

2 Product overview

2.1 Product model designation

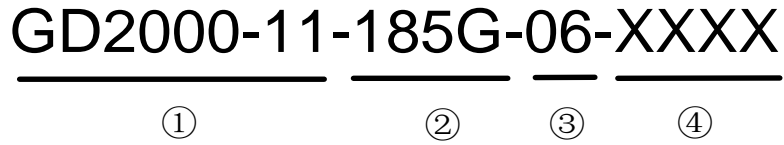


Figure 2-1 Product model example

Table 2-1 Product model code description

No.	Field	Description
①	Medium-voltage product series	GD2000-01: Two-quadrant module product, IP00 GD2000-11: Four-quadrant module product, IP00
②	Rated power	075G: 75kW 500G: 500kW
③	Voltage class	06: 660V
④	Management number	Internal management number

2.2 Goodrive2000 two-quadrant VFD technical specifications

Table 2-2 Two-quadrant VFD technical specifications

Item		Specifications
Power input	Input voltage (V)	AC 3PH 560V–760V; Rated voltage: 660V
	Input current (A)	See 2.4 Product ratings.
	Input frequency (Hz)	50Hz or 60Hz; Allowed range: 47–63Hz
Power output	Output voltage (V)	0–Input voltage (V)
	Output current (A)	See 2.4 Product ratings.
	Output power (kW)	See 2.4 Product ratings.
	Output frequency (Hz)	0–400Hz
Technical control performance	Control mode	Space voltage vector control, sensorless vector control (SVC), and sensor vector control (VC)
	Motor type	Asynchronous motor (AM) and permanent magnetic synchronous motor (SM)
	Speed ratio	For AMs: 1:200 (SVC); for SMs, 1:20 (SVC); 1:1000 (VC)
	Speed control accuracy	± 0.2% (SVC); ± 0.02% (VC)
	Speed fluctuation	± 0.3% (SVC)
	Torque response	< 20ms (SVC); < 10ms (VC)
	Torque control accuracy	10% (SVC); 5% (VC)

Item		Specifications
	Starting torque	For AMs: 0.25Hz/150% (SVC) For SMs: 2.5Hz/150% (SVC) 0Hz/200% (VC)
	Overload capacity	150% for 1 minute, 180% for 10 seconds, and 200% for 1 second
Running control performance	Frequency setting method	Settings can be implemented through digital, analog, pulse frequency, multi-step speed running, simple PLC, PID, Modbus communication, PROFIBUS communication and so on. Settings can be combined and the setting channels can be switched.
	Automatic voltage regulation	The output voltage can be kept constant although the grid voltage changes.
	Fault protection	More than 30 protection functions, such as protection against overcurrent, overvoltage, undervoltage, overtemperature, phase loss, and overload
	Speed tracking restart	Used to implement impact-free smooth startup for rotating motors
Peripheral interface	Terminal analog input resolution	No more than 20mV
	Terminal digital input resolution	No more than 2ms
	Analog input	2 inputs; AI1: 0–10V/0–20mA; AI2: -10–10V
	Analog output	1 input; AO1: 0–10V/0–20mA
	Digital input	Four regular inputs; max. frequency: 1kHz; internal impedance: 3.3kΩ Two high-speed inputs; max. frequency: 50kHz; supporting quadrature encoder input; with speed measurement function
	Digital output	One high-speed pulse output; max. frequency: 50kHz One Y terminal open collector output
	Relay output	Two programmable relay outputs RO1A: NO; RO1B: NC; RO1C: common RO2A: NO; RO2B: NC; RO2C: common Contact capacity: 3A/AC250V, 1A/DC30V
	Extended interfaces	Three extended interfaces: SLOT1, SLOT2, and SLOT3 Supporting PG cards, programmable extension cards, communication cards, I/O cards and so on
Other	Temperature of running environment	-10 – +50°C; derating is required if the ambient temperature exceeds 40°C
	Ingress protection rating	IP00
	Pollution degree	Degree 2
	Cooling method	Forced air cooling

2.3 Goodrive2000 four-quadrant VFD technical specifications

2.3.1 Goodrive2000 PWM rectifier technical specifications

Table 2-3 Goodrive2000 PWM rectifier technical specifications

Item		Specifications
Power input	Rated input voltage (V)	AC 3PH 560V–760V; Rated voltage: 660V
	Rated input current (A)	See 2.4.2 Goodrive2000 four-quadrant VFD main ratings.
	Rated input frequency (Hz)	50Hz or 60Hz; Allowed range: 47–63Hz
	Rated input efficiency (%)	More than 95%
	Rated input power factor (%)	More than 0.99
Fault protection		More than 30 protection functions, such as protection against overcurrent, overvoltage, undervoltage, overtemperature, phase loss, and overload

2.3.2 Goodrive2000 inverter technical specifications

Table 2-4 Goodrive2000 inverter technical specifications

Item		Specifications
Power output	Output voltage (V)	0–Input voltage (V)
	Output current (A)	See 2.4 Product ratings.
	Output power (kW)	See 2.4 Product ratings.
	Output frequency (Hz)	0–400Hz
Technical control performance	Control mode	Space voltage vector control, sensorless vector control (SVC), and sensor vector control (VC)
	Motor type	Asynchronous motor (AM) and permanent magnetic synchronous motor (SM)
	Speed ratio	For AMs: 1:200 (SVC); for SMs, 1:20 (SVC); 1:1000 (VC)
	Speed control accuracy	± 0.2% (SVC); ± 0.02% (VC)
	Speed fluctuation	± 0.3% (SVC)
	Torque response	< 20ms (SVC); < 10ms (VC)
	Torque control accuracy	10% (SVC); 5% (VC)
	Starting torque	For AMs: 0.25Hz/150% (SVC) For SMs: 2.5Hz/150% (SVC) 0Hz/200% (VC)
Overload capacity	150% for 1 minute, 180% for 10 seconds, and 200% for 1 second	
Running control performance	Frequency setting method	Settings can be implemented through digital, analog, pulse frequency, multi-step speed running, simple PLC, PID, Modbus communication, PROFIBUS communication and so on. Settings can be combined and the setting channels can be switched.

Item		Specifications
	Automatic voltage regulation	The output voltage can be kept constant although the grid voltage changes.
	Fault protection	More than 30 protection functions, such as protection against overcurrent, overvoltage, undervoltage, overtemperature, phase loss, and overload
	Speed tracking restart	Used to implement impact-free smooth startup for rotating motors
Peripheral interface	Terminal analog input resolution	No more than 20mV
	Terminal digital input resolution	No more than 2ms
	Analog input	2 inputs; AI1: 0–10V/0–20mA; AI2: -10–10V
	Analog output	1 input; AO1: 0–10V/0–20mA
	Digital input	Four regular inputs; max. frequency: 1kHz; internal impedance: 3.3kΩ Two high-speed inputs; max. frequency: 50kHz; supporting quadrature encoder input; with speed measurement function
	Digital output	One high-speed pulse output; max. frequency: 50kHz One Y terminal open collector output
	Relay output	Two programmable relay outputs RO1A: NO; RO1B: NC; RO1C: common RO2A: NO; RO2B: NC; RO2C: common Contact capacity: 3A/AC250V, 1A/DC30V
	Extended interfaces	Three extended interfaces: SLOT1, SLOT2, and SLOT3 Supporting PG cards, programmable extension cards, communication cards, I/O cards and so on
Other	Temperature of running environment	-10 – +50°C; derating is required if the ambient temperature exceeds 40°C
	Ingress protection rating	IP00
	Pollution degree	Degree 2
	Cooling method	Forced air cooling

2.4 Product ratings

2.4.1 Goodrive2000 two-quadrant VFD main ratings

Table 2-5 Goodrive2000 two-quadrant VFD main ratings

VFD model	Rated power (kW)	Rated input current (A)	Rated output current (A)
GD2000-01-075G-06	75.0	85	86
GD2000-01-090G-06	90.0	95	98
GD2000-01-110G-06	110.0	118	120
GD2000-01-132G-06	132.0	145	150
GD2000-01-160G-06	160.0	165	175
GD2000-01-185G-06	185.0	190	200
GD2000-01-200G-06	200.0	210	220
GD2000-01-250G-06	250.0	255	270
GD2000-01-315G-06	315.0	334	350
GD2000-01-400G-06	400.0	411	430
GD2000-01-500G-06	500.0	518	540

2.4.2 Goodrive2000 four-quadrant VFD main ratings

Table 2-6 Goodrive2000 four-quadrant VFD main ratings

VFD model	Rated power (kW)	Rated input current (A)	Rated output current (A)
GD2000-11-075G-06	75.0	69	86
GD2000-11-090G-06	90.0	83	98
GD2000-11-110G-06	110.0	101	120
GD2000-11-132G-06	132.0	122	150
GD2000-11-160G-06	160.0	147	175
GD2000-11-185G-06	185.0	170	200
GD2000-11-200G-06	200.0	184	220
GD2000-11-250G-06	250.0	230	270
GD2000-11-315G-06	315.0	290	350
GD2000-11-400G-06	400.0	368	430
GD2000-11-500G-06	500.0	460	540

2.5 Product standards

The Goodrive3000 series medium voltage speed regulation system is designed and manufactured with reference to the latest version of national standards (GB or GB/T), International Electrotechnical Commission (IEC) standards, and

International System of Units (SI) as the minimum design specifications, and some of its relevant technical parameters can meet the requirements of GB or GB/T and IEC standards.

Some technical standards for design reference:

IEC 60071-1:2019	Insulation coordination - Part 1: definitions, principles and rules
IEC 61800-5-1:2007+A1:2016	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy
IEC 61800-5-2:2016	Adjustable speed electrical power drive systems - Part 5-2: Safety requirements - Functional
IEC 60529:1989+A1:1999+A2:2013	Degrees of protection provided by enclosure (IP code)
IEC 61000-4 SER	EMC testing and measurement techniques. (series standards)
IEC 61800-3:2017	Adjustable speed electrical power drive systems--Part 3:EMC requirements and specific test methods
IEC 61800-2:2021	Adjustable speed electrical power drive systems - Part 2: General requirements - Rating specifications for adjustable speed AC power drive systems
IEC 61800-9-2:2017	Adjustable speed electrical power drive systems - Part 9-2: Ecodesign for power drive systems, motor starters, power electronics and their driven applications - Energy efficiency indicators for power drive systems and motor starters
IEC 60038:2009+A1:2021	IEC standard voltage
IEC 60196:2009	IEC standard frequencies
IEC 60034-9:2021	Rotating electrical machines - Part 9: Noise limits
IEC 60146-1-1:2009	Semiconductor converters - General requirements and line commutated converters - Part 1-1: Specification of basic requirements
IEC 60068-2:2021 SER	Environmental testing - Part 2: Tests - ALL PARTS
IEC 60204-1:2016+A1:2021	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
IEC 60204-11:2018	Safety of machinery - Electrical equipment of machines - Part 11: Requirements for HV equipment for voltages above 1000 V a.c. or 1500 V d.c. and not exceeding 36 kV
IEC 60721-3-1:2018	Classification of environmental conditions - Part 3-1: Classification of groups of environmental parameters and their severities - Storage
IEC 60721-3-2:2018	Classification of environmental conditions - Part 3-2: Classification of groups of environmental parameters and their severities - Transportation and Handling
IEC 60721-3-3:2019	Classification of environmental conditions - Part 3-3: Classification of groups of environmental parameters and their severities - Stationary use at weatherprotected locations
IEC 60228:2004	Conductors of insulated cables

IEEE 519-2014	Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems
GB/T 311.1-2012	Insulation co-ordination Part 1: Definitions, principle and rules
GB/T 12668.501-2013	Adjustable speed electrical power drive systems Part 5-1: Safety requirements—Electrical, thermal and energy
GB/T 12668.502-2013	Adjustable speed electrical power drive systems Part 5-2: Safety requirements—Function
GB/T 4208-2017	Degree of protection provided by enclosure (IP code)
GB/T 17626	Electromagnetic compatibility Testing and measurement techniques (series standards)
GB/T 12668.3-2012	Adjustable speed electrical power drive systems Part 3: EMC requirements and specific test methods
GB/T 12668.2-2002	Adjustable speed electrical power drive systems Part 2: General requirements—Rating specifications for low voltage adjustable frequency a.c. power drive systems
GB 12668.4-2006	Adjustable speed electrical power drive systems Part 4: General requirements—Rating specifications for a.c.power drive systems above 1000Va.c.and not exceeding 35kV
GB/T 12668.902-2021	Adjustable speed electrical power drive systems Part 9-2: Ecodesign for power drive systems, motor starters, power electronics and their driven applications—Energy efficiency indicators for power drive systems and motor starters
GB/T 156-2017	Standard Voltages
GB/T 1980-2005	Standard frequencies
GB/T 10069.3-2008	Measurement of airborne noise emitted by rotating electrical machines and the noise limits Part 3: Noise limits
GB/T 3859.1-2013	Semiconductor converters.General requirements and line commutated converters Part 1-1: Specification of basic requirements
GB/T 2423	Environmental testing Part 2: Test methods (series standards)
GB/T 5226.1-2019	Electrical safety of machinery—Electrical equipment of machines Part 1:General requirements
GB 5226.3-2005	Safety of machinery.Electrical equipment of machines Part 11: Requirements for HV equipment for voltages above 1000Va.c.or 1500Vd.c.and not exceeding 36kV
GB/T 4798.1-2019	Classification of environmental conditions—Classification of groups of environmental parameters and their severities Part 1: Storage
GB/T 4798.2-2021	Classification of environmental conditions—Classification of groups of environmental parameters and their severities Part 2: Transportation and handling

GB/T 4798.3-2007	Environmental conditions existing in the application of electric and electronic products Part 3: Stationary use at weather-protected locations
GB/T 3956-2008	Conductors of insulated cables
GB/T 14549-1993	Quality of electric energy supply harmonics in public supply network
GB/T 19212.1-2016	Safety of transformers, reactors, power supply units and combinations thereof Part 1: General requirements and tests
GB/T 30843.1-2014	Variable-frequency drive above 1 kV and not exceeding 35 kV Part 1: Technical conditions
GB/T 30843.2-2014	Variable-frequency drive above 1 kV and not exceeding 35 kV Part 2: Test methods
GB/T 30843.3-2017	Variable-frequency drive above 1 kV and not exceeding 35 kV Part 3: Safety requirements
DL-T 994-2006	High voltage variable frequency drive used in draft fan and pump of power plant
JB/T 9659.1-1999	Terminal blocks for low-voltage switchgear and controlgear assemblies Part 1: Sectional type and closed-back type terminal blocks
JB/T 9660-1999	Wiring duct