



TOPVERT G1 series TOPVERT H1 series



High performance Vector Drive



Toptek Electronics Corporation



Toptek's Topvert family

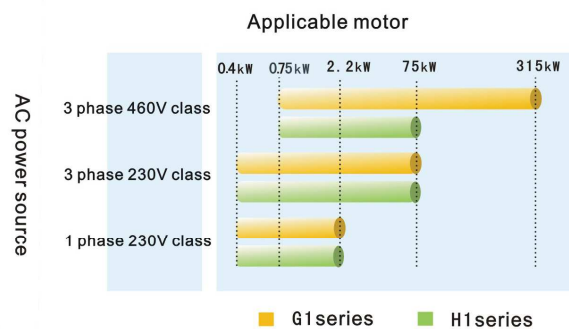
G1 series is High performance general purpose multi-function drive

H1 series is High performance high speed drive

They offer ultimate flexibility in integrating the customer requirements into the AC drive

7 major features of the G1 & H1 series:

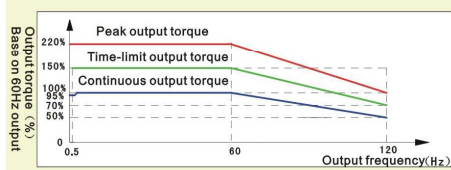
- **Ease of operation:** The Toptek is the first one who is using the encoder style flying shuttle knob, It's easy for change parameter and frequency adjusting.
- **Ease of installation & Wiring:** A single cover for all wiring.
- **Ease of maintenance:** It may display the life status of life-limited components, Cooling Fan replacing and Fuse replacing also are convenient.
- **High speed and intelligent core:** Generates more powerful performance through its superior Auto-Tune and sensorless vector control technology.
- **Multi control mode:** V/F, V/F + PG, SVC & VC + PG, 4 modes to meet the control requirements of the customers.
- **User-Friendly various Interface:** User defined programmable Digital/Analog, Input/Output terminals, Built-in, PID, RS-485 port as standard equipments, Sink/Source (NPN/PNP) are selectable.
- **Extremely versatile:** Over 500 parameters, The G1 & H1 series are suited to the machine builders, Particularly due to its flexible interface it will satisfy a wide variety of demands from different customers.



● Exceptional performance

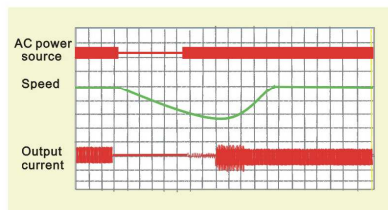
● Wide range of speed control

Open Loop Voltage/Frequency control
(V/F mode) 20: 1 (3 - 60 Hz) .
Close Loop Voltage/Frequency control
(V/F +PG mode) 120: 1 (0.5-60 Hz) .
Sensorless Vector Control
(SVC mode) 120: 1 (0.5-60 Hz) .
Vector Control
(VC + PG mode) 600: 1 (0.1-60 Hz) .



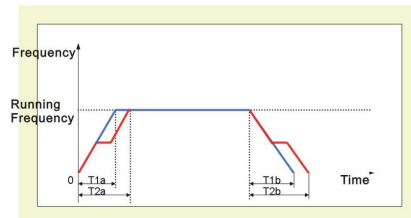
● Flying Restart into a spinning load

Smoothly restarts a motor that is rotating even in the opposite direction due to the windmill.



● Stall prevention and optimum Accel./Decel. Regulation

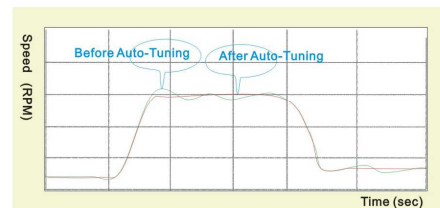
To achieve a maximum motor torque during the acceleration and deceleration procedure, "trip free" function is activated. This will accel. and decel. The motor with the fastest and the smoothest status when the drive is on Start or on Stop.



T1a :Set Acceleration time T2a :Actual Acceleration time
T1b :Set Deceleration time T2b :Actual Deceleration time

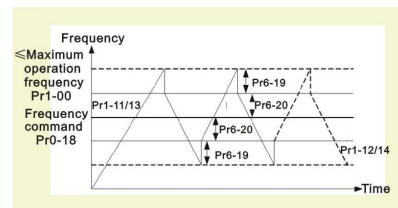
● Latest Auto-Tune technology

The auto tuning algorithm in the G1 & H1 series sets the motor factors automatically that brings the traditional commissioning difficulties become easier. Especially upgrade the motor torque performance at low speed range.



● Traverse Control function

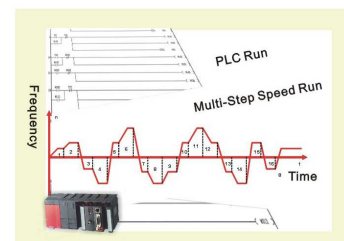
Specific for artificial fiber textile machinery.



Pr1-11/13: 1st/2nd Acceleration time Pr6-19:The Amplitude of traverse Vibration
Pr1-12/14: 1st/2nd Deceleration time Pr6-20:traverse Skip Frequency
Pr0-18: Main speed frequency command source

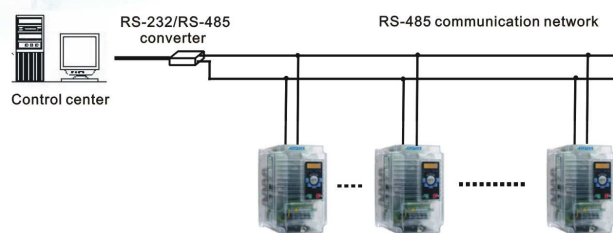
● Programmable Multi-Step Speed operation

Programmable 16 steps process control Run (PLC Run) or 16 steps Multi-Step Speeds Run by external digital terminals.



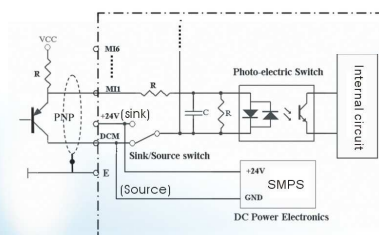
Communication function

- The high speed RS-485 (MODBUS) communication enables controlling drives through PLC and other controlling devices. Baud rate up to 125 k bps.



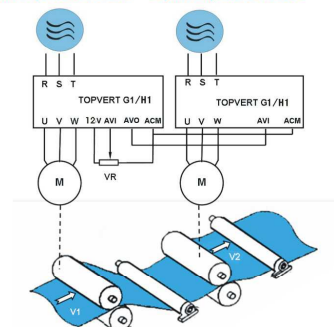
Versatile Input/Output ports

- Programmable 6 digital Inputs (DI).
- Programmable 2 Digital Outputs (DO).
- Programmable 2 Relay Outputs (Ry).
- Programmable 3 Analog Inputs (AI).
(AVI: DC 0~10V/ACI: DC 4~20mA/AUI:DC -10V~+10V) .
- Programmable 2 Analog Outputs (AO)
(AVO: DC 0~10V/ACO: DC 4~20mA, up to 10 bit resolution) .
- Sink/Source (NPN/PNP) DC 24V selectable.
- Programmable AI & AO, easy for ratio control and tension control.



Sink/Source Input

3 phase power source 3 phase power source



Multi-Motor Ratio Control

● Operation & maintenance

● Easy operation with the encoder style fly-shuttle dial

- Convenience for both parameter setting and Frequency adjusting.
- Setting resolution up to 0.01Hz.



● Flexible & intelligent operator

- 2 teams & 10 groups of parameter.
- Removable digital keypad (up to 150 meters).
- List-out changed parameters (easy for check).



● Easy to maintain

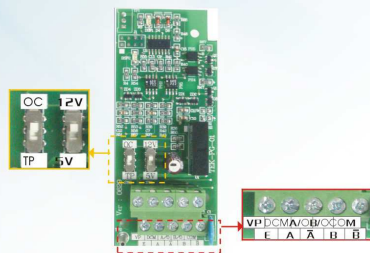
- Cooling fan control (provides a virtually quite environment & longer fan life).
- Easy change of the fan (Ease of fan clean & change).
- Running record & Trip record (up to 16 records).
- Fully isolated wind path design-Dust pollution free.
- IGBT Over-Heat Pre warning setting.



Accessories

Multi-function operator keypad (PU-02)

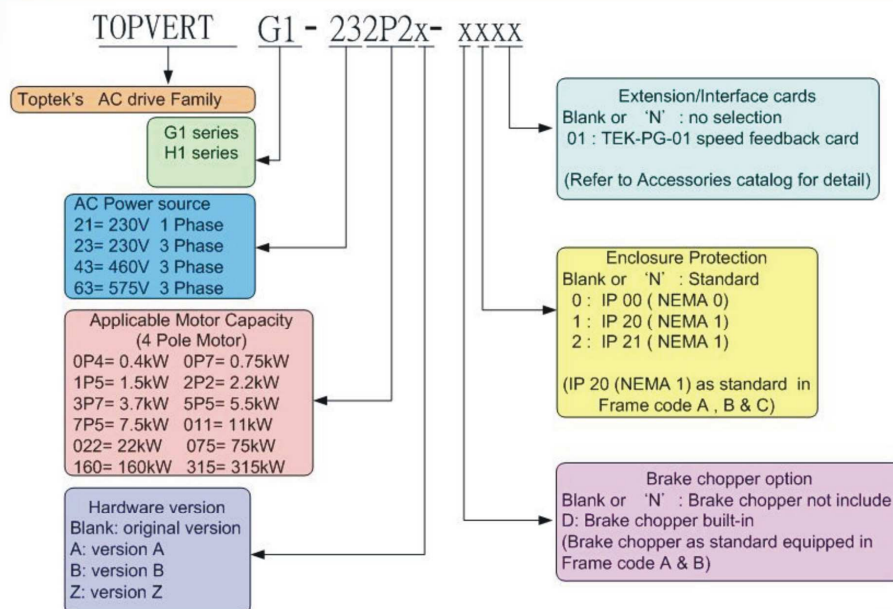
- Parameters READ/SAVE and Copy function operator.
- Store customer's parameters up to 3 packages.
- May replace PU-01 directly.



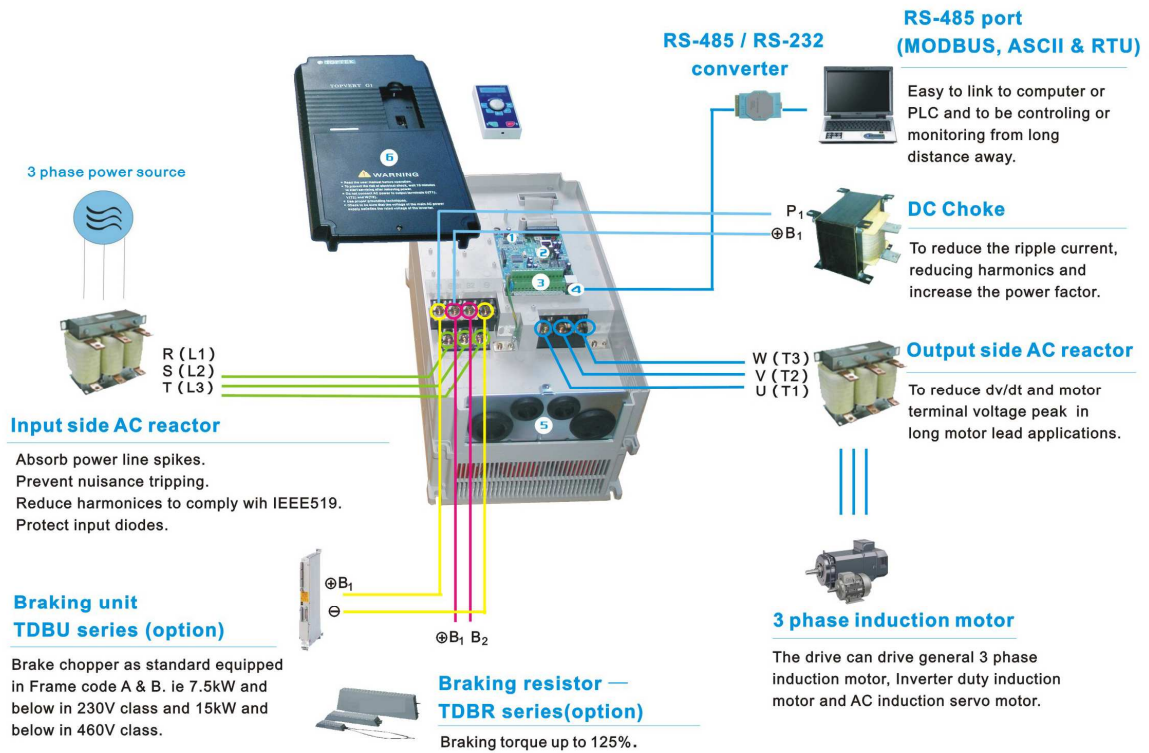
High precision speed feedback PG card (PG-01)

- Accept 4 kinds of encoder (Voltage output type / Open collector type / Line drive type / Complementary type).
- 5V/12 V insulated power supply.
- 500kHz Maximum input frequency.
- Pulse train reference output.

How to order



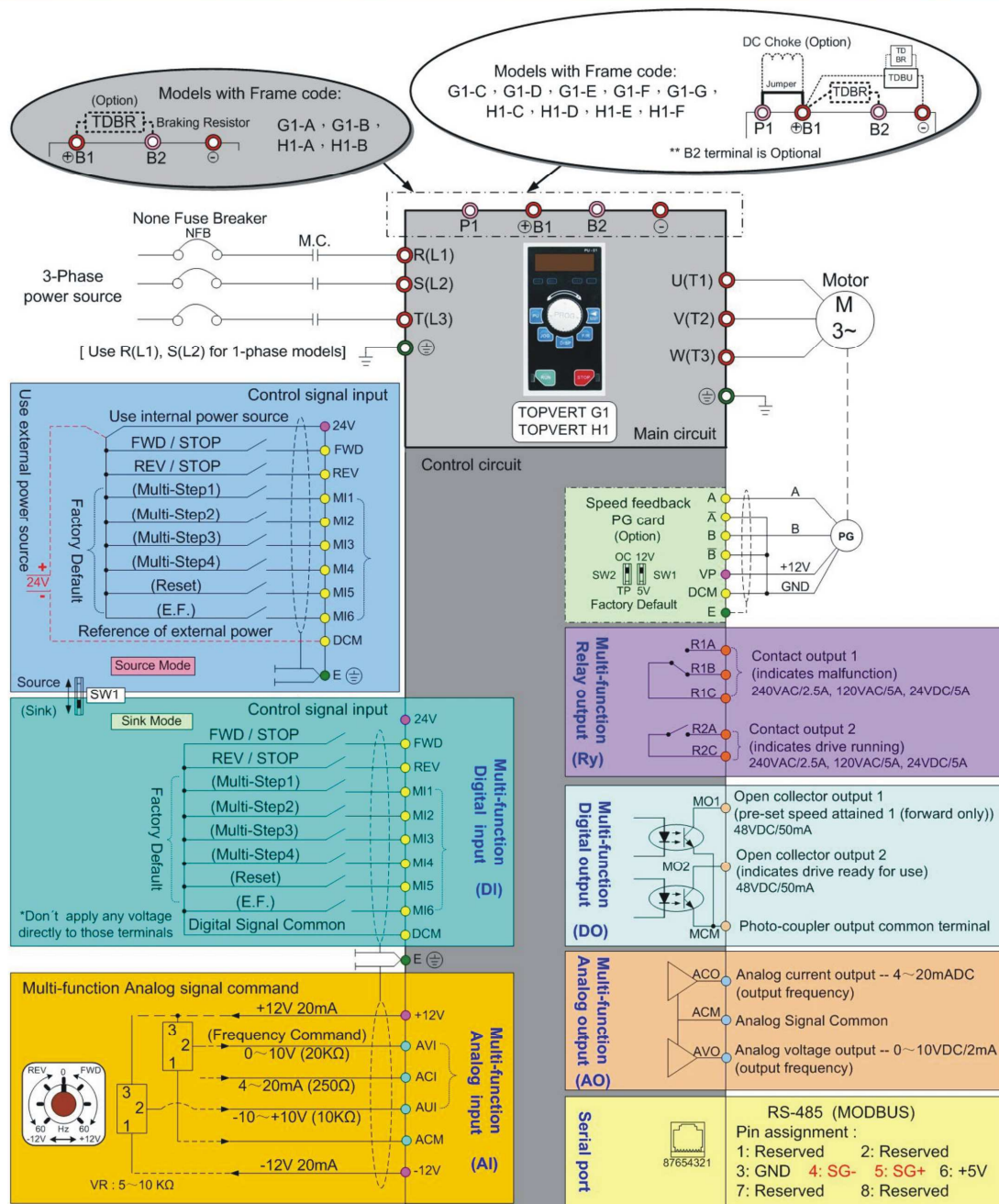
● Peripheral devices



User-friendly interface

- ① **PG feedback port**—The drive may use it to connect an encoder device then high precise motor speed control requirement become possible .
- ② **PU port**—connect to digital operator keypad PU-01 or PU-02.
- ③ **Digital and Analog I/O terminals**—Easy for wiring and maintain.
- ④ **RS-485 communication port**—Allow the drive to link to a computer or PLC.
- ⑤ **Conduit bracket**—meet UL standard.
- ⑥ **Single wiring cover**—Easy for wiring and maintain.

Wiring diagram



Remark: ⊙ → Main circuit ○ → Control circuit → Shielded leads & Cable () → Factory default → option

COMMON SPECIFICATIONS

Series		TOPVERT G1 series High performance general purpose multi-function drive	TOPVERT H1 series High performance high speed drive
Control Characteristics	Output frequency range	0.1~600Hz Programmable	0.1~6000Hz Programmable
	Overload endurance	150% of rated current for 1 minute/10 minutes, Ta ≤50℃, 200% of rated current for 3seconds	
	Maximum output voltage	Proportional to Input Voltage, 3-Phase output	
	Power factor/Efficiency	Power factor no lower than 0.95. Efficiency no lower than 95% at full load	
	Control system	SPWM (Sinusoidal Pulse Width Modulation) vector control, 4 control modes :V/F,V/F+PG,SVC&VC+PG	
	Speed control range	V/F mode 20:1; V/F+PG mode 120:1; SVC mode 120:1; VC+PG mode 600:1	
	Output frequency resolution	Analog input: 10Bit(1/1024), Digital input: 0.01Hz, Fly-Shuttle dial input: 0.01Hz	
	Output frequency accuracy	Analog input: Within ±0.2% of max.output frequency (25℃ ±10℃). Digital input: Within 0.01% of set output frequency	
	PWM carrier frequency	0.7 ~18kHz, Adjustable (Some models are limited)	H1: 1.4kHz ~ 36kHz, Adjustable
	Torque characteristics	auto-torque boost, auto-slip compensation; starting torque can be 150% at 1.0Hz	
	Skip frequency	Setting range 0.00 ~600Hz (H1series: 0.00 ~ 6000 Hz), Max. 6 points, skip width are adjustable	
	Accel/Decel time	0.1~60000 seconds (2 Independent settings for Accel/Decel Time)	
	Stall prevention	0 to 250% of Rated Current, independent adjustable both in acceleration and constant speed operation.	
	DC Braking	DC Braking both when start up and stop , Braking Current Level: 0 to 125% of rated output current. Braking time: 0 to 60 seconds. Braking Start-Point when stop: 0.1~600Hz (H1series: 0.00 ~ 6000 Hz)	
Operating Characteristics	Dynamic braking	Braking torque Approx. 20%(10%E.D.). Dynamic Brake chopper built-in in Frame code: xx-A and xx-B. Others can be built-in as an option. All models can connect to external Dynamic Brake Unit (TDBU-xxxx series).	
	V/F Pattern	2 of adjustable Random V/F curve. Constant Torque curve & Reduced Torque curve are available.	
	Frequency Setting	Keypad	By an Encoder style Fly-Shuttle dial.(setting resolution 0.01Hz/0.1Hz/1Hz/10Hz adjustable)
		External Signal	0 ~ +10VDC((Input impedance 20kΩ), -10 ~ +10VDC((Input impedance 10kΩ), 4 ~20mA DC ((Input impedance 250Ω), Multi-Function Inputs 1 ~ 6 (15 Steps Jog, up/down), PLC run, RS-485 port MODBUS protocol
	Operation Setting	Keypad	Set by RUN, STOP and JOG. Switch-able between Keypad and External signal
		External Signal	2 wire control(FWD/STOP, REV/STOP, RUN/STOP, FWD/REV), 3 wire control, FWD, REV, MI1 to MI6 can be combined to offer various modes of operation, RS-485 serial interface MODBUS protocol
	Multi-Function Digital Input (DI) (6 terminals)	Multi-step selection 0 to 15, first to second accel/decel switches, accel/decel inhibit, Input the counter , Pause Stop, EF Input, Emergency Stop, auxiliary motor control is invalid, ACI/AVI/AUI speed command selection,Reset, PLC Run, Jog, Up/Down command, Sink/Source selection, Parameter team selection...etc, up to 43 functions.	
	Multi-Function Output Indication (DO) (4 indications)	Include a form C relay contact, a form A relay contact and 2 Open collector output. They can be programmed to below indications: Drive Operating, Frequency Attained, zero speed, Base Block, Over torque, Fault Indication, Local/Remote indication, PLC Operation indication, and Auxiliary Motor Output, Drive ready for use, IGBT over-heat indication ...etc, up to 63 functions.	
	Multi-Function Analog Input (AI)	AVI: 0 ~ +10VDC((Input impedance 20kΩ), AUI: -10 ~ +10VDC((Input impedance 10kΩ), ACI: 4 ~20mA DC ((Input impedance 250Ω). 3 different Input terminals can be programmed to 15 functions	
	Multi-Function Analog Output (AO)	Include ACO and AVO, They can be programmed to Proportional to output frequency, output current, voltage, frequency command or motor's speed ...etc, up to 15 functions.	
	Fault Indication	The output will be activated when faults occur (User may get 1 or up to 4 indications from below terminals:2 Relay contact point RA, RB, RC. or 2 Open-collector	
	Communication function	RS-485 serial port, MODBUS protocol, ASCII & RTU. (Baud rate up to 125 k bps)	
	Other Functions	PID feedback control, Flying start, Automatic voltage regulation (AVR), 2 accel./decel time selection , Auto-optimum accel./decel. Time, S-curves, External fault interlock, External fault reset, Auto Restart after fault, 16 Fault records, Automatic energysaving, Upper/Lower limit, Programmable pulse output, Password protection, Pump and Fan process control, Sleep/Wakeup function , Auto-Tuning, By-Pass, Y-Delta control, Bi-Directional Speed search, Reverse inhibit, Automatic torque boost & slip compensation, 16-step PLC run, 16 step preset speed, Coast or ramp to stop, Random V/F curve, Mechanical brake release control, IGBT/ Heatsink temperature display & Pre-warning, Quiet operation mode (No noise), User define Multi-function display, Over torque detection, Over current/voltage t stall prevention, Sink/Source (NPN/PNP) mode, Electronic Thermal Relay, Internal Counter, DC injection brake both in start and stop, Dynamic brake, Controlled cooling Fan, Removable keypad operator, Programmable Multi -Function DI,DO,AI,AO and Ry terminals.	
	Intelligent Protection Functions	Self-testing, AC source Over Voltage, Phase loss, Over Voltage, Over Current, Under Voltage, Over Torque, External Fault, Motor over-load, IGBT Over-temperature, Heat-sink Over-temperature, Electronic thermal, Ground Fault, Output short circuit, Stall Prevention, Fuse protection, IGBT short circuit , Drive Over Load , DC bus capacitor life monitoring, Auto carrier frequency adjust according temperature, 16 Trip records, Run information of latest Fault such like DC-BUS voltage, Output voltage /Frequency/Current, Command frequency, IGBT temperature, Heat-sink temperature--etc.	
	Digital Keypad (PU-02 Digital Keypad with copy function and PU-03 Digital Keypad with LCD display are available as an option)	8 Function keys: Access Run, Stop, Reset/ Digit Shift, Forward/ Reverse run, Display mode, Keypad Enable, Programming data and Jog operation...etc. One Encoder style Fly-Shuttle dial: Sets the parameter number and changes the numerical data One 6 digits 7 segment display: Display the Setting frequency/actual operation frequency, Output current/Voltage, motor speed, Fault trip, User defined unit(up to 88 type)...etc. 6 LED Display for status indication: Display the Drive run/stop status, Forward/Reverse run status, Keypad enable, and Frequency command source. One RJ-45 connector: Removable Keypad, remote control distance up to 150 meters.	
Environ ment	Certificate	Complies with CE (EN61800-3) standard	
	Temperature	Ambient: -10℃ ~ +40℃/(-10℃ ~ + 50℃) (Non-Condensing and not frozen). Storage: -20℃ ~ +60℃	
	Humidity	Below 98% R.H. (Non-Condensing)	
	Vibration	Below 20Hz: 1G, above 20Hz: 0.6G	
Installation Location		Altitude 1,000 m or lower, keep away from corrosive gasses, liquid and dust	

※TOPVERT all series are designed and manufactured base on CNS and IEC, IEEE, CE & UL standard.

MODEL SPECIFICATIONS

TOPVERT G1 series 230V class

Model G1-xxxxx		1 phase 200-240VAC, 50/60Hz Tolerance range 180-264V, 47-63Hz				3 phase 200-240VAC, 50/60Hz Tolerance range 180-264V, 47-63Hz															
		210P4	210P7	211P5	212P2	230P4	230P7	231P5	232P2	233P7	235P5	237P5	23011	23015	23018	23022	23030	23037	23045	23055	23075
Applicable motor	kW	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75
	Hp	0.5	1	2	3	0.5	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100
Rated output	Capacity	1.2	2	3	4.4	1.2	2	3	4.4	6.8	10	13	20	26	30	36	48	58	73	92	120
	Current	3	5	7.5	11	3	5	7.5	11	17	25	33	49	65	75	90	120	145	182	232	300
	Voltage	AC 3Phase, 0-240V Maximum																			
	Frequency	0.1-600Hz																			
AC Power Source	Current	5.7	9.5	14	21	3.3	5.5	8.3	12	19	28	36	54	72	83	99	132	160	200	255	330
	Cooling Method	Fan-cooled				Fan-cooled															
Enclosure Construction	Protection	IP 20 NEMA 1				IP 20 NEMA 1										IP00 NEMA 0 (IP20, IP21, NEMA 2-Option)					
	Net weight	2.6	2.7	2.7	3.0	2.6	2.8	2.8	2.8	3.0	3.2	4.0	11.9	12.3	13.0	13.5	32.7	33.8	34.6	58.0	59.4
	Frame code	G1-A				G1-A				G1-B		G1-C		G1-D				G1-F			

TOPVERT G1 series 460V class

Model G1- XXXXX		3 phase 380-480VAC, 50 / 60Hz Tolerance range :323-528V,47-63Hz																											
		430P7431P5432P2433P7435P5437P54301143015430184302243030430374304543055430754309043110431324316043185432204328043315																											
Applicable motor	kW	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	185	220	280	315					
	Hp	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	175	215	250	300	375	420					
Rated output	Capacity	2.4	3.3	4.8	6.8	10	14	19	25	32	38	48	64	77	94	121	143	191	215	242	295	359	414	486					
	Current	3	4.2	6	8.5	13	18	24	32	40	48	60	80	97	118	152	180	240	270	304	370	450	520	610					
	Voltage	AC 3Phase, 0-460V Maximum																											
	Frequency	0.1-600Hz																											
AC Power Source	Current	3.3	4.6	6.6	9.4	14	20	26	35	44	53	66	88	107	130	167	198	264	297	334	407	495	572	671					
	Cooling Method	Fan-cooled																											
Enclosure Construction	Protection	IP 20 NEMA 1															IP 00 NEMA 0 (IP 20 NEMA 1 IP 21 optional)												
	Net weight	2.8	2.9	2.9	2.9	3.0	3.3	4.3	5.0	13.0	13.0	13.9	13.9	13.9	33.5	37.1	42.4	63.0	64.5	64.5									
	Frame code	G1-A					G1-B				G1-C				G1-D		G1-E		G1-F		G1-G								

TOPVERT H1 series 230V class

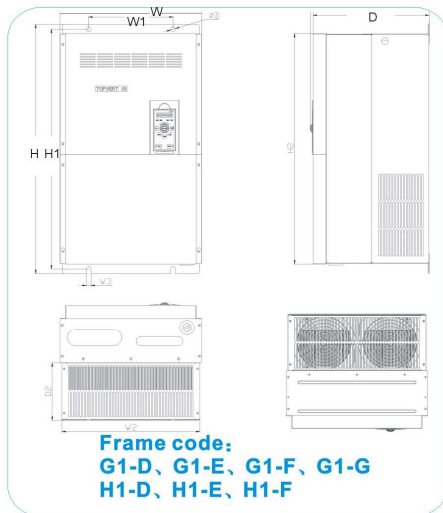
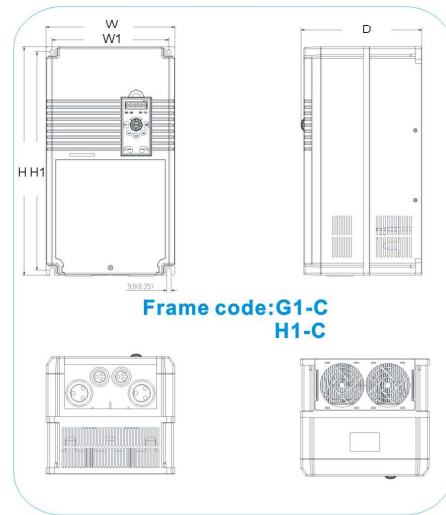
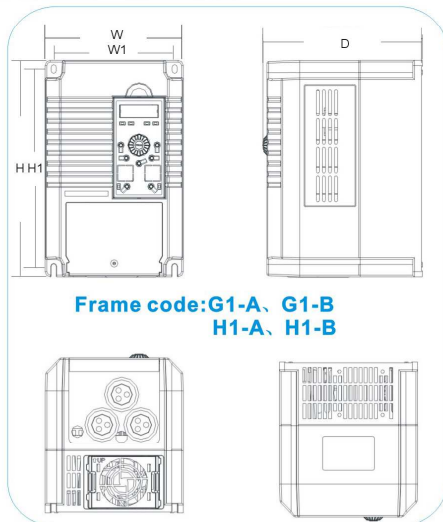
Model H1-xxxxx		1 phase 200-240VAC, 50/60Hz Tolerance range 180-264V, 47-63Hz				3 phase 200-240VAC, 50/60Hz Tolerance range 180-264V, 47-63Hz															
		210P4	210P7	211P5	212P2	230P4	230P7	231P5	232P2	233P7	235P5	237P5	23011	23015	23018	23022	23030	23037	23045	23055	23075
Applicable motor	kW	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75
	Hp	0.5	1	2	3	0.5	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100
Rated output	Capacity	1.2	2	3	4.4	1.2	2	3	4.4	6.8	10	13	20	26	30	36	48	58	73	92	120
	Current	3	5	7.5	11	3	5	7.5	11	17	25	33	49	65	75	90	120	145	182	232	300
	Voltage	AC 3Phase, 0-240V Maximum																			
	Frequency	0.1-6000Hz																			
AC Power Source	Current	5.7	9.5	14	21	3.3	5.5	8.3	12	19	28	36	54	72	83	99	132	160	200	255	330
	Cooling Method	Fan-cooled				Fan-cooled															
Enclosure Construction	Protection	IP 20 NEMA 1				IP 20 NEMA 1										IP00 NEMA 0 (IP20, IP21, NEMA 2-Option)					
	Net weight	2.6	2.7	2.7	3.0	2.6	2.8	2.8	2.8	3.0	3.2	4.0	11.9	12.3	13.0	13.5	32.7	33.8	34.6	58.0	59.4
	Frame code	H1-A				H1-A				H1-B		H1-C		H1-D				H1-F			

TOPVERT H1 series 460V class

Model H1-XXXXX		3 phase 380-480VAC,50/60Hz Tolerance range 323-528V,47-63Hz														
		430P7	431P5	432P2	433P7	435P5	437P5	43011	43015	43018	43022	43030	43037	43045	43055	43075
Applicable motor	kW	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75
	Hp	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100
Rated output	Capacity	2.4	3.3	4.8	6.8	10	14	19	25	32	38	48	64	77	94	121
	Current	3	4.2	6	8.5	13	18	24	32	40	48	60	80	97	118	152
	Voltage	AC 3Phase, 0-460V Maximum														
	Frequency	0.1-6000Hz														
AC Power Source	Current	3.3	4.6	6.6	9.4	14	20	26	35	44	53	66	88	107	130	167
	Cooling Method	Fan-cooled														
Enclosure Construction	Protection	IP 20 NEMA 1													IP00 NEMA 0 ※	
	Net weight	2.8	2.9	2.9	2.9	3.0	3.3	4.3	5.0	13.0	13.0	13.9	13.9	13.9	33.5	37.1
	Frame code	H1-A					H1-B			H1-C					H1-D	

※(IP 20 NEMA 1 IP 21 optional)

● Dimension



Unit : mm

Enclosure Frame code	W	W1	H	H1	D
G1-A H1-A	160	140	250	230	186
G1-B H1-B	200	180	275	255	206
G1-C H1-C	260	236	460	440	245
G1-D H1-D	386	230	617	591.5	298.3
G1-E H1-E	386	230	683	657.5	324.3
G1-F H1-F	496	260	810	784	352.1
G1-G	732	410	1196	1156	413

TOPVERT family members



TOPVERT E1 series

High performance
General purpose compact drive

Sensorless Vector control
Output frequency: 0.1 ~ 600Hz

1-Phase, 90~132VAC, 0.2~1.5kW
1-phase, 180~264VAC, 0.4~2.2kW
3-phase, 180~264VAC, 0.4~7.5kW
3-phase, 323~528VAC, 0.75~7.5kW

TOPVERT G1 series

High performance
General purpose
multi-function drive

Vector control
Output frequency: 0.1 ~ 600Hz

1-phase, 180~264VAC, 0.4~2.2kW
3-phase, 180~264VAC, 0.4~75kW
3-phase, 323~528VAC, 0.75~315kW



TOPVERT P1 series

High performance
variable torque drive
for Fan & Pump

Vector control
Output frequency: 0.1 ~ 600Hz

3-phase, 180~264VAC, 0.75~90kW
3-phase, 323~528VAC, 1.5~400kW



TOPVERT H1 series

High performance
high speed drive

Vector control
Output frequency: 0.1 ~ 6000Hz

1-phase, 180~264VAC, 0.4~2.2kW
3-phase, 180~264VAC, 0.4~75kW
3-phase, 323~528VAC, 0.75~75kW



TOPVERT S1 series

High performance
General purpose mini drive

Sensorless Vector control
Output frequency: 0.1 ~ 600Hz

1-Phase, 90~132VAC, 0.2~0.75kW
1-phase, 180~264VAC, 0.4~2.2kW
3-phase, 180~264VAC, 0.4~3.7kW
3-phase, 323~528VAC, 0.4~3.7kW



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