MOELLER

Hardware and Engineering

DE5-NET-DP

Interface module for PROFIBUS-DP

06/02 AWB 8240-1417GB

(draft)

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1 About this Module

The DE5-NET-DP is a PROFIBUS communication module with which DF5 and DV5 frequency inverters can be controlled through a PROFIBUS network.

The DE5-NET-DP is connected to the inverter through an RJ45 interface and is installed directly on the mounting plate.

The DE5-NET-DP supports data transfer rates of up to 12 Mbaud. A relay signal contact is provided to safely decelerate the frequency inverter when a communication fault occurs or an Emergency-Stop is actuated.

1.1 System overview

The interface module has the following type code:

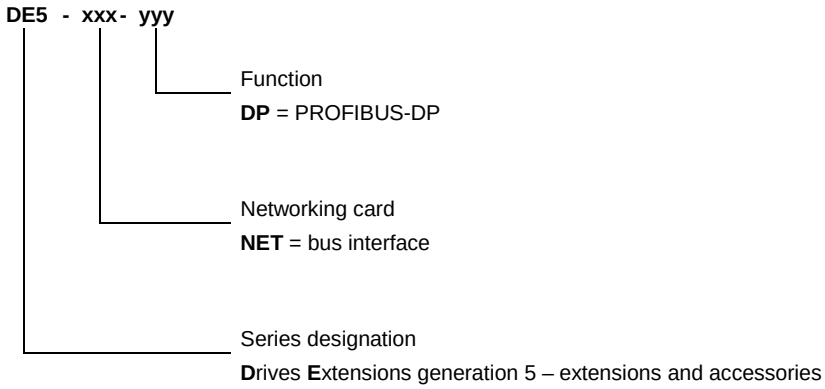


Figure 2: PROFIBUS-DP interface type code

1.2 Characteristics of the DE5-NET-DP

The DE5-NET-DP interface module has the following characteristics:

Communication profile	PROFIBUS-DP (DIN 19245 Parts 1 and 3)			
Interface	RS 485			
In the PROFIBUS-DP line	Slave			
Data transfer speed	9.6 to 93.75	kbaud for	1200	m data cable
	187.5	kbaud for	1000	m data cable
	500	kbaud for	400	m data cable
	1500	kbaud for	200	m data cable
	12000	kbaud for	100	m data cable
Baud rate detection	Automatic			
Slave address	Definable through 2 selector switches			
Process data	Basic parameters: 4 words input data/ 4 words output data			
Process data exchange	Cyclic			
Number of slaves	Depends on master used			
Supply voltage	Internal, from the frequency inverter (approx. 5 V/290 mA)			
Diagnostic LEDs	2			
Installation	Enclosure directly on the mounting plate below or next to the frequency inverter			
Degree of protection	IP 20			

1.3 Operating principle

With the DE5-NET-DP, you can connect a DF5 or DV5 frequency inverter to a PROFIBUS master through PROFIBUS-DP. Once you have correctly installed and configured the DE5-NET-DP, the connected inverter can be continually controlled and monitored through the PROFIBUS network. With the basic parameters, the DE5-NET-DP provides eight bytes of input data and eight bytes of output data.

The basic parameters are used for exchanging the following data:

From the PROFIBUS-DP master to the frequency inverter:

- Whether the inverter is to be controlled by the PROFIBUS master or through input signals at the inverter input terminals (FWD/REV/STOP)
- The speed setpoint source for the inverter (PROFIBUS-DP, input terminals or the potentiometer on the inverter).
- The Forward, Reverse and Stop signals to the inverter (if controlled through PROFIBUS-DP).
- The fault Reset signal to the inverter.
- The frequency inverter’s behaviour if the PROFIBUS is interrupted (maintain current state or stop).
- A signal for saving changed data in the frequency inverter.
- The speed or frequency setpoint value (in Hz) for the inverter (if controlled through PROFIBUS-DP).
- The inverter’s acceleration and deceleration time.

From the frequency inverter to the PROFIBUS-DP master:

- The inverter’s operating state (clockwise, anticlockwise, stop or fault).
- Fault signals (in the event of an inverter fault).
- Whether the inverter is controlled by the PROFIBUS master or through input signals at the inverter input terminals (FWD/REV/STOP).

- The speed reference source for the inverter (PROFIBUS-DP, input terminals or the potentiometer on the inverter).
- The inverter's present output frequency (in Hz).
- The inverter's present output current (in A).

In addition, using PROFIBUS configuration software (such as CFG-DP from Moeller), you can adapt the volume and type of information exchanged between the PROFIBUS master and the DE5-NET-DP to suit your current application.

2 Installation

2.1 Scope of delivery

On delivery, immediately check that you have received all items listed in the shipping papers. Moeller does not accept liability for items that are subsequently reported missing. The package contents of the interface module are:

- DE5-NET-DP interface module
- Installation instructions AWA 8240-1941
- Communication cable (RJ45 plug)
- Two-pin plug-in terminal for relay signalling contact
- Two screws with washer for fitting to enclosure

Immediately notify

- the supplier of any identifiable transport damage;
- the responsible Moeller organization of any identifiable faults or missing items

2.2 Installing the interface

⚠ WARNING DO NOT INSTALL OR PERFORM MAINTENANCE ON THIS DEVICE WHILE POWER IS SWITCHED ON. DEATH OR SEVERE PERSONAL INJURY CAN RESULT FROM CONTACT WITH LIVE EQUIPMENT. MAKE SURE THAT NO VOLTAGE IS PRESENT BEFORE PROCEEDING WITH INSTALLATION OR MAINTENANCE.

Only qualified persons should install, maintain, or operate this device. These persons should be familiar with the installation, maintenance, and operation of the device and the equipment to which it is installed. In addition, this personnel and all other users and operators must be familiar with all applicable national and international regulations, industry standards and accepted practices regarding health and safety of personnel. These instructions are provided only as a general guideline for the above persons; they should not be regarded as a comprehensive discussion of health and safety issues. They do not cover every application or circumstance that may arise during the installation, maintenance or operation of the module.

⚠ WARNING BEFORE YOU INSTALL OR OPERATE THE DE5-NET-DP WITH A DF5 OR DV5 FREQUENCY INVERTER, READ ALL WARNINGS AND CAUTIONS IN THIS USER MANUAL. ALSO FAMILIARIZE YOURSELF WITH THE FUNCTION AND WORKING PRINCIPLE OF THE INVERTER TO THE EXTENT TO WHICH THEY APPLY TO YOUR PARTICULAR APPLICATION.

Do not connect or disconnect the DE5-NET-DP to or from a live inverter, as this can cause the inverter to trip.

Disconnect all power sources from the inverter and wait until all indicators have gone out. Fit the module directly on the mounting plate next to or below the frequency inverter. Connect the frequency inverter and the DE5-NET-DP with the supplied communication cable (RJ45 plug).

(see installation instructions)

3 Engineering

3.1 RS 485 interface

The bus electronics are isolated from the remaining electronics with a built-in DC/DC converter. The bus signals (A- and B-line) are isolated with optocouplers. The fieldbus interface is a 9-pin female D-Sub connector, whose terminal assignment is shown in the table below.

Pin	Name	Function
Enclosure	Screening	Is connected to protective earth (PE)
1	Free	-
2	Free	-
3	B-line	Positive RxD/TxD according to RS 485 specification
4	RTS	Request To Send*
5	GND BUS	Isolated GND from RS 485 side*
6	+5 V BUS	Isolated +5 V from RS 485 side*
7	Free	-
8	A-line	Negative RxD/TxD according to RS 485 specification
9	Free	-

* In Standard applications, only A-line, B-line and screen are used.

⚠ WARNING DO NOT USE THE POWER SUPPLY OF THE FIELDBUS INTERFACE (+5V BUS AND GND BUS) IF ANY POWER IS DERIVED FROM THE INTERFACE, THE CONTROL LOGIC OF THE INVERTER MAY CEASE TO FUNCTION PROPERLY, RESULTING IN EQUIPMENT DAMAGE OR PERSONAL INJURY.

3.2 Bus terminating resistor

To avoid signal reflection, the physical ends of an RS 485 network cable must be terminated with bus terminating resistors. Use special-purpose plugs (such as the ZB4-209-D2S from Moeller) with bus terminating resistors which can be activated and disabled.

3.3 Bus address

To identify the slaves within a PROFIBUS-DP system, each slave must receive a unique bus address. To assign addresses, use the switches on the module. To get the bus address, multiply the value of the left switch by 10 and add the value of the right switch. For example, to set the bus address to 25, set the left switch to 2 and the right switch to 5.

Note: You cannot change the bus address during operation..

3.4 Diagnostics LEDs

The DE5-NET-DP has two status LEDs: Online and Error. Their functions are explained in the tables below:

Online-LED (green)	Fehler-LED (red)	Bedeutung
On	Off	Communication is activ, no faults
On	On	Communication with master is not active
Blinking	Off	Communication with inverter is not active [*1]
Blinking	On	PROFIBUS DP disconnected, no connection between interface and inverter
Off	Off	Check inverter/interface supply
Off	On	Warning: If address switches are in position 00 the interface does not perform its communication activity.

[*1] Normal condition during initialisation of PROFIBUS DP (for ~ 4 blinking cycles)

3.5 Behaviour on bus failure

If the communication cable between the DE5-NET-DP and the inverter is damaged or removed, the PROFIBUS master can no longer communicate with the inverter. If, in addition, communication between the DE5-NET-DP and the PROFIBUS master is interrupted, the inverter can no longer be controlled by the PLC. Normally, the inverter should generate a fault signal and shut itself down in this case. This assumes, however, that the module's Alarm relay signalling contact is connected to the inverter as described below. Alternatively, the inverter can be configured so that a loss of communication automatically results in a Free Run Stop (FRS) or Hold Last Speed as described below.

Fault/Stop

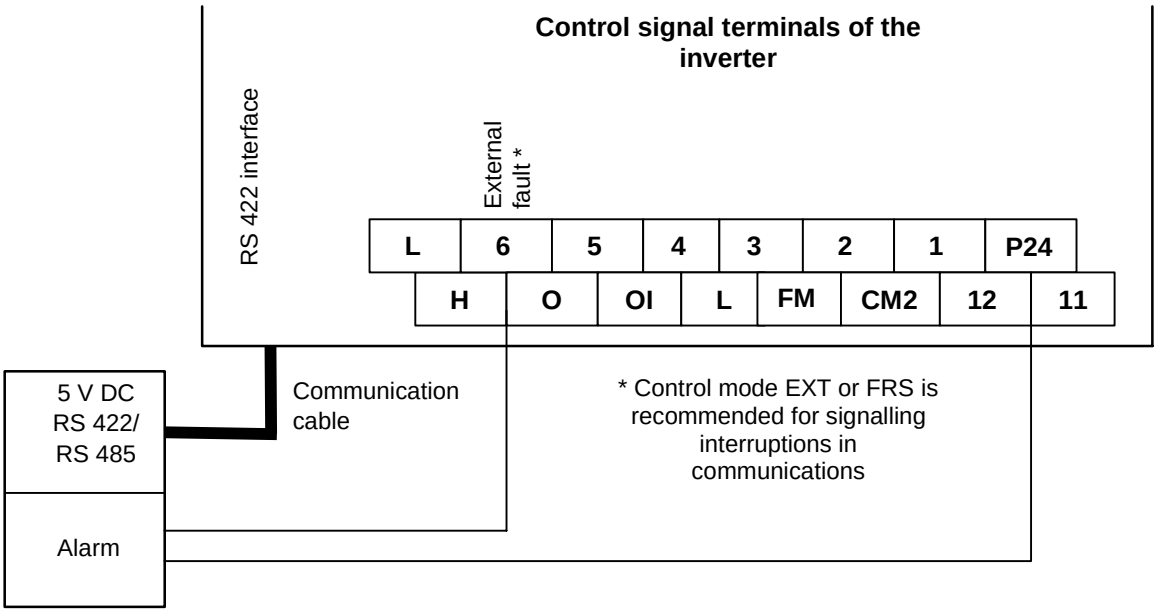
A loss of communication is an external fault and sets the inverter into Fault mode, which causes the connected motor to be switched off. Before the motor can be restarted, the fault signal must be acknowledged. To activate this control mode, set one digital input of the frequency inverter to "1" (NC contact) and to "12" (external fault).

Coasting (FRS – free run stop)

Loss of communication activates the FRS function, which removes power from the motor. The motor then coasts to a halt. If communication is restored, the inverter can respond to commands from the DE5-NET-DP again. To activate this control mode, set one digital input of the frequency inverter to "1" (NC contact) and to "11" (Free Run Stop/FRS). For details about configuring the digital inputs, see the manual for your frequency inverter.

⚠ WARNING If the inverter receives the Start and Stop commands through its input terminals (Net Ctrl = 0) the inverter will automatically restart, applying power to the motor, once communications have been restored. If the desired response is Fault/Stop or FRS, connect the Alarm relay signalling contact to input terminals 1-5/6 and P24.

⚠ WARNING If the Alarm cable is connected to one of the terminals 1-5/6, do not program this terminal for one of the Start or Jog functions. Otherwise the inverter and therefore the connected motor could unexpectedly start up when communications between DE5-NET-DP and inverter or between DE5-NET-DP and PROFIBUS master are lost.



Hold Last Speed

If communications are lost, the current output frequency – and therefore the current motor speed – is maintained indefinitely until it is changed through an external action. When communications are restored, the inverter can respond to signals from the DE5-NET-DP again. In Hold Last Speed mode, do not connect the Alarm output to the inverter. To stop the inverter, an external device must, however, be provided.

3.6 Device master data (GSD)

With the device master data, the PROFIBUS-DP master receives information about the slaves' properties. The master data (GSD) file for the DE5-NET-DP (KMDE4D05.gsd) is included on the CD supplied with the frequency inverter.

4 Operating Frequency Inverters Through PROFIBUS-DP

4.1 Settings in the PROFIBUS-DP configurator

By selecting “modules” in the PROFIBUS configurator (for example the CFG-DP from Moeller) the user data length and content of the data transmitted through PROFIBUS are specified. In the GSD file of the DE5-NET-DP, 49 modules are defined, which can be split into three groups:

- Basic parameters
- User parameters
- Generic parameters

Note that some modules appear twice, once for the DF5 series and once for the DV5 series.

⚠ WARNING IT IS ESSENTIAL THAT THE CONFIGURATION OF THE DE5-NET-DP IS CORRECT AT ALL TIMES. BEFORE YOU CONNECT THE DE5-NET-DP TO THE PROFIBUS NETWORK, MAKE SURE THAT THE CONFIGURATION USED IS SUITABLE FOR THE INVERTER TYPE, OTHERWISE EQUIPMENT DAMAGE OR PERSONAL INJURY MAY RESULT.

List of all modules

No.	Modules	Inputs	Outputs	In/Out
1	"DF5 - Basic Parameters" 0xF3			4 words
2	"DF5 - Swapped Basic Parameters" 0xF3			4 words
3	"DF5 - Get Acceleration Time" 0x50	1 word		
4	"DF5 - Get Actual Frequency" 0x50	1 word		
5	"DF5 - Get Command Source" 0x10	1 byte		
6	"DF5 - Get Deceleration Time" 0x50	1 word		
7	"DF5 - Get Frequency Source" 0x10	1 byte		
8	"DF5 - Get Inverter Status" 0x10	1 byte		
9	"DF5 - Get Output Current" 0x50	1 word		
10	"DF5 - Get Output Frequency" 0x50	1 word		
11	"DF5 - Get Rotation Direction" 0x10	1 byte		
12	"DF5 - Set Acceleration Time" 0x60		1 word	
13	"DF5 - Set Command Source" 0x20		1 byte	
14	"DF5 - Set Deceleration Time" 0x60		1 word	
15	"DF5 - Set Frequency Source" 0x20		1 byte	
16	"DF5 - Set Output Frequency" 0x60		1 word	
17	"DF5 - Set Run Command" 0x20		1 byte	
18	"DF5 - Set HoldLastSpeed" 0x20		1 byte	
19	"DF5 - Set SeepromStore" 0x20		1 byte	
20	"DF5 - Get HoldLastSpeed" 0x10	1 byte		
21	"DF5 - Get SeepromStore" 0x10	1 byte		
22	"DV5 - Basic Parameters" 0xF3			4 words
23	"DV5 - Swapped Basic Parameters" 0xF3			4 words

24	"DV5 - Get Acceleration Time" 0x50	1 word	
25	"DV5 - Get Actual Frequency" 0x50	1 word	
26	"DV5 - Get Command Source" 0x10	1 byte	
27	"DV5 - Get Deceleration Time" 0x50	1 word	
28	"DV5 - Get Frequency Source" 0x10	1 byte	
29	"DV5 - Get Inverter Status" 0x10	1 byte	
30	"DV5 - Get Output Current" 0x50	1 word	
31	"DV5 - Get Output Frequency" 0x50	1 word	
32	"DV5 - Get Rotation Direction" 0x10	1 byte	
33	"DV5 - Set Acceleration Time" 0x60		1 word
34	"DV5 - Set Command Source" 0x20		1 byte
35	"DV5 - Set Deceleration Time" 0x60		1 word
36	"DV5 - Set Frequency Source" 0x20		1 byte
37	"DV5 - Set Output Frequency" 0x60		1 word
38	"DV5 - Set Run Command" 0x20		1 byte
39	"DV5 - Set HoldLastSpeed" 0x20		1 byte
40	"DV5 - Set SeepromStore" 0x20		1 byte
41	"DV5 - Get HoldLastSpeed" 0x10	1 byte	
42	"DV5 - Get SeepromStore" 0x10	1 byte	
43	"1 Byte Generic IN" 0x10	1 byte	
44	"2 Byte Generic IN" 0x50	1 word	
45	"3 Byte Generic IN" 0x92	3 bytes	
46	"4 Byte Generic IN" 0xD1	2 words	
47	"8 Byte Generic IN" 0xD3	4 words	
48	"1 Byte Generic OUT" 0x20		1 byte
49	"2 Byte Generic OUT" 0x60		1 word

4.2 Basic parameters

This parameter block contains the most commonly used parameters. These blocks, which consist of eight input bytes and eight output bytes, should be sufficient for most standard applications. For each frequency inverter series (DF5 and DV5), there are two modules, which contain the basic parameters. The difference between the two versions is the order of the bytes within each word (i.e. for the Intel and Motorola formats). Note that this byte swap applies only to the basic parameters. If you use other parameters in addition to the basic parameters, their parameters are not swapped.

Please note: If you use the Basic Parameter module, it must always be configured as the first module.

Use modules 1 or 22 for the Moeller PROFIBUS master PLCs (LE4-504-BS1 and PS416-NET-440).

⚠ WARNING When you use the basic parameter block, the DE5-NET-DP continually sends the current control command (Clockwise operation, Anticlockwise operation or Stop) through the PROFIBUS. Because these control commands override any operation of the Emergency Stop button, this must be taken into account when defining emergency stop behaviour and for resetting faults.

4.2.1 Output data

The parameters sent by the PROFIBUS master to the DE5-NET-DP (four words) are::

Word	Name	Function		
0	Control word	For meaning, see table below		
1	Frequency setpoint value	Resolution 1/100 Hz	0.00 – 360.00 Hz	e.g.: 1388 hex = 50.00 Hz
2	acceleration time	Resolution 1/10 s	0.1 – 3000.0 s	e.g.: 0064 hex = 10.0 s
3	Deceleration time	Resolution 1/10 s	0.1 – 3000.0 s	e.g.: 0064 hex = 10.0 s

Function of the bits in the command

Bit	Name	Function
0	Run Fwd	0 = stop signal 1 = start clockwise rotation
1	Run Rev	0 = stop signal 1 = start anticlockwise rotation
2	-	Reserved
3	-	Reserved
4	Net Ctrl	0 = start signal through input terminals 1 = start signal through PROFIBUS
5	Inv Ref	0 = setpoint input through the input terminals 1 = setpoint input through inverter potentiometer
6	Net Ref	0 = setpoint input through the input terminals 1 = setpoint input through PROFIBUS
7	Reset	0 -> 1 Reset the current fault
8-13	-	Reserved
14	Com Loss	0 = inverter stops on interrupted or faulty PROFIBUS connection 1 = inverter remains in current state on fault PROFIBUS connection
15	Store	0 -> 1 Save changed parameter values in the EEPROM (Enter).The string COPY appears on the inverter display. The process takes nearly 5 seconds.

4.2.2. Input data

The parameters sent by the DE5-NET-DP to the PROFIBUS master (four words) are::

Word	Name	Function		
0	Status word	For meaning, see table below		
1	Output frequency	Resolution 1/100 Hz		e.g.: 07D0 hex = 20.00 Hz
2	Output current	Resolution 1/100 A		e.g.: 0032 hex = 0.50 A
3	Operating state	For meaning, see table below		

Function of the bits in the status word

Bit	Name	Function
0	Run Fwd	1 = direction of rotation is clockwise
1	Run Rev	1 = direction of rotation is anticlockwise
2	Trip Cond	Indicates the inverter's state at which the fault occurred:
3	Trip Cond	
4	Net Ctrl	0 = start signal through input terminals 1 = start signal through PROFIBUS
5	Inv Ref	0 = setpoint input through the input terminals 1 = setpoint input through inverter potentiometer
6	Net Ref	0 = setpoint input through the input terminals 1 = setpoint input through PROFIBUS
7	Trip	0 = no fault signal 1 = fault signal present
8-13	Trip Cause	Cause of the fault; for meaning see table below
14	Com Loss	0 = inverter stops on faulty PROFIBUS connection 1 = inverter remains in current state on faulty PROFIBUS connection
15	Store	1 = Changed parameter values are saved to the EEPROM.

Bit 3	Bit 2	
0	0	Other state
0	1	During acceleration
1	0	During deceleration
1	1	In static operation

Cause of the fault - meaning of bits 8 to 13 of Trip Cause

Bit 13-8	Cause of fault	Bit 13-8	Cause of fault	Bit 13-8	Cause of fault	Bit 13-8	Cause of fault
000000	Overcurrent	010000	-	100000	OverLoad	110000	CPU fault
000001	Overcurrent	010001	-	100001	USP fault	110001	CPU fault
000010	Overcurrent	010010	-	100010	PTC fault	110010	CPU fault
000011	Overvoltage	010011	-	100011	-	110011	-
000100	Undervoltage	010100	-	100100	-	110100	CPU fault
000101	Overload	010101	-	100101	External fault	110101	-
000110	EEPROM fault	010110	-	100110	-	110110	-
000111	-	010111	-	100111	-	110111	-
001000	CPU fault	011000	-	101000	CPU fault	111000	-
001001	-	011001	-	101001	CPU fault	111001	EEPROM fault
001010	Therm. fault	011010	-	101010	CPU fault	111010	Overcurrent
001011	-	011011	-	101011	CPU fault	111011	Overcurrent
001100	-	011100	-	101100	CPU fault	111100	Overcurrent
001101	Earth fault	011101	-	101101	CPU fault	111101	Overcurrent
001110	CPU fault	011110	-	101110	CPU fault	111110	Overvoltage
001111	Mains overvoltage.	011111	Undervoltage	101111	CPU fault	111111	Undervoltage

⚠ Important Fault messages are reset by pressing the Stop key on the inverter or with a 0→1 edge in bit 7 (Reset).

Operating state

Code [hex]	Meaning
00	Normal stop
01	Normal operation
02	Jogging
03	Free run stop (coasting)
04	DC braking
05	Restart
06	Stop during intermittent power supply failure
07	Restart
08	Restart
09	Fault register is being written
0A	Fault
0B	Undervoltage (waiting for normal voltage level)

4.3 User parameters

Here, you can select the parameters to be transmitted through the PROFIBUS yourself. If, for example only the present output current and output frequency are to be transmitted and displayed, select only modules 9 and 10 (for the DF5) or 30 and 31 (for the DV5) with the PROFIBUS configurator. In that case, the output area is not used, and two words are placed in the PROFIBUS input area.

⚠ WARNING! Parameters must be placed in the input or output area only once per configuration, as the correct value cannot, otherwise, be determined.

Get/Set Acceleration Time

Description: The acceleration time is the time taken by the inverter to accelerate the output frequency from 0 Hz to the programmed end frequency.

Modules: DF5 = 3/12, DV5 = 24/33

Access rights: Read/write

Resolution: 0.1 s

Setting range: 0.1 – 3000.0 s

Get Actual Frequency

Description: This parameter indicates the present frequency applied to the motor.

Modules: DF5 = 4, DV5 = 25

Access rights: Read-only

Resolution: 0.01 Hz

Get/Set Command Source

Description: This parameter indicates the source from which the inverter is to receive control commands.

Modules: DF5 = 5/13, DV5 = 26/34

Access rights: Read/write

Code: 1 = control signal terminals, 2 = DE5-NET-DP

Setting range: 1 – 2

Get/Set Deceleration Time

Description: The deceleration time is the time taken by the inverter to decelerate the output frequency from the programmed end frequency to 0 Hz.

Modules: DF5 = 6/14, DV5 = 27/35

Access rights: Read/write

Resolution: 0.1 s

Setting range: 0.1 – 3000.0 s

Get/Set Frequency Source

Description: This parameter indicates the source from which the inverter is to receive frequency setpoint values.

Modules: DF5 = 7/15, DV5 = 28/36

Access rights: Read/write

Code: 0 = potentiometer, 1 = control signal terminals, 2 = DE5-NET-DP

Setting range: 0 – 2

Get Inverter Status

Description: This parameter indicates the inverter's current operating state.

Modules: DF5 = 8, DV5 = 29

Access rights: Read-only

Code: See table below

Setting range: Not applicable

Code [hex]	Meaning
00	Normal stop
01	Normal operation
02	Jog
03	Free run stop (coasting)
04	DC braking
05	Restart
06	Stop during intermittent power supply failure
07	Restart
08	Restart
09	Fault register is being written
0A	Fault
0B	Undervoltage (waiting for normal voltage level)

Get Output Current

Description: This parameter indicates the current drawn by the connected motor.

Modules: DF5 = 9, DV5 = 30

Access rights: Read-only

Resolution: 0.01 A

Setting range: Not applicable

Get/Set Output Frequency

Description: This parameter contains the actual or setpoint frequency.

Modules: DF5 = 10/16, DV5 = 31/37

Access rights: Read/write

Resolution: 0.01 Hz

Setting range: 0.00 – 360.00 Hz

Get Rotation Direction

Description: This parameter indicates the direction of rotation of the motor.

Modules: DF5 = 11, DV5 = 32

Access rights: Read-only

Code: 0 = motor stopped, 1 = motor turning clockwise, 2 = motor turning anticlockwise

Setting range: Not applicable

Set Run Command

Description: This parameter contains the start command to be sent through the PROFIBUS to the inverter (i.e. direction of rotation or Stop).

Modules: DF5 = 17, DV5 = 38

Access rights: Write-only

Code: 2 = clockwise, 4 = anticlockwise, 8 = stop

Setting range: 2, 4, 8

Set/Get Hold Last Speed

Description:

Modules: DF5 = 18/20, DV5 = 39/41

Access rights: Read/write

Code:

Setting range:

Set/Get SeepromStore

Description:

Modules: DF5 = 19/21, DV5 = 40/42

Access rights: Read/write

Code:

Setting range:

4.4 Generic parameters

With generic parameters (modules 43 to 49), any parameter of the DF5 or DV5 can be exchanged through the cyclic process data. When you configure these areas, you need to enter the address, the size and, if you are also programming parameters, their minimum and maximum value. For further information, contact your Moeller sales office.

⚠ WARNING IF YOU ARE USING GENERIC PARAMETERS, THE DE5-NET-DP USES THE PROGRAMMED ADDRESS, SIZE AND MINIMUM AND MAXIMUM VALUES FOR COMMUNICATING WITH THE INVERTER. THESE SETTINGS MUST THEREFORE CORRESPOND WITH THE PARAMETERS OF THE RESPECTIVE INVERTER. OTHERWISE THERE IS A RISK OF EQUIPMENT DAMAGE OR PERSONAL INJURY.

5 Operation/Diagnostics

5.1 Commissioning

⚠ WARNING When you use the basic parameter block, the DE5-NET-DP continually sends the current control command (Clockwise operation, Anticlockwise operation or Stop) through the PROFIBUS. Because these control commands override any operation of the Emergency Stop button, this must be taken into account in defining emergency stop behaviour and for resetting faults.

⚠ WARNING Before you switch on mains power, make sure that all wiring is complete and check it for short-circuits and earth faults.

Use the interface module only if it is in perfect working condition.

To ensure safe operation, observe the guidelines in the user manuals of the master PLC and the drive controller.

Carry the first startup out in the following order (provided that the hardware has been fully installed, PROFIBUS has been configured with basic parameters and the master PLC is in RUN state):

- Set the device address at the DE5-NET-DP
- Connect the DE5-NET-DP with the communication cable
- Activate or disable the bus terminating resistors.
- Switch the frequency inverter on. The green Online LED lights up.
- To output word 2, “Acceleration time”, write a value which is valid for your application.
- To output word 3, “Deceleration time”, write a value which is valid for your application.
- To output word 1, “Frequency setpoint value”, write a value which is valid for your application.
- In output word 0, “Command”, set bits 4 “Net Ctrl” and 6 “Net Ref“.
- In output word 0 “Command”, set bit 0 “Run Fwd”.

⇒ The motor ramps up to the setpoint.

5.2 Configuring the frequency inverter

For some applications, you may want to define inverter parameters that can either not be set through the PROFIBUS network or that are not to be transmitted with PROFIBUS at all. These parameters can be set using the inverter keypad if the DE5-NET-DP is disconnected as described below.

Procedure:

The keys of the inverter keypad (except for the Stop key) are deactivated as long as the DE5-NET-DP is connected to the inverter. To set the inverter’s parameters, you must first remove the communication cable (RJ45 plug). Switch the inverter’s power supply off and wait until all indicator lights on the inverter have gone out before connecting or removing the plug.

In most cases, one of the inverter’s input terminals 1-5/6 is configured so that it signals a fault to the inverter (E12, external fault signal) if this terminal is not connected to +24 V DC through the Alarm contact of the DE5-NET-DP. If fault message E12 is issued during parameter configuration, connect this terminal (1-5/6) with P24.

For details about using the frequency inverter’s keypad, see the manual for your frequency inverter.

5.3 Troubleshooting

Fault condition	Possible cause
	- No supply voltage is applied to the DE5-NET-DP. - The communication cable is faulty or incorrectly connected.
The Error LED of the DE5-NET-DP is lit.	- There is an other device with the same address in the network. - The PROFIBUS cable is faulty or incorrectly connected. - The module is incorrectly configured.
The online LED of the DE5-NET-DP does not light up.	- The communication cable is faulty or incorrectly connected. - The module is incorrectly configured.
The frequency inverter will not start.	- If you are using the basic parameter block, the “Net Ctrl” bit must be set. If it is not used, parameter A02 (Start signal input) must be set to 02. - If the basic parameter block is used, the “Net Ref” bit must be set and a frequency setpoint must be specified. If it is not used, check whether parameter A01 (frequency setpoint value input) is set correctly and a setpoint value is applied there. - Check whether the configuration and the Alarm connection are suitable for your application.
The motor speed does not correspond to the value specified in the basic parameter block.	- Make sure that the “Net Ref” bit is set.
The Frequency inverter is not accepting any new settings.	- The new values lie below or above the permissible minimum or maximum value.

5.4 Resetting faults

To reset an inverter fault through the PROFIBUS network, the Reset bit within the basic parameter block must have a positive edge (0→1).

Note: If “Clockwise operation” or “Anticlockwise operation” are set to 1, the inverter starts up again when an inverter fault has been reset through PROFIBUS.

Appendix

Technical data

Ambient conditions	**Ambient temperature:** Operation: -10 to +40 °C / 50 °C Storage: -25 to +70 °C **Humidity:** 20 to 90 % non-condensing **Maximum installation altitude:** 1000 m above sea level **Impact resistance:** 0.6 G at 10–55 Hz
Communication	According to DIN 19245 Part 3 **Data rates:** 9.6 kbaud to 12 Mbaud.
Power supply	Supply through inverter; approx. 5 V/290 mA
Degree of protection	NEMA 1/IP 20

Dimensions

(See installation instructions)