people in motion

KEB

COMBICOM
F5-Profibus

F5 Profibus Operator

Hardware

Basics, Fundamentals Profibus

Basic Adjustments

Process Data Assignment

Communication Supervision

Saving of the F5 PB-Operator Configuration

PB-Master Assignments

Hardware

F5 Profibus Operator

Hardware

Following components are required for the successful start up:

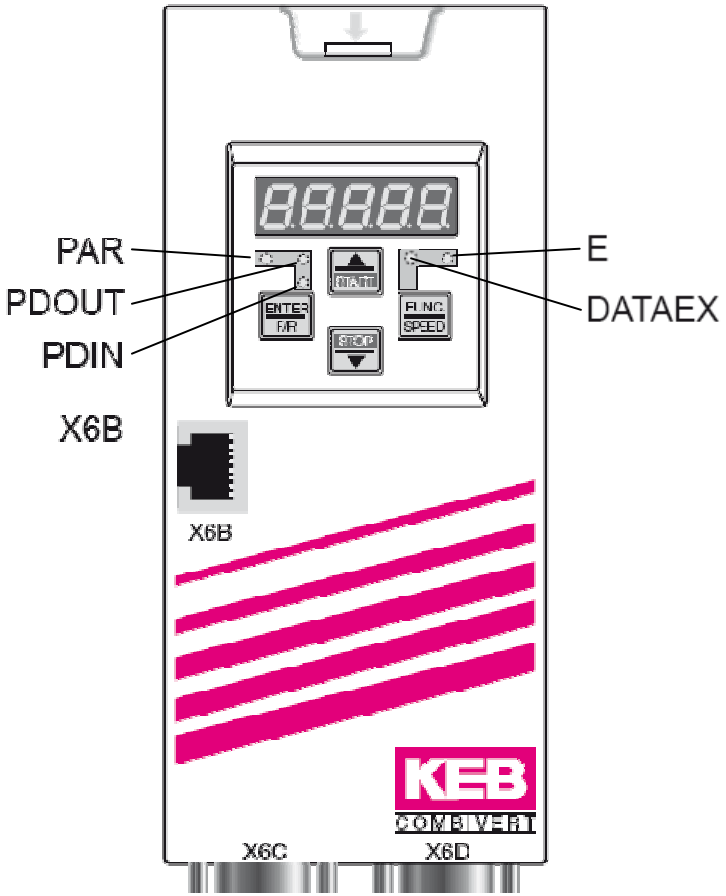
Instruction Manual:	CP.F5.0E0-K170
F5-PROFIBUS-Operator:	00.F5.060-3000
Operator without display:	00.F5.060-3100
HSP5-cable (PC - Adapter):	00.F5.0C0-0010
Adapter DSUB9 / Western:	00.F5.0C0-0020
Application manual of the inverter	

Software:

GSD File	keb305EB.gsd	(absolutely necessary)
Driver	S7_F5_2N.ARJ	(only when using parameter channel)

Operator Hardware

PAR (green)	:	Parameterizing channel active
PDOUT (green)	:	PDOUT data are written to the FI control
PDIN (green)	:	PDIN data are read by the FI control
E (red)	:	on → Inverter ready for operation Blinking → Error in inverter off → no power supply
DATAEX	:	Net data transfer active
X6B	:	Diagnostic interface to the PC (see chapter 4.1)
X6C	:	PRROFIBUS-DP interface 1, Sub D9 socket
X6D	:	PROFIBUS-DP interface 2, Sub D9 socket

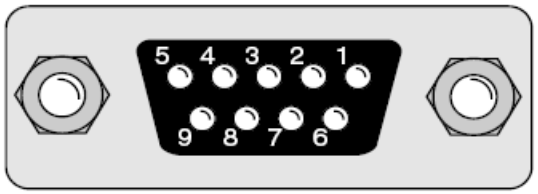


X6C X6D

Operator Hardware

The operator offers two D-SUB-9pole sockets for the PROFIBUS connection (according to DIN41652 part 1). The assignment is as follows:

Pin	Signal	Meaning
1-2	-	reserved
3	RxD/TxD-P	Transmit-/receive signal P
4	-	reserved
5	DGND	Data reference potential
6	VP	Supply voltage for terminating resistor
7	-	reserved
8	RxD/TxD-N	Transmit-/ receive signal N
9	-	reserved



RS485: The signal level is formed by the difference between the high and the low level. Since the bus cable is only a two-core cable, the lines carry either transmit or receive signals (half duplex).

PROFIBUS-DP specifications

Transmitting and physical medium: RS485; screened, twisted two-wire line

Cable parameter	Cable A to [1]	Cable B to [1]
Wave resistance	135-165 Ohm (f = 3-20 kHz)	100-120 Ohm (f > 100 kHz)
Capacitance per unit length	< pF/m	< 60 pF/m
Loop resistance	< 110 Ohm/km	< 160 Ohm/km
Core diameter	> 0.64 mm	> 0.53 mm
Core cross-section	> 0.34 mm²	> 0.22 mm²

[1] Profibus Norm EN 50170 Vol. 2

PROFIBUS-DP specifications

Line length dependent on baud rate:

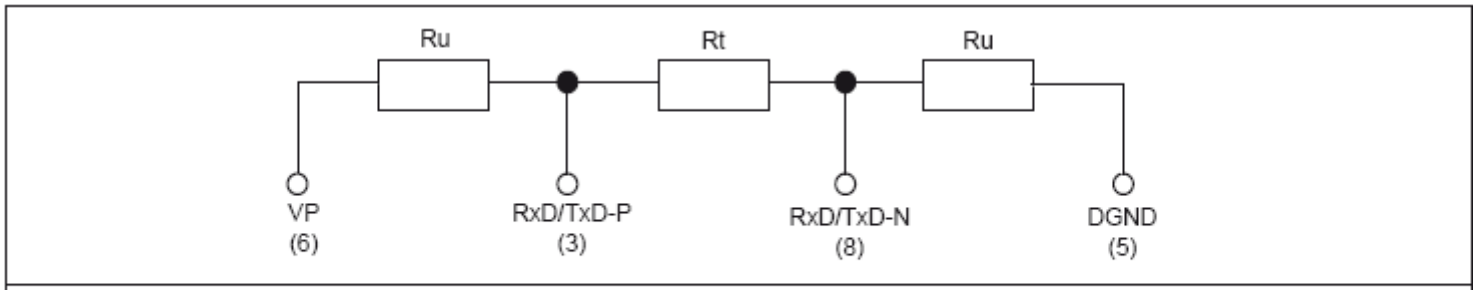
Baud rate in kbit/s	at line A in m	at line B in m
9.6	1200	1200
19,2	1200	1200
93,75	1200	1200
187,5	1000	600
500	400	200
1500	200	-
3000		
6000		
12000		

Radial lines at line A < 0,3 m / B < 6,6 m.
The radial lines are counted to the total length!

PROFIBUS-DP specifications

Max. number of bus nodes without line repeater:
- 32 (active, passive nodes and line amplifier).

Bus termination:



Ru: 390 Ohm	Rt: 220 Ohm (at line A)	Rt: 150 Ohm (at line B)

Must be made at each line at the first and last bus node.

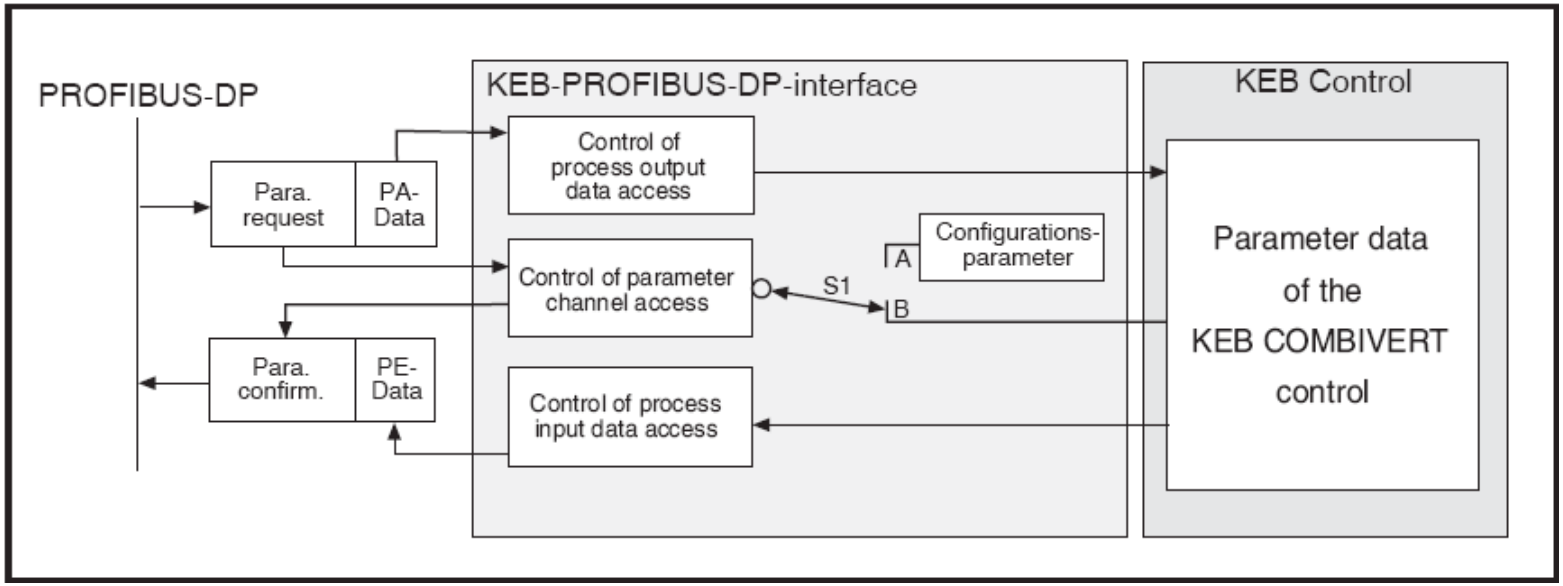
Basics

PROFIBUS-DP services

The PROFIBUS-DP interface connection provides the following services or functions:

Data_Exchange	Transfer of input and output data
RD_Inp	Read inputs of a slave
RD_Outp	Read outputs of a slave
Slave_Diag	Read DP slave diagnostics information
Set_Prm	Transmit parameter data
Chk_Cfg	Check configuration information
Get_Cfg	Read out configuration information
Global_Control	Control command

Three funktion blocks of the KEB-Profibus interface



Parameterizing channel

Any parameters of the FI control and the PROFIBUS DP operator can be read out or changed via the parameterizing channel. If available, the parameterizing channel determines the first 8 bytes of the cyclic telegrams between DP master and PROFIBUS-DP interface connection. The parameterizing channel is more flexible, since the parameter is directly addressed here. However the realization of the parameterizing channel on the cyclic data traffic is also somewhat more complex than the delivery of new process.

Process Data Channel

Process output data processing (PD-OUT)
The transmitted (process) output data from the PROFIBUS DP master are written to the FI control at a change. Processing of the output data can be switched on/off via parameter "PD_out_enable". Which parameters determines to the process output data is defined by the complex parameter process output data description.
Coding of this parameter in accordance with DRIVECOM profile.

Process input data processing (PD-IN)
The operator reads cyclically inside the adjustable cycle time (PE_Cycle) the values of the (process) input data from the inverter control and transfers them on PROFIBUS DP to the master. Processing of the input data can be switched on/off via parameter „PD_in_enable“. Which parameters determines to the process input data is defined by the complex parameter process input data description.
Coding of this parameter in accordance with DRIVECOM profile.

Process data and their mapping

The process data are only user data. That means they do not contain any addressing. The master preset new setpoints to the KEB COMBIVERT via process output data. In the other data direction the KEB COMBIVERT informs the master about certain actual values by means of process input data. For this the PROFIBUS operator reads cyclically the process input data from the inverter control adjusted by parameter PE_Cycle/PD_In_Cycle. Which parameters concern to the process data is determined by the process data assignment.
The current software of the KEB-F5-PROFIBUS operator allows the mapping of maximum16 byte both for process input data and process output data. Internal communication between operator and FI control supports only the transfer of maximum 8 byte process data into both directions. A second process data channel to the FI control is necessary for mappings with more than 8 byte process data.

Process Data Channel

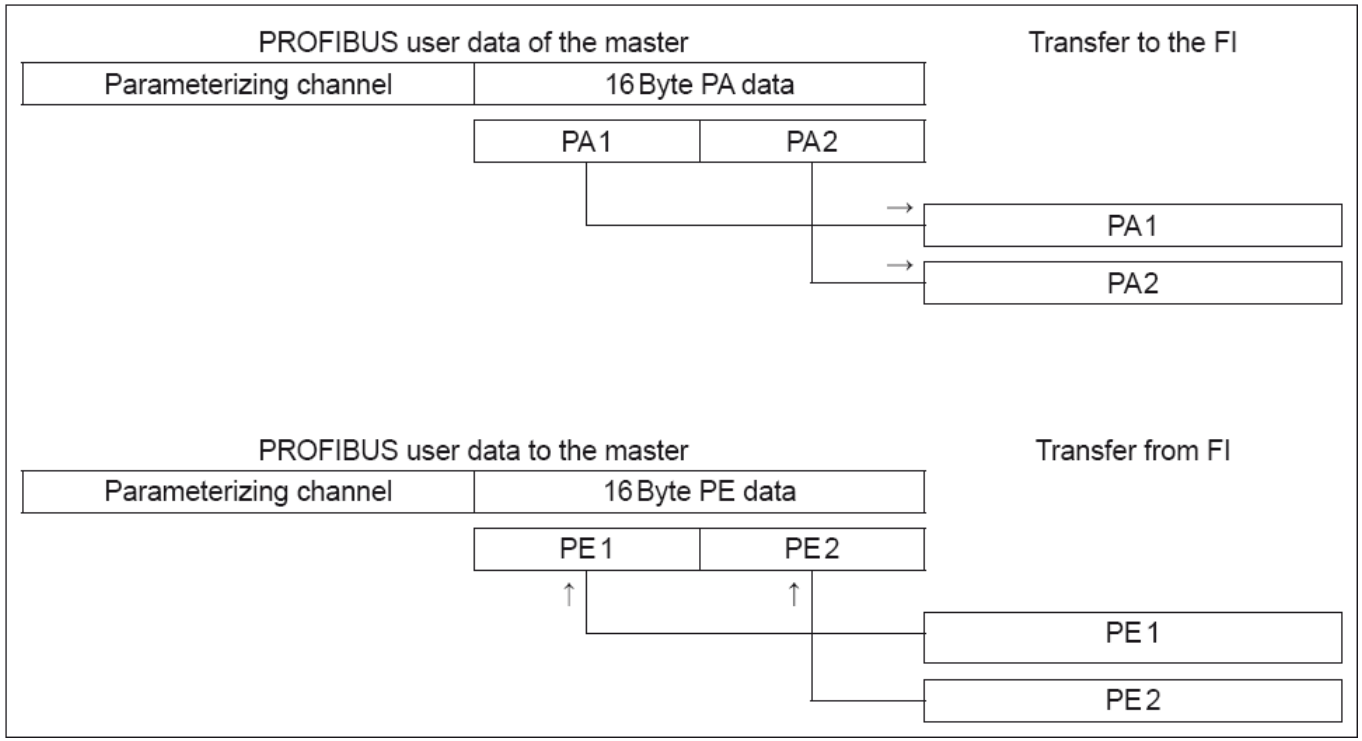
The name of each process data is taken from the view of the control

Process Input Data (PD-IN): Data that is read from the FI by the control.

Process Output Data (PD-OUT): Data that is written to the FI by the control.

The F5 Profibus operator offers the possibility to define up to 16 byte process data.
It depends on the used FI type whether this 16 byte process data can be used or only max. 8 byte.
Only together with inverters of type F5-G, F5-M, F5-S, F5-E, F5-H and F5-S in A-housing up to 16 byte process data can be used.
F5-B, F5-C and R6-S can support only up to 8 Byte process data.

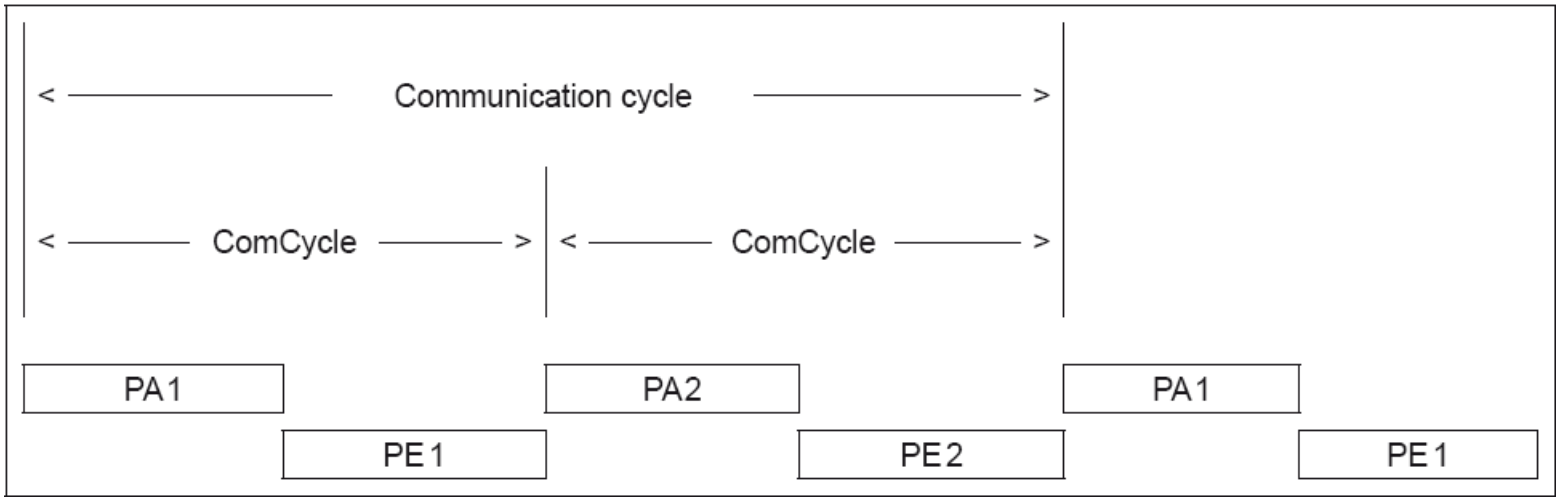
Process data and their mapping



In case of 16 byte PD data the process data are not transferred in one telegram to the FI control, but in two separated telegrams. This causes a division in halves of the maximum transfer rate of the process data.

Cyclic communication mode

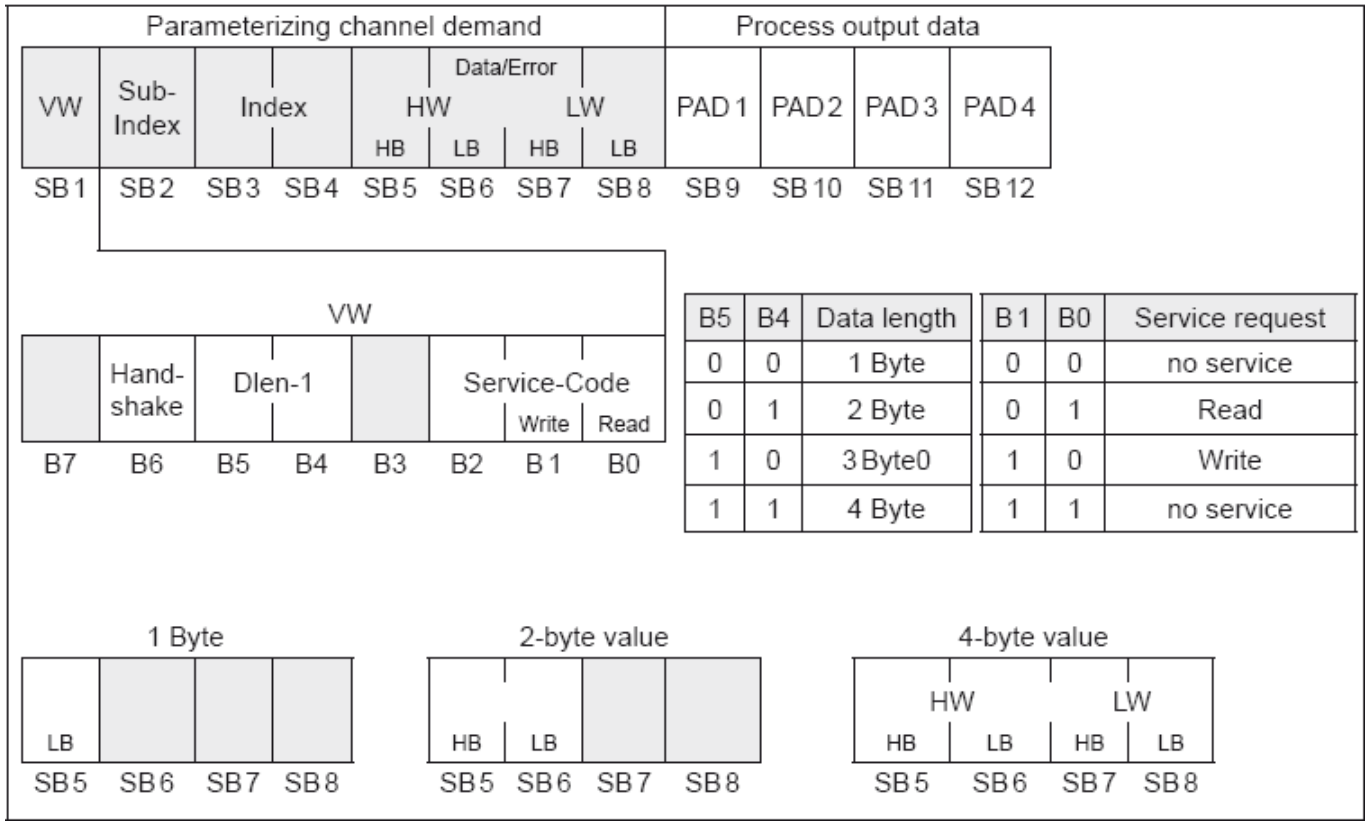
From software version V1.7 the F5-PBS operator supports the cyclic communication mode. Thereby all communication between operator and FI control is handled via four exact cyclic transmitted telegrams. Thus it is reached that process data are exchanged in a deterministic grid. Each telegram transfers process data of 8 byte maximum, in such a way process data of 16-byte are also supported in the cyclic mode. The smallest achievable communication cycle time thereby is 2ms (SelComCycle = 1000). The following picture shows the sequence as overview:



Cyclic communication mode

The cyclic communication mode causes no limitations in the functionality of the F5-PROFIBUS operator. All control elements and functions operate unchanged. Only the processing of all non-process data telegrams is dependent on the adjusted cycle time (ComCycle). That may lead (e.g.) to a deceleration of the processing speed to the diagnostic interface at high values of ComCycle.
The value of SelComCycle should be adjusted to 1000 or 2000 if no special circumstances are against it.
The cyclic communication mode can only be activated, if the connected FI control supports the HSP5 services 54 and 55 for writing (see parameter description ‚FU_HSP5Supp7').

Coding of the user data from DP master to KEB DP interface connection



B5	B4	Data length
0	0	1 Byte
0	1	2 Byte
1	0	3 Byte0
1	1	4 Byte

B 1	B0	Service request
0	0	no service
0	1	Read
1	0	Write
1	1	no service

This means

LB:	Low-Byte
HB:	High-Byte
LW:	Low-Word
HW:	High-Word

Coding of the user data from DP master to KEB DP interface connection

The first 8 byte contain the parameterizing channel request (PCR).
Request means, the DP master can inform the DP slave in this part of the telegram whether it wants to change (write) or scan (read) the value of a parameter.

The first byte of the PCR is called administration byte.
The parameterizing orders are carry out with this byte.
This byte is necessary, that the parameterizing orders can be treated detached from the cyclic exchange of the PROFIBUS-DP user data.
The administration byte contains one handshake-bit.
This bit must be inverted by the DP master each time if it wants to send a new PCR.
Bit 4 and 5 of the administration byte indicates the data length.
Bits 0 and 1 contain the service coding.
For a read request bit b 0 must be 1 and bit b 1 = 0.
For a write request bit b 0 must be 0 and bit b 1 = 1 .

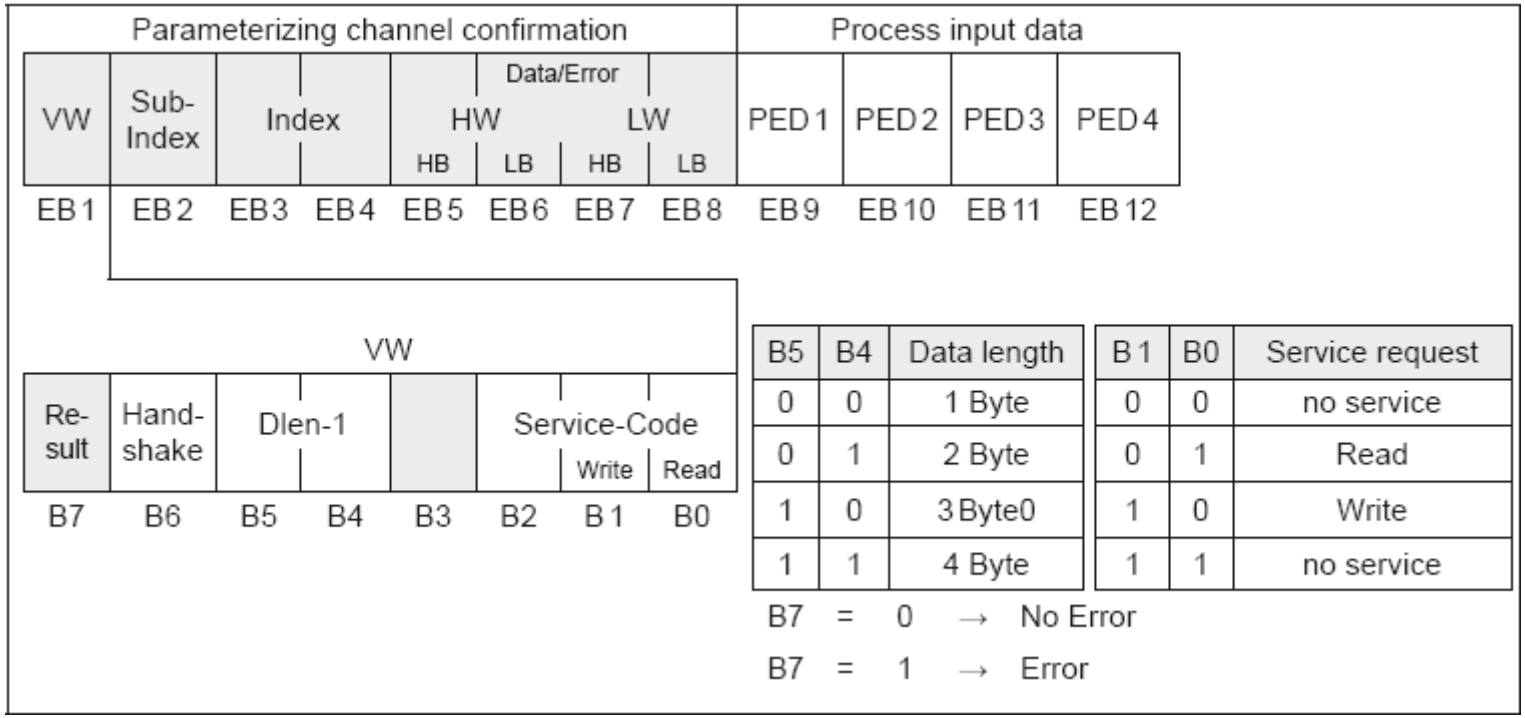
Coding of the user data from DP master to KEB DP interface connection

The addressing of the parameter is done via 16-bit index and 8-bit subindex.
In case of a write request the data length and the data must be entered additionally.
The data length of the parameters, which can be responded via this parameter channel, is limited to 4 byte.

The second part of the user data telegram includes the (process) output data. These data are non-addressed, i.e. they do not contain a parameter address, but only data.

Observe!
Process output data are only transferred to the KEB COMBIVERT if one of these values have changed!

Coding of user data from the KEB DP interface connection to the master



Coding of user data from the KEB DP interface connection to the master

The first 8 byte contain the parameterizing channel confirmation.
That means, the DP master is informed whether his requested order could be executed error-free or not.
The administrative byte has also a special meaning here.
Bit b 6 (handshake) indicates whether the execution of the requested order is executed.
The order is executed if bit b 6 has the same value than the request.
Bit b 7 indicates an error free executed requested order (b 7 = 0) or if an error occurs (b 7 = 1).
The data/error field (byte EB 5 to EB 8) is to be interpreted as error description in error case. The error divides in error class (EB 5), error code (EB 6) and additional code (EB 7,EB 8).
The meaning of the individual error codes are specified in the manual.
The data/error field contains the read out data, if no error occurs and the DP master has requested the reading of a parameter value.

Coding of user data from the KEB DP interface connection to the master

Error messages of the parameterizing channel:

Error class (EB5)	Error code (EB6)	Additional-Code (EB7, EB8)	Meaning
5	4	0000h	Bits for writing and reading are set simultaneously
6	2	0000h	No connection to the inverter
6	3	0000h	Parameter write protected.
6	3	0030h	Access to the parameter is not possible with the actual adjusted password.
6	4	0000h	Invalid parameter address (Index).
6	5	0000h	Invalid process data description.
6	5	0011h	Invalid Subindex.
8	0	0022h	Inverter busy
8	0	0030h	The written value lies outside of the valid value range
8	0	0033h	The addressed parameter set is unvalid
8	0	0034h	Operation not possible

Coding of user data from the KEB DP interface connection to the master

Notice

In case of a write request the written data from the request are also transferred to the confirmation if no error occurs. In this case the DP master can read back the written data for compare.

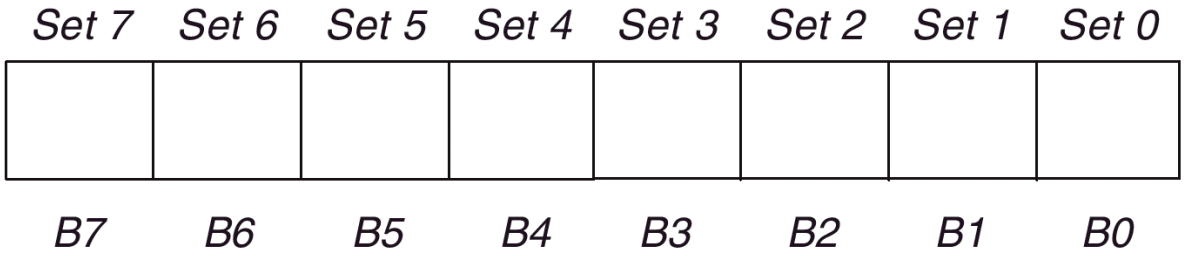
The second part of the telegram contains the (process) input data.
The input data are read cyclically with an adjustable cycle time.

Note for the use of the data length of the parameters

Parameters in the KEB F5 frequency inverter as well as the parameters in the PROFIBUS-DP interface connection offer an effective data lengths of 1 to 4 byte. It is possible to read and write each parameter with a data length of 4-byte in order to allow the user an easy access to the parameters.
That means the user must not pay attention to the data length of the parameter and uses each parameter as 4-byte parameter.
The data field of the parameterizing channel must be filled always as a 4-byte parameter for a write request.
In the example the setting of a 1-byte parameter with value = 255d is presented as 4-byte parameter:

Subindex

If FI parameter will be selected via the parameterizing channel the subindex is used for parmeter set addressing. Value = 0 - indirect set addressing, value ≠ 0 direct set addressing.
In this case the value determines bit-coded the addressed set/sets:



The following must be considered for the simultaneous addressing of several sets :
The value of the parameters is changed in all addressed sets during writing.
The value of the parameter is only returned during reading if the value is equal in all addressed sets. An error message is returned, if the values are unequal.

Application Parameters

The KEB frequency inverter with PROFIBUS-DP interface connection is characterized by the parameters on the application level.
These parameters are divided in three groups. The classification is preset by the DRIVECOM profile. This prescribes, manufacturer-specific parameters must be inside the index range 2000h...5FFFh.

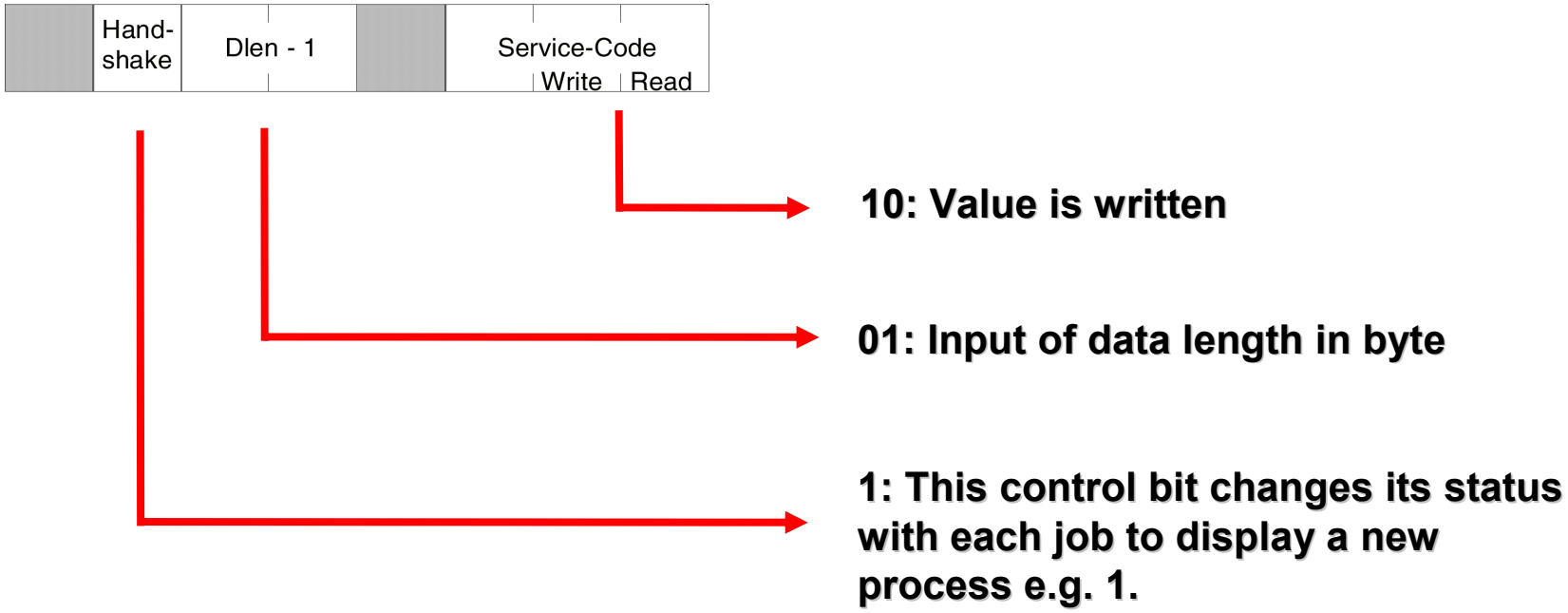
Parameter of the FI control (Index range 2000h...5EFFh).
The following applies to the parameter addressing:
Index = parameter address + 2000h (parameter address of the application manual of the FI control).

Configuration parameters of the PROFIBUS-DP interface connection (Index range 5F00h...5FFFh).

Parameters with preset coding by DRIVECOM profile are in index range up to 6000h.

Protocol from Master (PLC) to KEB - inverter

Parameter value of op.3 (digital setpoint setting) in set 0 shall be adjusted to 20 Hz.

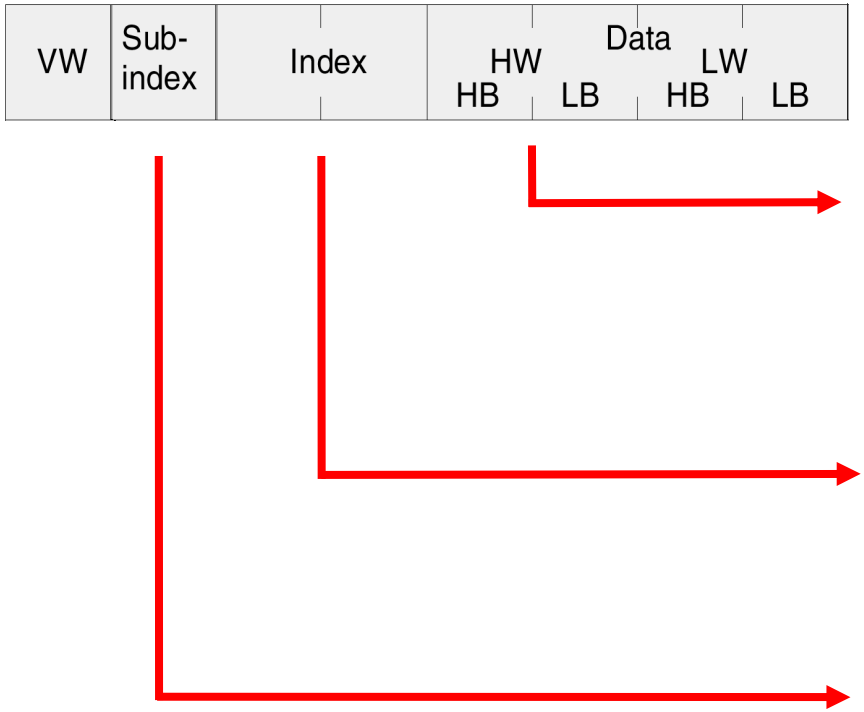


Thus the administrative byte is 01010010, 52h !

F5 Profibus Operator

Basics, Example

Protocol from Master (PLC) to KEB - inverter



Two byte long data stand in the HW (left-justified). The division of the frequency is 0.0125Hz. Thus the factor is 80.

20*80 = 1600dez = 640hex

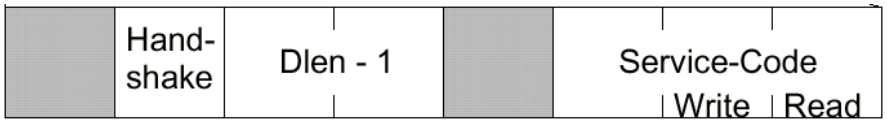
The inverter parameter address +2000h is the index.

Address of op.3 = 0303hex
Consequently: Index = 2303hex

The subindex has the value 1 for set 0.

Entire protocol (request): 52h 01h 23h 03h 06h 40h 00h 00h

Protocol from KEB - inverter to Master (PLC)



01000010 corresponds to 42h !

10: confirmation value was written

00: No specification of data length in the slave confirmation.

1: If this control bit has the same value as in the transmitted protocol, then the job was executed.

0: no error; 1: error

Subindex, index and data are specified again. In the case of a fault (result bit =1) the error identification is located in the four data bytes.

Protocol from KEB - inverter to Master (PLC)

Parameter-Channel-Confirmation

VW	Sub-index	Index	Data/Error			
			HW		LW	
			HB	LB	HB	LB

For checking purposes the written data is specified again. In case of a fault the error identification is located in the four bytes.

Even the addressing of the parameter is repeated.

Confirmation protocol: 42h 01h 23h 03h 06h 40h 00h 00h

Basic Adjustments

F5 Profibus Operator

Basic Adjustments

PROFIBUS is a Master-Slave-Communication procedure:
At this procedure passive users (Slaves) are controlled by an active user (Master, e.g. PLC).
The slaves require no intelligence with regard to the bus allocation. They transmit only upon request by the master.

Addressing:
Each inverter has a PROFIBUS-Address. It corresponds to the inverter parameter sy.06 - and is stored in the inverter. The adjustment can be done via operator keyboard or HSP5 diagnosis interface of the operator and Combivis.

F5 Profibus Operator
Basic Adjustments

Transmission speed:

The PROFIBUS-DP- transmission speed is detected automatically. Only the supported speeds can be detected.

The possible bit rates and the appropriate maximum response delay times can be taken from the following table:

Bit rate in KBit/s	max. TSDR in bit times
9.6	60
19.2	60
93.75	60
187.5	60
500	100
1500	150
3000	250
6000	450
12000	800

F5 Profibus Operator

Basic Adjustments

In standard setting the operator expects as process output data (inverter set values) the values of the parameters control word (sy.50) and set speed value (sy.52).

With the assistance of the following inverter parameters the operation mode via control word is activated.

Ud01	password	440	
Fr01	copy parameter set	-4: def. cust+sys. all sets	
Fr02	parameter set source	5: control word (sy.50)	
oP00	reference source	5: set speed value (sy.52)	
oP01	rotation source	9: ctrl.word(sy.50), abs.	
di01	select signal source	1: ST	
di02	digital input setting	1: ST	
Ud05	auto store	2: OFF store never	(F5.C)

Because of the setvalue (sy.52) is a speed and not a frequency using an F5-B, F5-C or F5- G the rated motor speed has to be put in the motor data.

Process Data Assignment

F5 Profibus Operator
Process Data Assignment

The process data are pure user data, they do not contain addressing. Therefore the assignment must be agreed before between master and KEB-F5 -PROFIBUS-Interface.

This can be done either with Combivis and operator parameters or via the Profibus Parameter Channel. This requires a bit S7 knowledge, to implement the driver programm.

Instead of inverter parameters the so-called operator parameter are used now.
These Parameters describe, witch inverter parameter shall be used as Process Data.

The values of the F5-operator parameter can be adjusted with COMBIVIS.
A parameter list of this parameters can be created. Using this list the selected adjustments of the operator can be up- or downloaded.

The purpose is to realise all the operator adjustment via COMBIVIS. Then no parameter channel driver has to be installed!

Requirements

- Up to 16 byte PD-OUT and up to 16 byte PD-IN data can be defined.
- In the PB-Operator the configuration of process data is divided into two blocks of 8 byte..
- Because at KEB inverters only 16 bit-(word) and 32 bit-(long) parameter are available for each block the process data can be configured in the following way:

  - Up to 4 word parameter
  - 1 long and up to 2 word parameter
  - 2 long parameter

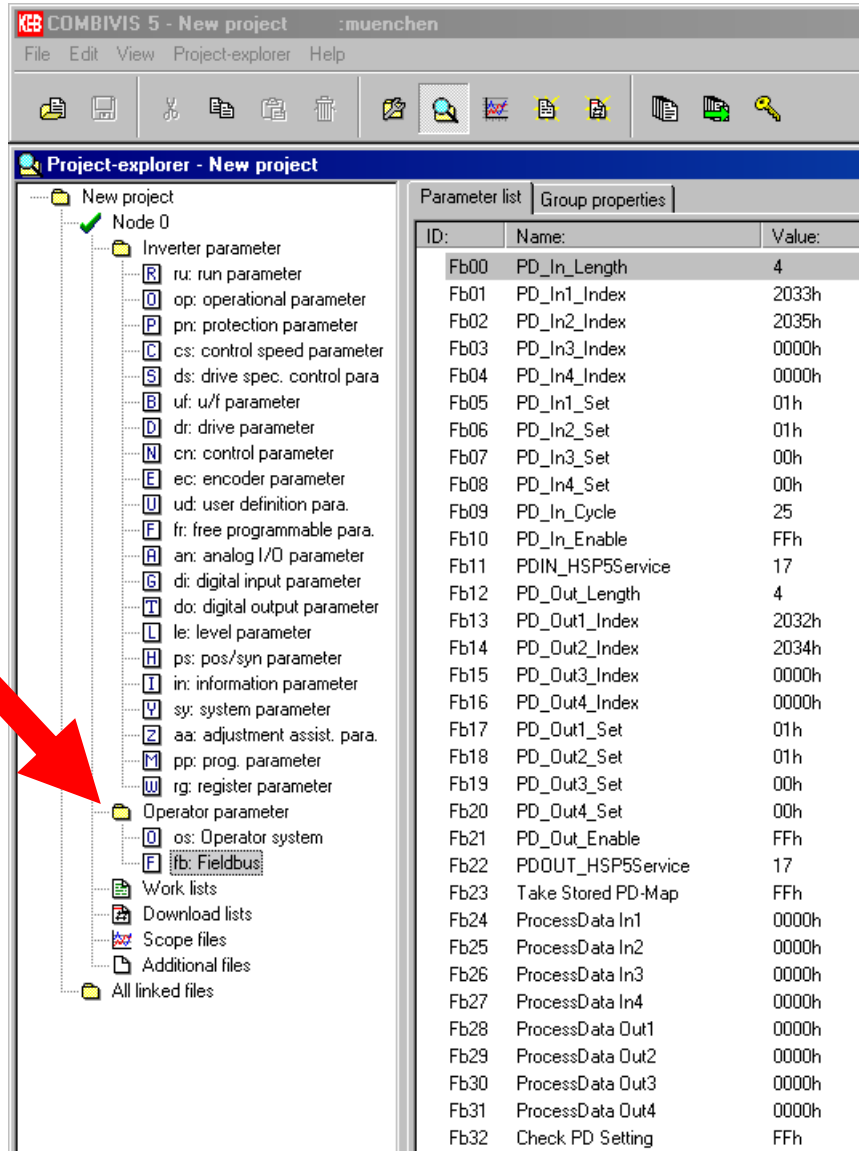
- Using 1 long and up to 2 word parameter the following conditions must be fulfilled:

  The long parameter must be the first PD.

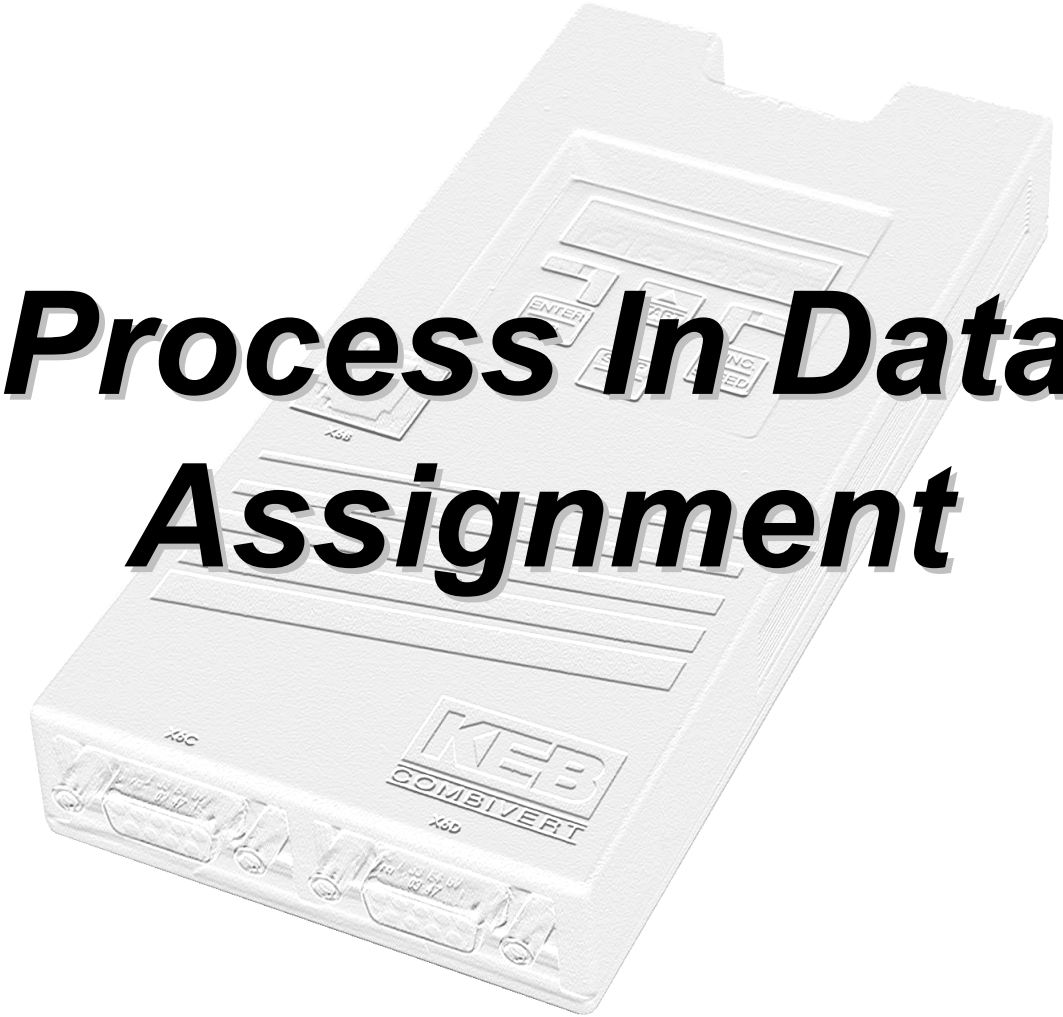
  PD-IN and PD-Out data of the affected block must be defined in the same structure.

F5 Profibus Operator
Process Data Assignment

Online changing of operator parameter using Combivis:



Process In Data Assignment



PD-IN Assignment

To configure the process in data assignment the following parameters have to be used:

Parameter list | Group properties

ID:	Name:	Value:
Fb00	PD_In_Length	4

The length of the required PD-IN of both blocks in numbers of byte has to be adjusted.
I.g. 4 word parameter ⇨ Fb.00 = 8

PD-IN Assignment (First Block)

Up to 4 word parameter

Address of the FI-parameter that should be used as PD-IN has to be adjusted in Fb.01 (PD-IN1) … Fb.04 (PD-IN4).

Note: Fb.01 … 04 = 2000h + parameter address

Parameter list | Group properties

ID:	Name:	Value:
Fb01	PD_In1_Index	2033h
Fb02	PD_In2_Index	2035h
Fb03	PD_In3_Index	0000h
Fb04	PD_In4_Index	0000h

PD-IN1 = SY.51 'status word (low)', word
PD-IN2 = SY.53 'actual speed value', word
PD-IN3 not occupied
PD-IN4 not occupied

PD-IN Assignment (First Block)

1 long and up to 2 word parameter

Address of the FI-parameter that should be used as PD-IN has to be adjusted in Fb.01, Fb02 (PD-IN1), Fb.03 (PD-IN2), Fb.04 (PD-IN3).
Fb.01, 02 (PD-IN1) must represent the long parameter. Because a long needs 2 words Fb.02 must be set to 0 as wildcard.

Note: Fb.01, Fb.03, Fb.04 = 2000h + parameter address.

PD-IN and PD-OUT of the same PD block must be configured in the same format.

Parameter list | Group properties

ID:	Name:	Value:
Fb01	PD_In1_Index	220Ch
Fb02	PD_In2_Index	0000h
Fb03	PD_In3_Index	2033h
Fb04	PD_In4_Index	2035h

PD-IN1 = ru.12 'actual torque display', long

PD-IN2 = SY.51 'status word (low)', word

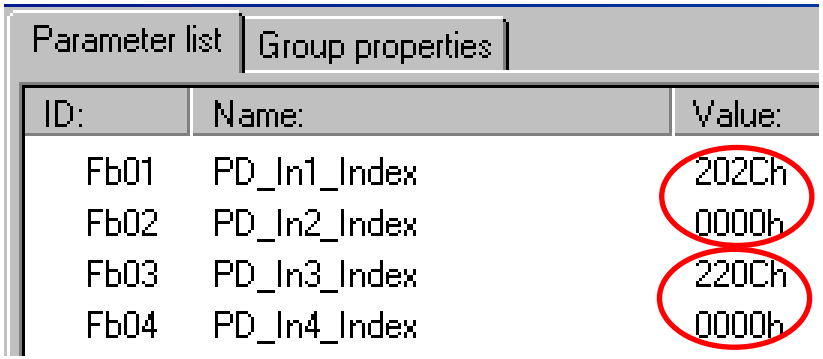
PD-IN3 = SY.53 'actual speed value', word

PD-IN Assignment (First Block)

2 long parameter

Address of the FI-parameter that should be used as PD-IN has to be adjusted in Fb.01, Fb.02 (PD-IN1) and Fb.03, Fb.04 (PD-IN2).
Because a long needs 2 words Fb.02 and Fb.04 must be set to 0 as wildcard.

Note: Fb.01, Fb.02 = 2000h + parameter address.



PD-IN1 = SY.44 'status word (long)', long

PD-IN2 = ru.12 'actual torque display', long

PD-IN Assignment (First Block)

Parameter list | Group properties

ID:	Name:	Value:
Fb05	PD_In1_Set	01h
Fb06	PD_In2_Set	01h
Fb07	PD_In3_Set	01h
Fb08	PD_In4_Set	01h

Fb.05 … Fb.06 are used as direct setting of the set from which the required PD-IN parameter should be read.
The value determines bit-coded the addressed set/sets:

Set 7	*Set 6*	*Set 5*	*Set 4*	*Set 3*	*Set 2*	*Set 1*	*Set 0*
B7	*B6*	*B5*	*B4*	*B3*	*B2*	*B1*	*B0*

The value of the parameter is only returned during reading if the value is equal in all addressed sets.
For a proper operation the values for parameter PD-Inx_Set should be set unequal to 0, default to 1 (set 0).

F5 Profibus Operator
Process Data Assignment

PD-IN Assignment (First Block)

Parameter list | Group properties

ID:	Name:	Value:
Fb10	PD_In_Enable	FFh

Indicates bit-coded which process input data bytes are activated

Byte 7	Byte 6	Byte 5	Byte 4	Byte 3	Byte 2	Byte 1	Byte 0
0	0	0	0	1	1	1	1
B7	B6	B5	B4	B3	B2	B1	B0

Example: 0Fh – byte 1 … byte 4 is activated.

Note: For easier handling it is advised to use always the value FFh, byte 1 … byte 8 enabled!
This adjustment can be used for any kind of PD-IN assignment.

F5 Profibus Operator

Process Data Assignment

PD-IN Assignment

Sets the cycle time in ms to read the process input data from the FI.

If more than 8-byte process input data are activated, the second part of the process input data were read directly after the first part.

PD-IN Assignment (First Block)

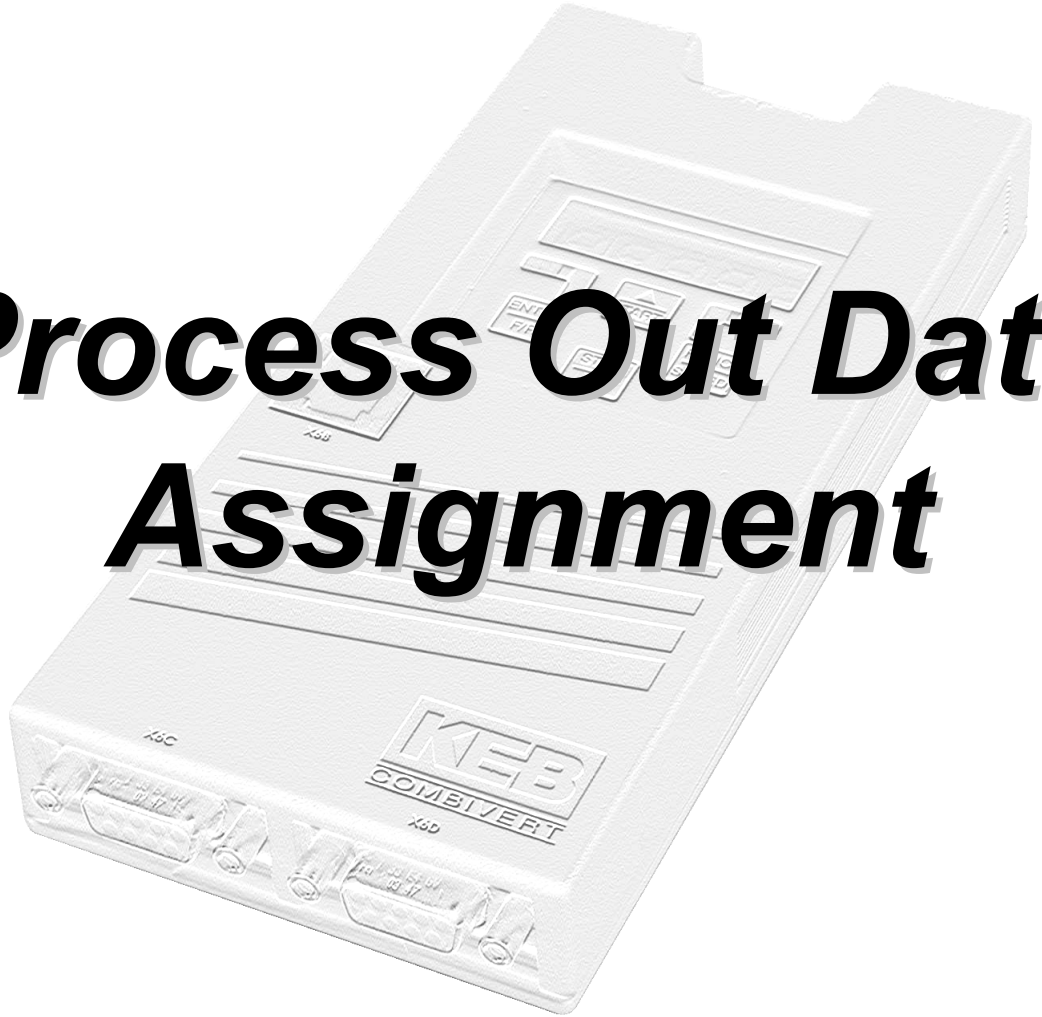
Example:

New Worklist1

Example for PD-IN assignment
1 long and two word parameter

Inv.	Addr.	Set	Id.	Name	Value	Remarks
0	0280h	I	Fb00	PD_In_Length	8	8 byte PD-IN length
0	0281h	I	Fb01	PD_In1_Index	202Ch	PD-IN1, ru.12 'actual torque display', long
0	0282h	I	Fb02	PD_In2_Index	0000h	Set to 0 because PD-IN1 is a long parameter
0	0283h	I	Fb03	PD_In3_Index	2033h	PD-IN2, SY.51 'status word (low), word
0	0284h	I	Fb04	PD_In4_Index	2035h	PD-IN3, SY.53 'actual speed value', word
0	0285h	I	Fb05	PD_In1_Set	01h	Set 0 selected (default)
0	0286h	I	Fb06	PD_In2_Set	01h	Set 0 selected (default)
0	0287h	I	Fb07	PD_In3_Set	01h	Set 0 selected (default)
0	0288h	I	Fb08	PD_In4_Set	01h	Set 0 selected (default)
0	0289h	I	Fb09	PD_In_Cycle	25	25 ms cycle time for reading the PD-IN (default)
0	028Ah	I	Fb10	PD_In_Enable	FFh	All PD-IN of the first block enabled FFh can be used in any case

Process Out Data Assignment



PD-OUT Assignment

To configure the process out data assignment the following parameters have to be used:

Parameter list | Group properties

ID:	Name:	Value:
Fb12	PD_Out_Length	4

The length of the required PD-OUT of both blocks in numbers of byte has to be adjusted.
I.g. 4 word parameter – Fb.12 = 8

PD-OUT Assignment (First Block)

Up to 4 word parameter

Address of the FI-parameter that should be used as PD-OUT has to be adjusted in Fb.13 (PD-OUT1) … Fb.16 (PD-OUT4).

Note: Fb.13 … 16 = 2000h + parameter address

Parameter list | Group properties

ID:	Name:	Value:
Fb13	PD_Out1_Index	2032h
Fb14	PD_Out2_Index	2034h
Fb15	PD_Out3_Index	0000h
Fb16	PD_Out4_Index	0000h

PD-OUT1 = SY.50 'control word (low)', word
PD-OUT2 = SY.52 'set speed value', word
PD-OUT3 not occupied
PD-OUT4 not occupied

PD-OUT Assignment (First Block)

1 long and up to 2 word parameter

Address of the FI-parameter that should be used as PD-OUT has to be adjusted in Fb.13, Fb14 (PD-OUT1), Fb.15 (PD-OUT2), Fb.16 (PD-OUT3).
Fb.13, 14 (PD-IN1) must represent the long parameter. Because a long needs 2 words Fb.14 must be set to 0 as wildcard.

Note: Fb.0x = 2000h + parameter address.

PD-IN and PD-OUT of the same PD block must be configured in the same format.

Parameter list | Group properties

ID:	Name:	Value:
Fb13	PD_Out1_Index	2F13h
Fb14	PD_Out2_Index	0000h
Fb15	PD_Out3_Index	2032h
Fb16	PD_Out4_Index	2034h

PD-OUT1 = cS.19 'abs. torque reference', long

PD-OUT2 = SY.50 'control word (low)', word

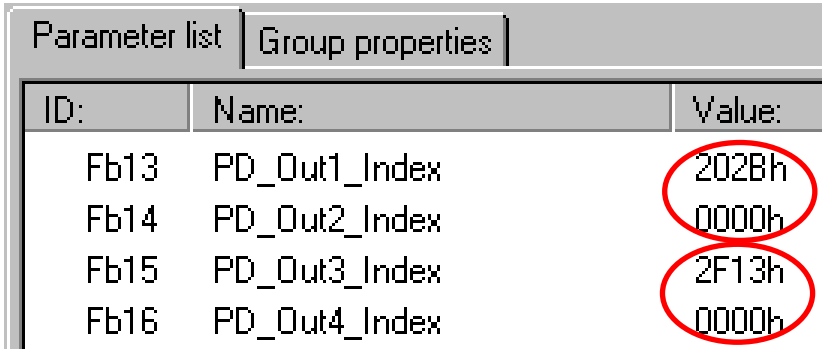
PD-OUT3 = SY.52 'set speed value', word

PD-OUT Assignment (First Block)

2 long parameter

Address of the FI-parameter that should be used as PD-OUT has to be adjusted in Fb.13, Fb.14 (PD-OUT1) and Fb.15, Fb.16 (PD-OUT2).
Because a long needs 2 words Fb.14 and FB.16 must be set to 0 as wildcard.

Note: Fb.13, Fb.15 = 2000h + parameter address.



PD-OUT1 = SY.434 'control word (long)', long

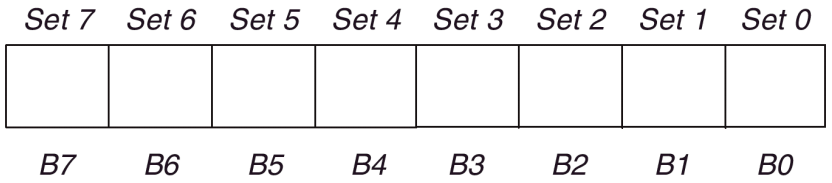
PD-OUT2 = cS.19 'abs. torque reference', long

PD-OUT Assignment (First Block)

Parameter list | Group properties

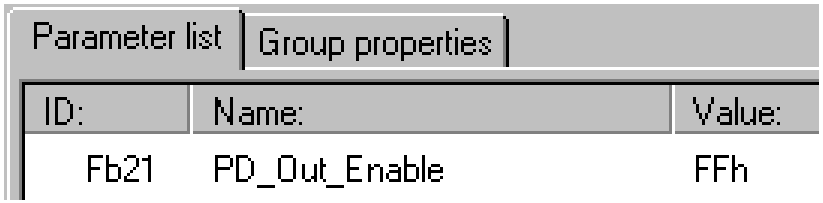
ID:	Name:	Value:
Fb17	PD_Out1_Set	01h
Fb18	PD_Out2_Set	01h
Fb19	PD_Out3_Set	01h
Fb20	PD_Out4_Set	01h

If a PD-OUT is set programmable Fb.17 … Fb.20 are used as direct setting of the set in which the value of required PD-OUT parameter should be written.
The value determines bit-coded the addressed set/sets:



The values of the required PD-OUT parameter in the selected sets will be changed during one write cycle.
For a proper operation the value for the required PD-IN should be set unequal to 0, default to 1 (set 0).

PD-OUT Assignment (First Block)



Indicates bit-coded which process output data bytes are activated

Byte 7	Byte 6	Byte 5	Byte 4	Byte 3	Byte 2	Byte 1	Byte 0
0	0	0	0	1	1	1	1
B7	B6	B5	B4	B3	B2	B1	B0

Example: 0Fh – byte 1 … byte 4 is activated.

Note: For easier handling it is advised to use always the value FFh, byte 1 … byte 8 enabled!
This adjustment can be used for any kind of PD-OUT assignment.

PD-OUT Assignment (First Block)

Example:

New Worklist2

Example for PD-OUT assignment
1 long and two word parameter

Inv.	Addr.	Set	Id.	Name	Value	Remarks
0	028Ch	I	Fb12	PD_Out_Length	8	8 byte PD-OUT length
0	028Dh	I	Fb13	PD_Out1_Index	2F13h	PD-OUT1, cS.19 'abs. torque reference', long
0	028Eh	I	Fb14	PD_Out2_Index	0000h	Set to 0 because PD-OUT1 is a long parameter
0	028Fh	I	Fb15	PD_Out3_Index	2032h	PD-OUT2, SY.50 'control word (low), word
0	0290h	I	Fb16	PD_Out4_Index	2034h	PD-OUT3, SY.52 'set speed value', word
0	0291h	I	Fb17	PD_Out1_Set	01h	Set 0 selected (default)
0	0292h	I	Fb18	PD_Out2_Set	01h	Set 0 selected (default)
0	0293h	I	Fb19	PD_Out3_Set	01h	Set 0 selected (default)
0	0294h	I	Fb20	PD_Out4_Set	01h	Set 0 selected (default)
0	0295h	I	Fb21	PD_Out_Enable	FFh	All PD-OUT of the first block enabled FFh can be used in any case

F5 Profibus Operator

Process Data Assignment

PD Supervising (First Block)

Parameter list | Group properties

ID:	Name:	Value:
Fb24	ProcessData In1	0000h
Fb25	ProcessData In2	0000h
Fb26	ProcessData In3	0000h
Fb27	ProcessData In4	0000h
Fb28	ProcessData Out1	0000h
Fb29	ProcessData Out2	0000h
Fb30	ProcessData Out3	0000h
Fb31	ProcessData Out4	0000h

If the communication between PD-master and FI is active in Fb.24 … Fb.27 and Fb.28 … Fb.31 the PD-IN and PD-Out data transmitted from an to the master could be supervised.

Using this parameter the PD values could be verified to that what the PD-master meant to send or receive.

These parameter could also be recorded with inverter scope using the online mode.

Process Data Assignment Second Block

PD-IN Assignment (Second Block)

The parameter used to define the PD-IN parameter for the second 8 byte block can be handled in the same way as the same typ of parameters of the first 8 byte block.

Parameter list | Group properties

ID:	Name:	Value:
Fb44	PD_In5_Index	0000h
Fb45	PD_In6_Index	0000h
Fb46	PD_In7_Index	0000h
Fb47	PD_In8_Index	0000h
Fb48	PD_In5_Set	00h
Fb49	PD_In6_Set	00h
Fb50	PD_In7_Set	00h
Fb51	PD_In8_Set	00h
Fb52	PD_In2_Enable	00h

Fb.44 … Fb.47 can be adjusted in the same way as Fb.01 … Fb.04 (PD-Inx_Index).

Fb.48 … Fb.51 can be adjusted in the same way like Fb.05 … Fb.08 (PD-Inx_Set).

Fb.52 PD_In2_Enable is the enable for the PD-IN of the second block and can be adjusted in the same way like Fb.10 PD_In_Enable.

Note: Fb.00 PD-In_Length is a common parameter for both blocks. The number of allocated PD-IN in bytes of both blocks must be adjusted there.

F5 Profibus Operator
Process Data Assignment

PD-IN Assignment (First and Second Block)

Example:

New Worklist1

Example for PD-IN assignment
1 long and 4 word parameter

Inv.	Addr.	Set	Id.	Name	Value	Remarks
0	0289h	I	Fb09	PD_In_Cycle	25	25 ms cycle time for reading the PD-IN (default)
0	0280h	I	Fb00	PD_In_Length	12	12 byte PD-IN length, both blocks
						1st block
0	0281h	I	Fb01	PD_In1_Index	202Ch	PD-IN1, ru.12 'actual torque display', long
0	0282h	I	Fb02	PD_In2_Index	0000h	Set to 0 because PD-IN1 is a long parameter
0	0283h	I	Fb03	PD_In3_Index	2033h	PD-IN2, SY.51 'status word (low), word
0	0284h	I	Fb04	PD_In4_Index	2035h	PD-IN3, SY.53 'actual speed value', word
0	0285h	I	Fb05	PD_In1_Set	01h	Set 0 selected (default)
0	0286h	I	Fb06	PD_In2_Set	01h	Set 0 selected (default)
0	0287h	I	Fb07	PD_In3_Set	01h	Set 0 selected (default)
0	0288h	I	Fb08	PD_In4_Set	01h	Set 0 selected (default)
0	028Ah	I	Fb10	PD_In_Enable	FFh	All PD-IN of the first block enabled FFh can be used in any case
						2nd block
0	02ACh	I	Fb44	PD_In5_Index	2200h	PD-IN4, ru.00 'inverter state', word
0	02ADh	I	Fb45	PD_In6_Index	2227h	PD-IN5, ru.39 'OL counter display', word
0	02AEh	I	Fb46	PD_In7_Index	0000h	spare
0	02AFh	I	Fb47	PD_In8_Index	0000h	spare
0	02B0h	I	Fb48	PD_In5_Set	01h	Set 0 selected (default)
0	02B1h	I	Fb49	PD_In6_Set	01h	Set 0 selected (default)
0	02B2h	I	Fb50	PD_In7_Set	01h	Set 0 selected (default)
0	02B3h	I	Fb51	PD_In8_Set	01h	Set 0 selected (default)
0	02B4h	I	Fb52	PD_In2_Enable	FFh	All PD-IN of the second block enabled FFh can be used in any case

PD-OUT Assignment (Second Block)

The parameter used to define the PD-OUT parameter for the second 8 byte block can be handled in the same way as the same typ of parameters of the first 8 byte block.

Parameter list | Group properties

ID:	Name:	Value:
Fb54	PD_Out5_Index	0000h
Fb55	PD_Out6_Index	0000h
Fb56	PD_Out7_Index	0000h
Fb57	PD_Out8_Index	0000h
Fb58	PD_Out5_Set	00h
Fb59	PD_Out6_Set	00h
Fb60	PD_Out7_Set	00h
Fb61	PD_Out8_Set	00h
Fb62	PD_Out2_Enable	00h

Fb.54 … Fb.57can be adjusted in the same way as Fb.13 … Fb.16 (PD-Out_Index).

Fb.58 … Fb.61 can be adjusted in the same way like Fb.17 … Fb.20 (PD-Outx_Set).

Fb.62 PD_Out2_Enable is the enable for the PD-OUT of the second block and can be adjusted in the same way like Fb.21 PD_In_Enable.

Note: Fb.12 PD-OUT_Length is a common parameter for both blocks. The number of allocated PD-OUT in bytes of both blocks must be adjusted there.

PD-OUT Assignment (First and Second Block)

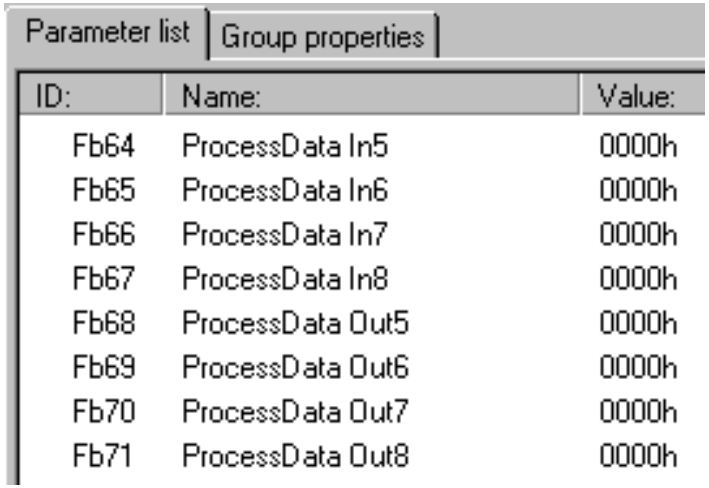
Example:

New Worklist2

Example for PD-OUT assignment
1 long and 3 word parameter

Inv.	Addr.	Set	Id.	Name	Value	Remarks
0	028Ch	I	Fb12	PD_Out_Length	10	10 byte PD-OUT length
						1st block
0	028Dh	I	Fb13	PD_Out1_Index	2F13h	PD-OUT1, cS.19 'abs. torque reference', long
0	028Eh	I	Fb14	PD_Out2_Index	0000h	Set to 0 because PD-OUT1 is a long parameter
0	028Fh	I	Fb15	PD_Out3_Index	2032h	PD-OUT2, SY.50 'control word (low), word
0	0290h	I	Fb16	PD_Out4_Index	2034h	PD-OUT3, SY.52 'set speed value', word
0	0291h	I	Fb17	PD_Out1_Set	01h	Set 0 selected (default)
0	0292h	I	Fb18	PD_Out2_Set	01h	Set 0 selected (default)
0	0293h	I	Fb19	PD_Out3_Set	01h	Set 0 selected (default)
0	0294h	I	Fb20	PD_Out4_Set	01h	Set 0 selected (default)
0	0295h	I	Fb21	PD_Out_Enable	FFh	All PD-OUT of the first block enabled FFh can be used in any case
						2nd block
0	02B6h	I	Fb54	PD_Out5_Index	230Ah	PD-OUT4, oP.10 'max reference forward', word
0	02B7h	I	Fb55	PD_Out6_Index	0000h	spare
0	02B8h	I	Fb56	PD_Out7_Index	0000h	spare
0	02B9h	I	Fb57	PD_Out8_Index	0000h	spare
0	02BAh	I	Fb58	PD_Out5_Set	01h	Set 0 selected (default)
0	02BBh	I	Fb59	PD_Out6_Set	01h	Set 0 selected (default)
0	02BCh	I	Fb60	PD_Out7_Set	01h	Set 0 selected (default)
0	02BDh	I	Fb61	PD_Out8_Set	01h	Set 0 selected (default)
0	02BEh	I	Fb62	PD_Out2_Enable	FFh	All PD-OUT of the second block enabled FFh can be used in any case

PD Supervising (Second Block)



Like for the first block also the PD of the second block can be supervised by using the displayed parameter.

Verification of PD-Length

In case of problems using the PD-communication one reason for a faulty behavior could be that the defined PD_In_Length or the PD_Out_Length of the PB-master and the F5 PB-Operator is different.

This can be checked by comparing the following parameter.

PD-Length Operator

ID:	Name:	Value:
Fb00	PD_In_Length	0Ch

compared with

PD-Length PB-Master

ID:	Name:	Value:
Fb37	Master_PDIN_Len	00h

ID:	Name:	Value:
Fb12	PD_Out_Length	04h

compared with

ID:	Name:	Value:
Fb38	Master_PDOUT_Len	00h

When the PB-Master is connected to the F5 PB-Operator and the communication is active Fb.00 and Fb.37 must have the same value even the value of Fb.12 and Fb.38 must be equal.

Important Restrictions

For a number of parameters it is not possible to use them as PD-OUT parameter (i.g. oP.27 … oP.35 parameters for the acc. and dec. ramp).

Parameter addresses not provided by the connected inverter are not allowed as PD-parameter.

F5-C, F5-B, and R6 do not support the second 8 byte PD-block, only max. 8 Byte PD are possible.

Important Restrictions

Using a combination of long and word parameters for the PD, PD1 must be the long parameter. The assignment of used parameter length of the affected 8 byte block must be the same for PD-IN and PD-OUT then.

All the above discribed restrictions could be ignored and unvalid inputs can be made but as consequence the enable for PD_In_Enable and PD_Out_enable could not be confirmed or will be reset.

Communication Supervision

F5 Profibus Operator

Communication supervision

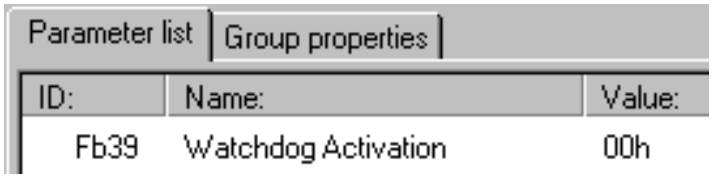
For a confident field bus operation it is important to supervise the communication between PD-master and PB-operator and also between PB-operator and FI.

An interrupt in the serial link must cause minimum a signal or better a controlled response (e.g. emergency stop) on this event.

This can be adjust by using parameters of the PB-Operator and parameter of the FI.

As a first step the watchdog in the PD-Operator must be enabled.
As second step the behavior of the FI must be selected.

PB-Operator Parmeter



Defines the activation of the fieldbus watchdog. This parameter must be observed always together with parameter FB.40 'watchdog inhibit'.
Several events can be used as watchdog-activation by the bit-coding of this parameter.

0: Fieldbus watchdog immediately active after power on (default).

Bit 0 = 1 Fieldbus watchdog active after first writing of PDOUT data to FI control.

Bit 1 = 1 Fieldbus watchdog active after first parameterizing channel request.

F5 Profibus Operator
Communication supervision

PB-Operator Parmeter

Defines upon which events the Fieldbus-Watchdog is triggered. The fieldbus watchdog is used to set the frequency inverter into the error state, if no more activities take place on PROFIBUS. The real activation and programming of the watchdog is adjusted in the FI-control.

Bit-coded: Bit 0= 1 When starting a PDOUT-telegram to the FI-control the watchdog is reset.

Bit1= 1 The watchdog is reset at the beginning of the pro-cessing of a parameterizing channel order.

Bit 2= 1 The watchdog is reset if the slave is in user data transfer.

Default value = 7h

F5 Profibus Operator
Communication supervision

KEB

Inverter Parmeter

Parameter list | Group properties

ID:	Name:	Value:
Pn05	E.buS stopping mode	6: warning by dig. output

Defines the FI activities in case of a watchdog error

Parameter list | Group properties

ID:	Name:	Value:
Pn06	watchdog time	0: off

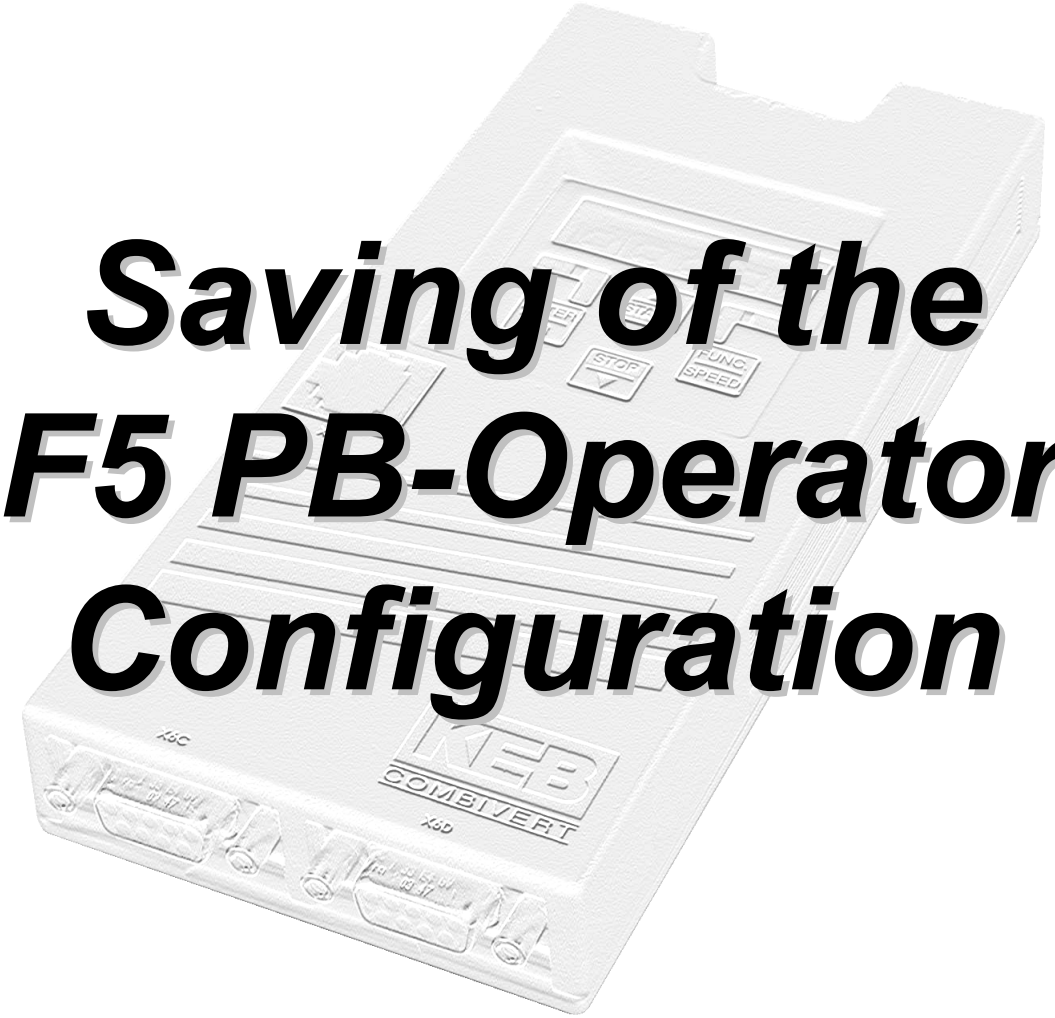
A value unequal to 0 enables a reaction (Pn.05) on a watchdog error caused by the fieldbus supervision (Fb.39, Fb.40)

Parameter list | Group properties

ID:	Name:	Value:
Sy09	HSP5 watchdog time	0: off

A value unequal to 0 enables a reaction (Pn.05) on a watchdog error caused by the supervision of the HSP5 link between FI and PB-Operator.

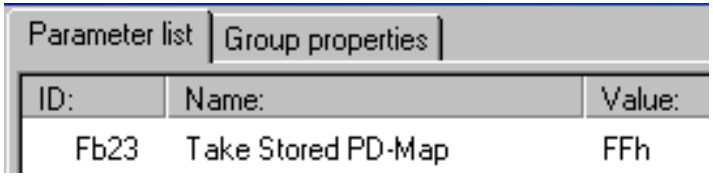
Saving of the F5 PB-Operator Configuration



F5 Profibus Operator

Saving of the F5 PB-Operator Configuration

The configuration of the F5 PB-Operator could be done by the Profibus master or using Combivis. The adjustments will be stored in the operator by considering the following terms:



Fb.23 must be set to FFh. If this parameter will be set to 0 after a power on reset the default values for the process data assignment will be stored back.

Any changement will cause that the regarding PD-enable (Fb.10, Fb.21, Fb.52, Fb.62) will be reset to 0. If the PD-enable will not be set to FFh after changing the PD-assignment this will have two effects.

1.) The affected PD will not be active.

2.) All changements of the affected PD will be lost after a power on reset and the previous settings will be stored back.

F5 Profibus Operator

Saving of the F5 PB-Operator Configuration

Because the HSP5 protocol also provides a PD-channel it is necessary that the PD assignments of the operator will be transmitted to the inverter.
This happens during the power on sequence and by setting the PD-enable (Fb.10, Fb.21, Fb.52, Fb.62) of the regarding PD.

The PD assignments of the operator will be displayed in the following FI parameter:

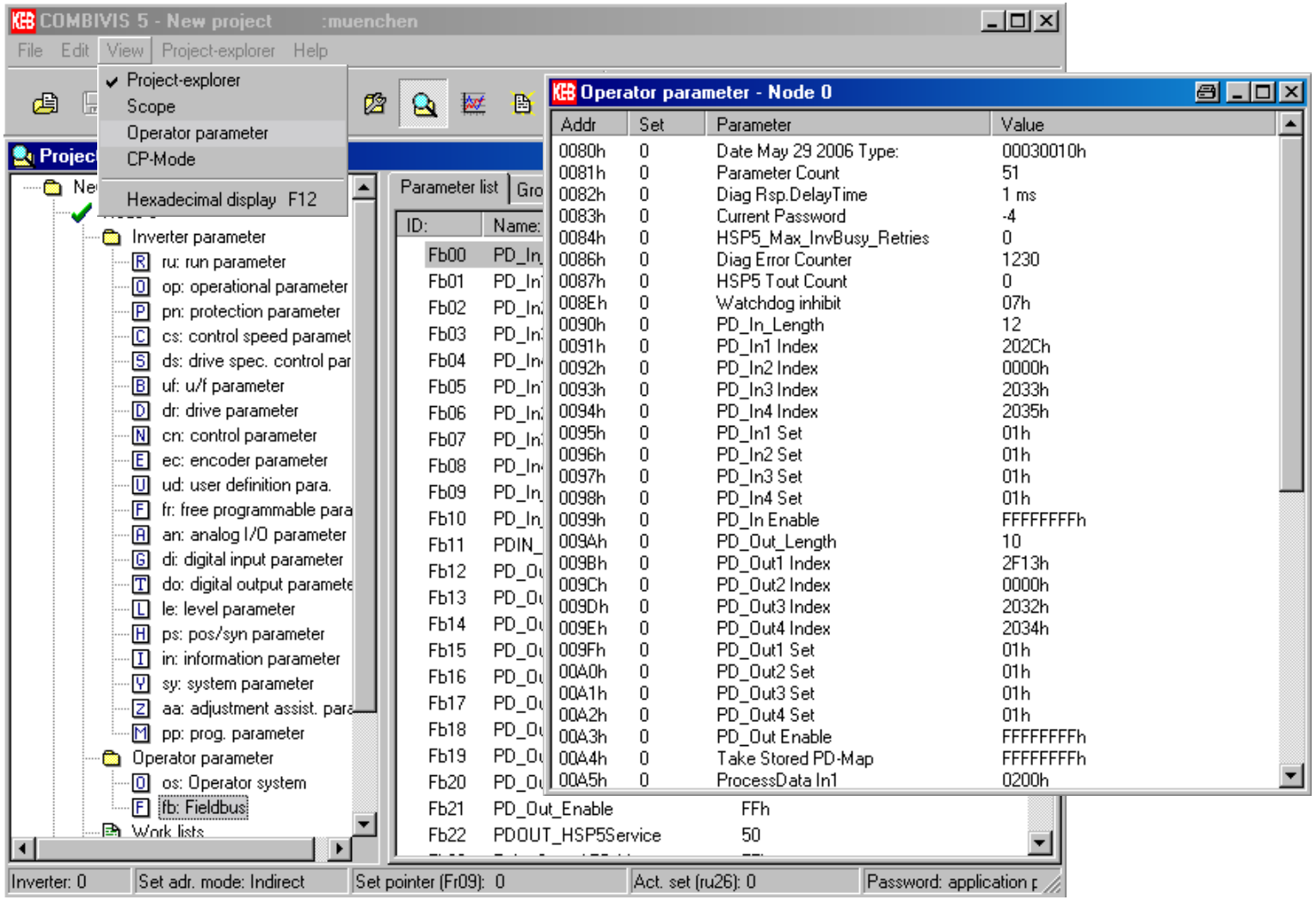
ID:	Name:	Value:
Sy16	proc. read data 1 defin.	002Ch
Sy17	proc. read data 1 set	1: S0
Sy18	proc. read data 2 defin.	0033h
Sy19	proc. read data 2 set	1: S0
Sy20	proc. read data 3 defin.	0035h
Sy21	proc. read data 3 set	1: S0
Sy22	proc. read data 4 defin.	-1: off
Sy23	proc. read data 4 set	1: S0
Sy24	proc. write data 1 def.	0F13h
Sy25	proc. write data 1 set	1: S0
Sy26	proc. write data 2 def.	0032h
Sy27	proc. write data 2 set	1: S0
Sy28	proc. write data 3 def.	0034h
Sy29	proc. write data 3 set	1: S0
Sy30	proc. write data 4 def.	-1: off
Sy31	proc. write data 4 set	255: S0+S1+S2+S3+S4+S5+S6+S7

ID:	Name:	Value:
Sy58	proc. read data 5 defin.	0200h
Sy59	proc. read data 5 set	1: S0
Sy60	proc. read data 6 defin.	0227h
Sy61	proc. read data 6 set	1: S0
Sy62	proc. read data 7 defin.	-1: off
Sy63	proc. read data 7 set	1: S0
Sy64	proc. read data 8 defin.	-1: off
Sy65	proc. read data 8 set	1: S0
Sy66	proc. write data 5 def.	030Ah
Sy67	proc. write data 5 set	1: S0
Sy68	proc. write data 6 def.	-1: off
Sy69	proc. write data 6 set	255: S0+S1+S2+S3+S4+S5+S6+S7
Sy70	proc. write data 7 def.	-1: off
Sy71	proc. write data 7 set	255: S0+S1+S2+S3+S4+S5+S6+S7
Sy72	proc. write data 8 def.	-1: off
Sy73	proc. write data 8 set	255: S0+S1+S2+S3+S4+S5+S6+S7

F5 Profibus Operator

Saving of the F5 PB-Operator Configuration

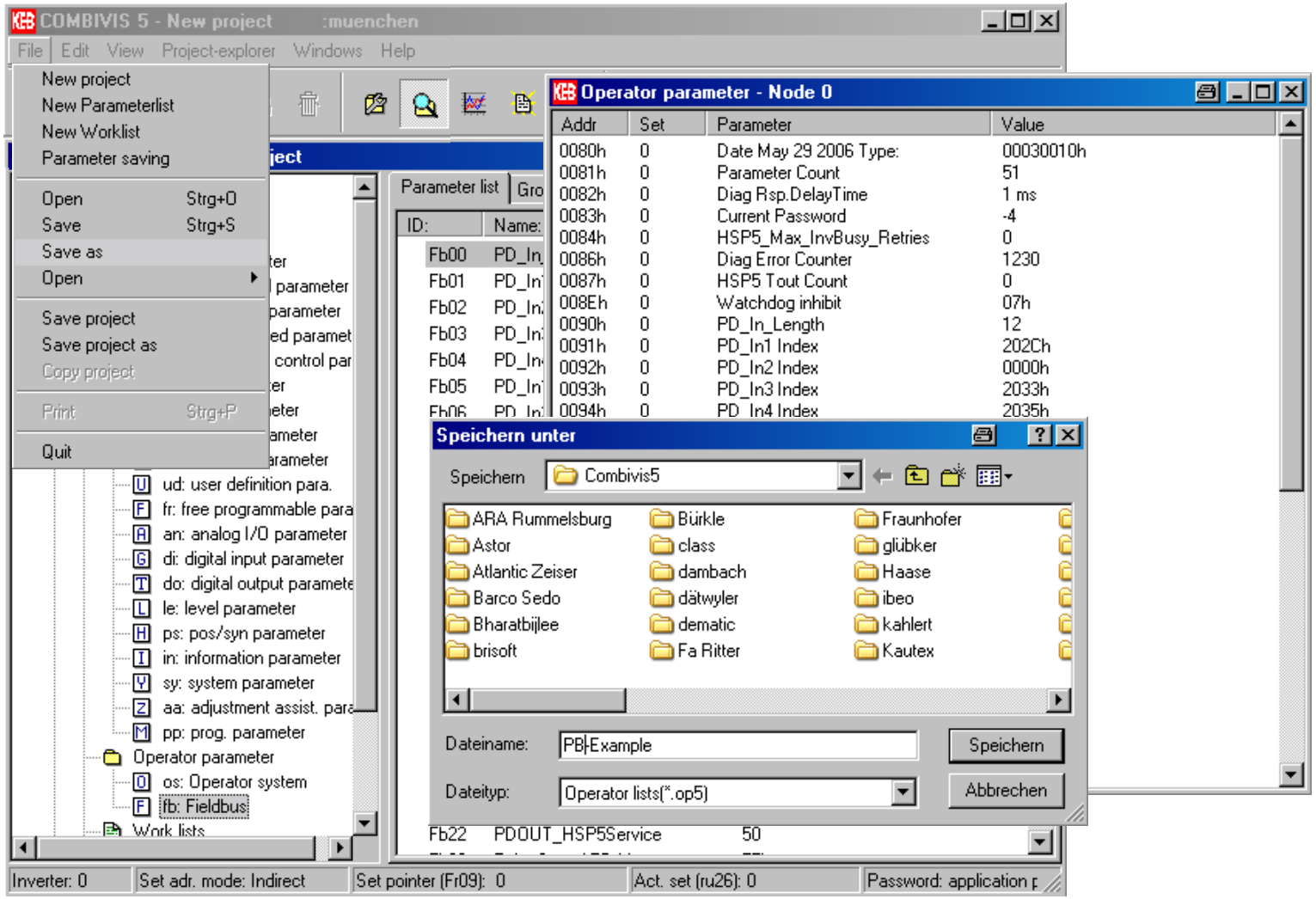
Backup of the PD Assignments (only Operator-Parameter)



F5 Profibus Operator

Saving of the F5 PB-Operator Configuration

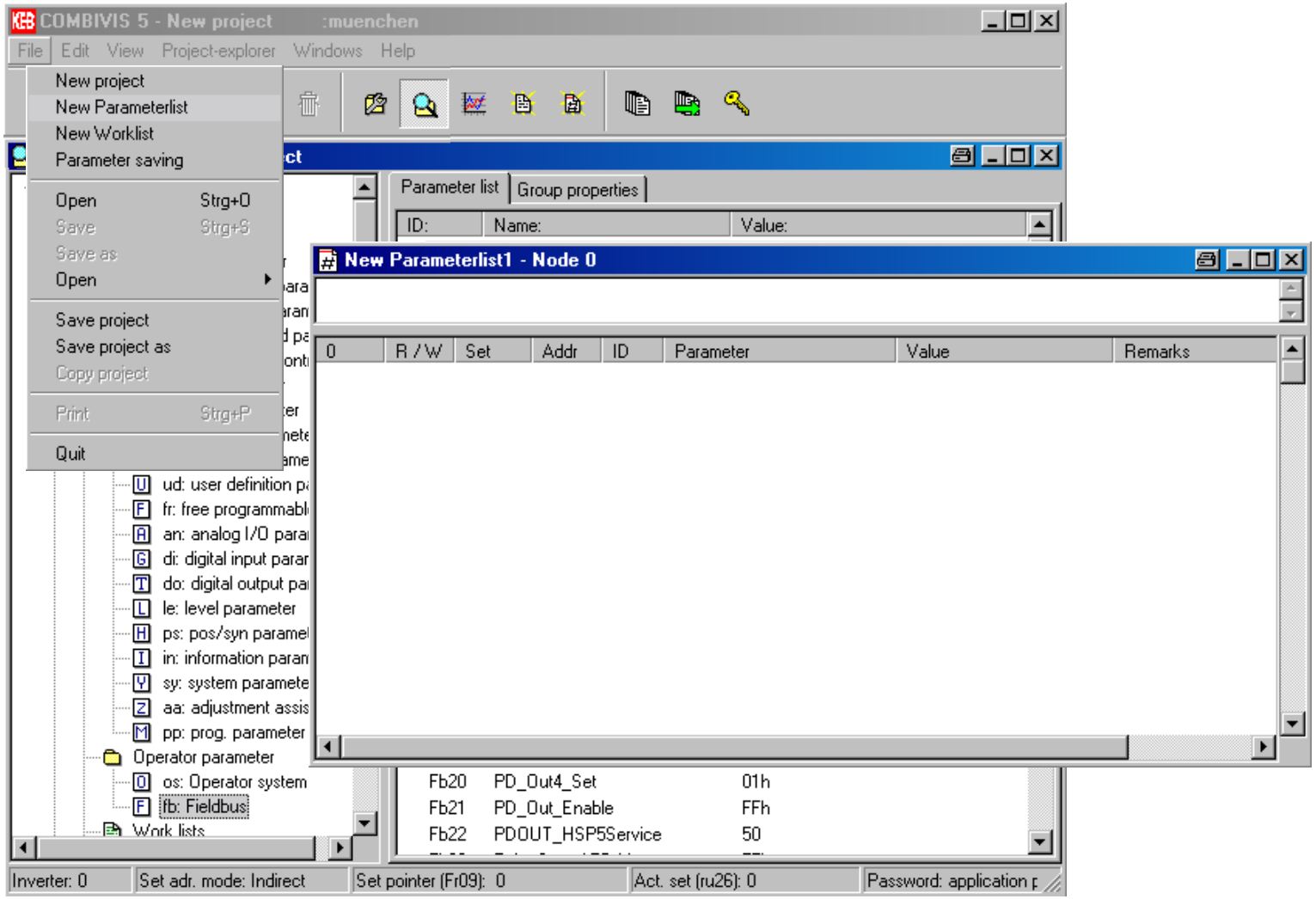
Backup of the PD Assignments (only Operator-Parameter)



F5 Profibus Operator

Saving of the F5 PB-Operator Configuration

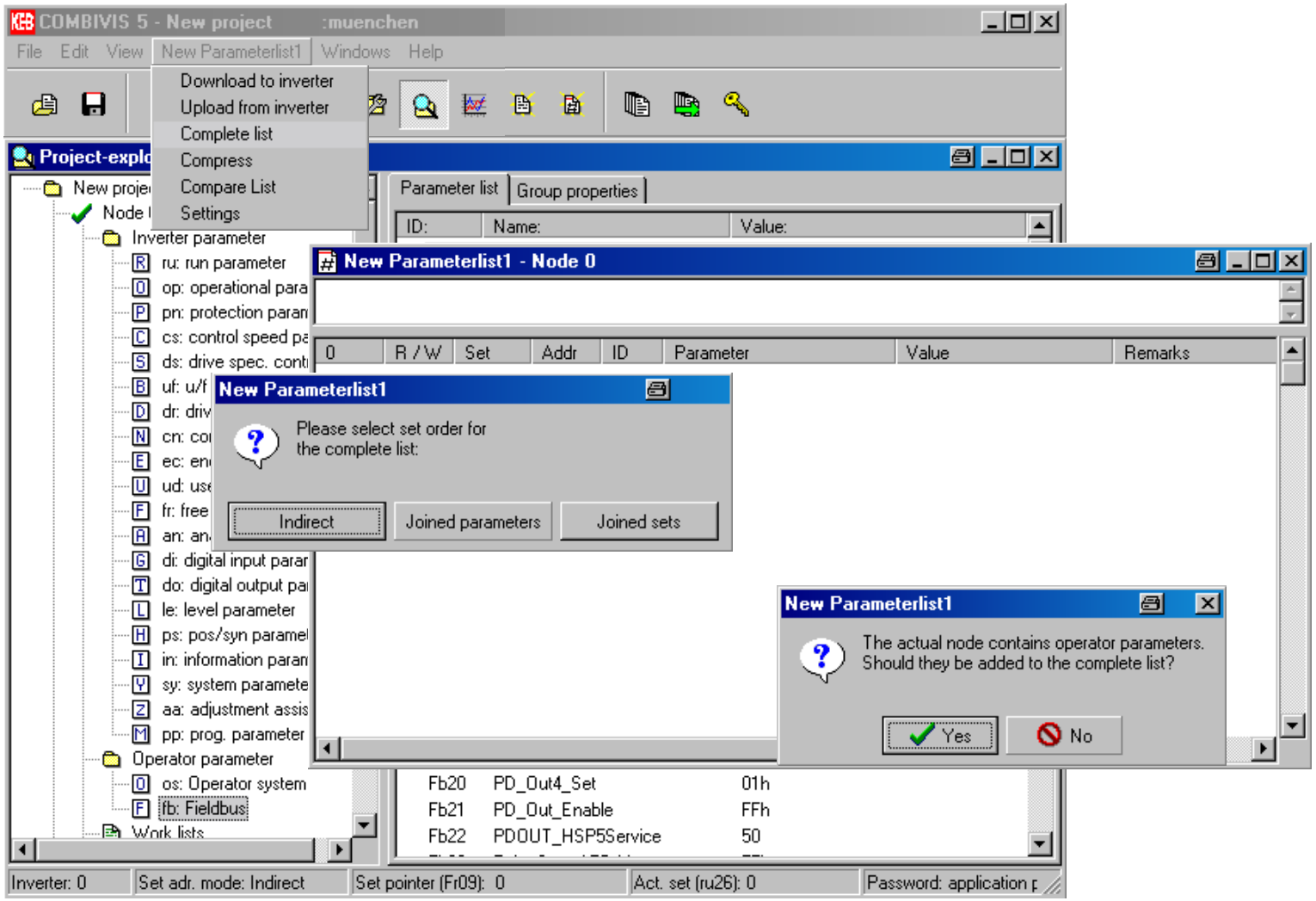
Backup of the PD Assignments (FI and Operator-Parameter)



F5 Profibus Operator

Saving of the F5 PB-Operator Configuration

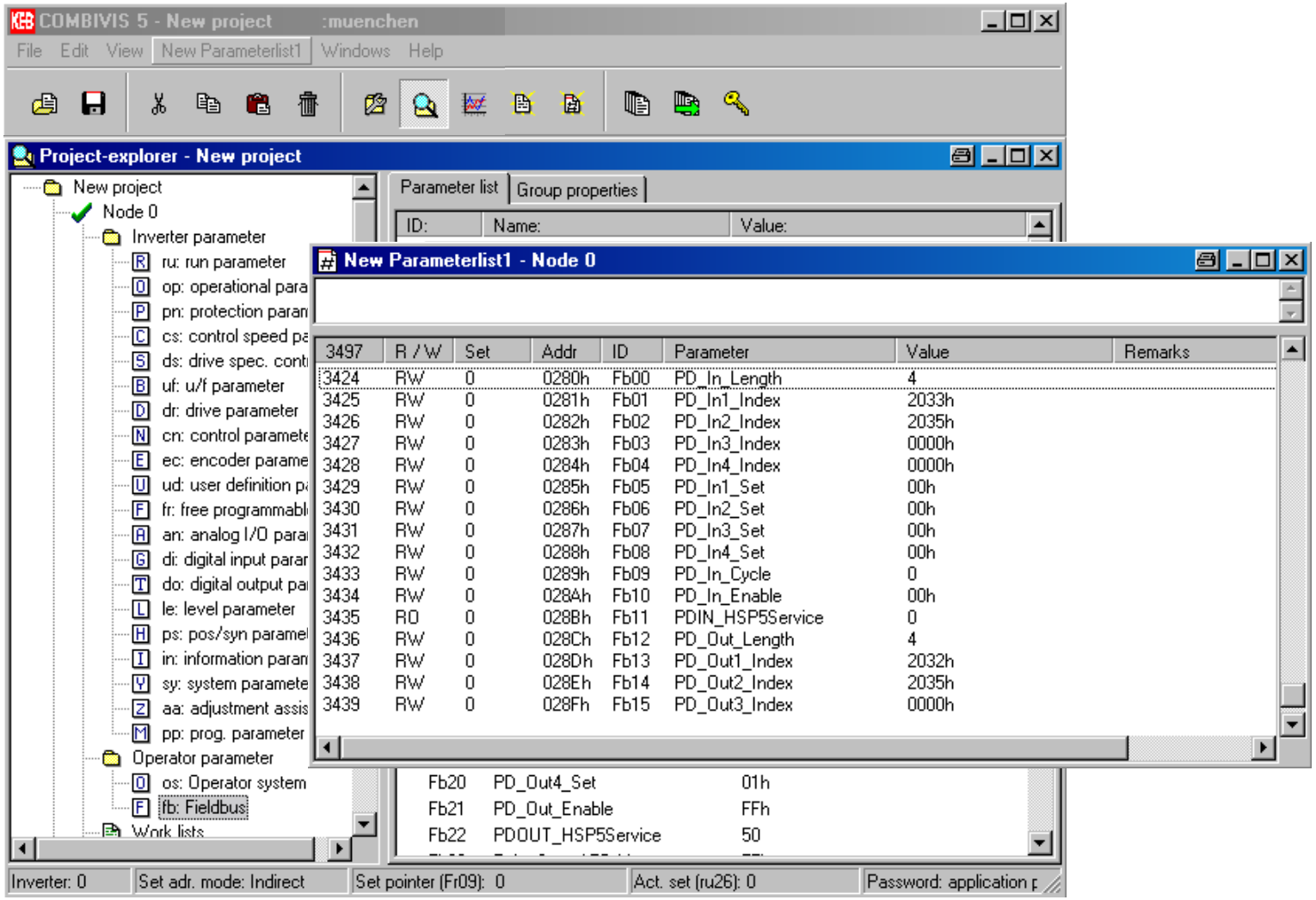
Backup of the PD Assignments (FI and Operator-Parameter)



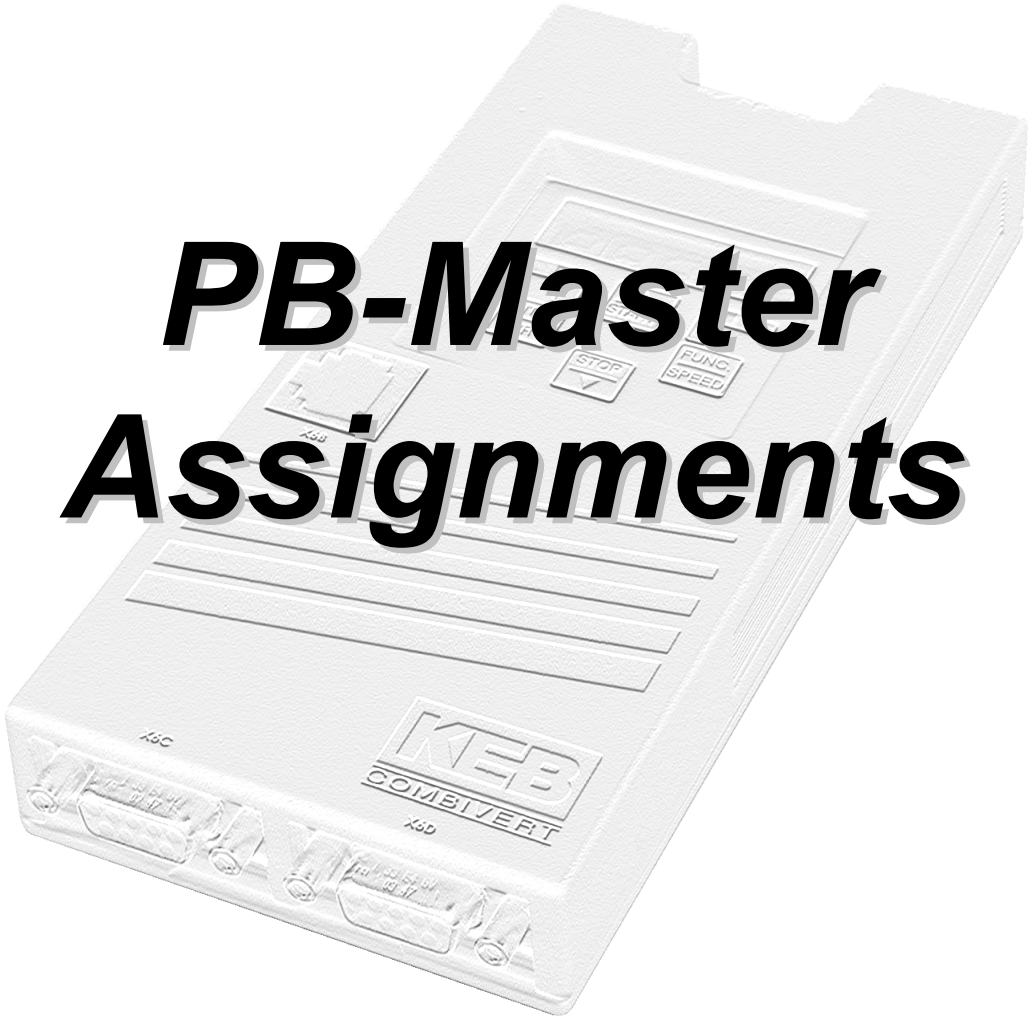
F5 Profibus Operator

Saving of the F5 PB-Operator Configuration

Backup of the PD Assignments (FI and Operator-Parameter)



PB-Master Assignments



F5 Profibus Operator

PB-Master Assignments

From www.keb.de it is required to load the GSD File and implement it via File/Add GSD File.

At older S7-Variants the access to the process data has to take place via the functions SFC14 and SFC15, if the length is different from four byte.
At newer versions this is not necessary.

In any case in the S7 Hardware Configuration the slots for the parameter channel has to be assigned with the correct PD length. (Selection from GSD below drives)

The resolution of the parameter values have to be considered basically!

GSD-File

```
;===============================================================
; KEB Antriebstechnik - Foersterweg 36-38 - 32683 Barntrup - Tel.:05263/401-0
; Gerätestammdatendatei fuer KEB-F5-PROFIBUS-DP-Operator
; Stand: 22.11.2001
; Historie:
; -Revision = "V1.0": Basisversion
; -Revision = "V2.0": Geforderte Erweiterungen fuer Zertifizierung
;  -Erweiterung um GSD_Revision,Slave_Family,Max_Diag_Data_Len
;  -Anpassung von Software_Release
; -Revision  = "V2.1":Geforderte Erweiterungen fuer Zertifizierung
;  -Alle moeglichen Moduldefinitionen fuer Prozess-Ausgangsdaten und
;   Prozess-Eingangsdaten werden jetzt hier aufgelistet.
; -Revision  = "V2.2":Die Namen fuer die Ausgangs-und Eingangsdatenmodule
   fuer verschiedene PD-Laengen unterschieden
;===============================================================
#Profibus_DP
GSD_Revision      = 2
Slave_Family      = 1    ; Antriebe
Vendor_Name       = "KEB Antriebstechnik"
Model_Name        = "KEB DP_F5_OP"
Revision          = "V2.2"
Ident_Number      = 1515  ; 0x05EB
Protocol_Ident    = 0
Station_Type      = 0           ; DP-Slave
FMS_supp          = 0
Hardware_Release   = "03.F5.060-0009"
Software_Release   = "0S.F5.A30-1200"
9.6_supp          = 1
19.2_supp         = 1
93.75_supp        = 1
187.5_supp        = 1
500_supp          = 1
1.5M_supp         = 1
3M_supp           = 1
6M_supp           = 1
12M_supp          = 1
MaxTsdr_9.6       = 60
MaxTsdr_19.2      = 60
MaxTsdr_93.75     = 60
MaxTsdr_187.5     = 60
MaxTsdr_500       = 100
MaxTsdr_1.5M      = 150
MaxTsdr_3M        = 250
MaxTsdr_6M        = 450
MaxTsdr_12M       = 800
Redundancy        = 0
Repeater_Ctrl_Sig  = 0
24V_Pins          = 0
```

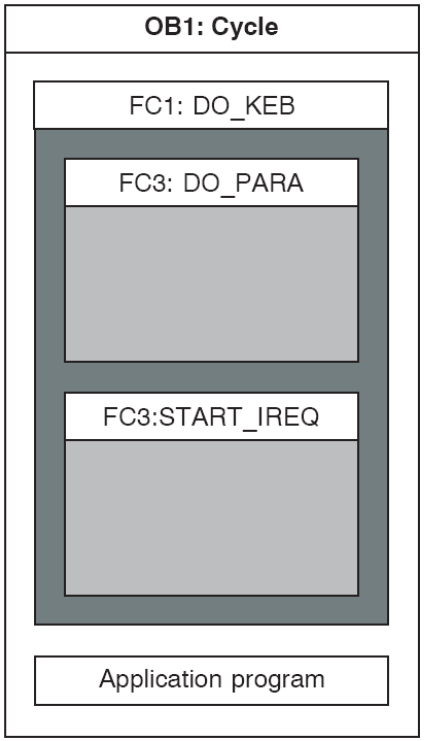
GSD-File

```
Freeze_Mode_supp   = 1
Sync_Mode_supp     = 1
Auto_Baud_supp     = 1
Set_Slave_Add_supp = 0
User_Prm_Data_Len  = 0
Max_Diag_Data_Len  = 6
Min_Slave_Intervall= 1        ; 0.1 ms
Modular_Station    = 1
Max_Module         = 3
Max_Input_Len      = 16
Max_Output_Len     = 16
Max_Data_Len       = 32
Module          = "Parametrierkanal" 0xB7
EndModule
Module          = "4 Byte Prozess-Ausgangsdaten" 0xA3
EndModule
Module          = "1 Byte Prozess-Ausgangsdaten" 0xA0
EndModule
Module          = "2 Byte Prozess-Ausgangsdaten" 0xA1
EndModule
Module          = "3 Byte Prozess-Ausgangsdaten" 0xA2
EndModule
Module          = "5 Byte Prozess-Ausgangsdaten" 0xA4
EndModule
Module          = "6 Byte Prozess-Ausgangsdaten" 0xA5
EndModule
Module          = "7 Byte Prozess-Ausgangsdaten" 0xA6
EndModule
Module          = "8 Byte Prozess-Ausgangsdaten" 0xA7
EndModule
Module          = "4 Byte Prozess-Eingangsdaten" 0x93
EndModule
Module          = "1 Byte Prozess-Eingangsdaten" 0x90
EndModule
Module          = "2 Byte Prozess-Eingangsdaten" 0x91
EndModule
Module          = "3 Byte Prozess-Eingangsdaten" 0x92
EndModule
Module          = "5 Byte Prozess-Eingangsdaten" 0x94
EndModule
Module          = "6 Byte Prozess-Eingangsdaten" 0x95
EndModule
Module          = "7 Byte Prozess-Eingangsdaten" 0x96
EndModule
Module          = "8 Byte Prozess-Eingangsdaten" 0x97
EndModule
```

Implementing Parameter Channel Driver Programm

The driver program consists out of a complete project, in with all data and function are realised via corresponding data components.

First the program has to be disarchived (File / Disarchiving).



DB1: SL_LIST

List for all configured KEB slaves. For each slave must be entered:
- one slave-DB-No. and
- one Init-DB-No.

DB2: Init_DB1

Initialiazion-job for one or several KEB slaves.

DB3: Slave 1_DB

Slave-DB of a configured KEB Slaves.

DB4: Slave2_DB

Slave-DB of a configured KEB Slaves.

In the Intit_DB are the parameter channel requests for the preadjustment of the inverter and the operator (pd assignment)!

In the Slave DB‘s there is a pointer onto the address of the parameter channel. This must be adapt to the value out of the hardware configuration.

Changing the PD-Assignment via the Parameter Channel

By way of the parameter channel the parameter assignment and the length of the process data channel can be modified.

Instead of inverter parameters the so-called configuration parameters are now used. Special configuration parameters describe, which inverter parameter shall be imported into the PD.

The parameter, that changes the POD-assignment, has the index 6001h. The complex system of the subindex meaning (1-17) shall be explained on the basis of following example.

Access to the PID-assignment takes place with parameter 6000h and subindex (1-17).

Changing the PD-Assignment via the Parameter Channel

For the release of the changed process output data the parameter 6002h / subindex 0 has to be written the value FFh (full byte - for each of the eight byte PD stands one bit).

For the release of the adapted process input data the parameter 5FF8h / subindex 0 must be written with the value FFh.

After the write jobs for activating the PD-processing, the user receives an error message, that the PD-assignment becomes active only after the next POWER-ON RESET.

Example 1: Standard assignment of the process input data

Index	Subindex	Value	Notice	
6000h	1	4	4 Byte process input data	
6000h	2	**2033hex**	**Status Word**	1. Word
6000h	3	1	read values of set 0	
6000h	4	0		
6000h	5	0		
6000h	6	**2035hex**	**actual speed**	2. Word
6000h	7	1	read values of set 0	
6000h	8	0		
6000h	9	0		

Example 1: Standard assignment of the process output data

Index	Subindex	Value	Notice	
6001h	1	4	4 Byte process output data	
6001h	2	**2032hex**	**Control Word**	1. Word
6001h	3	1	written values in set 0	
6001h	4	0		
6001h	5	0		
6001h	6	**2034hex**	**Setpoint speed**	2. Word
6001h	7	1	written values of set 0	
6001h	8	0		
6001h	9	0		

Example 2: **8. Byte assignment of the process input data with 32 bit values**

Index	Subindex	Value	Notice
6000h	1	8	8 Byte process input data
6000h	2	**233B**	**OP.59 Motorpoti ramp time**
6000h	3	1	Values of set 0
6000h	4	0	High Word
6000h	5	0	
6000h	6	0	
6000h	7	0	
6000h	8	0	Low Word
6000h	9	0	
6000h	A	**2D00**	**LE.00 switching level**
6000h	B	1	Values of set 0
6000h	C	0	High Word
6000h	D	0	
6000h	E	0	
6000h	F	0	
6000h	10	0	Low Word
6000h	11	0	

F5 Profibus Operator

people in motion

KEB

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