

GridPuls-PLC

G3 PLC Smart Data
Concentrator Unit



The **GridPuls-PLC** is an advanced, smart **G3PLC Data Concentrator Unit** (DCU) designed to function as a versatile gateway for modern smart grid applications. It features plug-and-play **GPRS/3G/4G** modem and **Ethernet** RJ45 connectivity, enabling seamless remote communication for efficient data management and monitoring. With its flexible network options, the **GridPuls-PLC** is capable of adapting to various installations, ranging from residential to small commercial settings, and can support smart grid initiatives with ease. Its design ensures smooth integration into diverse network configurations, including **G3PLC**, which allows reliable and real-time meter data collection across a variety of use cases.



G3-Alliance

DLMS[®]



MESH NETWORK



MULTI-BAND
ANTENNA



Main Functionalities

Backup Power	• Large supercapacitor • Continue to work one minute when power off
Firmware Upgrade	• DCU firmware can be upgraded both locally and remotely. • Receives meters firmware image from HES and manages to • upgrade meters firmware independently.
Configuration	• 1.4 GHz • Linux Debian 12 • 500 • 16 GByte • 1 GByte
Data Collection	• Manages up to 500 PLC meters. • On-demand & scheduled reading of meters are supported. • In gateway mode provides transparent access to meters.
Data Storage	• Days freezing: 31 days • Months freezing: 12 months • Load profile: time interval up to 15 min • Even record: up to actively report
Security	• AES-256 for encryption of critical data types • AES-128 for communication encryption.
Remote Communication	• 1x Pluggable 2G/3G/4G cellular modem • 1x Fast Ethernet port for uplink communication (RJ45 Port) • 1x Wi-Fi modem (optional) • Support TCP/IP server and client mode • Support permanent online or part time online mode
Local Communication	• 1x Pluggable PLC module • 1x Ethernet port for local maintenance to access embedded Web-server • 1x RS485 port for downlink communication (baud rate up to 115200bps) • 2x Pulse inputs (meter enclosure door switch) • Support multi-thread reading
Communication Protocol	• International open protocol • DSMR P3.2 • HDLC DLMS and TCPIP DLMS • DLMS Gateway Protocol
Web UI Maintenance	• Internal web user interface that can be accessed through Ethernet. • Access to events, logs and operational data of DCU, diagnosis and troubleshooting.

GridPuls-PLC

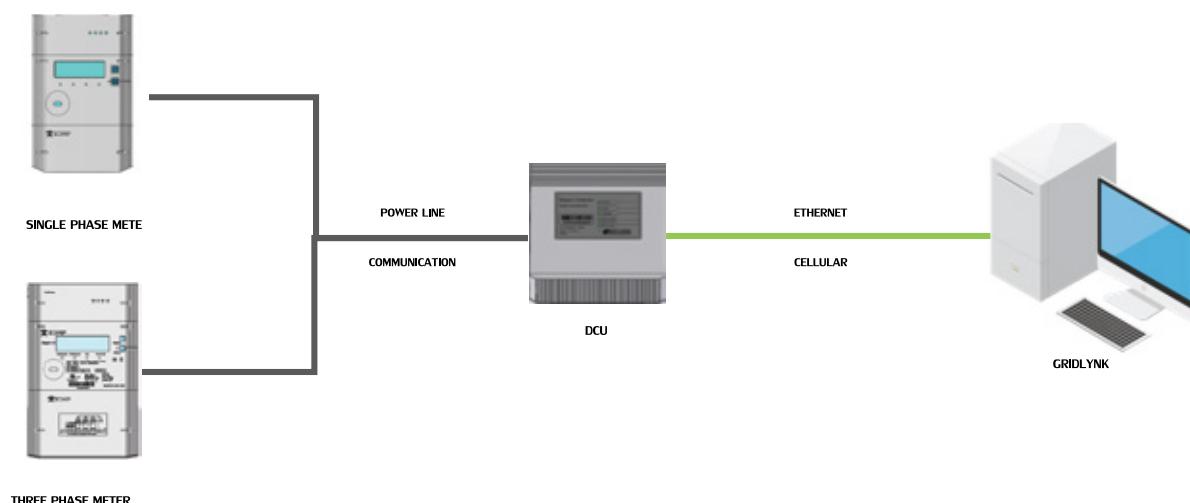
The GridPuls-PLC is a compact, advanced, and intelligent Data Concentrator Unit (DCU) built on embedded Linux, specifically designed for Smart Grid applications. This versatile unit plays a critical role in Advanced Metering Infrastructure (AMI) networks, with its primary function being to facilitate scheduled meter readings. It ensures secure, reliable communication from the Head-End System (HES) to the meters, allowing for seamless data collection and transmission. Despite its compact size, the Magno Collector delivers exceptional performance, ensuring high reliability and operational efficiency while minimizing the Total Cost of Ownership (TCO) for utilities. Its ability to integrate into various network configurations makes it an ideal solution for both small-scale and large-scale smart grid deployments.

The GridPuls-PLC supports both PLC and RS485 communication for downlink to meters, allowing flexible integration into diverse installations. For uplink communication with the Head-End System (HES), the unit uses a variety of connectivity options including cellular networks (GPRS, 3G, 4G, LTE) and Ethernet, ensuring robust, high-speed data transfer even in challenging environments. Compliance with the DLMS/COSEM protocol ensures seamless interoperability with a wide range of systems and devices, allowing utilities to easily integrate the Magno Collector into their existing infrastructure. This flexibility and compatibility make it a reliable and scalable solution for the management of smart metering systems, helping utilities improve operational efficiency, data accuracy, and overall network performance.

MAIN FEATURES

Supports both concentrator and gateway functionality. Both G3-PLC and BPLC are supported in downlink channel. Interoperability is preserved by supporting DLMS/COSEM protocol both in uplink and downlink channels.

Both polling and pushing mechanisms are supported for data reading / event reporting. Multi-layer security is considered both in PLC- MAC layer as well as in DLMS application layer. Integrated Web-server for local and remote access.



LAN

WAN

Main Functionalities

SMS Function

- Support wakeup by SMS
- HES IP and port can be configured by SMS

LED Indication

- Power indicator
- Local Comms indicator
- Cellular Comms indicator
- Ethernet/WAN Comms indicator
- Ethernet/MTC Comms indicator

Events

- Up to 100 event records, such as: power on, power off, clock error, unknown meter registration etc.
- Support events report to HES .

Alarm

- Up to 100 event records, such as: power on, power off, clock error, unknown meter registration etc.
- Support events report to HES .

Clock

- Hardware clock IC
- Accuracy $\leq 0.5s$ /day under 23
- Local and remote clock synchronization

Technical Specification

Rated Nominal Voltage

- 230V AC 1Phase or • 230/400V AC 3Phase

Operating Voltage Range

- 70 % -130 %Un

Rated Frequency

- 47.5Hz to 52.5Hz.

Power Consumption

- Non-communication state: Active power <5W
- Communication status: Active power <8W

Large Data Storage

- 16 GByte
- Stores 60 days of data of 500 meters for daily billing.

Battery and Life

- Replaceable Lithium battery, life more than 15 years

Tropical working temperature

- -40°C to +70°C, Humidity is up to 95 %

EMC Performance

- Impulse voltage > 8KV, AC voltage > 4KV, Short circuit
- Current > 3KA, Electrostatic Discharge > 8KV&15KV etc.

Protection class

- IP54 comply with IEC60529
- Insulation grade II

Environment

- Normal operation range: -25°C to +55°C
- Limit operation range: -40°C to +70°C

Housing material

- Polycarbonate with non-conductive, high impact, smooth finish, durable, non-flammable, UV stabilized, UV resistant and high resistance to weathering

Dimensions & Installation

- Dimension (W × H × D): 160mm × 180mm ×89mm
- Weight: 400g
- Installation Type: Din rail and hook mounting.

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