



Product Description

The VECTO PQ NODE is a classic, permanently time-synchronised IEC61000-4-30 Ed3.1 Class-A compliant power quality monitoring device.

The VECTO NODE platform supports a functional subset of the VECTO 3 multifunction measurement platform capabilities.

The device operates as part of a fleet of remotely installed instruments under direct control of VECTO Grid OS—big-data enterprise platform—transforming raw power quality data into real-time actionable intelligence through advanced analytics and visualisation.

The device is intended to be used deeper within distribution networks, at facilities and plant where typically no conventional CT's or formal Ethernet infrastructure is present.

The device supports external current sensors including Rogowski coils, split core CT's and Hall Effect sensors.

Robust LTE Cellular and IP-based Gigabit Ethernet ensure reliable remote data transmission, while maintenance free supercapacitors maintain ride-through during voltage dips and short outages.

Firmware modules and USB based external hardware accessories expand the features and capabilities, maximising your infrastructure investment as monitoring requirements evolve.

Hardware Features

- Broadband high impedance voltage and current sensor inputs
- 2.0 MHz sampling rate (18-Bit Resolution)
- 50kHz synchronised waveform capturing
- Built-in GPS & IEEE1588 (V2.0) PTP precision time synchronisation
- Built-in LTE cellular modem
- Gigabit Ethernet port
- Flash Type data storage
- Universal AC/DC Power Supply
- Supercapacitor with $\pm 30s$ "Ride Through"
- Compact, rugged, fan-less industrial design with DIN rail mounts
- Dimensions: 184 x 128 x 50mm (L x W x H)
- USB-C based expansion port supporting additional analog & logic inputs

Functional Features

- On-board Open VPN client
- Encrypted Communication
- Comprehensive Cyber Security support
- Comprehensive on-board device telemetry
- Web Server (Built-In HMI) with Real-Time Viewer
- Field Upgradeable
- RMS & Phasor based Event Data Streams updated 6 x per cycle
- Long Pre- & Post Data
- XrossTrigger® - (synchronous cross-triggering of multiple devices)
- Measures AC & DC Parameters
- Supports 50 Hz / 60 Hz Networks
- Diagnostic waveform data sampled at fixed sampling rate
- Harmonics up to 64th
- Calculate 3rd or 4th current from existing 2- or 3-current inputs

External Interfaces

- 4 × Voltage Inputs
- 4 × Powered Current Sensor Inputs
- 1 × Gigabit Ethernet Port
- 1 × Toggle DHCP Address Mode Button
- 1 × Powered GPS Antenna Port
- 1 × Cellular Antenna Port
- 1 × SIM Card Slot
- 1 × AC/DC Power Supply Input
- 1 × Safety Earthing Point
- 1 × Lockable USB-C Expansion Port
- 6 × Status LED's

Device Compliance

- Power quality: IEC6100-4-30 ED 3.1 Class-A
- Product Coding according to IEC62586-1
 - PQI-A-FI1-H
 - PQI-A-PI-H

PQ Trends

- Power Frequency
- Voltage & Current Magnitude
- Voltage Under/Over Deviation
- Flicker
- Voltage & Current Unbalance & Sequence Components
- Voltage & Current Harmonics & Inter Harmonics
- Flagging

PQ Event Monitors

- 3-Phase Voltage DIP/Swell
- 3-Phase Voltage Interruption (EU Definition)
- Rapid Voltage Changes

VOLTAGE INPUTS

Number of channels	4 × Broadband High Impedance Channels
Measurement input range	$300V_{LN}, 520 V_{LL}, \pm 425 V_{DC}$
Type of 3-Phase Interfaces	Star (Wye) (4-Wire), Delta (3-Wire)
Input impedance/channel	> 1M Ω

CURRENT SENSOR INPUTS

Number of channels	4 × Broadband High Impedance Channels
Measurement input range	$8 V_{AC}, \pm 12 V_{DC}$
Input impedance/channel	> 1M Ω

TIME STAMPING

Precision time source	On-board GPS & IEEE1588V2 PTP
Precision Time Accuracy	< 100 ns
Fall-back time sources	On-board RTC & NTP
RTC drift	10ppm (<1s per day)

ACCURACY & BANDWIDTH

Sampling rate	2.0 MHz (time synchronised)
ADC resolution	18-bit
Analogue bandwidth	> 50 kHz
Overall accuracy	< 0.1%
Power frequency range	DC, 45 Hz - 65 Hz
Harmonic Spectrum	DC - 64th

COMMUNICATION

Ethernet	1 × Gigabit Ethernet
Cellular	1 × LTE CAT1 BIS Cellular Modem
Cellular Antennae	1 × SMA Cellular Antenna Port
Expansion Port	1 × Lockable & Powered USB-C

POWER

Power consumption	Peak < 20 W, Normal < 10 W
AC supply	85-280 V _{AC} (45-65 Hz)
DC supply	120-300 V _{DC}
Energy storage	Super Capacitor (±30 s support)

PHYSICAL

Dimensions	184 x 128 x 50 (L x W x H)
Material	Aluminium Extrusion with plastic end-caps
Weight	750 g
Mounting options	Stand-Alone, DIN Rail
Electrical connections	Pluggable screw type (screw lock-down)
Electrical isolation class	300 V – Class IV
Operating humidity	5%-95% (non-condensing)
Rated Range of Operation	-25°C to +55°C
Storage & Transport	-40°C to +70°C
IP Rating	IP51

Pre-release DRAFT - Subject to change

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