Profibus Danfoos Inverter Parameter

1.Pilih PAR 512 = Telegram Profile , 0 = ProfiDrive, 1 = FC Protocol

512	Telegram Profile	
	(Telegram Profile)	
Value:		
	Profidrive (Profidrive)	[0]
☆	FC protocol (FC protocol)	[1]

Function:

It is possible to choose between two different control word profiles.

Description of choice:

Select the desired control word profile.
See *Serial port for VLT 2800* for further details of control word profiles.

2.Pilih PAR 500 = Bus Address ,0 = FC Protocol ,

500	Address	
	(BUS ADDRESS)	
Value:		
	Parameter 500 Protocol = FC protocol [0]	
	0 - 247	☆ 1
	Parameter 500 Protocol = Metasys N2 [1]	
	1 - 255	☆ 1
	Parameter 500 Protocol = MODBUS RTU [3]	
	1 - 247	☆ 1

3.Pilih PAR 501 = Baudrate Setting untuk communication ke Inverter

501	Baudrate
	(BAUDRATE)
Value:	
300 Baud (300 BAUD)	[0]
600 Baud (600 BAUD)	[1]
1200 Baud (1200 BAUD)	[2]
2400 Baud (2400 BAUD)	[3]
4800 Baud (4800 BAUD)	[4]
☆ 9600 Baud (9600 BAUD)	[5]

4.Pilih PAR 502 = Coasting Stop(Stop Command),0 =Digital,1 = Serial,=Logic AND,3=Logic OR.

502	Coasting Stop
	(COASTING SELECT)
Value:	
Digital input (DIGITAL INPUT)	[0]
Serial port (SERIAL PORT)	[1]
Logic and (LOGIC AND)	[2]
☆ Logic or (LOGIC OR)	[3]

Function:

Parameters 502-508 allow a choice between controlling the frequency converter via the digital inputs and/or via the serial port.

If *Serial port* [1] is selected, the relevant command can only be activated if a command is given via the serial port.

In the case of *Logic and* [2] the function must also be activated via a digital input.

5.PAR 503 = Quick Stop

503	Quick-stop
	(Q STOP SELECT)
Value:	
Digital input (DIGITAL INPUT)	[0]
Serial port (SERIAL PORT)	[1]
Logic and (LOGIC AND)	[2]
☆ Logic or (LOGIC OR)	[3]

6.PAR 504 = DC Brake

504	DC brake
	(DC BRAKE SELECT)
Value:	
Digital input (DIGITAL INPUT)	[0]
Serial port (SERIAL PORT)	[1]
Logic and (LOGIC AND)	[2]

7.PAR505 = Start Inverter Select

505	Start
	(START SELECT)
Value:	
Digital input (DIGITAL INPUT)	[0]
Serial port (SERIAL PORT)	[1]
Logic and (LOGIC AND)	[2]
☆ Logic or (LOGIC OR)	[3]

8.PAR 506 = Reverse Mode, untuk putaran motor

507	Selection of Setup (SETUP SELECT)	
Value:		
	Digital input (DIGITAL INPUT)	[0]
	Serial communication (SERIAL PORT)	[1]
	Logic and (LOGIC AND)	[2]
☆	Logic or (LOGIC OR)	[3]

9.PAR 507 = Active Setup Program

507	Selection of Setup (SETUP SELECT)	
Value:		
	Digital input (DIGITAL INPUT)	[0]
	Serial communication (SERIAL PORT)	[1]
	Logic and (LOGIC AND)	[2]
☆	Logic or (LOGIC OR)	[3]

10.PAR 509 & 510 = Jog Mode

509	Bus jog 1 (BUS JOG 1 FREQ.)	
510	Bus jog 2 (BUS JOG 2 FREQ.)	
Value:		
	0.0 - par. 202 *Output frequency high limit*	☆ 10,0 Hz

Function:

If parameter 512 *Telegram Profile* shows the selection *Profidrive* [0], two fixed speeds (Jog 1 or Jog 2) can be selected via the serial port.

The function is the same as in parameter 213 *Jog frequency* .

11.PAR 513 = Bus Timeout Time

513	Bus time interval (BUS TIMEOUT TIME)	
Value:		
1 - 99 sec.		☆ 1 sec.
Function:		
In this parameter it is possible to preset the maximum time expected to elapse between receipt of two consecutive telegrams. If this time is exceeded, the serial communication is assumed to have stopped and the desired reaction is preset in parameter 514 *Bus time interval function*.		

12.PAR 514 =Bus Timeout Func

514	Bus time interval function (BUS TIMEOUT FUNC)	
Value:		
☆	Off (off)	[0]
	Freeze output frequency (FREEZE OUTPUT)	[1]
	Stop (STOP)	[2]
	Jogging (JOGGING)	[3]
	Max. speed (MAX SPEED)	[4]
	Stop and trip (STOP AND TRIP)	[5]

Control Word from PLC to Inverter via Profibus

■ **Control word/Status word**

The bits of the "Control word" tell the frequency converter how to react, while the "Status word" bit status will tell the master the condition of the frequency converter.

Control word

The control words are used to send control commands to the frequency converter when the telegram is sent from the master.

Control word		
According to PROFIDRIVE control word (par. 512 = 0)		
Bit	Bit = 0	Bit = 1
00 (LSB)	OFF 1	ON 1
01	OFF 2	ON 2
02	OFF 3	ON 3
03	Motor coasting	Enable
04	Quick-stop	Ramp
05	Freeze output frequency	Ramp enable
06	Ramp stop	Start
07	No function	Reset
08	Jog 1 OFF	ON
09	Jog 2 OFF	ON
10	Data not valid	Valid
11	No function	Slow down
12	No function	Catch-up
13	Setup select LSB	
14	Setup select MSB	
15 (MSB)	No function	Reversing

Status Word from Inverter to PLC via Profibus

■ **Status word**

When the frequency converter returns the frame to the master, the same two bytes operate as status from the frequency converter with the following functions:

Status word		
According to PROFIDRIVE control word (par. 512 = 0)		
Bit	Bit = 0	Bit = 1
00 (LSB)	Control not ready	Ready
01	VLT not ready	Ready
02	Motor coasting	Enable
03	No fault	Trip
04	ON 2	OFF 2
05	ON 3	OFF 3
06	Stop enable	Start disable
07	No warning	Warning
08	Speed ≠ ref.	Speed = ref.
09	Local operation	Bus control
10	Out of range	Frequency OK
11	Not running	Running
12		
13	Voltage OK	Limit
14	Torque OK	Limit
15 (MSB)	No thermal warning	Thermal warning

Contoh Start Command PLC to Inverter via Profibus

This network sends a start command (047C hex) and a reference (2000 hex) of 50% to the frequency converter.

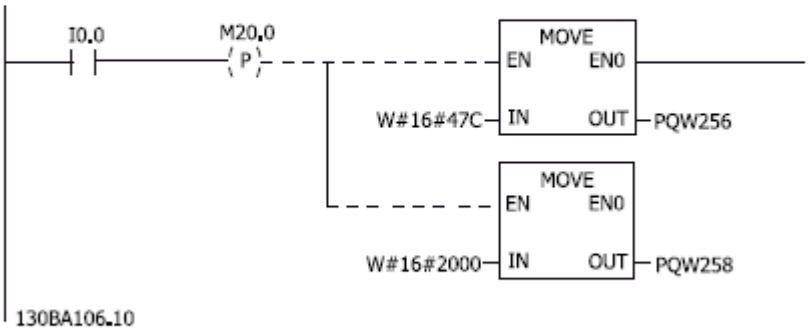

Illustration 7.3 Network Sends a Start Command and a Reference of 50% to the Frequency Converter.

Contoh Stop Command PLC to Inverter via Profibus

This network reads the status on the digital inputs from the frequency converter. If digital input 18 is On, it stops the frequency converter.

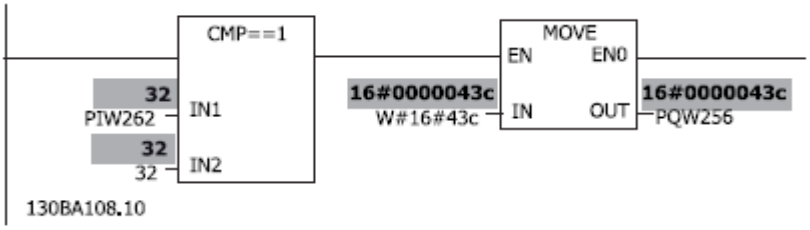

Illustration 7.5 Network Reads the Status on the Digital Inputs from the Frequency Converter

Contoh Start Reverse Command PLC to Inverter via Profibus

This network reverses the motor when digital input 19 is ON, because *parameter 8-54 Reversing Select* is programmed to Logic AND.

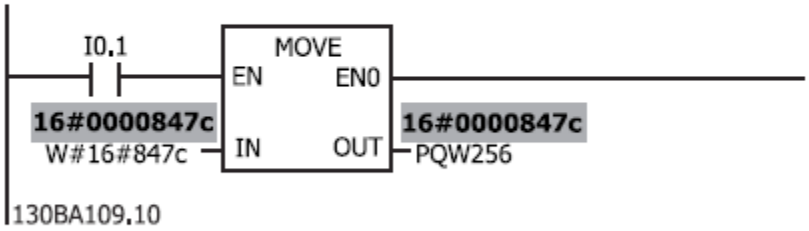

Illustration 7.6 Network Reverses the Motor When Digital Input 19 is ON

PPO TYPE

PPO TYPE 4

Byte 1	word 5	CTW / STW	PCD
Byte 2			
Byte 3	word 6	MRV / MAV	
Byte 4			
Byte 5	word 7	PCD 3	
Byte 6			
Byte 7	word 8	PCD 4	
Byte 8			
Byte 9	word 9	PCD 5	
Byte 10			
Byte 11	word 10	PCD 6	
Byte 12			

LEGEND

PPO	→	PARAMETER PROCESS DATA OBJECT
PCV	→	PARAMETER CHARACTERSTICS VALUE
PCA	→	PARAMETER CHARACTERSTICS(BYTE 1,2)
IND	→	SUBINDEX
PVA	→	PARAMETER VALUE
PCD	→	PROCESS DATA
STW	→	STATUS WORD(FromDrive)
CTW	→	CONTROL WORD (To drive)
MAV	→	MAIN ACTUAL VALUE (FREQUENCY FROM DRIVE)
MRV	→	MAIN REFERENCE VALUE (FREQUENCY TO DRIVE)

Specific Profibus Parameter

1. Par 800 = Protocol Selection

800 Protocol select (PROTOCOL SELECT)	
Value:	
★PROFIBUS DP V1	[30]

Function:

Selection of the PROFIBUS protocol supported by the master.

Description of choice:

DP: Communication according to EN 50170, part 3

2.Par 803 & 804 = Bus time out dan Bus time out function

803 Bus time out (BUS TIME OUT)	
Value:	
1 - 99 sec.	★ 1 sec.

804 Bus time out function (TIME OUT FUNCT.)	
Value:	
★Off (OFF)	[0]
Freeze output frequency (FREEZE OUTPUT)	[1]
Stop with auto restart (STOP)	[2]
Output frequency = JOG freq. (JOGGING)	[3]
Output freq. = Max. freq. (MAX SPEED)	[4]
Stop with trip (STOP AND TRIP)	[5]
No comm. option control (NO COMM OPT CONTROL)	[6]
Select setup 4 (SELECT SET UP 4)	[7]
Select setup 2	[8]

3. Par 805 = Bit 10 function , untuk setting Data Valid atau Not Valid dari Control Word PLC

805 Function of control word bit 10 (BIT 10 FUNCTION)	
Value:	
No function (NO FUNCTION)	[0]
★Bit 10 = 1 CTW active (BIT 10 = 1 CTW ACTIVE)	[1]
Bit 10 = 0 CTW active (BIT 10 = 0 CTW ACTIVE)	[2]
Bit 10 = 0 time out (BIT 10 = 0 TIME OUT)	[3]

4. Par 833 = FieldBus Enabled

833 Fieldbus enabled (FIELDBUS ENABLED)	
Value:	
Disable (DISABLE)	[0]
★Enable (ENABLE)	[1]

5.Par 904 = Setting PPO Type sesuai Hardware Configuration

904 PPO type select for DP (PPO TYPE SELECT)	
Value:	
★PPO type 1 (PPO TYPE 1)	[900]
PPO type 2 (PPO TYPE 2)	[901]
PPO type 3 (PPO TYPE 3)	[902]
PPO type 4 (PPO TYPE 4)	[903]
PPO type 5 (PPO TYPE 5)	[905]
PPO type 6 (PPO TYPE 6)	[906]
PPO type 7 (PPO TYPE 7)	[907]
PPO type 8 (PPO TYPE 8)	[908]

6.Par 915 = PCD configuration write

915 PCD config. write	
(PCD IN WR-)	
Value:	
Sub index 1 (PCD 3)	[Parameter #]
Sub index 2	[Parameter #]
Sub index 3	[Parameter #]
Sub index 4	[Parameter #]
Sub index 5	[Parameter #]
Sub index 6	[Parameter #]
Sub index 7	[Parameter #]
Sub index 8	[Parameter #]

7.Par 916 = PCD configuration read

916 PCD config. read	
(PCD IN RD-)	
Value:	
Sub index 1 (PCD 3)	[Parameter #]
Sub index 2	[Parameter #]
Sub index 3	[Parameter #]
Sub index 4	[Parameter #]
Sub index 5	[Parameter #]
Sub index 6	[Parameter #]
Sub index 7	[Parameter #]
Sub index 8	[Parameter #]

8.Par 918 = Station Address, atur Address sesuai HW Config (2...23)

918 Station address
(STATION ADDR)
Value:
0-125
★126
Function:
All stations connected to the same bus must have a unique address. The station address can be set in parameter 918.

Setting Danfoos Local / Remote

1.Pilih PAR 002 , untuk mengubah referensi LOCAL ke REMOTE atau sebaliknya,Local via keypad

002	Local/remote operation (OPERATION SITE)	
Value:		
☆	Remote operation (REMOTE)	[0]
	Local operation (LOCAL)	[1]

Function:

There is a choice of two different modes of operation of the frequency converter; *Remote operation* [0] or *Local operation* [1]. See also parameter 013 *Local control* if *Local operation* [1] is selected.

2.Pilih PAR 013 = Local Control Operation

013	Local control (LOC CTRL/CONFIG.)	
Value:		
	Local not active (DISABLE)	[0]
	Local control and open loop without slip compensation (LOC CTRL/OPEN LOOP)	[1]
	Remote-operated control and open loop without slip compensation (LOC+DIG CTRL)	[2]
	Local control as parameter 100 (LOC CTRL/AS P100)	[3]
☆	Remote-operated control as parameter 100 (LOC+DIG CTRL/AS P100)	[4]

Lock / Unlock Parameter setting

1.Pilih PAR 018 = Data Change Lock , Pilih 0

018	Lock for data changes	
	(DATA CHANGE LOCK)	
Value:		
☆	Not locked (NOT LOCKED)	[0]
	Locked (LOCKED)	[1]

Function:

In this parameter, it is possible to 'lock' the controls to disable data changes via the control keys.

Setting Parameter umum

1.Pilih PAR 100 = Configuration, untuk memilih jenis pengontrolan kecepatan

100	Configuration	
	(Configuration)	
Value:		
☆	Speed control, open loop (SPEED OPEN LOOP)	[0]
	Speed control, closed loop (SPEED CLOSED LOOP)	[1]
	Process control, closed loop (PROCESS CLOSED LOOP)	[3]

2. Pilih PAR 101 = Motor Torsi

101	Torque characteristic (TORQUE CHARACT)	
Value:		
☆	Constant torque (Constant torque)	[1]
	Variable torque low (torque: low)	[2]
	Variable torque medium (torque: med)	[3]
	Variable torque high (torque: high)	[4]
	Variable torque low with CT start (VT LOW CT START)	[5]
	Variable torque medium with CT start (VT MED CT START)	[6]
	Variable torque high with CT start (VT HIGH CT START)	[7]
	Special motor mode (Special motor mode)	[8]

3.Pilih PAR 102 = Motor Power (KW)

102	Motor power $P_{M,N}$ (motor power)	
Value:		
0.25 - 22 kW		☆ Depends on unit
Function:		

Here you must set a power value [kW] $P_{M,N}$, corresponding to the motor's rated power. The factory sets a rated power value [kW] $P_{M,N}$, that depends on the type of unit.

4. Pilih PAR 103 = Motor Voltage

103	Motor voltage $U_{M,N}$
	(MOTOR VOLTAGE)
Value:	
For 200 V units: 50 - 999 V	☆ 230 V
For 400 V units: 50 - 999 V	☆ 400 V
Function:	
This is where to set the rated motor voltage $U_{M,N}$ for either star Y or delta Δ.	

5.Pilih PAR 104 = Motor Frequency

104	Motor frequency $f_{M,N}$
	(MOTOR FREQUENCY)
Value:	
24-1000 Hz	☆ 50 Hz
Function:	
This is where to select the rated motor frequency $f_{M,N}$.	

6.Pilih PAR 105 = Motor Current

105	Motor current $I_{M,N}$
	(MOTOR CURRENT)
Value:	
0,01 - I_{MAX}	☆ Depends on choice of motor
Function:	
The nominal, rated current of the motor $I_{M,N}$ forms part of the frequency converter calculation of features such as torque and motor thermal protection.	

7.Pilih PAR 106 = Motor Nominal Speed

106	Rated motor speed (MOTOR NOM. SPEED)
Value:	
100 - $f_{M,N}$ x 60 (max. 60000 rpm)	☆ Depends on parameter 104 *Motor frequency*, $f_{M,N}$
Function:	
This is where to set the value that corresponds to the rated motor speed $n_{M,N}$ that can be seen from the nameplate data.	

8. Pilih PAR 200 = Output Frequency Range

200	Output frequency range (OUT FREQ. RNG/ROT)
Value:	
☆ Only clockwise, 0 - 132 Hz (132 Hz CLOCKWISE)	[0]
Both directions, 0 - 132 Hz (132 Hz BOTH DIRECT)	[1]
Anti-clockwise only, 0 - 132 Hz (132 Hz COUNTER CLOCK)	[2]
Clockwise only, 0 - 1000 Hz (1000 Hz CLOCK WISE)	[3]
Both directions, 0 - 1000 Hz (1000 Hz BOTH DIRECT)	[4]
Anti-clockwise only, 0 - 1000 Hz (1000 Hz COUNTER CLOCK)	[5]

9. Pilih PAR 201 = Output Frequency Min

201	Output frequency low limit, f_{MIN}
	(MIN OUTPUT FREQ)
Value:	
0.0 - f_{MAX}	☆ 0.0 Hz
Function:	
In this parameter, a minimum motor frequency limit can be selected that corresponds to the minimum speed at which the motor is allowed to run. If *Both directions* has been selected in parameter 200 *Output frequency range*, the minimum frequency is of no significance.	

10. Pilih PAR 202 = Output Frequency Max

202	Output frequency high limit, f_{MAX}
	(max. output freq)
Value:	
f_{MIN} - 132/1000 Hz (par. 200 *Output frequency range*)	☆ 132 Hz
Function:	
In this parameter, a maximum output frequency limit can be selected that corresponds to the highest speed at which the motor is allowed to run.	

11.

11.Pilih PAR 203 = Reference Speed Range

203	Reference range
	(REFERENCE RANGE)
Value:	
☆ Min. reference - Max reference (min - max)	[0]
-Max. reference - Max. reference (-max - +max)	[1]

Function:

In this parameter you select whether the reference signal must be positive or whether it can be both positive and negative. The minimum limit may be a negative value, unless in parameter 100 *Configuration* a selection has been made of *Speed regulation, closed loop*. You should select *Min ref. - Max. ref.* [0], if *Process regulation, closed loop* [3] has been selected in parameter 100 *Configuration*.

12.Pilih PAR 204 = Min Reference Speed

204	Minimum reference, Ref_{MIN}
	(Min.reference)
Value:	
Par. 100 *Config.* = *Open loop* [0].-100,000.000 - par. 205 Ref_{MAX}	☆ 0.000 Hz
Par. 100 *Config.* = *Closed loop* [1]/[3].-Par. 414 *Minimum feedback* - par. 205 Ref_{MAX}	☆ 0.000 rpm/par 416

Function:

Minimum reference is an expression of the minimum possible value of the total of all references. If in parameter 100 *Configuration*, *Speed regulation, closed loop* [1] or *Process regulation, closed loop* [3] is selected, the minimum reference is limited by parameter 414 *Minimum feedback*. Minimum reference is ignored if the local reference is active.

13. Pilih PAR 205 = Max Reference Speed

205	Maximum reference, Ref_{MAX}
	(max.reference)
Value:	
Par. 100 *Config.* = *Open loop*	
[0].Par. 204 Ref_{MIN} - 1000.000 Hz	☆ 50.000 Hz
Par. 100 *Config.* = *Closed loop* [1]/[3]. Par. 204 Ref_{MIN} - Par. 415 *Max. feedback*	☆ 50.000 rpm/par 416
Function:	
The maximum reference gives the highest value that can be assumed by the sum of all references. If *Closed loop* [1]/[3] is selected in parameter 100 *Configuration* the maximum reference cannot exceed the value in parameter 415 *Maximum feedback*. Maximum reference is ignored if the local reference is active.	