

EXP-PDP-ADV

Profibus DP interface
expansion card



1S5F24, Manual EXP-PDP-ADV -IT/
EN (rev 0.2 - 21.7.17)

Sommario

Reinforced insulation	1
Introduction	1
Mounting	1
Connections	2
Leds.....	3
Optional card recognition	3
1.0 Profibus DP	4
1.1 General Information.....	4
1.2 The Profibus DP system	4
1.3 Identification codes.....	4
1.4 EXP-PDP-ADV card control	5
1.5 Alarms.....	6
1.6 Data frame composition	8
1.7 Process data channel control	13
1.8 Profidrive	15
1.9 In general.....	17

Reinforced insulation

PELV (Protective Extra Low Voltage) EN 61800-5-1.

Introduction

This manual describes the EXP-PDP-ADV option card aimed at connecting the ADV200 series Drives to Profibus-DP networks.

It is possible to use only one field bus expansion card per Drive.

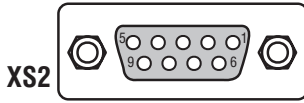
This manual is intended for design engineers and technicians responsible for the maintenance, commissioning and operation of Profibus-DP systems.

Basic knowledge of Profibus-DP is required. This is explained in detail in the document "PROFIBUS Specification Order No. 0.032"

Mounting

Refer to ADV200 Quick Start up manual, chapter "**Installation of optional cards**": **the card must be inserted on slot 3.**

Connections

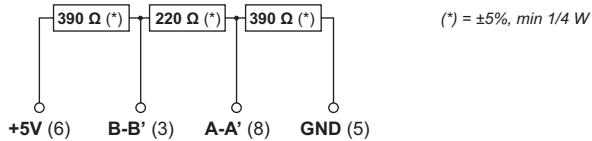


Wire

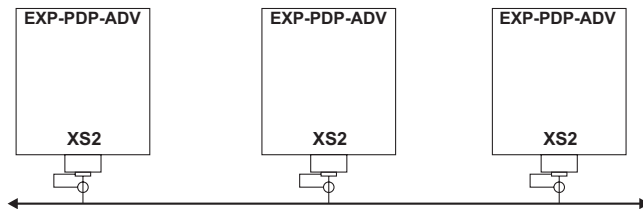
The Bus connection is provided via a shielded twisted cable (as stated by the Profibus-DP specification) which should be placed as far as possible from the power cables, with a minimum distance of 20 cm. The pinout of the Bus connectors are showed on the following table.

The cable shielding must be connected to ground at both ends of the cable. It is recommended that straight metal connectors be used and that the cable shielding is connected to the connector housing or to pin 1 (shield / protective ground). If the cable shielding from a number of drives is connected to ground at different points of the system, use equipotential connection cables to reduce the current flow between the drives and the Profibus DP master.

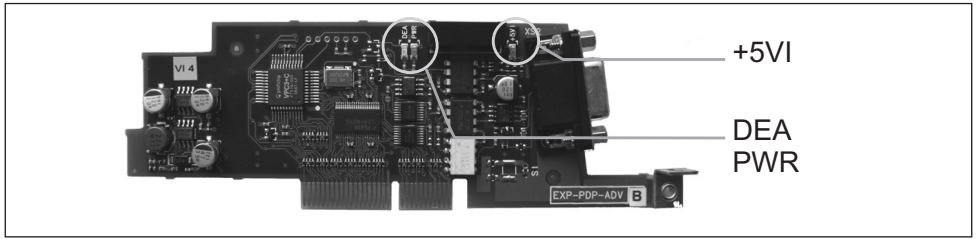
Terminal	Designation	Function
BUS terminal : allows to connect the card to the Profibus-DP network		
1	Shield	Shield / grounding
2	-	Not connected
3	RX/TX-B	P datum reception / transmission
4	-	Not connected
5	0V-GND	Datum transmission potential (grounding at 5V)
6	+5V	Resistance power supply - Terminating P (P5V)
7	-	Not connected
8	RX/TX-A	P datum reception / transmission
9	-	Not connected



The terminating resistances of the first and last network components must be active. Pins 5 (GND) and 6 (+5V) provide the connection of the terminating resistances. It is suggested to use resistance-supplied standard connectors. The following figure shows a connection between the single cards.



Leds



DEA (yellow)	Data Exchange Phase active
PWR (green)	The led is ON when the expansion card is powered and active
+5VI (green)	The led is ON when the optoinsulated Profibus node is correctly powered

Optional card recognition

1

T+ T- EN LOC ILim n:0 AL

MESSAGE 0 1

Option detect slot 3
Code: 0104H-260

2

T+ T- EN LOC ILim n:0 AL

01 MONITOR

02 DRIVE INFO

03 STARTUP WIZARD

04 DRIVE CONFIG

T+ T- EN LOC ILim n:0 AL

0 2.17 PAR : 5 3 4

Slot 3 card type
Profibus
Value 260

- 1 - At power-on, the drive recognizes the presence of optional card in the expansion slot 3, this message is shown on the display.
- 2- On 02 DRIVE INFO menu, select the PAR 534 Slot 3 card type to read the recognized card type.

Value	Description	Card type
0	None	-
260	Profibus	EXP-PDP-ADV
255	Unknown	-

1.0 Profibus DP

1.1 General Information

The information held in this manual have to be integrated with the information supplied by the producer of the Mains master.

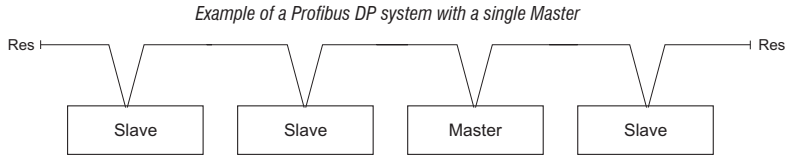
1.2 The Profibus DP system

Profibus DP is a field Bus designed for a fast data exchange relating to sensors/ actuators the communication is established between a Master central unit (PLC or PC) and the Slave units, i.e. sensors, actuators, drives, etc.

The data exchange is cyclic; the Master unit reads the Slave input data and writes the Slave output data. The allowable Baud Rates for the EXP-PDP-ADV card, are defined by the standard Profibus DP Specification, section 3, and lie between 9.6 kbit/s and 12 Mbit/s.

The total cycle time depends on the number of connected Slaves, on the transmission speed and on the quantity of data to be exchanged. The minimum cycle time supported by the drive is 1 ms.

The physical support is the RS485 serial line; the maximum number of Slaves connected to the Bus is 125.



Profibus DP allows the use of a Multi-Master system. For further information reference should be made to sections 6 and 7 in the document "PROFIBUS Specification Order No. 0.032".

1.3 Identification codes

1.3.1 Card identification code

The PROFIBUS-DP protocol requires an identification number for every device to be connected to the Bus.

The identification number assigned to the EXP-PDP-ADV card by the Profibus Nutzerorganisation is the following:

0B5E hexadecimal corresponding to 2910 decimal.

1.3.2 Card configuration codes

The EXP-PDP-ADV card requires the following user parameter configuration data, available in the GSD file: **DPV1Enable**

Values:

0 = The drive functions as a DPV0 device

1 = Enables DPV1 mode and MSAC services.

The configuration data consist of 1 or 2 Bytes made up as follows:

Configuration		Meaning
Byte 1 (Dec - Hex)	Byte 2 (Dec - Hex)	
240 - F0	Not exist	1 Word In + 1 Word Out PDC only

Configuration		Meaning
Byte 1 (Dec - Hex)	Byte 2 (Dec - Hex)	
241 - F1	Not exist	2 Word In + 2 Word Out PDC only
242 - F2	Not exist	3 Word In + 3 Word Out PDC only
243 - F3	Not exist	4 Word In + 4 Word Out PDC only
244 - F4	Not exist	5 Word In + 5 Word Out PDC only
245 - F5	Not exist	6 Word In + 6 Word Out PDC only
246 - F6	Not exist	7 Word In + 7 Word Out PDC only
247 - F7	Not exist	8 Word In + 8 Word Out PDC only
248 - F8	Not exist	9 Word In + 9 Word Out PDC only
249 - F9	Not exist	10 Word In + 10 Word Out PDC only
250 - FA	Not exist	11 Word In + 11 Word Out PDC only
251 - FB	Not exist	12 Word In + 12 Word Out PDC only
252 - FC	Not exist	13 Word In + 13 Word Out PDC only
253 - FD	Not exist	14 Word In + 14 Word Out PDC only
254 - FE	Not exist	15 Word In + 15 Word Out PDC only
255 - FF	Not exist	16 Word In + 16 Word Out PDC only
183 - B7	240 - F0	Conf. Channel + 1 Word In + 1 Word Out PDC
183 - B7	241 - F1	Conf. Channel + 2 Word In + 2 Word Out PDC
183 - B7	242 - F2	Conf. Channel + 3 Word In + 3 Word Out PDC
183 - B7	243 - F3	Conf. Channel + 4 Word In + 4 Word Out PDC
183 - B7	244 - F4	Conf. Channel + 5 Word In + 5 Word Out PDC
183 - B7	245 - F5	Conf. Channel + 6 Word In + 6 Word Out PDC
183 - B7	246 - F6	Conf. Channel + 7 Word In + 7 Word Out PDC
183 - B7	247 - F7	Conf. Channel + 8 Word In + 8 Word Out PDC
183 - B7	248 - F8	Conf. Channel + 9 Word In + 9 Word Out PDC
183 - B7	249 - F9	Conf. Channel + 10 Word In + 10 Word Out PDC
183 - B7	250 - FA	Conf. Channel + 11 Word In + 11 Word Out PDC
183 - B7	251 - FB	Conf. Channel + 12 Word In + 12 Word Out PDC
183 - B7	252 - FC	Conf. Channel + 13 Word In + 13 Word Out PDC
183 - B7	253 - FD	Conf. Channel + 14 Word In + 14 Word Out PDC
183 - B7	254 - FE	Conf. Channel + 15 Word In + 15 Word Out PDC
183 - B7	255 - FF	Conf. Channel + 16 Word In + 16 Word Out PDC

The selection of the configuration bytes is performed during the network configuration phase via the network configuration tool supplied by the master.

1.3.3 Gsd file

The GSD file is available on www.gefran.com web site (Drive & Motion Control / Inverter / ADV200 / Downloads section: **Driver GSD File, EXP-PDP-ADV**, file name: GEF0B5E.GSD).

1.4 EXP-PDP-ADV card control

The user interface of the EXP-PDP-ADV card is performed via the drive parameters. The EXP-PDP-ADV card, in fact, is not supplied with its own interface. See the ADV200 manual to understand how the drive parameters can be controlled.

The parameters are controlled via hierarchical menus. All the writing parameters referring to the EXP-PDP-ADV cards are active only after the drive reset.

Here following is a list of drive parameters useful to control the EXP-PDP-ADV cards

1.4.1 Menu Fieldbus

To enable the EXP-PDP-ADV card set PAR 4000 **Fieldbus type** as "Profibus". The following parameters are available in the COMMUNICATION->FIELDBUS CONFIG menu:

PAR	Parameter description	Type	Default value	Attr
4004	Fieldbus baudrate	Enum	None	Write
4006	Fieldbus address	2 byte unsigned	0	Write
4010	Fieldbus M->S enable	Enum	On	Write
4012	Fieldbus alarm mode	2 byte unsigned	0	Write
4014	Fieldbus state	Enum	Stop	Read only

- **Fieldbus baudrate** = shows the network baud rate, automatically recognized when the card is connected;
- **Fieldbus address** = address of this slave node in the network, accepted values from 3 to 127
- **Fieldbus M->S enable** = if set to Off the data the PLC sends the drive (master to slave) are not updated anymore by the drive and the current values are maintained
- **Fieldbus alarm mode** = if set to On the drive generates Opt Bus Fault errors relating to the loss of communication (Bus Loss) even when the drive is not enabled.
- **Fieldbus state** = state of the communication on the Profibus network: Wait-PRM, WaitCfg, DataExchange, DPError.

1.5 Alarms

1.5.1 Alarms EXP-PDP-ADV card

There is an alarm for EXP-PDP-ADV card management:

Opt bus fault is automatically enabled if there is no communication on the bus at a PDC level. This alarm becomes active only when the drive is enabled.

Il parametro **Fieldbus alarm mode** se posto a ON, abilita la generazione dell'alarme **Opt bus fault** anche quando il drive è disabilitato.

If ON, the **Fieldbus alarm mode** parameter enables the generation of the **Opt bus fault** alarm also when the drive is disabled.

Table 1.5.1: Alarm codes

Code	Cfg	Description	Action
0		Bus Loss	Check line for noise , terminations , problems with cabling
FF01	*	Fieldbus type does not match expansion card	Verify if EXP-PDP-ADV card is properly installed
FF03	*	Invalid address for node	Check "Fieldbus address"
FF24..FF33	*	More than one Src pointing to M2S Channel n	Check for multiple destinations on "Fieldbus M->Sn Dest"
FF34..FF43	*	M2S Channel n , data size is wrong (16 bits on 32 bits or 32 bits on 16 bits parameter)	Check "Fieldbus M->Sn sys"
FF44..FF53	*	Invalid parameter in channel S2M n	Check "Fieldbus S->Mn src"
FF54..FF63	*	S2M Channel n , data size is wrong (16 bits on 32 bits or 32 bits on 16 bits parameter)	Check "Fieldbus S->Mn sys"

Code	Cfg	Description	Action
FF74..FF83	*	M2S Channel n : too many words in PDC	"Fieldbus M-Sn dest" & "Fieldbus M->Sn sys" address more than 16 words in PDC
FF84..FF93	*	S2M Channel n : too many words in PDC	"Fieldbus S->Mn src" & "Fieldbus S->Mn sys" address more than 16 words in PDC
FFB4..FFC3	*	Internal database error on channel n	Please report back to manufacturer

Important ! The drive generates the Opt Bus Fault alarm in case of configuration errors ("*" in the Cfg column) or in case of loss of communication due to a Master timeout or errors on the line.

Note! The "Opt Bus Fault" error with code 0 (BusLoss) is only generated if the drive is enabled (or "Fieldbus alarm mode" is = 1). In these conditions the EXP-PDP-ADV card must be in Data Exchange.

The following codes can also be generated by the card and report the internal state of the Profibus ASIC VPC3+:

Code	Cfg	Description
0x11	*	Address error
0x12	*	Error configuring IO data len
0x13		Error in length of output data
0x14		Error in length of input data
0x15		Error in length of diagnostic buffer
0x16		Error in length of parameter buffer
0x18		Error in length of cfg buffer
0x19		Too much memory allocated for VPC3
0x20	*	Error in values of parameter buffer
0x23	*	Error in values of cfg buffer
0x24	*	Error updating cfg
0x30..0x36		Error while sending diagnostic error
0x91	*	Error initializing VPC3

1.5.2 Drive alarm management

Alarms are managed using the standard Profibus diagnostics to which the drive alarm codes are added (see Table below) when active.

When the alarms are reset the codes relating to the alarms that have ceased are removed from the diagnostics.

If using the Profidrive profile the alarms are managed with objects 944, 947, 952, accessed by the master via the MSAC services (see Profidrive specifications 4.1 and section 8.1).

Table 1.5.2.1: Alarms included in the Profibus diagnostics

Selection	Code
No alarm	0x0000
Overvoltage	0x3210
Undervoltage	0x3220
Ground fault	0x2110
Overcurrent	0x2310
Desaturation	0x2130
MultiUndervolt	0xFF06
MultiOvercurr	0xFF07
MultiDesat	0xFF08
Heatsink OT	0x4210
HeatsinkS OTUT	0x4310
Intakeair OT	0x4130
Motor OT	0xFF0C
Drive overload	0x8311
Motor overload	0x7121
Bres overload	0x7112
Phaseloss	0xFF10
Opt Bus fault	0xFF11
Opt 1 IO fault	0xFF12
Opt Enc fault	0x3130
External fault	0x9000
Speed fbk loss	0x7310
Overspeed	0x8400
Plc1 fault	23
Plc2 fault	24
Plc3 fault	25
Plc4 fault	26
Plc5 fault	27
Plc6 fault	28
Plc7 fault	29
Plc8 fault	30
Emg stop alarm	31
Watchdog	32
Trap error	33
System error	34
User error	35
Power down	36
Speed ref loss	37
Not Used1	38
Opt 2 IO fault	39
Not Used2	40
Not Used3	41
Not Used4	42
Not Used5	43
Not Used6	44
Param error	45

1.6 Data frame composition

When the node is added to the network, the "DPV1 Enable" parameter in the GSD file can be used to select whether the drive must use the DPV1 mode or only the services offered by DPV0.

1.6.1 DPV1 mode

The ADV200 drive implements the Profibus standard according to DPV1 specifications. It supports the following communication relationships:

MSCY

For Process Data Channel configuration refer to section 1.7.

Note!

Big Endian is the default format of the data in the package.

MSAC

Parameters are accessed according to Profidrive specifications, even if the Fieldbus type parameter is set to Profibus: requests to write and read must be sent to Slot 1, service 47. In addition to the Profidrive parameters (see section 1.8) it is also possible to access the drive parameters, visible from index 2000h (8192), which must therefore be added to the PAR of the parameter, and sub-index 1. Multiple requests are allowed, up to the maximum limit of 240 bytes.

For package format reference should be made to the Profidrive specifications, section 6.2.3.3 "Parameter requests & parameter responses"

1.6.2 DPV0 mode – Compatibility with Gefran drives

The card can be used in DPV0 mode while maintaining compatibility with the data exchange format used by other Gefran drives.

The frame can be made of two parts:

- the first, called "Configuration Channel", is the configuration channel for the non-cyclic data exchange; the user can decide to make it active via the Configuration bytes (see paragraph 1.3.2).
- the second part, with a variable length, is the process data channel for the cyclic exchange

A more detailed description is given in chapter 1.7 - Process Data Channel Control.

Note!

Big Endian is the default format of data in the PDC.

To change to Little Endian mode (for compatibility with Gefran drives) set the "Profibus byte order" parameter to On.

The frame composition is the following:

Configuration channel							Process data channel			
0	1	2	3	4	5	6	7	WORD 0	WORD ...	WORD n
Control byte	Index		Type	Data / error						

As for the Data/Error and Index fields, the data format is set starting from the least significant Byte to the most significant one.

The format of the write or read datum depends on the type of parameter (refer to the drive manual). Format conversions are not implemented.

The field meaning is the following:

A) Data format from the Master to the Slave:

- 1) Data / Error

The content of this field depends on the performed service: in case of writing it contains the parameter value, in case of reading it has no meaning. The format is Low-Byte High-Byte.

- 2) Not used
- 3) Index

Index of the parameter used during the operation with a Low-Byte High-Byte format.

4) Control byte

The meaning of this Byte is described in point 1.6.2.

B) Data format from the Slave to the Master:

1) Data / Error

The content of this field depends on the performed service. In case of writing, it contains the operation result. In case of reading, it contains the parameter value if the reading had a positive result; otherwise it contains a detailed error code. See the specific tables for the error codes and the operation results; the format is Low-Byte High-Byte

2) Type

It contains the format of the read or written data; in case of reading with a void type (non-specified type), the drive returns the original data type.

3) Index

Index of the parameter used in the operation with a Low-Byte High-Byte format.

4) Control byte

The meaning of this Byte is described in point 1.6.2.

Error codes for the parameter access

Code	Description
1	Incorrect parameter number
9	Maximum value exceeded
10	Minimum value exceeded
11	Value not allowed for the parameter
12,13	Read-only parameter
16,31	Parameter cannot be written with drive enabled
20	Parameter loading error
21	Error saving parameter
23	Parameter timeout
Other	Generic error, request technical assistance

Parameter formats

FORMAT	VALUE	MEANING
DB_T_VOID	0	Return the value in the origin format
DB_T_INT	3	16 bit signed
DB_T_WORD	6	16 bit unsigned
DB_T_LONG	4	32 bit signed
DB_T_DWORD	7	32 bit unsigned
DB_T_FLOAT	8	Float in IEEE 754 format

1.6.2.1 Setting of the control bytes

7	6	5	4	3	2	1	0
Status	Handshake	Reserved			Service		

Service

Bit			Meaning
2	1	0	
0	0	0	No request communication
0	0	1	Drive parameter reading
0	1	0	Drive parameter writing

Status

Bit		Meaning
7		
0		Service carried out without errors
1		Error occurred

The Status Bit is used exclusively by the Slave and, as a consequence, it acquires a value only during the transmission from the Slave to the Master; during the transmission from the Master to the Slave it must be always set at 0.

1.6.2.2 Handshake meaning

The Handshake bit prevents the same service request from being performed more than once. Its function is the same both in the direction from the Master to the Slave and from the Slave to the Master. The following explanation refers to the Master-Slave direction, but the same considerations can be applied also for the opposite direction.

Its default value is 0. With every transition of this bit, both from 0 to 1 (positive edge) and from 1 to 0 (negative edge), the Slave performs the service required by the Master via the previously set data frame. This Bit is therefore the trigger through which the Master states to the Slave that the data referring to the required service are ready.

The Slave responds to the Master in the same way, causing a Handshake Bit transition (both positive and negative). As a consequence, the Master can send a service to the Bus only if its Handshake Bit is equal to the one received by the Slave. During the initialisation and in case the Master does not receive any response from the Slave within a period of 500 msecs, the Master sends a non-required service (all the Bits are set at zero), thus allowing the Slave to perform a communication Reset. In this way the Slave Handshake Bit can be reset.

1.6.3 Access example to the drive parameter

These examples refer to the ADV drive firmware version 0.9.0 or later. It is assumed that the Handshake Bit is set at 0. See the specific table for the drive error codes (see paragraph 1.5.3).

1.6.3.1 Writing of the drive parameter

The master must write the PAR 600 **Dig Ramp ref 1** parameter of the ADV200 drive. The information required is:

- 1) **Dig Ramp ref 1** parameter index: 600 decimal corresponding to 258 hexadecimal.
- 2) The parameter value is in 16-bit signed integer format

3) Value to be written: 1000 decimal (03E8h).

42h	58h	02h	00h	E8h	03h	00h	00h
Control byte (see section 1.6.1)	Drive parameter index		Drive parameter type	Drive parameter value to be written			

Drive response:

42h	58h	02h	00h	E8h	03h	XX	XXh
Control byte (see section 1.6.1)	Drive parameter index		Drive parameter type	No meaning			

1.6.3.2 Reading of the drive parameter

The PAR 628 **Ramp setpoint** parameter of the ADV200 drive must be read by the master. The information required is:

- 1) PAR 628 **Ramp setpoint** parameter index of the ADV200 drive: 628 decimal corresponding to 274 hexadecimal.
- 2) The parameter value is in 16-bit unsigned integer format.
- 3) If the current value is 1000 rpm, it is:

41h	74h	02h	00h	XX	XX	XX	XX
Control byte (see section 1.6.1)	Drive parameter index		Drive parameter type	No meaning			

Drive response:

41h	74h	02h	00h	E8h	03h	00h	00h
Control byte (see section 1.6.1)	Drive parameter index		Drive parameter type	Read value of the drive parameter			

1.7 Process data channel control

This function allows to allocate the drive parameters or application variables to the Process Data Channel data.

The EXP-PDP-ADV card uses a number of words for the Process Data Channel (abbr. PDC Process Data Channel), which can always be set.

Note!

The number and format of the parameters that are set determine the maximum size of the area of exchange, which must coincide with the configuration selected on the master when the node is added to the network (refer to section 1.3.2). If the configurations are not compatible the drive refuses the connection of the master and remains in WaitCfg state: data cannot be exchanged.

The Process Data Channel configuration for the EXP-PDP-ADV card is the following:

DATA 0 DATA 1... DATA n

The Slave can both read and write the Process Data Channel data.

The Profibus DP data read by the Slave are defined as input data; the data written in Profibus DP by the Slave are defined as output data.

A datum can be made both of 2 and 4 bytes . The word "data" refers to any quantity of bytes included between 0 and 16, if the byte total number required is not higher than 32.

ADV200 Example:

It is possible to have:

- from 0 to 16 data with 2 bytes
- 1 datum with 4 bytes + from 0 to 14 data with 2 bytes
- 2 data with 4 bytes + from 0 to 12 data with 2 bytes
- ...
- 8 data with 4 bytes

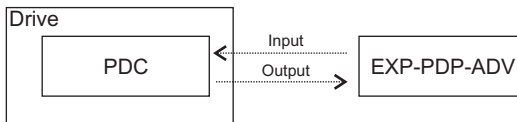
The data exchanged via the PDC can be of two types:

- drive parameters
- variables of an MDPLC application

the use of the MDPLC variables is described in par. 1.7.4.

The composition of the PDC input and output data is defined via suitable parameters as described in drive manual.

The master cyclically writes the data defined as PDC input and cyclically reads the data defined as PDC output.



Note!

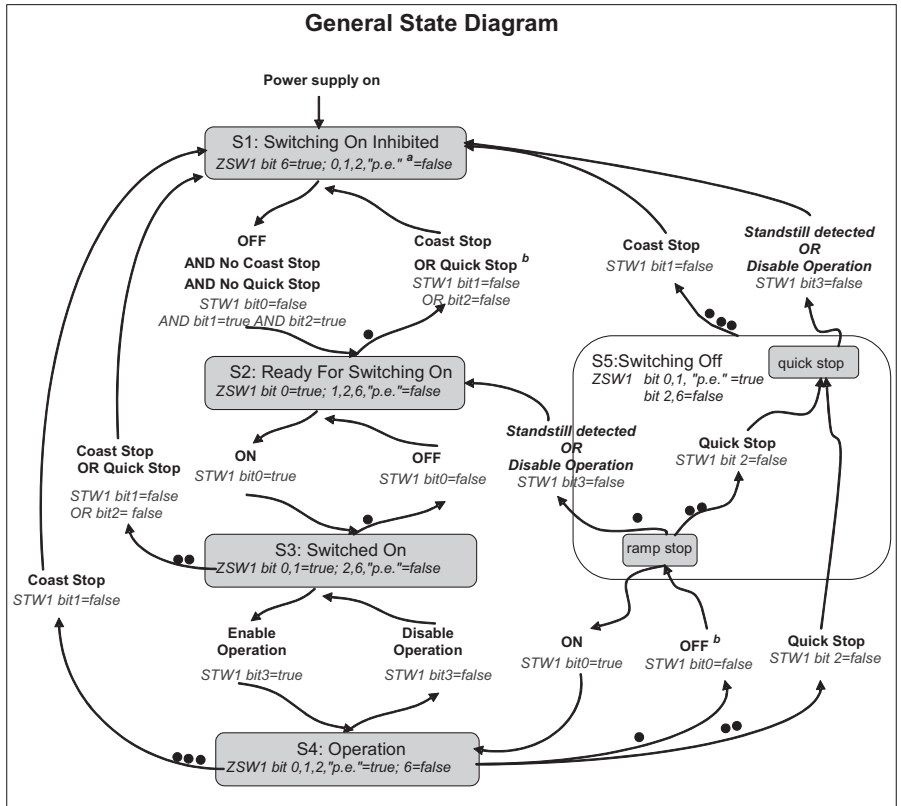
Reference should be made to the drive manual for parameter settings!

1.7.1 Configuration of the virtual digital I/Os

If the Profidrive profile is not used, commands can be sent to the drive using **Word decomp functions**, parameter PAR 4452. The meaning of the single bits is pro-

grammable. It can be set on a "Fieldbus M->Sn" channel as Count 16. The drive state is read in the PAR 443 **Word Comp** parameter, programmable on any "Fieldbus M->Mn" channel as Count 16. The meaning of each single bit can be selected by the user via parameters PAR 4400 **Word Bit 0 src** ... PAR 4430 **Word Bit 15 src**.

With the Profidrive profile the commands must be sent via control word STW1 according to the standard. The drive state is read by the status word ZSW1. In this case drive operation follows the machine states defined by the Profidrive standard, shown in the figure:



1.7.2 Use of the PDC in MDPLC applications

It is possible to configure both the PDC input and output data in order to allow the data direct access via the MDPLC application code.

PDC data can be mapped onto PLC variables for read data by setting the **Fieldbus S->Mn src** parameter to **Dig Fieldbus S->Mn**, the **Fieldbus S->Mn sys** parameter is automatically set to **MDPLC 16**.

For write data, **Fieldbus M->Sn sys** can be selected as MDPLC 16 or 32 and the destination can be left as **Not Used**. The datum is available on **Fieldbus M->Sn mon**.

The MDPLC application has the task of reading and writing on the relative **Dig** and **mon** parameters.

1.8 Profidrive

If the **Fieldbus type** parameter is set to Profidrive the drive operates in Profidrive Ver 4.1 mode, as P-Device (DPSlave) according to the Speed Control Mode for Application Class 1, with Master/Slave-type Cyclic Data Exchange (N.B.: clock synchronous operation DPV2 is not available). Alarms are managed via parameters.

1.8.1 Parameters

The drive makes the following parameters available, accessible using the DPV1-MSAC functions (see section 1.6.1), to the Process Data index DS47 (PAP):

In read mode:

918 : Node Address
922 : Telegram selection (value is always 1)
944 : Fault message number
947 : Fault number
952 : Fault situation number
965 : Profile identification
970 : Load parameter set
971 : Transfer into non-volatile memory
972 : Drive Reset

In write mode:

952: Fault situation number
970: Load parameter set
971: Transfer into non-volatile memory
972: Drive Reset

1.8.2 Cyclic data exchange

The PDC channel is automatically configured according to Telegram 1 standard:

	Word 0	Word 1	Word 2	...
Word 15				
In write mode:	STW1	NSOLL_A	User defined ... User defined	
		In read mode:	ZSW1 NIST_A	User
defined	... User defined			

Channel settings can be modified to exchange user parameters or other Telegram standards can be used, for example the following configuration can be used for Telegram Standard 2:

"Fieldbus M->S1 dest" = Profidrive control word , STW1
"Fieldbus M->S1 sys" = Count 16
"Fieldbus M->S2 dest" = Ramp ref1 src , NSOLL_B
"Fieldbus M->S2 sys" = Count 32
"Fieldbus M->S3 dest" = Word decomp src , STW2 (user defined)
"Fieldbus M->S3 sys" = Count 16
"Fieldbus S->M1 dest" = PFdrv status word1 , ZSW1
"Fieldbus S->M1 sys" = Count 16
"Fieldbus S->M2 dest" = Motor speed , NIST_B
"Fieldbus S->M2 sys" = Count 32
"Fieldbus S->M3 dest" = PFdrv status word2 , ZSW2
"Fieldbus S->M3 sys" = Count 16

1.8.3 Compatibility with Profidrive Ver 2.0

The drive can be used in Profidrive Ver 2.0 mode.

The default configuration works in the same way as PPO2.

To use the PKWs, one of the following configuration codes can be sent to the drive in place of those listed in section 1.3.2

Drive parameters can be accessed via the object with index 1 and sub-index equal to the relative PAR of the requested parameter.

Config. Byte 1	Config. Byte 2	Config. Byte 3	Meaning
Hex	Hex	Hex	-
F3	E0	D0	PKW & 1 Word In + 1 Word Out PDC
F3	E1	D1	PKW & 2 Word In + 2 Word Out PDC
F3	E2	D2	PKW & 3 Word In + 3 Word Out PDC
F3	E3	D3	PKW & 4 Word In + 4 Word Out PDC
F3	E4	D4	PKW & 5 Word In + 5 Word Out PDC
F3	E5	D5	PKW & 6 Word In + 6 Word Out PDC
F3	E6	D6	PKW & 7 Word In + 7 Word Out PDC
F3	E7	D7	PKW & 8 Word In + 8 Word Out PDC
F3	E8	D8	PKW & 9 Word In + 9 Word Out PDC
F3	E9	D9	PKW & 10 Word In + 10 Word Out PDC
F3	EA	DA	PKW & 11 Word In + 11 Word Out PDC
F3	EB	DB	PKW & 12 Word In + 12 Word Out PDC
F3	EC	DC	PKW & 13 Word In + 13 Word Out PDC
F3	ED	DD	PKW & 14 Word In + 14 Word Out PDC
F3	EE	DE	PKW & 15 Word In + 15 Word Out PDC
F3	EF	DF	PKW & 16 Word In + 16 Word Out PDC

1.9 In general

1.9.1 Glossary

Master	PLC or PC device controlling the Profibus DP; it has the right to access the Bus.
Slave	Drive or I/O modules which have no right to access the Bus
Process Channel	Channel for a fast, cyclical and high-priority data transfer of previously configured parameters.
Configuration Channel	Channel for a non-cyclical and low-priority data transfer used, for example, for the drive configuration
Profidrive	Standard communication profile for slave drives.

1.9.2 Abbreviations

• PDC	Process Data Channel.
• DP	Decentralized Peripherals.
• CC	Configuration Channel; see chapter 1.3.
• ZSW	Status word
• STW	Control word
• NSOLL	Speed setpoint
• NIST	Speed Actual Value

1.9.3 References

- 1 - "PROFIBUS Specification Normative Parts of PROFIBUS -FMS, -DP, -PA , Order No. 0.032 , Vol I & II
- 2- Profile Drive Technology - Profidrive - Ver 4.1
- 3 - ADV200 drive instruction manual

