

DG-D60

Intelligent Terminal Unit



- Power distribution monitoring, control and protection
- Comprehensive voltage and current protection, reclosing and synchronization
- Programmable logical control
- Power quality monitoring
- Data encryption and decryption communications
- Versatile time synchronization technologies
- Rich communication interfaces and protocols
- Optional Colorful LCD HMI for status, data and curve display
- Optional wireless connectivity

Overview

DG-D60, the comprehensive multi-function intelligent terminal unit, is designed to serve as the monitoring, control and protection units for power distribution network, substation and power plants. Compliant with the sophisticated smart grid and IEC 61850 standards, DG-D60 is fully equipped with plug and play, intelligent configuration and robust protection features.

Features & Benefits

Robust and Fully Integrated Hardware & Software

- ▼ Dual-core ARM-based CPU and real-time OS
- ▼ 64M SDRAM, 9M Flash and optional 4GB TF card for historical data storage
- ▼ Programmable control logic via windows-based configuration tool
- ▼ Protection relay
- ▼ Fault recorder
- ▼ Power quality and energy efficiency monitoring

Rich Communication Capability

- ▼ 2xRS232/485 serial ports and 1xCAN bus
- ▼ 2x10/100Base-Tx and 2x100Base SFP Ethernet ports
- ▼ Optional Wi-Fi and/or GPRS/3G/4G module (Wi-Fi only for LAN)
- ▼ Supports IEC 61850 MMS/GOOSE, IEC 60870-5-101/103/104, DNP 3.0 with Secure Authentication v2, Modbus

Remote Configuration & Maintenance Ability

- ▼ Supports remote maintenance and configuration (through Windows-based tool, Mobile App or Web page)
- ▼ Optional colorful LCD HMI

Time Synchronization

- ▼ NTP v2/v3
- ▼ IRIG-B, PPS

Versatile I/O interfaces

- ▼ 5, 8, or 16 I/O slots (inclusive 1 slot for Power and 1 for MCU)
- ▼ AC Current (Ia/Ib/Ic/In): up to 12 circuits
- ▼ AC Voltage (Va/Vb/Vc/Vn): up to 12 circuits
- ▼ Analog (I/V) Input: up to 48
- ▼ Analog (I/V) Output: up to 48
- ▼ Digital Input: up to 192
- ▼ Digital (Control) Output: up to 96

AC Measurement

- ▼ 16-bit simultaneous ADC
- ▼ Ia, Ib, Ic, In, Va, Vb, Vc, Vn
- ▼ P, Q, PF, KWh, KVARh, THD
- ▼ 1st~25th harmonic

Analog Measurement

- ▼ 16-bit simultaneous ADC
- ▼ Supports 4~20mA / 0~±5V / 0~±10V

Analog Output

- ▼ 16-bit simultaneous ADC
- ▼ Supports 0~20mA or 4~20mA

Digital Input

- ▼ 1ms SOE resolution
- ▼ Supports BCD
- ▼ Supports pulse accumulation

Digital (Control) Output

- ▼ SBO(Select-Before-Operate)
- ▼ Supports dual-pole control output
- ▼ Supports direct contact output
- ▼ Supports pulse output
- ▼ Supports latch output
- ▼ Control circuit supervision

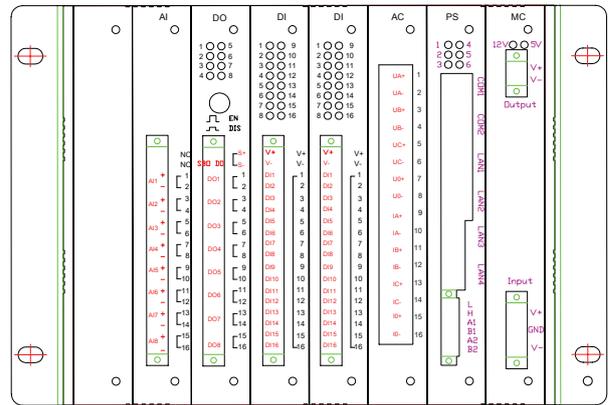
Full Function Protection

- ▶ Phase instant/inverse-time/directional over current protection
- ▶ Phase low/over voltage protection
- ▶ Zero sequence instant/inverse-time over current protection
- ▶ Low/High frequency protection
- ▶ Auto-reclosing and phase synchronism check
- ▶ Supports scheme logic, fault location isolation and restoration
- ▶ Fault recording

EMC

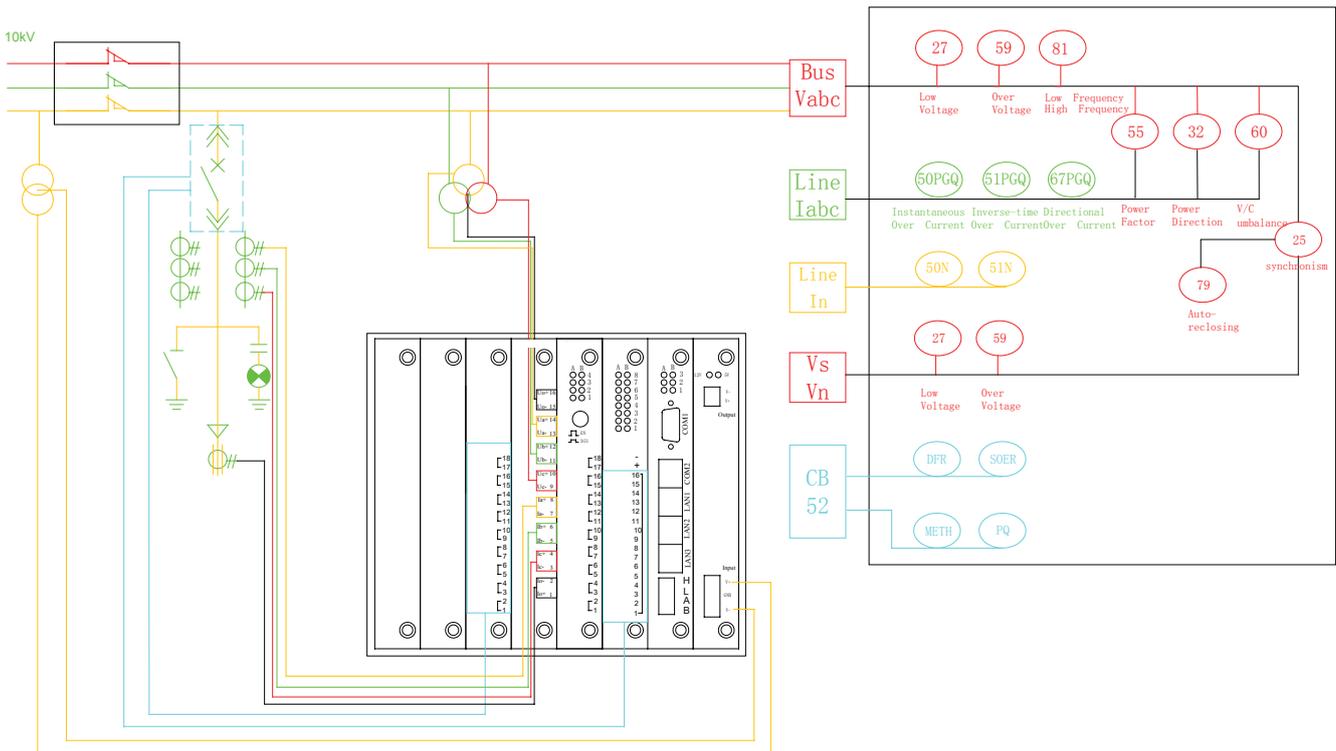
- ▶ Voltage: 220V DC/AC, 24V DC
- ▶ Power: typical about 15w
- ▶ Temperature: -40°C to +85°C
- ▶ Insulation coordination for measuring relays and protection equipment IEC 60255-5, DLT 721-2000, 2500V
- ▶ Oscillatory waves immunity IEC-61000-4-12 Level 4
- ▶ Voltage dips IEC 61000-2-8, Level 3
- ▶ Transient immunity IEC 61000-4-4, Level 4
- ▶ Surge immunity IEC 61000-4-5, Level 4
- ▶ Electrostatic discharge immunity IEC 61000-4-2, Level 4
- ▶ Power frequency magnetic fields immunity IEC 61000-4-8, Level 4
- ▶ Single input energizing quantity measuring relays with dependent specified time IEC 60255-4, DLT 721-2000 5kV (1.2/50 μs), 5s
- ▶ Electromagnetic field immunity IEC61000-4-3

Front Panel

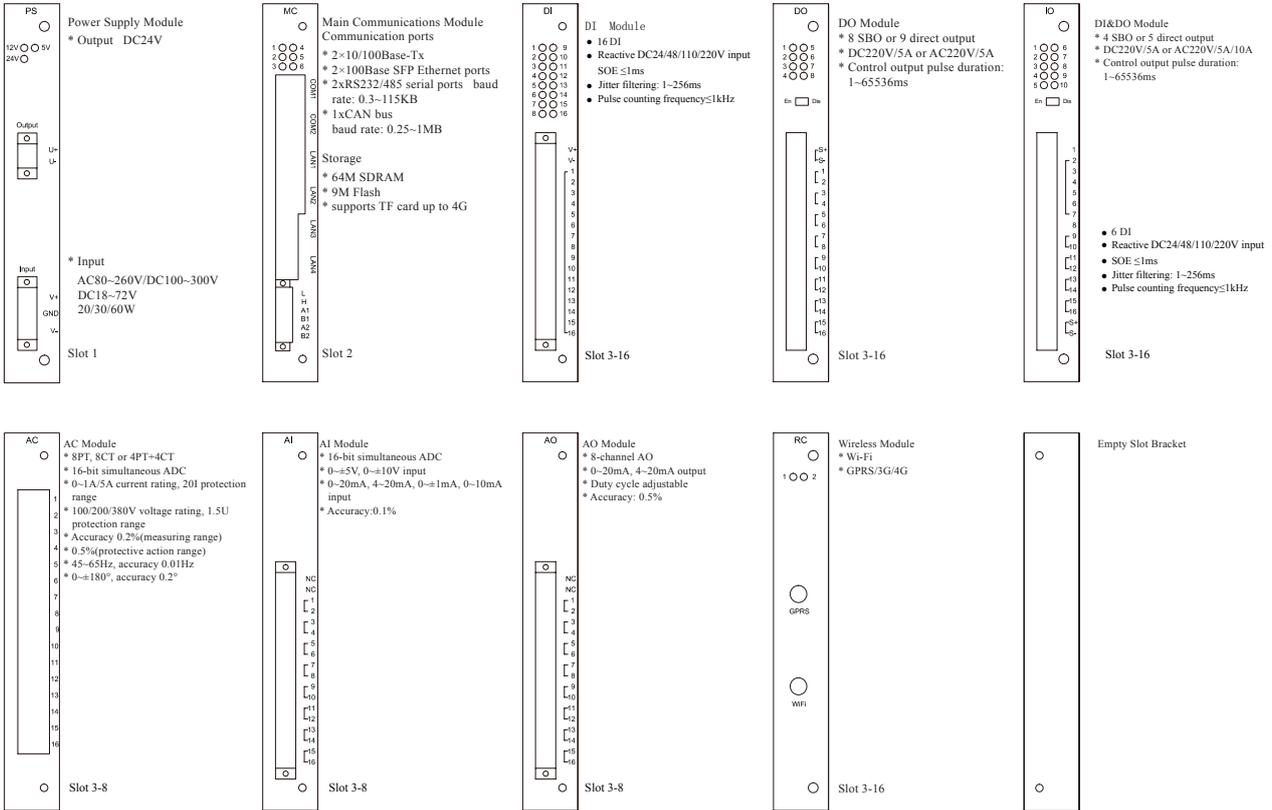


- ▶ 2xRS232/RS485 serial ports
- ▶ 2x100Base-Tx and 2x100Base-Tx/Fx Ethernet ports
- ▶ 1xCAN bus
- ▶ Optional Wi-Fi and/or GPRS/3G/4G module

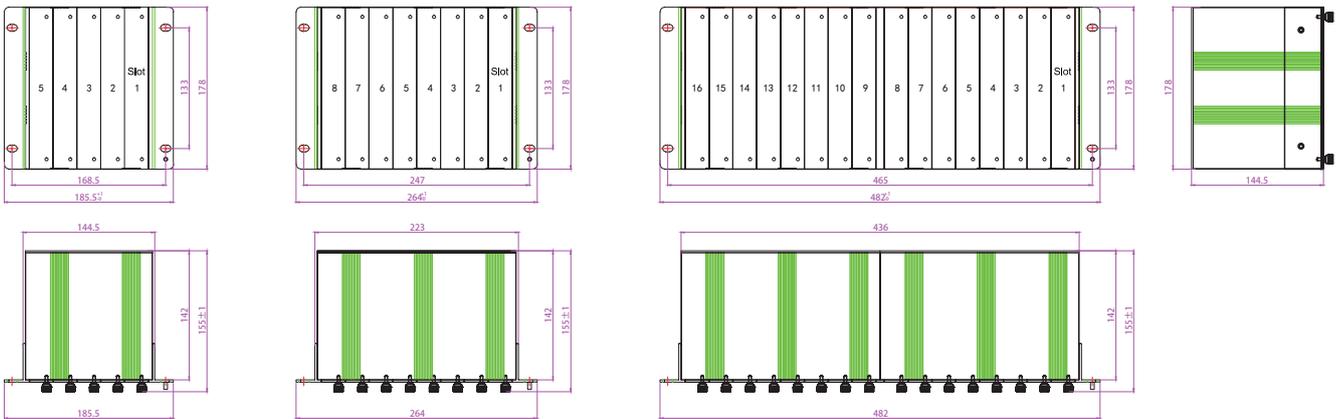
Function Diagram



Modules & Specifications



Chassis Dimension



5 slots

8 slots

16 slots

» Ordering Information

Chassis

- ▼ DG-D60-5: 5 slots (3 slots for I/O modules)
- ▼ DG-D60-8: 8 slots (6 slots for I/O modules)
- ▼ DG-D60-16: 16 slots (14 slots for I/O modules)

Power

- ▼ DGM-LV : 18~72VDC
- ▼ DGM-HV : 100~300VDC / 80~260VAC

CPU

- ▼ DGM-CPU: DEFAULT (IEC 60870-5-101/104, DNP3.0, Modbus)
- ▼ DGM-CPU-A*: DEFAULT + IEC 61850 MMS Server

Wireless

- ▼ DGM-WiFi: WiFi only
- ▼ DGM-GPRS*: WiFi + GPRS
- ▼ DGM-3G*: WiFi + 3G

DI

- ▼ DGM-1601: 16DI, DC24V
- ▼ DGM-1602: 16DI, DC48V
- ▼ DGM-1603: 16DI, DC110V
- ▼ DGM-1604: 16DI, DC220V

DO

- ▼ DGM-2801: 8DO, DO-220VDC/5A
- ▼ DGM-2802: 8DO, DO-220VAC/5A
- ▼ DGM-2803*: 8DO, DO-220VAC/10A

DIO

- ▼ DGM-3101: 6DI+4DO, DI-24VDC, DO-220VDC/5A
- ▼ DGM-3102: 6DI+4DO, DI-24VDC, DO-220VAC/5A
- ▼ DGM-3103*: 6DI+4DO, DI-24VDC, DO-220VAC/10A
- ▼ DGM-3111: 6DI+4DO, DI-48VDC, DO-220VDC/5A
- ▼ DGM-3112: 6DI+4DO, DI-48VDC, DO-220VAC/5A
- ▼ DGM-3113*: 6DI+4DO, DI-48VDC, DO-220VAC/10A
- ▼ DGM-3121: 6DI+4DO, DI-110VDC, DO-220VDC/5A
- ▼ DGM-3122: 6DI+4DO, DI-110VDC, DO-220VAC/5A
- ▼ DGM-3123*: 6DI+4DO, DI-110VDC, DO-220VAC/10A
- ▼ DGM-3131: 6DI+4DO, DI-220VDC, DO-220VDC/5A
- ▼ DGM-3132: 6DI+4DO, DI-220VDC, DO-220VAC/5A
- ▼ DGM-3133*: 6DI+4DO, DI-220VDC, DO-220VAC/10A

AC

- ▼ DGM-6801: 8CT, CT-1A-20In
- ▼ DGM-6802: 8CT, CT-5A-20In
- ▼ DGM-6811: 8PT, PT-100V-1.5Un
- ▼ DGM-6812: 8PT, PT-220V-1.5Un
- ▼ DGM-6813: 8PT, PT-380V-1.5Un
- ▼ DGM-6821: 4CT+4PT, CT-1A-20In, PT-100V-1.5Un
- ▼ DGM-6822: 4CT+4PT, CT-5A-20In, PT-100V-1.5Un
- ▼ DGM-6823: 4CT+4PT, CT-1A-20In, PT-220V-1.5Un
- ▼ DGM-6824: 4CT+4PT, CT-5A-20In, PT-220V-1.5Un
- ▼ DGM-6825: 4CT+4PT, CT-1A-20In, PT-380V-1.5Un
- ▼ DGM-6826: 4CT+4PT, CT-5A-20In, PT-380V-1.5Un

AI

- ▼ DGM-4801: 8AI, 0-20mA
- ▼ DGM-4802: 8AI, ±5V
- ▼ DGM-4803: 8AI, ±10V

AO

- ▼ DGM-5801: 8AO, 0-20mA

* Preliminary, contact Kyland representative for more details