YASKAWA
Energy In Motion™

Varispeed-606V7

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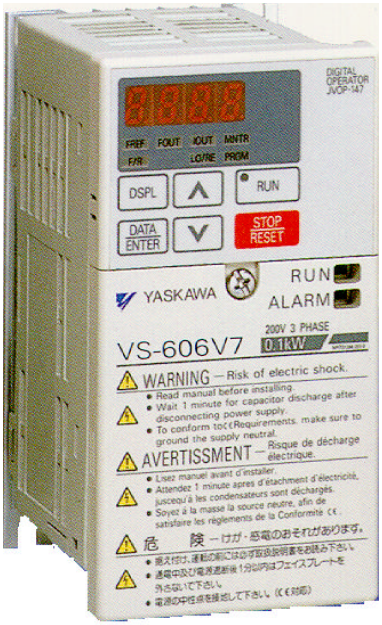


YEG-TEO-S606-11B

⚠WARNING

PRECAUTIONS

1) Read this manual thoroughly and in full before installing or operating the VS-606V7 inverter. Please observe all safety warnings and operating instructions.
2) Do not connect or disconnect wiring, or perform signal checks while the power supply is turned ON.
3) The VS-606V7 internal capacitor may be charged even after the power supply is turned OFF. To prevent electrical shock, disconnect all power before servicing the inverter. Then wait at least one minute after the power supply is disconnected and all LEDs are extinguished.
4) Do not perform a resistor voltage test or a megger test on any part of the VS-606V7. This electronic equipment uses semiconductors and can be damaged by high voltage.
5) Do not remove the digital operator unless the power supply is turned OFF. Never touch the printed control board while the power supply is turned ON.
6) The VS-606V7 is not suitable for use on a circuit capable of delivering more than 65,000 RMS symmetrical amperes, 480 Volts maximum (460V class units), 240 Volts maximum (230V class units).

Failure to observe these and other precautions highlighted in this manual will expose the user to high voltages, resulting in equipment damage, serious injury or death.

NOTICE

No patent liability is assumed with respect to the use of the information contained herein. Moreover, because Yaskawa is constantly improving its high-quality products, the information contained in this manual is subject to change without notice. Every precaution has been taken in the preparation of this manual. Nevertheless, Yaskawa assumes no responsibility for errors or omissions. Nor is any liability assumed for damages resulting from the use of the information contained in this publication.

CONTENTS

1. INTRODUCTION

1.1. GENERAL

This manual details basic installation procedures and parameter setting ranges for the VS-606V7 series adjustable frequency drive controller. For programming and more detailed information, please see the publication TOE-S606-11.

1.2. SAFETY INFORMATION

1) Never connect or disconnect cables or perform signal tests when the power supply is switched on.
2) Please note that the link circuit capacitor of the inverter remains charged for a period after the power supply is switched off. To avoid electric shock hazard always disconnect the frequency converter from the mains before servicing. Before working on the unit switch the power supply off and wait for at least one minute **after** all LEDs are off.
3) Do not perform voltage withstand checks on any part of the inverter. This is an electronic unit containing semiconductors that are not designed to carry high voltages.
4) Do not remove the digital operator while the mains power supply is switched on. Do not touch the circuit board while the unit is live.

SPECIAL WARNINGS:

1) Never connect a standard LC/RC interference suppression filter to the inverter output circuit.
2) Never connect a capacitor to the input/output stages and/or an over-voltage suppressor to the output stage.
3) If you need to install a contactor or switch between the inverter and the motor please note that the motor should never be connected/disconnected to/from the circuit while the unit is in operation.

Important instructions, please observe!

Study this operating manual carefully before installing and operating the unit.

Please observe all safety warnings and operating instructions.

For compliance with the IP protection rating the unit must always be operated with the housing closed and terminals covered. Please do not connect or operate any equipment that has visible damage or missing parts. The operator is liable for all injuries and damage to persons and installations resulting from failure to observe these warnings and safety instructions.

1.3. SAFETY WARNINGS AND OPERATING INFORMATION FOR INVERTERS

1.3.1. Introduction

Depending on their protection rating configuration, parts of inverters can have live, uninsulated and hot surfaces during operation. If housing components, the control unit or terminal covers are removed, incorrect installation and operation can lead to serious injuries and damage to other installations. It is thus absolutely essential to observe all the warnings and instructions in the operating manual. Installation, setup and maintenance should only be performed by properly qualified staff. (IEC 364 / Cenelec HD 384 or DIN VDE 0100 and IEC 664 or DIN VDE. The applicable national safety and accident prevention regulations must also be observed.) For the purpose of observance of the safety requirements qualified staff are defined as individuals who are familiar with the installation, setup and operation of the converters and who have the proper qualifications for this work.

1.3.2. Proper use for intended purpose

Inverters are designed for installation in electrical systems or machines. A inverter installed in a machine may only be activated if the machine conforms to the provisions of EU directive 89/392/EEC (machine directives). EN 60204 must also be observed. The inverter may also only be operated if the requirements of the EMC directive (89/336/EEC) are as well satisfied. This inverter conforms to the requirements of the low-voltage directive, 73/23/EEC. The harmonised standards of the prEN 50178/DIN VDE 0160 series have been applied, in combination with EN 660439-1 / VDE 06600 Part 500 and EN 60146 / VDE 0558. The specifications on the ratings nameplate and the specifications and connection requirements described in the documentation must be observed at all times.

1.3.3. Transportation and storage

All instructions for transport, storage and proper handling must be observed. Climatic and environmental conditions must conform to the requirements of prEN 50178.

1.3.4. Installation

The inverter must be installed and cooled in compliance with the regulations outlines and referred to in the documentation. The cooling air flow direction is an important requirement that must be observed. This means that the unit may only be installed and operated in the specified orientation (e.g. upright). All distances specified must also be observed. The inverter must be protected against excessive stresses. No components may be bent and no distances required for proper insulation may be changed. To prevent the risk of static electricity damage never touch electronic components or contacts.

1.3.5. Electrical connections

All national safety regulations (e.g. VBG 4) must be observed when working on live equipment. The electrical installation of the units must conform to the applicable regulations. For further information please refer to the corresponding documentation. In particular, please take care to observe all installation instructions as regards proper EMC immunity, e.g. for shielding, earthing, location of filters and cable routing. This also applies for equipment with CE approvals. Compliance with the EMC legislation limits is the responsibility of the machine or system manufacturer.

1.3.6. MCCBs

For information on the use of MCCBs with inverters please contact your supplier or Yaskawa representative.

1.3.7. Operation

Please note that the capacitors can remain charged for up to around 5 minutes after the inverter has been disconnected from the power supply. You should thus always wait for a short period of time before opening the unit and touching the electrical connections.

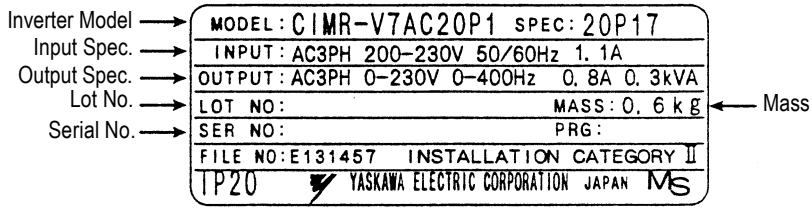
2. PRELIMINARY INSPECTION

Receiving

After unpacking the VS-606V7:

- Verify that the part numbers on the drive nameplate match the numbers on your purchase order or packing slip.
- Check the unit for physical damage which may have occurred during shipping. If any part of the drive is missing or damaged, notify the carrier and your Yaskawa representative immediately.
- Verify that all internal hardware (i.e. components, screws, etc.) is installed properly and fastened securely.
- Verify that the instruction manual is included.
- If the drive will be stored after receiving, place it in its original packaging and store according to temperature specifications.

Checking the Nameplate



MODEL

CIMR - V7 C C 2 0P1

Inverter

VS-606V7 Series

No.	Type
A	With digital operator (with potentiometer)
B	Without digital operator (with blank cover)
C	With digital operator (without potentiometer)

Note: Contact your YASKAWA representatives for the type without heatsink

	Applicable maximum motor output	
	200 V class	400 V class
OP1	0.1 kW	–
OP2	0.25 kW	0.37 kW
OP4	0.55 kW	0.55 kW
OP7	1.1 kW	1.1 kW
1P5	1.5 kW	1.5 kW
2P2	2.2 kW	2.2 kW
3P0	–	3.0 kW
4P0	4.0 kW	4.0 kW
5P5	5.5 kW	5.5 kW
7P5	7.5 kW	7.5 kW

No.	Voltage Class
B	Single-phase 230 VAC
2	Three-phase 200 VAC
4	Three-phase 400 VAC

No.	Specification
C	European standards

SPEC

2 0P1 7

B	Single-phase 230 VAC
2	Three-phase 200 VAC
4	Three-phase 400 VAC

	Applicable maximum motor output	
	200 V class	400 V class
OP1	0.1 kW	–
OP2	0.25 kW	0.37 kW
OP4	0.55 kW	0.55 kW
OP7	1.1 kW	1.1 kW
1P5	1.5 kW	1.5 kW
2P2	2.2 kW	2.2 kW
3P0	–	3.0 kW
4P0	4.0 kW	4.0 kW
5P5	5.5 kW	5.5 kW
7P5	7.5 kW	7.5 kW

No.	Protective structure
0	IP20
1	NEMA1*
7	IP20 (Top-closed type)

*NEMA1 is optional

Figure 1 Example of 3-phase, 200 VAC, 0.1 kW, IP20

3. MOUNTING

⚠CAUTION

PRECAUTIONS

1) When preparing to mount the VS-606V7, lift it by its base. Never lift it by the front cover.
2) Mount the inverter onto nonflammable material.
3) The VS-606V7 generates heat. For the most effective cooling possible, mount it vertically. For more details, refer to “Clearances” p. 10.
4) When mounting units in an enclosure, install a fan or other cooling device to keep the intake air temperature below 45°C.

Failure to observe these precautions may result in equipment damage.

Choosing a Location

Be sure that the inverter is mounted in a location protected against the following conditions:

- Extreme cold and heat. Use only within the ambient temperature range: -10 to 40°C.
- Direct sunlight (not for use outdoors)
- Rain, moisture
- High humidity (90 - 95 % RH or less/non-condensing)
- Oil sprays, splashes
- Salt spray
- Dust or metallic particles in the air
- Corrosive gases (e.g. sulfurized gas) or liquids
- Radioactive substances
- Combustibles (e.g. thinner, solvents, etc.)
- Physical shock, vibration (up to 9.8 m/s^2 (1G) at less than 20 Hz, up to 2 m/s^2 (0.2G) at 20-50 Hz)
- Magnetic noise (e.g. welding machines, power devices, etc.)
- Elevation 1000 m (3280 ft) or less

Clearances

When mounting the VS-606V7, allow sufficient clearances for effective cooling as shown below:

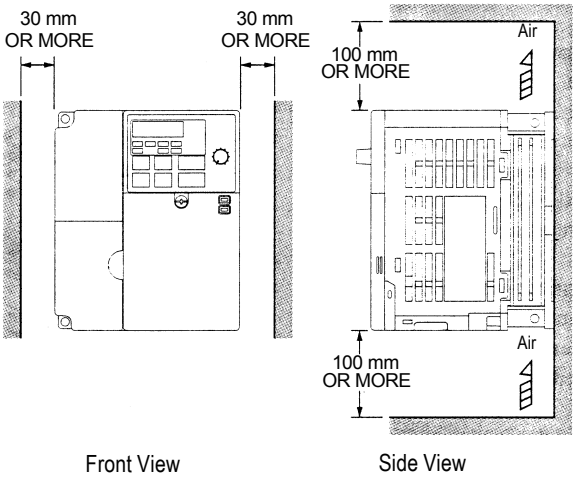


Figure 2 VS-606V7 Clearances

Notes:

1) The required clearances at the top, bottom, and both sides of the inverter are the same for IP20, IP21 and NEMA1 enclosures.
2) Allowable intake air temperature:
   IP20: -10°C to +45°C
   IP21, NEMA1: -10°C to +40°C
3) When mounting units in an enclosure, install a fan or other cooling device to limit the air temperature within the inverter to below 45°C.

4. WIRING

⚠CAUTION

PRECAUTIONS

1) Do not connect or disconnect wiring, or perform signal checks while the power supply is turned ON.
2) Connect the power supply wiring to terminals L1, L2 and L3 on the main circuit input section. DO NOT connect the power supply wiring to output terminals.
3) Connect the motor wiring to terminals on the main circuit output section.
4) **Never** touch the output circuit directly or let the output line contact the inverter enclosure.
5) Do not connect a phase-advancing capacitor nor an LC/RC noise filter to the output circuit.
6) The motor wiring must be less than 100m in length, and it is recommended that it be in a separate conduit from the power wiring.
7) Control wiring must be less than 50m in length and in a separate conduit from the power wiring.
8) Tighten the screws on the main circuit and control circuit terminals.
9) Low voltage wires shall be wired with Class 1 wiring.
10) Please observe national electrical code (NEC) when wiring electrical devices.

Failure to observe these precautions may result in equipment damage.

After wiring is complete, verify that:

All wiring is correctly installed.
Excess screws and wire clippings are removed from inside of the unit.
Screws are securely tightened.
Exposed wire has no contact with other wiring or terminals.

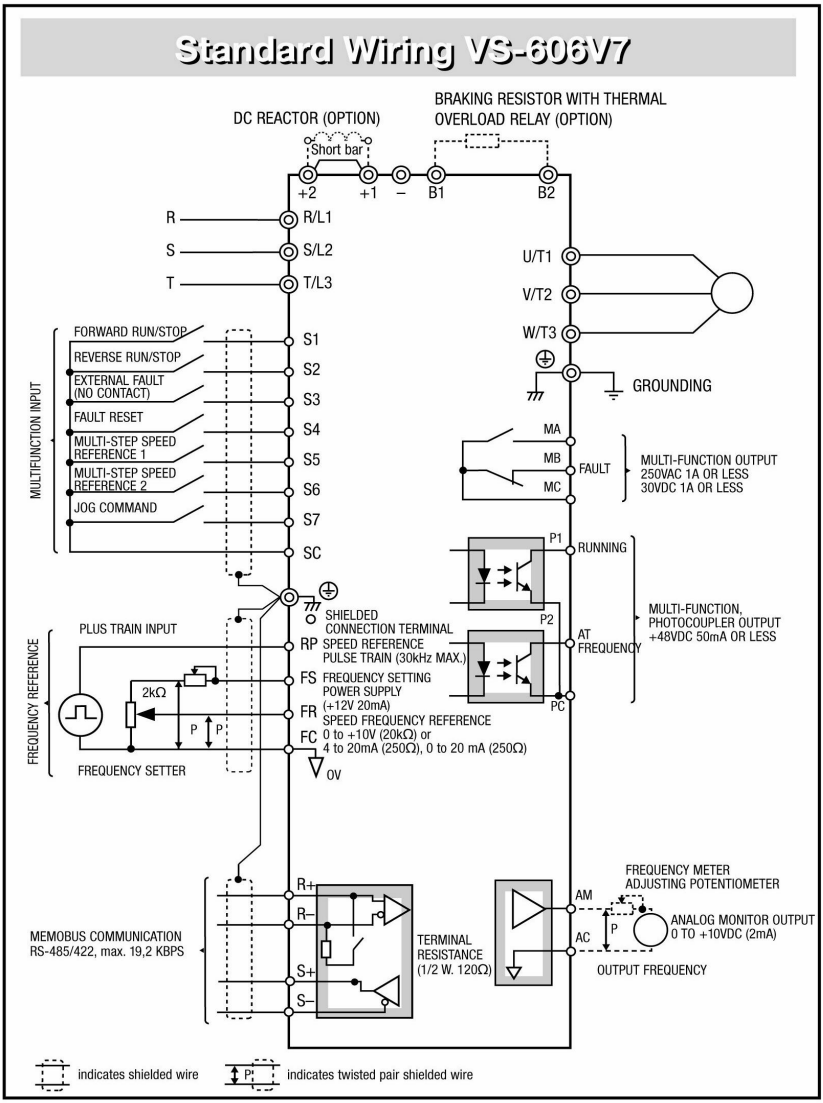
Functions of Main and Control Circuit Terminals

The following table outlines the functions of the circuit terminals. Wire according to each terminal function.

Table 1: Terminal Description

Type		Terminal		Name	Function (Signal Level)	
Main Circuit		R/L1, S/L2, T/L3		AC Power supply input	Always use terminal R/L1, S/L2 for single-phase inverters. Never connect to terminal T/L3.	
		U/T1, V/T2, W/T3		Inverter output	Inverter output	
		B1, B2		Braking resistor connection	Braking resistor connection	
		+2, +1		DC reactor connection	When connecting optional DC reactor, remove the main circuit short-circuit bar between +2 and +1.	
		+1, (–)		DC power supply input	DC power supply input (+1: positive –: negative)*	
		⏚		Grounding	Grounding 200 V: ground to local grounding codes 400 V: ground to local grounding codes	
Control Circuit	Input	Sequence	S1	Multi-function input selection 1	Factory setting closed: FWD run, open: REV run	Photo-coupler insulation 24 VDC, 8 mA.
			S2	Multi-function input selection 2	Factory setting closed: REV run, open: FWD run	
			S3	Multi-function input selection 3	Faxtory setting: External fault (NO contact)	
			S4	Multi-function input selection 4	Factory setting: Fault reset	
			S5	Multi-function input selection 5	Factory setting: Multi-step speed reference 1	
			S6	Multi-function input selection 6	Factory setting: Multi-step speed reference 2	
			S7	Multi-function input selection 7	Factory setting: Jog reference	
			SC	Multi-function input selection common	For control signal	
		Freqeuncy reference	RP	Master speed reference pulse train input	33 kHz max.	
			FS	Power for frequency setting	+12 V (permissible current 20 mA max.)	
			FR	Master speed frequency reference	0 to +10 DC (20 kΩ) or 4 to 20 mA (250 Ω) or 0 to 20 mA (250 Ω) (1/1000 resolution)	
			FC	Frequency reference common	0 V	
	Output	Multi-function contact output	MA	NO contact output	Factory setting: fault	Contact capability 250 VAC 1 A or less, 30 VDC 1 A or less
			MB	NC contact output		
			MC	Contact output common		
			P1	Photo-coupler output 1	Factory setting: Run	Photo-coupler output +48 VDC, 50 mA or less
			P2	Photo-coupler output 2	Factory setting: Frequency agreed	
			PC	Photo-coupler output common	0 V	
		AM		Analog monitor output ‡	Factory setting: Output frequency 0 to + 10 V	+10 VDC, 2 mA or less, 8-bit resolution
		AC		Analog monitor common	0 V	
Communication Circuit Terminal		MEMOBUS communications	R+	Communications input (+)	MEMOBUS communication Run through RS-485 or RS-422.	RS-485/422 MEMOBUS protocol 19.2 kbps max.
			R–	Communications input (–)		
			S+	Communications output (+)		
			S–	Communications output (–)		

* In case of directly connecting into the DC circuit, please contact your Yaskawa representative.
‡ Can be switched to pulse monitor output.


Standard Wiring VS-606V7
DC REACTOR (OPTION)
Short bar
BRAKING RESISTOR WITH THERMAL
OVERLOAD RELAY (OPTION)
+2
+1
–
B1
B2
R
S
T
R/L1
S/L2
T/L3
U/T1
V/T2
W/T3
GROUNDING
MULTIFUNCTION INPUT
FORWARD RUN/STOP
REVERSE RUN/STOP
EXTERNAL FAULT
(NO CONTACT)
FAULT RESET
MULTI-STEP SPEED
REFERENCE 1
MULTI-STEP SPEED
REFERENCE 2
JOG COMMAND
S1
S2
S3
S4
S5
S6
S7
SC
MA
MB
MC
FAULT
MULTI-FUNCTION OUTPUT
250VAC 1A OR LESS
30VDC 1A OR LESS
P1
RUNNING
P2
PC
AT
FREQUENCY
MULTI-FUNCTION,
PHOTOCOUPLER OUTPUT
+48VDC 50mA OR LESS
SHIELDED
CONNECTION TERMINAL
FREQUENCY REFERENCE
PLUS TRAIN INPUT
RP
SPEED REFERENCE
PULSE TRAIN (30kHz MAX.)
FS
FREQUENCY SETTING
POWER SUPPLY
(+12V 20mA)
FR
SPEED FREQUENCY REFERENCE
FC
0 to +10V (20kΩ) or
4 to 20mA (250Ω), 0 to 20 mA (250Ω)
2kΩ
P
P
FREQUENCY SETTER
0V
R+
R–
S+
S–
MEMOBUS COMMUNICATION
RS-485/422, max. 19,2 KBPS
TERMINAL
RESISTANCE
(1/2 W. 120Ω)
AM
AC
FREQUENCY METER
ADJUSTING POTENTIOMETER
ANALOG MONITOR OUTPUT
0 TO +10VDC (2mA)
OUTPUT FREQUENCY
indicates shielded wire
indicates twisted pair shielded wire

5. OPERATING THE INVERTER

Initial setting of control mode selection (n002) is set to V/f control mode.

- **Test Run**

The inverter operates by setting the frequency reference and the run command.
There are three types of operation modes for the VS-606V7:

1. Run command from the digital operator (local potentiometer/digital setting).
2. Run command from the control circuit terminal.
3. Run command from communications (MEMOBUS communications).

Prior to shipping, the drive is set up to receive run command and frequency reference from the digital operator. Below are instructions for running the VS-606V7 using the digital operator (with local potentiometer) JVOP-140.
Operation reference or frequency reference parameters can be selected separately as shown below.

Name	Parameter
Operation Reference Selection	N003 = 0 --- Enables operator RUN, STOP/RESET = 1 --- Enables control circuit terminal run/stop = 2 --- Enables communications (MEMOBUS communications)
Frequency Reference Selection	N004 = 0 --- Enables digital operator potentiometer = 1 --- Enables frequency reference 1 (parameter 024) = 2 --- Enables voltage reference (0 to 10V) of control circuit terminal = 3 --- Enables current reference (4 to 20mA) of control circuit terminal = 4 --- Enables current reference (0 to 20mA) of control circuit terminal = 5 --- Enables pulse line reference of control circuit terminal = 6 --- Enables communications (MEMOBUS communications)

Operation Steps	Operator Display	12-LED Display	Status Indicator LED
1.Turn ON the power supply.	6.00	FREF	RUN ● ALARM ●
2. Set parameter n004 to 1.	1	PRGM	RUN ● ALARM ●
3.Set the following parameters. n019 : 15.0 (acceleration time) n020 : 5.0 (deceleration time)	 15.0 5.0	PRGM	RUN ● ALARM ●
4.F/R blinks. Select Forward or reverse run by pressing [∧] or [∨] key. NOTE Examine the application. (Never select REV when reverse run is prohibited.)	For (Forward) or rEv (Reverse)	F/R	RUN ● ALARM ●
5.Set the reference by pressing [∧] or [∨] key.	60.00	FREF	RUN ☼ ALARM ●
6. Press RUN	0.00 → 60.0	FOUT	RUN ● ALARM ●
7. Press STOP to stop.	60.0 → 00.0	FOUT	RUN ▼ ALARM ●

Status indicator LED ☼ : ON ◎: Blinking (Long Blinking) ◎: Blinking ● :OFF

Operation Check Points

- Motor rotates smoothly.
- Motor rotates in the correct direction.
- Motor does not have abnormal vibration or noise.
- Acceleration or deceleration is smooth.
- Current matching the load flows.
- Status indicator LEDs and digital operator display are correct.

- **Operating the Digital Operator**

All functions of the VS-606V7 are set by the digital operator. Below are descriptions of the display and keypad sections.

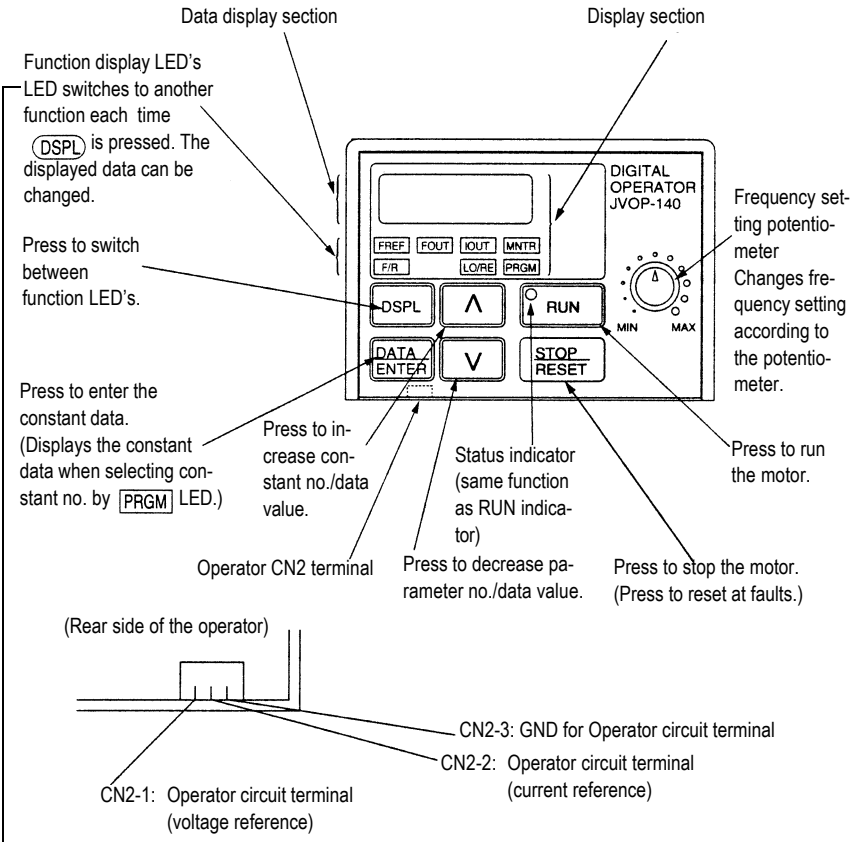


Figure 3 Digital Operator JVOP-140

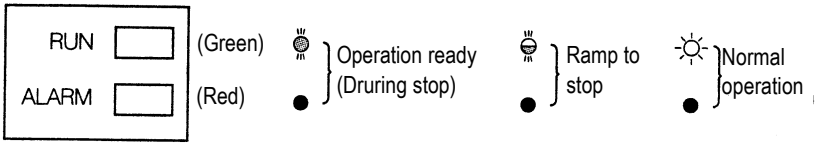
Details of LEDs (Color in parenthesis indicates the color of LED.)

FREF Frequency reference setting/monitoring (GREEN)	FOUT Output frequency monitor (GREEN)	IOUT Output current monitor (GREEN)	MNTR Multi-function monitor (GREEN)
F/R Operator RUN command FWD/REV selection (GREEN)		LO/RE LOCAL/REMOTE Selection (RED)	PRGM Parameter no./data (RED)

Description of Status Indicator LED's

There are two LEDs on the middle right section of the face of the VS-606V7. The inverter status is indicated by various combinations of ON, BLINKING and OFF LEDs. RUN indicator and status indicator of the RUN button have the same functions.

☼ : ON ☼ : Blinking (Long Blinking) ☼ : Blinking ● :OFF

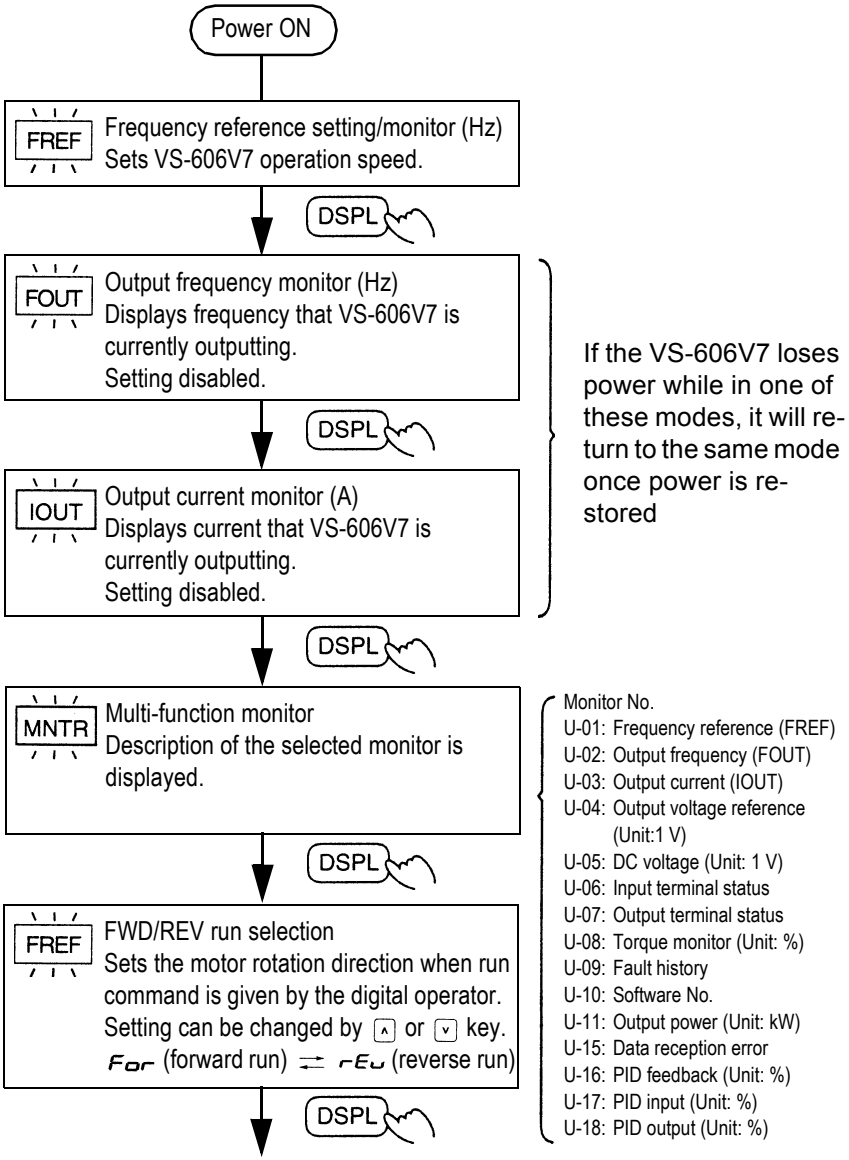


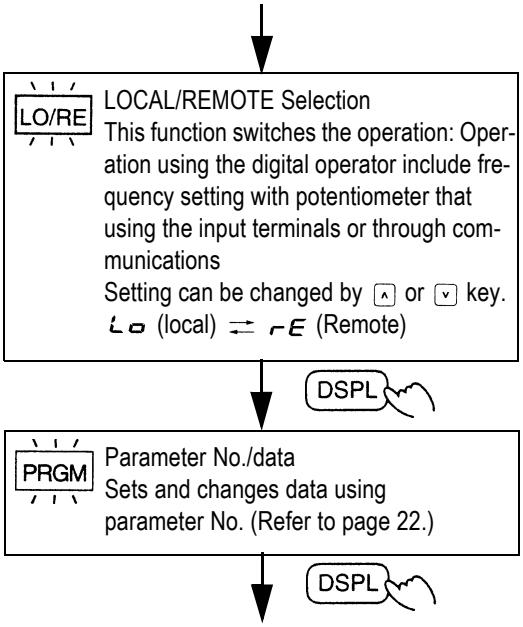
NOTE

The fault can be reset by turning ON the fault reset signal (or pressing STOP RESET key on the digital operator) with the operation signal OFF or by turning OFF the power supply. If the operation signal is ON, the fault cannot be reset by the fault reset signal.

- **Operating the Digital Operator**

By pressing (DSPL) on the digital operator, each of the function LEDs can be selected.
The following flowchart describes each function LED.





Return to FREF

MNTR Multi-Function monitor

- **Selecting monitor**

Press (DSPL) key. When MNTR is ON, data can be displayed by selecting monitor No.

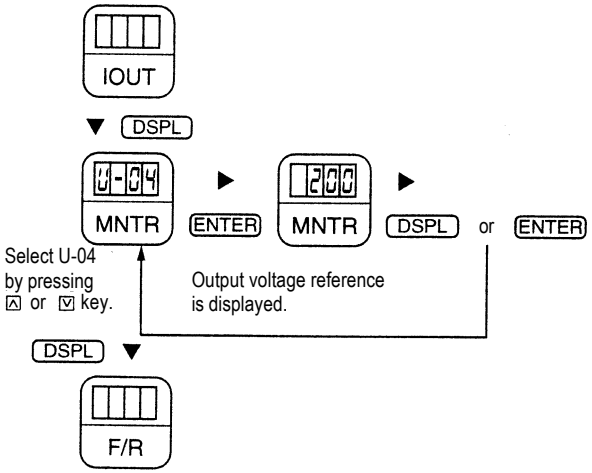


Figure 4 [Example] Monitoring Output Voltage Reference

6. SIMPLE DATA SETTING

Digital setting (OPERATING THE INVERTER, section 5) and potentiometer setting are both available for simple accel/decel operation of the VS-606V7.
Frequency reference by digital setting is initially set n004 = 1. For models with a digital operator (with potentiometer), factory setting is fixed by frequency setting potentiometer (n004=0).
Following is an example in which the function LEDs are used to set frequency reference, acceleration time, deceleration time, and motor direction.

Data setting by frequency setting potentiometer

Operation Steps	Operator Display	12-LED Display	Status Indicator LED
1.Turn the potentiometer fully to the left. Then, turn the power ON.	0.00	FREF	RUN ☼ ALARM ●
2.F/R blinks. Select FWD/REV run using keys. NOTE Never select REV when reverse run is prohibited.	For or rEv	F/R	RUN ☼ ALARM ●
3.Press DSPL to blink FREF. Then press RUN.	0.00	FREF	RUN ☼ ALARM ●
4.Operates the motor by turning the potentiometer to the right. (Frequency reference corresponds to the potentiometer position is displayed.) NOTE If the potentiometer is switched rapidly, the motor also accelerates or decelerates rapidly corresponding to the potentiometer movement. Pay attention to load status and switch the potentiometer with the speed not to affect motor movement.	00.0 to 60.00 Minimum output frequency is 1.50 Hz	FREF	RUN ☼ ALARM ●

Status indicator lamp ☼ : ON ☼ : Blinking ● :OFF

- **Programming Features**

Factory settings of the parameters are shown as ☐ in the tables.

Parameter Set-up and Initialization

Parameter selection/initialization (n001)

The following table describes the data which can be set or read when n001 is fixed.

Deactivated parameters among n001 to n179 are not displayed.

n001 Setting	Parameter that can be set	Parameter that can be referred to
0	n001	n001 to n179
1	n001 to n049*	n001 to n049
2	n001 to n079*	n001 to n079
3	n001 to n119*	n001 to n119
4	n001 to n179*	n001 to n179
5	Not used	
6	Fault history cleared	
7 to 11	Not used	
12	Initialize	
13	Initialize (3-wire sequence)	

* Excluding setting disabled parameters.

NOTE "Err" appears on the LCD display for one second and the set data are reset to their initial values in the following cases:

(1) The set values of input terminal function selection 1 to 7 (n050 to n056) are the same.

(2) The following conditions are not satisfied in the V/f pattern setting:
Max. output frequency (n011) ≥ Max. voltage output frequency (n013)
> Mid. output frequency (n014)
≥ Min. output frequency (n016)

(3) If the following conditions are not satisfied in the Jump frequency setting:
Jump frequency 3 (n085) ≤ Jump frequency 2 (n084)
≤ Jump frequency 1 (n083)

(4) If frequency reference lower limit (n034) ≤ frequency reference upper limit (n033)

(5) If motor rated current (n036) ≤ 150% of inverter rated current

(6) Parameter n018 is changed from 0 to 1 (accel / decel time unit is 0.01 sec.) and the value of n019 to n022 is set to more than 600.0 sec.

7. PARAMETER LIST

• Addition of parameters accompanied by the upgraded software version

The parameters marked with #1 and #2 are applicable for the following upgraded software version Nos.:

#1: Applicable for software version No. VSP 010015 or later

#2: Applicable for software version No. VSP 010020 or later

First Functions (Parameters n001 to n049)

No.	Name	Setting Range	Initial Setting
001	Parameter write-in prohibit / initialize	0 to 4, 6, 12, 13	1
002	Control mode selection (Note 6)	0,1	(Note 1) 0 (Note 6)
003	Operation reference selection	0 to 3	0
004	Frequency reference selection	0 to 9	1
005	Stopping method selection	0, 1	0
006	REV run prohibit	0, 1	0
007	Operation stop enable/disable selection	0, 1	0
008	Frequency reference selection in local mode	0, 1	1 (Note 5)
009	Setting method selection for frequency reference	0, 1	0
010	Detecting selection of operator connecting fault	0, 1	0
011	Maximum output frequency	50.0 to 400.0Hz	50.0Hz
012	Maximum voltage	0.1 to 255.0V (0.2 to 510.0)	200.0V (Note 2)
013	Maximum voltage output frequency	0.2 to 400.0Hz	50.0Hz
014	Mid. output frequency	0.1 to 399.9	1.3Hz
015	Mid. output frequency voltage	0.1 to 255.0V	12.0V (Note 2)
016	Minimum output frequency	0.1 to 10.0Hz	1.3Hz
017	Minimum output frequency voltage	0.1 to 50.0V	12.0V (Note 2)
018	Accel / decel time setting unit	0, 1	0
019	Acceleration time 1	0.0 to 6000s	10.0s
020	Deceleration time 1	0.0 to 6000s	10.0s
021	Acceleration time 2	0.0 to 6000s	10.0s
022	Deceleration time 2	0.0 to 6000s	10.0s
023	S-curve accel / decel selection	0 to 3	0
024	Frequency reference 1 (Master speed frequency reference)	0.0 to 400.0Hz	6.00Hz
025	Frequency reference 2	0.0 to 400.0Hz	0.00Hz
026	Frequency reference 3	0.0 to 400.0Hz	0.00Hz
027	Frequency reference 4	0.0 to 400.0Hz	0.00Hz
028	Frequency reference 5	0.0 to 400.0Hz	0.00Hz
029	Frequency reference 6	0.0 to 400.0Hz	0.00Hz
030	Frequency reference 7	0.0 to 400.0Hz	0.00Hz
031	Frequency reference 8	0.0 to 400.0Hz	0.00Hz
032	Jog frequency reference	0.0 to 400.0Hz	6.00Hz
033	Frequency reference upper limit	0 to 110%	100%

No.	Name	Setting Range	Initial Setting
034	Frequency reference lower limit	0 to 110%	0%
035	Unit Selection for frequency setting/display	0 to 3999	0
036	Motor rated current	0 to 150% of inverter rated current	(Note 3)
037	Electronic thermal motor protection	0, 1, 2	0
038	Parameter selection at electronic thermal motor protection	1 to 60 min	8 min
039	Cooling fan operation selection	0, 1	0

Second Functions (Constants n050 to n079)

No.	Name	Setting Range	Initial Setting
050	Multi-function input selection 1	1 to 22	1
051	Multi-function input selection 2	1 to 22	2
052	Multi-function input selection 3	0 to 22	3
053	Multi-function input selection 4	1 to 22	5
054	Multi-function input selection 5	1 to 22	6
055	Multi-function input selection 6	1 to 22	7
056	Multi-function input selection 7	1 to 25, 34, 35	10
057	Multi-function output selection 1	0 to 7, 10 to 18	0
058	Multi-function output selection 2	0 to 7, 10 to 18	1
059	Multi-function output selection 3	0 to 7, 10 to 18	2
060	Analog frequency reference gain	0 to 255%	100%
061	Analog frequency reference bias	-100 to 100%	0%
062	Analog frequency reference filter time constant	0.00 to 2.00s	0.10s
065	Monitor output selection	0,1	0
066	Monitor item selection	0 to 5	0
067	Monitor gain	0.00 to 2.00	1.00
068	Analog frequency reference gain (Operator voltage reference)	-255 to 255%	100%
069	Analog frequency reference bias (Operator voltage reference)	-100 to 100%	0%
070	Analog frequency reference filter time constant (Operator voltage reference)	0.00 to 2.00s	0.10s
071	Analog frequency reference gain (Operator current reference)	-255 to 255%	100%
072	Analog frequency reference bias (Operator current reference)	-100 to 100%	0%
073	Analog frequency reference filter time constant (Operator current reference)	0.00 to 2.00s	0.01s
074	Pulse train frequency reference gain	0 to 255%	100%
075	Pulse train frequency reference bias	-100 to 100%	0%
076	Pulse train frequency reference filter time constant	0.0 to 2.00s	0.10s
077 #2	Multifunction analog input selection	0 to 4	0
078 #2	Multifunction analog input signal selection	0,1	0
079 #2	Frequency reference bias (FBIAS) value	0 to 50%	10%

Third Functions (Constants n080 to n119)

No.	Name	Setting Range	Initial Setting
080	Carrier frequency	1 to 4, 7 to 9	4 (Note 4)
081	Operation selection after momentary power loss	0, 1, 2	0
082	Fault restart	0 to 10 times	0
083	Jump frequency 1	0.0 to 400.0Hz	0.00Hz
084	Jump frequency 2	0.0 to 400.0Hz	0.00Hz
085	Jump frequency 3	0.0 to 400.0Hz	0.00Hz
086	Jump frequency width	0.0 to 25.50Hz	0.00Hz
089	DC injection braking current	0 to 100%	50%
090	DC injection braking time at stop	0.0 to 25.5%	0.5s
091	DC injection braking time at start	0.0 to 25.5%	0.0s
092	Stall prevention (current limit) during decel	0,1	0
093	Stall prevention (current limit) during accel	30 to 200%	170%
094	Stall prevention (current limit) during running	30 to 200%	160%
095	Frequency detection level	0.0 to 400.0Hz	0.00Hz
096	Overtorque detection 1	0 to 4	0
097	Overtorque detection 2	0.1	0
098	Overtorque detection level	30 to 200%	160%
099	Overtorque detection time	0.1 to 10.0s	0.1s
100	Memory selection of hold output frequency	0,1	0
103	Torque compensation gain	0.0 to 2.5	1.0
104	Time constant at torque compensation	0.0 to 25.5s	0.3s
105	Torque compensation iron loss	0.0 to 6550	(Note 3)
106	Motor rated slip	0.0 to 20.0Hz	(Note 3)
107	Motor resistance for one-phase	0.0 to 65.50Ω	(Note 3)
108	Motor leak inductance	0.0 to 655.0mH	(Note 3)
109	Torque compensation voltage limiter	0 to 250%	150%
110	Motor no-load current	0 to 99%	(Note 3)
111	Slip compensation gain	0.0 to 2.5	0.0
112	Slip compensation primary delay time	0.0 to 25.5s	2.0s
113	Slip compensation selection during regeneration	0,1	0
115 #2	Stall prevention automatic decrease selection	0,1	0
116 #2	Accel/decel time during stall prevention	0,1	0

Fourth Functions (Constants n120 to n179)

No.	Name	Setting Range	Initial Setting
120	Frequency reference 9	0.0 to 400.0Hz	0.00Hz
121	Frequency reference 10	0.0 to 400.0Hz	0.00Hz
122	Frequency reference 11	0.0 to 400.0Hz	0.00Hz
123	Frequency reference 12	0.0 to 400.0Hz	0.00Hz
124	Frequency reference 13	0.0 to 400.0Hz	0.00Hz
125	Frequency reference 14	0.0 to 400.0Hz	0.00Hz
126	Frequency reference 15	0.0 to 400.0Hz	0.00Hz
127	Frequency reference 16	0.0 to 400.0Hz	0.00Hz
128	PID control selection	0 to 8	0
129	PID feedback adjustment gain	0.0 to 10.00	1.00
130	Proportional gain (P)	0.0 to 25.0	1.0
131	Integral time (I)	0.0 to 360.0	1.0

No.	Name	Setting Range	Initial Setting
132	Differential time (D)	0.0 to 2.50	0.00
133	PID offset adjustment	-100 to 100%	0%
134	Integral (I) upper limit	0 to 100%	100%
135	PID output primary delay constant time	0.0 to 10.0	0.0
136	PID feedback loss detection selection	0,1,2	0
137	PID feedback loss detection level	0 to 100%	0%
138	PID feedback loss detection time	0.0 to 25.5	1.0
139	Energy-saving control selection (V/f control mode)	0,1	0
140	Energy-saving coefficient K2	0.0 to 6550	(Note 7)
141	Energy-saving voltage lower limiter (at 60 Hz)	0 to 120%	50%
142	Energy-saving voltage lower limiter (at 6 Hz)	0 to 25%	12%
143	Power average time	1 to 200	1 (24ms)
144	Search operation voltage limit	0 to 100%	0%
145	Search operation voltage step (at 100%)	0.1 to 100%	0.5%
146	Search operation voltage step (at 5%)	0.1 to 10.0%	0.2%
149	Pulse train input scaling	100 to 3300	2500 (25kHz)
150	Pulse monitor output frequency selection	0,1,6,12,24,36	0
151	Timeover detection selection	0 to 4	0
152	Setting unit selection of communications frequency reference/frequency monitor	0, 1, 2, 3	0
153	Slave address	0 to 32	0
154	Baud rate selection	0 to 3	2
155	Parity selection	0, 1, 2	0
156	Send waiting time	10 to 65ms	10ms
157	RTS control	0, 1	0
158	Motor code (energy-saving control)	0 to 70	(Note 7)
159	Energy-saving voltage upper limit (at 60Hz)	0 to 120%	120%
160	Energy-saving voltage upper limit (at 6Hz)	0 to 25%	16%
161	Search operation power detection hold width	0 to 100%	10%
162	Power detection filter time constant	0 to 255	5 (20ms)
163	PID output gain	0.0 to 25.0	1.0
164	PID feedback selection	0 to 5	0
175 #1 #2	Reducing carrier frequency selection at low speed	0,1	0
176	Parameter copy selection	rdy,rEd,CPy vFy,vA,Sno	rdy
177	Prohibiting parameter read selection	0,1	0
178	Fault history	Stores, displays most recent 4 alarms	–
179	Software No.	Displays lower-place 4 digits of software No.	–

Notes: 1. Not initialized by parameter initalization.
2. Setting range and initial setting are doubled for 400 class.
3. Changes depending on inverter capacity.
4. Changes depending on inverter capacity.
5. Initial setting of the model with operator JVOP-140 (with potentiometer) is 0. Setting can be changed to 1 by parameter initialization.
6. When control mode selection (n002) is changed, initial setting corresponds to the control mode.

No.	Name	V / f control mode (n002 = 0)	Vector control mode (n002 = 1)
n014	Mid. output frequency	1.3Hz	3.0Hz
n015	Mid. output frequency voltage	12.0V*	11.0V*
n016	Minimum output frequency	1.3Hz	1.0Hz
n017	Minimum output frequency voltage	12V*	4.3V*
n104	Torque compensation time constant	0.3s	0.2s
n111	Slip compensation gain	0.0	1.0
n112	Slip compensation gain time constant	2.0s	0.2s

* Values are doubled with 400V class.

7. Changes depend on inverter capacity.

Initial settings that change with inverter capacity

• 200V class 3-phase

No.	Name	Unit	Factory setting									
–	Inverter capacity	kW	0.1kW	0.25kW	0.55kW	1.1kW	1.5kW	2.2kW	–	4.0kW	5.5kW	7.5kW
n036	Motor rated current	A	0.6	1.1	1.9	3.3	6.2	8.5	–	14.1	19.6	26.6
n105	Torque compensation iron loss	W	1.7	3.4	4.2	6.5	11.1	11.8	–	19	28.8	43.9
n106	Motor rated slip	Hz	2.5	2.6	2.9	2.5	2.6	2.9	–	3.3	1.5	1.3
n107	Motor resistance for one phase*	Ω	17.99	10.28	4.573	2.575	1.233	0.8	–	0.385	0.199	0.111
n108	Motor leakage inductance	mH	110.4	56.08	42.21	19.07	13.4	9.81	–	6.34	4.22	2.65
n110	Motor no-load current	%	72	73	62	55	45	35	–	32	26	30

• 200V class single-phase

No.	Name	Unit	Factory setting							
–	Inverter capacity	kW	0.1kW	0.25kW	0.55kW	1.1kW	1.5kW	2.2kW	–	4.0kW
n036	Motor rated current	A	0.6	1.1	1.9	3.3	6.2	8.5	–	14.1
n105	Torque compensation iron loss	W	1.7	3.4	4.2	6.5	11.1	11.8	–	19
n106	Motor rated slip	Hz	2.5	2.6	2.9	2.5	2.6	2.9	–	3.3
n107	Motor resistancefor one phase*	Ω	17.99	10.28	4.573	2.575	1.233	0.8	–	0.385
n108	Motor leak inductance	mH	110.4	56.08	42.21	19.07	13.4	9.81	–	6.34
n110	Motor no-load current	%	72	73	62	55	45	35	–	32

• 400V class 3-phase

No.	Name	Unit	Factory setting									
–	Inverter capacity	kW	–	0.37kW	0.55kW	1.1kW	1.5kW	2.2kW	3.0kW	4.0kW	5.5kW	7.5kw
n036	Motor rated current	A	–	0.6	1.0	1.6	3.1	4.2	7.0	7.0	9.8	13.3
n105	Torque compensation iron loss	W	–	3.4	4.0	6.1	11.0	11.7	19.3	19.3	28.8	43.9
n106	Motor rated slip	Hz	–	2.5	2.7	2.6	2.5	3.0	3.2	3.2	1.5	1.3
n107	Motor resistance for one phase*	Ω	–	41.97	19.08	11.22	5.044	3.244	1.514	1.514	0.797	0.443
n108	Motor leak inductance	mH	–	224.3	168.8	80.76	53.25	40.03	24.84	24.84	16.87	10.59
n110	Motor no-load current	%	–	73	63	52	45	35	33	33	26	30

* Values of motor line-to-line resistance are set to half of the standard value.

= Values between V/f mode and Vector control mode.

8. TROUBLESHOOTING

This chapter describes the inverter fault display and the fault contents caused by motor/machine malfunctions and the corrective actions to be taken.

FAULT DIAGNOSIS AND CORRECTIVE ACTIONS

This section describes the alarm and fault displays, explanations for fault conditions and corrective actions to be taken if the VS-606V7 malfunctions.

< Corrective Actions for models with blank cover >

1. Input fault reset or cycle the power supply OFF and ON.
2. When a fault cannot be corrected:

(1) Turn the power supply OFF and check the wiring and external circuit (sequence).

(2) Turn the power supply OFF and replace the blank cover with the digital operator to display faults. The faults are displayed after turning the power ON.

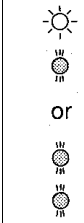
< Corrective Actions of models with digital operator >

: ON : Blinking : OFF

Alarm Display and Contents

Alarm Display		Inverter Status	Explanation	Causes and Corrective Actions
Digital Operator	RUN (Green) ALARM (Red)			
UV Blinking		Warning Fault contacts do not change state.	UV (Main circuit low voltage) Main circuit DC voltage drops below the low-voltage detection level while the inverter output is OFF. 200V: Stops at main circuit DC voltage below approx. 200V (160V for single phase) 400V Stops at main circuit DC voltage below approx. 400V. (Control supply fault) Control power supply fault is detected while the inverter output is OFF.	Check the following: • Power supply voltage • Main circuit power supply wiring is connected. • Terminal screws are securely tightened.
OV Blinking			OV (Main circuit over voltage) Main circuit DC voltage exceeds the over voltage detection level while the inverter output is OFF. Detection level: 200V class: Approx 410V or more 400V class: Approx 820V or more	Check the power supply voltage.
oH Blinking			OH (Cooling fin overheat) Intake air temperature rises while the inverter output is OFF.	Check the intake air temperature.
CAL Blinking			CAL (MEMOBUS communications waiting) Correct data has not been received from the PLC when the constants n003 (operation command selection) is 2 or n004 (frequency reference selection) is 6, and power is turned ON.	Check communication devices and transmission signals.

Alarm Display		Inverter Status	Explanation	Causes and Corrective Actions
Digital Operator	RUN (Green) ALARM (Red)			
oP□ Blinking		Warning Fault contacts do not change state.	OP□(Constant setting error when the constant setting is performed through the MEMOBUS communications) OP1: Two or more values are set for multi-function input selection. (constants n050 to n056) OP2: Relationship among V / f constants is not correct. (constants n011, n013, n014, n016) OP3: Setting value of motor rated current exceeds 150 % of inverter rated current. (constant n036) OP4: Upper/lower limit of frequency reference is reversed. (constants n033, n034) OP5: (constants n083 to n085)	Check the setting values.
oL3 Blinking			OL 3 (Over torque detection) Motor current exceeded the preset value in constant n098.	Reduce the load and expand the accel/decel time.
SEr Blinking			SER (Sequence error) Inverter receives LOCAL/REMOTE select command or communication/control circuit terminal changing signals from the multi-function terminal while the inverter is outputting.	Check the external circuit (sequence).

Alarm Display		Inverter Status	Explanation	Causes and Corrective Actions
Digital Operator	RUN (Green) ALARM (Red)			
bb Blinking		Warning Fault contacts do not change state.	BB (External baseblock) Baseblock command at multi-function terminal is active. The inverter output is shut OFF (motor coasting). Temporary condition is cleared when input command is removed.	Check the external circuit (sequence).
EF Blinking			EF (Simultaneous FWD/REV run commands) When FWD and REV run commands are simultaneously input for over 500ms, the inverter stops according to constant n005.	Check the external circuit (sequence).
SrP Blinking			STP (Operator function stop) STOP RESET is pressed during running by the control circuit terminals FWD/REV command, or by the run command from communications. The inverter stops according to constant n005. STP (Emergency stop) Inverter receives emergency stop alarm signal. Inverter stops according to constant n005.	Open FWD/REV command of control circuit terminals. Check the external circuit (sequence).
FAn Blinking			FAN (Cooling fan fault) Cooling fan is locked.	Check the following: • Cooling fan • Cooling fan wiring is not connected.
CE Blinking			CE (MEMOBUS) communications fault	Check the communication devices or communication signals.
FbL			FBL (PID feedback loss detection) PID feedback value drops below the detection level. When PID feedback loss is detected, the inverter operates according to the n136 setting.	Check the mechanical system and correct the cause, or increase the value of n137.
bUS Blinking			Option card communications fault. Communication fault has occurred in a mode that run command and frequency reference are set from the communication option card.	Check the communication devices or communication signals.

Alarm Display		Inverter Status	Explanation	Causes and Corrective Actions
Digital Operator	RUN (Green) ALARM (Red)			
oC	● ☼	Protective Operation Output is shut OFF and motor coasts to a stop.	OC (Over current) Inverter output current momentarily exceeds approx. 250 % of rated current.	• Short circuit or grounding at inverter output side. • Excessive load GD^2 • Extremely rapid accel/decel time (constants n019 to n022) • Special motor used • Starting motor during coasting • Motor of a capacity greater than the inverter rating has been started. • Magnetic contactor open/closed at the inverter output side.
ou			OV (Main circuit over voltage) Main circuit DC voltage exceeds the overfatigue detection level because of excessive regenerative energy from the motor. Detection level: 200V: Stops at main circuit DC voltage below approx. 410V 400V: Stops at main circuit DC voltage approx. 820V or more	• Insufficient decel time (constants n020 and n022) • Lowering of minus load (elevator, etc.) ⇓ • Increase decel time. • Connect optional braking resistor.
Uv 1			UV1 (Main circuit low voltage) Main circuit DC voltage drops below the low voltage detection level while the inverter output is ON. 200V: Stops at main circuit DC voltage below approx. 200V (160V for single phase) 400V: Stops at main circuit DC voltage approx. 400V or more	• Reduction of input power supply voltage • Open phase of input supply • Occurrence of momentary power loss ⇓ Check the following: • Power supply voltage • Main circuit power supply wiring is connected. • Terminal screws are securely tightened.

Alarm Display		Inverter Status	Explanation	Causes and Corrective Actions
Digital Operator	RUN (Green) ALARM (Red)			
UV2			UV2 (Control power supply fault) Voltage fault of control power supply is detected.	Cycle power. If the fault remains, replace the inverter.
oH		Protective Operation	OH (Cooling fin overheat) Temperature rise because of inverter overload operation or intake air temperature rise.	• Excessive load • Improper V/f pattern setting • Insufficient axel time if the fault occurs during acceleration • Intake air temperature exceeding 122°F (50°C) • Cooling fan stops ⇓ Check the following: • Load size • V/f pattern setting (constants n011 to n017) • Intake air temperature
oL 1	● ☼	Output is shut OFF and motor coasts to a stop.	OL1 (Motor overload) Motor overload protection operates by built-in electronic thermal overload relay.	• Check the load size or V/f pattern setting (constants n011 to n017) • Set the motor rated current shown on the nameplate by constant n036.
oL2			OL2 (Inverter overload) Inverter overload protection operates by built-in electronic thermal overload relay.	• Check the load size or V/f pattern setting (constants n011 to n017) • Check the inverter capacity
oL3			OL3 (Over torque detection) V/f mode: Inverter output current exceeded the preset value in constant n098. Vector mode: Motor current or torque exceeded the preset value in constants n097 and n098. When over torque is detected, inverter performs operation according to the preset setting of constant n096.	Check the driven machine and correct the cause of the fault, or increase the value of constant n098 up to the highest value allowed for the machine.

Alarm Display		Inverter Status	Explanation	Causes and Corrective Actions
Digital Operator	RUN (Green) ALARM (Red)			
EF□	●	Protective Operation	EFq (External fault) Inverter receives an external fault input from control circuit terminal. EF0: External fault reference through MEMOBUS communications EF1: External fault input command from control circuit terminal S1 EF2: External fault input command from control circuit terminal S2 EF3: External fault input command from control circuit terminal S3 EF4: External fault input command from control circuit terminal S4 EF5: External fault input command from control circuit terminal S5 EF6: External fault input command from control circuit terminal S6 EF7: External fault input command from control circuit terminal S7	Check the external circuit (sequence).
F00	☼	Output is shut OFF and motor coasts to a stop.	CPF-00 Inverter cannot communicate with the digital operator for 5 sec. or more when power is turned ON.	Cycle power after checking the digital operator is securely mounted. If the fault remains, replace the digital operator or inverter.
F01			CPF-01 Transmission fault occurred for 5 sec. or more when transmission starts with the digital operator.	Cycle power after checking the digital operator is securely mounted. If the fault remains, replace the digital operator or inverter.
F04			CPF-04 EEPROM fault of inverter control circuit is detected.	• Record all constant data and initialize the constants. (Refer to page 32 for constant initialization) • Cycle power. If the fault remains, replace the inverter.

Alarm Display		Inverter Status	Explanation	Causes and Corrective Actions
Digital Operator	RUN (Green) ALARM (Red)			
FOS		Protective Operation Output is shut OFF and motor coasts to a stop.	CPF-05 AD converter fault is detected	Cycle power. If the fault remains replace the inverter.
FO6			CPF-06 • Option card connecting fault • A non-corresponding option card is connected.	Remove power to the inverter. Check the connection of the digital operator. Verify inverter software number (n179).
FO7			CPF-07 Operator control circuit (EEPROM or AD converter) fault	Cycle power after checking the digital operator is securely mounted. If the fault remains, replace the digital operator or inverter.
F21	● ☼		Communication option card self diagnostic error	Option card fault Replace the option card.
F22			Communication option card model code error	
F23			Communication option card DPRAM error	
oPr			OPR(Operator connecting fault)	Cycle power. If the fault remains, replace the inverter.
CE			CE (MEMOBUS communications fault)	Check the communication devices or communication signals.
SrP	☼	Stops according to parameter.	STP (Emergency stop) The inverter stops according to parameter n005 after receiving the emergency stop fault signal.	Check the external circuit (sequence).
FbL	☼ or ● ☼		FBL (PID feedback loss detection) PID feedback value drops below the detection level. When PID feedback loss is detected, the inverter operates according to the n136 setting.	Check the mechanical system and correct the cause, or increase the value of n137.

9. CE CONFIRMATION INFORMATION

9.1. EU MANUFACTURER'S DECLARATION

9.1.1. Products

Static inverter, series VS-606V7

9.1.2. Scope

YASKAWA inverters are components (defined by IEC 22G/21CDV) designed exclusively for installation in machines or systems (end products) by qualified re-users (e.g. mechanical engineering manufacturers).

9.1.3. Responsibility

As a component manufacturer we are responsible for the provision of installation instructions. For complete information please refer to the document EZZ 006543 available at the Yaskawa Electric Europe office.
Our products have been tested by authorised bodies pursuant to the requirements of the standards listed below. The products conform to these standards, subject to due and proper observation of the installation instructions provided in this manual:

Immunity – EMC resistance pursuant to EN50082-2, Part 2:

EN 61000-4-2	Resistance to static discharge
EN 61000-4-4	Resistance to high-speed transients and bursts
EN 61000-4-8	Testing of resistance to magnetic fields with power systems frequencies
ENV 50140	Resistance to high-frequency magnetic fields
ENV 50141	Resistance to conducted interference

Emissions – EMC interference emissions pursuant to EN50081-2, Part 2:

EN 55011	Class A or B limit curve under the conditions described in this manual

YASKAWA Electric Europe GmbH
Am Kronberger Hang 2
65824 Schwalbach am Taunus
Germany

Always observe all the safety instructions provided in this product documentation!

9.2. MEASURES TO MAKE YASKAWA INVERTERS CONFORM TO EMC

According to the EMC directive EEC/89/336 YASKAWA inverters do not have an intrinsic function until connected with other components (e.g. a motor). Therefore, such devices are not allowed to be CE marked for compliance with the EMC directive.

Compliance with the EMC legislation limits is the responsibility of the machine or system manufacturer. In particular, please take care to observe all installation instructions as regards proper EMC immunity, e.g. for shielding, earthing, location of filters and cable routing. Installation, setup and maintenance should only be performed by properly qualified staff (IEC 364 / Cenelec HD 384 or DIN VDE 0100 and IEC 664 or DIN VDE).

For your convenience, details of the EMC performance characteristics of the devices when they are installed in accordance with YASKAWA's wiring recommendations are provided below. This information is based on YASKAWA's complete documentation EZZ006543, latest revision.

9.3. RECOMMENDED LINE FILTERS FOR YASKAWA INVERTERS

The following table shows recommended filters for YASKAWA Inverters.

Recommended Line Filters for VS-606V7 made by RASMI Electronics

A) 200V Single Phase Models

Inverter Model	Model	EN55011 class*	Current (A)	Weight (kg)	Dimension WxDxH
CIMR-V7CCB0P1	RS 1010-V7	B	10	0.6	71 x 45 x 169
CIMR-V7CCB0P2		B			
CIMR-V7CCB0P4		B			
CIMR-V7CCB0P7	RS 1020-V7	B	20	1.0	111 x 50 x 169
CIMR-V7CCB1P5		B			
CIMR-V7CCB2P2	RS 1030-V7	B	30	1.1	144 x 50 x 174
CIMR-V7CCB4P0	RS 1040-V7	B	40	1.2	174 x 50 x 174

* For motor cable length less than 10m

Rated Voltage : AC 250 V single phase
Ambient Temperature : 40°C (max.)

B) 200V Three Phase Models

Inverter Model	Model	EN55011 class*	Current (A)	Weight (kg)	Dimension WxDxH
CIMR-V7CC20P1	RS 2010-V7	B	10	0.8	82 x 50 x 194
CIMR-V7CC20P2		B			
CIMR-V7CC20P4		B			
CIMR-V7CC20P7		B			
CIMR-V7CC21P5	RS 2020-V7	B	20	1.0	111 x 50 x 169
CIMR-V7CC22P2		B			
CIMR-V7CC24P0	RS 2030-V7	B	30	1.1	144 x 50 x 174
CIMR-V7CC25P5	RS 2050-V7	B	50	2.3	184 x 56 x 304
CIMR-V7CC27P5		B			

* For motor cable length less than 10 m

Rated Voltage : AC 250V three phase
Ambient Temperature : 40°C (max.)

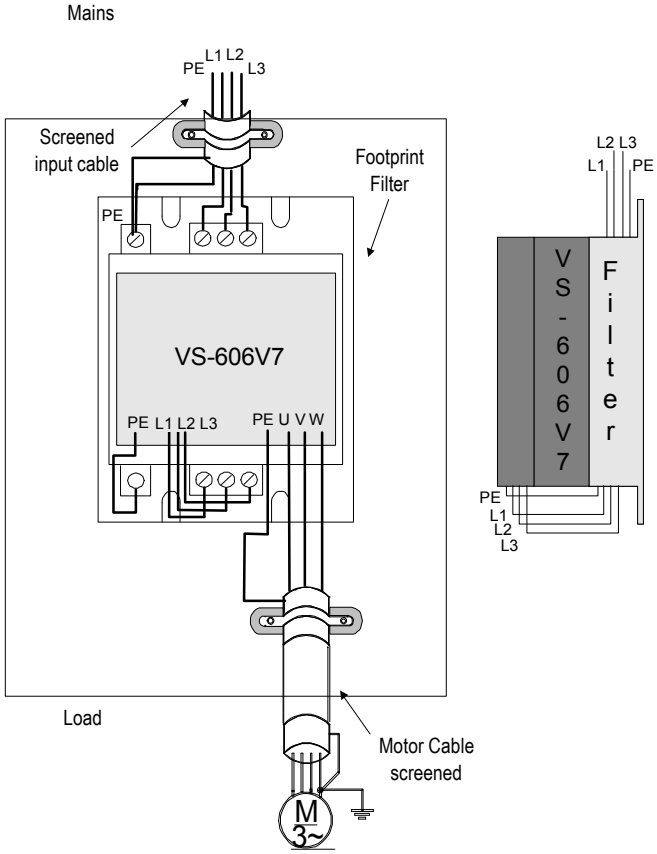
C) 400V Three Phase Models

Inverter Model	Model	EN55011 class*	Current (A)	Weight (kg)	Dimension WxDxH
CIMR-V7CC40P2	RS 3005-V7	B	5	1.0	111 x 45 x 169
CIMR-V7CC40P4		B			
CIMR-V7CC40P7	RS 3010-V7	B	10	1.0	111 x 45 x 169
CIMR-V7CC41P5		B			
CIMR-V7CC42P2		B			
CIMR-V7CC43P0	RS 3020-V7	B	20	1.1	144 x 50 x 174
CIMR-V7CC44P0		B			
CIMR-V7CC45P5	RS 3030-V7	B	30	2.3	184 x 56 x 304
CIMR-V7CC47P5		B			

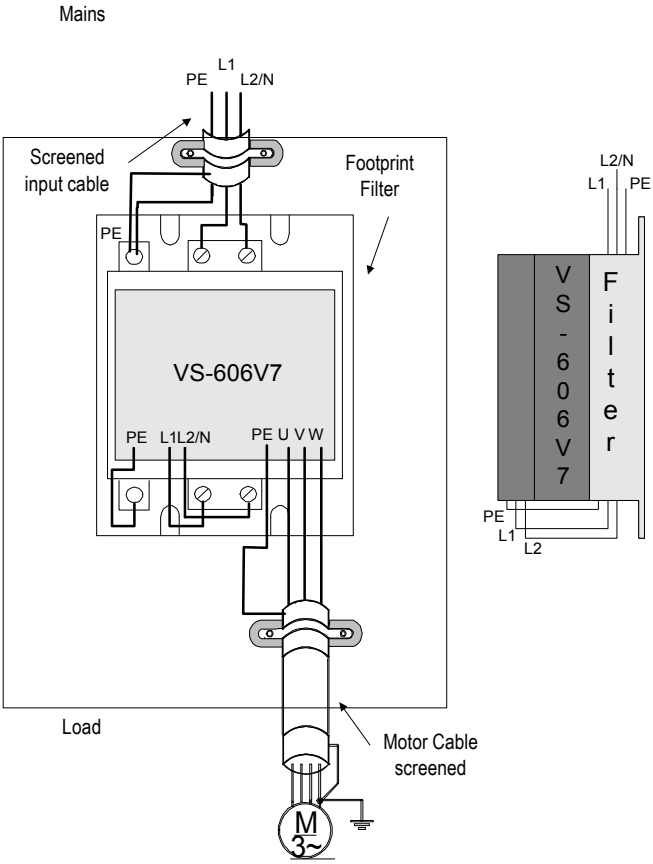
* For motor cable length less than 10m

Rated Voltage : AC 480 V three phase
Ambient Temperature : 40°C (max.)

9.4 INSTALLATION OF LINE FILTER AND INVERTERS
Installation of line filter and VS-606V7, Three-Phase Models



Installation of line filter and VS-606V7, Single-Phase Models



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