V7 High HP
High Frequency (800Hz) Custom Software Release Guide

Software No. VSP015121
(Version for 5.5/7.5kW)
CIMR-V7AMXXXX-026

YASKAWA

Please refer to the standard V7 Instruction Manual for content not described in this document.

1. Revision history

Revision No.	Date	Software No.	Changed item
First version	1/24/01	VSP015121	

2. Modifications from standard software

Changed item	High frequency software	Standard software
Maximum output frequency	800Hz	400Hz
Carrier frequency	• Fixed at 5kHz • Parameter n080 (Carrier frequency selection) deleted	2.5kHz ~ 10kHz, synchronous carrier, selected by parameter n080
Setting unit for all parameters related to frequency Frequency reference and output frequency display units	• Fixed at 0.1Hz. • Parameter n035 (Setting/display unit of frequency reference selection) is deleted	• 0.01Hz (less than 100Hz) • 0.1Hz (above 100Hz) • Selected by parameter n035
Memobus frequency reference/monitor unit selection	n152 selection 1 (0.01Hz) is deleted	This selection is included
Control mode	• Fixed at V/f mode • Parameters for VVC mode are deleted	• V/f or VVC • Set by n002 (Control mode selection)
Torque compensation	n103 (Torque compensation gain) setting unit is 0.01	n103 setting unit is 0.1
V/f setting	Parameter n045 (Base frequency voltage) added	No base frequency voltage parameter
Deleted functions*	• Frequency reference unit selection • Control mode selection • Carrier frequency selection • Slip compensation • Energy savings • Input/output phase loss detection • Dynamic braking resistor overheat protection • Reference loss detection • Multi-function analog input (operator CN2) • PID control • Pulse output monitor	These functions are included

* Please refer to the deleted parameter list on the following page

■ Parameters deleted from standard software

The deleted parameters are not displayed on the digital operator.   If any of these parameters are read via Memobus communication, data of "0" is returned.   These parameters cannot be written via Memobus, although a normal response message will be returned.

No.	Parameter Description
002	Control mode selection
035	Setting/display unit of frequency reference selection
064	Frequency loss detection selection
065	Monitor output type
068	Analog frequency reference gain (CN2-1)
069	Analog frequency reference bias (CN2-1)
070	Analog frequency reference filter time constant (CN2-1)
071	Analog frequency reference gain (CN2-2)
072	Analog frequency reference bias (CN2-2)
073	Analog frequency reference filter time constant (CN2-2)
077	Multi-function analog input function
078	Multi-function analog input signal selection
079	Frequency reference bias
080	Carrier frequency selection
097	Overtorque detection function selection 2
106	Motor rated slip
108	Motor leakage inductance
109	Torque compensation voltage limiter
110	Motor no-load current
111	Slip compensation gain
112	Slip compensation time constant
113	Slip compensation during regenerative operation
128	Selection of PID control
129	PID feedback gain
130	Proportional gain (P)
131	Integral time (I)
132	Derivative time (D)
133	PID offset adjustment
134	Integral (I) upper limit
135	PID output primary delay time constant
136	PID feedback loss selection
137	PID feedback loss detection level
138	PID feedback loss detection time
139	Energy-saving control selection
140	Energy-saving coefficient K2
141	Energy-saving control voltage lower limit (At 60Hz)
142	Energy-saving control voltage lower limit (At 6Hz)
143	Power average time
144	Search operation voltage limit
145	Search operation voltage step (at 100%)
146	Search operation voltage step (at 5%)
150	Pulse train output scaling
158	Motor code
159	Energy-saving voltage upper limit (at 60Hz)
160	Energy-saving voltage upper limit (at 6Hz)
161	Search operation power detection hold width
162	Time constant of power detection filter
163	PID output gain
164	PID feedback value selection
165	Dynamic braking resistor overheat protection selection
166	Input phase loss detection level
167	Input phase loss detection time
168	Output phase loss detection level
169	Output phase loss detection time

3. Parameters related to voltage and frequency

No.	Memobus No.	Name	Description	Default
011	010BH	Maximum output frequency	Unit: 0.1Hz Range: 50.0 ~ 800.0Hz	60.0Hz
012	010CH	Maximum voltage	Unit: 0.1V Range: 0.1 ~ 255.0V**	200.0V**
013	010DH	Base frequency	Unit: 0.1Hz Range: 0.2 ~ 800.0Hz	60.0Hz
014	010EH	Mid. output frequency	Unit: 0.1Hz Range: 0.1 ~ 799.9Hz	1.5Hz
015	010FH	Mid. voltage	Unit: 0.1V Range: 0.1 ~ 255.0V**	12.0V**
016	0110H	Minimum output frequency	Unit: 0.1Hz Range: 0.1 ~ 10.0Hz	1.5Hz
017	0111H	Minimum voltage	Unit: 0.1V Range: 0.1 ~ 50.0V**	12.0V**
024	0118H	Frequency reference 1	Unit: 0.1Hz Range: 0.0 ~ 800.0Hz	6.0Hz
025 ~ 031	0119H ~ 011FH	Frequency reference 2 ~ 8	Unit: 0.1Hz Range: 0.0 ~ 800.0Hz	0.0Hz
032	0120H	Moving slightly frequency reference	Unit: 0.1Hz Range: 0.0 ~ 800.0Hz	6.0Hz
045	012DH	Base voltage	Unit: 0.1V Range: 0.1 ~ 255.0V**	200.0V**
066	0142H	Monitor item selection	0: Output frequency 1: Output current 2: DC bus voltage 3: Unused 4: Unused 5: Output voltage 6: Frequency reference	0
083 ~ 085	0153H ~ 0155H	Jump frequency 1 ~ 3	Unit: 0.1Hz Range: 0.0 ~ 800.0Hz Note: When 0.0Hz is set, the jump frequency function is disabled.	0.0Hz
086	0156H	Width of jump frequency	Unit: 0.1Hz Range: 0.0 ~ 25.5Hz Note: When 0.0Hz is set, the jump frequency function is disabled.	0.0Hz
095	015FH	Frequency detection level	Unit: 0.1Hz Range: 0.0 ~ 800.0Hz	0.0Hz
103	0167H	Torque compensation gain	Unit: 0.01 Range: 0.00 ~ 2.55	0.00
120 ~ 127	0178H ~ 017FH	Frequency reference 9 ~ 16	Unit: 0.1Hz Range: 0.0 ~ 800.0Hz	0.0Hz
152	0198H	Memobus frequency reference and frequency monitor unit	0: 0.1Hz/1 1: This selection is deleted 2: 100%/30000 3: 0.1%/1	0

** The upper limit and default values are twice the indicated values for 460V class units.

4. Function explanation

    (1) Maximum output frequency

        The maximum output frequency is 800Hz.

    (2) Carrier frequency

        The carrier frequency is fixed at 5kHz.

        There is no parameter to set the carrier frequency (n080 in standard software).

    (3) Setting unit for frequency related parameters

        Fixed at 0.1Hz.

        There is no parameter to change the setting/display unit (n035).

        (Soft starter internal calculation resolution is 0.001Hz).

    (4) Display unit for frequency reference/output frequency monitors

        Fixed at 0.1Hz.

        There is no parameter to change the setting/display unit (n035).

    (5) Memobus frequency reference/monitor unit

        It is possible to select 0.1Hz/1, 100%/30000 and 0.1%/1 by parameter n152.

        0.01Hz/1 (n152 = 1 in standard software) cannot be set.

    (6) Control mode

   Control mode is fixed at V/f.

        Parameters related to VVC are removed.

- The deleted parameters are shown below.
  Control mode selection (n002), Overtorque detection function selection 2 (n097), Motor leakage inductance (n108), Torque compensation voltage limit (n109), Slip compensation during regenerative operation (n113).
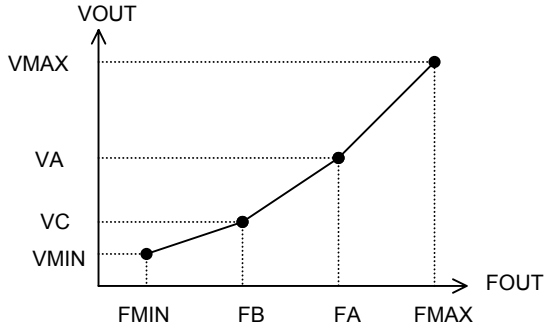
    (7) Torque compensation

        The amount of torque compensation is decreased proportionally to output frequency as follows.

Amount of torque compensation

100%

Output Frequency

120Hz   160Hz
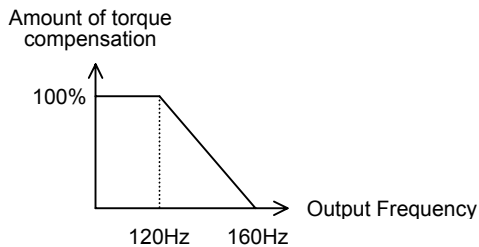
        The amount of torque compensation is a percentage of parameter n103 (Torque compensation gain).

(8) V/f setting

Base frequency voltage (n045) is added.   The V/f pattern is set as shown:

FOUT: Output frequency
VOUT: Output voltage after V/f conversion
FMAX: Maximum output frequency (n011)
VMAX: Mmaximum voltage (n012)
FA: Base frequency (n013)
VA: Base frequency voltage (n045)
FB: Mid. output frequency (n014)
VC: Mid. voltage (n015)
FMIN: Min. output frequency (n016)
VMIN: Min. voltage (n017)

VMAX becomes effective at FMAX = FA.

(9) Deleted functions

The functions deleted from standard software are shown in the table below. The parameters corresponding to these functions are deleted.

Deleted function	Deleted parameter/selection
Frequency reference from operator CN2 terminal	Settings 7,8 of Frequency reference selection (n004) Analog frequency reference gain, bias, and filter time constant (n068 ~ n073)
Frequency reference setting/display Unit selection	Unit selection for frequency reference setting/display (n035)
Frequency reference loss detection	Reference loss detection selection (n064)
Pulse monitor output	Monitor output type selection (n065) and Pulse monitor scaling (n150)
Monitor item selection	Set point "3" and "4" of monitor item selection (n066)
Memobus frequency reference/monitor unit	Setting 1 of Memobus frequency reference and frequency monitor unit (n152)
Multi-function analog input	Multi-function analog input function, signal selection, frequency reference bias value (n077 ~ n079)
PID control	PID control selection, feedback gain, proportional gain, integral time, derivative time, offset adjustment, integral limit, primary delay time constant, feedback loss detection selection, feedback loss detection level/time, output gain, and feedback value selection (n128 ~ n138, n163, n164)
Dynamic braking resistor overheat protection	Dynamic braking resistor overheat protection selection (n165)
Input phase loss detection	Input phase loss detection level and input phase loss detection time (n166, n167)
Output phase loss detection	Output phase loss detection level and output phase loss detection time (n168, n169)
Slip compensation	Motor rated slip, no-laod current, slip compensation gain/time constant (n106, n110 ~ n112)

Deleted function	Deleted parameter/selection
Energy saving control	Energy saving control selection, coefficient K2, voltage lower limits, power average time, search operation voltage limit, search operation voltage steps, motor code, voltage upper limits, search operation power detection hold width, power detection filter time constant (n139 ~ n146, n158 ~ n162)
Vector control	Control mode selection, overtorque detection function selection 2, motor leakage inductance, torque compensation voltage limit, slip compensation during regenerative operation (n002, n097, n108, n109, n113)