

## Start-up Guide Axpert-VT240S

200V System, 1Hp (0.75kW) ~ 60Hp (45kW)  
400V System, 1Hp (0.75kW) ~ 60Hp (45kW)



### NOTICE

1. Read this guide thoroughly before using the Axpert-VT240S, and store in a safe place for reference.
2. Make sure that this guide is delivered to the final user.

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## Introduction

This Start-Up Guide is not meant to replace the complete Instruction Manual. This is a supplementary document intended to provide concise instructions covering the most common installation and configuration options. For detailed instructions, safety precautions, proper mounting, installation, configuration and operation, please refer to the appropriate revision of the Axpert-VT240S complete Instruction Manual.

**WARNING: Only qualified personnel should plan or implement the installation, start-up, operation and maintenance of this equipment. Personnel must read the entire INSTRUCTION MANUAL before attempting to install, operate or troubleshoot the Axpert-VT240S.**

There are ten key elements to the basic installation and start up of a Variable Frequency Drive. In this Start-Up Guide we will cover the following steps. For more information, please refer to the complete Instruction Manual.

1. Physically install the VFD with consideration for ambient temperature and proper cooling, adequate room around the VFD for airflow and mounting properly to protect the VFD for the specific environment. If mounted inside or outside of another enclosure, make sure the environment that the VFD is mounted in is properly evaluated and the correct NEMA rated drive or enclosure is used to suit the application. For example, if outside, a NEMA3R, clean room, NEMA1 or IP20, a dirty, dusty environment, a NEMA12.
2. Check that the VFD is of the correct voltage and current rating to suit the application.
3. Use the required peripheral devices, such as Circuit Breaker or Input Fuses, Line or Load reactors, DC Bus choke, DB resistors, push buttons and selector switches to suit the application.
4. Connect the AC input voltage, AC motor and control wiring using proper sized cables and wires with appropriate grounding and shielding to assure proper operation. Make sure that the requirements of the local electrical codes are adhered to for a proper installation.
5. Power up the VFD and familiarize yourself with the operation of the keypad, such as navigating through the parameters and how to change parameters.

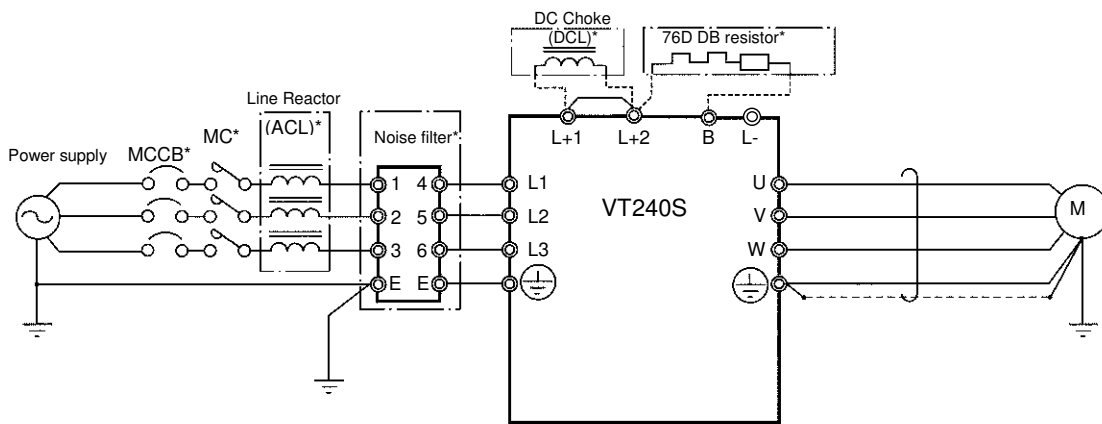
**IMPORTANT NOTE! Whenever undertaking the start-up of a VFD, especially if anyone has been operating the VFD prior to the start-up, it is advisable to set all of the parameter values to their factory default values. By knowing that all of the parameters are at the default values, this can save a lot of troubleshooting later on through mis-operation by having a parameter set to a value not needed by the application. An incorrectly programmed parameter can look like a defective VFD. Setting parameter C09-7 to “9” will reset all user parameters to default. If drive is supplied with some logic, ensure that you have related parameter list to input after default.**

6. Review the parameters and determine which ones need to be changed to meet the requirements of your application. The motor parameters (B00-0 to B00-7 for v/f control and B01-0 to B01-7 for vector control mode) must be entered for precise protection of the AC motor used. The method for start/stop, speed reference, and values for the Accel/decel rate and minimum and maximum speeds are all important parameters to be considered.
7. Start the motor and assure proper rotation and the expected load currents are displayed, (See Parameter D02-0 - Output Current in Amps). Find the read-only parameters that display information like a digital meter to show operational parameters such as input and output voltages, DC Bus voltage, load currents, motor speed and frequency, power used and run time.
8. Review the Fault Codes and what they mean. Look at the Fault History parameters and how the VFD will display the last ten faults and operational values that existed at the time of the fault.
9. Test all of the system operators, such as pushbuttons, remote keypad, selector switches, to assure proper operation and control. Verify starting and stopping and correct speed control.
10. Once the installation is complete and the system operates as desired, It is advised to fully document all parameter value changes, jumper changes and control wiring to simplify troubleshooting or system duplication in the future. This will help to get better technical support if need arises.

## Chapter-1: Installation Procedure

Always confirm the following points before turning ON the power after completing wire.

1. First, visually inspect the VFD and ensure that the VFD has not been damaged in transport. If any damage has occurred, do not energize the VFD, and contact the supplier.
2. Mount the VFD according to the detail Instruction Manual, Chapter 2 “Installation and Wiring”.
3. Be aware of the ambient temperature. Use the VFD within the specified ambient temperature ( $\leq 50^{\circ}\text{C}$ ).
4. Connect the main circuit terminals L1, L2, L3 to the line side and terminals U, V, W to the motor side as shown in Fig.1. Refer Chapter-2 of detail Instruction Manual for the terminal layout of other models. Tighten the terminals with the specified torque as specified in Table-2-3, Chapter-2 of detail Instruction manual for the Axpert-VT240S Series AC Drive. Make sure that none of the terminal section screws are loose and there is no short circuit state in the terminals caused by wire scraps, etc.



**Fig. 1 Example of main circuit wiring (018L, 022H and smaller)**  
 (\* Indicates optional equipment, refer detail IM for other models)

5. Connect the system ground to the ground terminal of the VFD.
6. Remove the coupling to the motor and machine, so that the machine can be run as a single unit.
7. With the 400V Series (075H or higher), there are some sections in the inverter, which operate with an AC power supply, such as fan and magnetic contactor. In this case, set the power changeover connector on the transformer auxiliary PCB according to the power voltage. If this connector is not set correctly, the fan and magnetic contactor could burn.

380V: JP-380	440V: JP-440
400V: JP-400	460V: JP-460
415V: JP-415	480V: JP-480 (factory setting)

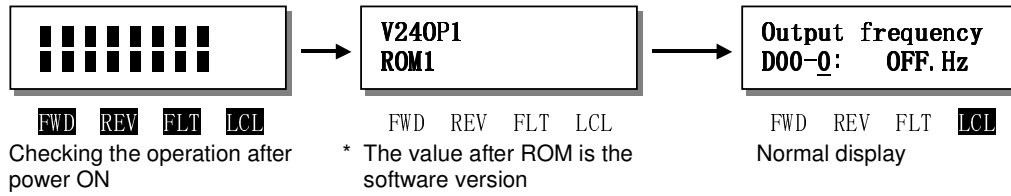
8. Make sure that the power supply is within the tolerable range.
9. Always correctly install the front cover and outer cover before turning the power ON.

## 1-1 Turning Power ON and Starting VT240S

Turn the power ON.

### (1) LCD operation panel (V24-OP1)

The LCD operation panel startup screen is shown below.



### (2) LED operation panel (V24-OP2)

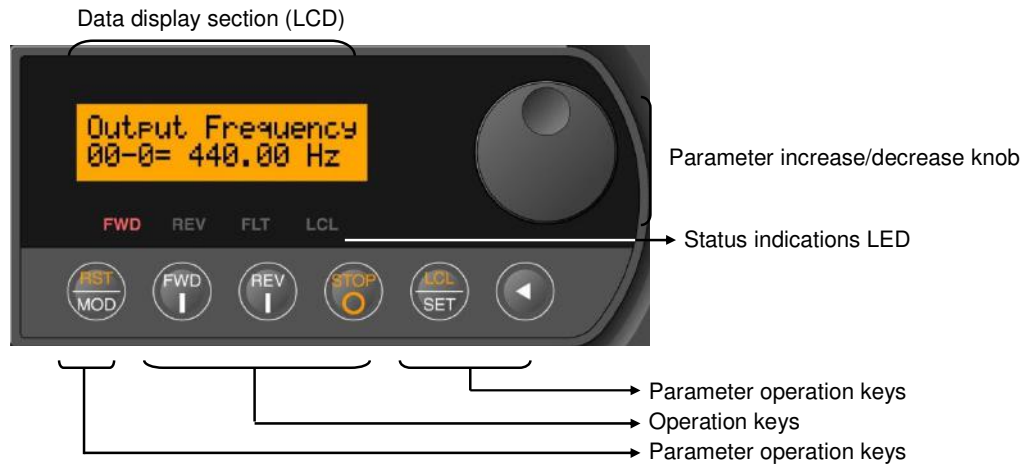
All LEDs on the numeric display will turn ON for a short time, and then "-----", "000-0" and "000" will appear. The "LCL" and "Hz" LEDs will also turn ON.



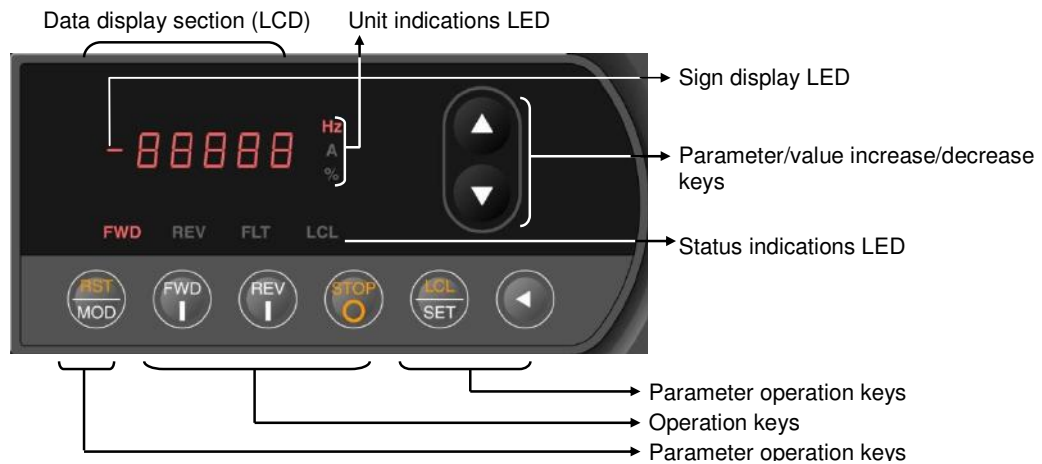
## Chapter-2: Operation Panel (Digital Keypad)

### 2-1 Outline of operation panel types and functions

#### LCD operation panel (V24-OP1)

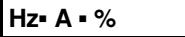





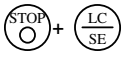




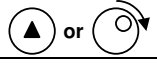
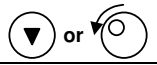






#### LED operation panel (V24-OP2)



#### Status indications LEDs

<b>FWD (Forward)</b>	The drive is running in the forward direction.	When both LEDs flicker simultaneously, it indicates that DC Brake or pre-excitation is in action. If only the "FWD" or "REV" LED is flickering, this indicates that a command in the reverse direction has been received, and the drive is decelerating.
<b>REV (Reverse)</b>	The drive is running in the reverse direction.	
<b>FLT (Fault)</b>	The drive has detected a fault and has stopped. Turns OFF when the $\text{STOP}$ + $\text{RS}$ keys are pressed or the sequence input RESET signal is input.	
<b>LCL (Local)</b>	The drive is in the Local Mode and can be operated from the Operation Panel (FWD, REV and STOP only). When LED is off, the drive is in the Remote Mode and can be controlled from the terminal block. To change Modes between Local and Remote, press $\text{STOP}$ + $\text{LCL}$ . Change this setting in stop condition.	

Unit indication LEDs (LED panel dedicated)	
	Indicates the unit of the parameter value shown on the display.
Minus polarity indication LED (LED panel dedicated)	
	Lights when the number on the display is a minus number.
Operation keys	
	Starts the drive in the forward direction in Local Mode only.
	Starts the drive in the reverse direction in Local Mode only.
	Stops the drive. The motor will either coast to a stop or ramp down to a stop as selected on C00-1.
 Held down for 2 sec.	When this key is held down for two seconds or longer during operation, the motor will coast to stop. During LCL, the motor will first decelerate to a stop, and then coast to a full stop. During RMT, the motor will coast to a stop from the current output frequency/speed.
	Changes control Modes from Local to Remote, or vice-versa. When the drive is in Local Mode, "LCL" LED is on. In default condition, the Local/Remote selection is disabled while the drive is running. Even while the drive is at a stop, this selection cannot be made if operating commands such as RUN, JOG, etc., are being received at the terminal. This lock can be released with Parameter C09-2.
	Resets a fault, putting out FLT LED.
Parameter operation keys · Parameter operation knob	
	Changes the block No. mode displayed on the indicator in the following order each time the key is pressed: Monitor → Parameter A → Parameter B → Parameter C → Utility Mode U.
	Fixes Parameter number or set its values.
	Parameter Select When main & sub-No. Selection method (C11-7=2) is selected for parameter setting method, moves from sub-No. Selection to main No. selection.
	Valve change Moves the digit to increment or decrement.
Parameter increase/decrease key, parameter increase/decrease knob	
	Increases the parameter No. or parameter setting value.
	Decreases the parameter No. or parameter setting value.
	When the parameter is being set with the sub-No. selection method (C11-7=1), increases the parameter's main No.
	When the parameter is being set with the sub-No. selection method (C11-7=1), decreases the parameter's main No.
Operations dedicated for LED panel	
 Held down	Increases the parameter No. or setting value at a fast speed.
 Held down	Decreases the parameter No. or setting value at a fast speed.



## Chapter-3: Initial Start-up and Keypad Operation

The VT240S has various setting items. Some of these include settings that must be made according to the power supply and motor before actually starting operation.  
The methods for the VT240S basic test operation and adjustment are explained in this section.

### 3-1 Selection of Control Mode

With the VT240S, four control modes and two overload modes can be selected. These are set with the parameter C30-0 (control mode selection).

\* C30-0 is set with a 2-digit value ( $f_1$ ,  $f_0$ ).

#### (1) Control modes

Refer to the following table, and select the mode, which suits the application.

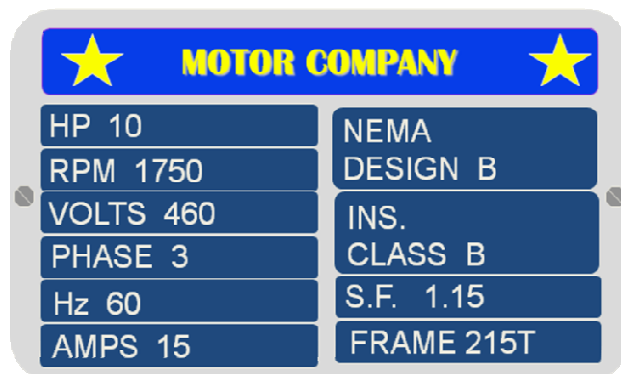
Control mode		Explanation	C30-0
Normal-duty	1) V/f control	The IM is controlled keeping the ratio of voltage and frequency constant.	11
	2) IM sensor-less vector control	The IM is vector-controlled without a speed sensor. The speed can be controlled.	12
	3) IM close loop vector control	PLEASE REFER FULL INSTRUCTION MANUAL	13
	4) PM motor close loop control	PLEASE REFER FULL INSTRUCTION MANUAL	14
Heavy-duty	1) V/f control	The IM is controlled keeping the ratio of voltage and frequency constant.	21
	2) IM sensor-less vector control	The IM is vector-controlled without a speed sensor. The speed can be controlled.	22
	3) IM close loop vector control	PLEASE REFER FULL INSTRUCTION MANUAL	23
	4) PM motor close loop control	PLEASE REFER FULL INSTRUCTION MANUAL	24

Normal-duty setting: Select this when the maximum load rate in respect to the rated load is low. The overload standard will be 120% of the device's rated current for one minute.

Heavy-duty setting: Select this when the maximum load rate in respect to the rated load is high. The overload standard will be 150% of the device's rated current for one minute.

### 3-2 Initialization of motor constants

Input the motor rating parameters. Set the parameters shown in Table 4-2-1. Automatic tuning will automatically change the parameters, so it is recommended to write down the values set in Table 4-2-2 or Table 4-2-3.



The figure to the left shows the information provided on a typical AC motor nameplate. There are several important motor values that will be used to program the drive to provide accurate motor operation and protection. The motor HP will be programmed in KW. To change from HP to KW, multiply by 0.75. The 10HP shown would be  $10 \times 0.75 = 7.5\text{KW}$ . For this case motor, assuming the input voltage  $>460$ , B00-0=6, B00-1=2, B00-2=7.5, B00-3=460,

B00-4=60.00, B00-5=60.00, B00-6=15.0

Table 4-2-1

Applicable mode	Parameter No.	Name	
C30-0 = 11 or 21 B19-0 = 1, 2	B00-0	Rated input voltage setting	[No.]
	B00-1	Max/base frequency simple setting	[Hz]
	B00-2	Motor rated output	[kW]
	B00-3	Rated output voltage	[V]
	B00-4	Maximum frequency <b>(Note 1)</b>	[Hz]
	B00-5	Base frequency <b>(Note 1)</b>	[Hz]
	B00-6	Motor rated current	[A]
	B00-7	Carrier frequency	

**(Note 1)** The maximum frequency cannot be set below the base frequency, and the base frequency cannot be set above the maximum frequency.

### 3-3 Automatic tuning & Test operation

Automatic tuning measures the constants of the connected motor, and automatically adjusts the parameters so that the system is used to the fullest.

The VT240S automatic tuning function performs different measurements for each of the four control modes. Carry out automatic tuning each time the motor being used or the applicable control mode is changed. The automatic tuning mode is set with parameter B19-0 (automatic tuning selection). Refer detail instruction manual for other control modes.

B19-0	Name
1	Simple adjustment mode for v/f control mode
2	High-function adjustment for v/f control mode

Automatic tuning will automatically change the parameters, so it is recommended to write down the values set in Table 4-5-2 or Table 4-5-3.

Table 4-2-2

Applicable mode	Parameter No.	Name	Explanation
C30-0 = 11 or 21 B19-0 = 1	A02-2 A03-0 B02-0, 1 B02-4, 5	Manual torque boost setting DC brake voltage R1: Primary resistance Lσ: Leakage inductance	The basic parameters, such as boost voltage and brake voltage, are adjusted without rotating the motor.

Table 4-2-3





Applicable mode	Parameter No.	Name	Explanation
C30-0 = 11 or 21 B19-0 = 2	A02-2 A03-0 B02-0, 1 B02-4, 5 A02-5 A02-6	Manual torque boost setting DC brake voltage R1: Primary resistance Lσ: Leakage inductance Slip compensation gain Max. torque boost gain	The parameters related to the slip compensation and max. Torque boost are adjusted while rotating the motor. The magnetic saturation characteristics are measured at the voltage boost, and are adjusted to match the max. torque boost.

### 3-3-1 Automatic tuning operation procedures (V/f control mode)



Separate the motor and load, machine, etc., and confirm the safety on the load side.


#### 1) Selecting and executing the automatic tuning mode





Select the automatic tuning mode and execute automatic tuning.

- The operation panel's operation mode must be set to "Local" to execute automatic tuning. Make sure that the "LCL" LED is ON. If not, press the  +  keys, and confirm that the "LCL" LED turns ON.
- Set A05-0 to 1. (Set the expanded setting display ON.)
- Using B19-0 (automatic tuning selection), select the automatic tuning mode according to the working conditions.
- The automatic tuning standby state will be entered when the  key is pressed.
- During the automatic tuning standby state and the automatic tuning execution state, the "LCL" LED will flicker.
- To exit the automatic tuning standby state, press the  key.

#### 2) Starting automatic tuning

Automatic tuning will start when the  key or  key is pressed according to the required rotation direction.

To stop, press the  key or input the emergency stop signal (EMS) from the terminal block.

\* Once automatic tuning starts, all panel operations other than the ,  and   keys are disabled until the operation ends.

#### 3) During automatic tuning execution

The progression state can be confirmed with D22-0.



Upper level: The steps required for tuning are indicated (lit).

Lower level: The finished steps are indicated (lit).  
The step currently being executed is indicated with a flicker.

#### 4) Normal completion of automatic tuning

When the automatic tuning ends normally, the "LCL" LED will change from a flicker to a stable light. The "RUN" LED will change from a stable light to the OFF state.

#### 5) Abnormal completion of automatic tuning

If automatic tuning ends abnormally, the "FLT" LED will turn ON and a message will appear. Investigate and check according to the error codes.

### 3-3-2 Automatic tuning error messages

If automatic tuning ends abnormally, the following message will appear. Investigate and confirm the state following the error code.



$$\overline{R12-n}$$

$$\uparrow$$
 Automatic tuning step

No.	Cause and remedy
n=1	The motor may not be connected correctly. Check the connection. The B00 and B01 parameters may not be set correctly. Check the parameter setting.
n=2	The B00 and B01 parameters may not be set correctly. Check the parameter setting.
n=3	The load and machine may not be separated. Separate the load and machine. Lengthen the acceleration time (A01-0). Lengthen the deceleration time (A01-1). If the motor vibrates, adjust the torque stabilizing gain (B18-2). Normally, the default value (1.00) is set, but increase the setting value in increments of approx. 0.05 according to the state of hunting. Please return to regulated value (1.00) of a set value once, and reduce it by carving about 0.05 when the hunting phenomenon is not controlled even in case of maximum value (4.00).
n=4	The load and machine may not be separated. Separate the load and machine. If the motor vibrates, increase the torque stabilizing gain (B18-2). Normally, the default value (1.00) is set, but increase the setting value in increments of approx. 0.05 according to the state of hunting. Please return to regulated value (1.00) of a set value once, and reduce it by carving about 0.05 when the hunting phenomenon is not controlled even in case of maximum value (4.00).
n=5	When the motor does not stop Increase the acceleration/deceleration time (A01-0, A01-1). When the motor does stop The B00 and B01 parameters may not be set correctly. Check the parameter setting.
n=6	The B00 and B01 parameters may not be set correctly. Check the parameter setting.
n=8	Indicates that the output voltage did not stabilize for 1 second or more during magnetic pole position estimation for the PM motor.
n=9	Indicates that the PM motor magnetic pole estimation did not end normally even after retrying three times.



### 3-4 Test operation (V/f control mode)

When finished with automatic tuning, test run the isolated motor, and make sure that there are no errors. Use the following procedures to test the operation with the operation panel. Refer to Chapter 3 for details on using the operation panel.

- 1) To enable operation with the operation panel, confirm that the "LCL" LED is ON. If not, press the  +  keys, and confirm that the "LCL" LED turns ON.
- 2) Set speed setting input point selection: C02-0= 3 (panel fixed).
















#### CAUTION

The motor will rotate with the next step.  
Confirm the safety around the motor before starting the next step.

- 3) Press the  and display D00-0 on the monitor. Then press the  key. Operation will start. The "FWD" lamp will turn ON, and the display will change from "OFF" to a value display. The value will gradually increase, and after several seconds, will change to "10.00". This is because as the factory settings, the direct setting frequency (A00-0) is set to 10 Hz and the acceleration ramp time 1 (A01-0) is set to 10 sec.

#### CHECK



1. Did the motor run?
2. Is the run direction correct? Check the wiring and operation if abnormal.
3. Is the rotation smooth?



- 4) Press the  key and confirm that the motor runs in reverse.  
**(Note)** Do not carry out this step if a load, which cannot be run in reverse, is connected.
- 5) Press the  key and stop the motor.
- 6) Press the  key. The motor will forward run at the output frequency 10 Hz.  
Change the frequency to 50 Hz with the following operation.
- 7) Press the  key several times. The Display will alternate between "800-0" and "10.00".
- 8) Press the  key once.  
The display will stop at "10.00", and the last digit will flicker.  
This completes the preparation for changing the output frequency. The digit to change can be moved with the  key. The output frequency can be Incremented/Decrementated with the   keys.
- 9) Move the digit with the  key, and using the  key, raise the frequency to 50.00 Hz. Then, press the  key. The output frequency will rise to 50 Hz.  
**(Note)** The operation panel frequency change operation is set to be changed (C11-2=1) in real time at the factory shipment settings, and therefore the output frequency is changed in real time using the   keys, without having to press the  key.  
When the  key is pressed, the current setting value will be saved.




## CAUTION

A 10-second acceleration and 20-second deceleration ramp time are set as defaults. The motor will slowly increase its speed to the set value.

When making a setting (using the   keys), check that the motor operates correctly at each increment of approx. 10Hz.

- 10) Press the  key several times, and display D00-0. When the output frequency ("D00-0" display) reaches 50Hz, press the  key.

The display will decrease to "0.00" in several seconds. The "FWD" or "REV" LED will flicker for two seconds while the DC-brake is applied and the motor will stop.

- 11) Press the  key, and test the reverse run at 50Hz.

**(Note)** Do not carry out this step if a load which cannot be run in reverse is connected.

This completes the test operation with the operation panel.

After this, refer to Chapter 5 and carry out the settings and adjust the load operation to match the user's application.

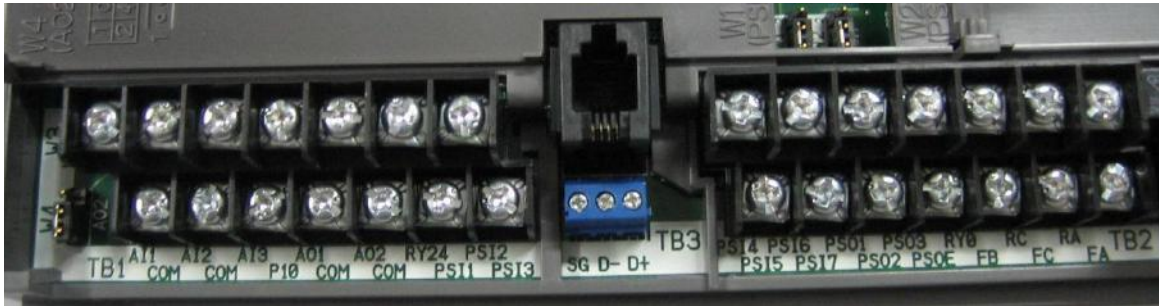
### 12) Acceleration / Deceleration Time





Program the required acceleration time and deceleration time in parameters **A01-0** and **A01-1** respectively. The value programmed is the time from zero to maximum frequency in seconds (Acceleration Time) or maximum frequency to zero in seconds (Deceleration Time).

## Chapter-4: Remote Terminal Operation

### 4-1 Start / Stop Operation from terminal

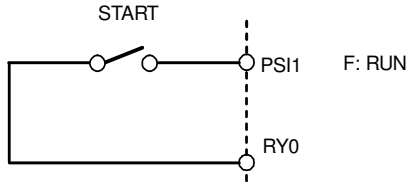
In default condition, basic operation (start/stop) control is from digital operation panel (LCL). The basic operations (start/stop) can be controlled from terminal shown in the below fig.



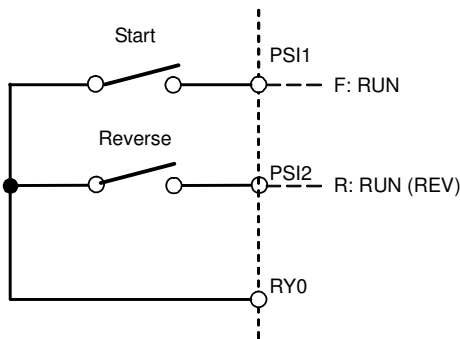
When LCL LED is off, the drive is in the Remote Mode and can be controlled from the terminal block (sequence input signals). To change Modes between Local and Remote, press  and  keys simultaneously  + . **Change this setting while operation is stopped.**

Select start/stop command method using C00-0.

**4-1-1 Two wire start/stop (C00-0=1):** This mode is also called maintained type start/stop. In this method, the F:RUN or R:RUN is through 2-wire. Assign sequence command, F.RUN and R.RUN with C03-0=1 and C03-2=2. In this example, PSI1 is used. Connect two wires to PSI1 and RY0 through switch (NO) for forward run. When the switch is closed, the drive will start. It will stop when the switch is opened.

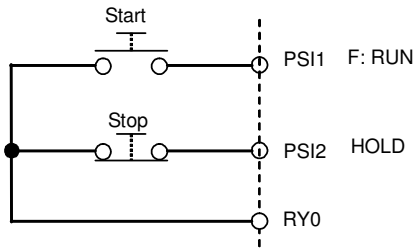


**4-1-2 Two wire start/stop with separate input for direction change (C00-0=2):** Set the sequence command, F.RUN and R.RUN with C03-0=1 and C03-2=2. In this example, PSI1 and PSI2 are used. As in default condition, PSI2 is assigned to RESET in C03-7, set C03-7=0. In this mode, the start/stop is controlled by the switch connected between PSI1 & RY0 and the direction is decided by the status of the switch connected between PSI2 & RY0. If the switch at PSI2 is open, the direction is forward. If the switch at PSI2 is closed, the direction is reverse.



**4-1-3 Three wire start/stop (self hold):** This mode is also called as momentary start/stop as the start/stop operations are through push buttons. Set the sequence command, F.RUN and HOLD with C03-0=1 and C03-5=2. In this example, PSI1 and PSI2 are used. As in default condition, PSI2 is

assigned to RESET in C03-7, set C03-7=0. In this mode, the start operation is controlled by normally open type push button connected between PSI1 & RY0 and stop by normally close type push button connected between PSI2 & RY0. Press start push button to start the drive. Press stop push button to stop the drive.



## 4-2 Speed reference setting selection

The ten types of speed setting inputs shown below can be used.

One of the ten types of inputs can be selected by setting a parameter or with the sequence input.

In default condition, the speed reference is from the digital operation panel (keypad) A00-0. The speed reference can be assigned to any of the following.

### 4-2-1 Keypad (A00-0)

The frequency reference from keypad when the start/stop operation is through terminal can be assigned by setting following parameters.

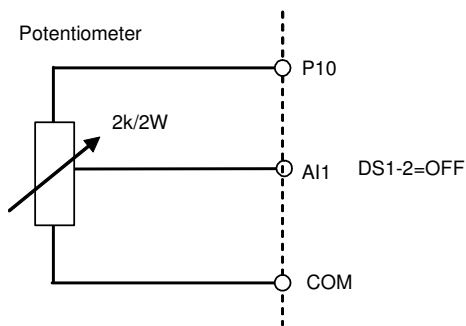
Step-1: Set C03-D=0.

Step-2: Set the desired frequency in A00-0.

### 4-2-2 Potentiometer (or 0-10V)

To assign the potentiometer (or 0-10V) as speed reference, one needs to connect the potentiometer (or 0-10V) to any one analog input from AI1, AI2 or AI3. Follow below steps to use potentiometer (or 0-10V) as speed reference.

Step-1: Select the analog input. In this example, the potentiometer (or 0-10V) is connected to AI1. Set C12-0=1 and DIP switch DS1-2 to OFF position.



Step-2: Assign the selected analog input (AI1, AI2 or AI3) to speed setting input1, speed setting input2 or speed setting input3 using C07-0, C07-1 and C07-2. By default, AI1 is assigned to speed setting input1 (C07-0=2)

Step-3: Set speed setting input using C03-D, C03-E or C03-F. In our example, as we have used speed setting1, we need to set C03-D=16: ON Fixed.

If one requires switching the speed reference between digital operation panel (A00-0) and potentiometer (or 0-10V), assign any sequence input (PSI) to C03-D. For example, PSI5 is assigned to switch reference. Set C03-D=5 and C03-3=0. When PSI5 is open, the speed reference will be through keypad (A00-0) and when PSI5 is closed the speed reference will be potentiometer (or 0-10V).

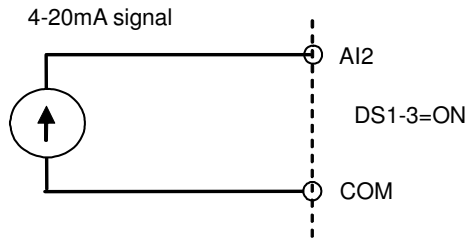


### 4-2-3 Speed reference through 4-20mA

To assign the 4-20mA as speed reference, one needs to connect the 4-20mA analog signal to any one analog input from AI1, AI2 or AI3. Follow below steps to use 4-20mA as speed reference.

Step-1: Select the analog input. In this example, the 4-20mA analog signal is connected to AI2. Set C12-4=2 and DIP switch DS1-3 to ON position.

Step-2: Assign the selected analog input (AI1, AI2 or AI3) to speed setting input1, speed setting input2 or speed setting input3 using C07-0, C07-1 and C07-2. By default, AI2 is assigned to speed setting input2 (C07-1=3)

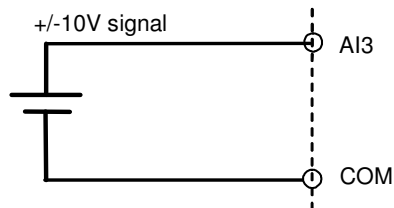


Step-3: Set speed setting input using C03-D, C03-E or C03-F. In our example, as we have used speed setting2, we need to set C03-E=16: ON Fixed.

If one requires switching the speed reference between digital operation panel (A00-0) and 4-20mA), assign any sequence input (PSI) to C03-E. For example, PSI5 is assigned to switch reference. Set C03-E=5 and C03-3=0. When PSI5 is open, the speed reference will be through keypad (A00-0) and when PSI5 is closed the speed reference will be 4-20mA.

### 4-2-4 Speed reference through $\pm 10V$ signal

To assign the  $\pm 10V$  signal as speed reference, one needs to connect the  $\pm 10V$  analog signal to any one analog input from AI1, AI2 or AI3. Follow below steps to use  $\pm 10V$  signal as speed reference.



Step-1: Select the analog input. In this example, the  $\pm 10V$  analog signal is connected to AI3.

Step-2: Assign the selected analog input (AI1, AI2 or AI3) to speed setting input1, speed setting input2 or speed setting input3 using C07-0, C07-1 and C07-2. Assign AI3 to speed setting input3 (C07-2=4)

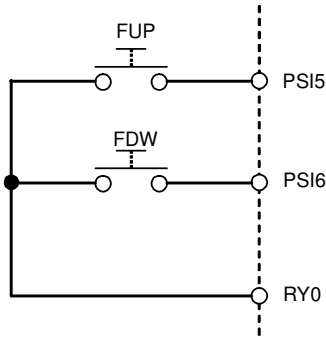
Step-3: Set speed setting input using C03-D, C03-E or C03-F. In our example, as we have used speed setting3, we need to set C03-F=16: ON Fixed.

If one requires switching the speed reference between digital operation panel (A00-0) and  $\pm 10V$  signal), assign any sequence input (PSI) to C03-F. For example, PSI5 is assigned to switch reference. Set C03-F=5 and C03-3=0. When PSI5 is open, the speed reference will be through keypad (A00-0) and when PSI5 is closed the speed reference will be  $\pm 10V$  signal.

### 4-2-5 Speed reference through Increment / Decrement push buttons (static pot or electronic pot)

To assign the Increment / Decrement push buttons as speed reference, one needs to connect two push buttons to PSI for increment and decrement the speed reference. Follow below steps to use static pot as speed reference.

Step-1: Assign FUP and FDW to any PSI using C04-7 and C04-8 respectively. In this example, PSI5 is assigned to Increment push button and PSI6 is assigned to Decrement push button. Set C04-7=5, C04-8=6, C03-3=0 and C03-4=0.



Step-2: Set C03-D=0.

Note that the speed reference will be incremented or decremented from the A00-0 set value. So, set the initial desired speed reference to A00-0. When the ON state continues, the frequency is incremented/ decremented with the currently valid acceleration time.

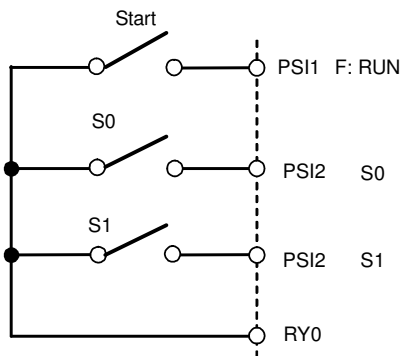
#### 4-2-6 Use of Multiple Preset Speed reference

To assign multiple preset speed reference, one needs to connect selector switches to digital inputs (PSI) to select the desired preset speed. Follow below steps to use preset speed reference. This drive has facility to select the speed as per the binary logic as well as direct method. Both the methods are described here. In this example, only two digital inputs PSI2 and PSI3 are used for preset speed setting. PSI1 is used for start.

##### Binary method for speed selection:

Step-1: Connect selector switch for start between PSI1 & RY0.

Step-2: Assign PSI2 to S0 by setting C04-2=2 and PSI3 to S1 by setting C04-3=3. As PSI1 and PSI2 are assigned to other functions in default conditions, clear them first by setting C03-1=0 and C03-7=0. Connect selector switches S0 and S1 between PSI2 & RY0 and PSI3 & RY0 respectively.



Step-3: Set C04-0=16

Step-4: Set B11-8=1 for binary method for speed selection

Step-5: Set the desired frequency in parameter B11-0, B11-1 and B11-2

Step-6: When both the switches are OFF, the previous set frequency will be selected.

Step-7: Keep only S0 switch to ON position, the frequency set in B11-0 will be selected.

Step-8: Keep only S1 switch to ON position, the frequency set in B11-1 will be selected.

Step-9: When both the switches are kept to ON position, the frequency set in B11-2 will be selected.

Below table shows how the multiple preset speed (frequency) can be selected using more digital inputs (PSI1 ~ PSI7). **Refer detail instruction manual for more detail and timing diagrams on this application.**

**(1) For binary mode (B11-8 = 1)**

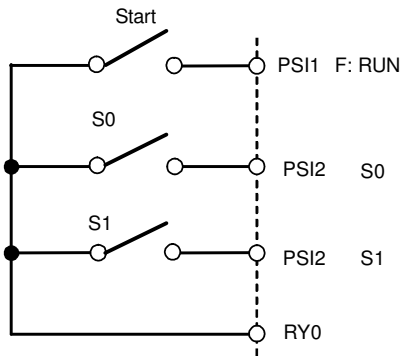
Sequence command					Selected frequency
SE	S3	S2	S1	S0	
*	*	OFF	OFF	OFF	B11-0
		OFF	OFF	ON	B11-1
		OFF	ON	OFF	B11-2
		OFF	ON	ON	B11-3
		ON	OFF	OFF	B11-4
		ON	OFF	ON	B11-5
		ON	ON	OFF	B11-6
		ON	ON	ON	B11-7

\*: SE and S3 are not used.

**Direct method:**

Step-1: Connect selector switch for start between PSI1 & RY0.

Step-2: Assign PSI2 to S0 by setting C04-2=2 and PSI3 to S1 by setting C04-3=3. As PSI1 and PSI2 are assigned to other functions in default conditions, clear them first by setting C03-1=0 and C03-7=0. Connect selector switches S0 and S1 between PSI2 & RY0 and PSI3 & RY0 respectively.



Step-3: Set C04-0=16

Step-4: Set B11-8=2 for direct method

Step-5: Set the desired frequency in parameter B11-0 and B11-1

Step-6: When both the switches are OFF, the previous set frequency will be selected.

Step-7: Keep only S0 switch to ON position, the frequency set in B11-0 will be selected.

Step-8: Keep only S1 switch to ON position, the frequency set in B11-1 will be selected.

The table shows how the multiple preset speed (frequency) can be selected using more digital inputs (PSI1 ~ PSI7). **Refer detail instruction manual for more detail and timing diagrams on this application.**

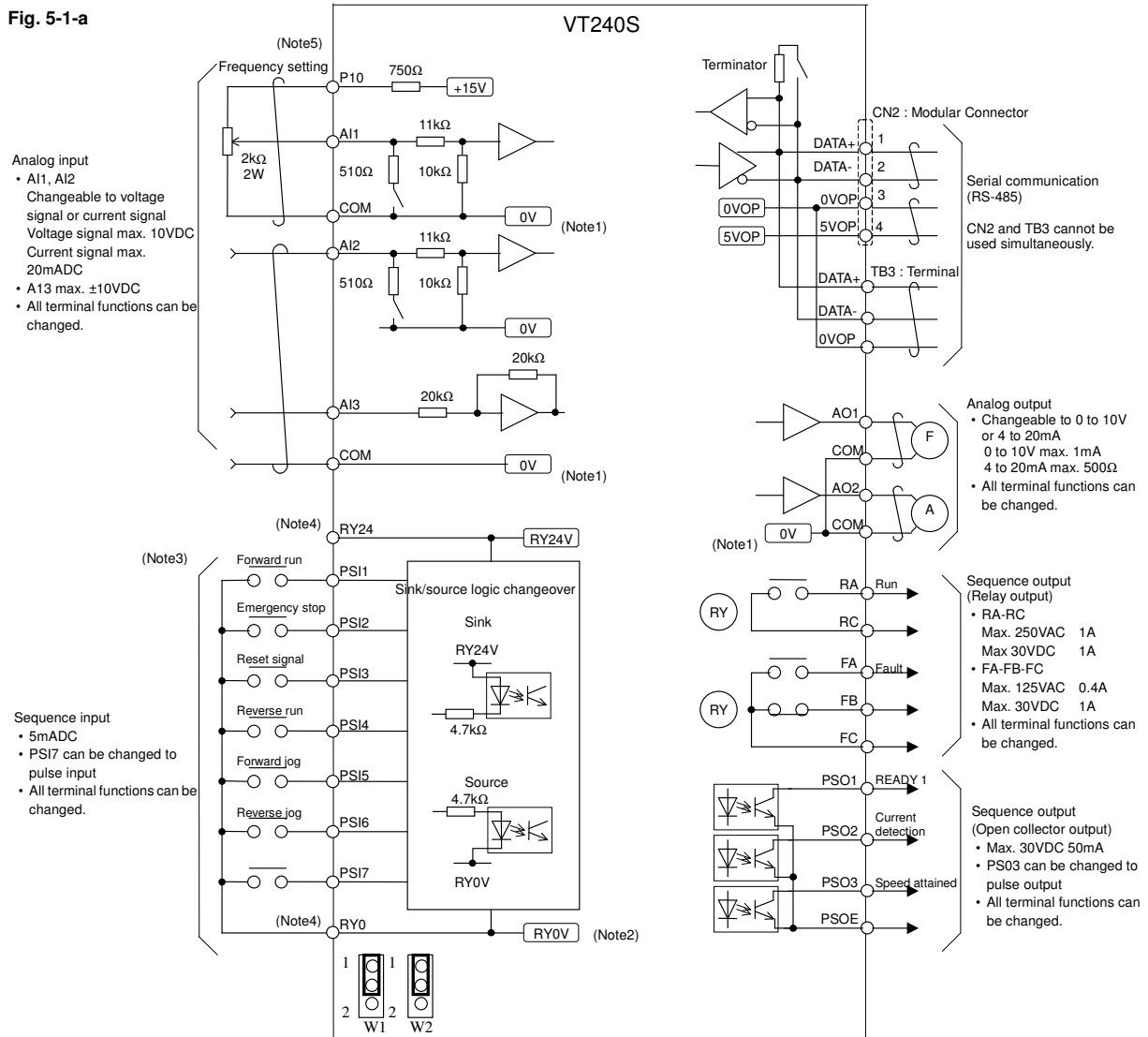
**(2) For direct select mode (B11-8 = 2)**

Sequence command					Selected frequency
SE	S3	S2	S1	S0	
OFF	OFF	OFF	OFF	OFF	Previous values
OFF	OFF	OFF	OFF	ON	B11-0
OFF	OFF	OFF	ON	OFF	B11-1
OFF	OFF	ON	OFF	OFF	B11-2
OFF	ON	OFF	OFF	OFF	B11-3
ON	OFF	OFF	OFF	OFF	Previous values
ON	OFF	OFF	OFF	ON	B11-4
ON	OFF	OFF	ON	OFF	B11-5
ON	OFF	ON	OFF	OFF	B11-6
ON	ON	OFF	OFF	OFF	B11-7

When S0 to S3 are all OFF, or when two or more are set between S0 and S3, the previous values will be held. If there are no previous values because the power has been turned ON, etc., "0" will be set.

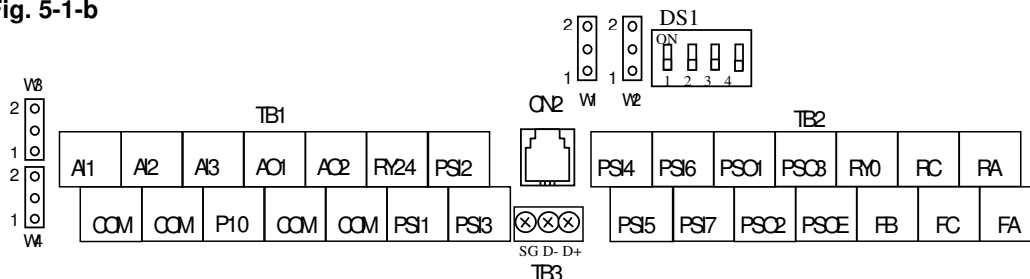
# Chapter-5: Control Input/Output

Fig. 5-1-a



(Notes)

Fig. 5-1-b



1. Four COM terminals are internally connected.
2. No connection shall be made between RY0, COM and 0VOP since this section is insulated.
3. This diagram is an example of the sink logic connection.
4. RY24 and RY0 must not be shorted.
5. P10 and COM must not be shorted.

Dip switch DS1 positions information

No.	OFF	ON	Signal
1	OPEN	120Ω	Standard serial terminator changeover
2	V1	I1	AI1 voltage, current changeover
3	V2	I2	AI2 voltage, current changeover
4	PS03	PULSE	Sequence output, pulse train output changeover

All switches are set to OFF as the default.

Jumper W1, W2, W3, W4 position information

No.	1	2	Signal
W1	SINK	SOURCE	PSI1~6 sink, source changeovers
W2	SINK	SOURCE	PSI7 sink, source changeover
W3	voltage	current	AO1 voltage, current changeover
W4	voltage	current	AO2 voltage, current changeover

All jumpers are set to 1 as the default.

## Chapter-6: Control Functions & Parameter Settings

### 6-1 Monitor parameters

The monitor mode sequentially displays the frequency, power supply, etc., parameters recognized by the VT240S.

The symbols shown at the right of the list show the application of each parameter as shown below.

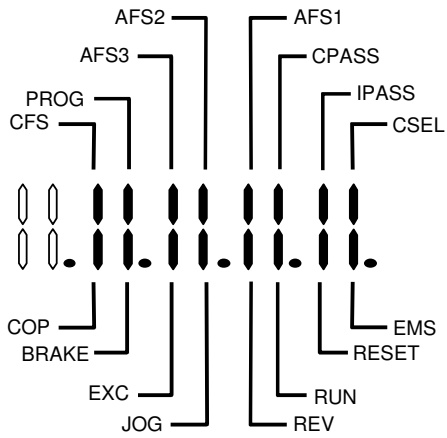
V/f: Indicates parameters that apply for V/f control (constant torque, variable torque) (C30-0: f0 = 1).

VEC: Indicates parameters that apply for IM speed sensor-less vector control and IM speed vector control with sensor (C30-0: f0 = 2, 3).

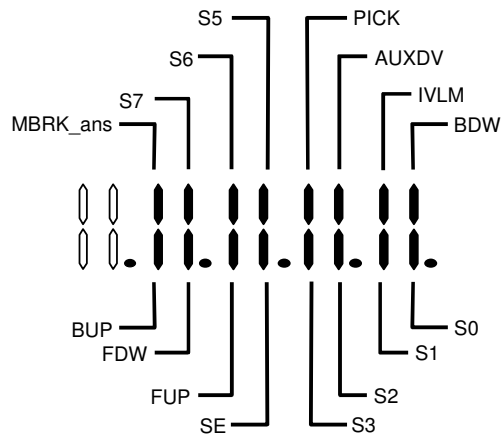
PM: Indicates parameters that apply for control mode with PM motor sensor (C30-0: f0 = 4).

**Monitor parameters list**

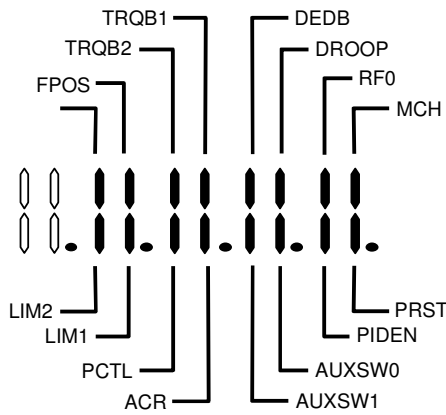
No.	Parameter	Unit	Remarks	Application		
				V/f	VEC	PM
<b>D00 – Output frequency monitor</b>						
0	Output frequency in Hz	Hz	⓪ will display when the gate is closed.	○	○	○
1	Output frequency in %	%	⓪ displays while the DC brake is in action. ⓪ is displayed during pick up.			
2	Motor speed in min <sup>-1</sup>	min <sup>-1</sup>	The forward run direction is displayed with the + polarity, and the reverse run direction with the – polarity. (This is displayed even when stopped.)		○	○
3	Motor speed in %	%				
<b>D01 – Frequency setting monitor</b>						
0	Set frequency in Hz	Hz	The currently selected frequency setting value is displayed.	○		
1	Set frequency in %	%	The max. frequency is displayed as 100%.	○		
<b>D02 – Current monitor</b>						
0	Output current (Amps)	A	⓪ will display when the gate is closed.	○	○	○
1	Output current (%)	%	The motor rated current is displayed as 100%.	○	○	○
4	Heatsink temperature	°C	Depending on the capacity, OHT.1 functions at 95°C or 120°C or more.	○	○	○
<b>D02 – Current monitor</b>						
7	U phase output current amps	A	⓪ will display when the gate is closed. The correct value is not displayed during pick-up or during automatic tuning.	○	○	○
8	V phase output current amps	A	⓪ will display when the gate is closed. The correct value is not displayed during pick-up or during automatic tuning.	○	○	○
9	W phase output current amps	A	⓪ will display when the gate is closed. The correct value is not displayed during pick-up or during automatic tuning.	○	○	○
<b>D03 – Voltage monitor</b>						
0	DC voltage	V	Displays the voltage of the DC link circuit in the main circuit.	○	○	○
1	Output voltage (command)	V	Displays output voltage command. The display may differ from the actual output voltage. It depends on the power supply voltage. ⓪ will display when the gate is closed.	○	○	○
2	Output power	kW	Displays the inverter's output power. ⓪ will display when the gate is closed.	○	○	○
3	Carrier frequency	kHz	The current carrier frequency is displayed.	○	○	○
<b>D05 – Minor fault monitor</b>						
0	Minor fault monitor		The internal minor fault status will display. The correspondence of each LED segment and signal is shown in the next page.	○	○	○
1	Hardware detection fault status		The status of the fault signal detected by the hardware is displayed.	○	○	○



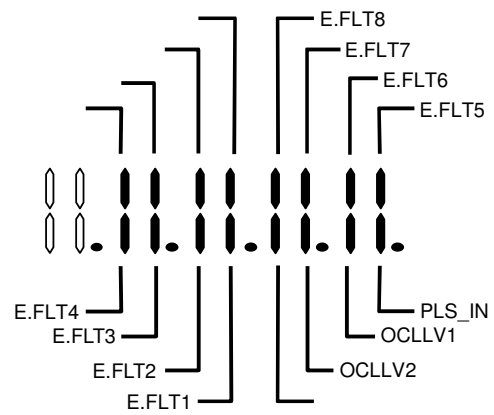
**Sequence input (D04-0)**



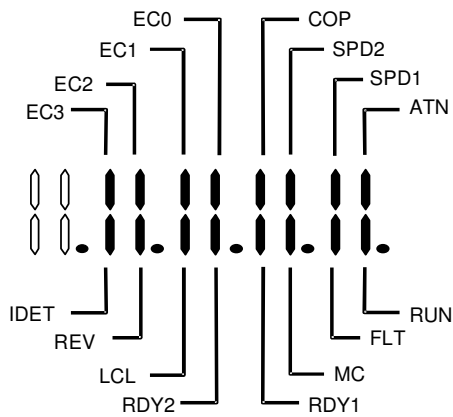
**Sequence input (D04-1)**



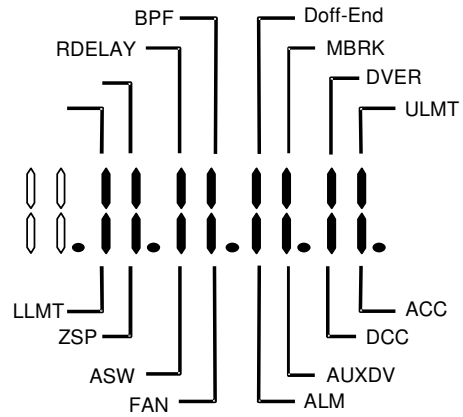
**Sequence input (D04-2)**



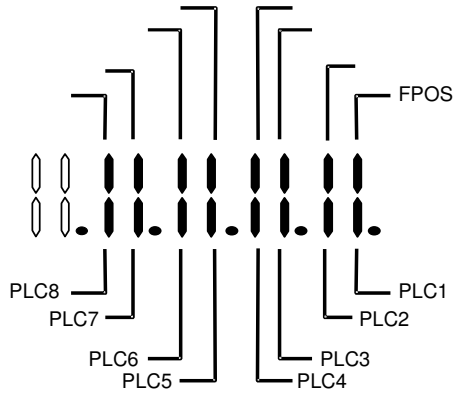
**Sequence input (D04-3)**



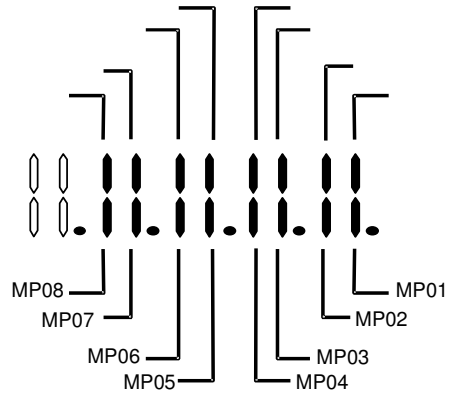
**Sequence output (D04-4)**



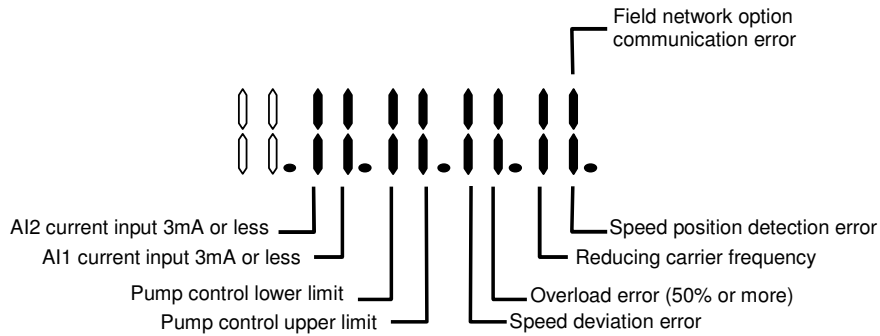
**Sequence output (D04-5)**



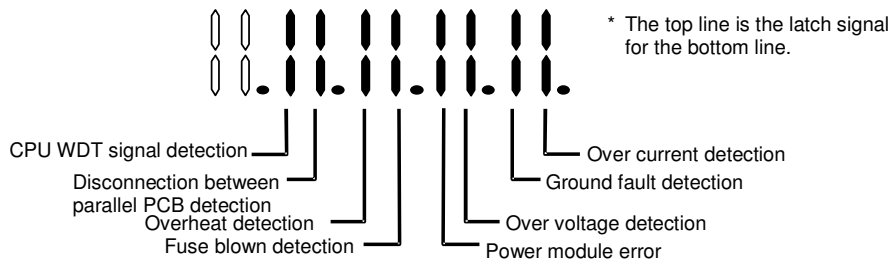
**Sequence output (D04-6)**



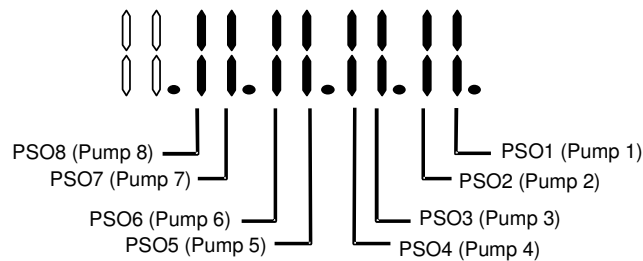
**Sequence output (D04-7)**



**Minor fault monitor (D05-0)**



**Hardware detection fault status displays (D05-1)**



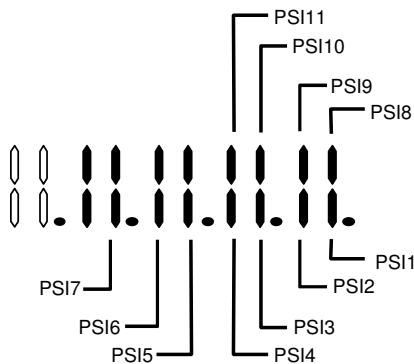
**Pump operation status monitor (D07-0)**



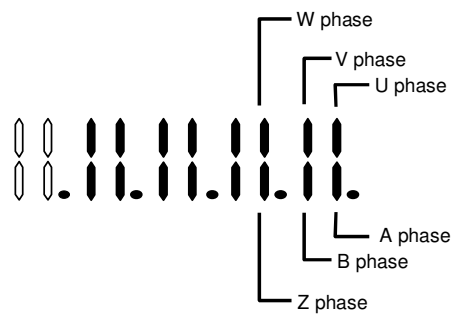
### Monitor parameters list

No.	Parameter	Unit	Remarks	Application		
				V/f	VEC	PM
<b>D08 – Input display</b>						
3	AI1 input voltage display	V	The voltage on AI1, 2 and 3 terminals will be displayed in a unit of 0.01V. When the AI terminals are for current setting, "0" will be displayed.	○	○	○
4	AI2 input voltage display					
5	AI3 input voltage display					
6	AI1 input current display	mA	The current on the AI1 and AI2 terminals will be displayed in a unit of 0.01mA. When the AI terminals are for voltage setting, "0" will be displayed.	○	○	○
7	AI2 input current display					
8	AI1 input display (in %)	%	The current or voltage on the AI1, 2 and 3 terminals will be displayed in % against 10V and 20mA as 100%.	○	○	○
9	AI2 input display (in %)					
A	AI3 input display (in %)					
<b>D20 – Extended monitor</b>						
0	Fault history monitor		The fault history reference mode will display when <b>[SET]</b> is pressed.	○	○	○
1	Minor failure past record indication		The minor fault history reference mode will display when <b>[SET]</b> is pressed.	○	○	○
2	Parameter A, B and C modification list entry		The mode for referring to and changing parameters that differ from the default value will display <b>[SET]</b> is pressed.	○	○	○
<b>D21 – Maintenance monitor</b>						
0	Cumulative conductivity time	h.	The cumulative power ON time after product shipment will be counted and displayed.	○	○	○
1	Cumulative run time	h.	The cumulative run time after product shipment will be counted and displayed.	○	○	○
2	CPU version		Display for maker control.	○	○	○
3	ROM version		Display for maker control.	○	○	○
<b>D22 – Automatic tuning</b>						
0	Automatic tuning progression display		The progression state of automatic tuning is displayed. The correspondence of the LED's segments and signals is shown in the previous section.	○	○	
<b>D30 – Hardware monitor</b>						
0	Inverter type		This indicates the inverter type.	○	○	○
1	Option PCB		Displays the mounted option PCB. The correspondence of the LED segments and signals is shown in the previous page.	○	○	○

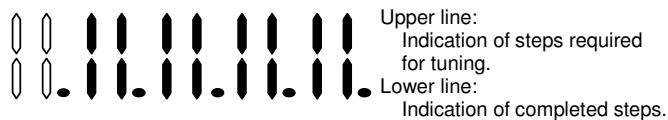
Note) D30-2 to D30-5 available from the version 9457.0+9458.3



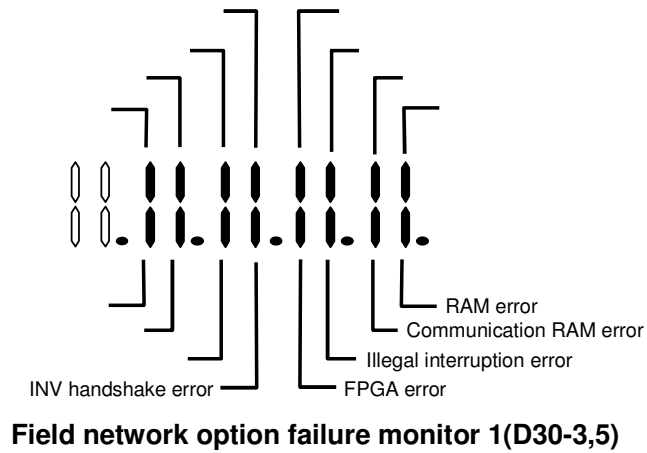
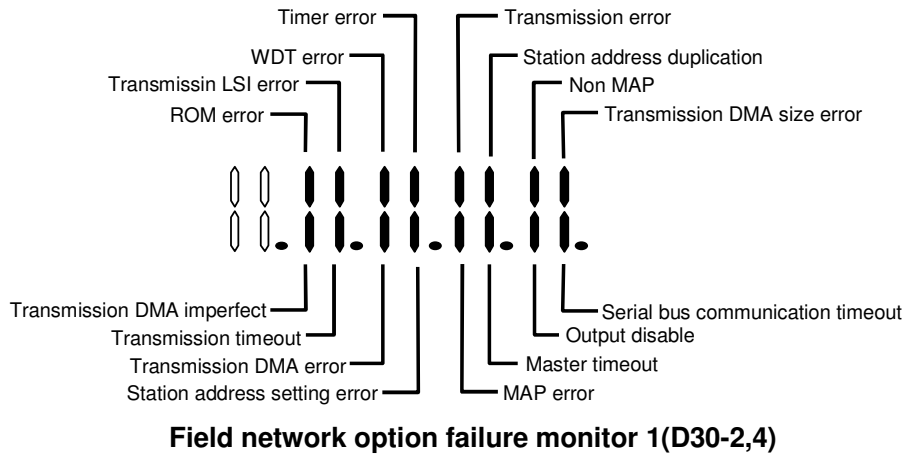
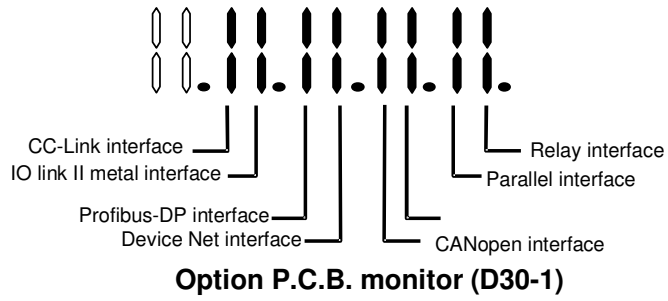
Sequence input terminal status(D08-B)



Speed detection signal input status(D08-C)



Automatic tuning progress state (D22-0)



## 6-2 Block-A parameters

The parameters used most frequently have been grouped in Block-A.

V/f: Indicates parameters that apply for V/f control (constant torque, variable torque) (C30-0: f0 = 1).

VEC: Indicates parameters that apply for IM speed sensor-less vector control and IM speed vector control with sensor (C30-0: f0 = 2, 3).

PM: Indicates parameters that apply for control mode with PM motor sensor (C30-0: f0 = 4).

\*△ Indicates a parameter which functions during drive operation or when the V/f control is active during automatic tuning.

RWE: Displays the parameters that can be changed during operation.

Reference page: The number of the page providing detailed explanations is indicated.

### Block-A parameters list

No.	Parameter	Min.	Max.	Default (Unit)	Function	Application				Ref. page
						V/f	VEC	PM	RWE	
<b>A00 – Frequency setting</b>										
0	Local frequency setting	0.10	Max. frequency	10.00 (Hz)	This is the frequency set from the operation panel.	○			○	6-87
1	Jogging frequency	0.10		5.00 (Hz)	This is the frequency setting for jogging.	○			○	6-87
<b>A01 – Acceleration/deceleration time</b>										
0	Acceleration time – 1	0.1	6000.0	10.0 (s)	The value can be displayed in units of 0.1 or 10 times as set on B10-5.	○	○	○	○	6-87
1	Deceleration time – 1	0.1	6000.0	20.0 (s)	The time to reach the max. Frequency or max. speed from 0 is set.	○	○	○	○	6-87
<b>A02 – Torque boost</b>										
0	Manual torque boost selection	1.	2.	2.	1: Disable = 2: Enable	○				6-88
1	Automatic torque boost selection	1.	2.	1.	1: Disable = 2: Enable	○				6-88
2	Manual torque boost setting	0.00	20.00	Inverter rating (%)	Set the boost voltage at 0Hz. This is automatically adjusted by the automatic tuning.	○			○	6-90
<b>A03 – DC Brake</b>										
0	DC braking voltage	0.01	20.00	Inverter rating (%)	This is automatically adjusted by the automatic tuning. When setting manually, monitor the output voltage and change the setting in increments of 1% or less.	○			○	6-87
1	DC braking time	0.0	20.0	2.0 (s)	Set the time to apply the DC brakes.	○	○	○	○	6-87
2	DC braking current	0.	150.	50. (%)	This is used instead of the DC brake voltage in the vector mode and PM mode. This is not adjusted with automatic tuning.		○	○	○	6-87
<b>A05 – Parameter B and C indicatory skip</b>										
0	Parameter B and C extended setting	1.	2.	2.	= 1: Display, = 2: Skip	○	○	○	○	6-91
1	Parameter B and C software option function	1.	2.	2.	= 1: Display, = 2: Skip	○	○	○	○	6-91
2	Parameter B and C hardware option function	1.	2.	2.	= 1: Display, = 2: Skip	○	○	○	○	6-91

### 6-3 Block-B parameters

The Block-B parameters are divided into the basic functions, extended functions and software option functions.

**Block-B parameters list**

No.	Parameter	Min.	Max.	Default (Unit)	Function	Application				Ref. page																																															
						V/f	VEC	PM	RWE																																																
<b>B00 – Output rating (V/f control)</b>																																																									
0	Rated input voltage setting (V/f control)	1.	7.	7.	Select the rated input voltage from the following table.	<input type="radio"/>				6-94																																															
					<p><b>Small size (Note 1)</b></p> <table border="1"> <thead> <tr> <th>Value</th> <th>200V system</th> <th>400V system</th> </tr> </thead> <tbody> <tr><td>1</td><td>to 200V</td><td>to 380V</td></tr> <tr><td>2</td><td>to 200V</td><td>381 to 400V</td></tr> <tr><td>3</td><td>201 to 220V</td><td>401 to 415V</td></tr> <tr><td>4</td><td>201 to 220V</td><td>416 to 440V</td></tr> <tr><td>5</td><td>221 to 230V</td><td>441 to 460V</td></tr> <tr><td>6</td><td>231 to 240V</td><td>461 to 480V</td></tr> <tr><td>7</td><td>221 to 230V</td><td>381 to 400V</td></tr> </tbody> </table> <p><b>Large size (Note 2)</b></p> <table border="1"> <thead> <tr> <th>Value</th> <th>200V system</th> <th>400V system</th> </tr> </thead> <tbody> <tr><td>1</td><td>to 200V</td><td>to 380V</td></tr> <tr><td>2</td><td>to 200V</td><td>381 to 400V</td></tr> <tr><td>3</td><td>201 to 220V</td><td>401 to 415V</td></tr> <tr><td>4</td><td>201 to 220V</td><td>416 to 440V</td></tr> <tr><td>5</td><td>221 to 230V</td><td>441 to 460V</td></tr> <tr><td>6</td><td>231 to 240V</td><td>461 to 480V</td></tr> <tr><td>7</td><td>221 to 230V</td><td>381 to 400V</td></tr> </tbody> </table>	Value	200V system	400V system	1	to 200V	to 380V	2	to 200V	381 to 400V	3	201 to 220V	401 to 415V	4	201 to 220V	416 to 440V	5	221 to 230V	441 to 460V	6	231 to 240V	461 to 480V	7	221 to 230V	381 to 400V	Value	200V system	400V system	1	to 200V	to 380V	2	to 200V	381 to 400V	3	201 to 220V	401 to 415V	4	201 to 220V	416 to 440V	5	221 to 230V	441 to 460V	6	231 to 240V	461 to 480V	7	221 to 230V	381 to 400V				
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1	Max./base frequency simple setting (V/f control)	0.	9.	1.	Select the output frequency rating from the combination below.	<input type="radio"/>				6-94																																															
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2	Motor rated output (V/f control)	0.10	750.00	Inverter rating (kW)	The motor rated output at the base frequency is set.	<input type="radio"/>				6-94																																															
3	Motor rated voltage (V/f control)	39.	480.	230. or 400. (V)	DC-AVR does not operate when set to 39. The input voltage equals the output voltage at the base frequency. DC-AVR operates so that the set voltage is attained at the base frequency when not set to 39. When the rated input voltage setting (B00-0) is changed, this data is also changed to the rated input voltage value. This cannot be set above the rated input voltage.	<input type="radio"/>				6-95																																															
4	Max. frequency (Fmax) (V/f control)	Fbase or 3.00	Fbase *7 or 440.00	50.00 (Hz)	When "B00-1" is a value other than 0, this will be rewritten with the data set in the simple setting.	<input type="radio"/>				6-95																																															
5	Base frequency (Fbase) (V/f control)	Fmax/7 or 1.00	Fmax or 440.00	50.00 (Hz)		<input type="radio"/>				6-95																																															
6	Motor rated current (V/f control)	Inverter rating × 0.3	Inverter rating	Inverter rating (A)	This is the reference value for the over current limit, OLT, current % display, analog input and output.	<input type="radio"/>				6-95																																															
7	Carrier frequency (Small size) (V/f control)	1.0	21.0	17.0	The noise can be lowered by changing the carrier frequency and control method. This can be changed while running. 1.0 to 15.0: Monotone sound method (Carrier frequency: 1.0 to 15.0kHz) 15.1 to 18.0: Soft sound method 1 (Basic carrier frequency: 2.1 to 5.0kHz) 18.1 to 21.0: Soft sound method 2 (Basic carrier frequency: 2.1 to 5.0kHz)	<input type="radio"/>		<input type="radio"/>		6-96																																															

## 6-4 List of key parameters

Listed here are the key parameters used to set up the drive to meet the requirements of most applications. Typically, only a few of these parameters are changed from their default values. Please refer to the detail Instruction Manual for the complete parameter listing and Fault Codes.

Para No.	Name	Description
D00-D30:	Monitor Group	Read-only Drive Monitor parameters
D00-0	Output Frequency	Output Frequency being applied to the AC motor in Hz.
D00-4	Motor Speed	Speed of the motor in RPM, revolutions per minute.
D01-0	Set Frequency	The active speed reference is displayed
D02-0	Output Current	Current that is being supplied to the motor in Amps
D02-1	Output Current	Current that is being supplied to the motor in % of the motor's Full Load Amp (FLA) rating
D02-4	Heatsink temperature	Displays the heat sink temperature in °C
D03-0	DC voltage	Displays the voltage of the DC link circuit in the main circuit
D03-1	Output Voltage	Calculated output voltage
D03-2	Output power	Displays inverter's output power
D20-0	Fault history monitor	Provides fault history for last 4 faults and information of 5 important parameters at the time of fault.
D20-2	Non-default parameter list	This parameter is used to see the non-default parameters list and their value.
A00-0	Local Frequency Setting	Setting the motor speed with the keypad
A00-1	Jog Frequency	Frequency run when Jog input is used
A01-0	Acceleration Time – 1	Time to accelerate from Zero to Max Speed in seconds
A01-1	Deceleration Time – 1	Time to decelerate from Max Speed to Zero in seconds
A05-0	Parameter B and C extended setting	Allows to see extended functions in Mode B and C
A05-1	Parameter B and C software option function	Allows to see software option functions in Mode B and C
A05-2	Parameter B and C hardware option function	Allows to see hardware option functions in Mode B and C
B00-0 ~ B00-7	Motor Parameters	Key motor values that must be programmed at start-up
B00-4	Maximum Frequency	Maximum Frequency (Speed) the motor will run. Speed at 10VDC and 20mA for analog inputs
B07-1	Lower limit (Minimum Frequency) for v/f mode	Minimum Frequency (Speed) the motor will run, Speed at 0VDC and 4mA for analog inputs.
B19-0	Automatic tuning selection	Used to select the type of auto-tuning in v/f and vector control mode
B43-0 ~ B43-A	PID Parameters	PID Set point Controller functions
C00-0	Run command, Maintained Start/Stop	Selects 2 or 3 wire start/stop control
C00-1	Stop Mode	Selects Ramp to stop or Coast to stop
C00-3	Emergency stop (EMS) input logic	Selects the logic for the emergency stop input
C00-4	Emergency stop (EMS) mode	Selects the stop method for the emergency stop input
C03 ~	PSI 1-6 Digital Inputs	Selects the function of the Digital Inputs (Prog. Seq. Inputs)

C06		
C04-D	Pick up (Speed Search Selection)	Enables "Catch-a-Spinning Load" Function. Related parameters are C21-1 ~ C21-7
C09-0	Parameter protection	Set to prevent unintentional parameter change from keypad
C09-1	Operation panel lock	Set to prevent unintentional operation from keypad
C09-3	Reverse Direction Lock	Prevents the motor from running in the reverse direction
C09-7	Default Value Load	Multiple options to set the parameters to default condition
C11-0	Initial mode	Select initial operation mode (local or remote) when the power is turned ON
C12-0 ~ C12-3	Parameter setting for Analog Input AI1	These parameters select voltage or current type input, range and filter time constant for AI1
C12-4 ~ C12-7	Parameter setting for Analog Input AI2	These parameters select voltage or current type input, range and filter time constant for AI2
C12-8 ~ C12-A	Parameter setting for Analog Input AI3	These parameters select voltage or current type input, range and filter time constant for AI3
C13-0	Analog output A01	Selects the function of the analog output 1
C13-1	Analog output A02	Selects the function of the analog output 2
C13-3 ~ C13-5	PSO 1 – 3	Selects the function of the Open Collector Outputs
C13-2 & C13-6	Programmable Relays	Selects the function of the Programmable Relays
C30-0	Control mode selection	Selects the control mode and inverter duty.
U00-0	Parameter copy function	Use this parameter to copy the parameters and paste into another unit

# Chapter-7: Application Macro

## 7-1 Fan Application

No	Parameter	Unit	Def	Min	Max	Description																																				
A01-0	Acceleration Time-1	Sec	10.0	0.1	6000.0	= 30 to 100 Sec. (30kw to 75 kw) = 70 to 180 Sec. (90 kw & 200 kw) = 100 to 250 Sec. (250 kw & above) <b>Note:</b> Acceleration time should be in the range of 1/3 to 2/3 times of deceleration time settings.																																				
A01-1	Deceleration Time-1	Sec	20.0	0.1	6000.0	= 80 to 150 (30 kw to 75 kw) = 150 to 250 (90 kw & 200 kw) = 300 to 400 (250 kw & above)																																				
C00-1	Run/stop method		2	1	2	Select coast to stop mode (C00-1=1), It is mandatory when there is contactor or ACB in the output of the drive.																																				
C21-0	Number of retries		0	0	10	Allow restart 2 or 3 time in fault condition to continue fan operation. <b>Note:</b> Consult to customer before changing this parameter as motor (load) will restart automatically in case of tripping /power failure of VFD.																																				
C04-D	PICK Peak-Up		0	-11	16	It is mandatory to enable speed search to start the VFD at rotating speed of the motor as load is rotating for a longer time due to load inertia to avoid any tripping while restarting. Take a start/stop trial with loaded motor at 4 different rotating speeds (standstill, 5Hz, 20Hz, and 50 Hz) of the actual rotor by keeping coast to stop & make sure that rotating speed is caught by the VFD.																																				
C21-2	Peak-Up wait time	Sec	2.0	0.5	10.0	Increase C21-2 If it not catching the rotating speed																																				
B00-0	Rated input voltage setting (V/f control)	Vac	7	1	7	Select suitable rated input voltage from the below selections. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Value</th> <th>200V system</th> <th>400V system</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>to 200V</td> <td>to 380V</td> </tr> <tr> <td>2</td> <td>to 200V</td> <td>381 to 400V</td> </tr> <tr> <td>3</td> <td>201 to 220V</td> <td>401 to 415V</td> </tr> <tr> <td>4</td> <td>201 to 220V</td> <td>416 to 440V</td> </tr> <tr> <td>5</td> <td>221 to 230V</td> <td>441 to 460V</td> </tr> <tr> <td>6</td> <td>231 to 240V</td> <td>461 to 480V</td> </tr> <tr> <td>7</td> <td>221 to 230V</td> <td>381 to 400V</td> </tr> </tbody> </table>	Value	200V system	400V system	1	to 200V	to 380V	2	to 200V	381 to 400V	3	201 to 220V	401 to 415V	4	201 to 220V	416 to 440V	5	221 to 230V	441 to 460V	6	231 to 240V	461 to 480V	7	221 to 230V	381 to 400V												
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B00-1	Max./base frequency simple setting (V/f control)		1	0	9	Select the output frequency rating from the combination below. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Value</th> <th>Ftrq [Hz]</th> <th>Fmax [Hz]</th> <th>Value</th> <th>Ftrq [Hz]</th> <th>Fmax [Hz]</th> </tr> </thead> <tbody> <tr> <td>0</td> <td colspan="2">Free setting on B00-4 and B00-5</td> <td>5</td> <td>50</td> <td>100</td> </tr> <tr> <td>1</td> <td>50</td> <td>50</td> <td>6</td> <td>60</td> <td>70</td> </tr> <tr> <td>2</td> <td>60</td> <td>60</td> <td>7</td> <td>60</td> <td>80</td> </tr> <tr> <td>3</td> <td>50</td> <td>60</td> <td>8</td> <td>60</td> <td>90</td> </tr> <tr> <td>4</td> <td>50</td> <td>75</td> <td>9</td> <td>60</td> <td>120</td> </tr> </tbody> </table>	Value	Ftrq [Hz]	Fmax [Hz]	Value	Ftrq [Hz]	Fmax [Hz]	0	Free setting on B00-4 and B00-5		5	50	100	1	50	50	6	60	70	2	60	60	7	60	80	3	50	60	8	60	90	4	50	75	9	60	120
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B00-2	Motor rated output (V/f control)		Inverter rating (kW)	0.10	750.00	The motor rated output at the base frequency is set.																																				
B00-3	Motor rated output (V/f control)	Vac	230. or 400. (V)	39	480	This is the Motor rated Voltage. Set the voltage mentioned on the motor nameplate. The setting value depends on the 400V, 500V or 600V Series model.																																				

B00-4	Max. frequency (Fmax) (V/f control)		50.00 (Hz)	Fbase e or 3.00	Fbase *7 or 440.0 0	When "B00-1" is a value other than 0, this will be rewritten with the data set in the simple setting.
B00-5	Base frequency (Fbase) (V/f control)		50.00 (Hz)	Fmax/ 7 or 1.00	Fmax or 440.00	
B00-6	Motor rated current (V/f control)		Invert er rating (A)	Invert er rating × 0.3	Inverte r rating	This is the reference value for the over current limit, OLT, current % display, analog input and output.

**Note:**

**Speed Reference Selection:** Enable below require parameter as per source of frequency reference

A00-0 – Local Set Frequency (Keypad of Axpert-VT240S)

C03-D to F – Frequency Reference Input (Analog I/O i.e. 0~10V, 4~20mA and others)

**I/O's Requirements:** Enable below parameter as per requirement.

C03-0 to C03-C and C13-0 to C13-6 for Digital I/O and C12-0 to C12-F and C14-0 to C14-B for Analog I/O.

**7-2 Blower Application**

No	Parameter	Unit	Def	Min	Max	Description
A01-0	Acceleration Time-1	Sec	10.0	0.1	6000.0	= 30 to 120 Sec. (30kw to 75kw) = 70 to 200 Sec. (90kw & 200kw) = 100 to 270 Sec. (250kw & above) <b>Note:</b> Acceleration time should be in the range of 1/3 to 2/3 times of deceleration time settings.
A01-1	Deceleration Time-1	Sec	20.0	0.1	6000.0	= 80 to 180 (30kw to 75kw) = 200 to 300 (90kw & 200kw) = 320 to 400 (250kw & above)
C00-1	Run/stop method		2	1	2	Select coast to stop mode (C00-1=1), It is mandatory when there is contactor or ACB in the output of the drive.
C21-0	Number of retries		0	0	10	Allow restart 2 or 3 time in fault condition to continue blower operation. <b>Note:</b> Consult to customer before changing this parameter as motor (load) will restart automatically in case of tripping /power failure of VFD.
C04-D	PICK Peak-Up		0	-11	16	It is mandatory to enable speed search to start the VFD at rotating speed of the motor as load is rotating for a longer time due to load inertia to avoid any tripping while restarting. Take a start/stop trial with loaded motor at 4 different rotating speeds (standstill, 5Hz, 20Hz, and 50 Hz) of the actual rotor by keeping coast to stop & make sure that rotating speed is caught by the VFD.
C21-2	Peak-Up wait time	Sec	2.0	0.5	10.0	Increase C21-2 If it not catching the rotating speed



B00-0	Rated input voltage setting (V/f control)	Vac	7	1	7	Select suitable rated input voltage from the below selections. <table border="1"> <thead> <tr> <th>Value</th> <th>200V system</th> <th>400V system</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>to 200V</td> <td>to 380V</td> </tr> <tr> <td>2</td> <td>to 200V</td> <td>381 to 400V</td> </tr> <tr> <td>3</td> <td>201 to 220V</td> <td>401 to 415V</td> </tr> <tr> <td>4</td> <td>201 to 220V</td> <td>416 to 440V</td> </tr> <tr> <td>5</td> <td>221 to 230V</td> <td>441 to 460V</td> </tr> <tr> <td>6</td> <td>231 to 240V</td> <td>461 to 480V</td> </tr> <tr> <td>7</td> <td>221 to 230V</td> <td>381 to 400V</td> </tr> </tbody> </table>	Value	200V system	400V system	1	to 200V	to 380V	2	to 200V	381 to 400V	3	201 to 220V	401 to 415V	4	201 to 220V	416 to 440V	5	221 to 230V	441 to 460V	6	231 to 240V	461 to 480V	7	221 to 230V	381 to 400V												
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B00-1	Max./base frequency simple setting (V/f control)		1	0	9	Select the output frequency rating from the combination below. <table border="1"> <thead> <tr> <th>Value</th> <th>Ftrq [Hz]</th> <th>Fmax [Hz]</th> </tr> </thead> <tbody> <tr> <td>0</td> <td colspan="2">Free setting on B00-4 and B00-5</td> </tr> <tr> <td>1</td> <td>50</td> <td>50</td> </tr> <tr> <td>2</td> <td>60</td> <td>60</td> </tr> <tr> <td>3</td> <td>50</td> <td>60</td> </tr> <tr> <td>4</td> <td>50</td> <td>75</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Value</th> <th>Ftrq [Hz]</th> <th>Fmax [Hz]</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>50</td> <td>100</td> </tr> <tr> <td>6</td> <td>60</td> <td>70</td> </tr> <tr> <td>7</td> <td>60</td> <td>80</td> </tr> <tr> <td>8</td> <td>60</td> <td>90</td> </tr> <tr> <td>9</td> <td>60</td> <td>120</td> </tr> </tbody> </table>	Value	Ftrq [Hz]	Fmax [Hz]	0	Free setting on B00-4 and B00-5		1	50	50	2	60	60	3	50	60	4	50	75	Value	Ftrq [Hz]	Fmax [Hz]	5	50	100	6	60	70	7	60	80	8	60	90	9	60	120
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B00-3	Motor rated output (V/f control)	Vac	230. or 400. (V)	39	480	This is the Motor rated Voltage. Set the voltage mentioned on the motor nameplate. The setting value depends on the 400V, 500V or 600V Series model.																																				
B00-4	Max. frequency (Fmax) (V/f control)		50.00 (Hz)	Fbase or 3.00	Fbase *7 or 440.00	When "B00-1" is a value other than 0, this will be rewritten with the data set in the simple setting.																																				
B00-5	Base frequency (Fbase) (V/f control)		50.00 (Hz)	Fmax/7 or 1.00	Fmax or 440.00																																					
B00-6	Motor rated current (V/f control)		Inverter rating (A)	Inverter rating × 0.3	Inverter rating	This is the reference value for the over current limit, OLT, current % display, analog input and output.																																				

**Note:**

**Speed Reference Selection:** Enable below require parameter as per source of frequency reference

A00-0 – Local Set Frequency (Keypad of Axpert-VT240S)

C03-D to F – Frequency Reference Input (Analog I/O i.e. 0~10V, 4~20mA and others)

**I/O's Requirements:** Enable below parameter as per requirement.

C03-0 to C03-C and C13-0 to C13-6 for Digital I/O and C12-0 to C12-F and C14-0 to C14-B for Analog I/O.

**7-3 Pump Application**

No	Parameter	Unit	Def	Min	Max	Description
A01-0	Acceleration Time-1	Sec	10.0	0.1	6000.0	=10 to 15 seconds (5kw to 90kw). =15 to 25 seconds (110kw and above rating).
A01-1	Deceleration Time-1	Sec	20.0	0.1	6000.0	= 10 to 15 seconds (5kw to 125kw). = 15 to 25 seconds (110kw and above rating).

C00-1	Run/stop method		2	1	2	Select coast to stop mode (C00-1=1), It is mandatory when there is contactor or ACB in the output of the drive.																																				
C21-0	Number of retries		0	0	10	Allow restart 1 time in fault condition to continue pump operation. <b>Note:</b> Consult to customer before changing this parameter as motor (load) will restart automatically in case of tripping /power failure of VFD.																																				
B00-0	Rated input voltage setting (V/f control)	Vac	7	1	7	Select suitable rated input voltage from the below selections. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Value</th> <th>200V system</th> <th>400V system</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>to 200V</td> <td>to 380V</td> </tr> <tr> <td>2</td> <td>to 200V</td> <td>381 to 400V</td> </tr> <tr> <td>3</td> <td>201 to 220V</td> <td>401 to 415V</td> </tr> <tr> <td>4</td> <td>201 to 220V</td> <td>416 to 440V</td> </tr> <tr> <td>5</td> <td>221 to 230V</td> <td>441 to 460V</td> </tr> <tr> <td>6</td> <td>231 to 240V</td> <td>461 to 480V</td> </tr> <tr> <td>7</td> <td>221 to 230V</td> <td>381 to 400V</td> </tr> </tbody> </table>	Value	200V system	400V system	1	to 200V	to 380V	2	to 200V	381 to 400V	3	201 to 220V	401 to 415V	4	201 to 220V	416 to 440V	5	221 to 230V	441 to 460V	6	231 to 240V	461 to 480V	7	221 to 230V	381 to 400V												
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B00-1	Max./base frequency simple setting (V/f control)		1	0	9	Select the output frequency rating from the combination below. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Value</th> <th>Ftrq [Hz]</th> <th>Fmax [Hz]</th> <th>Value</th> <th>Ftrq [Hz]</th> <th>Fmax [Hz]</th> </tr> </thead> <tbody> <tr> <td>0</td> <td colspan="2">Free setting on B00-4 and B00-5</td> <td>5</td> <td>50</td> <td>100</td> </tr> <tr> <td>1</td> <td>50</td> <td>50</td> <td>6</td> <td>60</td> <td>70</td> </tr> <tr> <td>2</td> <td>60</td> <td>60</td> <td>7</td> <td>60</td> <td>80</td> </tr> <tr> <td>3</td> <td>50</td> <td>60</td> <td>8</td> <td>60</td> <td>90</td> </tr> <tr> <td>4</td> <td>50</td> <td>75</td> <td>9</td> <td>60</td> <td>120</td> </tr> </tbody> </table>	Value	Ftrq [Hz]	Fmax [Hz]	Value	Ftrq [Hz]	Fmax [Hz]	0	Free setting on B00-4 and B00-5		5	50	100	1	50	50	6	60	70	2	60	60	7	60	80	3	50	60	8	60	90	4	50	75	9	60	120
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B00-2	Motor rated output (V/f control)		Inverter rating (kW)	0.10	750.00	The motor rated output at the base frequency is set.																																				
B00-3	Motor rated output (V/f control)	Vac	230. or 400. (V)	39	480	This is the Motor rated Voltage. Set the voltage mentioned on the motor nameplate. The setting value depends on the 400V, 500V or 600V Series model.																																				
B00-4	Max. frequency (Fmax) (V/f control)		50.00 (Hz)	Fbase or 3.00	Fbase +7 or 440.00	When "B00-1" is a value other than 0, this will be rewritten with the data set in the simple setting.																																				
B00-5	Base frequency (Fbase) (V/f control)		50.00 (Hz)	Fmax/7 or 1.00	Fmax or 440.00																																					
B00-6	Motor rated current (V/f control)		Inverter rating (A)	Inverter rating × 0.3	Inverter rating	This is the reference value for the over current limit, OLT, current % display, analog input and output.																																				

**Note:**

**Speed Reference Selection:** Enable below require parameter as per source of frequency reference

A00-0 – Local Set Frequency (Keypad of Axpert-VT240S)

C03-D to F – Frequency Reference Input (Analog I/O i.e. 0~10V, 4~20mA and others)

**I/O's Requirements:** Enable below parameter as per requirement.

C03-0 to C03-C and C13-0 to C13-6 for Digital I/O and C12-0 to C12-F and C14-0 to C14-B for Analog I/O.

## 7-4 Compressor Fan Application

No	Parameter	Unit	Def	Min	Max	Description																																				
A01-0	Acceleration Time-1	Sec	10.0	0.1	6000.0	= 7 to 12 seconds (5Hp to 125Hp). = 10 to 20 seconds (150Hp and above rating).																																				
A01-1	Deceleration Time-1	Sec	20.0	0.1	6000.0	= 7 to 12 seconds (5Hp to 125Hp). = 10 to 20 seconds (150Hp and above rating).																																				
C00-1	Run/stop method		2	1	2	1=Coast to Stop <b>Note:</b> Must required																																				
B00-0	Rated input voltage setting (V/f control)	Vac	7	1	7	Select suitable rated input voltage from the below selections. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Value</th> <th>200V system</th> <th>400V system</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>to 200V</td> <td>to 380V</td> </tr> <tr> <td>2</td> <td>to 200V</td> <td>381 to 400V</td> </tr> <tr> <td>3</td> <td>201 to 220V</td> <td>401 to 415V</td> </tr> <tr> <td>4</td> <td>201 to 220V</td> <td>416 to 440V</td> </tr> <tr> <td>5</td> <td>221 to 230V</td> <td>441 to 460V</td> </tr> <tr> <td>6</td> <td>231 to 240V</td> <td>461 to 480V</td> </tr> <tr> <td>7</td> <td>221 to 230V</td> <td>381 to 400V</td> </tr> </tbody> </table>	Value	200V system	400V system	1	to 200V	to 380V	2	to 200V	381 to 400V	3	201 to 220V	401 to 415V	4	201 to 220V	416 to 440V	5	221 to 230V	441 to 460V	6	231 to 240V	461 to 480V	7	221 to 230V	381 to 400V												
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B00-1	Max./base frequency simple setting (V/f control)		1	0	9	Select the output frequency rating from the combination below. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Value</th> <th>Ftrq [Hz]</th> <th>Fmax [Hz]</th> <th>Value</th> <th>Ftrq [Hz]</th> <th>Fmax [Hz]</th> </tr> </thead> <tbody> <tr> <td>0</td> <td colspan="2">Free setting on B00-4 and B00-5</td> <td>5</td> <td>50</td> <td>100</td> </tr> <tr> <td>1</td> <td>50</td> <td>50</td> <td>6</td> <td>60</td> <td>70</td> </tr> <tr> <td>2</td> <td>60</td> <td>60</td> <td>7</td> <td>60</td> <td>80</td> </tr> <tr> <td>3</td> <td>50</td> <td>60</td> <td>8</td> <td>60</td> <td>90</td> </tr> <tr> <td>4</td> <td>50</td> <td>75</td> <td>9</td> <td>60</td> <td>120</td> </tr> </tbody> </table>	Value	Ftrq [Hz]	Fmax [Hz]	Value	Ftrq [Hz]	Fmax [Hz]	0	Free setting on B00-4 and B00-5		5	50	100	1	50	50	6	60	70	2	60	60	7	60	80	3	50	60	8	60	90	4	50	75	9	60	120
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B00-4	Max. frequency (Fmax) (V/f control)		50.00 (Hz)	Fbase or 3.00	Fbase *7 or 440.00	When "B00-1" is a value other than 0, this will be rewritten with the data set in the simple setting.																																				
B00-5	Base frequency (Fbase) (V/f control)		50.00 (Hz)	Fmax/7 or 1.00	Fmax or 440.00																																					
B00-6	Motor rated current (V/f control)		Inverter rating (A)	Inverter rating × 0.3	Inverter rating	This is the reference value for the over current limit, OLT, current % display, analog input and output.																																				



- Don't enable speed search function
- Don't enable auto restart function

### Take care of

- Interlocking of water pressure/air pressure
- Interlocking of water pressure/air pressure

**Put this two interlocking contact (NC) in series of Stop command of VFD.**

**Amtech**

- Make sure that water/oil pressure bypass interlocking is tuned as per the programmed acceleration time of VFD.

❖ **Without Built-in PID of VFD**

**Select Frequency Reference** - If it is 0~10V signal, than

C03-D = 16 (On fixed, AFS1 speed setting1)

**Connect 0~10V signal wire at VFD's terminal board as below**

0~10V signal (at COM & AI1 terminal)

**Select Frequency Reference** - If it is 4~20mA signal, than

C03-D = 0 (Off fixed, AFS1 speed setting1)

C03-E = 16 (On fixed, AFS2 speed setting2)

C12-4 = 2: Current input, 4-20mA

**Connect signal wire on the VFD control terminal board**

4~20mA signal (at COM & AI2 terminal)

- ON the DIP switch DS1-3 that is available on VFD control board.

**Minimum Operating Frequency**

Consult to customer for minimum allowable operating frequency (speed) of the compressor which is declared by manufacturer. If data is not available than program minimum frequency as per below.

B07-1=35Hz (approx 70% of motor base frequency).

**7-5 Hoist Fan Application**

No	Parameter	Unit	Def	Min	Max	Description																								
A01-0	Acceleration Time-1	Sec	10.0	0.1	6000.0	= 0.5 to 3 Acceleration time																								
A01-1	Deceleration Time-1	Sec	20.0	0.1	6000.0	= 0.5 to 3 Acceleration time																								
A03-0	DC braking voltage		Inverter rating (%)	0.01	20.00	= 3 to 5% DC braking voltage, Program amount of current apply for DC braking when DC braking used during stop.																								
A03-1	DC braking time	Sec	2.0	0.0	20.0	=0.5 to 2 sec, its amount of time that DC braking will applied when stop command issue. DC braking is used to hold the motor slippage when stop command issue.																								
B00-0	Rated input voltage setting (V/f control)	Vac	7	1	7	Select suitable rated input voltage from the below selections. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Value</th> <th>200V system</th> <th>400V system</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>to 200V</td> <td>to 380V</td> </tr> <tr> <td>2</td> <td>to 200V</td> <td>381 to 400V</td> </tr> <tr> <td>3</td> <td>201 to 220V</td> <td>401 to 415V</td> </tr> <tr> <td>4</td> <td>201 to 220V</td> <td>416 to 440V</td> </tr> <tr> <td>5</td> <td>221 to 230V</td> <td>441 to 460V</td> </tr> <tr> <td>6</td> <td>231 to 240V</td> <td>461 to 480V</td> </tr> <tr> <td>7</td> <td>221 to 230V</td> <td>381 to 400V</td> </tr> </tbody> </table>	Value	200V system	400V system	1	to 200V	to 380V	2	to 200V	381 to 400V	3	201 to 220V	401 to 415V	4	201 to 220V	416 to 440V	5	221 to 230V	441 to 460V	6	231 to 240V	461 to 480V	7	221 to 230V	381 to 400V
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B00-1	Max./base frequency simple setting (V/f control)		1	0	9	Select the output frequency rating from the combination below.																																			
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B00-2	Motor rated output (V/f control)		Inverter rating (kW)	0.10	750.00	The motor rated output at the base frequency is set.																																			
B00-3	Motor rated output (V/f control)	Vac	230. or 400. (V)	39	480	This is the Motor rated Voltage. Set the voltage mentioned on the motor nameplate. The setting value depends on the 400V, 500V or 600V Series model.																																			
B00-4	Max. frequency (Fmax) (V/f control)		50.00 (Hz)	Fbase or 3.00	Fbase *7 or 440.00	When "B00-1" is a value other than 0, this will be rewritten with the data set in the simple setting.																																			
B00-5	Base frequency (Fbase) (V/f control)		50.00 (Hz)	Fmax/7 or 1.00	Fmax or 440.00																																				
B00-6	Motor rated current (V/f control)		Inverter rating (A)	Inverter rating × 0.3	Inverter rating	This is the reference value for the over current limit, OLT, current % display, analog input and output.																																			
B17-0	V/f middle point Setting-Freq 1		0.00	0.00	Max frequency	= 5Hz, frequency																																			
B17-1	V/f middle point Setting-Volt 1		0.0%	0.0	200	= 18%, voltage																																			
B17-2	V/f middle point Setting-Freq 2		0.00	0.00	Max frequency	= 8Hz, frequency																																			
B17-3	V/f middle point Setting-Volt 2		0.0%	0.0	200	= 26%, voltage																																			
B17-4	V/f middle point Setting-Freq 3		0.00	0.00	Max frequency	= 10Hz, frequency																																			
B17-5	V/f middle point Setting-Volt 3		0.0%	0.0	200	= 28%, voltage																																			
B17-B	V/f middle point use selection		1	2	1	= 2, function valid																																			
C03-d	AFS1, Speed setting 1		16	-11	16	= 0																																			
C04-0	PROG		0	-11	16	=16 Multi speed function is valid																																			
C04-2	S0, Prog. speed selection		0	-11	16	= Select PSI for first speed																																			
C04-3	S1, Prog. speed selection		0	-11	16	= Select PSI for second speed																																			
C04-4	S2, Prog. speed selection		0	-11	16	= Select PSI for second speed																																			



- Don't enable speed search function
- Don't enable auto restart function

**Take care of**

- It is mandatory to select ramp down to stop mode (C00-1=2)
- Make sure that pick up function is disabled C04-D=0
- Interlock the all the limit switch with stop command.
- Always control the Electro-mechanical brake by VFD
  - C13-2=10, RA-RC Output relay
- C15-2=4 to 6% Electro-mechanical brake released after this speed is achieved.
- Electro-mechanical brake is used for holding the load.
- Electro-mechanical Brake operate from VFD's relay and relay program in speed detection, for using this function to develop starting torque at the time of Handling and lifting the load.

**Dynamic braking is must due to heavy regeneration**

**Parameter list when inbuilt DB used**

- C31-0=1222
- C22-4=10%
- B18-1=Set as per equation refer page6-110 of Instruction manual

**Parameter list when External DBU used**

- C31-0=1222
- C22-4=0
- B18-1= Set as per equation refer page6-110

**7-6 Cane Carrier**

No	Parameter	Unit	Def	Min	Max	Description																																				
A01-0	Acceleration Time-1	Sec	10.0	0.1	6000.0	= 5 to 10 sec (30Kw to 55Kw) = 8 to 12 sec (75kw and above)																																				
A01-1	Deceleration Time-1	Sec	20.0	0.1	6000.0	= 7 to 12 sec (30Kw to 55Kw) = 10 to 15 sec (75kw and above)																																				
C00-1	Run/stop method		2	1	2	Select coast to stop mode (C00-1=1), It is mandatory when there is contactor or ACB in the output of the drive.																																				
B00-0	Rated input voltage setting (V/f control)	Vac	7	1	7	Select suitable rated input voltage from the below selections. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Value</th> <th>200V system</th> <th>400V system</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>to 200V</td> <td>to 380V</td> </tr> <tr> <td>2</td> <td>to 200V</td> <td>381 to 400V</td> </tr> <tr> <td>3</td> <td>201 to 220V</td> <td>401 to 415V</td> </tr> <tr> <td>4</td> <td>201 to 220V</td> <td>416 to 440V</td> </tr> <tr> <td>5</td> <td>221 to 230V</td> <td>441 to 460V</td> </tr> <tr> <td>6</td> <td>231 to 240V</td> <td>461 to 480V</td> </tr> <tr> <td>7</td> <td>221 to 230V</td> <td>381 to 400V</td> </tr> </tbody> </table>	Value	200V system	400V system	1	to 200V	to 380V	2	to 200V	381 to 400V	3	201 to 220V	401 to 415V	4	201 to 220V	416 to 440V	5	221 to 230V	441 to 460V	6	231 to 240V	461 to 480V	7	221 to 230V	381 to 400V												
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B00-2	Motor rated output (V/f control)		Inverter rating (kW)	0.10	750.00	The motor rated output at the base frequency is set.
B00-3	Motor rated output (V/f control)	Vac	230. or 400. (V)	39	480	This is the Motor rated Voltage. Set the voltage mentioned on the motor nameplate. The setting value depends on the 400V, 500V or 600V Series model.
B00-4	Max. frequency (Fmax) (V/f control)		50.00 (Hz)	Fbase or 3.00	Fbase *7 or 440.00	When "B00-1" is a value other than 0, this will be rewritten with the data set in the simple setting.
B00-5	Base frequency (Fbase) (V/f control)		50.00 (Hz)	Fmax/7 or 1.00	Fmax or 440.00	
B00-6	Motor rated current (V/f control)		Inverter rating (A)	Inverter rating × 0.3	Inverter rating	This is the reference value for the over current limit, OLT, current % display, analog input and output.
B17-0	V/f middle point Setting-Freq 1		0.00	0.00	Max frequency	=3 to 5% of motor frequency
B17-1	V/f middle point Setting-Volt 1		0.0%	0.0	200	=9 to 12%, voltage
B17-2	V/f middle point Setting-Freq 2		0.00	0.00	Max frequency	=5 to 8% of motor frequency
B17-3	V/f middle point Setting-Volt 2		0.0%	0.0	200	=12 to 16%, voltage
B17-B	V/f middle point use selection		1	2	1	= 2, function valid <b>Note:</b> V/F Custom curve must be required for starting torque when load is present on carrier.
C03-d	AFS1, Speed setting 1		16	-11	16	= 0
C04-0	PROG		0	-11	16	=16 Multi speed function is valid
C04-2	S0, Prog. speed selection		0	-11	16	= Select PSI for first speed
C04-3	S1, Prog. speed selection		0	-11	16	= Select PSI for second speed
C04-4	S2, Prog. speed selection		0	-11	16	= Select PSI for second speed



- Don't enable speed search function
- Don't enable auto restart function

**Note:**

**Speed Reference Selection:** Enable below require parameter as per source of frequency reference

- A00-0 – Local Set Frequency (Keypad of Axpert-Eazy)
- C03-D or C03-E – Frequency Reference Input (i.e. 0~10V, 4~20mA etc.)

**I/O's Requirements:** Enable below parameter as per requirement.

- C03-0 to C03-C and C13-0 to C13-6 for Digital I/O and C12-0 to C12-F and C14-0 to C14-B for Analog I/O.

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