V75

SERIES GENERAL PURPOSE FREQUENCY INVERTER

CE

ErsanTeknoloji Science & Technonogy Co.,Ltd

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PROFILES

ErsanTeknoloji Science & Technology Co.,Ltd is one professional and honest manufacturer of variable speed drive (VFD, ac drive or VSD) and soft starter with a mature team of R&D, sales, and after-sales service. ErsanTEKNOLOJI owns its professional R & D team with strong innovative capability.

With hard work of ErsanTeknoloji colleagues, the company has already gotten national computer software intellectual right for variable speed drive. Until now ErsanTeknoloji products have been widely used in machine tool, metal products, plastics, printing and packing, textile, building materials, metallurgy, coal and other municipal industries.

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Product characteristics

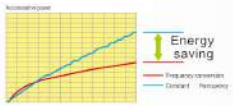
Excellent performance

Advanced sensorless speed vector control

- Adopt advanced flux estimation technology, and speed estimation technology to realize high-performance sensorless speed vector control.
- Low down motor parameter sensibility to enforce site adaptability.

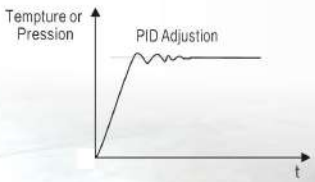
Striking energy saving function

- Under energy saving mode, V75 frequency inverter will monitor real load value to automatically adjust motor's voltage and current to reach best energy saving result.



Outstanding anti-interference performance

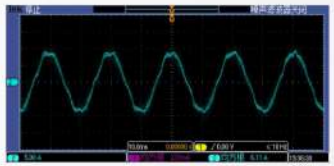
- Adopt modified PID control technology tomake quicker torque response and least motor speed changing amplitude as load changes suddenly.



Powerful and various functions

Various and smart input/output terminals

- Logic input/output terminal has more than 60 options and analog output also has 15 optional functions.
- AI1-AI2 and AO could rectify linear curve when delivering from the factory or commissioning on the site. After rectification, the accuracy could reach 20mV.



Quick current limitation function

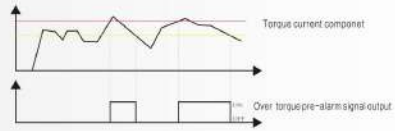
- Ensure that frequency inverter could run under rated current value of hardware before reaching over current of software in order to reduce over current fault possibility.
- Quick current limitation function could help V75 frequency inverter avoid frequent over current alarm to protect the equipment.

Motor overheat protection

- Analog input AI2 could receive motor temperature sensor input. V75 frequency inverter will report output fault and stop when the motor's temperature is over protection value.

Torque limitation to protect the equipment

- V75could offer torque limitation to most effectively protect motor within torque limitation range.

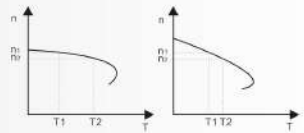


Smart multi-segment V/F control

- V75 frequency inverter has multi-segment V/F function to better service different load so as to improve motor running efficiency.

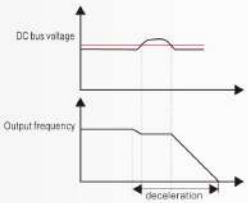
Droop control

- When several motors drive one load, V75frequency inverter will help adjust rotating speed droop of different motors so as to balance each motor's load.



Unique over voltage protection

- During deceleration process, it will protect V75frequency inverter according to selected over voltage mode when DC bus voltage is over setting value.



Compact and simply structure

Compact structure

- Compact structure design makes its dimensions smaller to save more space.
- There is detachable protection label on the top. And V75 frequency inverters support parallel installation.
- Clear terminal deployment and wiring symbol makes installing easier.

Harsh environment design

- Adopt the fourth generation IGBT power cell of Germany Infineon, which effectively upgrades reliability of the whole hardware system.
- Its wide voltage range design ensures V75 frequency inverter's adaptability to grid fluctuation.
- V75 frequency inverter has passed strict TUV testing and been authorized its official certificate.

Convenient fan replacement

- It is easy to install, clear, maintain and replace fan.
- V75frequency inverter adopts advanced independent air duct design to adapt all kinds of complicated and worse site condition.

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Some typical industry application examples

Machine tool industry

- Support high-speed communication;
- High-speed accuracy control;
- Spindle open loop control: various vector controls;
- Applicable to all kinds of machine tools

Textile industry

- Reduce thread end breakage rate;
- Specially designed externl heat sink for easily cleaning the cotton;
- Various indication signals: Full yarn indication, cotton thread bteadage indication,power off indication and so on;
- Applicable to all kinds of machine tools

Ceramic machine industry

- Super adaptability to environment and temperature;
- Professional anti-interference and anti-thunder design;
- Stable performance with three typical treatments (anti moisture, anti-mildew and anti-dust);
- No trip with reliable control protection of power module.

Air compressor industry

- Close loop constant pressure control;
  Excellent vector control;
- PC (upper machine) remote control;
- Energy saving efficiency could reach 20%~50%;
- Intelligent sleep and low-voltage wake-up.

Plastic injection machine industry

- Optional for professional plastic injection machine;
- No high-voltage throttling or overflow energy loss，Energy saving efficiency could reach 25%~70%;
- Independent air duct design for easy maintenance;
- Strong adaptability to environment with high IP level.

Civil construction project

- Application in constant pressure water supply to solve over current and water hammer phenomenon;
- Application in central air-conditioner and freezer to realize constant temperature control;
- Application in polluted water treatment to ensure its availability under harsh environment;
- Application in industrial fan to realize efficient energy saving.

Crane industry

- Plentiful crane application experiences with advised retrofit scheme;
- Vector technology stage to service our customer with excellent control performance;
- Multiply protection functions so as to ensure a reliable system;
- Intelligent fault inspection to reduce inspection workload.

Petroleum and chemistry industry

- Supply special frequency inverter for oil field to decrease energy loss;
- Better energy saving performance with little harmonics and little reactive current;
- Reliable outside work for a long time through constant temperature control container;

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Product basic functions and related configurations

Electric characteristics

Input voltage	Single-phase 200V class: 200V-240V,50Hz/60Hz 5%±5% 3-phase 400V class: 380V-480V , 50Hz/60Hz 5%
Output voltage	0~100% input voltage 0.5 Hz to 400 Hz
Control mode	V/f control for constant torque, V/f control for quadratic load, vector control without PG (open loop control), Energy-saving mode.
Switching frequency	1.5 kHz ~ 12 kHz, according to junction temperature automatically reduce the switching frequency.
Overload capacity	150% of rated output current for 60s, 200% of rated output current for 2s.

Control signal

Frequency setting signal	Integrated operation keypad	Film switch (Press button), speed control knob (potentiometer)
	Outside signal	Given UP/DOWN, analogue input, multi-speed, remote keypad and series communication
Start & Stop control signal	Integrated operation keypad	Press button of 'RUN' and 'STOP'
	Outside signal	Logic input terminal, remote keypad and series communication

Basic application functions

Torque raise at low frequency	To improve low frequency torque about 0.1% ~30% under V/f control and sensorless speed vector control through raising voltage and torque.
V/f curve	Linear type or multi-point type
Acceleration and deceleration curve	Linear type or Model S acceleration and deceleration; three groups acceleration and deceleration time; time range for acceleration and deceleration range: 0~3200s.
AVR	When grid voltage changes, it could keep constant output voltage.
Built-in PID	It is convenient to realize process control under close-loop control system.
DC brake	DC brake range: 0.0Hz-maximum frequency; brake time: 0.0s~20.0s; brake action current value: 0%~100%.
Jog control	To realize instant start and instant stop; jog frequency setting range: 0.0~20.0Hz; jog stop type: deceleration/ freedom/DC brake
Jump frequency	Available to set three jump frequency points and related jump frequency ranges to avoid frequency inverter's running within this frequency band.
Multi-speed	Available to set 15 running frequencies at most through 4 logic input terminals
Input sum	Take 2-way analog input figure sum as frequency set to make frequency set smarter.
Two sets of motor parameter switch	Available to set two sets of motor parameter and could freely switch each other in order to match currently droved motor.

Control circuit characteristics

Available inside power supply	5V	5VDC 5%, maximum current 10mA, it is used for benchmark potentiometer
	24V	24VDC5%, maximum current 100mA, it is used for logic input entrance
Analog input	AI1	Voltage analog input: 0~5 VDC or 0~10 VDC, Impedance is 30k Current analog input: 0/4~20mADC, impedance is 250Ω Resolution: 10digital A/D switch Factory default set: 0~5 VDC voltage input
	AI2	Voltage analog input: 0~10VDC or PTC probe input Resolution: 10 digital A/D switch
Logic input	LI1-LI8	0~24VDC power supply Positive logic (source) and negative logic (sink) are optional. Factory default set is negative logic. There are 69 functions available such as forward, reverse, run, fault reset, and multi-speed and so on.
Logic input	AI1、AI2 Mandatory effective input	AI1 and AI2 could be set to logic input for V75 frequency inverter with power below (including) 11kW. F309 and F310 are mandatory effective input. It will guarantee the set function effective during powering on.
Analog output	AI0	Voltage analog output: 0~10VDC, minimum load Impedance is 470Ω Current analog output: 0~20mA, maximum load Impedance is 700Ω Resolution: 8digital Output frequency, output current, given speed, series output date are optional Factory default set: 0~10VDC voltage output
Logic output	L0、CL0	Open collector, maximum current 100mA, maximum voltage 30VDC Optional for logic output or pulse output, factory default is logic output Output frequency, output current and given speed are optional
Relay output	T1A、T1B、T1C T2A、T2B、T2C	T1A constant open, T1B constant close, T1C public point/T2A constant open, T2B constant close, T2C public point Touch point capacity: 5A@250VAC, 5A@30VDC There are many functions optional such as fault, alarm and set frequency Only the power above (including) 15kw will have T2A, T2B and T2C.
Series communication		2-way RS-485,MODBUS-RTU,RJ45 connection port

Protection function

Protection for Frequency inverter	Input phase failure, output phase failure, under load monitor, over torque, under voltage, over voltage, over current, over heat, short circuit among three phases
Protection for motor	Motor overheat, motor current limiting amplitude, motor over load, motor short circuit

Environment characteristics

Protection level	IP20	Work temperature/ Storage temperature	-10~50° C/-20~60° C
Cooling method	Forced Air cooling	Humidity	No condensed water or drip at 5 ~ 95%, In accordance with IEC60068-2-3
Installation place	Room	Altitude	1000m or below (Derating is necessary when the altitude is higher than 1000m)

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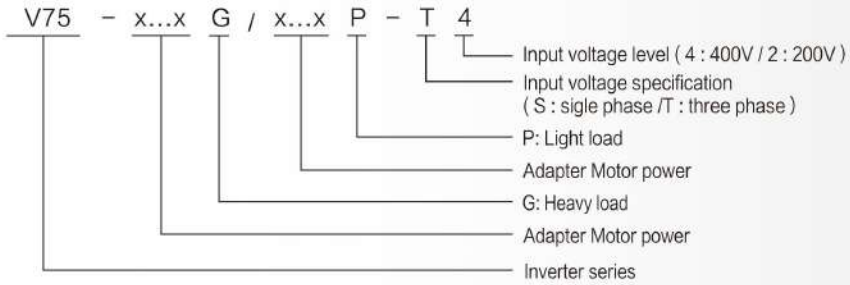
Model instruction and specification

Model instruction of V75 series frequency inverters



Specification of V75 series frequency inverters

400V

Type	G Type (heavy load)				P Type (light load)			
	Line current (A)	Rated output current (A)	Maximum transient current for 60s (A)	Motor power (kW)	Line current (A)	Rated output current (A)	Maximum transient current for 60s (A)	Motor power (kW)
V75-0R75G/1R5P-T4	3.6	2.3	3.5	0.75	6.4	4.1	4.9	1.5
V75-1R5G/2R2P-T4	6.4	4.1	6.2	1.5	8.7	5.5	6.6	2.2
V75-2R2G/3RP-T4	8.7	5.5	8.3	2.2	10.9	6.9	8.3	3
V75-4RG/5R5P-T4	14	9.4	14.1	4	20.7	12.6	15.1	5.5
V75-5R5G/7R5P-T4	20.6	12.6	18.9	5.5	26.5	17	20.4	7.5
V75-7R5G/11RP-T4	26.5	17	25.5	7.5	36.6	24.6	29.5	11
V75-11RG/15RP-T4	36.6	24.6	37	11	40	32	38.4	15

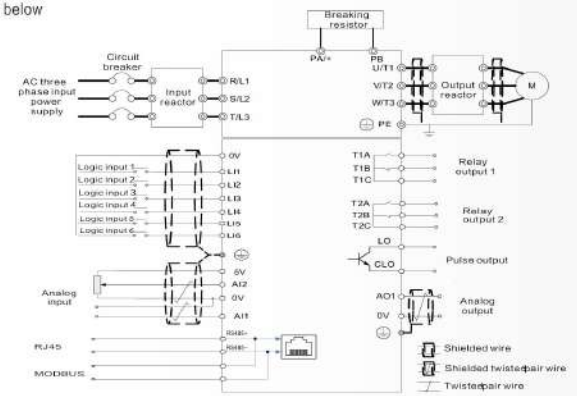
400V

Type	G Type (heavy load)				P Type (light load)			
	Line current (A)	Rated output current (A)	Maximum transient current for 60s (A)	Motor power (kW)	Line current (A)	Rated output current (A)	Maximum transient current for 60s (A)	Motor power (kW)
V75-15RG/18R5P-T4	40	32	48	15	47	38	45.6	18.5
V75-18R5G/22RP-T4	47	38	57	18.5	56	45	54	22
V75-22RG/30RP-T4	56	45	68	22	70	60	72	30
V75-30RG/37RP-T4	70	60	90	30	80	75	90	37
V75-37RG/45RP-T4	80	75	113	37	94	92	110.4	45
V75-45RG/55RP-T4	94	92	138	45	128	115	138	55
V75-55RG/75RP-T4	128	115	173	55	160	150	180	75
V75-75RG/90RP-T4	160	150	225	75	190	180	216	90
V75-90RG/110RP-T4	190	180	270	90	225	215	258	110
V75-110RG/132RP-T4	225	215	323	110	265	260	312	132
V75-132RG/160RP-T4	265	260	390	132	310	305	366	160
V75-160RG/185RP-T4	310	305	458	160	355	350	420	185
V75-185RG/220RP-T4	355	350	525	185	385	380	456	200
V75-200RG/220RP-T4	385	380	570	200	430	425	510	220
V75-220RG/250RP-T4	430	425	638	220	485	480	576	250
V75-250RG/280RP-T4	485	480	720	250	545	530	636	280
V75-280RG/315RP-T4	545	530	795	280	610	600	720	315
V75-315RG/350RP-T4	610	600	900	315	665	650	780	350
V75-350RG-T4	665	650	975	350	665	650	975	350
V75-400RG-T4	785	725	1088	400	785	725	1088	400
V75-500RG-T4	885	860	1290	500	885	860	1290	500
V75-560RG-T4	950	950	1425	560	950	950	1425	560
V75-630RG-T4	1100	1100	1650	630	1100	1100	1650	630
V75-710RG-T4	1280	1280	1920	710	1280	1280	1920	710
V75-800RG-T4	1380	1380	2070	800	1380	1380	2070	800

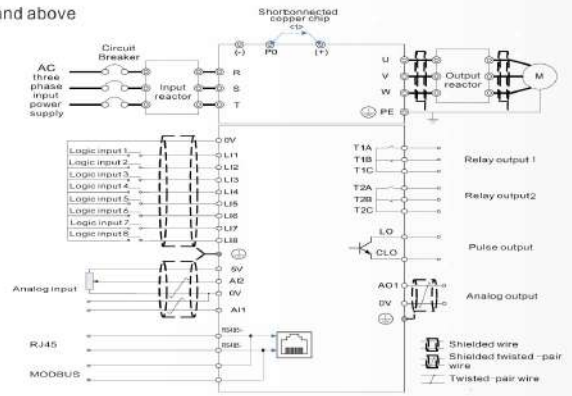
Standard wiring diagram

Standard wiring diagram

For 11kW and below



For 15kw and above



(1)There is no PO terminal for 15~30kW V75 frequency inverter
Pls be sure to knock down short connected copper chip between PO terminal and (+) terminal when installing DC reactor (optional accessories) for 37kW and above V75 frequency inverter.
(2)There is PB terminal for 15~18.5kW V75 frequency inverter, so it is available to connect braking resistor between PB terminal and (+) terminal.

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Accessories

Introduction of accessories

Remote keypad has the same functions of integrated operation keypad of V75 frequency inverter,which could realize status display, parameter setup, frequency given, start and stop control.

Remote keypad is an optional accessory for V75 frequency inverter.The customer could decide whether to buy or not according to the site condition. When delivering the remote keypad, it will offer one 2-meter connection cable with two RJ45 connectors. (Super five type non-shielded twisted-pair wire).

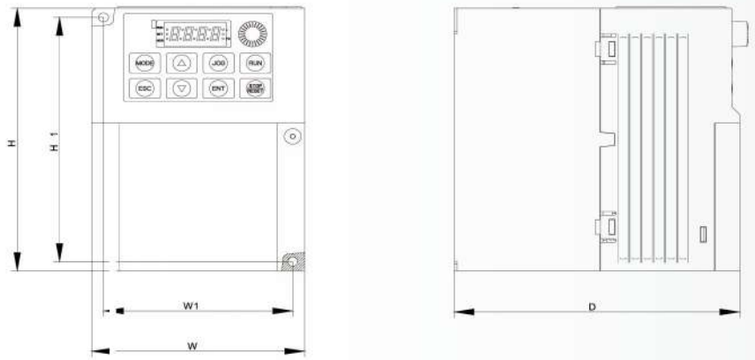
Outline of remote keypad

Usage instruction and notes of remote keypad

- When cutting off remote keypad, control of frequency inverter will automatically switch to integrated operation keypad.
- When making connection cable on one's own, make sure that the 4 and 5 of RJ45 is twisted-pair wire.
- We don't advise that plug in or plug out remote keypad when it is power on because it will probably break down the remote keypad.
- The outline of remote keypad is the same to integrated operation keypad of V75 frequency inverter above (including) 15kw but these two keypads could not interchangeably use. The remote keypad must connect T5 terminal, meanwhile, integrated operation keypad must connect T4 terminal.

Outline and installation dimensions

Outline and installation dimensions (11kW and below)



V75 Model	Outline dimensions (mm)			Installation dimensions (mm)		Aperture (mm)
	H(mm)	W(mm)	D(mm)	H1(mm)	W1(mm)	
V75-0R4G-S2	145	107	144	135	95	5
V75-0R75G-S2						
V75-0R75G/1R5P-T4						
V75-1R5G/2R2P -T4						
V75-2R2G/3RP -T4						
V75-1R5G-S2	200	138	134	188	124	5
V75-2R2G-S2						
V75-4RG/5R5P-T4						
V75-5R5G/7R5P -T4						
V75-7R5G/11RP -T4	232	153	164	220	139	5
V75-11RG/15RP-T4						

Remarks 1 & 2: This specific frequency inverter could choose additional installation base so that it will be cabinet installation. Height of base are separately 200mm (remarks 1) and 300mm (remarks 2). If needed, please inform the supplier when placing your order.
Remarks 3: The installation way could be cabinet installation for this specification frequency inverter.

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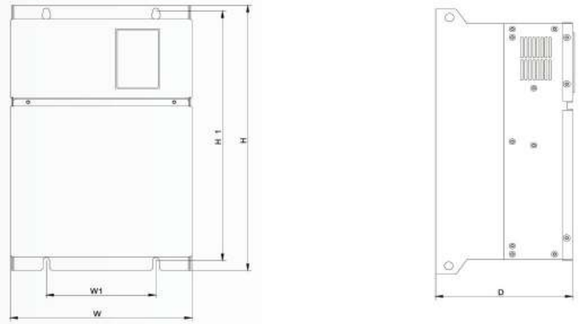
Outline and installation dimensions (15kW and above)



V75 Model	Outline dimensions (mm)			Installation dimensions (mm)		Aperture (mm)
	H(mm)	W(mm)	D(mm)	H1(mm)	W1(mm)	
V75-15RG/18R5P-T4	335	200	195	321	140	9
V75-18R5G/22RP-T4						
V75-22RG/30RP-T4						
V75-30RG/37RP-T4	410	260	214	396	180	9
V75-37RG/45RP-T4						
V75-45RG/55RP-T4	560	305	300	543	200	11
V75-55RG/75RP-T4						
V75-75RG/90RP-T4	600	310	310	583	240	11
V75-90RG/110RP-T4						
V75-110RG/132RP-T4						
V75-132RG/160RP-T4	720	355	345	698	240	13
V75-160RG/185RP-T4						
V75-185RG/200RP-T4 注1	920	480	390	898	320	13
V75-200RG/220RP-T4 注1						
V75-220RG/250RP-T4 注1						
V75-250RG/280RP-T4 注2	1100	480	405	1078	320	13
V75-280RG/315RP-T4 注2						
V75-315RG/350RP-T4 注2						
V75-350RG-T4 注3	1100	650	465	1060	350	17
V75-400RG-T4 注3						
V75-500RG-T4 注3						
V75-315RG/350RP-T4 注2	2200	1100	800	943	665	16
V75-350RG-T4 注3						
V75-400RG-T4 注3	2200	1400	800	1100	665	16
V75-500RG-T4 注3						