

13. PROFIBUS ASICs

13.1 ASIC

ISO/OSI 1 2 PROFIBUS DP 가 ASIC 1995  
 가 PROFIBUS 가 RAM Chip 가  
 ASIC PROFIBUS (RS 485) 가 ASIC  
 DM50.00 "PROFIBUS (RS 485) " 가 ASIC  
 Delta t, IAM Siemens 가 ASIC PROFIBUS EN 50 170  
 ASIC ASIC 가  
 PROFIBUS

13.2 Fieldbus XI 1(Delta t)

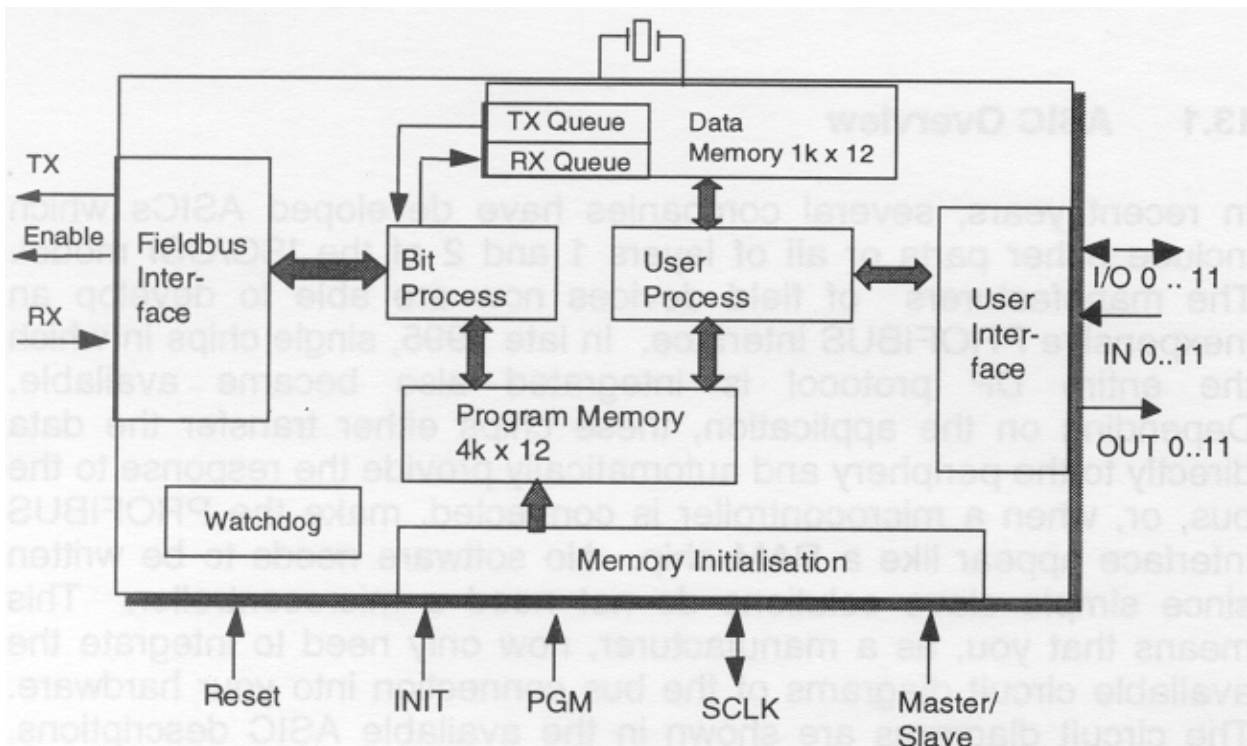


Bild 23: Fieldbus XI 1

Fieldbus	가	Fieldbus	X	가
		Fieldbus	.	
X	가	가	,	Fieldbus
		Fieldbus	“back to back”	Fieldbus
X				
			Fieldbus	
Fieldbus	X			X
			X	
X	1	context	가	84 (dual-task)
Fieldbus				
Fieldbus		X 36		가
:				
:		24 MHz		
:		5 V		
:		TTL		
Fieldbus	:	RxD, TxD, TXEnable(TTL-	)	
:		NRZ, Manchester		
:		3 가		
:				
		12 I/O, 12	, 12	,
		3		
:				
		DMA	8	/
:		WAIT-	2Kx8	
		가 RAM		
:		1.5 Mb/s,	(baudrate)	
:		8k RAM,		
		PROM		
:		1k x 12 RAM		

가 : PROFIBUS-DP/-FMS

DP DP

13.3 PROFIBUS PBS01(IAM)

PBS PROFIBUS FMS DP 가

PBS EN 50 170 PROFIBUS 2 , 7  
가 가 . PBS01 , PROFIBUS FMS DP  
3 MBd

PBS RAM, DMA  
.PBS CMOS RS 485  
가

- EN 50 170 ( 1/2)
- 3 MBd
- 246
- 
- 
- /
- 32
- DMA
- CMOS
- PLCC84

13.4 PROFIBUS PBM(IAM)

PBM PROFIBUS FMS DP 가

PBMS EN 50 170 PROFIBUS 1 2

PBM RAM, DMA  
 PBM CMOS RS 485  
 가 PBM 가 PROM

- EN 50 170( 2)
- 1 2 PROFIBUS
- 3 MBd
- /
- 63
- , DPR DMA
- RAM
- I/O
- PLCC84

13.5 Siemens ASIC

Thermo- 가  
 가 I/O, I/O  
 Siemens PROFIBUS 가 SPM2 (Siemens PROFIBUS 2) LSPM2( 12 MBd  
 DP 가 ASIC . 7 2  
 Telegram Telegram  
 ( , ) ASIC  
 PROFIBUS-DP , SPC3 PROFIBUS  
 , 12 MBd  
 SPC3 DPS2 가

SPC4 DP/FMS PA ( , 80C32 80C165) DP SPC3  
가 . 가 SPC3

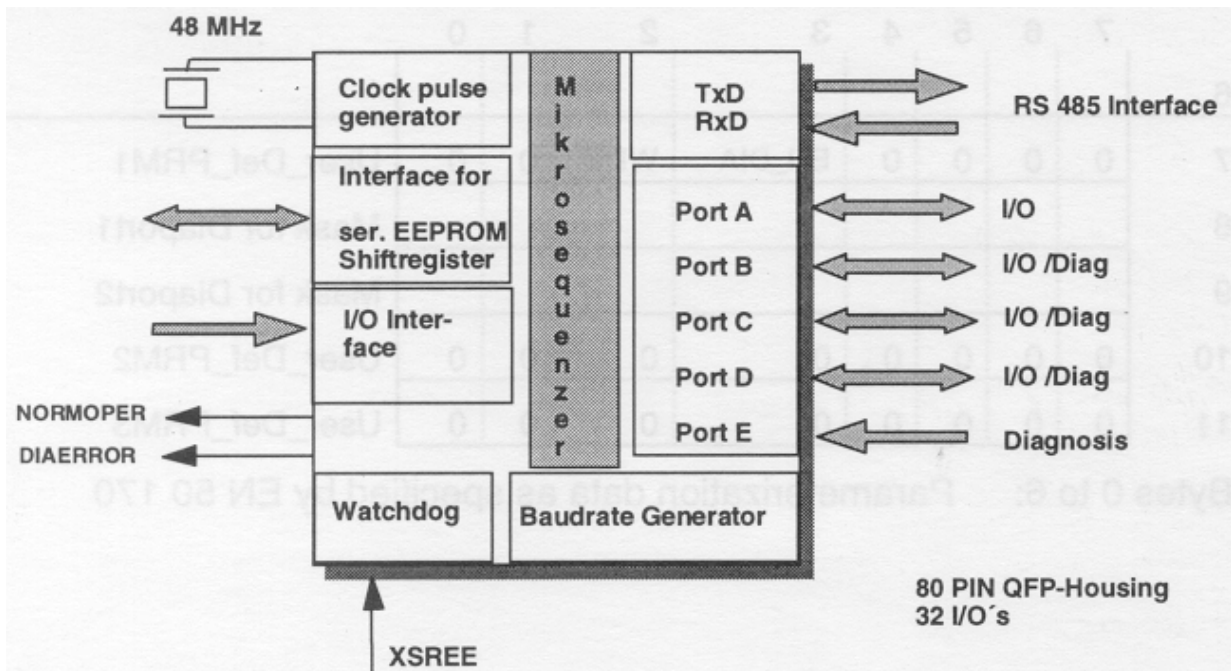
PROFIBUS EN 50 170 1 2 ASPC2 ( Siemens PROFIBUS )  
ASPC2 PROFIBUS-DP FMS

ASPC2 ASIC DP 가 extensive ( 64 KB)  
PROFIBUS

Siemens PROFIBUS-DP ASIC (Fail Safe mode)

### 13.6 LSPM2(Siemens)

LSPM2 가 PROFIBUS  
LSPM2 ID 8 PROFIBUS DP , RS 485 EEPROM (quartz) 가 16  
I/O (pull up) 가 ( 4 ) 8



17: Siemens LSPM2 PROFIBUS-DP ASIC

LED NORMOPER DIAERROR  
 XSREE EEPROM  
 ASIC

ASIC RWCONS ASIC 9.6  
 kBd - 12 MBd 가

LSPM2 가 Telegram, Telegram Telegram

PROFIBUS

13.6.1 LSPM2 Telegram

PROFIBUS Telegram LSPM2 . 7  
 5 LSPM2

Byte Bit Position Designation

Byte	7	6	5	4	3	2	1	0	Designation
6									
7	0	0	0	0	EN_DIA	WDB	0	0	User_Def_PRM1
8									Mask for Diaport1
9									Mask for Diaport 2
10	0	0	0	0	0	0	0	0	User_Def_PRM2
11	0	0	0	0	0	0	0	0	User_Def_PRM3

0 - 6: EN 50 170

7: User\_Def\_PRM1( )

0,1: ,0

2: WD

0 = 10 ms( )

1 = 1 ms

3:

EN\_Dia = 0

D E

EN\_Dia = 1

가

E0-E3

E4-E7

13.6.2 LSPM2

Telegram

LSPM2  
가

Telegram

“1”

6

가

, LSPM2  
LSPM2

7

(freeze)

: FREEZE 가

Telegram FREEZE UNFREEZE 가

Telegram

	7	6	5	4	3	2	1	0	
5									
6	0	0	0	0	0	1	1	1	Diag_Header
7	PE7	PE6	PE5	PE4	PE3	PE2	PE1	PE0	Port diagnosis (Port E)
8	0	0	0	0	0	0	0	0	Diag_Res_1
9	PC7	PC6	PC5	PC4	PC3	PC2	PC1	PC0	Port C (only with exp. diagnosis, otherwise 00 <sub>HEX</sub> )
10	PD7	PD6	PD5	PD4	PD3	PD2	PD1	PD0	Port D (only with exp. diagnosis, otherwise 00 <sub>HEX</sub> )
11	0	0	0	0	0	0	0	0	Diag_Res_2
12	0	0	0	0	0	0	0	0	Diag_Res_3

6: Diag\_Header

ext.diagnostic

LSPM2

( 07<sub>HEX</sub>)

LSPM2 .)

7:

E (forwarded) . (“1” ( log.<0>) .)

8, 11, 12: Diag\_Res

. LSPM2 00<sub>HEX</sub> .

9, 10: C, D

C D ( log.<0>) (forwarded) . (“1” 00<sub>HEX</sub> .)

LSPM2/SPM2

LSPM2 가

ASIC

Telegram

( )

, Telegram

. ASIC

EXT\_DIAG

가

가

가 ASIC

가

, ASIC

EXT\_DIAG

PRM-REQ, STAT\_DIAG

EXT\_DIAG\_OVERFLOW

13.6.3 LSPM2

Telegram

Telegram

I/O

LSPM2

LSPM2

( , “Kennung”)

Byte Bit Position

Designation

	7	6	5	4	3	2	1	0	
0	0/1	0	1	0	0	0	0/1	0/1	Identifierbyte_Outputs
1	0/1	0	0	1	0	0	0/1	0/1	Identifierbyte_Inputs

0 : Identifierbyte\_Outputs



1	20 <sub>Hex</sub> 1	A0 <sub>Hex</sub>
2	21 <sub>Hex</sub> 2	A1 <sub>Hex</sub>
3	22 <sub>Hex</sub> 3	A2 <sub>Hex</sub>
4	23 <sub>Hex</sub> 4	A3 <sub>Hex</sub>
0	00 <sub>Hex</sub> 0	00 <sub>Hex</sub>

1: Identifierbyte\_Inputs

1	10 <sub>Hex</sub> 1	90 <sub>Hex</sub>
2	11 <sub>Hex</sub> 2	91 <sub>Hex</sub>
3	12 <sub>Hex</sub> 3	92 <sub>Hex</sub>
4	13 <sub>Hex</sub> 4	93 <sub>Hex</sub>
0	00 <sub>Hex</sub> 0	00 <sub>Hex</sub>

13.7 SPM2(Siemens)

SPM2 120 QFP 8 (64 I/O) 2 (16 ) 가  
LSPM2 . LSPM2 / SPM2

PROFIBUS

13.8 SPC3(Siemens)

13.8.1

Siemens PROFIBUS-DP SPC3  
(Siemens PROFIBUS ) DP (EN 50 170  
PROFIBUS-DP) ASIC . ASIC

- PQFP 44
- 9.6 kBd 12 MBd PROFIBUS
- chip 1.5 KB RAM
- 가 Telegram
- (SYNC/FREEZE) DP
- RAM

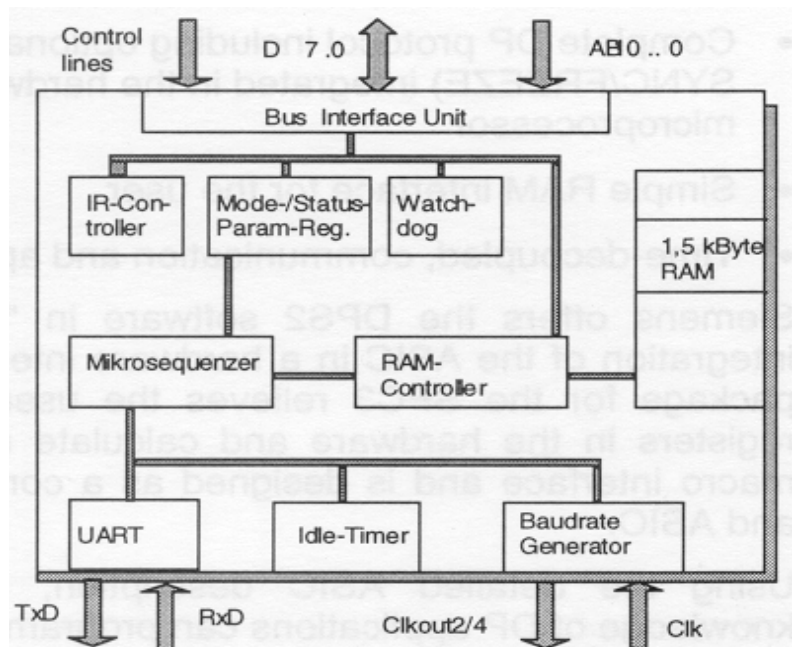
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Siemens SPC3 DPS2 ASIC "C" DPS2  
 . SPC3 . DPS2 , ASIC  
 DP 가 ASIC  
 SPC3

13.8.2 ASIC

ASIC

( 80C32 80x86, Siemens  
 80C165/166/167 HC  
 11, HC 16, HC 916 )  
 가 /  
 8



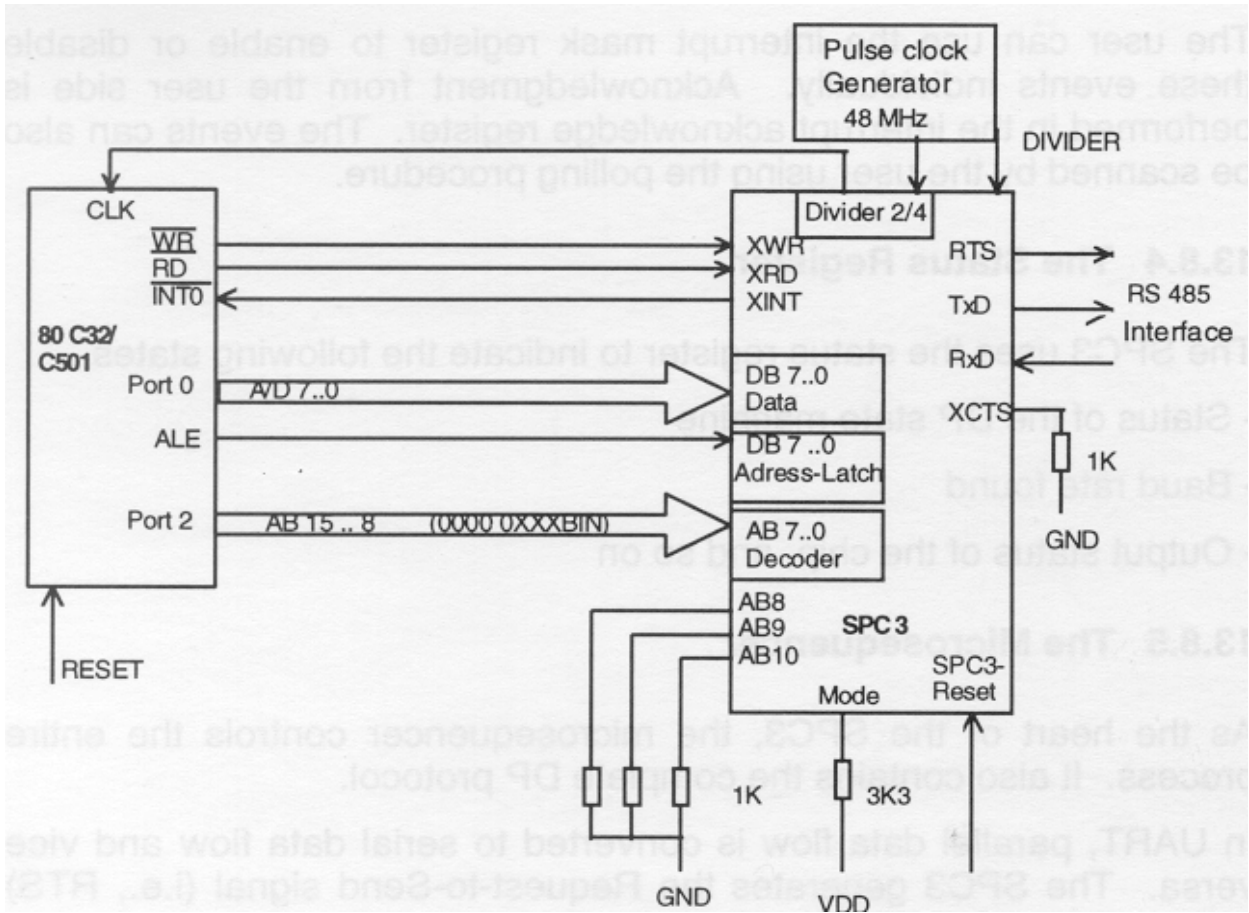
18: Siemens SPC3

11 8 RAM (latch)  
 . 80 C 32 SPC3

DP 0 PROFIBUS-DP  
 가

- min.  $T_{SDR}$  ( )

- SYNC( )
- FREEZE( )



19: SPC3 80 C 32

EOI( ) / DP 가 1

Watchdog SPC3  
 가 DP (disable) 가

13.8.3

SPC3 가 가 SPC3

- DP Telegram ( , , , , , ,  
Telegram)

- ( , Watchdog , , )

가 가

13.8.4

SPC3

- DP

-

-

13.8.5

SPC3

DP

UART

가 . SPC3

(RTS)

4

PROFIBUS

Telegram

. SPC3 UART

SPC3 48 MHz

, SPC3

CLKOUT2/4

2 4

가

RESET

(forward)

13.8.6 SPC3

1.5 KB RAM

0000H	0/1
0016H	
	ID /
0040H	(3)
	(3)
	(2)
	(1)
	(1)
	(1 2)
SSA	(1)

0-15H

16H-3FH

DP

가  
40H-5FFH

20: SPC3

256 , I/O 32 , 16 가  
가 I/O, , 가  
가 SPC3

가

SPC3  
가

SPC3

x (3)	20	x 3 = 60	3
x (3)	20	x 3 = 60	3
x (1)	8	x 1 = 8	8
(1)	4	x 1 = 4	I/O 4
(2)	7	x 2 = 14	7
(2)	7	x 2 = 14	
		160	

13.8.7

PROFIBUS-DP

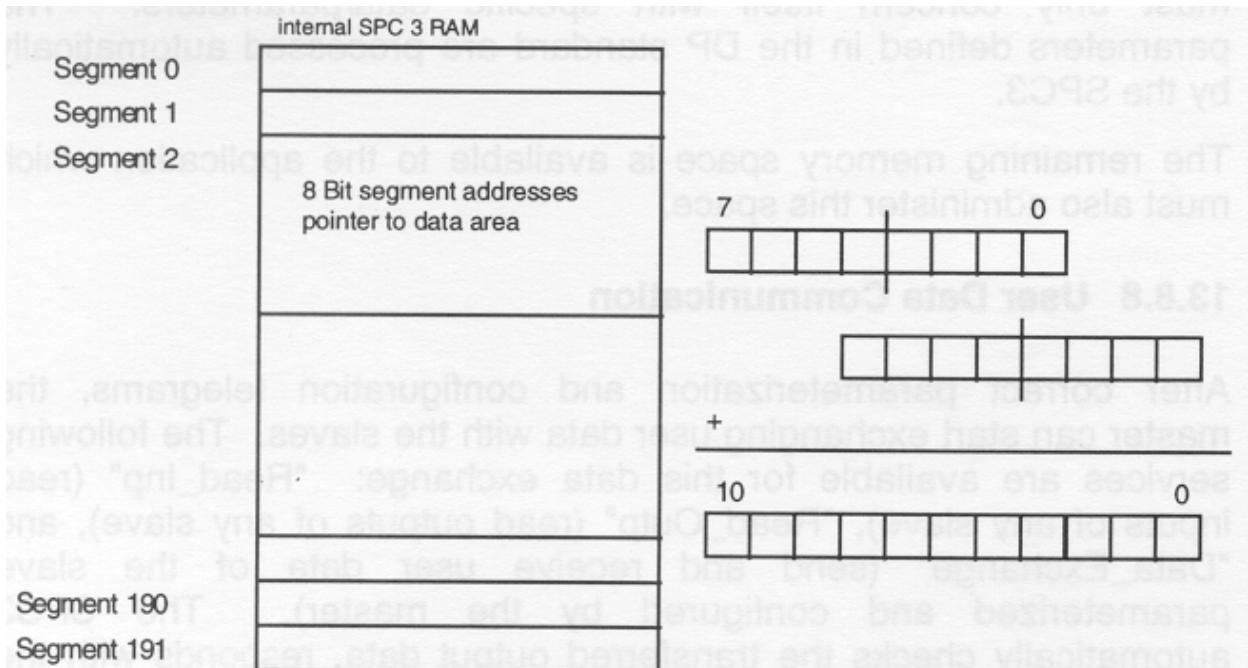
가 DP SPC3  
 가  
 가  
 3가 (D ) , (U ) .3 (N )  
 (FREE). 가  
 SPC3  
 SPC3 Telegram (Set\_Slave\_Add Set\_Prm) Telegram (Chk\_Cfg)  
 (SSA, Prm Cfg ) SPC3 , SPC3  
 / . DP  
 SPC3

13.8.8

Telegram ,  
 “Read\_Inp”( ), “Read\_Outp”( ),  
 “Data\_Exchange”( SPC3 ) , 가  
 , 가

13.8.9

SPC3 RAM 8 192  
 40H 8  
 (start-up) 가  
 가



21:

가 SPC3 “Baud search” 가 가  
가 SPC3 “Baud control” 가  
가 SPC3 가 가  
가 가

- ID ( 3AH 3BH )
- ( 16H )
- ( 0 )
- ( )
- 

DSAP PROFIBUS-DP SPC3

Dafault SAP: (Write\_Read\_Data)  
 SAP55: (Set\_Slave\_Add)  
 SAP56: (Rd\_Inp)  
 SAP57: (Rd\_Outp)  
 SAP58: DP (Global\_Control)  
 SAP59: (Get\_Cfg)  
 SAP60: (Slave\_Diagnosis)  
 SAP61: (Set\_Prm)





7: Spec_User_Prm_Byte			
0	Dis_Startbit		Dis_Startbit = 1, ( )
1	Dis_Stopbit		Dis_Stopbit = 0, ( )
2	WD_Base	WD_Base = 0: = 10ms WD_Base = 1: = 1ms	WD_Base = 0 ( = 10ms)
3-7	Res.	0	0

SPC3 SPC4 가 . .

### 13.8.11 SPC3

Siemens AG SPC3 ASIC

. ANSI C

가

, ASIC , ID ,

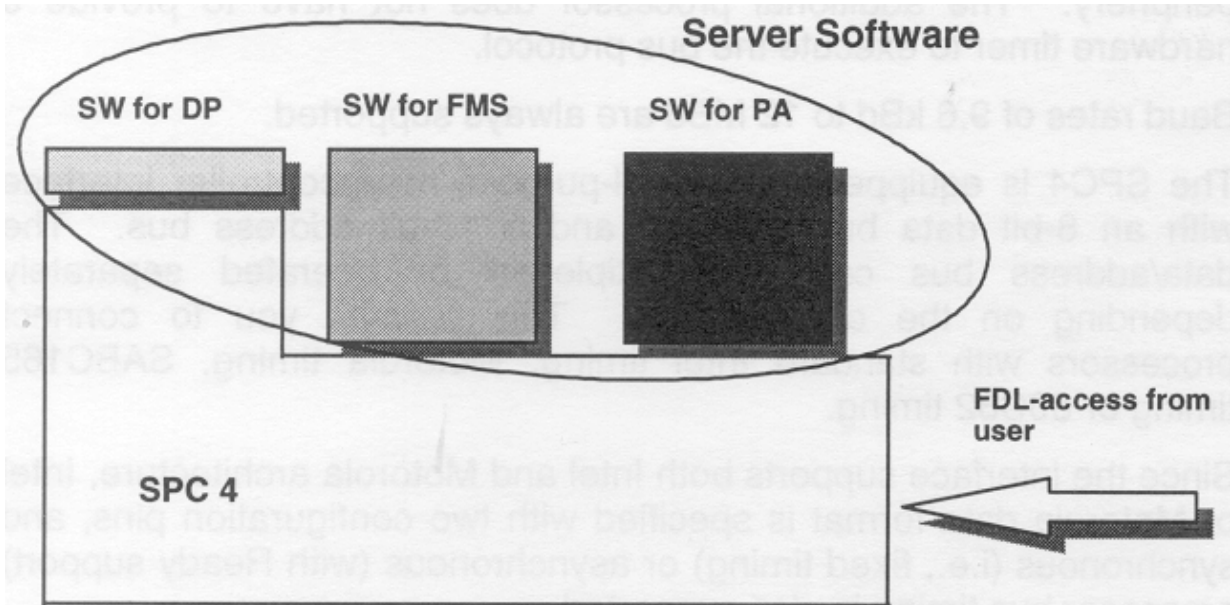
가

SPC3

가

. 가

13.9 SPC4(Siemens)



22: Siemens SPC4 PROFIBUS ASIC

SPC4 DP/FMS PA  
 2 SPC4 가 가 2 ( )  
 2 , ASIC EN 50 170 Data\_Exchange, Read\_Input Read\_Output  
 Global\_Control  
 SPC4 가

- FMS
- PA
- DP

SIM1 ASIC , PROFIBUS-PA ( )

SIM1 ASIC

PROFIBUS

(passive)

Telegram

Telegram

SPC4 PROFIBUS  
가 가 .

9.6 KBd - 12 MBd 가 .

SPC4 8 10 가  
가 . /

SABC165 80C32 . , .

가  
가 , ( ) ( (Ready) )

SPC4 가 , SPC4 1.5 KB  
RAM .

SPC4 1KB .  
SPC4 Telegram (plausibility) .  
SPC4 SPC3 가

### 13.10 ASPC2(Siemens)

ASPC2 PROFIBUS ASIC 가 . ASPC2  
release C .

EN 50 170 1 2 ASPC2 . ASPC2  
PROFIBUS-DP .

가 ASPC2 , ,  
, ,  
.

PROFIBUS ASIC ( .  
, , I/O ) .

DP

ASPC2 ASIC

( 64KB)가

ASPC2 ASIC

• PROFIBUS-DP PROFIBUS-FMS

•

• FIFO 122 244

가

• DP

• (job)

•

•

8/16 가

/

가

•

ASPC2 RAM 1 MB

•

가

•

ASPC2

ASPC2

• ID

• Request-FDL-Status

• (SDN) /

• (SDA)

• (SRD)

• 9.6; 19.2; 93.75; 187.5; 500 kb/s

• 1.5; 3; 6; 12 Mb/s

- Short acknowledge - ( , SDA) 11 ms(11 )
- ( , SRD) 3 ms

- 126 / ,
- 64 SAP

- PROFIBUS EN 50 170

- -40°C ~ +85°C
- -65°C ~ +150°C
- -40°C ~ +125°C

- P-MQFP 100 14 x 20 mm<sup>2</sup>  
17.2 x 23.2 mm<sup>2</sup>