Franklin Electric
GRID SOLUTIONS

POWER GRID MONITORING

DISTRIBUTION TRANSFORMER MONITOR

The INCON® Distribution Transformer Monitor (DTM) provides continuous, meter-grade precision performance monitoring of high-value, mission critical, low voltage pad mount transformers and conventional pole top transformers.

TRANSFORMER STATE-OF-HEALTH

DEPLOY ANYWHERE

CUSTOMIZED NOTIFICATIONS

HIGHLIGHTS & TECHNOLOGY

Monitor and trend transformer output voltage, loading (current) by phase, temperature, and Power Factor for an entire network of transformers.

By continuously monitoring the key indicators of a transformer's performance, including temperature and load, the DTM provides remote access to real-time transformer health data and automated threshold alarms for condition-based maintenance planning.

The DTM provides a transformer's Power Factor, which is a trend of useful power delivered. Power Factor helps utilities to determine the most efficient distribution of power during peak times and to ensure the delivery of high-quality outbound power when their customers need it the most.

A powerful industrial IoT grade processor and sophisticated polyphase energy measurement integrated circuit provide superior on-board computation capability and Power Quality Monitor level fidelity.

Via the CONVERGE™ web interface, utilities can manage by exception with customized threshold alarms and notifications.

A built-in Cat M1/NB2 cellular modem allows the DTM to communicate via Verizon® and compatible private LTE networks, enabling utilities to deploy the DTM anywhere and at scale (i.e. one unit or thousands of units).

An MQTT / TLS Comms Protocol allows the DTM to securely communicate with the web-based UNITE™ user interface. Franklin Electric's UNITE™ database application provides real-time DTM data visualization including Current, Voltage, Temperature and Power Factor.

The DTM can be applied to any type of distribution transformer with a secondary output of 480 volts or less, phase to neutral. This includes, single-phase, split-phase, or three-phase transformers.

Four split-core Rogowski Coils measure load current. Five voltage leads measure voltage across three phases, as well as neutral and ground. Two magnetically mounted RTD sensors measure top and bottom transformer temperature.

Four powerful 25 lbs. magnets integrated into the mounting plate allow the DTM to be installed vertically or horizontally without any drilling or adhesives.

APPLICATIONS

DATA CENTERS

CRITICAL POWER

UTILITIES

SPECIFICATIONS

GENERAL

Applications	– 3-Phase Wye, 100-480V Line-Neutral, 50/60 Hz – 3-Phase (3 and 4-wire) Delta, 480V Line-Line, 50/60 Hz – 3-Phase Corner-Grounded Delta, 100-480V Line-Line, 50/60 Hz
Tolerances	Voltage ±10%, Frequency ±5%
Power Source	Powered from the transformer secondary via Phase A and N voltage leads
Temperature Sensors	2 each RTDs, 25lb. Magnetic-mounted, 5-foot lead length
Current Sensors	4 each, Rogowski Coils, 5-foot lead length
Fuses	Internal fuses on phase A and neutral leads (2 Amps)
Standards	IEC 61010 CAT IV 480V

ENVIRONMENTAL

Enclosure Rating	IP66/67/NEMA 4X
Operating Temperature/ Humidity	-40°C to +60°C / 0 – 90% RH
Storage Temperature/ Humidity Range	-40°C to +85°C / 0 – 95% RH

MEASURED PARAMETERS

Signal	Channels	Range	Accuracy
Temperature	2	-50°C to +150°C	±3°C (1.5%)
10/12 Cycle RMS Voltage	3	90-480V RMS Line-to-neutral	±0.5%
10/12 Cycle RMS Current	3 + Neut.	0-3000 Amps	±1%
Phase Angle	3	0° – 360° phase difference	±2°
Line Frequency	3	47-63 Hz	± 0.1 Hz
Power Factor	3	± 1.000	±0.05
Voltage THD	3	0% – 400% THD	±5% absolute
Current THD	3	0% – 400% THD	±5% absolute

ALARM NOTIFICATION TYPES

Threshold Limits	– Voltage Signal Delta – Current Signal Delta – Fault Current – Voltage Sag and Swell – K-Factor Harmonics – Top/Bottom Tank Temperature – Temperature Delta – Winding Hot Spot Load Ratio – Winding Load – Winding Hot Spot Temperature

SPECIFICATIONS CONTINUED

COMMUNICATIONS

Local Communication	Wi-Fi (TCP/IP)
User Interface	CONVERGE™ embedded webserver running on Linux platform accessible via standard web browser
Protocol	MQTT
Embedded Device Options	Cat M1 Cellular
LED Indicator	Tri-color LED to indicate running and alarm states (can be deactivated)

MECHANICAL

Size (W x L x H)	6.25" x 7.75" x 3.75"
Weight	5.5 Lbs.
Mounting	Magnet-mount (provided)

COMPONENTS

1. IP67 weather-proof enclosure
2. Voltage leads (5)
3. Split-core Rogowski coils (4)
4. RTD temperature sensors (2)
5. Cable strain relief
6. Status indicator LED

CONFIGURATION

All user interface communication including configuration of alarms and settings, data viewing, and alarm resetting is made via the CONVERGE™ web interface. Configuration can be done locally via Wi-Fi using a web browser or remotely through the cellular connection.

ORDERING INFORMATION

DISTRIBUTION TRANSFORMER MONITOR

Model	Description
DTM-4-VZ	Distribution Transformer Monitor with Verizon® Sim Card
UNITE-1	UNITE™ 3-month subscription equaling one unit (1 device, up to 10 users)

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