

# AS-Interface

AS-Interface Master"

AS-Interface /

PROFIBUS

AS-Interface

AS-Interface

Topology	tree
	unshielded 2-wire-cable for data and energy (24 V DC / typical up to 8 A for the bus. Higher values allowed)
Cable	100m
Slave	31
Number of participants	up to 4 sensors and 4 actuators per slave(max.124, bi-directional max. 248 binary participants)
Addresses	Each slave gets a definite address. Setting of address by the master or by a programming tool.
Messages	Message of the master to one single address with immediate response from the slave
Bit-rate	4 bits (net) per slave and message
31 slave Cycle time	5 ms
Error detection	Incorrect messages are reliably identified and repeated.
Device interface	4 configurable data ports (as inputs or outputs or bi-directional) plus 4 parameter outputs and 2 control outputs (strobe)
Process data in The master	Cyclic polling of all participants Cyclic transmission of data to the host or to the slaves respectively
Master	Initialisation of the network, identification of participants, acyclic setting of parameter values to the slaves, diagnosis of bus and ASI-slaves, error messages to the host, setting of addressed in replaced slaves

, AS-Interface Master

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" " " )

AMI V2.1 3가  
 ) (PCB 가  
 ) 4  
 가 - A2SI  
 AMI A2SI 31 62  
 가 AS-  
 - Mannheim Bihl & Wiedemann Interface Version 2.1  
 A2SI AS-I IC  
 ASIC AS- 가  
 Interface  
 PCB  
 ( . +49-621-339-2723, Mr. Bihl) American Microsystems GmbH (AMI)  
 Mr. Gerd Thierfelder  
 - Owen/ Teck Leuze electronic Bertold-Brecht-Allee 22  
 (SW ) D 01309 Dresden Germany  
 PCB Tel.: +49-351-3199-1500  
 ( . +49-7021-573-270, Dr. Müller) Fax: +49-351-3199-1519  
 Email:mailto:thierfel@amis.de  
 http://www.amis.com/  
 - Erlangen Siemens, ANL - ASI3+  
 가 ' ' - AMS ASI3+  
 ( . +49-9131-7-43180, Mr. Landgraf) 가  
 가  
 - Karlsruhe TMG-itec - SAP4.0  
 SAP4.0  
 ( . 1997 Siemens가  
 +49-721-9654-800, Prof. Bender/Dr. AS Interface-point-of-view  
 Wenzel) ASI3+  
 ( ) 가  
 AS-Interface EEPROM ) 가  
 15

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Fax: +49-9621-80-3888

- SAP4.1

Siemens SAP4.1  
EEPROM  
(C.S.2.1)

SAP4.0

- Quartz

AS-Interface quartz( )

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Fax : +49-7452-1470 Geyer electronic

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6.

( PCB)

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GmbH

Mr. Keller  
In der Braike 1  
D 73277 Owen/ Teck  
Tel.: +49-7021-573-248  
Fax: +49-8021-573-200

AS-Interface PC

AS-Interface , 가  
(OTS) AS-

Interface PC

AS-Interface PC

- Bihl+Weidemann  
AS-i PC2 PC AS-  
Interface AS-Interface  
AS-Interface

가

PC 8 AS-  
Interface PC2-

AS-i/PC/104 Master AS-i PC2

PC/104 Module

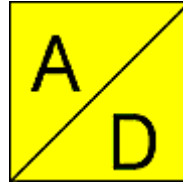


62  
AS-Interface

Version 2.1

- ifm electronic  
ifm electronic  
Interface PC

AS-



ifm electronic AC2708  
ifm electronic AC2709

- Pepperl + Fuchs  
Pepperl + Fuchs AS-Interface PCB

Actuator



Sensor Interface Network(AS-i)

. 4 /4

AS-Interface

AS-Interface

AS-Interface

- AS-Interface 가

AS-Interface

PROFIBUS

- AS-Interface Version 2.1  
, Version 2.1

. Pepperl + Fuchs 2 I/O

4 I/O

( : Version 2.1  
Version 2.1 가

Pepperl+Fuchs VAA-4EA-CB-E/E2

.)

AS-Interface

:

AS-Interface Version 2.1



62 :

- AS-Interface Version 2.1

62

1 .... 31 2

"A"

"B"가

A -

Version 2.1

5ms( ) 가

AS Interface

A- B -

poll

refresh time

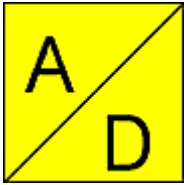
4

10ms

4

(

)가



- AS-Interface Version 2.1

- , AS-Interface

- 가 : refresh time

( 16

7

).

AS Interface

가

가



- Version 2.1

가

가

가

가

4

(time multiplexing)가

( )

( , )

AS Interface

Interface 가 AS- 3. AS Interface 가 가

refresh rhythm

(31 5ms) Version 2.1 AS Interface Version 2.1

" " 가 가 . 4

가 ( V2.1 ) . 3가

1.

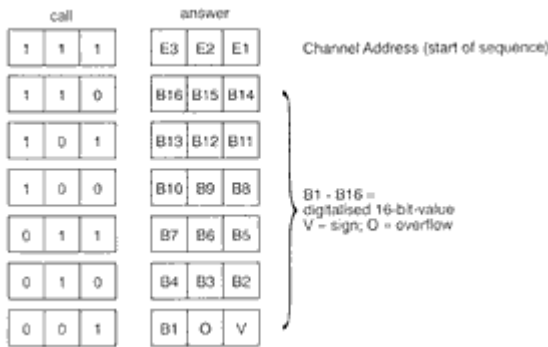
PLC - Slave-profile S 7.3 V2.1 가 " "

Interface AS- AS Interface 가 - V.2.1

2.

Interface AS 가

Interface



가 3가

- Profile S 7.3

4 ( )

1: AS Interface

V.2.1

가

가

60

4

가

124(=31x4)

- profile S 7.3

16

Telegram

3

Telegram

Telegram

가 가

B16

μs가

7

Telegram

7

Telegram

가

가 AS Interface

poll

가

가

가

가

가

2 x 7

( 70ms)

가

가

가

AS Interface

- Profile S-7.4

AS Interface

가

219

가

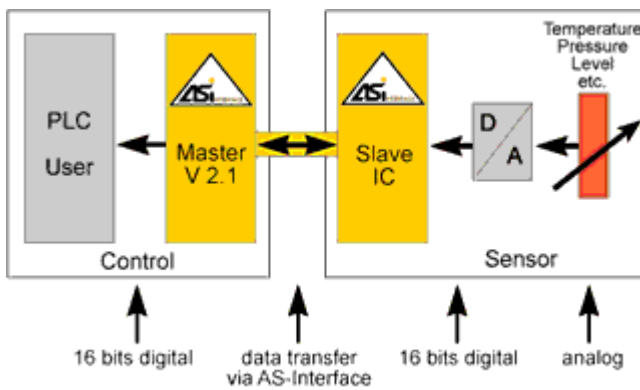
( , , )

, AS Interface

2

("Get\_Analogue\_Value" "Write\_Analogue\_Value")

AS Interface



AS Interface가

2: AS Interface

2-

가

가

D/A

- AS Interface

가

가 , D/A  
가

, 16



AS Interface

“ I/O”  
AS - Interface

AS-Interface

- AS Interface 가

가 方

가

(The Safety at Work Concept)

- AS Interface

가

AS-Interface

4-20mA

가

가

가

- AS Interface

( )

가

EN954-1

4

가

-  
Interface

AS-

( ,

가 )

가

( 2.1

) 가

가

- refresh rates

가

4

AS-Interface

- AS Interface

가

가

가

가

( , ) OR

(

), ,

가

- Telegram

가 가

-

가

( , PLC)

AS-Interface

AS Interface

가 . AS-Interface

, " "

( ) ( " ")

가

가 " "

AS-Interface

Interface , AS-

가

가 ) 가 가

가 ( 3 )

- " 가

( , )

- 가

( , )

- AS-Interface

가 AS Interface

-IC

가

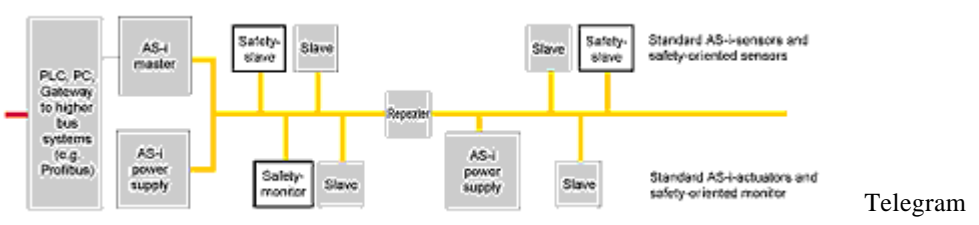
가

Telegram

AS " 가

Telegram

Interface 가 Telegram



3 : AS-Interface 가

가

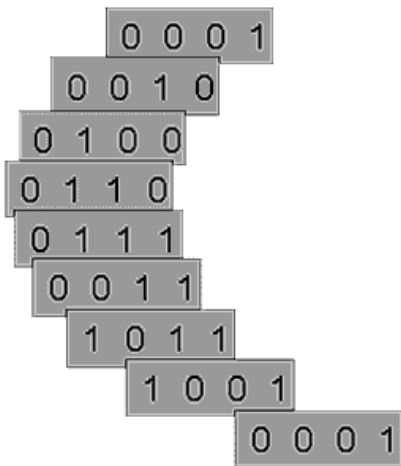
- ( , , , )

PLC가

가

AS-Interface

가



4:

" "

가 " "( ) 가  
가

, " "

EN 954-1

4

가

AS-Interface

TÜV BIA (Berufsgenossenschaftliches  
Institut für Arbeitssicherheit)

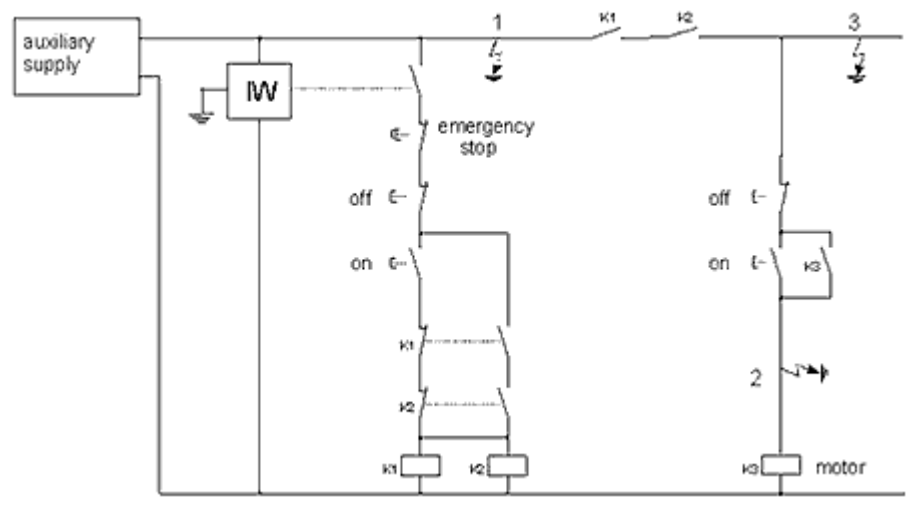
Interface 2 Wire

AS-

" "

가  
 가  
 가  
 EN60204가  
 가  
 PELV-System(IEC 364-4-41: ( ))  
 Protective Extra Low Voltage)  
 PELV 가

가  
 PELV



가  
 25V AC 60V DC (IW)( )

가 가

EN 60204  
 가

가

가

가

가  
Interface Network

AS-

AS-Interface

AS-Interface

AS-Interface

가 5 ms

가

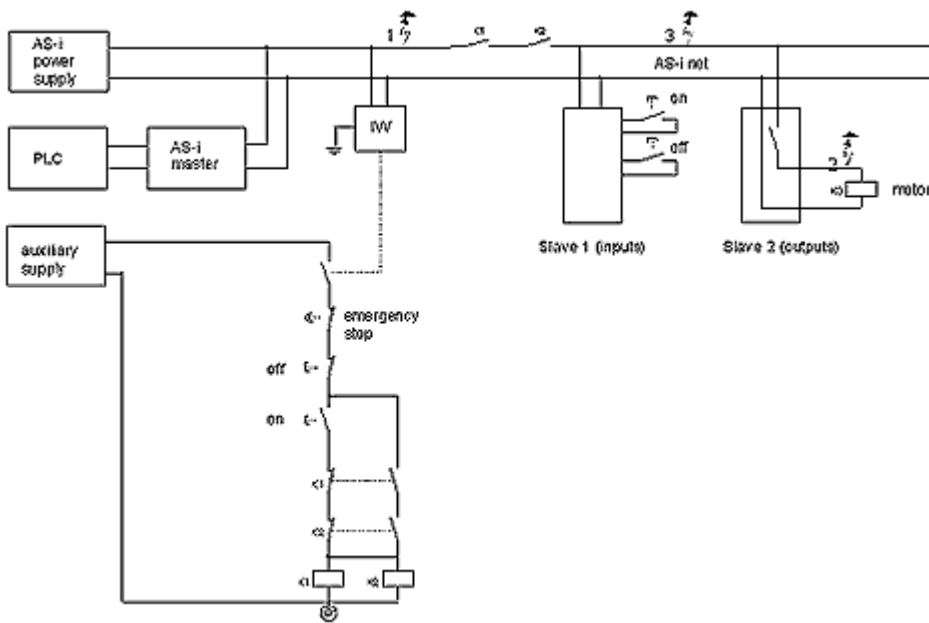
가

AS-

:

Interface Network

가



가  
( 6 )

AS-  
Interface

6: 가

AS-

가

Interface Network

( )

( 7 )

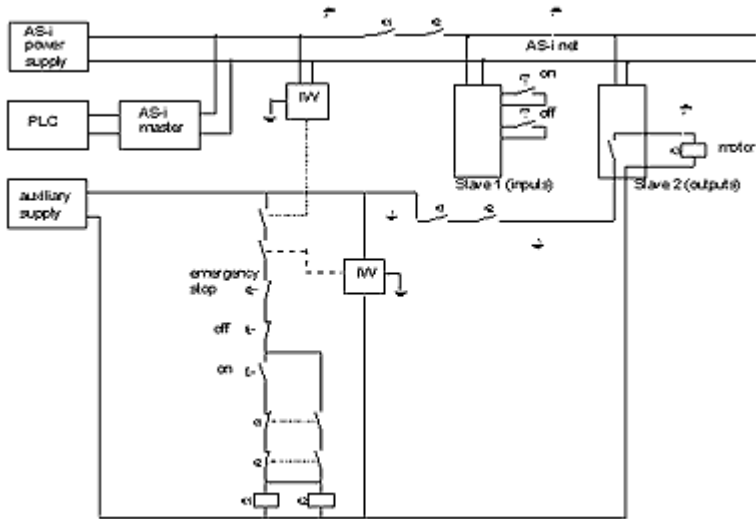
가

AS-

Interface

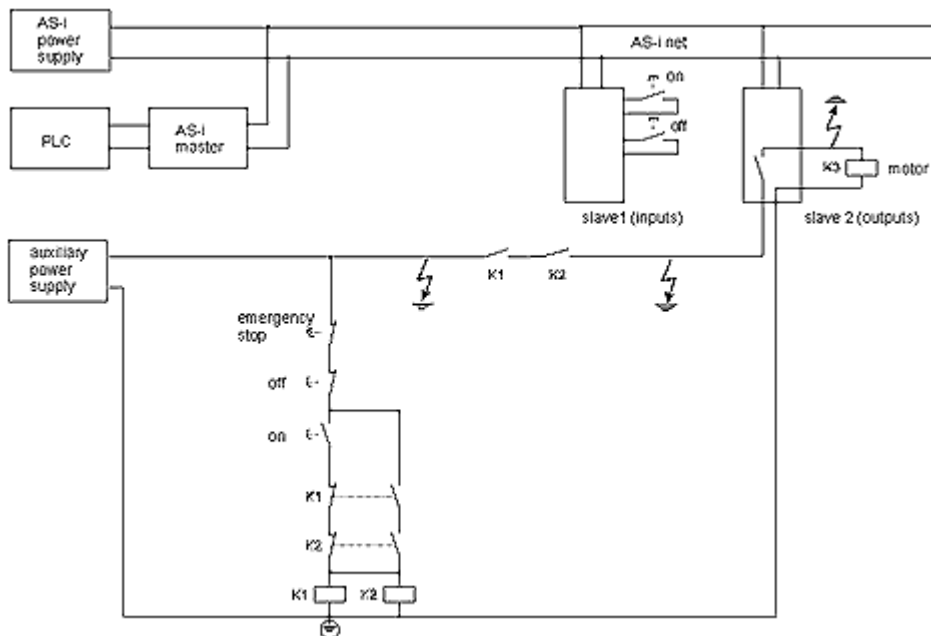
가

가



7: AS-Interface Network

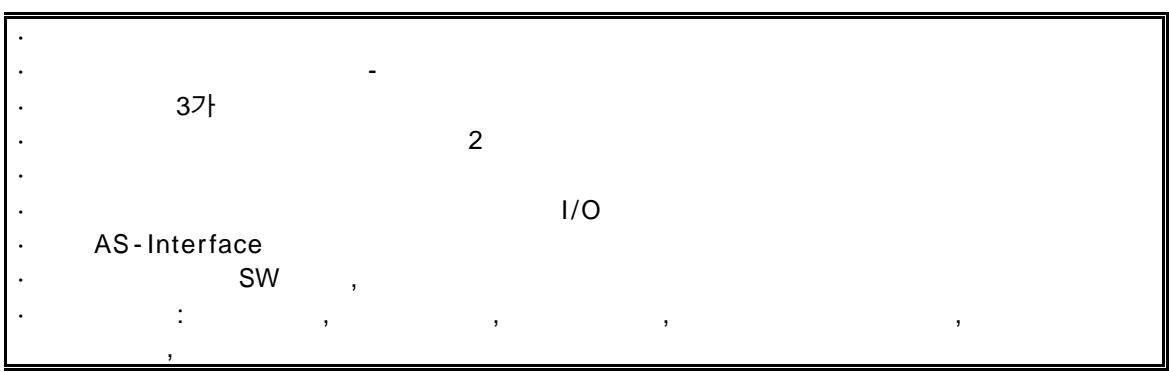
( )



8: AS-Interface Network

( )

AS-Interface ( 2 ) ,  
 PLC PC  
 . AS-Interface  
 가 , , 가 , PLC PC

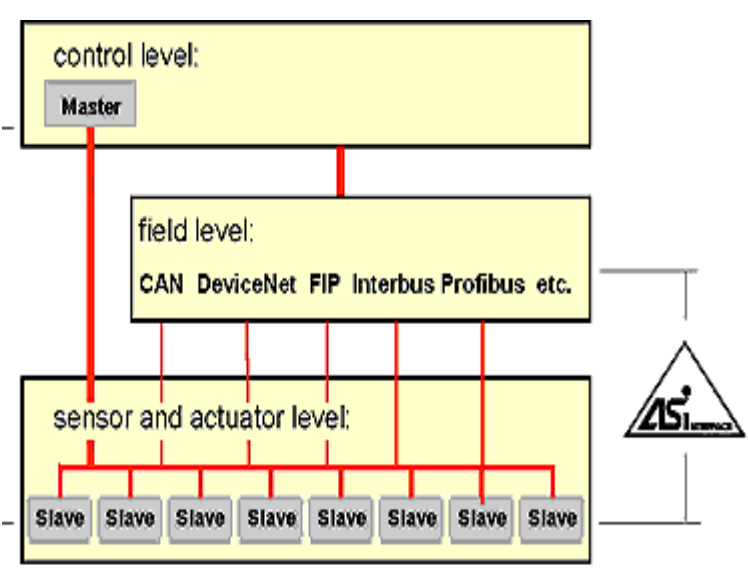


1. : AS-Interface

가 가  
 가 가

AS-Interface

가 . 가 AS-Interface



(  
 2 ) .  
 , AS-Interface

2: 가 : AS-  
 Interface ( ) fieldbus  
 ( )



가 ,

AS-Interface 가

PROFIBUS, Interbus, FIP,  
DeviceNet, CAN ( , LON, Fieldbus  
Foundation)

가

가

AS-Interface 가

가

AS-Interface 가

가?

가?

5ms 가

( 가

가 500 $\mu$ s ). 4

:

1) AS-Interface 가

2 wire

가

( ) .

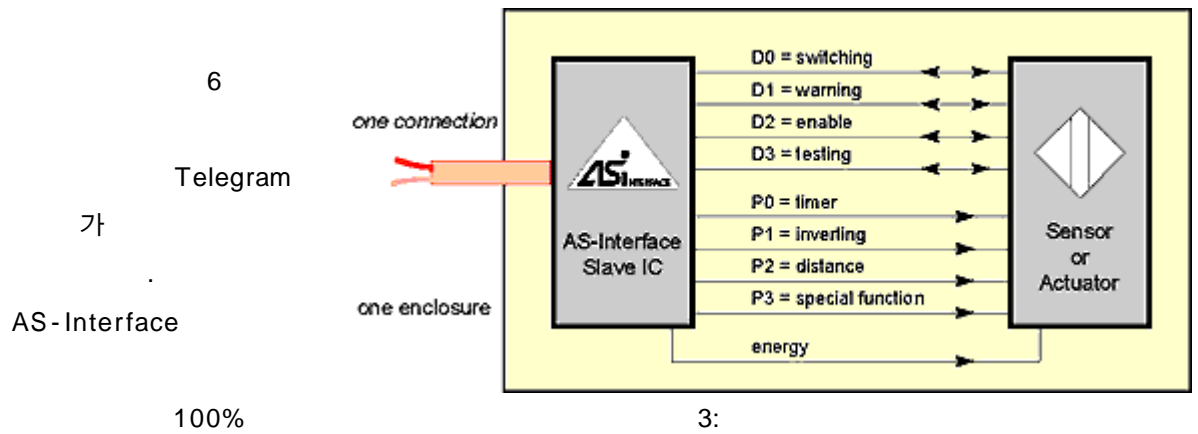
I/O

,

(floating)

가

가 가



6  
Telegram  
가  
AS-Interface  
100%  
3 4 99.999%  
Telegram 가 14 Interface 가 AS-Interface  
“Hamming Distance” HD-  
가 가  
Telegram 가  
Telegram ( 가  
) 2) , AS-Interface Telegram ( )  
가  
)  
, “ ” 150 μs  
( , , 가  
가 )  
가 가  
( 3 D1 D2) 가 , “ ”가  
( AS-Interface IC AS-Interface  
I/O ( )

3) “ ” ( AS-Interface가  
가 )

AS-Interface ,  
(

. AS-Interface  
가

EMC- HD-

(IEC 1000

3)

가

EMC  
?

( !)

. AS-Interface

가

2kV)

(

가

가 Telegram

가

가

Telegram

“ ” (3 가

1.

가

( Telegram

1 2 100%, 3 4

99.999%).

(

50%가 1kV

2kV

2.

가

Telegram

).

AS-

-

가

Interface 가

Telegram

150µs

가

AS-Interface 가

( , -

가

가 )

가

AS-Interface가 HD=2

Hamming distance

\_\_\_\_\_ ?

가

가 .]

1. Telegram CRC -

" "

AS-Interface HD=2 가

Telegram

)

AS-Interface

6

가

Telegram

Telegram

2. Hamming Distance

AS-

Interface

AS-Interface Telegram

Telegram

( 1 ) 1000V,

3. , HD -

1,000,000

IEC 1000

burst

1600

, Hamming

Distance

가

(

>10, 50

).

가

가

가 150  $\mu$ s

5ms

( )

2000V burst

1000V

, AS-Interface

가

[ : AS-Interface

" "