



VEICHI

## GS20 Series Pump Drive



**VEICHI**

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Official Website

\*Version: Y5/2-11

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Excellent  
Performance



Easy  
Handling



Compact  
Structure

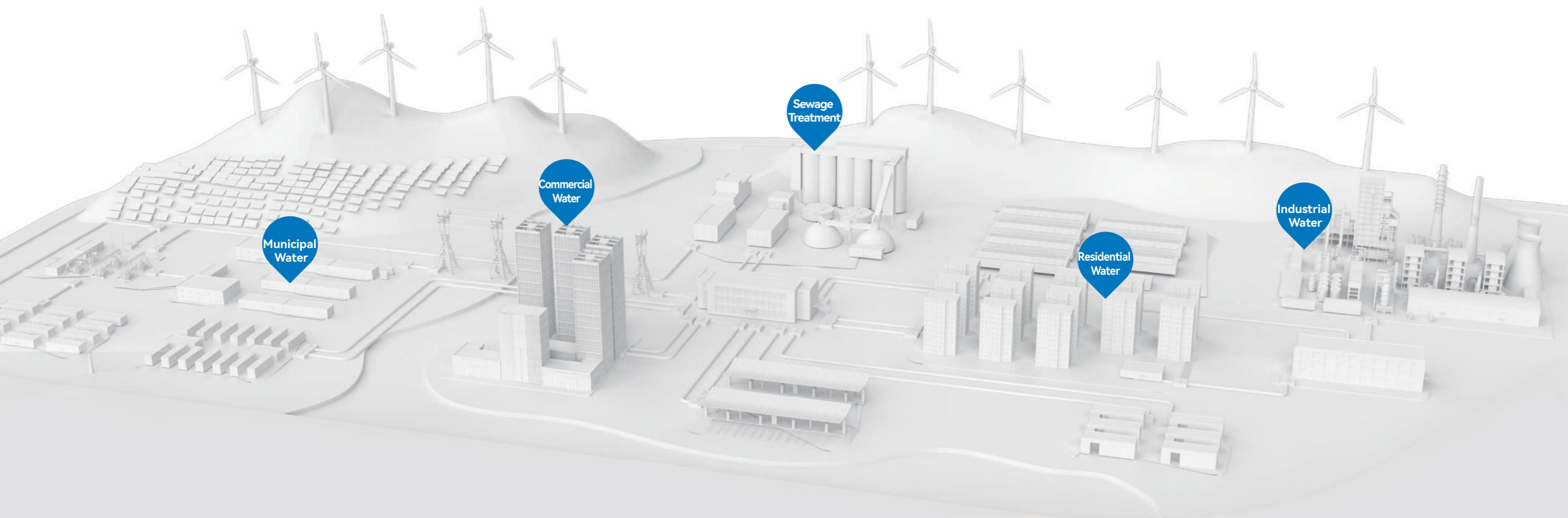


Stable  
Operation

Stock Code :688698

# GS20

INTELLIGENT TECHNOLOGY, BUILDING THE FUTURE



## Pump Drive

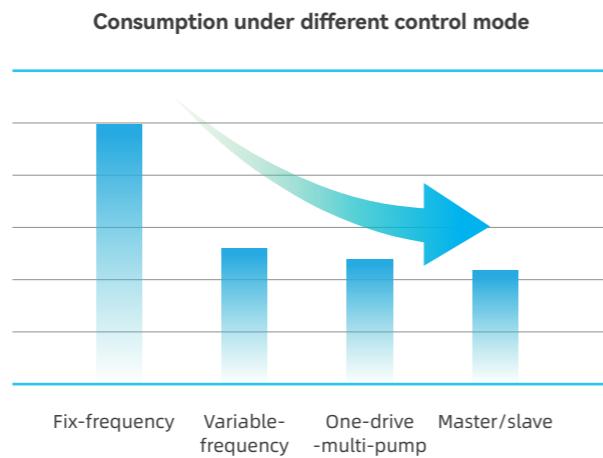
Tailored for the water supply and sewage treatment sectors, our solution integrates cutting-edge pump-specific software and functions such as independent PID control, multi-pump management, and pump shift. These advanced features ensure unwavering stability, significant energy savings, safeguarding pump integrity, and prolonging overall system lifespan. Its outstanding performance positions it as the premier choice for secondary water supply in commercial buildings, educational facilities, healthcare institutions, and residential complexes, adeptly addressing the diverse and varying demands of water supply and wastewater management.

## Multi-pump Control for System Efficiency and Stability



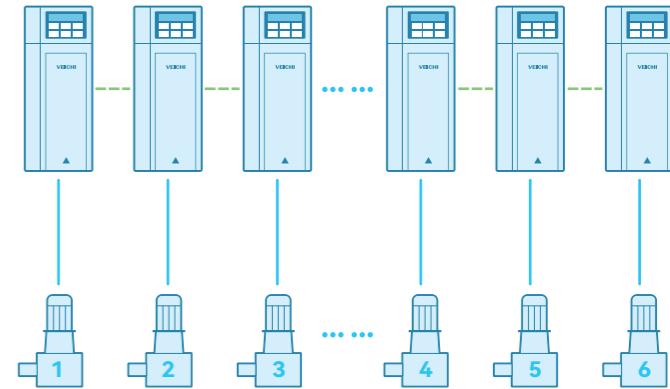
### VEICHI's Innovative Multi-pump Control Algorithms

- Significant reductions in energy consumption compared to the constant-frequency pumps
- Reduced cost of use with reduced carbon emissions to a greater extent



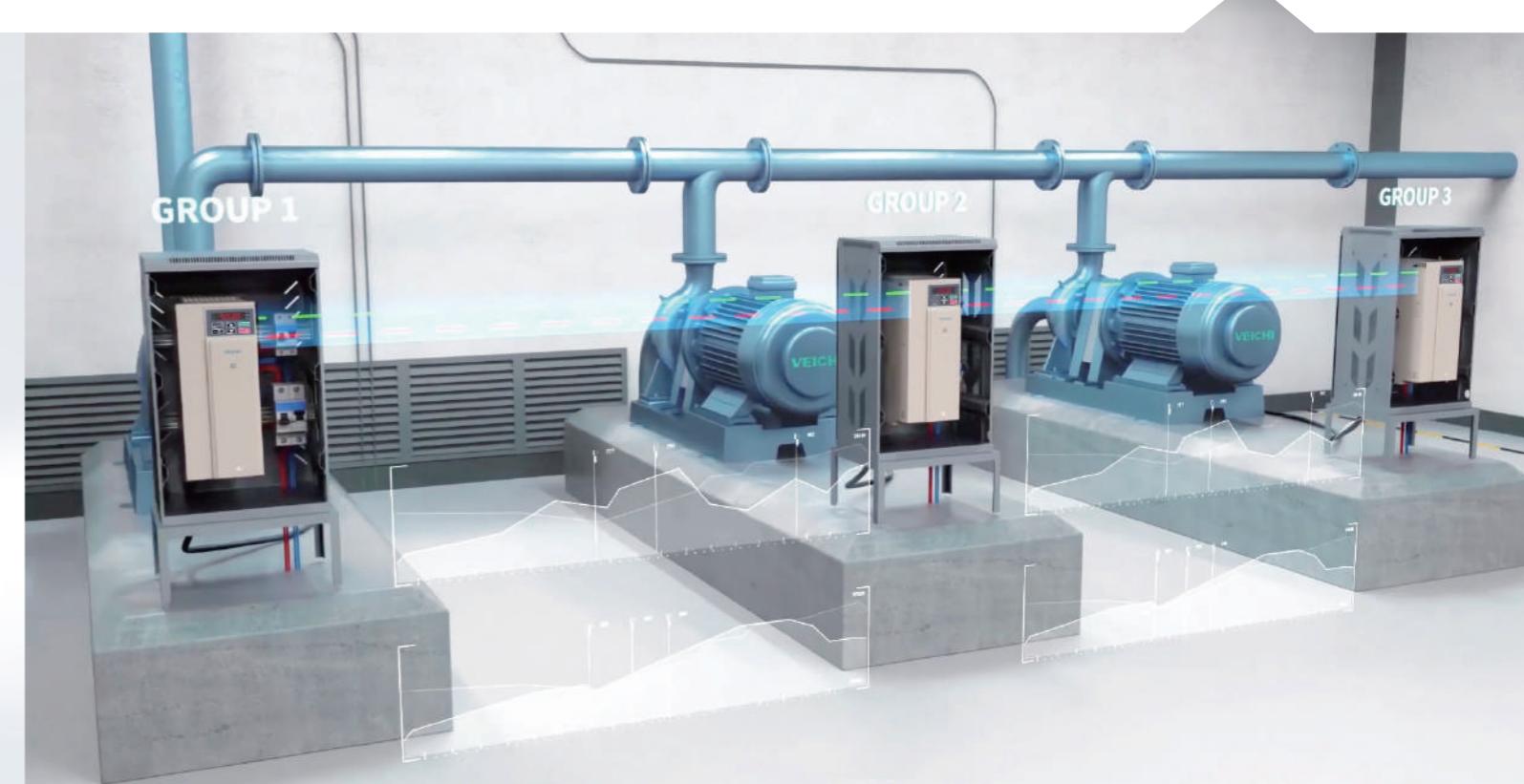
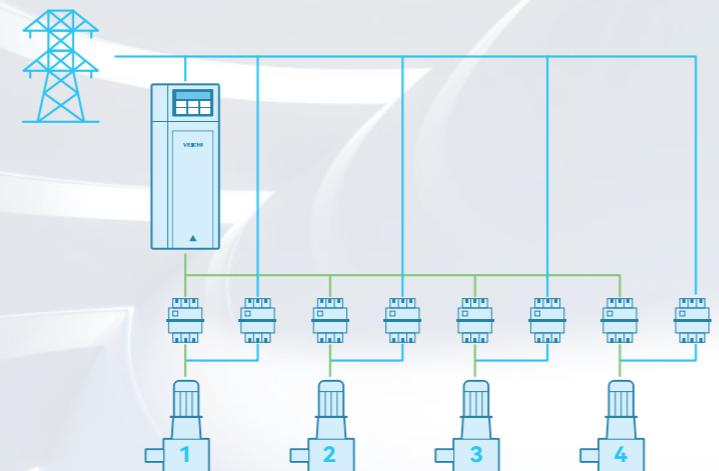
### Advanced Built-in Cascade Drive Control

- Efficient interconnection between drive by RS485 communication
- Flexibly management of up to 10 pumps running at variable frequency simultaneously
- Optimal overall performance and reliability



### Optional Relay Expansion (GS20-R8-E)

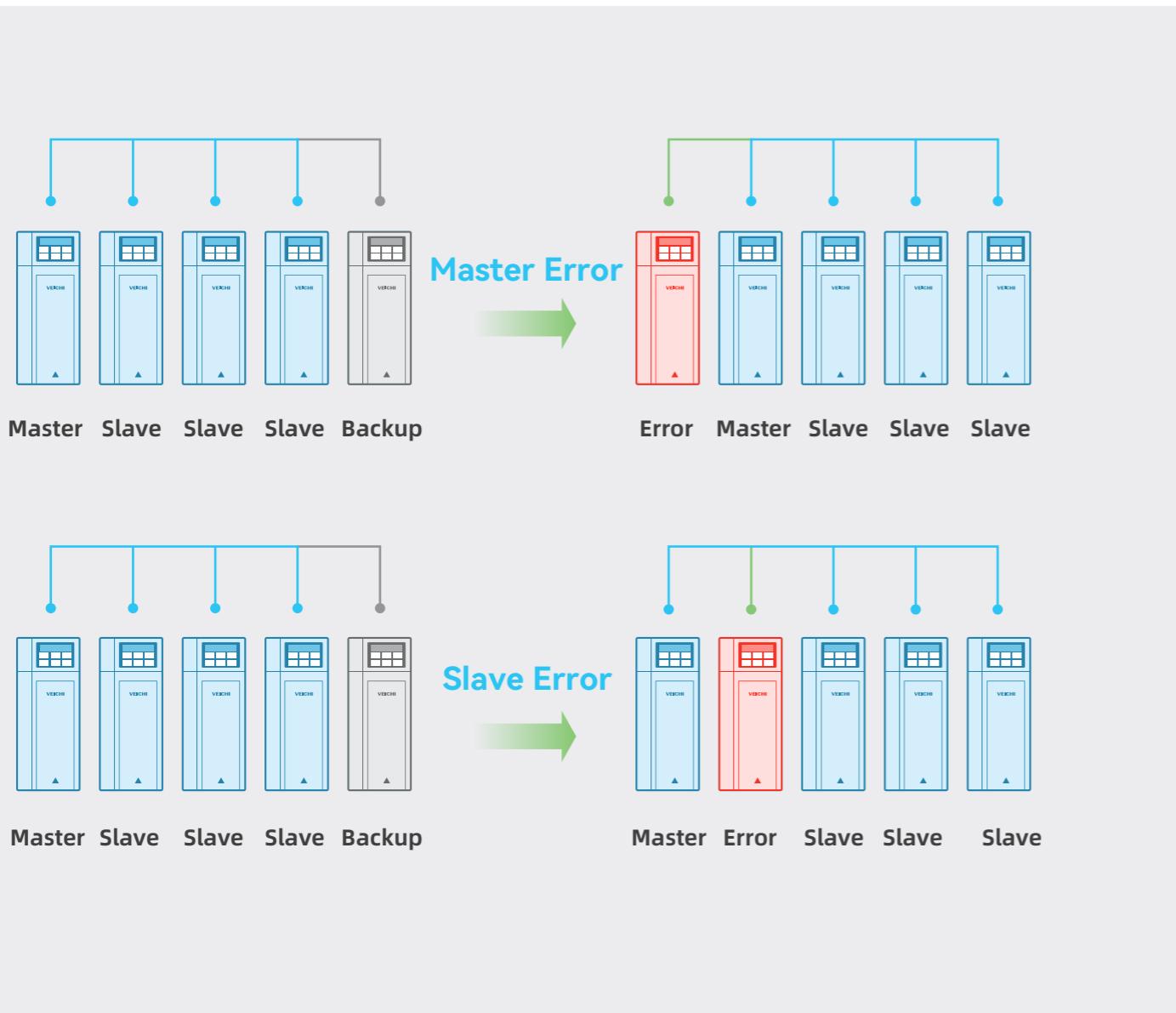
Up to 4 pumps (1 for variable frequency operation + 3 for constant frequency operation) for lower cost and higher requirements





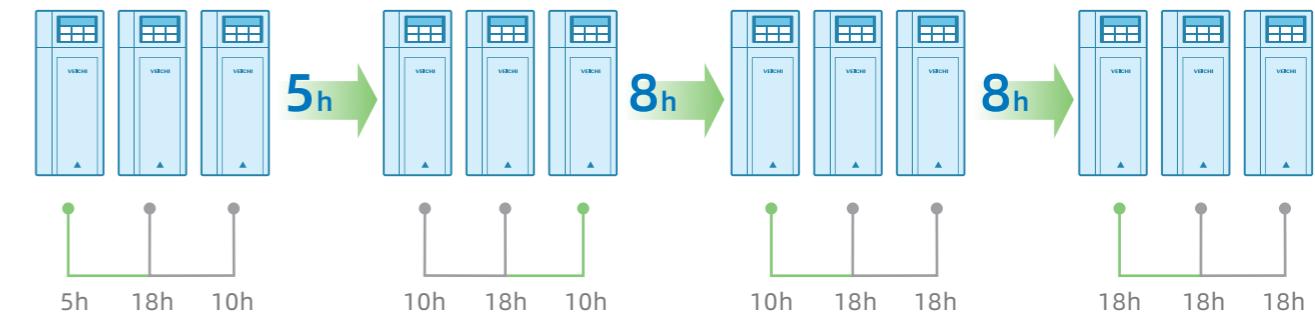
## Superior Master-Slave Redundant Control Technology

In the event of a master or slave pump failure, our system is designed to automatically switch to the backup pump, ensuring a seamless continuation of water supply to ensure overall system stability. The intelligent failover mechanism acts as an additional safeguard for the water supply system, guaranteeing stable operation even during critical moments.



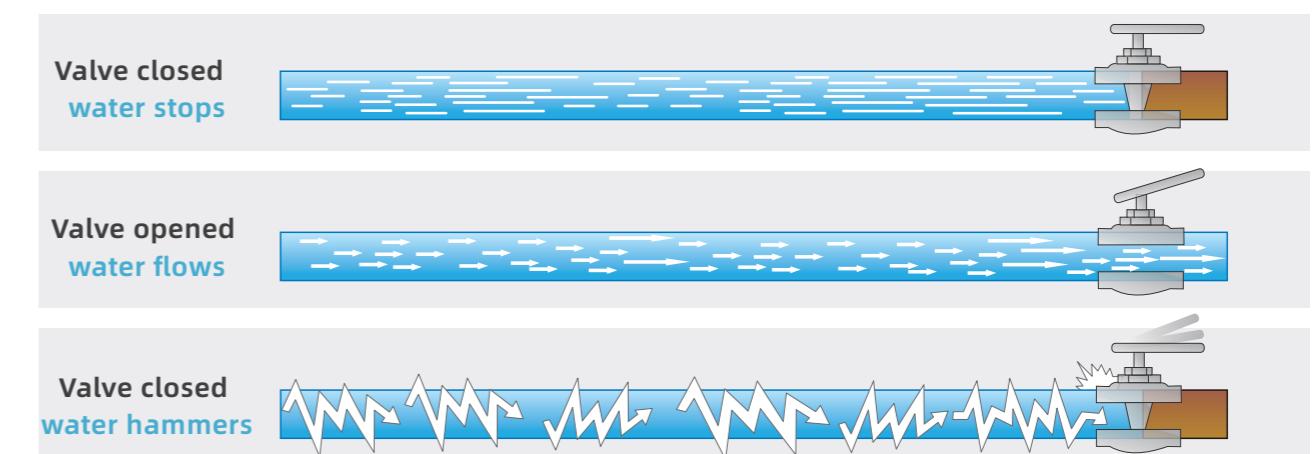
## Smart Pump Shift

For water systems demanding continuous operation and high reliability, the pump shift function strategically distributes the workload among the pumps and balances their running times. This mechanism substantially mitigates the risk of wear and tear, as well as breakdowns, that can result from the extended operation of a single pump. Users can set shift intervals or auto shift according to their runtimes to prolong service life of the entire water supply infrastructure.



## Water Hammer Prevention

When there is a drastic flow change in the pipeline, such as a sudden stop or turn, water hammer may occur due to inertia, leading to drastic pressure fluctuations, which may cause serious damage to the pipeline and its connectors. GS20 pump drive can effectively mitigate the water hammer and reduces the impact on the pipeline through its advanced features such as intelligent pump plus/minus control, overpressure monitoring and pipe filling.



## Specification

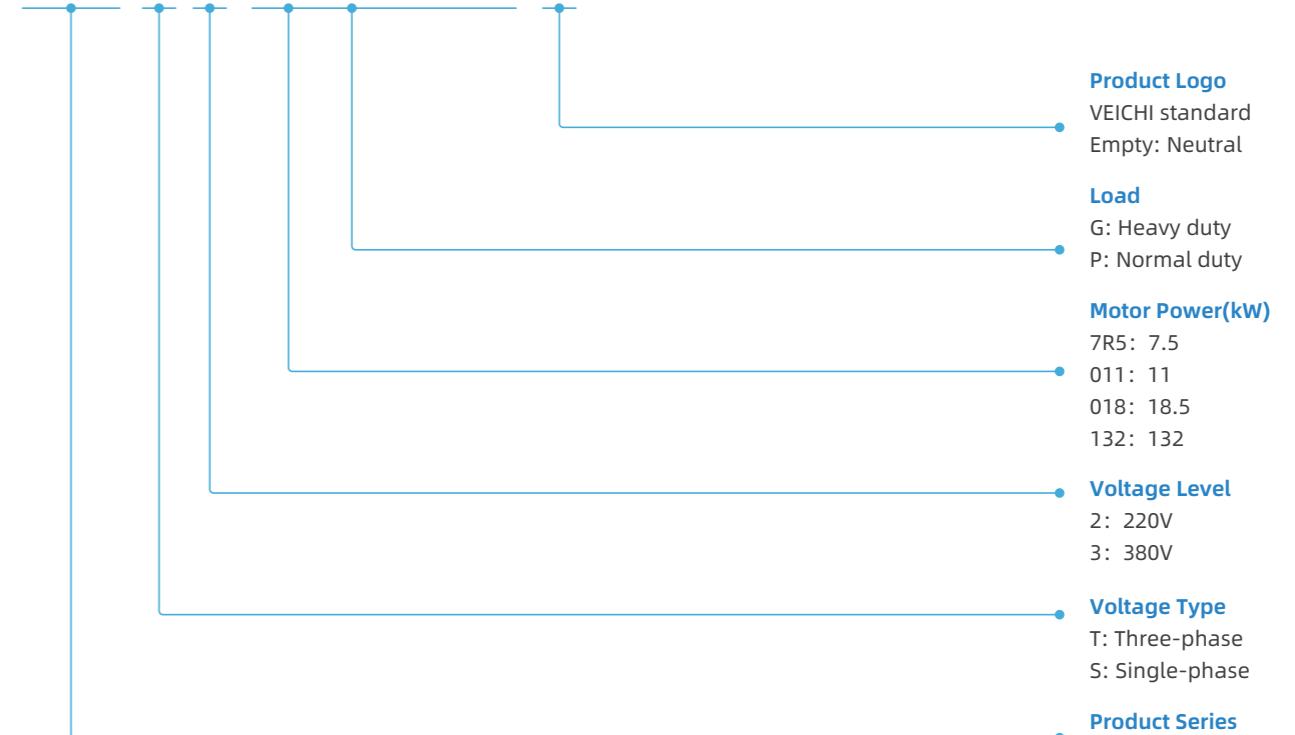
Input							
Input voltage				S2: Single phase 220V~240V; 50Hz/60Hz			
T2: Three-phase 220V~240V; 50Hz/60Hz							
T3: Three-phase 380V~480V; 50Hz/60Hz							
Voltage fluctuation							
T/S2: -10%~10%; T3: -15%~10%; voltage imbalance rate <3%							
Frequency fluctuation							
±5%; Distortion rate in conformity to IEC61800-2							
Output							
Output voltage	0V~input voltage, error < 5%						
Output frequency	0Hz~599Hz						
Overload capacity	T/S2	136% of rated current for 90 seconds; 163% of rated current for 10 seconds; 181% of rated current for 3 seconds					
	T3	G: 150% of rated current for 90 seconds; 180% of rated current for 10 seconds; 200% of rated current for 3 seconds P: 120% of rated current for 35 seconds; 140% of rated current for 7 seconds; 150% of rated current for 3 seconds					
Control Characteristics							
Motor	Asynchronous motors, permanent magnet synchronous motors, synchronous reluctance motors						
Control mode	V/F, SVC, FVC, and voltage-frequency split control						
Modulation mode	SVPWM						
Carrier frequency	1.0kHz~16.0kHz						
Speed control range	SVC	1:200	FVC	1:1000			
Stabilizing speed accuracy	SVC	Three-phase AM ±0.5% PMSM ±0.1%	SVC	±0.02%			
Starting torque	SVC	150% of rated torque at 0.25Hz	SVC	200% of rated torque at 0Hz			
Torque response time	SVC	<10ms	SVC	<5ms			
Torque accuracy	SVC	±5%	SVC	±2.5%			
Product Functions							
Description	PID control, fly track, power-down restart, jump frequency, frequency upper and lower limit, program operation, multi-frequency, RS485 communication, analog output, frequency pulse output, parameter access level, common parameter setting, monitoring comparator, counter and timer, wobble frequency; Protection against over-voltage, under-voltage, phase loss, over-current, overload, stall, short-circuit, drive overheat, expansion failure, communication failure, and auto-tuning failure						
Pump-dedicated functions	Multi-pump control, one-drive-multi-pump control, sleep, restart interval, anti-freezing/rusting, stabilizing pump, priming pump, dryout protection, pump clean, over-pressure protection, pressure compensation, pressure loss detection, PID auto-tuning, and pipe filling						
DI	5xswitching input, and 1 can be used for high pulse (X5)						
DO	1xswitching output, 1xrelay output						
AI	2xanalog input for 0V~10V/0mA~20mA						
AO	1xanalog output for 0V~10V/0mA~20mA						
RS485 communication	Standard RS485 communication interface with Modbus protocol(RTU)						
Environment							
Installation	Altitude <1000m, derate 1% of the rated current for every 100m increase when above 1000m No condensation, icing, rain, snow, hail, etc., solar radiation below 700W/m <sup>2</sup> , air pressure 70kPa~106kPa						
Temperature, humidity	-10°C~+50°C, derate above 40°C, 60°C max. (no-load operation) 5%RH~95%RH (no condensation)						
Oscillation	5.9m/s <sup>2</sup> (0.6G) during 9Hz~200Hz						
Storage temperature	-30°C~+60°C						
Installation	Wall-mounting						
IP	IP20						
Pollution class	Level 2						
Cooling method	Forced air cooling						

## Pump-dedicated Functions

Name	Advantages
Sleep	Energy-saving
Pump Clean	Auto pump cleaning prevents sediment clogging and reduces wear on internal pump parts
Anti-Freezing/Rusting	Protection on pipes from rusting and freezing when there is no water flow for long
PID Auto-tuning	Auto regulation for optimal PID parameters and efficient operation
Jockey Pump	Protection on system pressure from fluctuations in water usage
Dryout Protection	Pump operation prevention without water
Pipe Filling	Water hammer prevention due to air in pipes
Pressure Loss Compensation	Automatic compensation of pressure to ensure adequate pressure and flow where needed
Priming Pump	Enhanced inlet pressure of the main pump before operation to avoid cavitation
Low-frequency Protection	Prevention of pump performance degradation and damage caused by low-speed pump operation
Multi-pump Control	One drive control for multiple pump for lower cost
Cascade Drive Control	Fully redundant multi-pump system with independent control and centralized management
Overpressure Monitor	Prevention of pipe rupture and equipment damage due to high pressure in the multi-pump system

## Naming Rules

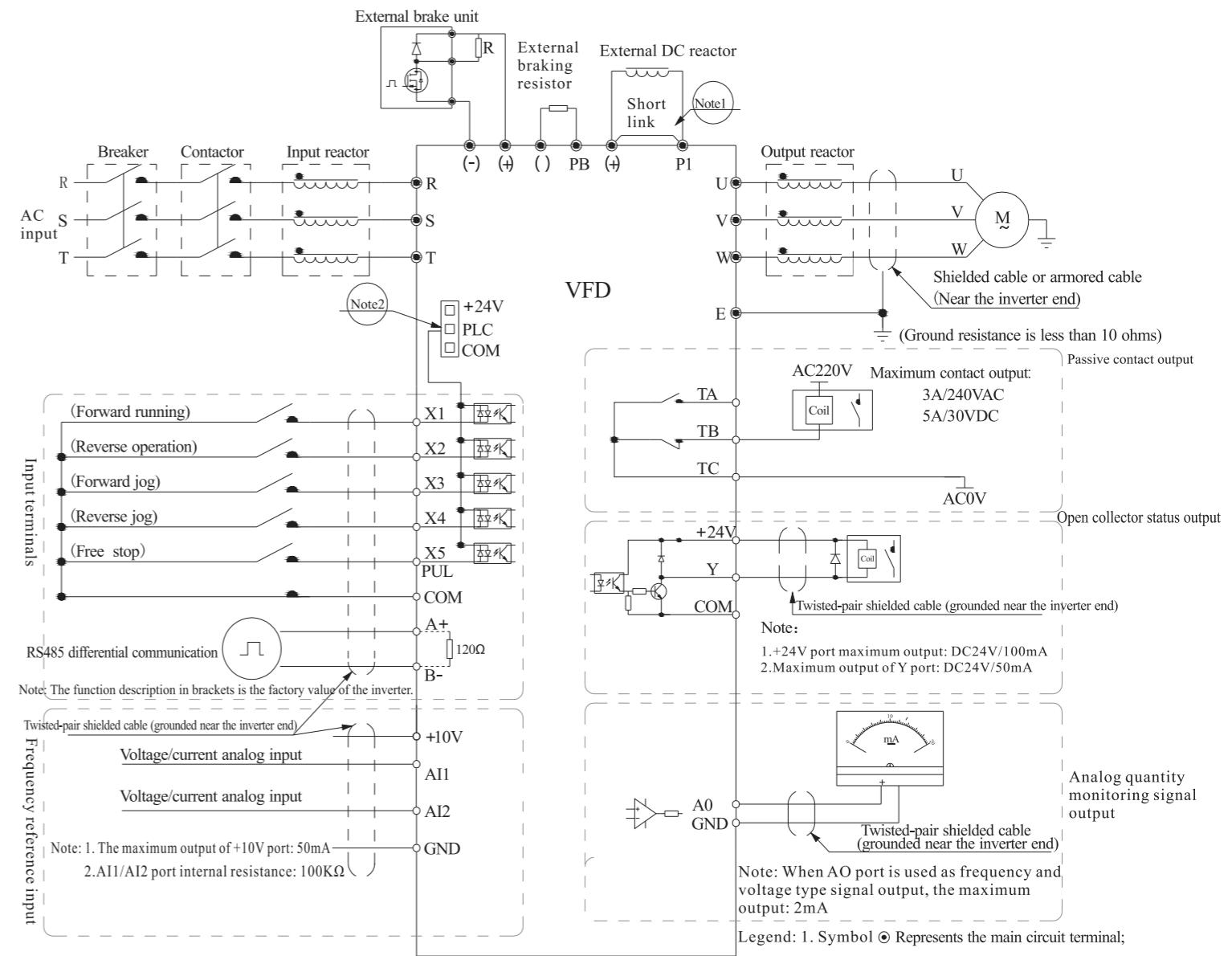
GS20 T 3 011 G / 015 P A



## Drive Ratings

Model	Heavy Duty (G)		Normal Duty (P)	
	Rated Output Power P (kW)	Rated Output Current I (A)	Rated Output Power P (kW)	Rated Output Current I (A)
<b>Single/Three-phase 220V</b>				
GS20-T/S2-R75G-A	0.75	4	—	—
GS20-T/S2-1R5G-A	1.5	7	—	—
GS20-T/S2-2R2G-A	2.2	10	—	—
GS20-T/S2-004G-A	4	16	—	—
GS20-T/S2-5R5G-A	5.5	20	—	—
GS20-T/S2-7R5G-A	7.5	30	—	—
GS20-T/S2-011G-A	11	42	—	—
GS20-T/S2-015G-A	15	55	—	—
GS20-T2-018G-A	18.5	70	—	—
GS20-T2-022G-A	22	80	—	—
GS20-T2-030G-A	30	110	—	—
GS20-T2-037G-A	37	130	—	—
GS20-T2-045G-A	45	160	—	—
GS20-T2-055G-A	55	200	—	—
<b>Three-phase 380V</b>				
GS20-T3-R75G/1R5P-A	0.75	3	1.5	4
GS20-T3-1R5G/2R2P-A	1.5	4	2.2	6
GS20-T3-2R2G-A	2.2	6	—	—
GS20-T3-004G/5R5P-A	4	10	5.5	13
GS20-T3-5R5G/7R5P-A	5.5	13	7.5	17
GS20-T3-7R5G/011P-A	7.5	17	11	25
GS20-T3-011G/015P-A	11	25	15	32
GS20-T3-015G/018P-A	15	32	18.5	38
GS20-T3-018G/022P-A	18.5	38	22	45
GS20-T3-022G/030P-A	22	45	30	60
GS20-T3-030G/037P-A	30	60	37	75
GS20-T3-037G/045P-A	37	75	45	90
GS20-T3-045G/055P-A	45	90	55	110
GS20-T3-055G/075P-A	55	110	75	150
GS20-T3-075G/090P-A	75	150	90	180
GS20-T3-090G/110P-A	90	180	110	210
GS20-T3-110G/132P-A	110	210	132	250
GS20-T3-132G/160P-A	132	250	160	310
GS20-T3-160G/185P-A	160	310	185	340
GS20-T3-185G/200P-A	185	340	200	380
GS20-T3-200G/220P-A	200	380	220	415

## Wiring of Main and Control Circuit



Note: 1. Three-phase 380V, 22kW and below models with built-in braking units can be added with braking resistors as needed; For models without built-in brake units, external brake units can be added as needed.  
 2. X1-X5/PUL terminals support NPN or PNP signal input, and the bias voltage can be selected to the internal drive power supply (+24V) or external power supply (PLC terminal).

## Terminal

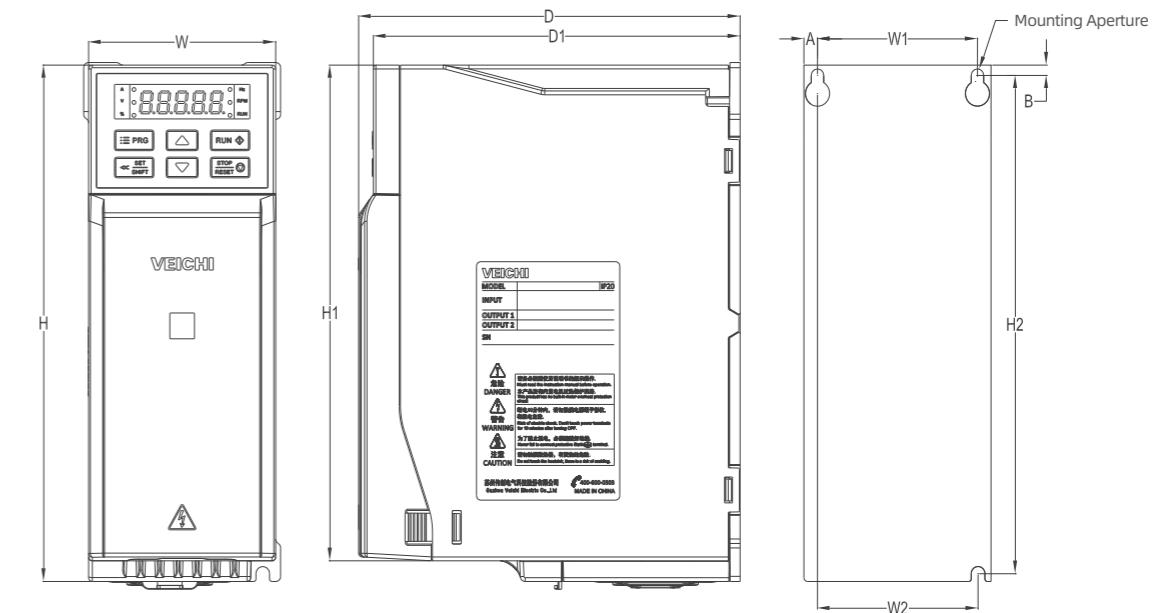
Control Circuit			
Name	Mark	Name	Description
Power	+10V-GND	External +10V power supply	+10V power supply to external devices, max. output current:50mA. Generally used as power supply for potentiometer, potentiometer resistance range:1kΩ~5kΩ
	+24V-COM	External +24V power supply	+24V power supply to external devices. Generally used as power supply for DO and DI terminals and external sensors, 100mA max.
	PLC	External common terminal	Connected to +24V by factory default. If X1~X5/PUL needs to receive external signals, PLC needs to be connected with an external power supply, and disconnected to +24V power(See "+ 24V", "PLC", and "COM" wiring diagram)
AI	AI1-GND	AI voltage/current	1. Range: DC 0V~10V/0mA~20mA 2. Voltage impedance: 100kΩ 3. Current impedance: 500Ω
	AI2-GND	AI voltage/current	1. Range: DC 0V~10V/0mA~20mA 2. Voltage impedance: 100kΩ 3. Current impedance: 500Ω
DI	X1-PLC	Multi-function terminal 1	Optocoupler isolated, compatible with bipolar input 1. Max. input frequency: 4.4kΩ 2. Voltage input range at high level: 10V~30V 3. Voltage input range at low level: 0V~5V for low pulse, 0kHz~5kHz(standard)
	X2-PLC	Multi-function terminal 2	
	X3-PLC	Multi-function terminal 3	
	X4-PLC	Multi-function terminal 4	
	X5-PLC	Multi-function terminal 5	
	X5/PUL-PLC*	Multi-function terminal 5 /high-speed pulse input*	Except for characteristics of X1~X4, X5 can also be used for high-speed pulse input on certain models 1. Optocoupler isolated, compatible with bipolar input, max. input frequency: 100kHz 2. Input impedance: 1.5kΩ 3. Pulse level range: 10V~30V
AO	AO-GND	AO	1. Voltage range: DC 0V~10V 2. Current range: DC 0mA~20mA 3. Pulse range: 0kHz~100kHz Max. output 2mA when used as frequency/voltage output
DO	Y-COM	DO1	Optocoupler isolated, open collector output Driving capability: DC 0V~30V or 0mA~50mA
RO	TA-TC	Normally open	Driving capability: 240V AC, 3A
	TB-TC	Normally closed	
Communication Terminal	A+	Communication terminal A+	RS485 communication interface Please see the legend and description of the dip switch, RS485 switch decides whether RS485 is accessed to the 120Ω terminal.
	B-	Communication terminal B-	

Main circuit terminal		
Mark	Name	Description
(+), (-)	DC power terminal	DC power output,(-) is the negative electrode of DC bus, and (+) is the positive pole of DC bus. Used for external brake unit
(+), PB	Braking resistor terminal	For connecting to the external braking resistors to realize quick stop
R, S, T	Drive input terminal	For connecting to three-phase AC supply
U, V, W	Drive output terminal	For connecting to the motor
E	Ground	Ground terminal, with the grounding resistance < 10Ω

Dip Switch		
Pin	Position	Description
RS485 OFF	OFF	RS485 terminal resistance
AO-F OFF	OFF	RS485 dialed to ON, and then communication circuit is connected to a 120Ω terminating resistor
AO-I OFF	OFF	AO-Frequency
AO-U OFF	OFF	0.0kHz~100kHz frequency output from AO interface When AO-F is dialed to ON, connect to a 5.1kΩ resistor to increase voltage to 10V
AI1 U	OFF	AO-Current
AI2 U	OFF	0mA~20mA or 4mA~20mA current output
AI1 I	OFF	AO-Voltage
AI2 I	OFF	0V~10V voltage output
AI1 U	ON	AI1-current/voltage
AI2 U	ON	0mA~20mA current input or 0V~10V voltage input
AI1 I	ON	AI2-current/voltage
AI2 I	ON	0mA~20mA current input or 0V~10V voltage input

## Dimensions

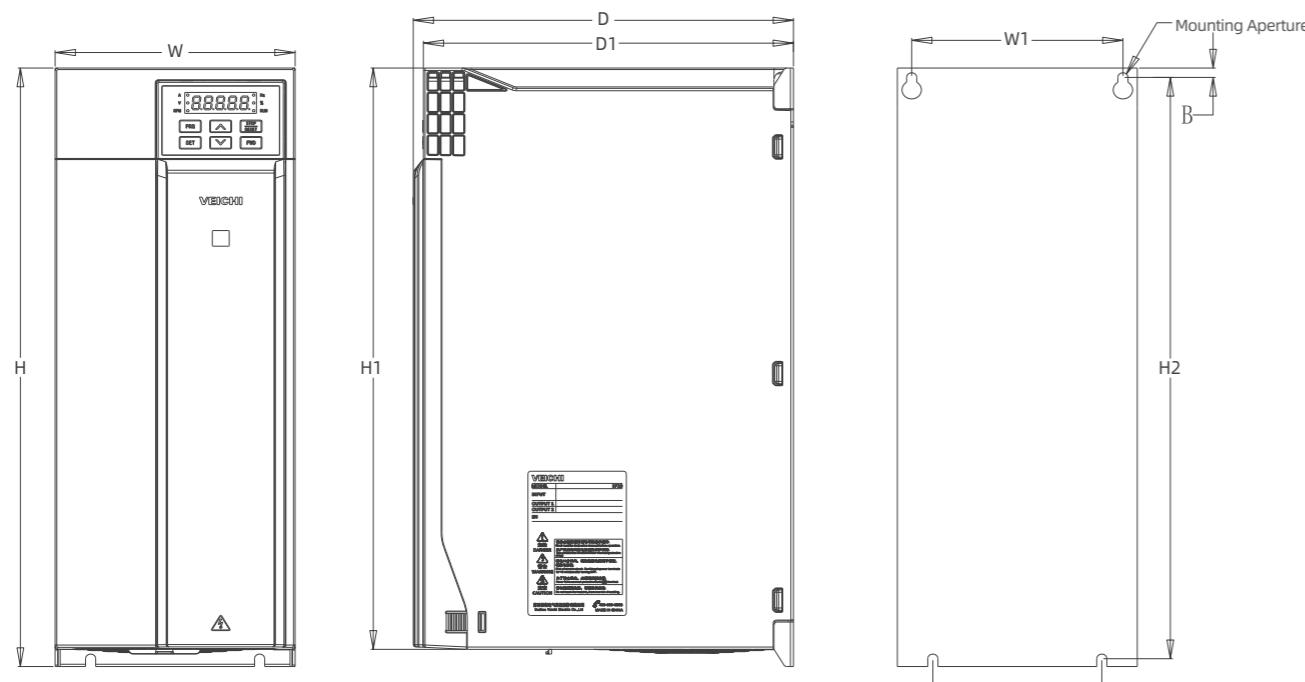
Model	Outer Dimension (mm)					Installation Dimension (mm)					Mounting Aperture	Estimated Weight (kg)
	W	H	H1	D	D1	W1	W2	H2	A	B		
<b>Single/Three-phase 220V</b>												
GS20-T/S2-R75G-A	76	200	192	155	149	65	65	193	5.5	4	3-M4	1.3
GS20-T/S2-1R5G-A												
GS20-T/S2-2R2G-A	100	242	231	155	149	84	86.5	231.5	8	5.5	3-M4	1.9
GS20-T/S2-004G-A												
GS20-T/S2-5R5G-A	116	320	307.5	175	169	98	100	307.5	9	6	3-M5	3.5
<b>Three-phase 380V</b>												
GS20-T3-R75G/1R5P-A												
GS20-T3-1R5G/2R2P-A	76	200	192	155	149	65	65	193	5.5	4	3-M4	1.3
GS20-T3-2R2G-A												
GS20-T3-004G/5R5P-A	100	242	231	155	149	84	86.5	231.5	8	5.5	3-M4	1.9
GS20-T3-5R5G/7R5P-A												
GS20-T3-7R5G/011P-A	116	320	307.5	175	169	98	100	307.5	9	6	3-M5	3.5
GS20-T3-011G/015P-A												



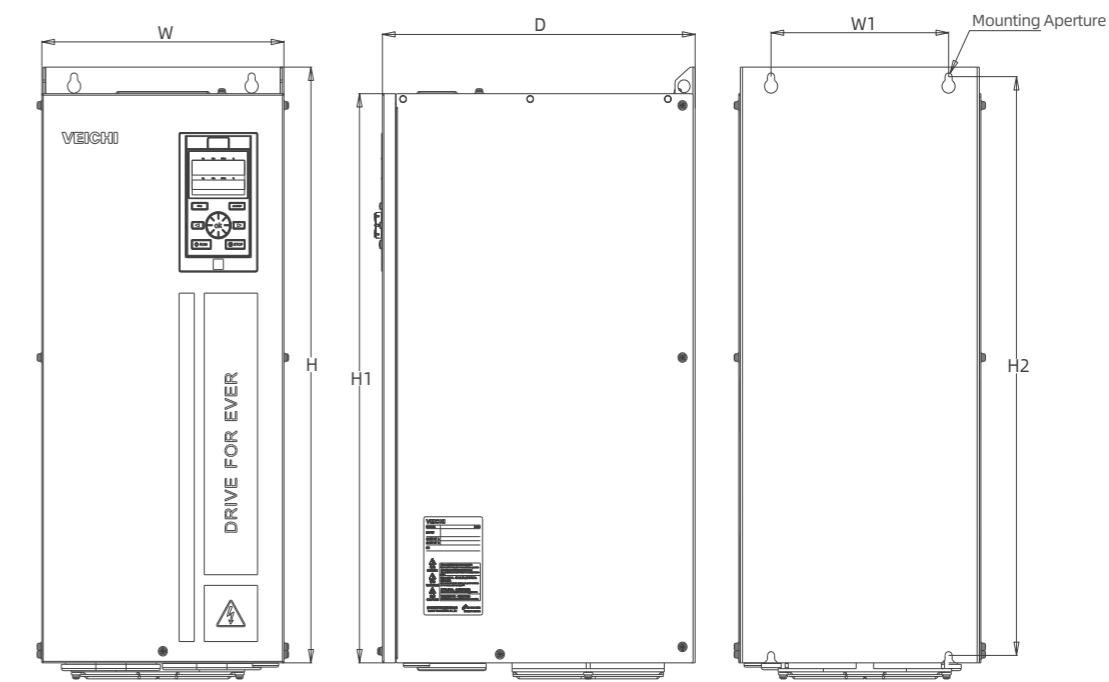
Model A with Plastic Housing

Model	Outer Dimension (mm)					Installation Dimension (mm)				Mounting Aperture	Estimated Weight (kg)
	W	H	H1	D	D1	W1	W2	H2	B		
<b>Single/Three-phase 220V</b>											
GS20-T/S2-7R5G-A	142	383	372	225	219	125	100	372	6	4-M5	5.9
GS20-T/S2-011G-A											
GS20-T/S2-015G-A	172	430	-	225	219	150	150	416.5	7.5	4-M5	9.5
GS20-T2-018G-A											
GS20-T2-022G-A											
<b>Three-phase 380V</b>											
GS20-T3-015G/018P-A	142	383	372	225	219	125	100	372	6	4-M5	5.9
GS20-T3-018G/022P-A											
GS20-T3-022G/030P-A											
GS20-T3-030G/037P-A	172	430	-	225	219	150	150	416.5	7.5	4-M5	9.5
GS20-T3-037G/045P-A											

Model	Outer Dimension (mm)					Installation Dimension (mm)		Mounting Aperture	Estimated Weight (kg)
	W	H	H1	D	W1	H2			
<b>Single/Three-phase 220V</b>									
GS20-T2-030G-A	240	560	520	310	176	544	4-M6	23.3	
GS20-T2-037G-A									
GS20-T2-045G-A	270	638	580	350	195	615	4-M8	35.8	
GS20-T2-055G-A									
<b>Three-phase 380V</b>									
GS20-T3-045G/055P-A	240	560	520	310	176	544	4-M6	23.3	
GS20-T3-055G/075P-A									
GS20-T3-075G/090P-A									
GS20-T3-090G/110P-A	270	638	580	350	195	615	4-M8	35.8	
GS20-T3-110G/132P-A									
GS20-T3-132G/160P-A	350	738	680	405	220	715	4-M8	64.7	
GS20-T3-160G/185P-A									
GS20-T3-185G/200P-A	360	940	850	480	200	910	4-M16	93	
GS20-T3-200G/220P-A									



Model B with Plastic Housing



Steel Housing