Definition for Parameter Address that can be used by COM

Definition	Parameter Address	Function Description	
Setting parameters inside the inverter	XXH	E.g. The address of parameter P0-3: 13(0DH) The address of parameter Pn-m: n*16+m (nmH) Note: It is allowed to be read and overwritten, but only one parameter can be read or overwritten.	
Order to inverter	2000H	Bit0~1	00: Invalid
			01: Shutdown
			10: Start-up
			11: JOG+RUN
		Bit2~3	Remain
		Bit4~5	00B: Invalid
			01B: Positive direction command
			10B: Negative direction command
			11B: Command given to change direction
		Bit6~15	Remain
	2001	Frequency order	
	2002	Bit0	Remain
		Bit1	RESET
		Bit2—15	Remain
Monitor the inverter state	2100	Error code:	
		0	No error
		1	Module
		2	Over-voltage
		3	Overheat
		4	Overload
		5	Low voltage
		6	Parameter register fault
		7	OP trip
		8	Communication
		9	Default phase
		10	Remain
	2101	Remain	
	2102	Current setting frequency	
	2103	Current operating frequency	
	2104	Output current (XXX.X)	
	2105	DC voltage value (XXXV)	
	2106	Output voltage (XXXV)	

	2107	Multi-stage speed value
	2108	Remain
	2109	Remain
	210A	Counter value
	210B	Input AC voltage value (XXXX)
	210C	Module temperature
	210D	Motor rotating speed
	210E	Remain
	210F	Remain
	2110	Remain
	2111	Remain
	2112	Remain
	2113	Remain
	2114	Remain

Error Response

The inverter will not respond if the data received is incomplete or the data failed to pass the proof. Error response will bring out if the function code or address is incorrect though the data received has passed proof. E.g.
Respond to inquiry command of the host

ASCII Mode

STX	':'
Address	'0'
	'1'
Function	'8'
	'6'
Exception code	'0'
	'2'
LRC CHK	'7'
	'7'
END	CR
	LF

RTU Mode

Address	01H
Function	86H
Exception code	02H
CRC CHK Low	C3H
CRC CHK High	A1H

Put the function codes received from the upper machine to a high bit 1, then error codes will be followed. See detail instructions on error codes below:

Error Code	Description
1	Invalid command
2	Invalid address
3	Invalid data
4	The inverter can not perform the requested operation of the user.

Chapter 4 Trouble Indication and Troubleshooting

4.1 Trouble Displayand Causes

Code	Content	Causes for anomalies	Solution
ErLU	Under-voltage during operation	1)The input power andvoltage are too low. 2)There's a momentary outageof power; 3)There's a loose contactof relay DC loop.	1)Check power and voltage. 2)Check the main circuit orseek service.
ErOC	Over-current	1)The accelerating period istoo short. 2)The load inertia istoo large. The inverter has a smallpower supply.	1)Extend accelerating or decelerating time . 2)Reduce load inertia. 3)Use an inverter with largerpower supply.
ErOL	Overload	1)Over torque lifting 2)Excessively short acceleration time 3)Overload 4)Power grid voltage below level.	1)Reduce torque lifting value . 2)Extend acceleration time. 3)Replace an inverter with higher power level. 4)Check power grid voltage.
ErOH	Overheat	1)The ambient temperature istoo high. 2)The fan is damaged. 3)There's air binding to the exhaust.	1)Lower the ambient temperature. 2)Change the fan. 3)Clear up the exhaust and improve ventilation.
ErSC	Short Circuit	1)Short circuit occurs at theoutput port. 2)There is short circuit amongphases of the inverter or error grounding. 3)There is a momentary over-currentof the inverter. 4)The control panel is abnormal.	1)Check the output wireor the motor. 2)Seek Service.
ErOP	OP Trip	The starting signal is closedbefore it is energized.	1)Disconnect the starting signal. 2)Cancel OP protection function.
ErEF	External Faults	The input terminals are closedbecause of external equipment error.	Disconnect the input terminal impacted by external equipment failure and clear failure.
ErEP	Register Failure	There is failure inside the invertet	Seek Service.
ErCE	Communication Error	1)The baud rate is improperlyset. 2)Communication error occurs at the serial port due to interference. 3)There is no communication signalin the upper machine.	1)Adjust the baud rate. 2)Check the communication cable and take more measures to prevent interference. 3)Check if the upper machineruns normally; the communication cable is disconnected.
ErOU	Over-voltage	1)The input voltage is abnormal; 2)The decelerating period is too short. 3)There is energy feedbackload. 4)The voltage detection is abnormal.	1)Check the power supply. 2)Extent the decelerating period. 3)Choose proper braking units. 4)Seek service.
ErCO	Current Detection Error	1)Hoare is damaged orcircuit is error. 2)DC auxiliary current error occurs.	Seek service.

4.2 Common Troubleshoot

Anomalies	Key points to be checked	Solutions
Motor doesn't rotate.	Check if there isinput of power and the control panel indicatoris ON.	• Disconnect the power supplyand restart again. • Confirm the grade of powervoltage. • The terminal screw is tightly fastened.
	Check if the output terminalU, V or W has output ofvoltage.	• Disconnect the power supply andrestart again.
	Check if there isoverload which leads to jamming of themotor.	• Reduce loads to enable themotor to run.
	Check if the inverter isnormal or not.	• Refer to troubleshooting.
	Check if RWD/REVcommand has been carried out.	
	Check if the frequencysetting signal has been sent out.	• Make the frequency input wiring proper • Set the frequency input voltage properly
	Check if the operation modeis set properly.	• Select the mode by operationpanel.
Motor counter rotates.	Check if the outputU, V andW are correctly wired; FRD/REV signalis right or not.	• Change two ends. • Check the wiring and correct it.
Motor couldn't change speed.	Check if the frequency settingsignal for input is correct ornot; the operation mode is properly setor not; the load is too heavyor not.	• Check the wiring and correct it. • Run the motor by operation panel. • Reduce loads.
Motor runs too fast or too slow.	Check if the motorspecifications (i.e. polarity, voltage) isproper; the gear ratio is proper ornot; the value forthe maximum output frequency is proper.	• Check the specifications of themotor. • Confirm the gear ratio. • Confirm the value for themaximum output frequency.
The speed is abnormal when the motor rotates.	Check if the loadis too heavy; the load fluctuation is toolarge; the input power is stable.	• Reduce loads. • Reduce load fluctuation. • Increase the inverter andthe motor capacity. • Install an ACreactor at inlet side of input power supply.

Chapter 5 Inverter Inspection and Maintenance

5.1 Inspection and Maintenance

The following influences may leadto latent failure of theinverter such as ambient temperature, humidity, dust, vibration,as well as device ageing,wear and other causes ofthe inverter itself during long-period operation onindustrial occasions. So itis necessary to performdaily and periodic inspections and maintenance onthe inverter.

5.1.1 Daily Inspection Items

Target of Inspection	Check for...	Inspection Cycle	Inspection Method	Criteria	Measuring Instrument
Operating ambient	• Ambient temperature; • Humidity, dust, corrosive gas, oil mist and etc.	Daily	• Thermometer • Scent; • Visual.	• Ambient temperature between -10 to 40℃, no-condensing; • Humidity between 20 to 90%，no dew or special odor.	• Thermometer • Hygrometer
Inverter	• Vibration • Heat • Noise	Daily	• Touch the housing; • Aural.	**• Stable vibration** **• Normal temperature** **• No abnormal noise**	
Motor	• Vibration • Heat • Noise	Daily	• Touch the housing; • Aural.	**• Stable vibration** **• Normal temperature** **• No abnormal noise**	
Electric Parameter	• Input voltage • Output voltage • Output current	Daily	• Thermometer	• Each electric parameter is within the rated value.	• Moving-iron voltmeter; • Rectifier voltmeter; • Clip-on ammeter

WARNING

• Make sure that only qualifiedpersonnel will perform maintenance, inspectionand part replacement.
• Wait at least10 minutes after turning OFFthe input power supply beforeperforming maintenance or an inspection. Otherwise,there is the danger ofelectric shock.
• Make sure to open thefront panel only after theindicator on the control keypadturns OFF and verify the charge indicatorat the right side ofmain loop terminal is OFFafter the panel is opened.
• Do use an insulated appliancewhile performing check and donot operate the equipment with wet hand(s) to avoid unexpectedaccidents.
• Always keep the equipment cleanso that dust and otherforeign matter does not enterthe inverter.
• Keep electronic equipment away frommoisture and oil. Dust, steelfilings and other foreign matter can damage the inverter, causing unexpected accidents, sodo take special care.

5.1.2 Periodic Inspection Items

Table 5-2 PeriodicInspection Items

Target of Inspection	Inspection Items	Check for...	Inspection Cycle	Inspection Method	Criteria
Main circuit	Overall	• Check if there is any loose connector or terminal. • Check if there is any device burnt.	Regular	Visual	• No loose connector or loose terminal. • No burnt device.
	Main power module	• Check if it is damaged or not.	Regular	Visual	• No sign of damage.
	Filter capacitance	• Check if there is any leakage. • Check if there is any inflation.	Regular	Visual	• No leakage; • No inflation.
	Contactor	• Check if there is any abnormal sound of actuation. • Check if dust has been cleaned.	Regular	Aural Visual	• Normal sound; • Clean.
	Resistor	• Check if there is any big crack. • Check if the color is abnormal.	Regular	Visual	• No crack. • Normal color.
	Fan	• Check if there is any abnormal noise or vibration.	Regular	Aural Visual	• Normal sound and stable vibration.
	PCB	• Check if dust has been cleaned.	Regular	Visual	• Neat and clean.
Control circuit	FPC strand socket	• Check if it is loose.	Regular	Visual	• No loose connection.
	Overall	• Check there is any special odor or discoloring. • Check if there is any crack	Regular	Scent or audio	• No odor and discoloring; • No crack, smooth surface.
Keyboard	LED	• Check if the LED display is normal.	Regular	Visual	• Normal and clear.
	Connecting cable strand	• Check if there is any scratch. • Check if it is connected tightly.	Regular	Visual	• No scratched surface. • No loose connection.

> **WARNING**
>
> • Do not remove or shake the device arbitrarily, nor pull out the connector during inspection. Otherwise, this may result in inverter failure or damage.
> • Do not leave any inspection tool (i.e., a screwdriver...) in the machine after periodic check. Otherwise, there is the danger of damage to the inverter.

5.2 Replacement of Wearing Parts

The wearing parts of inverter mainly include cooling fan and filter electrolytic capacitor. Usually, a cooling fan's service life is 20,000~30,000 hours and a electrolytic capacitor's service life is 40,000~50,000 hours. User can decide when to replace these parts according to the corresponding operation time.

1、Cooling Fan

It is advisory to replace the fan when abnormal noise or even vibration occurred to the fan due to bearing wear and fan blade aging. The standard replacement age is 2~3 years.

2、Filter Electrolytic Capacitor

The performance of filter electrolytic capacitor is subject to the pulsating current of main circuit. High ambient temperature or frequent load jump may cause damage to the filter electrolytic capacitor. Generally, every 10℃ rise in temperature may lead to reduction of the capacitor's service life by half (as shown in Fig.8-1). If there is any electrolytic leakage or safety valve emission, just replace it at once. The standard replacement age for electrolytic capacitor is 4~5 years.

3、The above replacement duration for inverter's wearing parts is applied to the following conditions:

• Ambient Temperature: 30℃ averagely all year round;
• Load Proportion: <85%;
• Operation Time: ≤12h/day.

If used beyond the above mentioned range, the service life of the inverter's wearing parts will minimize.

5.3 Storage of Inverter

Please pay attention to the following points if an inverter is set aside or stored for a short/long period:

> **CAUTION**
>
> • DO not keep the inverter in a place with high temperature, humidity, heavy dust, metal shavings, corrosive gas and vibration, and ensure a good ventilation.
> • Long-term idle of the inverter may cause decreasing in filter characteristic of the electrolytic capacitor. So it should be recharged within 2 years and the recharging period should be at least 5 hours. DO raise the voltage gradually by using a voltage regulator to some rated value before it is recharged. At the same time, check whether the inverter's function is normal or not, whether there is a short circuit caused by some problems. In case the above problems occur, just remove or seek service as soon as possible.

Chapter 6 Outline Dimension & Mounting Dimension

6.1 Inverter Outline Dimensions & Mounting Dimensions

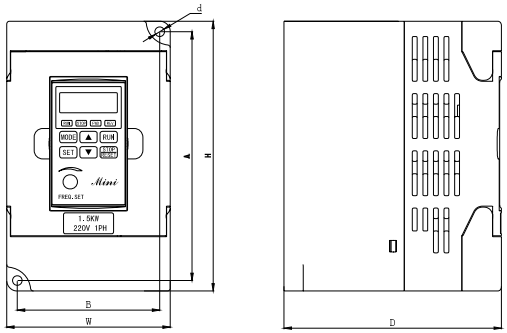

Fig.6-1 Inverter Outline Dimensional Drawings

Inverter Models	Power (KW)	Dimension					
		H	W	A	B	D	d
ZVF11-M0004S2	0.4	141.5	85.0	130.5	74.0	113.0	5
ZVF11-M0007S2	0.75	141.5	85.0	130.5	74.0	113.0	5
ZVF11-M0015S2	1.5	151.0	100.0	140.0	89.5	116.5	5
ZVF11-M0022S2	2.2	151.0	100.0	140.0	89.5	116.5	5

6.2 Operation Panel Outline Dimension

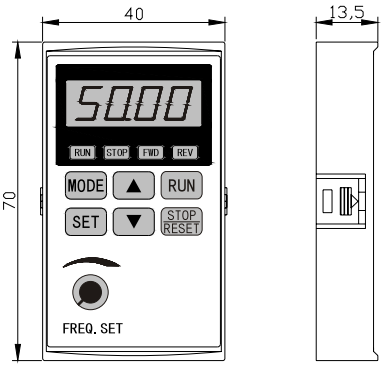

Fig.6-2 Display Panel Dimension

Appendix 1 Quality Warranty

1. Warranty Period under Normal Conditions
• We provide guarantees for repair, replacement and return of the purchase in 1 month from the date of use.
• We provide guarantees for repair and replacement in 3 months from the date of use.
• We provide guarantee for repair in 12 months from the date of use.
2. If the date of use can not be verified, then the warranty period shall be 18 months from the date of manufacture. Service exceeding the warranty periods shall be charged to the purchaser. The purchaser enjoys life-long paid service whenever and wherever he uses an inverter made in our company.
3. Service in the following cases, even within the warranty period, shall be charged to the purchaser:
• Damage caused by mal-operation in violation of this manual;
• Damage caused by improper use of an inverter that is off technical standard and requirement;
• Malfunction or damage caused by fire, earthquake, flood, abnormal input voltage or other natural disasters;
• Artificial damage caused by unauthorized repair or renovation;
• Induced failure or aging of the device due to poor ambient;
• Delayed or unsatisfied payment in violation of purchase appointment;
• Unidentifiable nameplate, mark and date of manufacture;
• Malfunction or damage caused by improper transit or storage after purchase;
• Fail to give an objective description on the use of installation, wiring, operation, maintenance or else;
• Defective products should be sent to us for repair, replacement and return, which can be proceeded only after verifying the burden of liability.
4. In case there is any quality problem or accident, we merely promise to bear the above-mentioned responsibilities. If a user needs more guarantees for liabilities, please assure on the insurance company voluntarily.

Appendix 2 Optional Parts

All the optional partscan be ordered forwith us if needed.

1. Brake Assembly

The brake assembly consists oftwo parts: braking unit andbraking resistor. Itis necessary to install a brake assemblyon the occasion thatquick stop is requiredthough there is aheavy potential load (e.g., elevator)or inertia load.

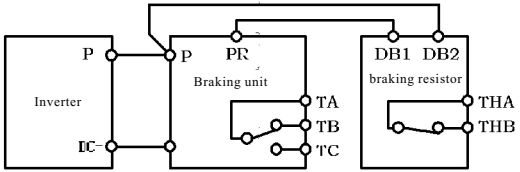

Fig. Appendix 1-1Brake Assembly Wiring Diagram

TIPS

• When installing a brakeassembly, DO takeinto consideration of the safetyof the surrounding ambient.

• For detailed parameters and introductionto the function, please referto **Brake Assembly User's Manual.**

Table Appendix 1-1 Recommended BrakeAssembly Matching Specifications

Inverter		Braking unit	Braking resistor		
Voltage	Motor(kW)		Recommended resistance value	Resistor specification	Quantity
220V	0.4	Built-in	80W250Ω	80W250Ω	1
	0.75	Built-in	80W200Ω	80W200Ω	1
	1.5	Built-in	160W100Ω	160W100Ω	1
	2.2	Built-in	300W70Ω	300W70Ω	1

2、Remote-operated adapter and extendedcable

There are two selectionsavailable for remote operationon the inverter ZVF11-M/Sseries. If it is operated at shortrange（≤15m）, just extend the shieldingcable directly and connect it to the operator panel.The company can provide arange of extended shielding cableswith different specifications such as1m, 1.5m, 2m, 5m and10m. If there isany special requirement on cable length, justplace an order withthe company.

3、Serial Communication (COM)

The standard machine typeof the inverter ZVF11-M/Sseries does not provide RS232and RS485 communication function. User shallmark out the functionat the time oforder. The control terminals of standard RS232and RS485 communication interface mayconnect to RS232 or RS485 communication cableto realize network control orratio interlocking control.

RS232 and RS485 serial communicationprotocol for the inverterZVF11-M/S series can be operated under Windows98/2000.The monitoring software forthis series, featured by friendly man-machine operation interface,can easily realize networkingoperation and perform monitoring and otherfunctions of the inverter. Please contact theservice center of our company or our agents if it isneeded.

Appendix 3 User's Parameter Amendment Record

Table Appendix3-1

Function Code	Setting Value	Function Code	Setting Value	Function Code	Setting Value
F0. 00		F1. 00		F2. 00	
F0. 01		F1. 01		F2. 01	
F0. 02		F1. 02		F2. 02	
F0. 03		F1. 03		F2. 03	
F0. 04		F1. 04		F2. 04	
F0. 05		F1. 05		F2. 05	
F0. 06		F1. 06		F2. 06	
F0. 07		F1. 07		F2. 07	
F0. 08		F1. 08		F2. 08	
F0. 09		F1. 09		F2. 09	
F0. 10		F1. 10		F2. 10	
F0. 11		F1. 11		F2. 11	
F0. 12		F1. 12		F2. 12	
F0. 13		F1. 13		F2. 13	
F0. 14		F1. 14		F2. 14	
F0. 15		F1. 15		F2. 15	

Function Code	Setting Value	Function Code	Setting Value	Function Code	Setting Value
F3. 00		F4. 00		F5. 00	
F3. 01		F4. 01		F5. 01	
F3. 02		F4. 02		F5. 02	
F3. 03		F4. 03		F5. 03	
F3. 04		F4. 04		F5. 04	
F3. 05		F4. 05		F5. 05	
F3. 06		F4. 06		F5. 06	
F3. 07		F4. 07		F5. 07	
F3. 08		F4. 08		F5. 08	

Function Code	Setting Value	Function Code	Setting Value	Function Code	Setting Value
F3. 09		F4. 09		F5. 09	
F3. 10		F4. 10		F5. 10	
F3. 11		F4. 11		F5. 11	
F3. 12		F4. 12		F5. 12	
F3. 13		F4. 13		F5. 13	
F3. 14		F4. 14		F5. 14	
F3. 15		F4. 15		F5. 15	

Function Code	Setting Value	Function Code	Setting Value	Function Code	Setting Value
F6. 00		F7. 00		F8. 00	
F6. 01		F7. 01		F8. 01	
F6. 02		F7. 02		F8. 02	
F6. 03		F7. 03		F8. 03	
F6. 04		F7. 04		F8. 04	
F6. 05		F7. 05		F8. 05	
F6. 06		F7. 06		F8. 06	
F6. 07		F7. 07		F8. 07	
F6. 08		F7. 08		F8. 08	
F6. 09		F7. 09		F8. 09	
F6. 10		F7. 10		F8. 10	
F6. 11		F7. 11		F8. 11	
F6. 12		F7. 12		F8. 12	
F6. 13		F7. 13		F8. 13	
F6. 14		F7. 14		F8. 14	
F6. 15		F7. 15		F8. 15	

Function Code	Setting Value	Function Code	Setting Value	Function Code	Setting Value
F9. 00		FA. 00		Fb. 00	
F9. 01		FA. 01		Fb. 01	
F9. 02		FA. 02		Fb. 02	
F9. 03		FA. 03		Fb. 03	
F9. 04		FA. 04		Fb. 04	
F9. 05		FA. 05		Fb. 05	
F9. 06		FA. 06		Fb. 06	
F9. 07		FA. 07		Fb. 07	
F9. 08		FA. 08		Fb. 08	
F9. 09		FA. 09		Fb. 09	
F9. 10		FA. 10		Fb. 10	
F9. 11		FA. 11		Fb. 11	
F9. 12		FA. 12		Fb. 12	
F9. 13		FA. 13		Fb. 13	
F9. 14		FA. 14		Fb. 14	
F9. 15		FA. 15		Fb. 15	

Function Code	Setting Value	Function Code	Setting Value	Function Code	Setting Value
Fc. 00		Fc. 06		Fc. 12	
Fc. 01		Fc. 07		Fc. 13	
Fc. 02		Fc. 08		Fc. 14	
Fc. 03		Fc. 09		Fc. 15	
Fc. 04		Fc. 10		Fc. 16	
Fc. 05		Fc. 11			

User's Warranty

User's Details

Name of Distributor		Date of Purchase	
Inverter Model(s)		Identification Number	
Name of Equipment		Power Capability of the Motor	
Date of Installation		Date of Use	

Maintenance Record

Failure Cause
Settlement
Date of Maintenance Serviceman Signature

Failure Cause
Settlement
Date of Maintenance Serviceman Signature

TIP

• This copy is for theholder (user) only.

Inverter User's Warranty

User's company		Tel	
Add		Post Code	
Contact Person		Department	

Name of Distributor		Add/Tel	
Date of Purchase		Invoice Number	

Inverter Model(s)		Identification Number	
Name of Equipment		Power Capability of the Motor	
Date of Installation		Date of Use	

Description of Use
Description of ParameterAmendment

TIP

• User shall fill itout based on thefacts with care andreturn it to usas soon as possible,so that we could serveyou better service toavoid inconvenience or losscaused by your improper installation or error use.