Purpose: VFD-F software version upgrade
Explanation:

Software version : 0.75KW~ 90KW (1HP~125HP): V1.202 → V1.302
110KW~220KW (150HP~300HP): V3.10 → V1.302

No.	Type	Old version	New version	The CPU starts the serial number
1	VFD450F43A	1.202	1.302	6W0510001-29
2	VFD370F43A	1.202	1.302	6W0510001-6
3	VFD750F43A	1.202	1.302	6W0510001-23
4	VFD550F43A	1.202	1.302	6W0510003-4
5	VFD022F43A	1.202	1.302	6W0520001-13
6	VFD1320F43A	3.10	1.302	6W0530001-4
7	VFD2200F43A	3.10	1.302	6W0530001
8	VFD1600F43A	3.10	1.302	6W0530001-2
9	VFD037F43A	1.202	1.302	6W0530030-71
10	VFD1100F43C	3.10	1.302	6W1020002
11	VFD015F43A	1.202	1.302	6W1030001-15
12	VFD075F43B	1.202	1.302	6W1050018-302
13	VFD015F23A	1.202	1.302	6W1090001
14	VFD007F43A	1.202	1.302	6W1120001

Content:
1. New function
2. Function change
3. Function correction

New Function

1. Add new parameter Pr00-15: Stall torque output(N.M.)

00-15	Stall torque output(N.M.)

🕮 This parameter shows stall torque output in Newton metre

2. Add new parameter Pr02-06: Line Start Lockout function selection

02-06	Line Start Lockout			Factory Setting	01
	Setting Range	00	Enabled		
		01	Disabled		
		02	If the command to run still remains after resetting, the inverter will continue to run.		

🕮 Pr02-06=2 :

This determines the following matter. The VFD (Variable-Frequency Drive) detects an error message and eliminates the error. If the command terminal remains running in the external function terminals, you can simply press the RESET button to make the VFD running again.

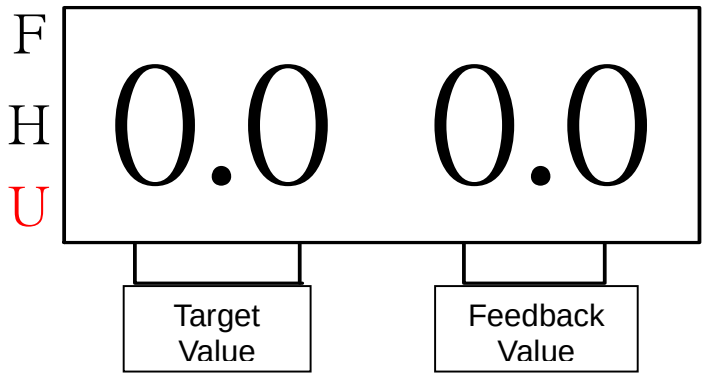
3. Add new parameter Pr02-07: ACI (4~20mA) Loss of ACI Signal function selection

02-07	ACI (4~20mA) Loss of ACI Signal			Factory Setting	01
	Setting Range	00	Decelerate to zero Hz		
		01	Show E.F.		
		02	Continue operation by following the last frequency command		
		03	Use loss of ACI Signal Frequency of Pr02-16		

4. Add new parameter Pr02-09: Special Display function selection

02-09	Special Display			↗	Factory Setting	00
	Setting Range	00	A displays outputs current of AC drive			
		01	U displays DC-Bus voltage of AC drive			
		02	E displays RMS of output voltage			
		03	P displays feedback signal			
		04	PLC displays auto procedure state			
		05	T displays heat sink's temperature			
		06	The keypad's screen displays both target value and feedback value controlled by PID (**proportional–integral–derivative controller** (**PID controller**)).			

📖 When Pr02-09 is set to be 6, the keypad's screen displays both target value and feedback value controlled by PID as shown below.



5. Add new parameter Pr02-14: Source of Second Frequency Command

02-14	Source of Second Frequency Command			Factory Setting	00
	Setting Range	00	Master Frequency Setting is controlled by PID controller.		
		01	Master frequency is controlled by an external terminal via analog input AVI: DC 0~+10V.		
		02	Master frequency is controlled by an external terminal via analog input ACI1: DC 4~ 20mA.		
		03	Master frequency is controlled by an external terminal via analog input ACI2: DC 4~ 20mA		
		04	Master frequency is handled via RS485 serial communication (RJ-11).		
		05	External Reference Master frequency via External Reference.		

📖 This parameter sets the source of inverter's second frequency.

6. Add new parameter Pr02-15: Source of Second Operation Command

02-15	Source of Second Operation Command			Factory Setting	00
	Setting Range	00	Controlled by the digital keypad		
		01	Controlled by the external terminals, keypad STOP enabled.		
		02	Controlled by the external terminals, keypad STOP disabled		
		03	Controlled by the RS-485 communication interface keypad STOP enabled.		
		04	Controlled by the RS-485 communication interface keypad STOP disabled.		

📖 This parameter sets the source of inverter's second operation command.

7. Add new parameter Pr02-16: Loss of ACI Signal

02-16	Loss of ACI Signal		Factory Setting	0.00
	Setting Range	0.00-Highest operational frequency		

📖 This parameter sets the loss of ACI signal

8. Add new parameter Pr03-00~Pr03-07: Multi-function Output Terminal function selection

03-00	Multi-function Output Terminal 1 (Relay 1)		
03-01	Multi-function Output Terminal 2 (Relay 2)		
03-02	Multi-function Output Terminal 3 (Relay 3)		
03-03	Multi-function Output Terminal 4 Relay 4)		
03-04	Multi-function Output Terminal 5 (Relay 5)		
03-05	Multi-function Output Terminal 6 (Relay 6)		
03-06	Multi-function Output Terminal 7 (Relay 7)		
03-07	Multi-function Output Terminal 8 (Relay 8)		
	Setting Range	00-43	Factory Setting 00

Functions Table

Settings	Functions	Descriptions
38	Loss of an ACI signal Indication	When there is a loss of an ACI signal indication, the corresponding relay output will be closed.
39	HOA-Hand mode indication	Under the Hand mode indication of HOA mode, the corresponding relay output will be closed.
40	HOA-Off mode indication	Under the Off mode indication of HOA mode, the corresponding relay output will be closed.
41	HOA-Auto mode indication	Under the Automatic mode indication of HOA mode, the corresponding relay output will be closed.
42	Fire mode indication	When Fire mode indication is activated, the corresponding relay output will be closed.
43	Bypass fire mode indication	Under the Bypass fire mode indication, the corresponding relay output will be closed.

9. Add new parameter Pr03-15: DC Fan Control function selection

03-15	**DC Fan Control**			Factory Setting	00
	Setting Range	00	Fan runs on power up.		
		01	Fan begins upon a RUN command. Fan stops 1 minute after a STOP command.		
		02	Fan begins upon a RUN command. Fan stops 1 minute after a STOP command.		
		03	Fan is controlled by temperature. Approximately a 60℃ temperature will start the fan.		
		04	Unusual Fan status warning, inverter runs continuously at more than 150hp.		

10. Add new parameter Pr04-00~04-07: Multi-function Input Terminal function selection

04-00	**Multi-function Input Terminal 1**	Factory Setting	01	
04-01	**Multi-function Input Terminal 2**	Factory Setting	02	
04-02	**Multi-function Input Terminal 3**	Factory Setting	03	
04-03	**Multi-function Input Terminal 4**	Factory Setting	04	
04-04	**Multi-function Input Terminal 5**	Factory Setting	05	
04-05	**Multi-function Input Terminal 6**	Factory Setting	07	
04-06	**Multi-function Input Terminal 7**	Factory Setting	08	
04-07	**Multi-function Input Terminal 8**	Factory Setting	09	
	Setting Range	00~43		

<table>
<tr><th>Setting</th><th>Functions</th><th>Description</th></tr>
<tr><td>34</td><td>Enable source of the second frequency</td><td>● This terminal allows you to choose the master frequency or the second one.</td></tr>
<tr><td>35</td><td>Enable source of the second operation command</td><td>● This terminal allows you to choose the master operation command or the second one.</td></tr>
<tr><td>36</td><td>Motor No.5 output disabled</td><td rowspan="4">● When multiple motors are controlled by an AC drive, these settings will allow the corresponding motor to disable and ignore this motor.
● AC drive will not accept the “Motor Output Disabled signal” when it is running.</td></tr>
<tr><td>37</td><td>Motor No.6 output disabled</td></tr>
<tr><td>38</td><td>Motor No.7 output disabled</td></tr>
<tr><td>39</td><td>Motor No.8 output disabled</td></tr>
<tr><td>40</td><td>HOA-Hand mode indication</td><td rowspan="2">● This terminal enables HOA function.
<table><tr><td></td><td>MI40 ON</td><td>MI40 OFF</td></tr><tr><td>MI41 ON</td><td>Off mode</td><td>Auto mode</td></tr><tr><td>MI41 OFF</td><td>Hand mode</td><td>Off mode</td></tr></table>Pr02-00 Refer to Pr02-00 for the source of frequency

Auto mode：Pr02-14 Refer to Pr02-14 for the source of frequency. Pr02-15 Refer to Pr02-15 for source of operation command

Off mode: AC Drive is permanently off.</td></tr>
<tr><td>41</td><td>HOA-Auto mode indication</td></tr>
<tr><td>42</td><td>(NO) Fire mode (NO)</td><td rowspan="2">In accordance with Pr11-15[Fire Mode], this terminal can start the Fire Mode</td></tr>
<tr><td>43</td><td>Fire mode (NC)</td></tr>
</table>

11. Add new parameter Pr04-24: Summation of External Frequency Sources function selection

<table>
<tr><td>04-24</td><td colspan="2">Summation of External Frequency Sources</td><td>Factory setting</td><td>00</td></tr>
<tr><td rowspan="9"></td><td rowspan="9">Setting Range</td><td>00</td><td colspan="2">No function</td></tr>
<tr><td>01</td><td colspan="2">AVI+ACI1</td></tr>
<tr><td>02</td><td colspan="2">ACI1+ACI2</td></tr>
<tr><td>03</td><td colspan="2">ACI2+AVI</td></tr>
<tr><td>04</td><td colspan="2">Communication master frequency +AVI</td></tr>
<tr><td>05</td><td colspan="2">Communication master frequency +ACI1</td></tr>
<tr><td>06</td><td colspan="2">Communication master frequency+ACI2</td></tr>
<tr><td>07</td><td colspan="2">First frequency + Second Frequency</td></tr>
<tr><td>08</td><td colspan="2">First frequency + Second Frequency</td></tr>
</table>

12. Add new parameter Pr04-25: Summation of First External Frequency Source

04-25	**Summation of First External Frequency Source**			Factory Setting	00
	Setting Range	00	Digital Keypad		
		01	AVI External Terminal AVI		
		02	External Terminal ACI1		
		03	External Terminal ACI2		
		04	RS-485 communication interface		

13. Add new parameter Pr04-26: Summation of Second External Frequency Source

04-26	**Summation of Second External Frequency Source**			Factory Setting	00
	Setting Range	00	Digital Keypad		
		01	External Terminal AVI		
		02	External Terminal ACI1		
		03	External Terminal ACI2		
		04	RS-485 Communication Interface		

14. Add new parameter Pr06-18: Recording Mid/Low Voltage while running the AC Drive

06-18	**Recording Mid/Low Voltage while running the AC Drive**			Factory Setting	00
	Setting Range	00	None Recorded Low Voltage, Parameter Reset Automatically		
		01	None Recorded Low Voltage, Parameter Reset Manually		
		02	Recorded Low Voltage, Parameter Reset Manually		

15. Add new parameter Pr07-10: Poles of Motor

07-10	**Poles of Motor**			Factory setting	4
	Setting Range	2~10			

16. Add new parameter Pr07-11: Reserved

07-11	**Reserved**			Factory setting	
	Setting Range				

17. Add new parameter Pr09-00: Communication Address

09-00	Communication Address	↗	Factory Setting	01
	Setting Range	When Pr09-09=0, Setting range is 01~254 When Pr09-09=1, Setting range is 01~127 When Pr09-09=2, Setting Range is 01~254		

18. Add new parameter Pr09-09: Switching between Modbus & BACnet

09-09	Switching between Modbus & BACnet	↗	Factory Setting	00
	Setting Range	00 Modbus Mode 01 BACnet Master Mode 02 BACnet Slaver Mode		

🕮 This parameter determines the switch between Modbus and BACnet.

19. Add new parameter Pr09-10: BACnet DNET

09-10	BACnet DNET	↗	Factory Setting	01
	Setting Range	01~65535		

🕮 This parameter determines the final IP address of the BACnet.

20. Add new parameter Pr09-11: BACnet Device Instance

09-11	BACnet Device Instance	↗	Factory Setting	00
	Setting Range	00~65535		

🕮 This parameter determines the serial number of the BACnet.

21. Add new parameter Pr09-12: DCC password

09-12	DCC password	↗	Factory Setting	0
	Setting Range	0~65535		

🕮 This parameter determines the DCC password of the BACnet.

The proprietary objects, properties and data type supported by the BACnet.

Property Type	Object Type supported		
	Device supported	Analog Value supported	Binary Value supported
Object Identifier	X	X	X
Object Name	X	X	X
Object Type	X	X	X
System Status	X		
Vendor Name	X		
Vendor Identifier	X		
Model Name	X		
Firmware Revision	X		
Appl Software revision	X		
Protocol Version	X		
Protocol Revision	X		
Services Supported	X		
Object Types supported	X		
Object List	X		
Max APDU Length	X		
Segmentation Support	X		
APDU Timeout	X		
Number ADPU Retires	X		
Max_Master	X		
Max_Info_Frames	X		
Device Address Binding	X		
Database Revision	X		
Present Value		X	X
Status Flag		X	X
Event State		X	X
Out-of-Service		X	X
Units		X	
Priority Array		X*	X*
Relinquish Default		X*	X*
Active Text			X
Inactive Text			X

*** Only with commandable values**

VFDF-Analog Values Description：

ID	Object Name	Description	Unit	
0	AV00:RESERVED	software version(.xx)	NO_UNITS	R
1	AV01:ERROP	Error Code(xx.)	NO_UNITS	R
2	AV02:LEDOP	VFDF status(xx.)	NO_UNITS	R
3	AV03:FSET	Frequency Command(xx.xx)	HERZ	R
4	AV04:FOUT	Output Frequency(xx.xx)	HERZ	R
5	AV05:OUTAMP	Output Current(xx.x)	AMPERES	R
6	AV06:DCBUS	DC Bus Voltage(xxx.x)	VOLTS	R
7	AV07:OUTACV	Output Voltage(xxx.x)	VOLTS	R
8	AV08:PFANGLE	PF angle(xx.xx)	DEGREE_ANGULAR	R
9	AV09:POUT	Output Power(xx.xx)	KILPWATTS	R

10	AV10:PVFB	PID feedback physical signal (x.x)	NO_UNITS	R
11	AV11:SENSOR	PID feedback (xx.xx)	PERCENT	R
12	AV12:USERDL	Low part of user define (xx.xx)	NO_UNITS	R
13	AV13:USERDH	High part of user define(xxxx)	NO_UNITS	R
14	AV14:PLC_TIME	PLC time (xxxx)	UNIT_SECOND	R
15	AV15:TQ_RATIO	Torque(xx.x)	UNIT_NEWTON_METER	R
16	AV16:CMD_REM	(RUN/STOP/JOG/FWD/REV)	NO_UNITS(resolution 1.0)	C
17	AV17:FCMAIN	Frequency command	HERTZ	C
18	AV18:SCMD_REM	(EF/Reset/BB)	NO_UNITS(resolution 1.0)	C
19	AV19:PARAMETERID	Parameter ID set	0.0~65535.0 (resolution 1.0)	R/W
20	AV20:PARAMETERVALUE	Parameter value set	0.0~65535.0	R/W

- 🕮 To set up object AV16 from the BACnet Communication Protocol, Pr02-01 has to be set as 3 or 4.
- 🕮 To set up object AV17 from the BACnet Communication Protocol, Pr02-00 has to be set as 4.
- 🕮 To set up communication parameter from BACnet, please set up the object AV19 then set up object AV20.
- 🕮 Please refer to the description of Group 00 to set up objects AV00 to AV15.
- 🕮 Please refer to Pr09-06 for the description of the object AV16.
- 🕮 Please refer to Pr09-07 for the description of the object AV17.
- 🕮 Please refer to Pr09-08 for the description of the object AV18.

VFDF-Binary Values:

ID	Object Name	Description	Inactive/Active	
0	BV00:Ready or Not-Ready	Ready State	Not Ready/ Ready	R

For current Value Access Types, R = Read-only, R/W = Writable, C = Commandable. Commandable values support priority arrays and relinquish defaults.

22. Add new parameter Pr10-12: PID Mode

10-12	**PID Mode**			Factory setting	00
	Setting Range	00	PID control by hand		
		01	Automatic PID control		

- 🕮 This parameter allows you to choose PID control by hand or automatic PID control.
- 🕮 When the set up is Automatic PID Control, you can adjust Kp from Pr10-03[Proportional Gain], adjust TI from Pr10-04[Integral Time] and adjust Td from Pr10-05[Differential Time].

23. Add new parameter Pr11-01: Circulative Control function selection

11-01	Circulative Control			Factory Setting	00
	Setting Range	00	No function		
		01	Fixed Time Circulation (by time)		
		02	Fixed amount circulation (by PID)		
		03	Fixed amount control (one AC drive runs with 8 motors)		
		04	Fixed Time Switch + Fixed Amount Circulation		
		05	Fixed Time Switch +Fixed Amount Control		

📖 When the AC drive is set to be Pr11-01 <Fixed Time Circulation (by time)>, the AC drive is able to run with 1 to 8 motors (the number of motor can be set by Pr11-02) while the order of running of those motors can be set by Pr11-03. To set the delay time of running of motors, use PR 11-04.

📖 When the setting is <<03 Fixed amount control (one AC drive runs with 8 motors)>>, and if the output frequency reaches the setting of <<Pr 11-06 Motor Switch Frequency during the Fixed Amount Circulation>> and surpasses (or is equal to) the setting of <<Pr 11-05 Motor Switch Delay Time during the Fixed Amount Circulation>>, the AC drive will start to run a second motor. The AC drive is able to run up to 8 motors in order and simultaneously (the number of motors can be set by <<Pr11-02>>. When output frequency is lower than the output frequency of <<Pr 11-11>>, the motors will stop running one by one.

📖 When the setting is <04 Fixed Time Switch and Fixed Amount Circulation>, its function is the same as fixed amount circulation. But since the Fixed Time Switch is also added, the current motor run by the AC drive will stop and start to run another idling motor. This function reduces efficiently the idling time of motors.

📖 When the setting is <<05 Fixed Time Switch + Fixed Amount Control>>,

its function is the same as Fixed Amount Control. But by adding a Fixed Switch Device

will activate the auxiliary which is not in use and deactivate the one which is running.

This function can prevent an auxiliary from being too long time at an idle mode.

24. Add new parameter Pr11-02: Multiple Motors Control

11-02	Multiple Motors Control		Factory Setting	01
	Setting Range	01-08		

25. Add new parameter Pr11-14: Delay Time when Switching Circulating Motors (2)

11-14	Delay Time when Switching Circulating Motors (2)		Factory Setting	1.0
	Setting Range	0.0-3600.0 Sec		

📖 This parameter determines the delay time of switching circulating motors from mains electricity while doing fixed amount control (Pr11-01=2).

26. Add new parameter Pr11-12: Setting of Sleep Mode Function

11-12	Setting of Sleep Mode Function		Factory Setting	00
	Setting Range	00	Refer to PID Output Command	
		01	Refer to Feedback signal	

📖 When the setting is 00: the Pr11-08 is the <Sleep Frequency of Sleep Process.> while Pr11-09 is the <Wake Up Frequency of Sleep Process>
📖 When the setting is 01: the Pr11-08 is the Wake Up Feedback Frequency of Sleep Process, while Pr11-09 is the Sleep Feedback of Sleep Process.>

27. Add new parameter Pr11-08: Sleep Frequency of Sleep Process (hz)
/ Wake Up Feedback Frequency of Sleep Process (%)

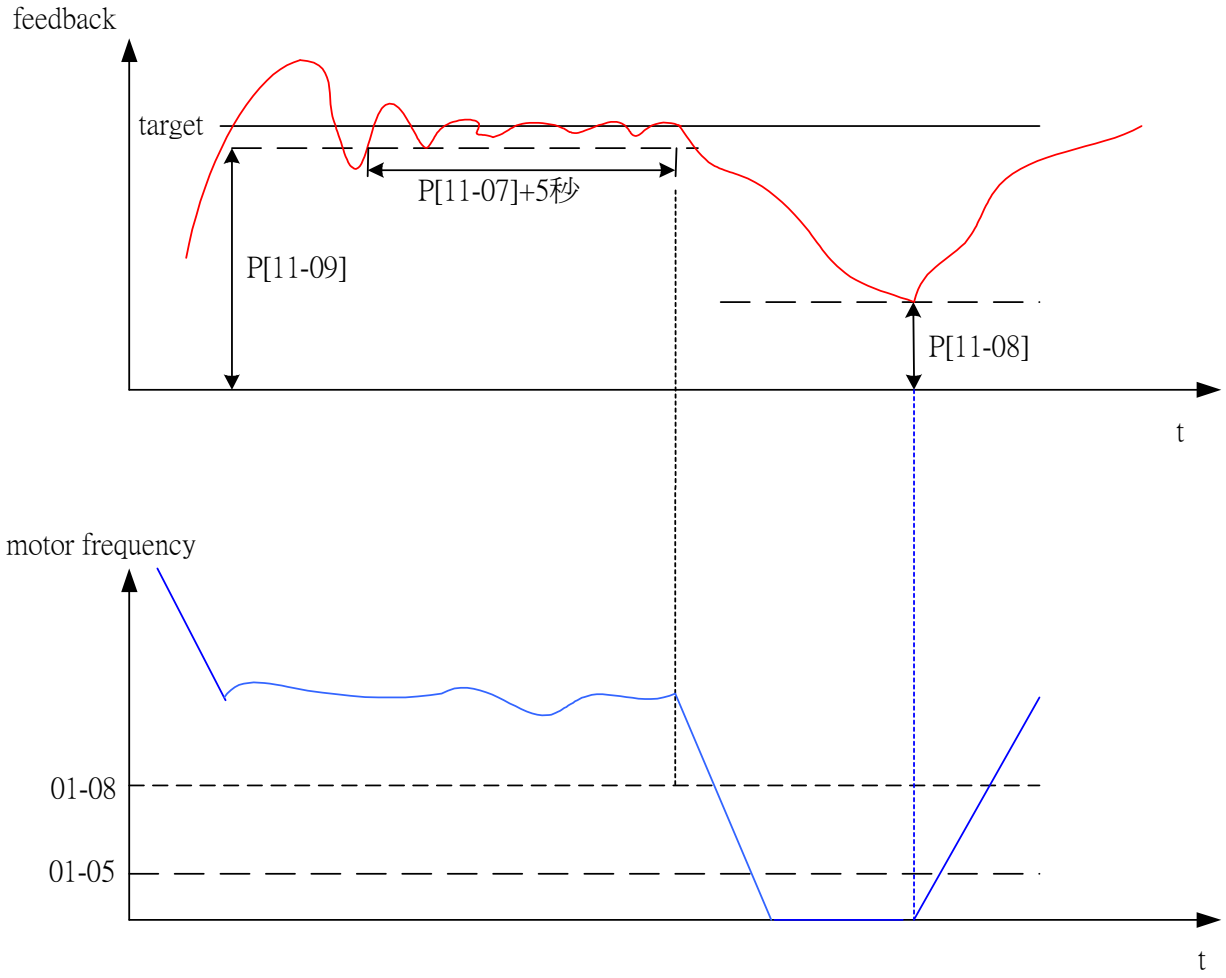
11-08	Sleep Frequency of Sleep Process (hz) / Wake Up Feedback Frequency of Sleep Process (%)		Factory Setting	0.00
	Setting Range	0.00~11-09		

📖 When Pr11-12 = 1, this parameter is a certain percentage of PID rate.

28. Add new parameter Pr11-09: Sleep Feedback rate of Sleep Process (%)

11-09	Sleep Feedback rate of Sleep Process (%)		Factory Setting	0.00
	Setting Range	0.00~120.00		

📖 When Pr11-12 =1, this parameter is a certain percentage of PID rate.
📖 The Sleep feedback rate of Sleep Process has to be bigger than Wake up feedback rate of Sleep Process.



Fire Mode：

📖 By choosing the fire mode and ignoring most of errors to make the AC drive to work non-stop could cause damages or mal function to the AC Drive and the system itself. It could evne incur a fire accident. If any errors occured by using the fire mode then lead to damages of personnels or properties, Delta Electronics Co. Ltd will not be responsible. If an AC drive is set to be at fire mode and is running under this mode, then any direct, indirect, specific or afterward damages happen to the end users or others, Delta Electonics will not be responsible for that.

could cause damages or mal function to the AC Drive, the system and the components.
Then it could lead to a fire accident or other disasters. If the AC drive is set to be the fire mode then some errors occured to cause any mal function nor

📖 Note:
Only under certain circumstance, the fire mode may be used to keep the motors running. For example: To keep the ventialtion system running in the staire ways and tunnels, Ventilatioin systems cannot be stopped to help the evacuation. Some erros occurred while running the fire mode will be ignored to keep the motors running unstopped.

📖 Action time
When Pr-11-15 is not equal to zero and when external terminal MI=42 or MI=43.

📖 The error codes of AC drive under normal usage and fire mode.

Code	Error Name	Normal Usage	Fire Mode
1	OC	X	X
2	OV	X	X
3	OH	X	X
4	OL	X	
5	OL1	X	
6	EF	X	
7	OCC	X	X
8	CF3	X	X
9	HPF	X	X
10	OCA	X	X
11	OCN	X	X
12	OCD	X	X
13	GFF	X	X
14	LV	X	
15	CF1	X	
16	CF2	X	X
17	BB	X	
18	OL2	X	
20	Code	X	
21	EF1	X	
22	PHL	X	
23	Lc	X	
24	FbL	X	
26	FANP	X	
27	Fan1 Abnormal	X	
28	Fan2 Abnormal	X	
29	Fan3 Abnormal	X	
30	Fan1,2,3 Abnormal	X	
31	Fan1,2 Abnormal	X	
32	Fan1,3 Abnormal	X	
33	Fan2,3 Abnormal	X	
34	FV	X	X
41	HPF1	X	X
42	HPF2	X	X
43	HPF3	X	X
44	HPF4	X	X
45	CF33	X	X
46	CF34	X	X
47	CF35	X	X
48	CF36	X	X
49	CF37	X	X
50	CF38	X	X

29. Add new parameter Pr11-13: Reserved

11-13	Reserved		Factory Setting	00
	Setting Range	Reserved		

🕮 This parameter determines the largest PID Integral rate when waking up. If the integral rate is too big, the AC drive will be easily overcharges. If the integral rage is too small, the AC drive will react slowly.

30. Add new parameter Pr11-15: Fire Mode Function

11-15	Fire Mode Function		Factory Setting	0
	Setting Range			
	00	Turn off Fire Mode Function		
	01	To turn at Clock-wise direction		
	02	To turn at counter clock-wise direction		

🕮 This parameter determines to turn on or off the Fire mode function and the direction of fire mode.

31. Add new parameter Pr11-16: Operation Frequency at Fire Mode

11-16	Operation Frequency at Fire Mode		Factory Setting	60.00
	Setting Range	0~FMAX		

🕮 This parameter determines the operation frequency at fire mode.

32. Add new parameter Pr11-17: umber of Times to Re-activate while Abnormal Fire Mode

11-17	Number of Times to Re-activate while Abnormal Fire Mode		Factory Setting	0
	Setting Range	0~10		

🕮 This parameter determines the number of times to re-activate the system while abnormal fire mode.

🕮 Able to re-activate while abnormal fire mode: OC、OV、OH、OCC、OCA、OCN、OCD、GFF、FV。

🕮 This parameter is only effective when bypass mode is already set up. If bypass mode is not set up, then the AC drive will always be reset.

33. Add new parameter Pr11-18: Bypass Function

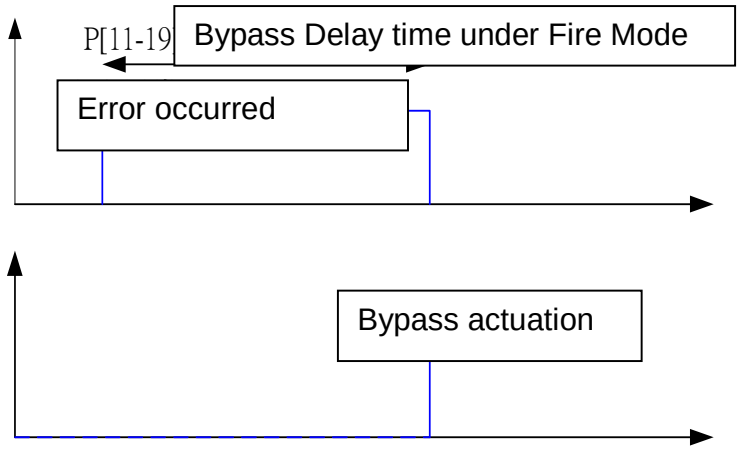
11-18	Bypass Function	Factory Setting	00
	Setting Range		
	00	Turn Off	
	01	Turn On	

📖 This parameter determines to turn on or turn off the bypass function. AC drive can switch to operate under this function by usung this function.
📖 The abnormal codes are to activate bypass function under the fire mode. OC、OV、OH、OCC、CF3、HPF、OCA、OCN、OCD、GFF、PHL、FV。

34. Add new parameter Pr11-19: Bypass Delay time under Fire Mode

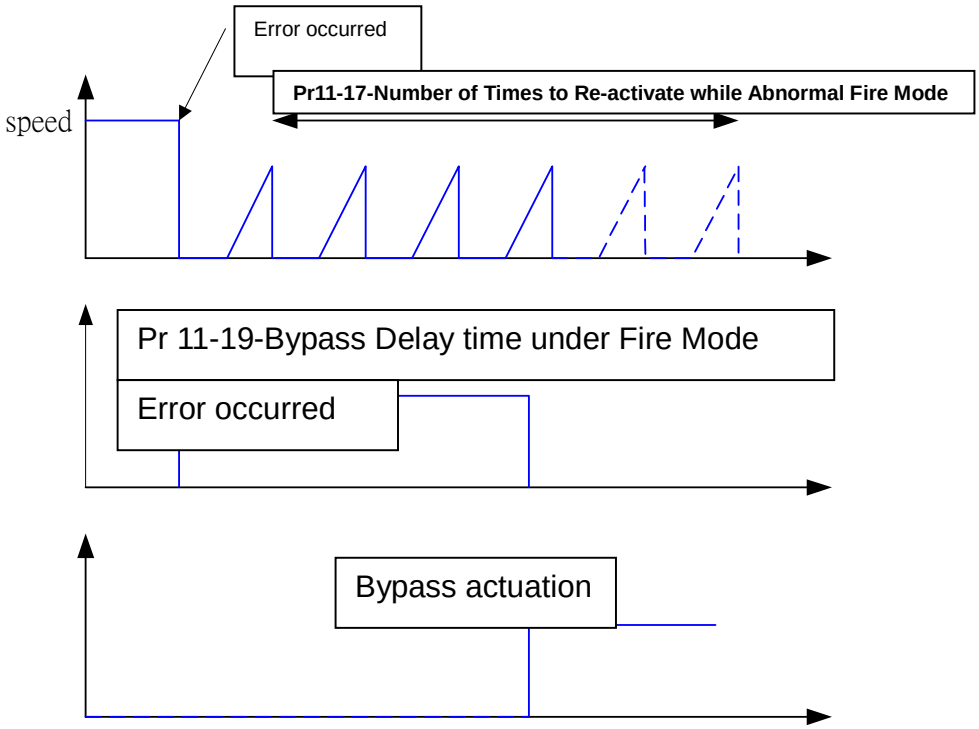
11-19	Bypass Delay time under Fire Mode	Factory Setting	0.0
	Setting Range	0.0~6550.0 Second	

📖 This parameter determines the bypass delay time.
📖 When the external bypass actuation timing starts, the inverter stops any output.
📖 External bypass actuation timing
When error codes such as CF3, HPF are shown on the inverter, wait for command of Pr11-19<Bypass delay time under fire mode> then the bypass will actuate.



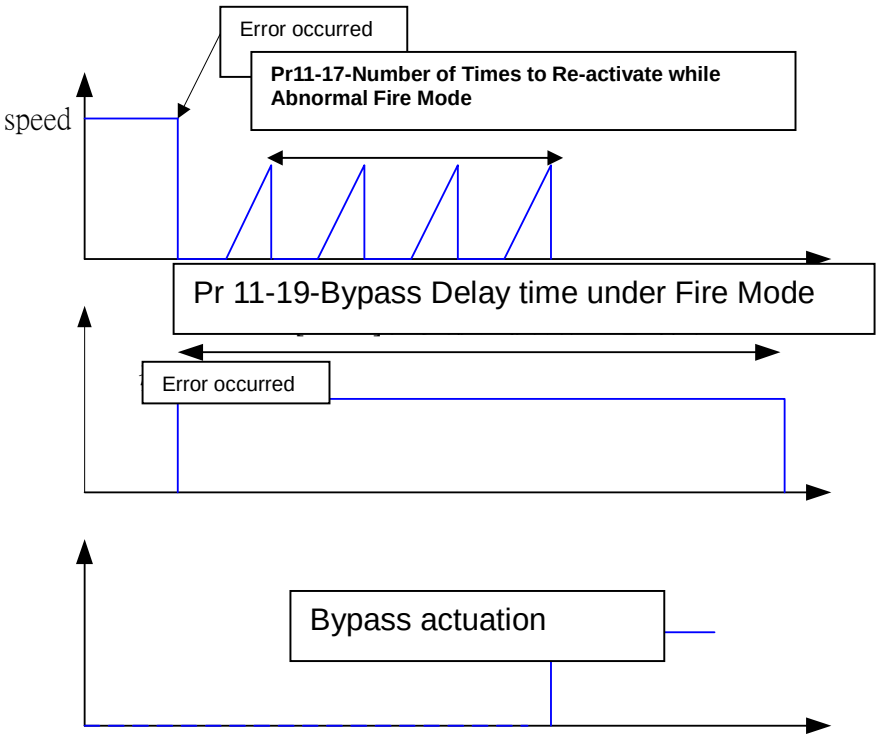
🕮 External bypass actuation timing

When error codes are not eliminated (i.e. OC, OV, OH, OCC, OCA, OCD, OCN, GFF and FV) and when Pr11-19<Bypass delay time under fire mode> arrives.



🕮 External bypass Actuation Timing

Under the fire mode, the number of time of autorest is ZERO for the following error code: OC, OV, OH, OCC, OCA, OCD, OCN, GFF.



Additional information on Circulative Control

Pr11-01=01 ：Fixed Time Circulation

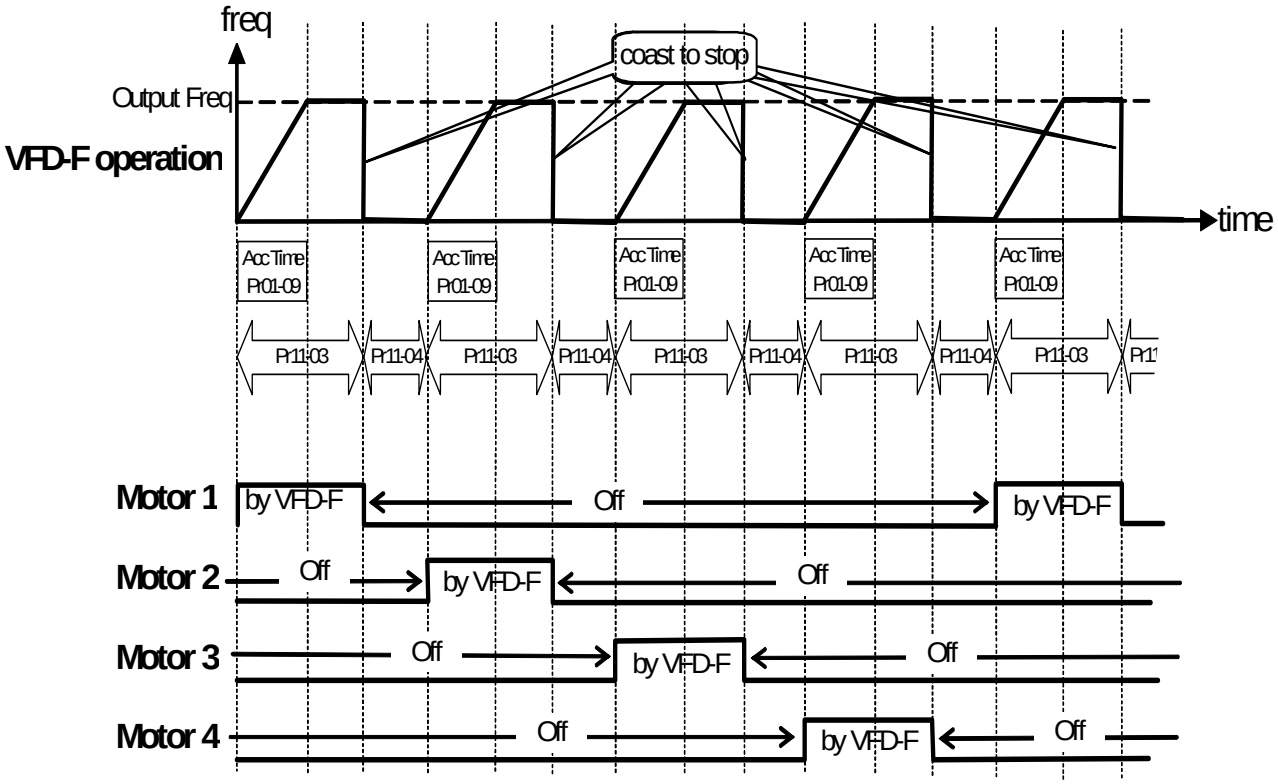
After Motor#1 follows Pr11-03 <Fixed Time Circulation Setting> to run for some time, it will park freely. Then Motor # 2 will wait for the Pr11-04<Motor Switch Delay Time> and start to run. The order to run of fixed time circulation is Motor1-Motor2-Motor3-Motor4-Motor1-Motor2-Motor3-Motor4 repeatedly.

- Setting of Related Parameters ：

  Pr11-01=01 Select <Fixed Time Circulation>
  Pr11-02=X Set quantity of motors, maximum 8 motors.
  Pr11-03=X Set time for fixed time circulation.
  Pr11-04=X Set time for motor switch delay time.

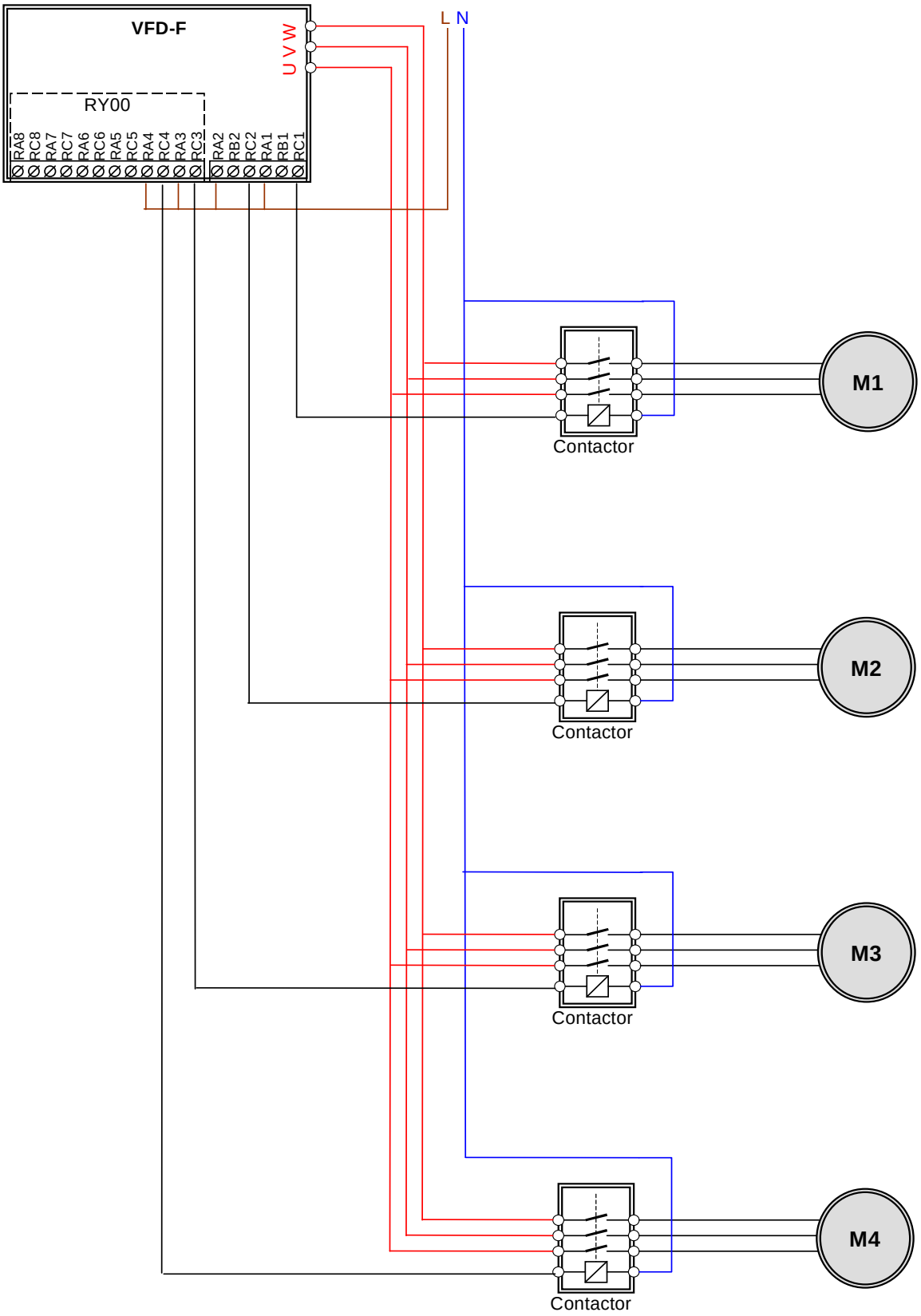
  Multi-function output terminal will follow Pr11-02 for setting.

Pr11-02=	01	02	03	04	05	06	07	08
Pr03-00=	1	1	1	1	1	1	1	1
Pr03-01=	-	2	2	2	2	2	2	2
Pr03-02=	-	-	3	3	3	3	3	3
Pr03-03=	-	-	-	4	4	4	4	4
Pr03-04=	-	-	-	-	5	5	5	5
Pr03-05=	-	-	-	-	-	6	6	6
Pr03-06=	-	-	-	-	-	-	7	7
Pr03-07=	-	-	-	-	-	-	-	8



Description of Fixed Time Circulation

- Example of Fixed Time Circulation: Connecting 4 Motors



Pr11-01=02 ：Fixed Amount Circulation

When Motor#1 of the inverter accelerate from 0Hz to the highest frequency, it will follow Pr11-05<Motor switch delay time during Fixed Amount Circulation> to decelerate. After the time set by Pr11-04<Motor Switch Delay Time>, Motor01 will not be powered by the inverter but by the mains. Then after the same length of time set by Pr11-04<Motor Switch Delay Time>, Motor#2 will be powered by the inverter, so on and so forth. Please refer to the Increasing Demand graph.

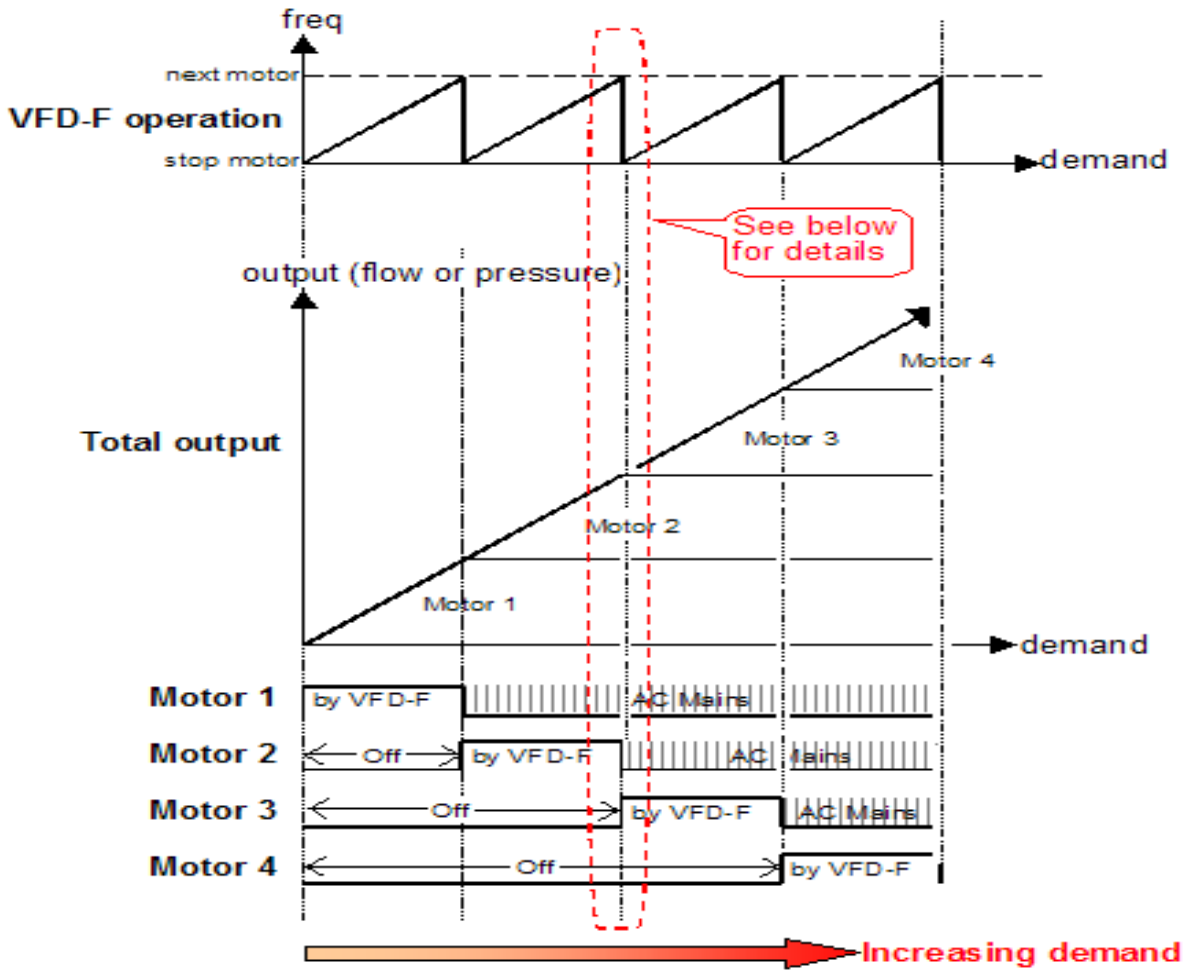
When Motor#4 which is powered by the inverter decreases from the largest frequency to 0Hz and after it runs for the length of time set by Pr11-14, it will make one of the motor not to be powered by the mains electricity. Then after it runs again for the same length of time set by Pr11-14, it will stop another motor being powered by the mains electricity, so on and so forth. Please refer to the Decreasing demand graph. No matter it is the acceleration or the deceleration, the 4 motors will be running at this order repeatedly: 1-2-3-4-1-2-3-4

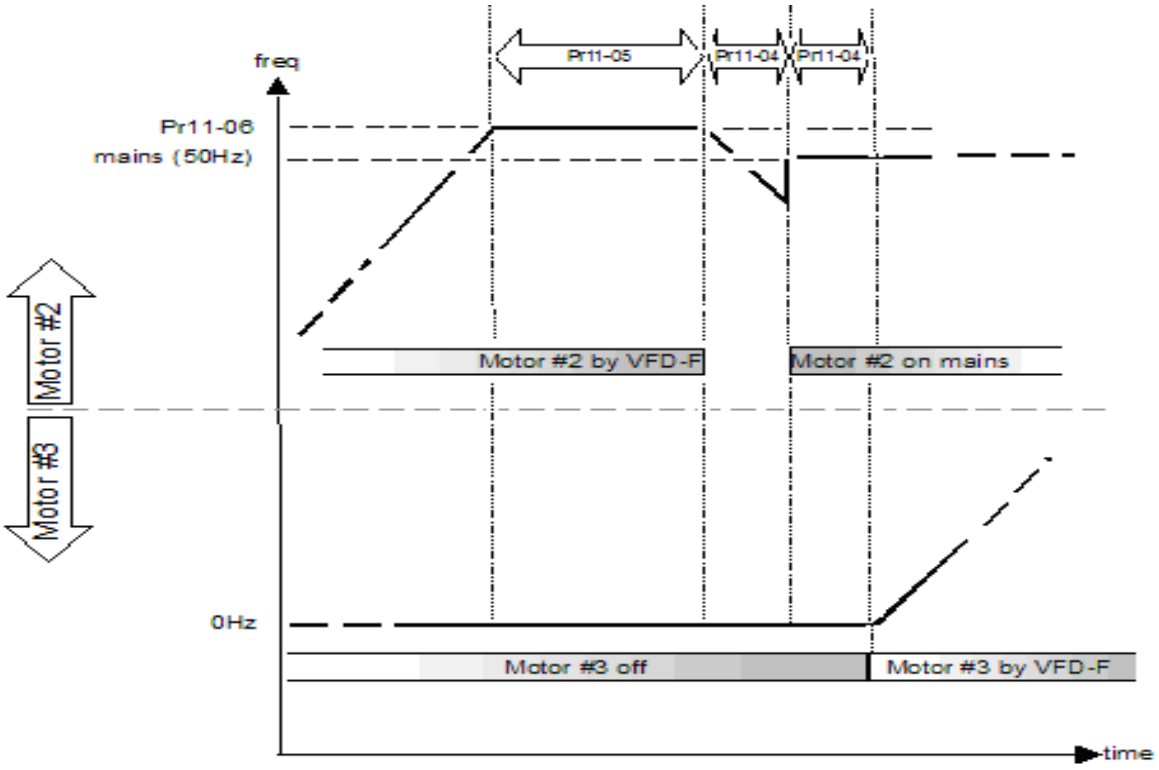
- Setting of Related Parameters

  Pr11-01=02 Select <Fixed Amount Circulation>.
  Pr11-02=X Set quantity of motors, maximum 4.
  Pr11-05=X Set motor switch delay time
  Pr11-06=X Activation Frequency of an Auxiliary
  Pr11-04=X Command from the AC drive to increase the motor switch delay time (Please refer to Increasing demand graph)
  Pr11-14=X Command from the AC drive to decrease the motor switch delay time (Please refer to the Decreasing demand graph).

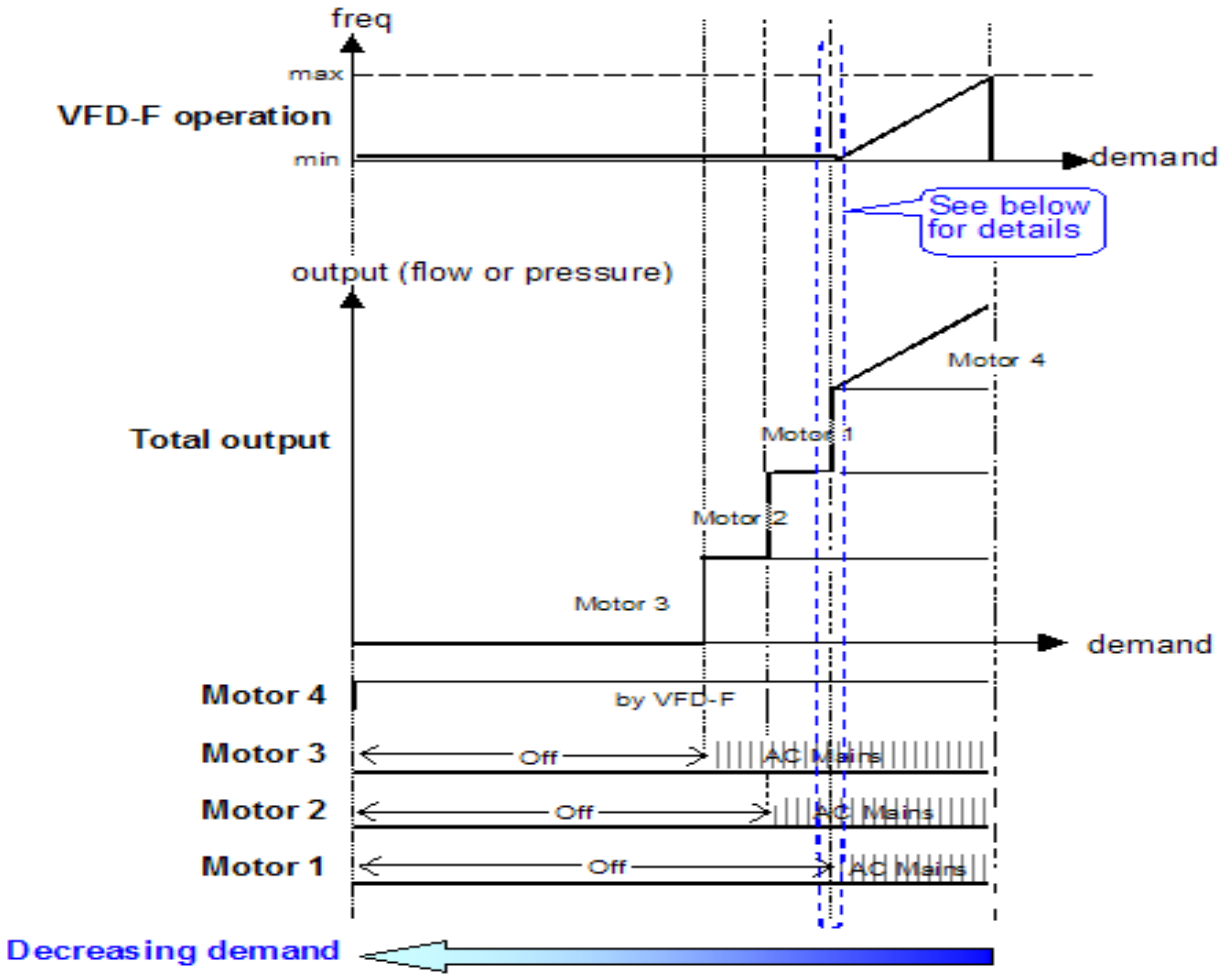
  Multi-function output terminal will follow Pr11-02 for setting.

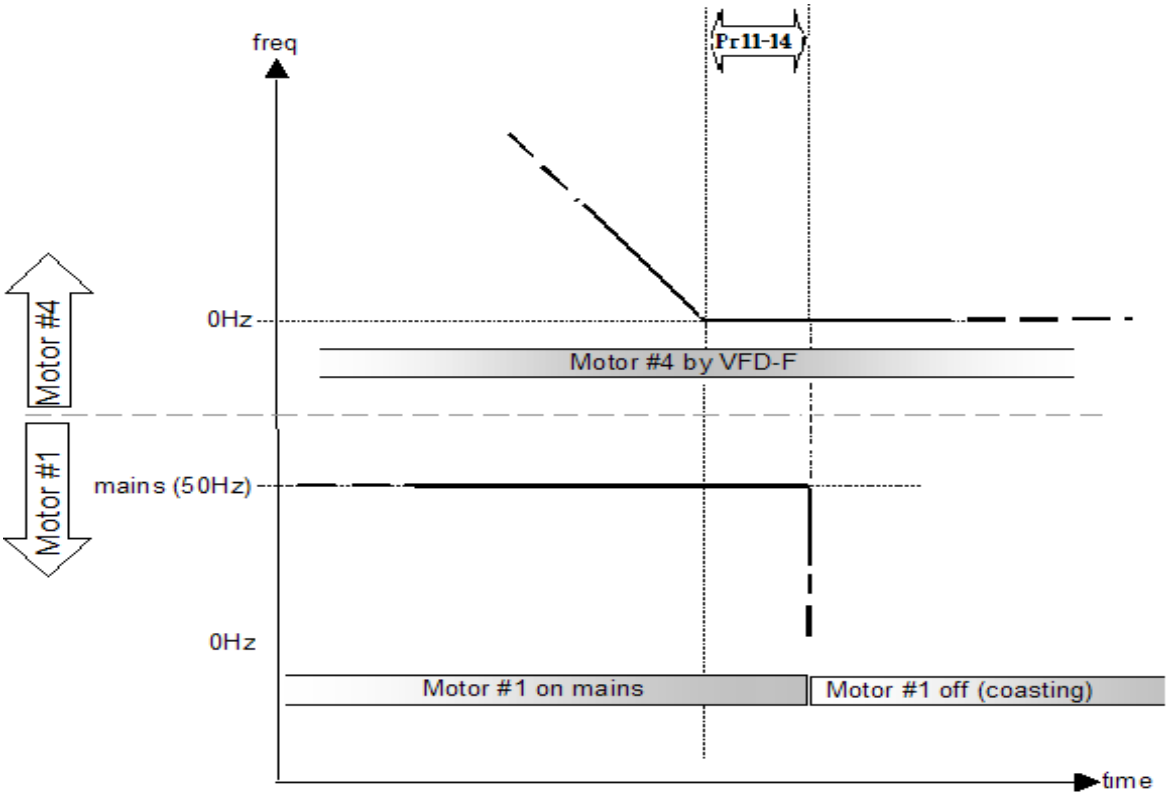
Pr11-02=	**01**	**02**	**03**	**04**	
Pr03-00=	1	1	1	1	Motor #1 by VFD-F
Pr03-01=	2	2	2	2	Motor #1 on Mains
Pr03-02=	-	3	3	3	Motor #2 by VFD-F
Pr03-03=	-	4	4	4	Motor #2 on Mains
Pr03-04=	-	-	5	5	Motor #3 by VFD-F
Pr03-05=	-	-	6	6	Motor #3 on Mains
Pr03-06=	-	-	-	7	Motor #4 by VFD-F
Pr03-07=	-	-	-	8	Motor #4 on Mains





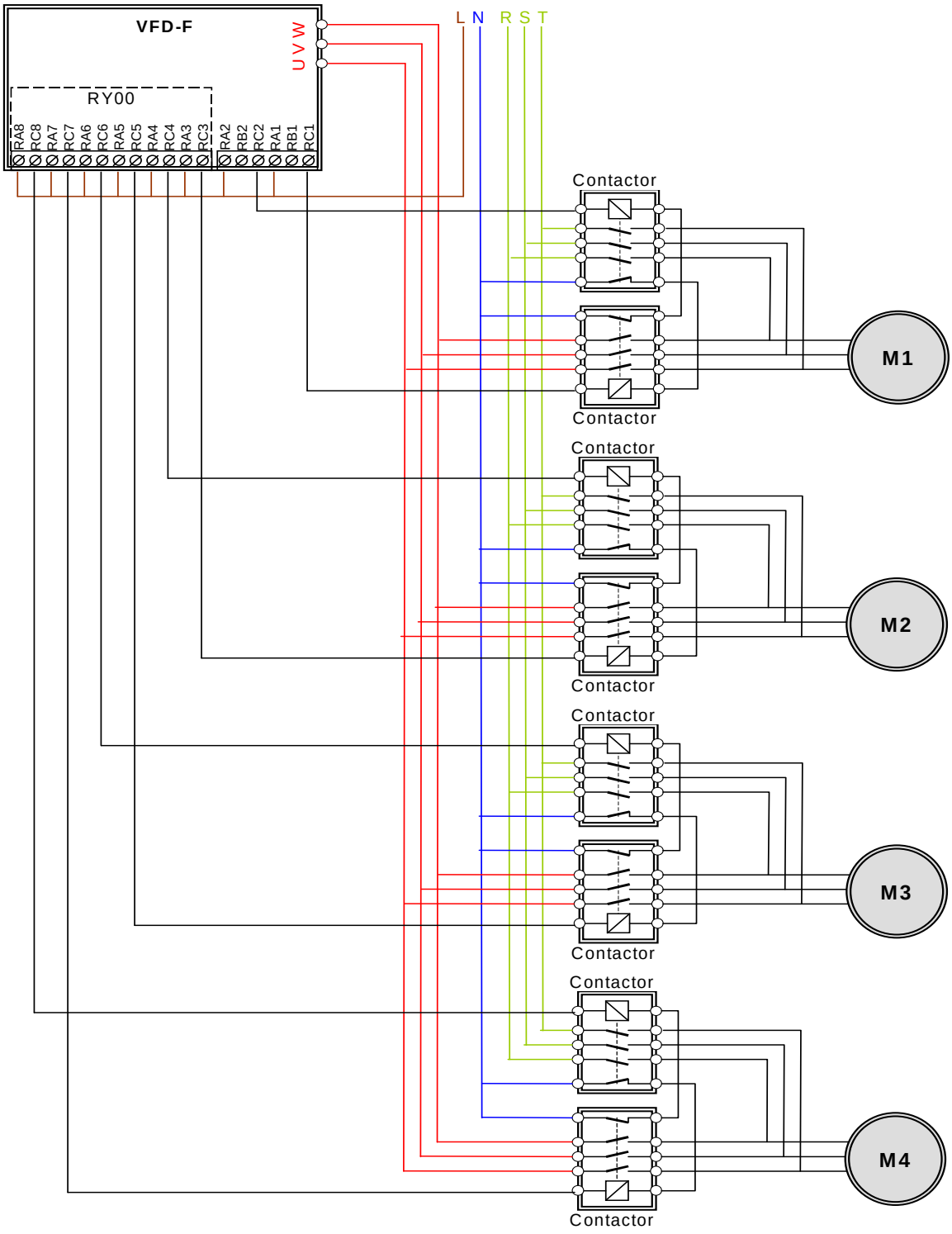
Graph: Increasing Demand





Graph: Decreasing Demand

- Example of Fixed Amount Circulation: Connecting to 4 motors

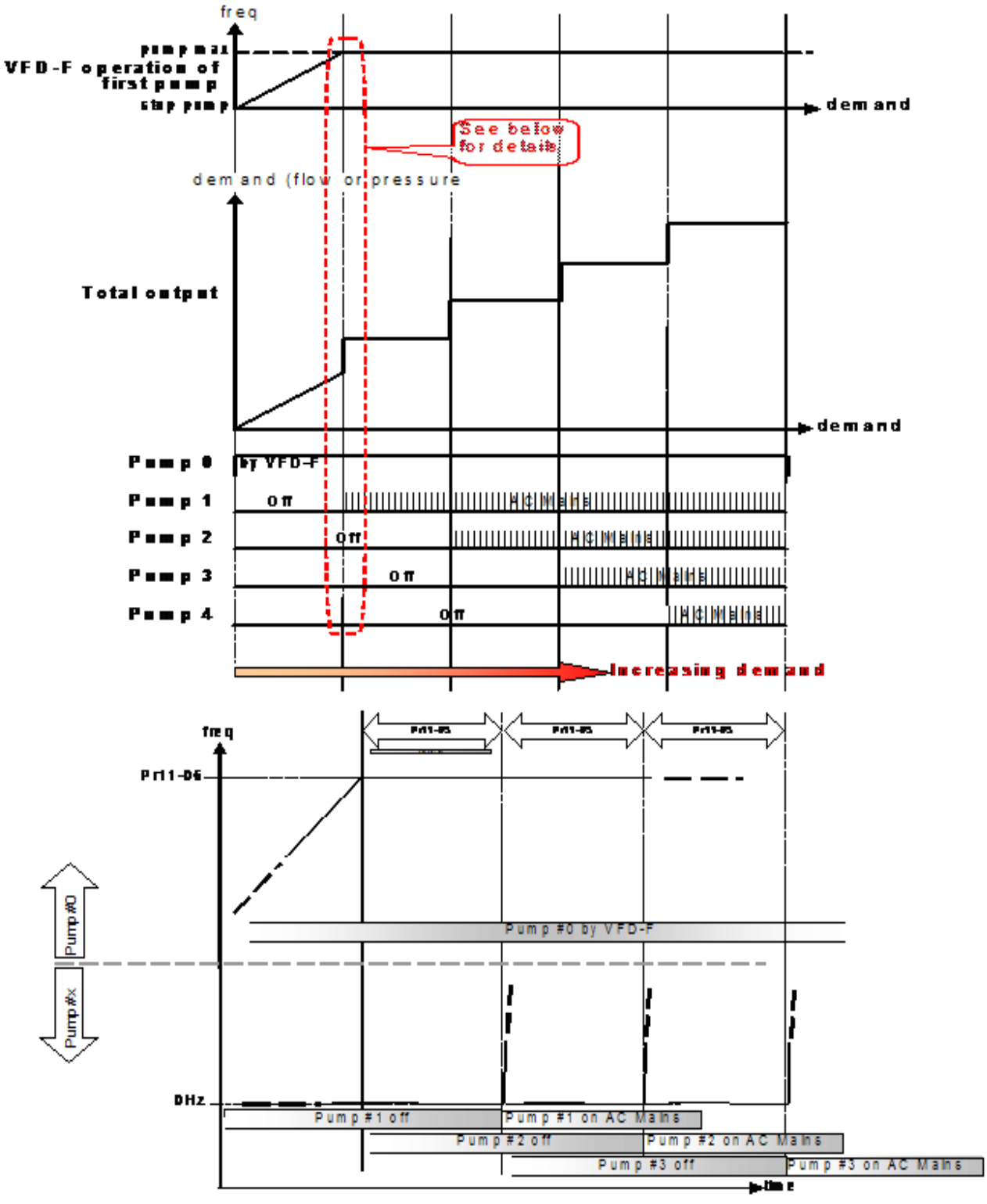


Pr11-01=03 ：Fixed Amount Control

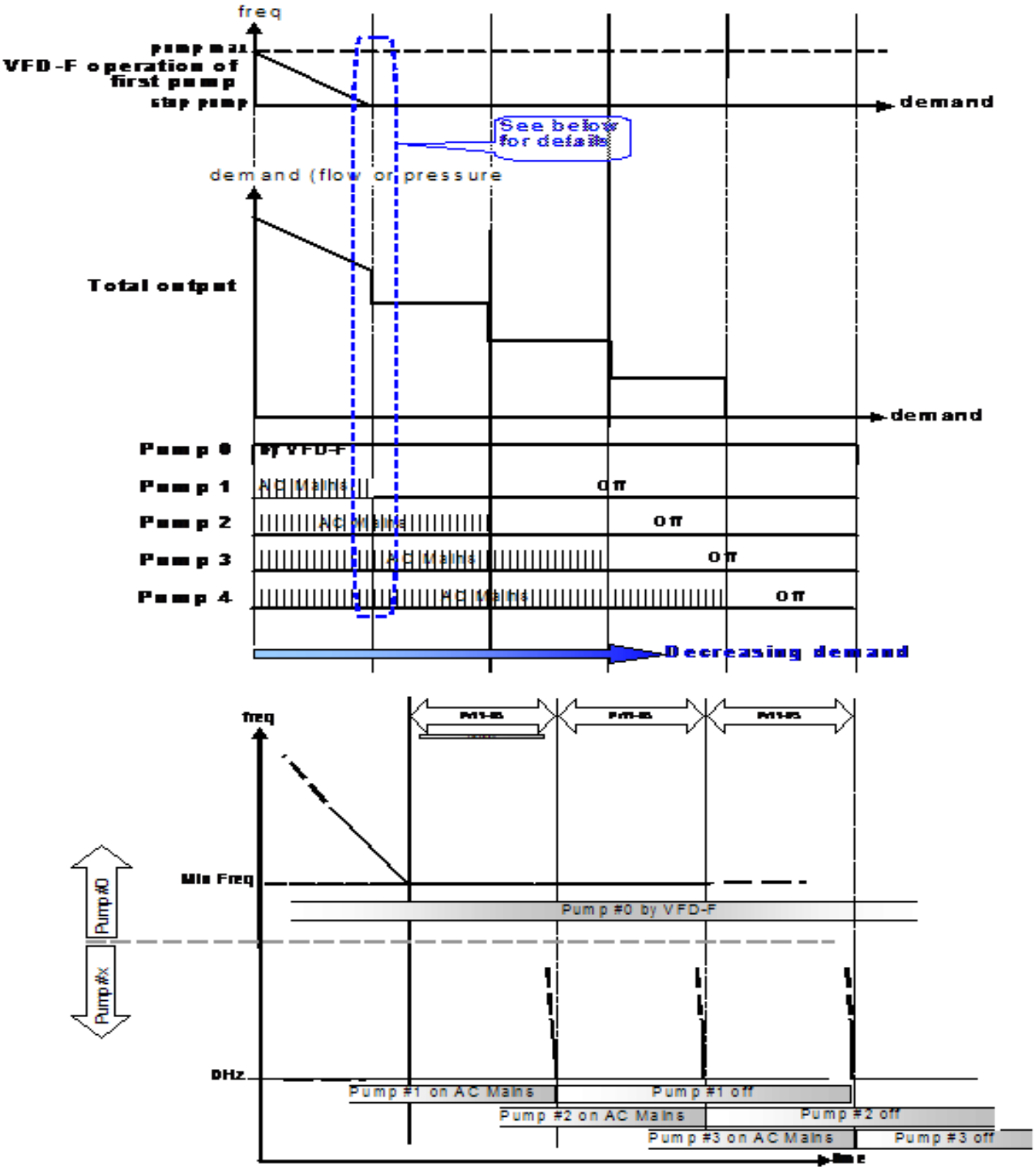
The motor powered by the inverter accelerates from 0Hz to exceed the frequency value set at Pr11-06. Then after the inverter runs for the length of time set at Pr11-05, it will pass Auiliary#1 to be powered by the mains electricity. Then it will pass other auxiliaries to be powered by the main electricity in the same way. (Please refer to Increasing Demand graph)
The motor powered by the inverter decelerates from its largest frequency to 0Hz. Then when it passes the length of time set at Pr11-05, it will stop Auxiliary#1 being powered by the mains electricity. It will continue to stop repeatedly other auxiliaries being powered by the mains electricity one by one in the following order: 1-2-3-4-1-2-3-4.

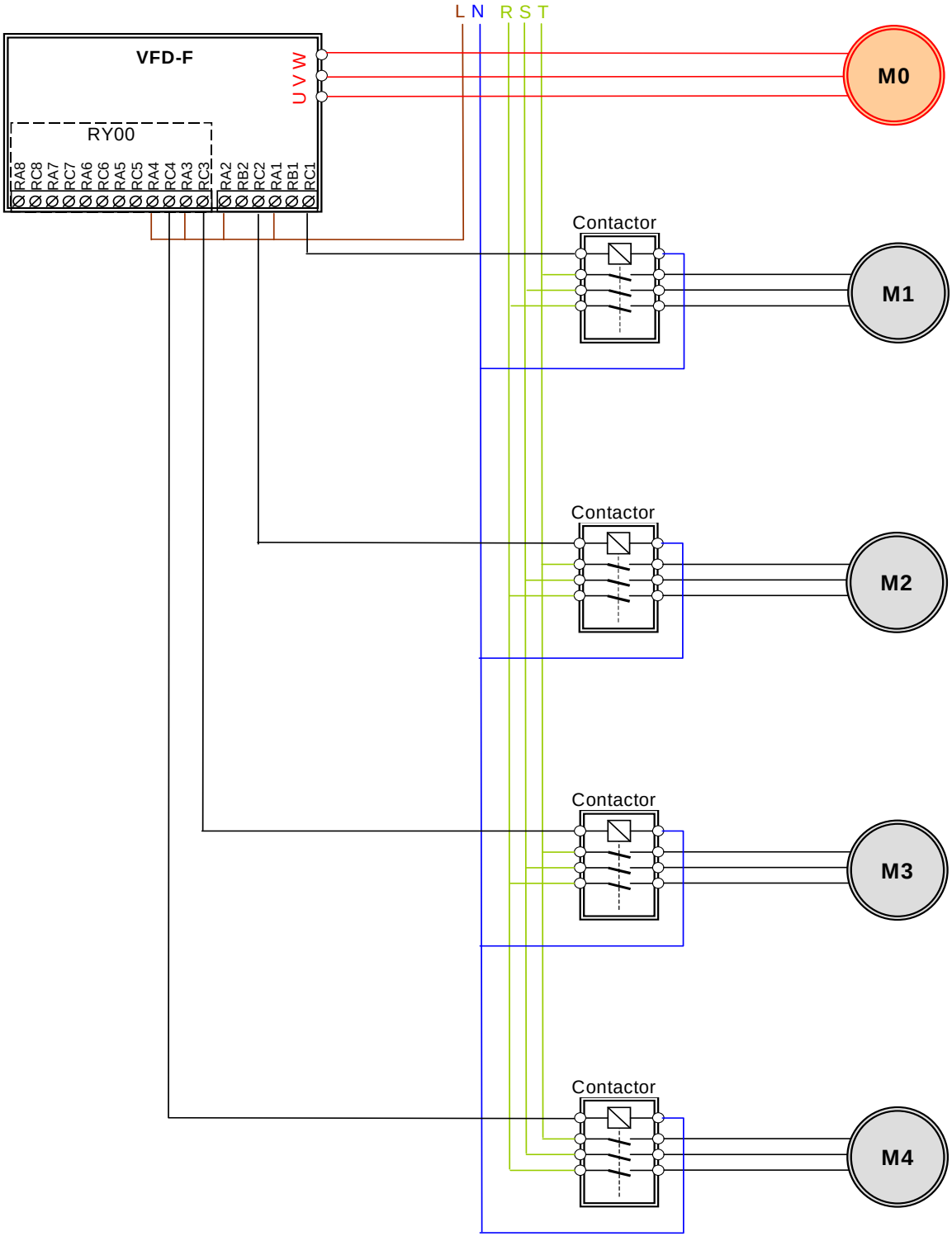
- Setting of related Parameters
  Pr11-01=01 Select fixed time circulation
  Pr11-02=X Set quantity of motors, maximum 8 motors.
  Pr11-05=X Delay time to activate auxiliaries.
  Pr11-06=X Activation frequency of auxiliaries
  Multi-function output terminals follow automatically the settings of Pr11-02

Pr11-02=	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	
Pr03-00=	1	1	1	1	1	1	1	1	Motor#1 on Mains
Pr03-01=	-	2	2	2	2	2	2	2	Motor#2 on Mains
Pr03-02=	-	-	3	3	3	3	3	3	Motor#3 on Mains
Pr03-03=	-	-	-	4	4	4	4	4	Motor#4 on Mains
Pr03-04=	-	-	-	-	5	5	5	5	Motor#5 on Mains
Pr03-05=	-	-	-	-	-	6	6	6	Motor#6 on Mains
Pr03-06=	-	-	-	-	-	-	7	7	Motor#7 on Mains
Pr03-07=	-	-	-	-	-	-	-	8	Motor#8 on Mains



Graph: Increasing Demand



Graph: Decreasing Demand

- Example of Fixed Amount Control: Connecting to 4 motors