DG-X1

Industrial 19 inch rack mount multi ports gateway for Smart Grid

- Special design to enhance communications of the smart grid in harsh environment
- Compliant with IEC61850-3, IEEE1613 standard, and pass EMC certification test (grade 4)
- Dual CF card slots
- IRIG-B input/output, PPx, NTP time sync
- Frequency acquisition from 45Hz to 65Hz within 0.01Hz precision
- RTOS, embedded Linux
- Support MySQL database
- Support serial port and USB port for on-line printing
- Support software dual redundancy
- Low power consumption, fanless, operating temperature range: - 40 to 85°C(-40 to 185°F)

Overview

DG-X1 is a specially designed communication facility based on the Power PC architecture. Users can collect, supervise, control and manage various IEDs in substation through 3 independent 10/100M Ethernet ports, 2 Modem ports and 8 RS-232/422/485 ports. Besides, DG-X1 renders kinds of data communication service to multiple PMS, EMS, SAS, DMS, charging system. Except the collecting of real time information, DG-X1 also supports information as fault record, electrical energy quality (eg. harmonic wave, voltage waveform, frequency wave, load wave, etc) and setting value.

DG-X1 is an embedded multifunctional device that integrates network technology and advanced application technology. High reliability, high stability, and low power consumption are its features. The application of DG-X1 not only saves the cost of daily operating and maintaining, but also provides a most genuine open migration platform for the upgrade of the digital smart grid.

Features & Benefits

Special designing based on PowerQUICC II Processor architecture
Built-in dual CF card slot
IRIG-B input/output, NTP time synchronization
Modem access serial port
Power system frequency measurement with 0.001Hz precision
Can be panel-mounted 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)
MySQL database (optional)
EMC: High interference immunity with class 4 level.
Compliant to IEC61850-3, IEEE1613 standards
Operating temperature: -20 to 75°C (-4 to 167°F) or - 40 to 85°C(-40 to 185°F) (optional)
Compact and low power consumption, no fan designing

Technical Specifications

Hardware Parameter
Performance: 450 MHz CPU,300 MHz CPM,100 MHz bus
RTOS: Embedded Linux 2.6 Kernel
SDRAM: 128M, 256M(Optional)
NOR FLASH: 64M
Ethernet: 3 x 10/100Base-T
Serial Ports: 8× RS232/485/422(Isolated) with isolated IRIG-B output per port, 2 x RS232 full modem access ports
CF card: 2 slots, up to 8GB per slot

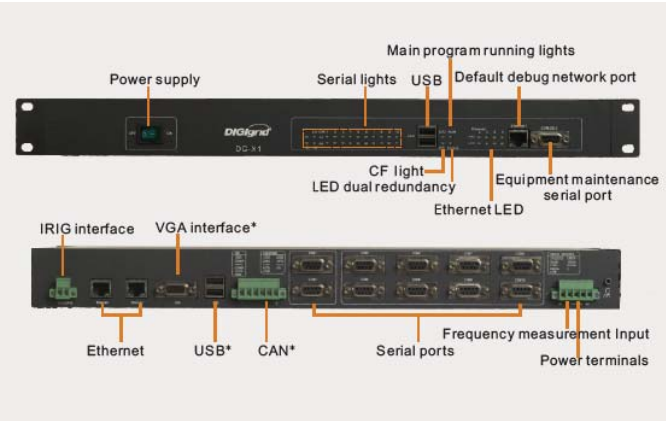
Firmware
IEC61850 MMS/GOOSE
DNP 3.0 Level2 slave/master over serial port and LAN
Modbus(RTU/ASCII)/Modbus slave/master over serial port and LAN
SEL fast-Meter master
AREVA Courier master
IEC60870-5-101/102/103(vendor)/104 salve/master
Advanced calculator
Virtual connection
Online event print (optional)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

Dimension and Installation

WxHxD: 483 x 45 x 280 mm (19 x 1.77 x 11.02 inch)
Weight: 4.5kg (9.92pound)
Installation: 1U height, 19 inch rack mount

Interface

DB9(Front): 1 x RS-232 serial maintenance port (with isolated IRIG-B output)
DB9(Back): 2 x RS232 modem ports, 8 x RS232/422/485 serial ports(with isolated IRIG-B output)
RJ45: 3 x 10/100Base-T Ethernet ports
USB: 4 x USB ports (optional)
IRIG-B DC input/output(isolation) terminal
Power supply terminal: 85-264V AC/85-300V DC
Frequency measurement terminal: 80-264VAC, 45-65Hz (optional)
2 x CAN buses (optional) terminal



Electric Parameter

Input: 85-264V AC/ 85-300V DC
Power consumption: 10 W
Relative humidity: 5%- 95% (non-condensing)
Electrostatic discharge immunity test: GB/T 17626.2-1998/IEC 61000-4-2-1995 Class 4
Electrical fast transient/burst immunity test: GB/T 17626.4-1998/IEC 61000-4-4-1995 Class 4
Surge immunity test: GB/T 17626.5-1998/IEC 61000-4-5-1995 Class 4
Power frequency magnetic field immunity test: GB/T 17626.8-1998/IEC 61000-4-8-1995 Class 5
Oscillatory waves immunity test: GB/T 17626.12-1998/IEC61000-4-12-1995 Class 4
Voltage dips, short interruptions and voltage variations immunity test: GB/T 15153.1-1998/IEC 61000-4-11 2004 ΔU100%, Δt=0.4s
Insulation resistance: > 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-X1:
3x10/100Base-T Ethernet ports , 2x RS-232, 8xRS-232/422/485
SDRAM:128M,NOR FLASH: 64M
Note: Please contact Kyland for optional interface.

Typical Application