending real-time data to the Motware IoT platform. It helps to review the transformer's parameters at regular intervals to help in easy predictive analysis and preventive maintenance. Transformer losses can be acutely monitored and streamed over a GSM network that is connected to the cloud-based Motware application. The user can make productive and informative decisions based on the data captured in the transformer monitoring device. The Motware application provides alerts based on the limits applied on the streamed parameter values to avoid any damage.

**Our solution can be used for various segments like**

- Utilities
- Transformer OEMs
- Industries
- Commercial premises
- Railways and Metro's



## Technical Specification

## IoTx - IE

### Power Supply

Mains Power supply : 90-528VAC Frequency 50/60Hz with OVP & OCP

Battery power : Rechargeable Battery 14.8V,2600mAh

### Features

#### Energy Parameter Monitoring

R, Y, B – Phase to neutral Voltage

R, Y, B – Current

R, Y, B Phase Watt

Total Active power (KW)

Total Apparent power (KVA)

Total Reactive power (KVA<sub>r</sub>)

R, Y, B – phase PF

Total PF

Frequency

Cumulative active energy (kWh)

Cumulative apparent energy (KVAh)

Cumulative reactive energy (Lag)KVA<sub>r</sub>h

Cumulative reactive energy (Lead)KVA<sub>r</sub>h

Total Harmonic distortion in percentage -Voltage

Total harmonic distortion in percentage – Current

Maximum Demand

### Type of Measurement

#### Oil Temperature

Range: 0-150°C (Customisable as per customer requirement), Resolution:0.1, Signal type : 4- 20mA

#### Winding temperature

Range: 0-150°C (Customisable as per customer requirement), Resolution:0.1, Signal type : 4-20mA

#### Oil Level (High/low)

**Range :** The Oil level low level indication is set to 25% below the transformer conservator tank. Oil level high set to above 25% of the transformer conservator tank, Signal type : 0-5V

#### Panel temperature up to 2 panel\*1

Range: 0°C to 100°C OR -20°C to 80°C, Signal type : 4-20mA

OR

#### Panel Humidity up to 2 panel\*1

Range: 0 to 100% RH, Signal type:4-20mA

#### Ambient temperature and Humidity

Range: 0-50°C,20-90%RH, Accuracy-35%RH/32°C



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### Controller

Microcontroller :32bit ARM running at 72MHz

Real time clock : Battery backed internal RTC

Memory : Data can store up to 1 day depends on the time interval

### Protection on input channels

3 phase voltage i/p channel protection: Surge protection

Temperature i/p channel protection: ESD, EFT, Surge protection

Alarm/trip channel protection: Surge protection, OPTO isolation

### Communication

Communication port protocol: Modbus RTU for interfacing Energy meter. (Only for Energy meter interfacing) \*3

Communication port : RS485\*4

Communication wireless: GSM/GPRS

Frequency range : 850Mhz/900Mhz/1800Mhz/1900Mhz

Supported SIM card type: 2G/3G/4G

GPS: Operating frequency:1575.4231 MHz

### Indication

Display type :16x2 LCD

Display colour : White on Blue background

LED Indicators : RYB phase indication, Status, Power Indication, Data Transmit/Receive Indication

### Mechanical

Enclosure material : Metal MS CRCA sheet

Mounting mode : Wall mount/Pole mount\*5

Weight : 6Kg Approx.

Dimension : 480(L)x127(W)x405(H) mm Approx.

### Environment

IP Degree of protection : IP65

Operating temperature range: -10°C to 55°C, Relative Humidity: < 95% RH Non-Condensing.

Storage temperature range: -20°C to 70 °C

### Accessories

Standard Mounting Bracket

#### Note:

1. Panel Temperature OR Humidity –anyone of the parameter will read per panel.
2. Tap positions are interfaced with the device through the Tap position indicator which is connected to the power transformer with OLTC.
3. We are not giving access to read our internal registers.
4. The RS485 port is not projected outside of the box to maintain IP65 grade.
5. Mode of mounting needs to be specified at the time of ordering.



### **MOT-WARE Cloud Application**

Motwane has designed and developed MOT-WARE – a cloud based test data platform to aid in accurate Asset Health Assessment. It is accessible from web based applications. In addition, it offers an open architecture that can seamlessly integrate with any asset for quick and authentic digital data. MOT-WARE also has the facility to upload data history and the breakdown history of the transformer. Digital test data enables data analytics and visualization which offers multiple statistical advantages. It improves productivity & efficiency, reduces costs, and improves the life of the asset. Data analysis done through MOT-WARE includes trends analysis. As an add-on, MOT-WARE also offers 'Motwane AI Analytics'(Link to AI Analytics page) which uses a proprietary AI algorithm and Machine Learning to make accurate predictions about your asset's life based on its behavioral patterns and operating conditions.

# Contact Details

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