PROFIBUS
Interface Components

- SIEMENS

(LAN)

PROFIBUS-DP

PROFIBUS-DP

.

PROFIBUS-DP

PROFIBUS-PA

.

PROFIBUS-DP   .

-                        EN 50 170, Volume 2
- IEC 61158-3, Ed. 2
-   .
-

.

-

.

-

.

-   .
-                              32   125
.

- 12 Mbit/s
.

- 23.8 km(14.7   )
- ASIC
.

- PROFIBUS-DP   " Totally Integrated
  Automation"   .
-            PLC   PROFIBUS-DP
.

ASIC

PROFIBUS-DP

.   ASIC

Third party

vendor　　　PROFIBUS-DP

，

．

（

　　　　　　　）

ASIC

．
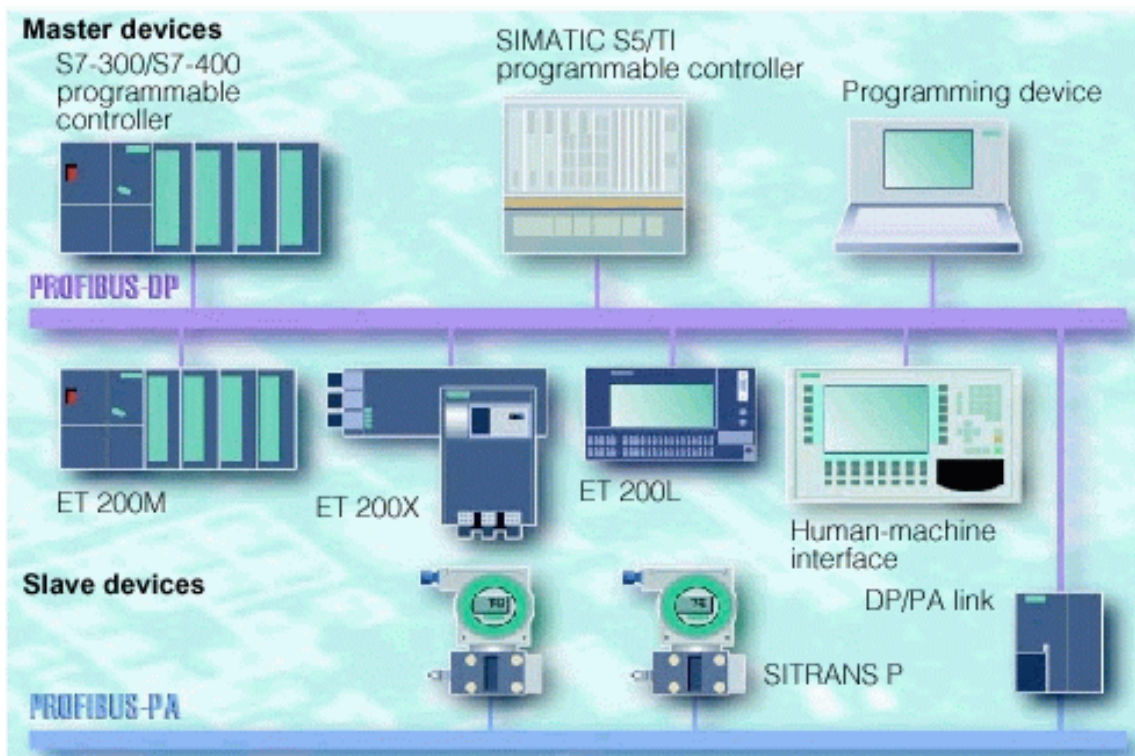
- PROFIBUS-FMS
- PROFIBUS-PA

PROFIBUS-DP

PROFIBUS-DP

，

．　　　　DP

EN 50 170　　　, Volume

図 1 : PROFIBUS DP/PA

PROFIBUS-DP,　PROFIBUS-PA

Application

PROFIBUS

．

- PROFIBUS-DP

2　　　　　　．PROFIBUS-DP　　PROFIBUS-PA

．

PROFIBUS-FMS

PROFIBUS-FMS

．　　　　　　FMS

EN 50 170　　, Volume 2

．

PROFIBUS-PA

PROFIBUS-PA   PROFIBUS
        . PROFIBUS-PA   EN 50170
     2   IEC 1158-2

intrinsically safe application   .
PROFIBUS-PA   PROFIBUS-DP
              .
PROFIBUS-DP   + IEC 1158-2
        = PROFIBUS-PA

Design

PROFIBUS-DP   Active bus
Passive bus
     .

Active Nodes (Masters)

-                        ,
  (: S7-300/S7-400 ; M7-300/M7-400)
- PC   (: WinAC)
- SIMATIC   PC
- HMI
-                  (: SINUMERIK)
-                (: SIMADYN)
- Third-party PLC

Passive nodes (Slaves)

-       I/O   (SIMATIC ET 200)
-          (: S7-200 S7-300, S5-95U/DP)
-                    -

-                          (: SITRANS)
- Third-party field device

PROFIBUS-DP
                              .

                              .
                                    Access
              . PROFIBUS-DP   Active
node   Access
     " Master/Slave   "
              .
Master   Master
              .

                              .
Passive bus node   Master module
              polling   .

PROFIBUS-DP/PROFIBUS-PA   Open Interface

                    .   PROFIBUS-
DP   ASIC
          .   ASIC
        . Master   Slave

ASIC   .

Integration

                                    ASIC
              ,
              .   .

PROFIBUS Schnittstellencenter
COMDec Wrzburger Str. 121
D-90766 F rth, Germany
    : 0911/750-2080 Fax: -21 00
Mailbox : 0911/737-972.
E-Mail: COMDEC@fthw.siemens.de

PROFIBUS Integration Center
3000 Bill Garland Road
Johnson City, TN 37605-1255, USA
    : (423)-461-2576, Fax. -2016
Mailbox : (423)-461-2751
E-Mail: profibus.center@sea.siemens.com

PROFIBUS

PROFIBUS
    PROFIBUS   (PNO)

        .   .
PROFIBUS   (PNO)
Haid-und-Neu-Straße 7 D-76131 Karlsruhe
Germany   : 0721/96 58 589
www.profibus.com

PROFIBUS-ASIC

PROFIBUS ASIC   PROFIBUS

        . PROFIBUS-DP
                    12Mbit/s
            ASIC
        .

                ASIC   .

Master ASIC

ASPC   2(Advanced   Siemens   PROFIBUS
Controller)   Master
                                ASIC
PROFIBUS-DP   PROFIBUS-FMS
                                    .
PROFIBUS-DP   12
Mbit/s   .

ASIC

SPC 3 (Siemens PROFIBUS Controller)
Slave   Chip
        .   Chip   PROFIBUS-DP
                    .   12Mbit/s
        .

ASIC

DPC 31   SPC 3, SPC 41, 8031
                    . DPC 31

                        DP

            . DPC 31

                        (intrinsically
safe)   .
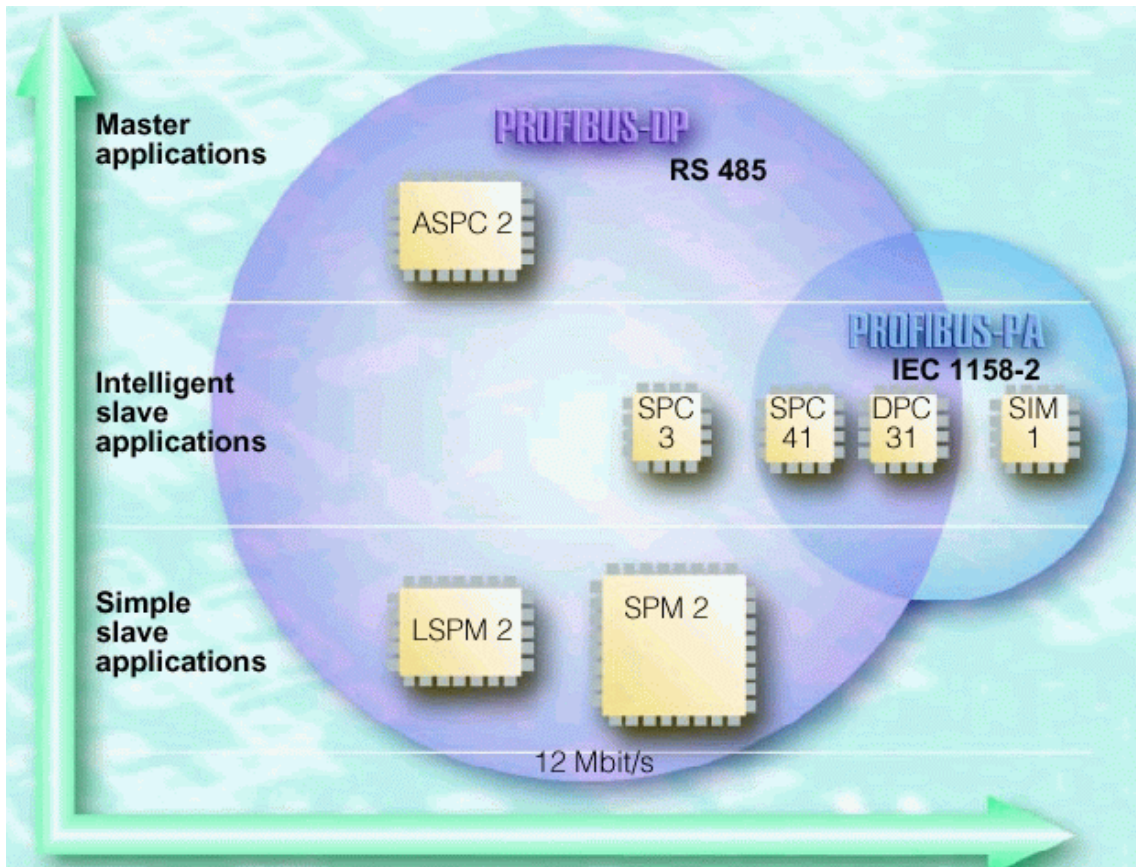   PROFIBUS-DP, PROFIBUS-FMS, PROFIBUS-
PA   . SIM 1   DPC 31
                IEC 1158-2
PROFIBUS-PA

                            .
PROFIBUS-DP   12 Mbit/s, PROFIBUS-PA

31.25 kbit/s   .   .

2:   ASIC

              ASIC   SPM   (SPM 2   LSPM 3)   ASIC

SPM 2 (Siemens PROFIBUS Multiplexer)   .
    Slave   Firmware   .
                      12 Mbit/s   .   SPC   (SPC 3, SPC 41, DPC 31, ASPC 2)
LSPM 2   SPM 2   Slave   ASIC   .
                      Chip   ASIC
                                          Firmware   .

      12 Mbit/s   .   **Firmware**

                                        Firmware
                                                            .

ASIC   . Firmware

ASIC   .

<u>ASIC SPM 2   LSPM 2</u>

                                        SPM 2   /   64   .
                                              PQFP   120   .
ASIC SPM 2(Siemens PROFIBUS Multiplexer)   /
LSPM 2(Lean Siemens PROFIBUS Multiplexer)   . ASIC
                                                        . SPM 2

        .   ,   .
    , thermocouple   Firmware   .
              ASIC   PROFIBUS-DP   PROFIBUS-DP
                      . LSPM 2   . LSPM
                              2   SPM 2
                          .   12   /   32   .
Mbit/s   . IM 184   ASIC   MQFP   80   .
LSPM 2   .
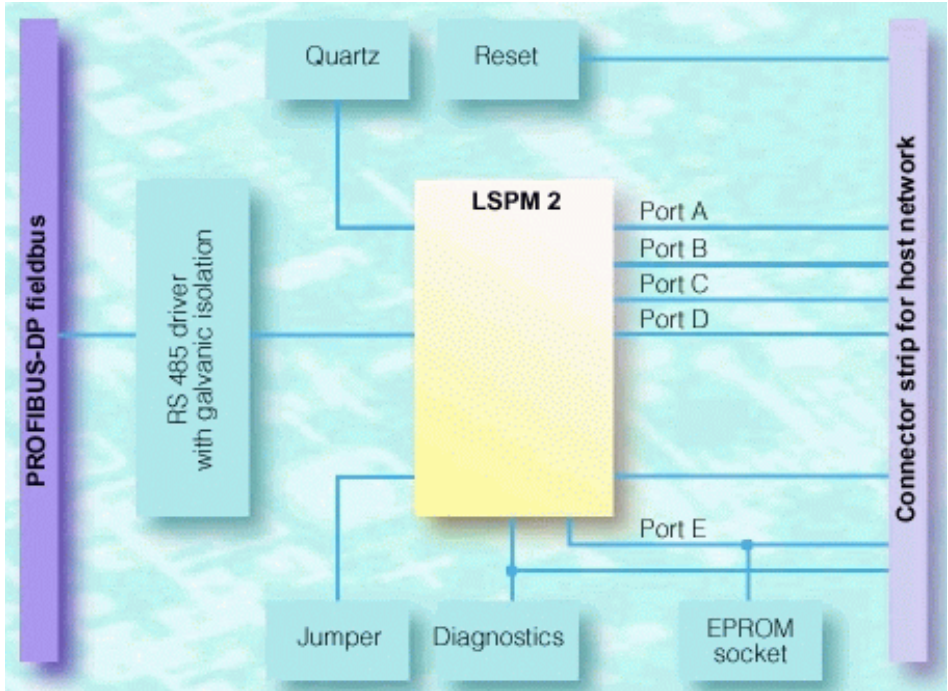
SPM 2   LSPM
2

                .
                            /

                .
SPM 2   LSPM
2   PROFIBUS
- DP

3 : Slave   LSPM 2 ASIC

                        .

12 Mbit/s   .

- PROFIBUS-DP
-              12 Mbit/s
-   SPC 3   1.5 Kbyte
- RS 485   .   PQFP
- SPM 2   120   PQFP   LSPM 2   44   .
  80   MQFP
-       ASIC   (glue logic)
- SPM 2 : 32
        64   /   , LSPM 2:   SPC 3   PROFIBUS-DP
  16   .
  32   /   .
- 8
-     /   ,   .
                                        .   1.5 Kbyte RAM
-      Watchdog timer   .
- 24 MHz   48 MHz quartz/   .
  quartz
- 5 V DC   .   .

Firmware   Firmware   .

SPM 2   LSPM 2
      .   ASIC
            .   - PROFIBUS-DP/-DPV1
                                     -            12 Mbit/s
                                     -
<u>ASIC SPC 3</u>   - 80C32, 80X86, 80C166, 80C165, 80C167,
                                       HC11,   HC16,   HC916

                                     - RS 485
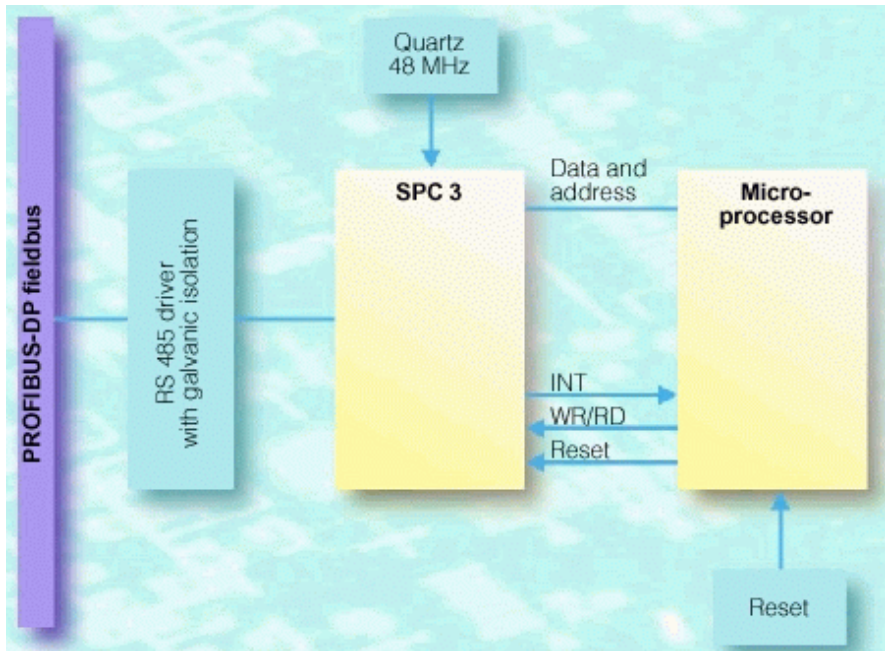SPC 3   Slave   - 44   PQFP
            .   - PROFIBUS-DP
PROFIBUS-DP   .
IM 183-1   SPC 3   -   Watchdog timer

- 48 MHz quartz   quartz   **DPC 31**

- 5 V DC   .

DPC31   ASIC SPC3

      SPC4

   . DPC31

                .

                 PROFIBUS

-DP

4 : Slave   SPC 3 ASIC   .

              3.3 V

,   DPC31   PROFIBUS   -PA

          . DPC31

Firmware

SPC 3

firmware(C   )

   . Firmware

Slave

     .

           .

Firmware   4-24   ,   DPC31   RS485

IM 182-1   IM 183-1   SIM

      . DP   SPC   .

3   ASIC   DPC31

     Firmware   PROFIBUS-PA   IEC   1158-2

Firmware   .

           . DP   DPC31

DPV1(read/write   )

     Firmware   . 6   RAM   8031

   . 8031   24

ROM   '   2
DPC31   100   PQFP   DPC31   8032
                                                                            .

                                                  8031   Firmware ROM
                                                                       .

DPC31   DP   - SPI   E 2 PROM
              ,
                                                       . -
                              DPC31   - ' DP   '
                          .

                              DPC31
                          6   DPC31   .
        RAM   .
                                                       . -   DPC31
                                                       -      ROM/RAM   DPC31
              firmware   . -   DPC31
        8031   8031   100 %
        .   ,
                                             .   8031
        256   '   ' RAM   8032 - PROFIBUS-DP/-DPV1   (/
)

                                                                          -
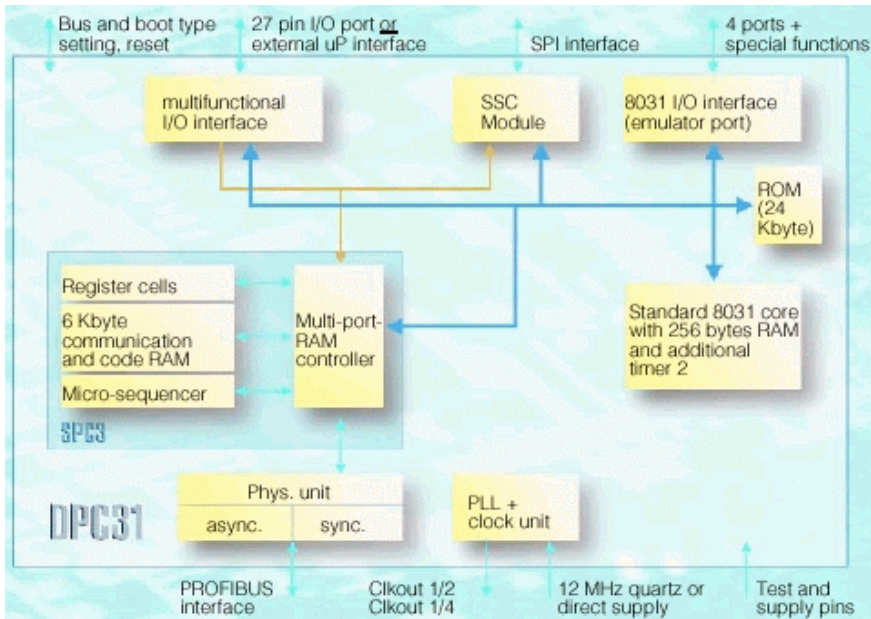   12 Mbit/s,
                                                                        IEC1158 -
                                                                  2   31. 25
                                                                  kbit/s
                                                                  -

                                                                  - PROFIBUS-DP

                                                                  - PROFIBUS-PA

图 5 : DPC31
                                                                          -        8031

- E 2 PROM   AD   SPI   SIM 1   DPC 31   PROFIBUS-PA
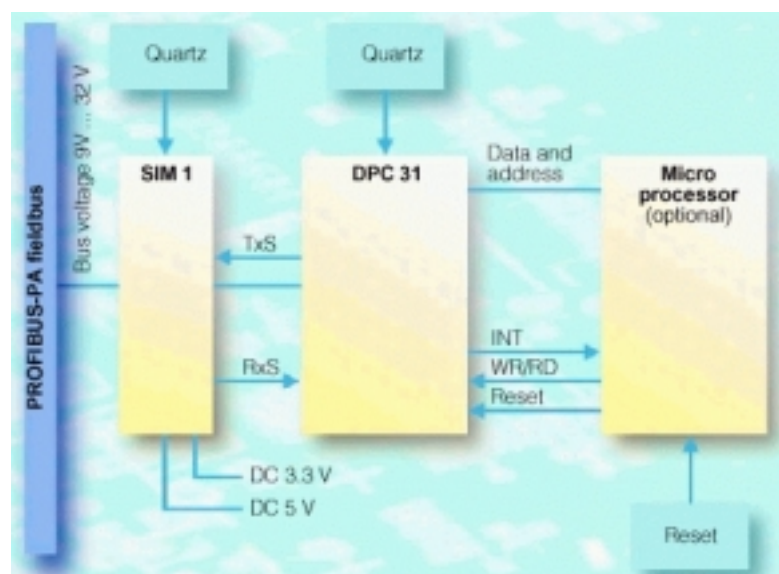   SSC
-      8031   (Intrinsically safe)
-       Intel   Motorola   ASIC
                                                   . SIM 1   44   TQFP
-             3.3 V DC   .
- 100   PQFP

Firmware

                                     SIM1
DPC31   tapping
              Firmware(C   )   .   .   2
Firmware   galvanically isolate
                                       . SIM 1   IEC 1158-2
                        .   Manchester   /   .

SIM 1

SIM 1(Siemens IEC Medium
Attachment Unit)
                        IEC
1158-2
              PROFIBUS-PA
        .   PROFIBUS-PA
                  PROFIBUS

7 : Slave   DPC 31   SIM1 ASIC

IEC   1158-2
PROFIBUS-DP   .   PROFIBUS-PA
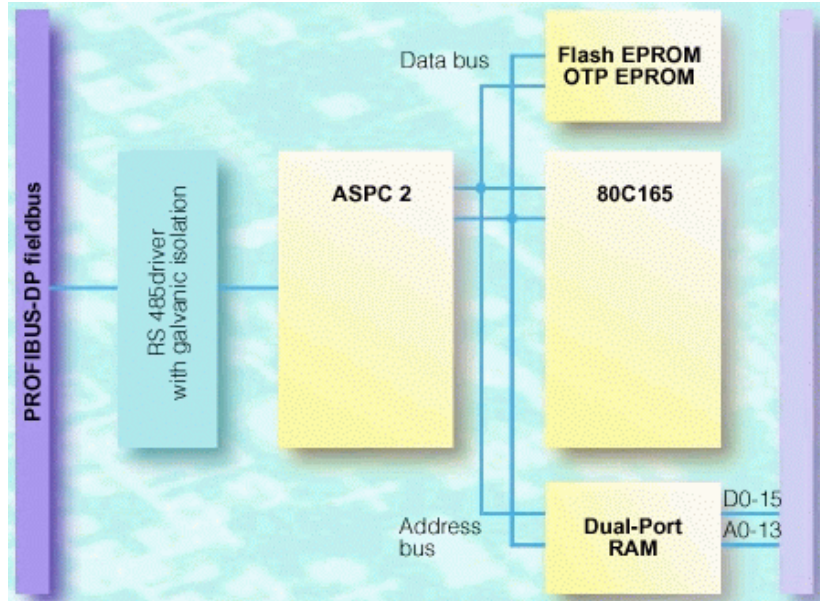   (Intrinsically   safe)   - IEC 1158-2   ,   PROFIBUS-PA
                    .

                                   -          31.25 kbit/s
                                   -     44   TQFP
                                   - 3.3 V DC   5 V DC,   5 V DC   6.6 V

DC   (250 mW   ASPC 2   ,

-   40   . PROFIBUS-DP

   mA   .   PROFIBUS-FMS   Firmware

                                                            . ASPC 2   1 Mbyte

                                                                                                    .

ASPC 2   .

ASPC   2

                    PROFIBUS-
DP   PROFIBUS-FMS

                                    .

PROFIBUS-PA   DP/PA

                                .

ASIC   8 :   ASPC 2 ASIC
                    ,
        ,   ,   -
                                                            Firmware   . ASPC 2

                    . IM 180   .

ASPC 2   .   12

Mbit/s   .

                                                        - PROFIBUS-DP   PROFIBUS-FMS

                                                        -                    12 Mbit/s

                                                        - RS 485

ASPC 2   MQFP 100   .   - 125   Active, Passive

        ASIC   IEC 1158-2   .

                                        PROFIBUS-   -   100   P-MQFP

PA   DP/PA   - 16

                            .   - 1-Mbyte RAM

                                                        -                    : Ident, FDL   , SDN

SDA, SRD, SRD, 12 Mbit/s .
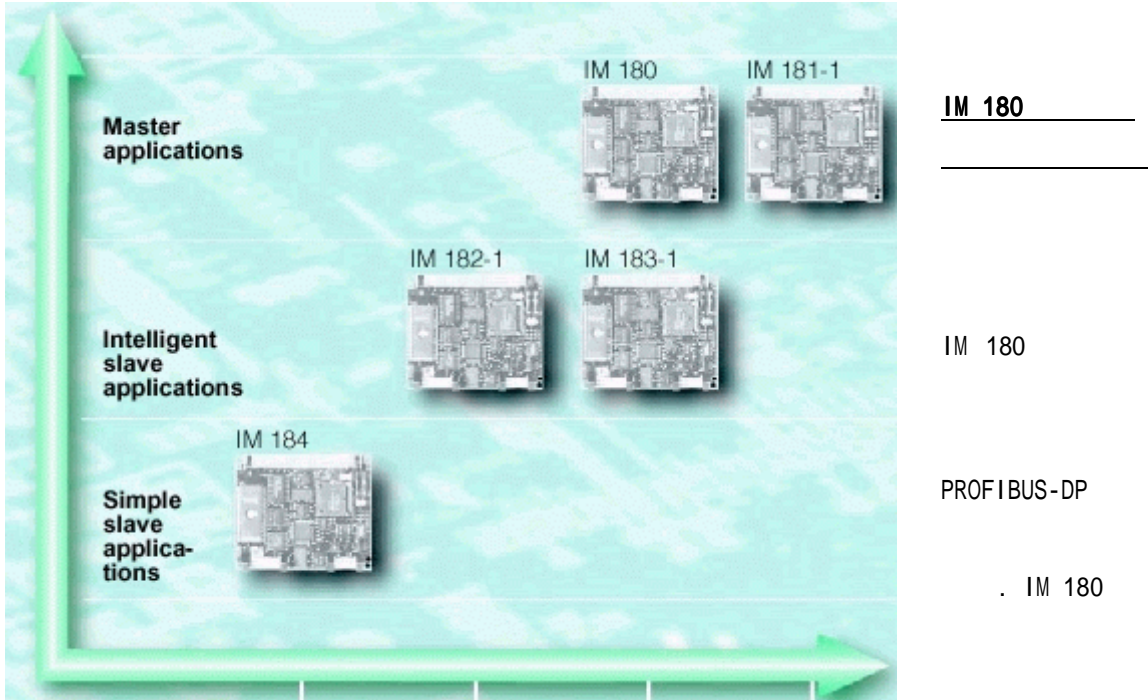
SM IM 181-1 PC

- 2 IM 180 .

- 5 V DC PC

- 0.9 W ISA .

Firmware

ASPC 2 PROFIBUS-DP IM 182-1

PC .

. PROFIBUS-DP ISA PC

Firmware . 12 Mbit/s .

. 80C165 IM 183-1

80 PROFIBUS-DP

. . 12

Mbit/s . IM 184

PROFIBUS-DP

_____, **Development Kit**_____ .

12 Mbit/s .

PROFIBUS-DP ASIC

ASIC

.

PROFIBUS-DP .

PROFIBUS-DP

. Multi-row strip

.

.

.

(

) PROFIBUS-DP

.

IM 180

PROFIBUS-DP . (RAM,

,   ,   )

.(www.profibus.com / www.profibus.co.kr)

IM 180

IM 180

PROFIBUS-DP

. IM 180

그림 9 :

Development Kit

IM 180

PROFIBUS ASIC

(IM   PROFIBUS

PROFIBUS

PROFIBUS

IM 180   80C165

, ASPC 2 ASIC,   EPROM

RAM   . ASPC 2 ASIC   48 MHz

100 x 100 mm (3.9 x 3.9

in.)   ,   . IM

180

12 Mbit/s   .

IM 181

PC   ISA

Firmware

ASPC 2 ASIC   Firmware

.

RAM

.

.

RAM

.
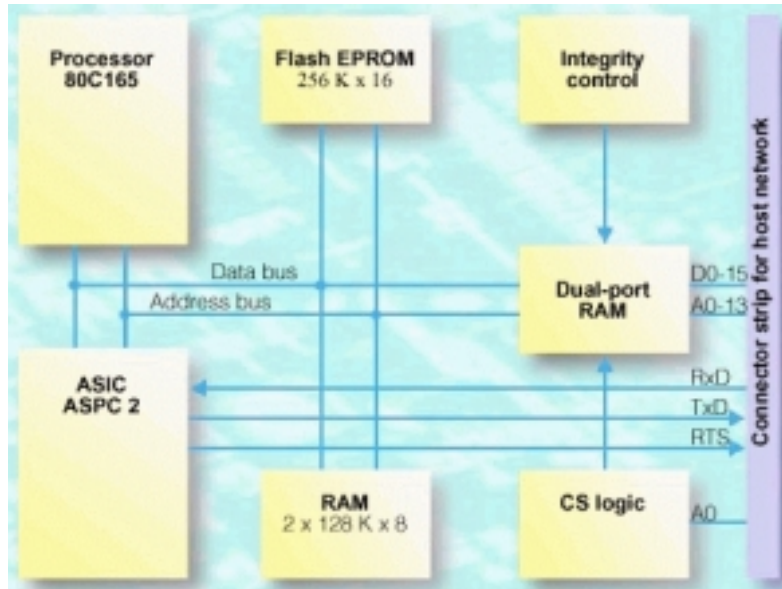

图 10: IM 180

- 12   Mbit/s

- ASPC 2 ASIC   PROFIBUS-DP   .

-

80C165   , 40 MHz

; 2 x 128K x 8   RAM

; 256K x 16   EPROM   Windows NT   .

- ASPC 2   48 MHz

-

16/ 8   ,

RAM (8K x 16   ), 64   (4   ),   8/16

- RAM

- 5 V DC

- 0- 70 °C

-     (W x H): 100 x 100 mm/3.9 x 3.9 in.

180 / IM 181-1   IM 180   MS-DOS   RAM   ,   IM 180   .

IM 180   COM PROFIBUS

.

.   -   12 Mbit/s
                                                           -

IM 184   - LSPM 2 ASIC   PROFIBUS-DP
                                                           - LSPM 2   48 MHz
                                                           - 16
IM 184   32   /
                    PROFIBUS-DP   - 8
             .   12 Mbit/s   -
     . IM 184   2 x 34
                              .   RS 485   10
                                                           - PROFIBUS-DP   RS 485
                                                           - EEPROM   (64 x 16   )
                                                           - 5 V DC
                                                           -                   100 mA
IM 184   LSPM 2   -
ASIC   EEPROM   , PROFIBUS-DP   - 0-70 ° C
    RS 485   .   -   (Wx H): 85 x 64 mm/3.3 x 2.5 in.
" RUN", " BUS ERROR", " DIAGNOSTICS"   (   ).
                             LED
    . LSPM 2 ASIC   48 MHz
             .

             .

     LSPM2 ASIC   PROFIBUS-DP
                             .

                         /
                         .

         .
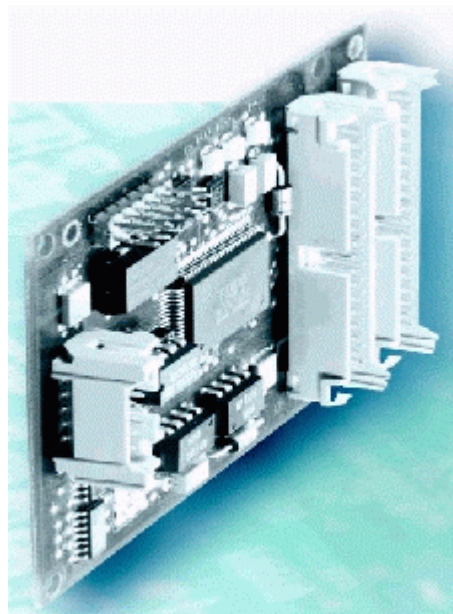

11 : IM 184

Firmware   80C32

IM 184   .

Firmware   .

                              ASIC

         .
                                                   -               12 Mbit/s
                                                   -
IM 183-1 _____   - SPC 3 ASIC   PROFIBUS-DP

                                                   -

                                                   CPU 80C32
IM 183-1   20 MHz

                      PROFIBUS-DP   32   SRAM
              .   12   32   64   EPROM
Mbit/s   . IM 183-1

                                    .   - SPC 3   48 MHz
                                                   -                        :

                                                   -
IM 183-1   SPC 3 ASIC,   50
80C32   , EPROM RAM   ,   RS 232   14
PROFIBUS-DP   RS 485   RS 485   10
          . RS 232   PC   - ASIC SPC 3
    RS 232   PROFIBUS-DP   - 5 V DC
                                                   -                 100 mA
    . SPC 3 ASIC   48 MHz   - PROFIBUS-DP   RS 485
                                                   - 0-70 ° C
                              .   -   (W x H): 86 x 76 mm/3.3 x 2.7 in.
                                                     (   ).

                                                   Firmware

        SPC 3 ASIC
                        .   SPC 3
                                                           firmware(C
)   .

Firmware   .   12 Mbit/s

                    . Firmware

          4-24

                    . DP

IM 183-1   ASIC SPC   IM 182-1   SPC 3 ASIC
3   PROFIBUS-DP   RS 485

Firmware   Firmware   . SPC 3 ASIC   48 MHz

                    .   DPV1 DP
   (/   )

          Firmware   .
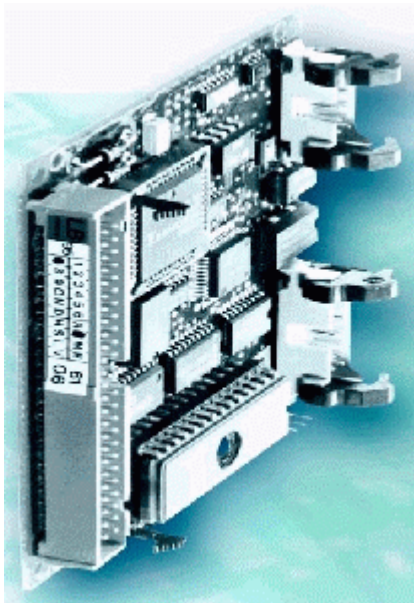

                                              ASIC SPC 3   PROFIBUS-DP

                                                      . RAM

ASIC   Firmware

                                              .

- 12 Mbit/s
- SPC 3 ASIC   PROFIBUS-DP

- SPC 3   48 MHz
- PROFIBUS-DP   RS 485
-              RS 485
- I/O

图 12：IM183-1   DIP

- 5 V DC
-              250 mA
IM 182-1   - 0-60°C

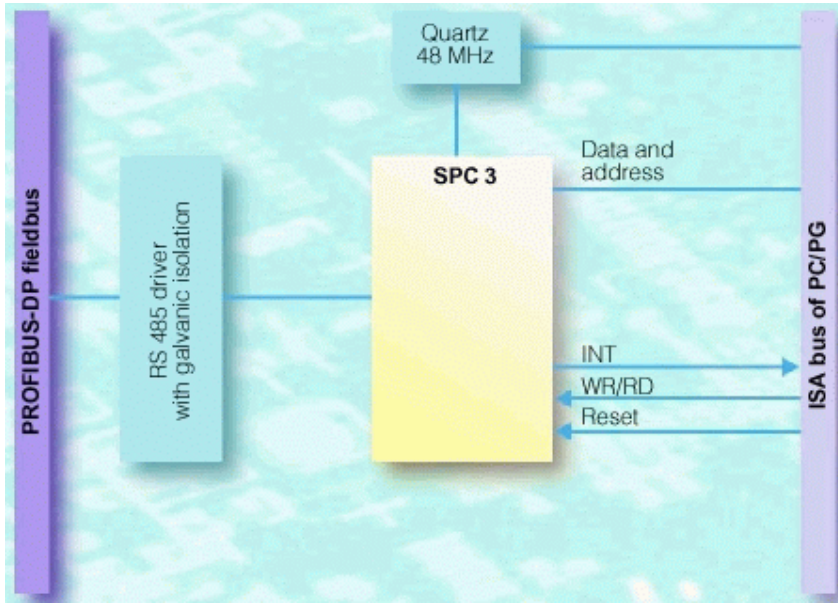   **Firmware**

IM 182-1   PROFIBUS-DP   SPC 3
                                        PC   Firmware(C   )
      182-1   ISA   PC   .

Quartz 48 MHz

SPC 3

Data and address

PROFIBUS-DP fieldbus

RS 485 driver with galvanic isolation

ISA bus of PC/PG

INT
WR/RD
Reset

4
PROFIBUS-DP

.

:

-

IM180/181

-

IM183-1

-

IM184

13 IM182-1   -   -ASIC SPC3

Firmware

IM82-1   -   IM180

. Firmware   IM81

4-24   -   IM183-1(

. DP   IM 182-1   , ASIC SPC3   )

ASIC   SPC 3   -   IM 184(

Firmware   , ASIC LSPM2   )

Firmware   -

.

DPV1 DP   (/   )

Firmware   .

- COM PROFIBUS

(IM180

)

Windows NT   .   - IM183-1   Firmware

(ASIC SPC3

Firmware)

4   -   ,
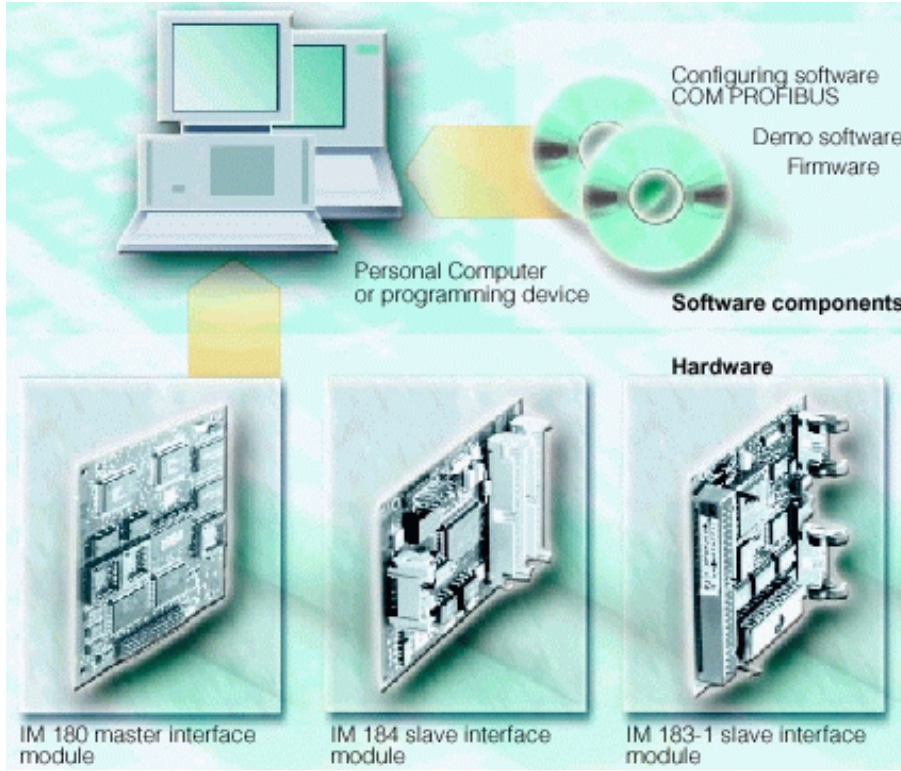
(   )

．   ，

PROFIBUS-DP

CD   ．

．   PC

IM 180

RAM

query

．

14 :   4

．

IM 180

ASIC SPC 3   LSPM2

PROFIBUS   ．   IM 180

， IM 183-1   IM 184   PROFIBUS   ．

PROFIBUS   (

piggy-bag   )   ．

PROFIBUS

IM 180

IM 181   PC(ISA   )

．   (piggy-back)

IM 183-1   ．   IM 180

IM   ASPC2   Firmware   ．

- PROFIBUS-PA   ;

.   80C165

.

Firmware

.   - PC   (WinNT   )

,   CP5613

PROFIBUS DP/PA   -

DPC31

- DPC31   DPV1   ,

- CP 5613   "COM

PROFIBUS   PROFIBUS   PROFIBUS", DP

.   - PA   PDM   (PDM=

- PROFIBUS DPV1 (RS 485)   )

- PROFIBUS PA (IEC 1158)

-                    PROFIBUS   PDM   ,

:   ,   ,

PROFIBUS-ASIC DPC31   .   PDM

. ,   2

ASIC SIM   full

IEC 1158-2t   PROFIBUS-   PDM

PA   .   .

- DPC31   ASIC DPC31   SIM   PROFIBUS

- CP5613   .

PC   (PCI   )   .

-   .

CP 5613   PC   PCI

- PROFIBUS-DP   ,   ,   ,   .

(WinNT 4.0   )
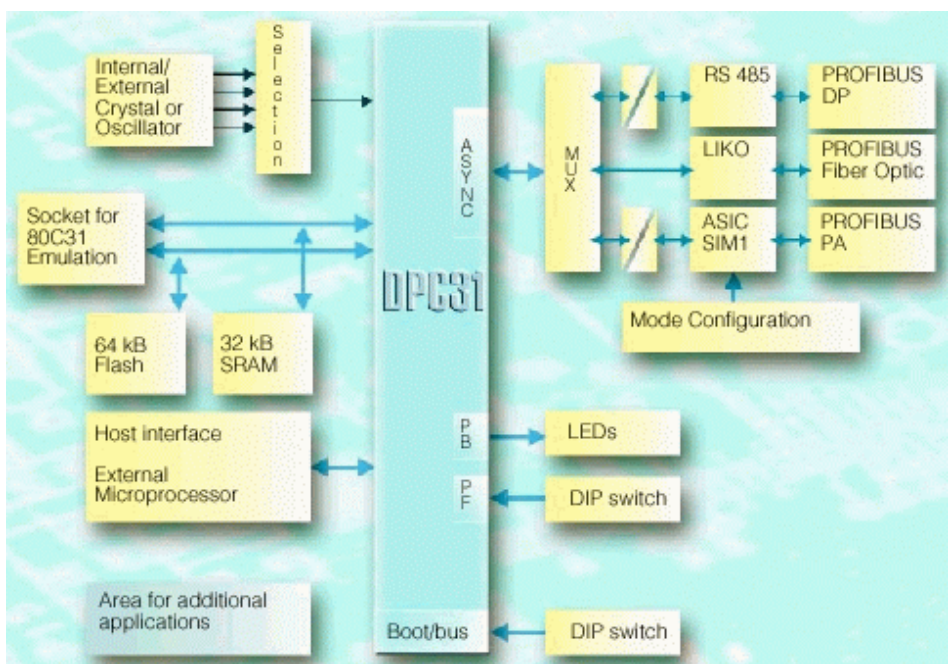
- PROFIBUS-DP   ;   ,   PROFIBUS-DP   .

"COM PROFIBUS"   CP 5613

PROFIBUS   (DPC31   )   PROFIBUS-PA   .

. PROFIBUS-DP   RS

485   .

PROFIBUS   PC   DPC 31   Firmware EPROM

DPC31   .   ,

.

(   )   "   "

.

DPC31   .

.   PROFIBUS-PA   .

DP/PA   DPC31

.

PROFIBUS-DP   DP/PA

PROFIBUS-PA   DP/PA

DPC31   PA

. PROFIBUS-PA   PDM

.

15 : PROFIBUS DP/PA

PROFIBUS DP/PA   (PROFIBUS-PA

)   PROFIBUS-DP