DG-Mini

Industrial Compact Multi-ports Gateway for Smart Grid

- Special design for the network extension of legacy systems, such as
- RTU and the use in harsh environment
- Conform to IEC61850-3, IEEE1613 standard, and pass EMC certifiction test (level 4)
- Built-in CF card slot
- IRIG-B input/output, PPx, NTP time sync
- RTOS, embedded Linux
- Plug-in 3U height RTU box conveniently, such as D20 RTU
- Support serial ports for on-line printing
- Low power consumption, fanless, operating temperature range: -20 to 75℃ (-4 to 167°F) or - 40 to 85℃ (-40 to 185°F) (optional)

>> Overview

DG-Mini can be used as standalone powerful gateway in automation system for Smart Grid. The specified size of DG-Mini allows it to be plugged into the 3U height legacy device, such as traditional RTU to extent its functionality for the original SCADA system. It can be easily deployed to collect data, realize data supervisory and time-synchronization, manage various IEDs concurrently by application configuration per port. It is designed with the combination of small size, high reliability and low power consumption yet plentiful intelligent functionalities for the Smart Grid.

>> Features & Benefits

Special design based on PowerQUICC II Processor architecture
Built-in CF card slot
IRIG-B input/output, NTP time synchronization
Support panel mounting in standard 3U height chassis
Configurable multi-ports protocol communication
Configurable virtual connection with each port
Configurable MMS （IEC61850-8-1） server & client application
Advanced online data calculating
Online SOE/Event printing by serial port printer (optional)
EMC: High interference immunity with class 4 level.
Compliant to IEC61850-3, IEEE1613 standards
Operating temperature: -20 to 75℃ (-4 to 167°F) or - 40 to 85℃ (-40 to 185°F) (optional)
Compact and low power consumption, no fan design
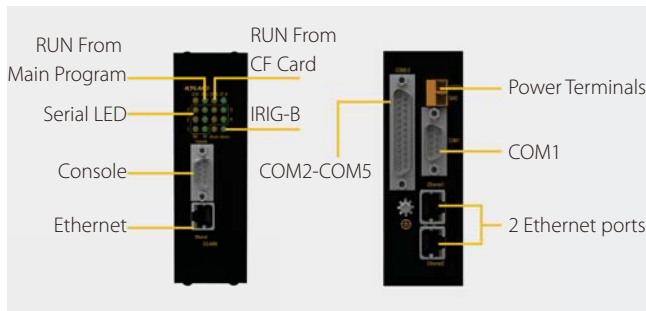
>> Technical Specifications

Hardware Parameter
Performance: 450 MHz CPU, 300 MHz CPM,100 MHz bus
RTOS: Embedded Linux 2.6 Kernel
SDRAM: 128M
NOR FLASH: 64M
Ethernet: 3 x 10/100Base-T
Serial Ports: 5× RS232 (Isolated) with isolated IRIG-B output per port
CF card: 1 slot, maximum 8GB

Firmware
IEC61850 MMS/GOOSE
DNP 3.0 Level2 slave/master over serial port and LAN
Modbus (RTU/ASCII)/Modbus slave/master over serial port and LAN
SEL®Fast-Meter master
AREVA Courier master
IEC60870-5-101/102/103(vendor)/104 salve/master
Advanced calculator
Virtual connection
Online event print (optional)
Customization (optional)

Interface
DB9: 1 x RS-232 serial maintenance port (with isolated IRIG-B output)
DB25: 4 x RS-232 serial communication ports (with isolated IRIGB output)
RJ45: 3 x 10/100M Base-T Ethernet ports
Power supply terminal: 12-24VDC

RUN From Main Program
RUN From CF Card
Serial LED
IRIG-B
Console
COM2-COM5
Ethernet
Power Terminals
COM1
2 Ethernet ports

Dimension and Installation

WxHxD: 40 x 128 x 176mm (1.57 x 5.04 x 6.93 inch)
Weight: 1.0 kg (2.2 pound)
Installation: panel-mounted or plug into the 3U chassis

Electric Parameter

Input: 12-24VDC
Power consumption: <10 W
Relative Humidity: 5% - 95% (non-condensing)
Electrostatic discharge immunity test: GB/T 17626.2-1998/IEC61000-4-2-1995 Class 3

Electrical fast transient/burst immunity test: GB/T 17626.4-1998 /IEC 61000-4-4-1995 Class3
Power frequency magnetic field immunity test: GB/T 17626.8-1998/IEC 61000-4-8-1995 Class5
Insulation resistance test: >5MΩ
Power frequency withstand voltage test: Communication port and the earth terminal be withstood 500V; Power input terminal and the earth terminal be withstood 1500V
Dry Heat: GB/T2423.2-2001/IEC 60068-2-2/IEC 60870-2-2 24 hours at +70℃
Cold: GB/T2423.1-2001/IEC 60068-2-1/IEC 60870-2-2 24 hours at 40℃
Damp heat, steady state influence test: GB/T2423.3-1993 IEC 60068-2-3 +40℃±2℃, 93%±3%, insulation resistance: >1MΩ

Order Information

DG-Mini: Industrial compact multi-ports gateway for Smart Grid
Note: Please contact Kyland for optional interface.

Typical Application

SAS Workstation
PMS Workstation

IEC60870-5-104
DNP 3.0 over LAN
Modbus over LAN
IEC61850-8-1(MMS)
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Ethernet B
Station Bus 100/1000M Base

DG-Mini upstream protocol communication/Convert

DG-Mini

Plug-In

Net Ports Connect to DG-Mini

3U Height RTU

Virtual Connection From DG-Mini

Virtual Connection From DG-Mini

IEC60870-5-104
DNP 3.0 over LAN
Modbus over LAN
IEC61850-8-1(MMS)
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Ethernet A
Bay Level 100/1000M Base

Manufacture IEDs

Legacy Relay/Bay Controller