

# ENGO-V 10 (10 kVAR)

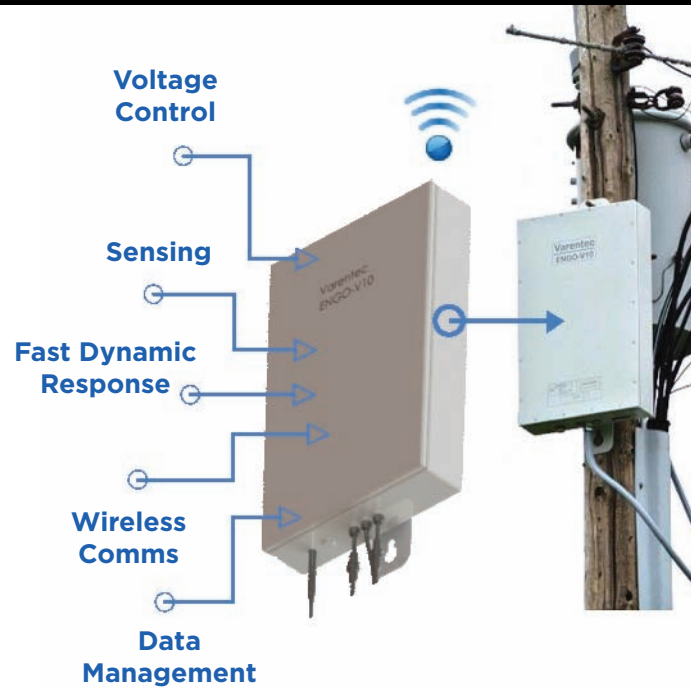
## EDGE OF NETWORK GRID OPTIMIZATION

**ENGO-V10** - a secondary-side voltage and var regulator that is the field hardware element of Varentec's distributed Grid Edge Volt-VAR Control (VVC) solution which enables multiple applications for utility companies:

- » Grid edge voltage support & efficiency
- » Peak demand reduction & energy savings
- » Grid edge volt-var control (VVC)
- » Support for High PV Penetration

ENGO-V10 combines real-time voltage control with monitoring and diagnostics at the grid edge to solve the most challenging Volt VAR Control problems for today's electric utility.

The ENGO-V10 is a compact cost effective, autonomous device that installs on the secondary side of service transformers. The unit delivers precise real-time control over feeder voltage and power factor, and provides visibility of voltage all along the feeder.



Multiple ENGO-V10 devices can be deployed along a feeder to provide fast voltage support and accurate control, with no fighting, along a feeder or the entire edge of a distribution grid network.



**Real-Time Distributed Autonomous Volt-VAR Control at the Grid Edge**

A deployment of ENGO-V10 units on a feeder comes with a cloud-based management software called Grid Edge Management System (GEMS), that allows an operator to monitor, configure and view data. Below is a snapshot of how the software plots secondary voltage (blue line) to show impact at a customer location. As voltage deviates from a setpoint (orange line), vars (green line) are instantly provided by the ENGO-V10 to support the voltage.



**Configuration & Performance**

- » Dynamic, distributed and autonomous control
- » Fast live installation: shunt device
- » Light weight: 35 lbs
- » Low bandwidth communications
- » Pole and pad mount
- » Low losses of 0.35%: best in class
- » Easy installation = 15-30 mins

**Applications**

- » Targeted grid voltage support
- » Integration of PV solar
- » Demand Control range up to 6%
- » Volt VAR Control and optimization
- » Conservation Voltage Reduction (Energy Saving, Peak Demand Reduction)
- » Grid Modernization (visibility, monitoring efficiency, analytics, etc.)

**FEATURES:**

- » Variable voltage support (0-10 kVAR) per ENGO-V10
- » Fast sub-cycle response with no fighting between devices
- » Multi-microprocessor design with inbuilt diagnostics
- » Multiple communications options
- » Voltage monitoring, reporting & alerts
- » Scalable to deliver VAR support for feeders over 10 MW

**ENGO-V10 Specifications**

**Electrical**

- Nominal Voltage: 240/277V, 1 phase
- Injected VARs: 0-10kVAR leading, 1-phase
- Nominal Frequency: 60 Hz / 50 Hz
- Losses: Less than 0.35% at full 10 kVARs

**Mechanical**

- Dimensions: 27 x 16 x 7 inches (h x w x d)
- Weight: 40 lbs
- Installation: Pole top (standard) Pedestal (optional)
- Transportation: Vibration testing per ISTA 1A, 1E and 2A

**Networking**

- Communication: Cellular 1xRTT

**Protection**

- Overvoltage: 330V up to 1 minute
- Fusing: Fused internally (100A)
- Surge/Impulse Protection: IEEE/ANSI C62.41 C2 combination wave (10kV/5kA/1.2 /50µs) IEEE C62.41 B3 ring-wave (6kV/500A/100 kHz)

**Environmental**

- Operating Temperature: -40C to 55C
- Humidity: Up to 95% non-condensing
- Weather: IP65/NEMA4x
- Wind Survival: 165MPH with < 300Newton wind load
- Corrosion Resistance: Enclosure is UV stabilized ASTM B117 salt fog resistance compliant
- Emissions: FCC Part 15 Class A conducted and radiated

**Real-Time Distributed Autonomous Control at the Grid Edge**