

TED Pro ENERGY MONITORING AND CONTROL SYSTEM

SINGLE AND THREE-PHASE ELECTRICAL SERVICES WORLDWIDE

OVERVIEW

The TED Pro Energy Monitoring and Control System is a state-of-the-art system for use in residential, commercial and government buildings and small industrial complexes. The system allows the user to monitor energy usage, thereby managing energy use through awareness of energy use and costs. Energy use and alerts can be presented on a custom display, computer, over the Internet, on mobile devices or by text or email messages. Colored LEDs alert the user to rate-tier changes, high demand, cost or other user-defined parameters.

Optionally, the system can be configured to automatically adjust thermostat settings or turn off loads based on user-selectable criteria such as cost of electricity, total use, cost, time of day, budget, or request from a utility or electric provider.

The system is designed to work on any single or 3-phase electrical system anywhere in the world and is compatible with numerous energy or demand-rate billing systems, including fixed, time-of-use, step/tiered, seasonal, demand, or any combination of those mentioned. The system also accommodates taxes, fixed charges, and fuel surcharges to accurately reflect the monthly electric bill.

The basic system consists of an MTU and an ECC, descriptions of each follow below.

The Measuring Transmitting Unit (MTU) measures the energy consumption, demand, voltage, current, and power factor. MTU Pro is designed for 3-phase systems in small to medium size commercial, institutional and industrial environments. It is suitable for any 3-phase system up to 1200A, 600V.

The MTU is generally located at the main electrical panel and transmits the information collected, over the building's existing electrical wiring, using state-of-the-art Power Line Carrier communication (PLC) to an ECC which receives and interprets the data. Multiple MTUs can be used to give individual measurement of panels or loads. For systems with solar, wind or other generation, multiple MTUs will tell the user consumption, generation and net, from-or-to the utility.

The Energy Control Center (ECC) is the communication hub for the system. It receives raw energy-use data from the MTU(s), interprets the data and calculates the current energy cost, cost today, month-to-date, etc. The ECC can be configured to communicate with display devices, computers, networks, mobile devices, thermostats, and load control devices via Ethernet, PLC, WiFi, ZigBee, USB, or XBee. System can be configured to send text or e-mail alerts using TED Advisor software.

Multiple ECCs in multiple locations can be monitored via the internet using TED's proprietary AggreData software.

System and Utility Rate setup is simple and intuitive using a PC running our web-based setup wizards. For utilities, rates and setup configuration can be pre-programmed making the entire system plug-and-play.

To this basic system can be added numerous options:

- Multiple MTUs can be added to separately measure various loads or generation.
- Multiple systems can be used and the data aggregated at a central location..
- Display Devices
 - o Wired-in Display connects directly to ECC.
 - o Optional Wireless Display with battery backup can be mounted anywhere or carried around for load checking.

- Communication Modules. ECC includes two USNAP ports and one USB port.
 - o WiFi modules – Allow wireless communication with a router or other WiFi-enabled device.
 - o ZigBee modules – Allows communication with Smart Meters, Smart Thermostats and other ZigBee-enabled devices.
- Smart Thermostats
 - o WiFi or ZigBee-based

MTU Pro



ECC (Energy Control Center)



How TED Works



TECHNICAL SPECIFICATIONS

Measuring Transmitting Units (MTU)

	Pro
Types of Services	
Single-phase 2-Wire or 3-Wire	Yes
3-phase 4-Wire Wye	Yes
3-phase 3-Wire Delta	Yes
3-phase 4-Wire Hi-leg Delta	Yes
Frequency	50/60 Hz
Maximum Voltage - Phase/Phase	600 V
Maximum Voltage - Phase/Neutral	347 V
Minimum Voltage	180 V
Maximum Current - per phase	1200A *
Maximum Wire Size	500 MCM (23mm OD)*
Voltage Measurement	Voltage Divider Circuit
Current Measurement	400A:3V Split-Core CTs
Operating Temperature	-40°C < T _A < +50°C
Energy Measurement and Calculations	Analog Devices ADE7854ACPZ
Overall Accuracy	Better than ± 2%
Measure and Transmit Energy	± 1W
Measure and Transmit Demand	± 1VA
Measure and Transmit Voltage	± 0.1V
Measure and Transmit Phase Currents	± 0.01A
Measure and Transmit Power Factor	± 0.1%
Communication Interface	PLC / Ethernet
PLC System	Yitran IT700 System

* Will measure up to 1200A with three 400A parallel feeds using additional CT sets. For systems over 1200A please contact TED Customer Service.

** Will measure up to 400A with two parallel 200A using additional CT set or with optional 400A CT set.

Data-Receiving Unit

	Energy Control Center (ECC)
Works w/ 3-phase & single phase MTU	Yes
Maximum Voltage Phase/Neutral	277 V
Minimum Voltage Phase/Neutral	95 V
Frequency	50/60 Hz
Cord Types Available	UL / EU / UK / AU
Operating Temperature	+5°C < T _A < +40°C
Communication Methods Available	PLC, Ethernet, Wifi, ZigBee, USB, XBee
USB 2.0 Port	1

Data-Receiving Unit	
	Energy Control Center (ECC)
USNAP 2.0 Port	2
Display Port	1
Compatible w/ ZigBee SE 2.0 smart meter	Yes
Accept Demand Reduction Request from Utility	Yes
Maximum number of MTUs on one system	4
Maximum number of Spydres on one system	4 - Future Release
Maximum number of Load Measured	32 - Future Release
Power-on LED	Blue
Link Status LED	Green / Yellow
Transmit / Receive	Green / Red
Energy-Use Indicator Bar	Green / Yellow / Red

OPERATIONAL SPECIFICATIONS	
	Energy Control Center (ECC)
Software	
TED Footprints™ - Historical, Graphical, Profiling, TED Advisor, Aggredata	Included
TED Smart Load-Shedding Software	Included - Avail 3 rd Qtr
System and Utility Rate Setup	Wizard Setup
Solar / Wind Generation	
Display System Load	Yes
Display System Generation	Yes
Display Net Metering	Yes
Data Display Options	
Computer - TED Footprints™ Software	Yes
Desktop LCD Display	Yes
Wireless LCD Display	Yes
Mobile Phones or Pads	Yes
AggreData - Aggregates data from multiple systems	Yes
Third Party Applications	Yes
Data Storage / Display	
Second Data	Every second for 2 hours
Minute Data	Every minute for 48 hours
Hour Data	Every hour for 90 days
Day Data	Every day for 2 years
Month Data	Every month for 24 years

	Energy Control Center (ECC)
Rate Structures	
Rates downloadable from Internet	Yes - Available 2 nd Qtr
Rates can be pre-programmed	Yes
Number of TOU Rates	4
Number of Tier/Step Rates	4
Critical Peak Rates	Yes
Weekend Rates	Yes
Holiday Rates (US and Canada)	Yes
Seasonal Rates (4 seasons)	Yes
Tier/Step within Seasons	Yes
Tier/Step within TOU periods	Yes
TOU Rates within Seasons	Yes
Demand Charges or Demand Penalties	Yes
Number of House Codes	unlimited
Update Time	1 Second
Optional Devices / Equipment	
Wireless Display with Backlight/Battery	Yes
Smart Thermostats	Wifi or ZigBee
USNAP Modules	Yes - 2 (Wifi or ZigBee)
USB Dongle	Wifi or ZigBee
Load Shedding Devices 20A 1P	PLC, Wifi, or ZB avail 2 nd Qtr
Load Shedding Devices 40A 2P	PLC, Wifi, or ZB avail 2 nd Qtr