PROFIBUS-PA
System Network

PROFIBUS

.

PROFIBUS Cell level Field level

FMS DP

Solution .

PROFIBUS-PA

solution .

PROFIBUS-PA

DP FMS

PROFIBUS

solution

Total .

1.

PROFIBUS-PA PROFIBUS-FMS(Fieldbus Message Specification) PROFIBUS-DP (Decentralised Periphery)

. FMS automation system cell level

, DP field level

PROFIBUS-DP

. DP 12 Mbit/s

.

PROFIBUS-PA

. EN 50170 Vol. 2

.

PROFIBUS-PA RS 485

IEC 1158-2 . IEC

4-20mA

(

)

Power . RS 485

IEC DP/PA Coupler

DP/PA Link .

PROFIBUS network

(hazardous areas)

. .

PROFIBUS-PA Function Block

. profile

field unit

. profile

PROFIBUS-DP protocol

DP

. actuator , , ,

binary inputs/output PROFIBUS user organisation (PNO)

service unit, individual controllers

analysis unit

PROFIBUS-PA PROFIBUS

.

2. DP/PA Coupler DP/PA Link
Field unit

PROFIBUS-DP (RS 485) PROFIBUS-PA

(IEC 1158-2) DP/PA

Coupler DP/PA Link

PROFIBUS-DP

                                                    .   cycle

                                        (actuator   ) field unit

DP/PA Coupler   .

- asynchronous (11 bits/character)

synchronous (8 bits/character)   (   )   field unit   .

format   45.45 kbit/s

   3.25 kbit/s   . Coupler   field unit   . bus cycle time

                                          field unit   master

                                 .   master

- field unit   energy   field unit

- barrier(hazardous area application   )   .

                                      cycle   unit/system

DP/PA Coupler   .   software   .

-        30   field unit

              (non-explosion-proof)   PROFIBUS-PA segment   Field unit

- 1,2   field unit   time frame

10   field unit   hysical   bus cycle   .

Technische Bundesanstalt (PTB)   bus cycle time

                                              .(1).   cycle

DP/PA Link   5   DP/PA Coupler(,   Field

)   Main   unit   10ms   .

mudule   PROFIBUS-DP   1   cycle time   4 x 10 ms +

         . main module   higher-level PROFIBUS-   10 ms = 50 ms   .

DP(max. 12 Mbit/s)   slave   PA

segment   master   .   PA   DP/PA Link

segment   bus   . DP/PA   PROFIBUS-DP

Link   field unit   30   unit   system   .

   DP/PA Link   time   12 Mbit/s

              .

                                               . (DP/PA Link   30   field unit

3.   DP/PA Link   1 ms   ).

                                           DP/PA Link   DP/PA Coupler

Cycle time = approx 1 ms

Cyclical message
(4 byte measurement + 1 byte status)

Acyclical message
(read alarm limit: 4 bytes)

PROFIBUS-DP, 12 MBit/s

max. 1 ms

DP/PA-Link

24 V

10 ms

Cycle time =
4 x 10 ms + 10 ms = 50 ms

PROFIBUS-PA 31,25 kbit/s

10 ms

10 ms

10 ms

10 ms

10 ms

1. DP/PA link   Bus cycle

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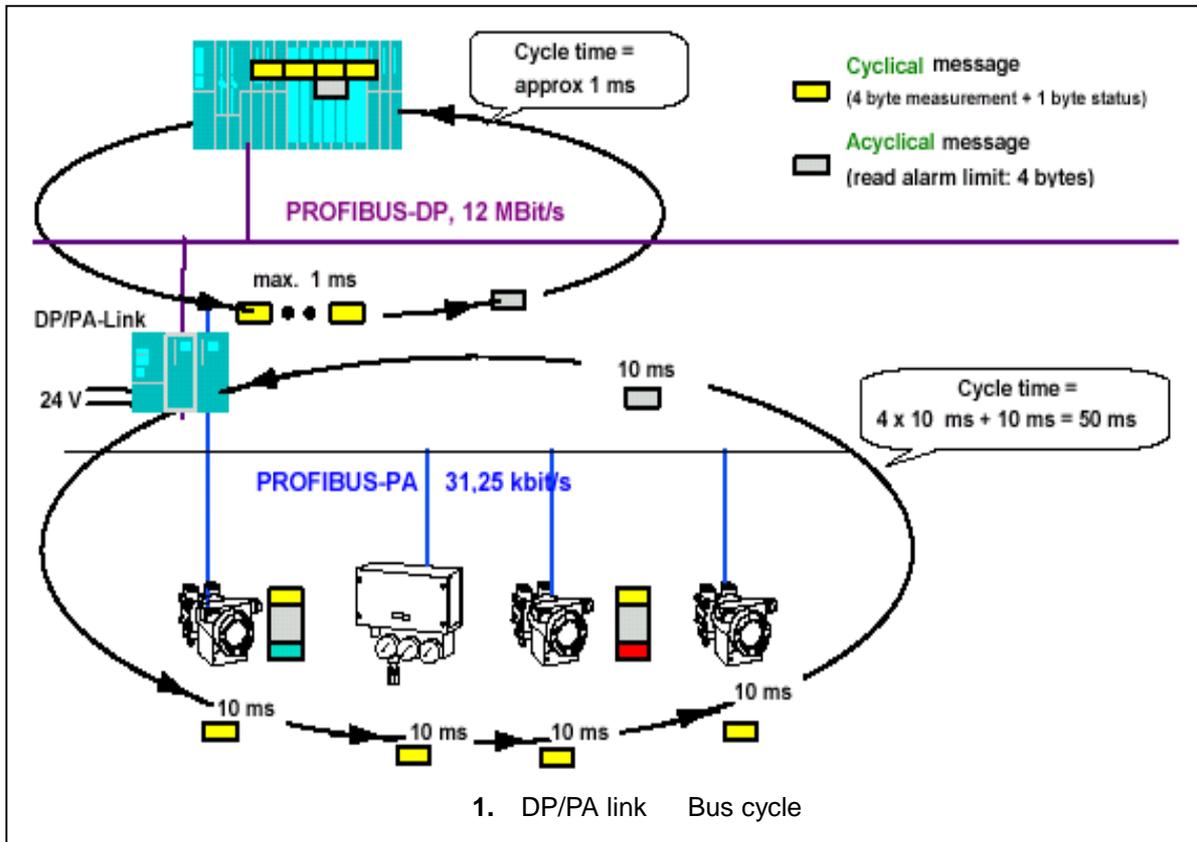
field unit

.

field unit   DP/PA Link

.

PROFIBUS-DP   12 Mbit/s

1ms

cycle time

field unit   .

DP/PA link   10   field unit

cycle   100ms   field unit   30

300ms   .

4. PA

Field unit   parameter   3

.

1.   parameter :

2.   parameter :   , filter time,
para- meters (message, alarm   warning   ),
standard parameters (, TAG)

3.   Parameter :

1   unit/system

                                          .

parameter   field unit

parameter   field unit

code   .(

/   IEEE   4byte

)

2

. parameter
function modules field unit
unit/system
.( )
1 2 field unit function
parameter PNO "PROFIBUS-PA Profile
for Process Control Devices" .
field unit function
option . optional
function field unit PA profile
.

3

.

parameter unit/
system .

control
system field unit
.
units/system PCs PA profile
parameter .
Field unit
PA profile
.

5. PROFIBUS-PA

PROFIBUS-PA
.(2)
process-bound component (PNK) DP/PA
parameterization central Engineering
System(ES) module field unit
.
system

2. PROFIBUS-PA

.
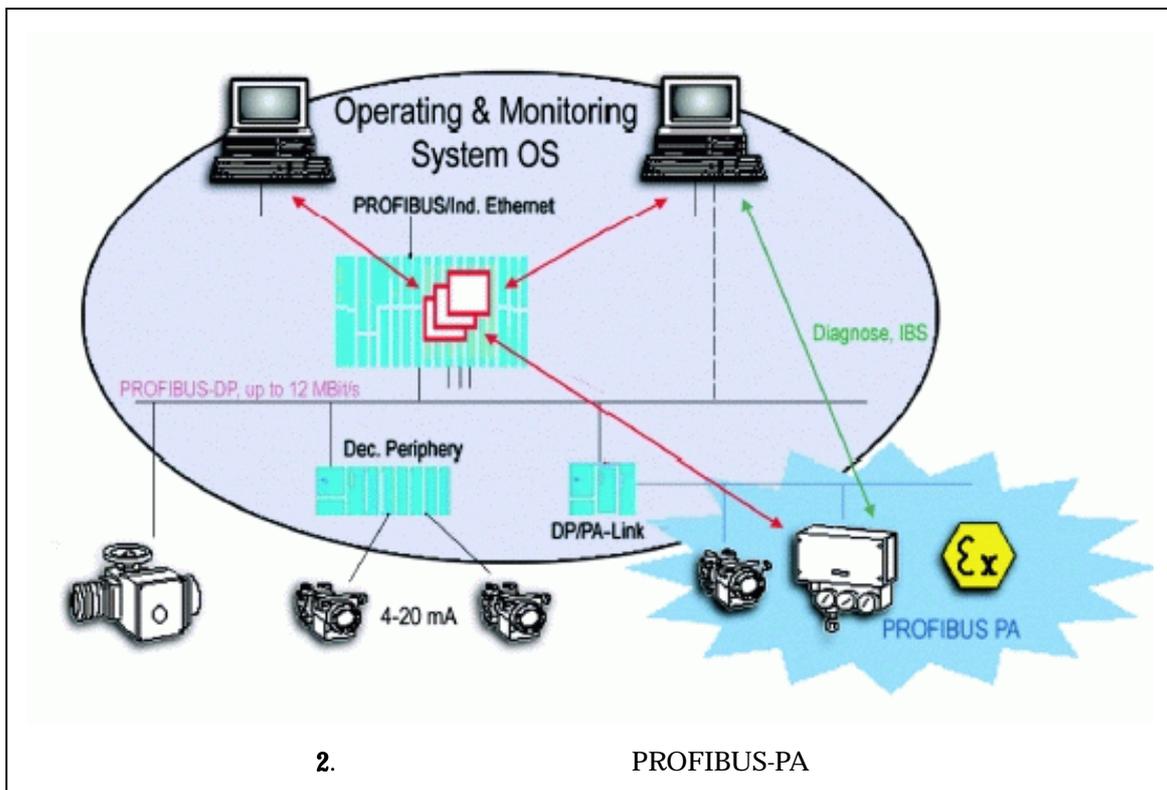
PROFIBUS-PA   PNK   field unit
          CPU   module
       .   module   CPU
field unit
             OS   installation
bus   .   module
Central Engineering System(ES)
          .   DP/PA Link
                                    DP/PA
Link   load   field uint   .

PROFIBUS-PA

          PROFIBUS-PA   20
                  EN 50 170(Amendment 2)
          PROFIBUS Protocol   IEC 61158-2
                                    .

PROFIBUS-PA

                        ,   ,
        ,   ,

    .

50,000   PROFIBUS-PA

          PROFIBUS-PA   5   700
                                    .

                  200,000
2,000,000   PROFIBUS
                                    4.5

---

billion   .

PROFIBUS

                                    .

**Bavaria B.V.   Bottling Plant Implement-
ation   PROFIBUS**

Bavaria   700

              .

                                    .

              Malt Plant, Brewery Plant,
Bottling Plant   3
Bottling Plant   1980

                          . 1990
    Bavaria
                  .
              bottle

                          . Bus system

      PROFIBUS   .

- Why Profibus?
- Application with Decentral Periphery
- Integration of Management and Visualising
  Systems through the Bus System
- Experiences with Profibus in General
- Further Developments