

DGC

Distributed Grid Controller

The Gridco Systems Distributed Grid Controller™ (DGC) is a next-generation RTU/PLC designed to enable a more agile, flexible and resilient distribution network. DGCs are intelligent computing platforms that provide coordination and control, power quality monitoring, data logging, local analytics, data networking, and communications for Gridco Systems In-line Power Regulators™ (IPRs) and Power Regulating Transformers™ (PRTs). DGCs are available standalone (pictured) or integrated with IPR and PRT units.

Utility personnel can use DGCs to locally or remotely monitor and configure IPRs/PRTs. DGCs support industry-standard protocols such as Secure DNP3.0 and IEC 60870 for communication with existing SCADA and DMS systems, and secure web services for richer data exchanges with the Gridco Systems Grid Management and Analytics Platform™ (GMAP) and other web-based systems. DGCs provide standard serial (RS-232), USB and Ethernet interfaces, and are compatible with common utility-supplied Distribution Automation (DA) communication modules.

The DGC is an effective tool for reliably integrating Distributed Energy Resources (DER), optimizing energy consumption, managing peak demand, protecting sensitive customer equipment, and increasing overall system reliability.

Centralized Operation

The DGC is designed to seamlessly integrate into existing centralized coordination and DA schemes. The DGC securely communicates with upstream operational systems (SCADA/DMS) via standard management protocols to enhance grid visibility and enable remote monitoring and control, effective Volt-VAR Optimization (VVO), and improved switching and protection coordination.

Distributed Operation & Coordination

The DGC is also designed to support distributed coordination, extending SCADA/DMS capabilities out as far as the service transformer edge of the distribution grid. This is particularly useful in providing monitoring, coordination and control in areas with high penetration levels of DER. The DGC is architected to support communications with downstream smart meters, PV inverters, EV charging stations and energy storage to provide local area management in an aggregate fashion, alleviating central operational systems from managing more devices than originally designed to support.

Autonomous Operation

The DGC also operates autonomously by default. This mode is useful in the event that communication links are not available or temporarily severed. In this mode, the DGC operates based on preconfigured settings.



KEY FEATURES

- Enable real-time power flow and quality monitoring throughout the distribution system
- Full front panel functionality with user-friendly push buttons and LCD screen
- Log data for offline analysis
- Enable secure communications remote management via SCADA, DMS and/or GMAP using industry-standard protocols
- Control and coordinate IPRs to enhance existing FDIR and VVO application performance
- Send fault, outage and service restoration notifications to the OMS
- Monitor distribution transformer loading for effective system planning, reliable asset management and enhanced revenue protection

Remote Access

The DGC supports remote access from SCADA systems using Secure DNP3.0 and from the Gridco Systems Grid Management and Analytics Platform™ (GMAP) using secure web services. The DGC is compatible with any standard third party communication devices and has been validated with a variety of devices including:

- Silver Spring Networks eBridge
- Landis+Gyr Series 4 DA IWR Radio
- Landis+Gyr Series 4 DA IP Radio
- MultiTek QuickCarrier 3G Modem

Local Access

The DGC supports local access via the Gridco Systems Field Configuration Tool™ (FCT) using secure web services over Ethernet or Wi-Fi, and via a touch-panel interface.

Mounting Options

The DGC supports two mounting options: 1) standalone (pictured below) and 2) integrated. In the standalone mounting option, the DGC is mounted onto a pole or externally to a pad-mounted IPR using a NEMA-4 enclosure. In the integrated mounting option, the DGC is mounted inside the IPR or PRT.



The DGC offers a simple, secure, flexible, communications and control platform

DGC SPECIFICATIONS

Communication Protocols	Secure DNP3.0 Modbus IEC 60870 IEC 61850 (future) Secure Web Services
Communication Interfaces	Serial (RS-232) USB Ethernet Wi-Fi (optional) 3G (optional) Bluetooth (optional) 3G Cellular
Communication Network Options	Wi-Fi WiMAX 900 MHz Fiber optics
Data Logging	200 samples per cycle Sag/swell capture CBEMA/ITIC reporting Power Quality 4 GB removable Flash
Power Quality Parameters	V, I, F, kW, kVAR, kVA, harmonics
Cybersecurity	Secure authentication 1024-bit RSA SSL data encryption Client/server certificates Audit log
Operating Voltage	24 VDC
Emissions	FCC part 15 class B
Operating Temperature	-40° to 55° C
Enclosure	NEMA-4
Dimensions	12"H x 10"W x 6"D
Weight	~15 lbs.
Time Synchronization	GPS NTP 3G Secure DNP3.0