SIEMENS

EG-Konformitätserklärung

Hersteller: Siemens AG I&S EDM

Anschrift: Am Brabrinke 14
30519 Hannover
Deutschland

Produktbezeichnung: IE/AS-i LINK PN IO

Das bezeichnete Produkt stimmt in der gelieferten Ausführung mit den Vorschriften folgender Europäischer Richtlinien überein:

89/336/EWG Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten über die elektromagnetische Verträglichkeit
geändert durch RL 91/263/EWG, 92/31/EWG, 93/68/EWG und 93/97/EWG des Rates

Weitere Angaben über die Einhaltung dieser Richtlinie enthält Anhang EMV.

Anbringung der CE-Kennzeichnung: 2006

Die Konformität mit den Richtlinien wird nachgewiesen durch die Einhaltung folgender Normen:

Immunity		
X	ESD	EN 61000-4-2
X	Radiated RF electromagnetic fields	EN 61000-4-3
X	Burst	EN 61000-4-4
X	Surge	EN 61000-4-5
X	Current injection	EN 61000-4-6
Emission		
X	Conducted RF noise 150kHz-30MHz	EN 55011;EN 55022
X	Radiated RF noise 30MHz-1GHz	EN 55011;EN 55022

Hannover, den .....

Siemens Aktiengesellschaft

Produktionsleitung ..... Name, Funktion ..... Unterschrift

Heuse Kaufleiter ..... Name, Funktion ..... Unterschrift

Der Anhang EMV ist Bestandteil dieser Erklärung.
Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Beschaffenheits- oder Haltbarkeitsgarantie nach §443 BGB.
Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.

SIEMENS

Automation and Drives
Type test center - A&D ATS 63
D-76181 Karlsruhe - Germany
Phone. +49 721/595-2039 **Fax** – 6959

Test report No 2501_00_2006E01

EMC Test

Customer

Company	Siemens AG	*Department*	I&S EDM
Project manager	Mr. Gutzmer		
Address	D-30519 Hannover	Am Brabrinke 14	
E-mail	marcus.gutzmer@siemens.com	*Phone*	0511/877-1474

EUT Data

Product Name	IE-ASI-LINK	
Product No	6GK1411-2AB20	
Version and EUT No.	Mother board, A2B00047451, Version ES02	EUT No. SMAU3112039 200047776
	PS-Board, A2B00047447, Version 02	EUT No. SMAU3102198 200046374
	ASI Board, A2B00047446, Version 00	EUT No. without
Date of receipt of EUT	03/22//06	

Test specification / standards / result

Requirements according to	SPH Environment specification
Version / date	V3.3 / 11/09/04
Deviation / addition /restriction	Tested only below listed tests performed on Ethernet Port 1 and 2
Test procedure	After customer statements
Test result	**Test passed**

Result of individual tests

Immunity			Date of test	passed
X	Radiated RF electromagnetic fields	EN 61000-4-3	03/23/06	Yes
X	Burst	EN 61000-4-4	03/22 & 03/23/06	Yes
X	Surge	EN 61000-4-5	03/24/06	Yes
X	Current injection	EN 61000-4-6	03/22 & 03/24/06	Yes
Emission				
X	Radiated RF noise 30MHz-1GHz	EN 55011;EN 55022	03/23/06	Yes

Remark: Date is written as MM/DD/YY

Tester in charge, author Wolfer / 2188 *Name*

Wolfer 04/28/06 *signature / date*

Approved by authorized personnel Wetzel / 2396 *Name*

Wetzel 04/28/06 *signature / date*

Deutscher Akkreditierungs Rat DAR
Reg.-Nr. TTI-P-G149/98-01
Akkreditiertes Prüflabor

Order data

Org. Id.	AV003126
SAP order No	4590037825

EUT data

Dimensions in cm (W x H x L)	9 x 13,2 x 8,6
Weight in kg	0,38
Operating voltage	24V DC
Firmware	T0.0.25 TEST KW
Test program	T0.0.25 TEST KW
Peripherals (Type and Ser. No)	S7-300 setup with PS and CPU 315 and SM 374
Test criteria	Test criteria controlled visually and described in requirements see page 1

signature of the customer or his responsible test person: confirmation of the identity and the function of the EUT and of the test configuration

Mr. Buhr *name*

Bu 04/28/06 *signature / date*

Attention:
The requested and conducted tests may have caused damage to the EUT!
The results of this test report relate exclusively to the tested equipment.

Distribution

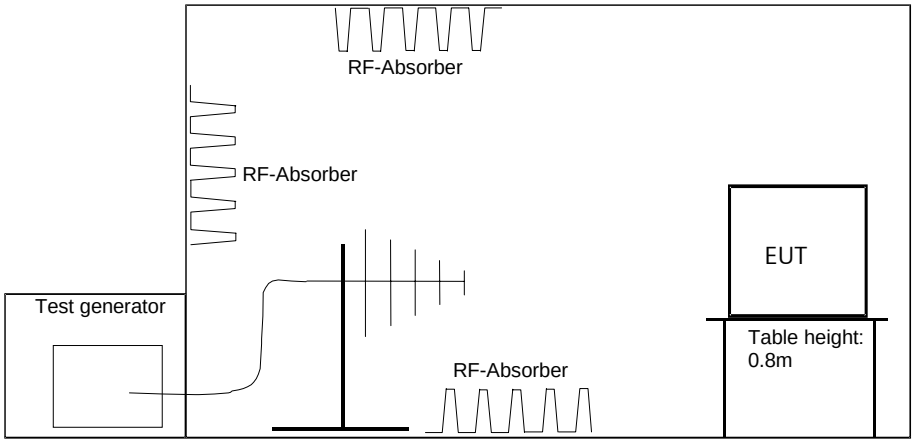
Customer / responsible	I&S EDM E	Mr. Gutzmer	original and PDF
Type test center	A&D ATS 63		copy

Description of EUT: Data switch with twisted Pair 2 Ethernet Port and 2 ASI Port Used cables (type and length): L = approx. 20m, Profinet cable shielded

The following test equipment was used for the test:

Item	Type	Manufacturer	Inventory No	Calibration date	
				last	next
Anechoic chamber field uniformity	3-meter	Siemens Matsushita	10426778	10/05	10/06
Digital multimeter	B 1026	Siemens	0B392897	12/05	12/06
Antenna 30-200MHz	HK116	R&S	10426775	10/05	10/06
Antenna 80-1000MHz	HL023A1	R&S	10414143	10/05	10/06
Antenna Bilog 30-2000MHz	CBL6112A	R&S	10431710	07/05	07/06
Dig. Multimeter	Keithley2000	Keithley	10435977	01/06	07/06
Test receiver	ESVS20	R&S	10426776	09/05	09/06
Test receiver	ESVS10	R&S	10426779	09/05	09/06
Thermo-Hygrograph(RF chamber)	252	Lambrecht	10431023	12/05	12/06
Thermo-Hygrog.(shielded cabinet)	252	Lambrecht	10431021	12/05	12/06
Thermo-Hygrograph(OATS)	252	Lambrecht	10431022	12/05	12/06
Burst generator + coupling network	EFT 500	EM-Test	10414678	09/05	09/06
Burst-coupling clamp	HFK	EM-Test	10414678	-----	-----
Ultra-Compact-Generator Surge	UCS 500/4	EM-Test	10432285	09/05	09/06
BCI-Generator	CWS 500	EM-Test	A191597	09/05	09/06
Injection clamp	EM 101	Lüthi	10414672	-----	-----
HF-Field Power meter	NRVD	R&S	0B392941	09/05	09/06
HF-Field Signal generator	SMY 02	R&S	0G190925	09/05	09/06
OATS-open area test site		Siemens	10435293	05/01	If required

Radiated, RF, electromagnetic field immunity test
IEC 61000-4-3 (2002-03+A1:2002-08); **EN 61000-4-3** (2002-04+A1:2002-10);
DIN EN 61000-4-3 (2003-11);



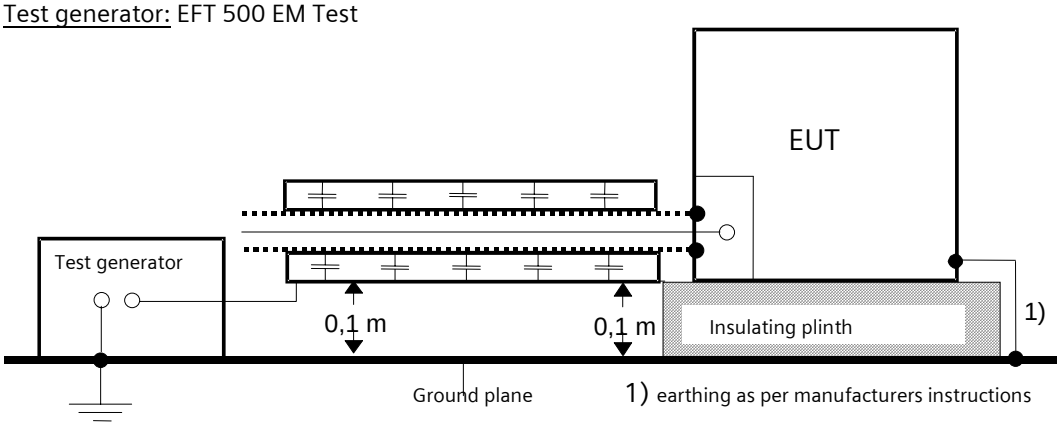
Direction of radiation	80MHz-1GHz, AM, vertical		80MHz-1GHz, AM, horizontal		1.4-2GHz, AM vertical		1.4-2GHz, AM horizontal		2-2.7GHz, AM vertical		2-2.7GHz, AM horizontal	
clockwise	Test[1]	ok.[2]	Test	ok	Test	ok	Test	ok	Test	ok	Test	ok
0° = front	x	x	x	x	x	x	x	x	x	x	x	x
90°	x	x	x	x	x	x	x	x	x	x	x	x
180°	x	x	x	x	x	x	x	x	x	x	x	x
270°	x	x	x	x	x	x	x	x	x	x	x	x

Requirements: **80MHz-2GHz: test field strength 10V/m**
2GHz-2.7GHz: test field strength 1V/m
Test criterion: **A**
Modulation AM: **80%, 1kHz**
Step duration AM: **3 sec/Frequency, 1% change of step size**
Test site: **anechoic RF chamber, building 32**
Temperature: **23°C**
Rel. humidity: **30%**
Test requirements fulfilled: ☒ **Yes** ☐ **No**
Date of test: **03/23/06**
Test staff: **Wolfer**
EUT function proofed by: **Mr. Buhr**

[1] "x": Test applied
[2]"x": Test requirements met, criteria "A", "no": "A" not met.

Burst - Immunity of shielded signal lines
IEC 61000-4-4 (2004-07); **EN 61000-4-4** (2004-12); **DIN EN 61000-4-4** (2002-07)

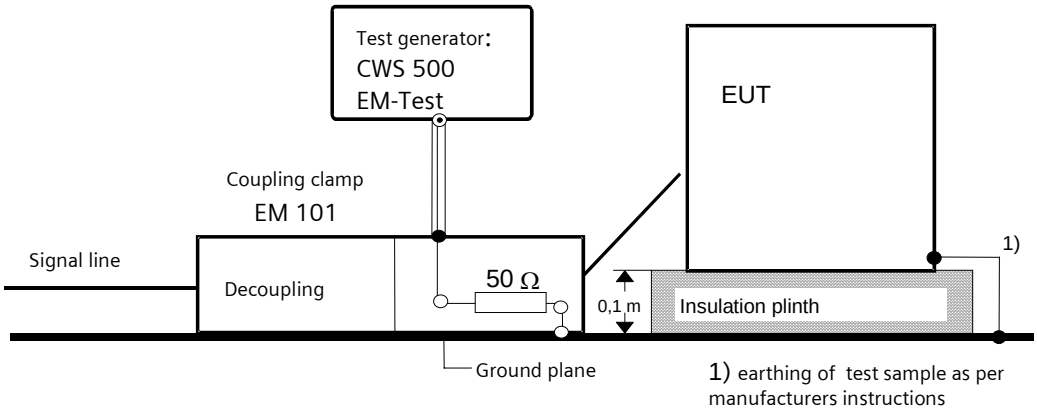
Test generator: EFT 500 EM Test



Coupling on:	Requirements	***Results***	Test criterion: **B**
Ethernet Port 1	± 0.5 kV ± 1 kV ± 2 kV	***± 0.5 kV*** ***± 1 kV*** ***± 2 kV***	**Ok.**
Ethernet Port 2	± 0.5 kV ± 1 kV ± 2 kV	***± 0.5 kV*** ***± 1 kV*** ***± 2 kV***	**Ok.**

Test duration: **1 min/Polarity**
Test site: **large shielded cabinet, building 32**
Temperature: **23°C**
Rel. humidity: **30%**
Date of test: **02/23/06**
Test requirements fulfilled: ☒ **Yes** ☐ **No**
Test staff: **Wetzel**
EUT function proofed by: **Mr. Buhr**

Current injection on shielded and unshielded signal lines
IEC 61000-4-6 (2004-11); **EN 61000-4-6** (1996+A1:2001); **DIN EN 61000-4-6** (2001-12)

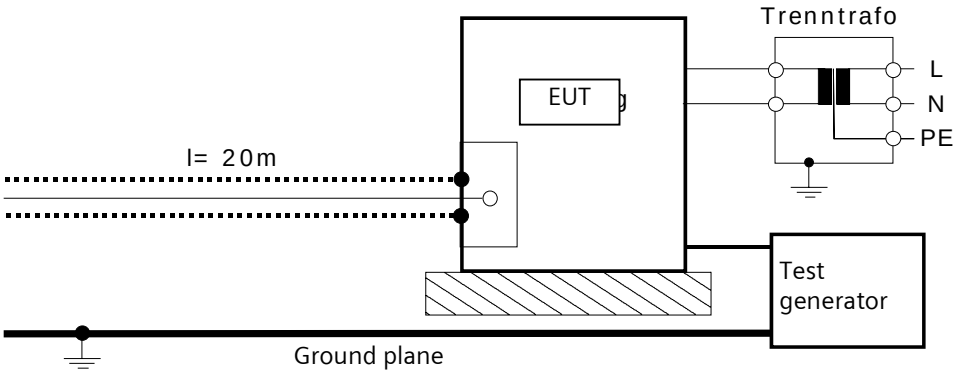


Coupling on:	Frequency range	Requirements	***Result***	Test criterion: **A**
Ethernet Port 1	10kHz to 80MHz	10 V_{eff}, 80 % AM 1kHz	***10 V_{eff}, 80 % AM 1kHz***	**Test ok.**
Ethernet Port 2	10kHz to 80MHz	10 Veff, 80 % AM 1kHz	***10 Veff, 80 % AM 1kHz***	**Test ok.**

Test duration: **1 sec/frequency; 1% step size**
Test site: **large shielded cabinet, building 32**
Temperature: **23°C**
Relative humidity: **30%**
Test requirements fulfilled: ☒ **Yes** ☐ **No**
Date of test: **02/23/06**
Test staff: **Wetzel**
EUT function proofed by: **Mr. Buhr**

Surge - Immunity on signal lines
IEC 61000-4-5 (2001-04 Ed. 1.1); **EN 61000-4-5** (1995+A1:2001);
DIN EN 61000-4-5 (2001-12)

Test generator: UCS 500/4 EM Test



Coupling:	Requirements	*Results*	Test criterion: **B**
Ethernet Port 1 (length = 20m)	± 0.5 kV ± 1 kV ± 2 kV	***±0.5 kV*** ***±1 kV*** ***±2 kV***	**Ok.**
Ethernet Port 2 (length = 20m)	± 0.5 kV ± 1 kV ± 2 kV	***±0.5 kV*** ***±1 kV*** ***±2 kV***	**Ok.**

Test duration: **10 impulses / polarity**
Impulse repetition rate: **2 / min**
Test site: **large shielded cabinet, building 32**
Temperature: **23°C**
Rel. humidity: **30%**
Date of test: **03/24/06**
Test requirements fulfilled: ☒ **Yes** ☐ **No**
Test staff: **Wolfer**
EUT function proofed by: **Mr. Buhr**

Radiated noise measurement 150kHz-30MHz according CISPR 11 (Edition 4.1; 2004-06**) or CISPR 22 (**2005-04**) class A**

Test site: **Anechoic chamber building 32**
Temperature: **23°C**
Rel. humidity: **30%**
Test requirements fulfilled: ☒ **Yes** ☐ **No**
Date of test: **03/23/06**
Test staff: **Wolfer**
EUT function proofed by: **Mr. Buhr**

Start-Frequency	Stop-Frequency	Step-width	Detector	Meas-time	ZF-Bandw.	Transducer (antenna)
30.0 MHz	1.0 GHz	100.0 kHz	MaxPeak	10.0 ms	120 kHz	CBL6112A_2005

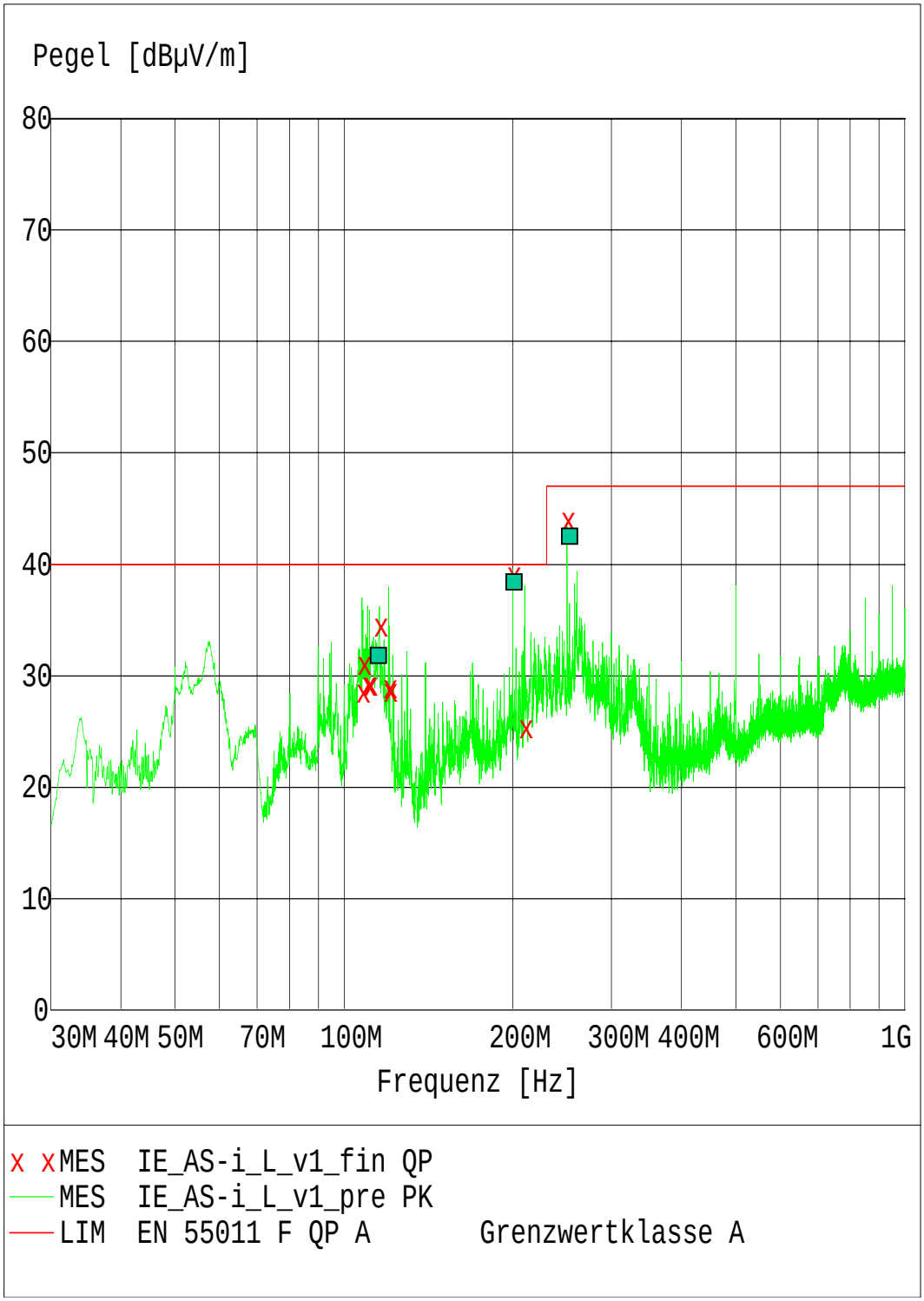
Test result: " IE_AS-i_L_v1_fin QP "
03/23/06 9:40

Frequency MHz	Pegel dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation	**Verification in OATS, 03/23/06 measuring distance 10m dBµV/m**
107.700000	28.50	14.0	40.0	11.5	150	293.00	VERTICAL	
108.000000	31.00	14.0	40.0	9.0	150	309.00	VERTICAL	
110.200000	29.20	13.7	40.0	10.8	150	309.00	VERTICAL	
111.000000	29.10	13.7	40.0	10.9	150	309.00	VERTICAL	
115.600000	34.40	13.4	40.0	5.6	150	299.00	VERTICAL	**32**
120.100000	28.90	13.1	40.0	11.1	150	323.00	VERTICAL	
120.400000	28.60	13.1	40.0	11.4	150	319.00	VERTICAL	
200.000000	39.00	10.8	40.0	1.0	150	247.00	VERTICAL	**39**
210.200000	25.30	9.4	40.0	14.7	150	91.00	VERTICAL	
250.000000	43.90	12.1	47.0	3.1	150	70.00	VERTICAL	**42**

basis of emission measurement in anechoic chamber: additional correction curve of 10m-OATS.

Verification in OATS is necessary because in anechoic chamber is no ground plane and there is also no height scan up to 4m possible.
Test result in OATS see next page: ■
Environmental conditions in OATS: Temp = 5°C, rel. Humidity =54%

Test staff in OATS: **Wolfer**
Test passed: **yes**


Pegel [dBµV/m]
80
70
60
50
40
30
20
10
0
30M 40M 50M 70M 100M 200M 300M 400M 600M 1G
Frequenz [Hz]
X XMES IE_AS-i_L_v1_fin QP
MES IE_AS-i_L_v1_pre PK
LIM EN 55011 F QP A Grenzwertklasse A

Radiated noise measurement 150kHz-30MHz according CISPR 11 (Edition 4.1; 2004-06**) or CISPR 22 (**2005-04**) class A**

Test site: **Anechoic chamber building 32**
Temperature: **23°C**
Rel. humidity: **30%**
Test requirements fulfilled: ☒ **Yes** ☐ **No**
Date of test: **03/23/06**
Test staff: **Wolfer**
EUT function proofed by: **Mr. Buhr**

Start-Frequency	Stop-Frequency	Step-width	Detector	Meas-time	ZF-Bandw.	Transducer (antenna)
30.0 MHz	1.0 GHz	100.0 kHz	MaxPeak	10.0 ms	120 kHz	CBL6112A_2005

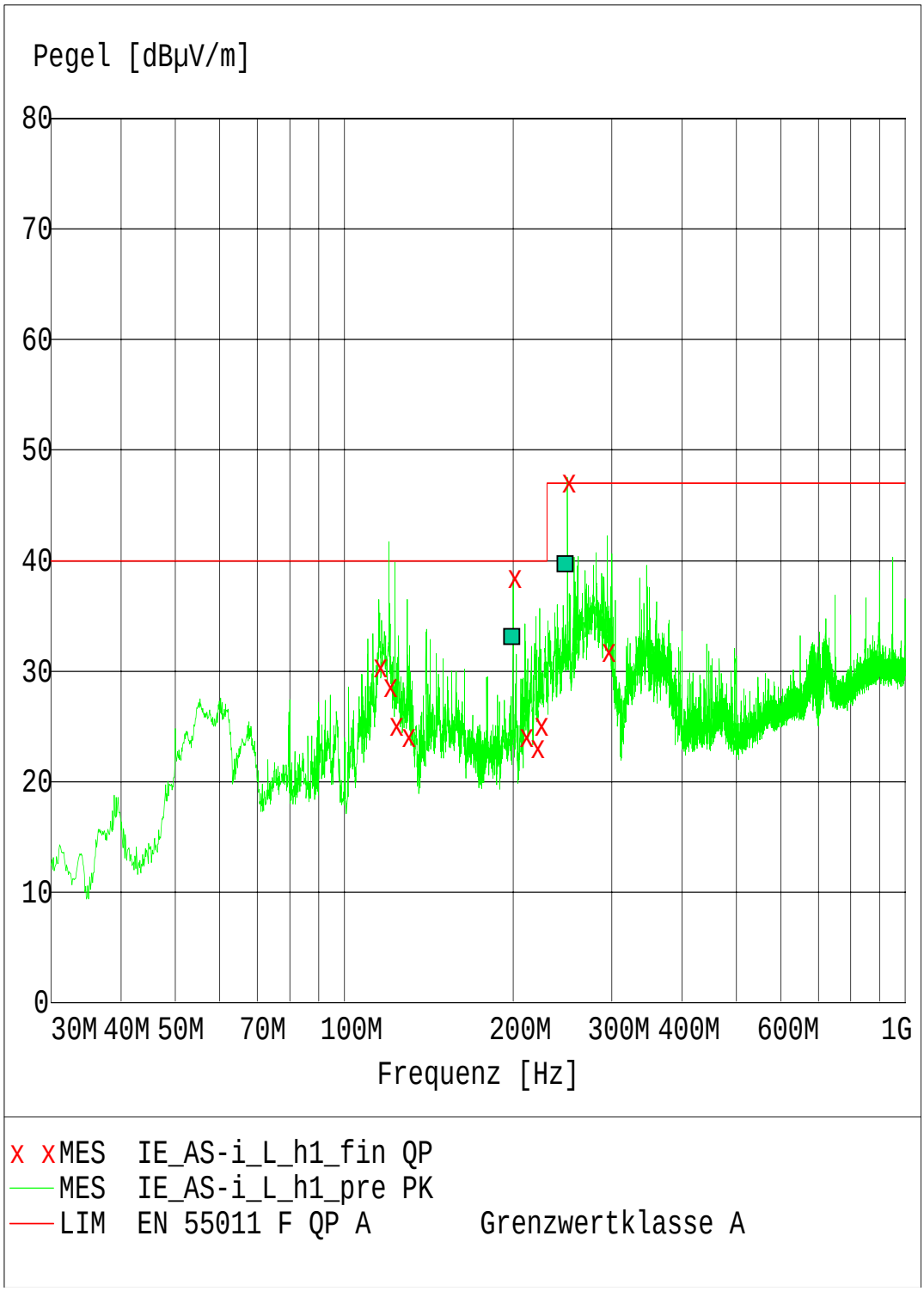
Test result: " IE_AS-i_L_h1_fin QP "
03/23/06 10:17

Frequency MHz	Pegel dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation	**Verification in OATS, 03/23/06 measuring distance 10m dBµV/m**
115.300000	30.40	8.9	40.0	9.6	150	338.00	HORIZONTAL	
120.100000	28.60	9.7	40.0	11.4	150	337.00	HORIZONTAL	
123.100000	25.10	9.8	40.0	14.9	150	342.00	HORIZONTAL	
129.500000	24.10	10.1	40.0	15.9	150	355.00	HORIZONTAL	
200.000000	38.40	10.6	40.0	1.6	150	175.00	HORIZONTAL	**34**
210.000000	24.10	9.6	40.0	15.9	150	177.00	HORIZONTAL	
219.800000	23.10	9.7	40.0	16.9	150	158.00	HORIZONTAL	
223.100000	25.10	10.0	40.0	14.9	150	171.00	HORIZONTAL	
250.000000	47.10	12.9	47.0	-0.1	150	285.00	HORIZONTAL	**40**
294.400000	31.70	14.7	47.0	15.3	150	268.00	HORIZONTAL	

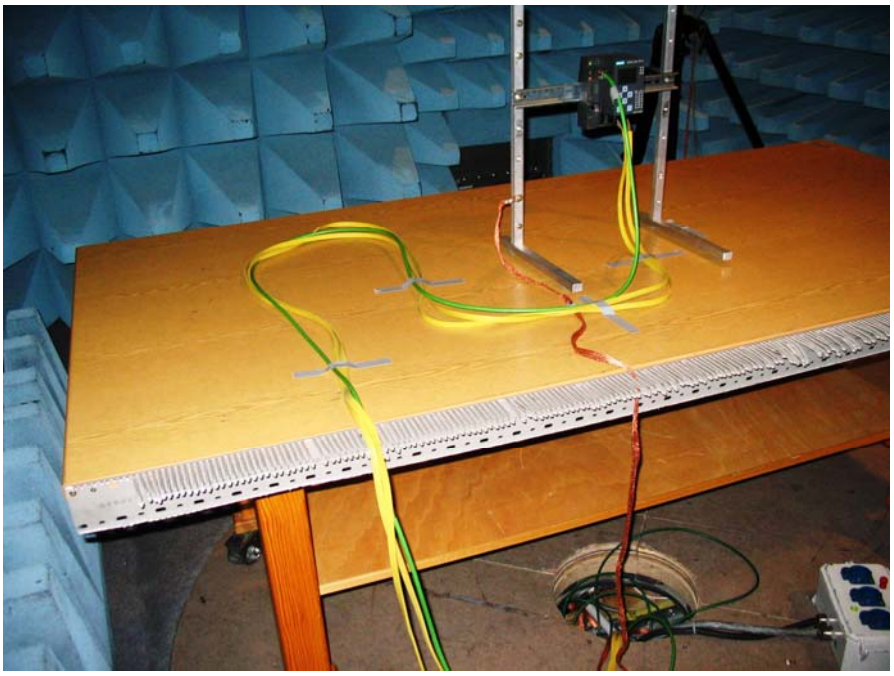
basis of emission measurement in anechoic chamber: additional correction curve of 10m-OATS.

Verification in OATS is necessary because in anechoic chamber is no ground plane and there is also no height scan up to 4m possible.
Test result in OATS see next page: ■
Environmental conditions in OATS: Temp = 5°C, rel. Humidity =54%

Test staff in OATS: **Wolfer**
Test passed: **yes**

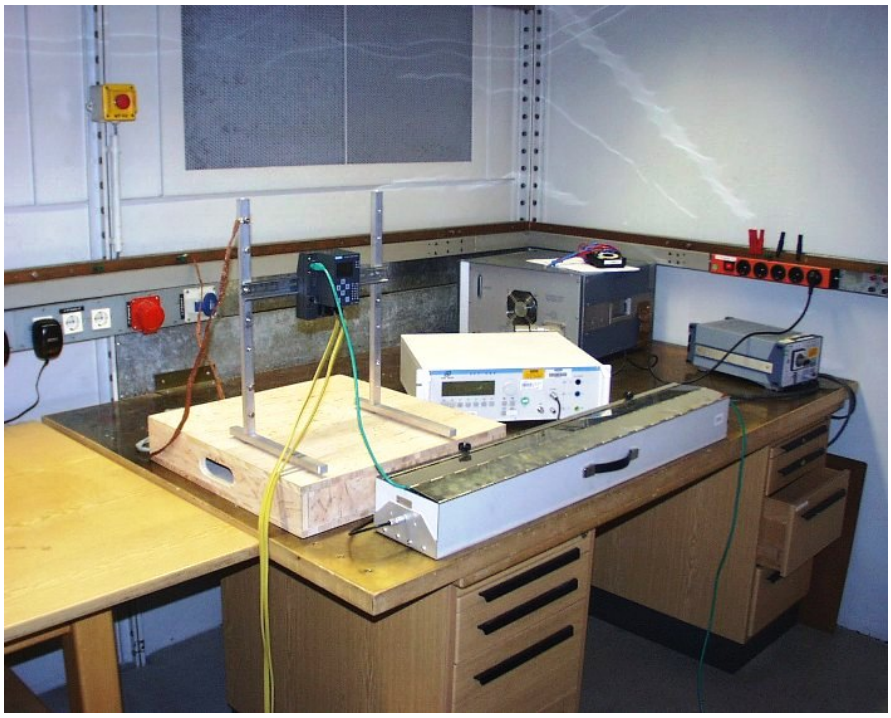

Pegel [dBµV/m]
80
70
60
50
40
30
20
10
0
30M 40M 50M 70M 100M 200M 300M 400M 600M 1G
Frequenz [Hz]
X XMES IE_AS-i_L_h1_fin QP
MES IE_AS-i_L_h1_pre PK
LIM EN 55011 F QP A Grenzwertklasse A

Test-setup in anechoic chamber – radiated emission and immunity –

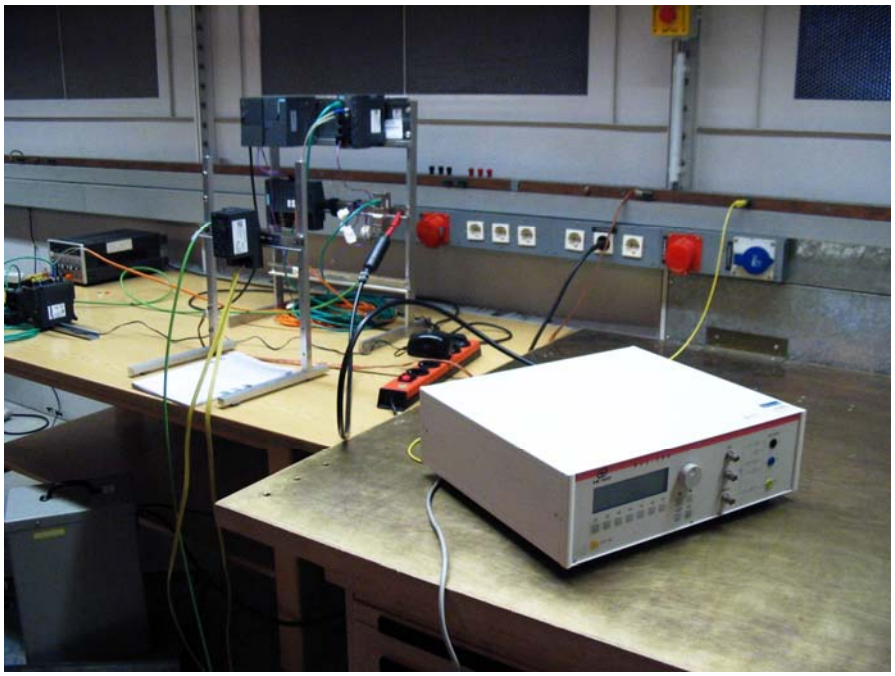


Test-setup in OATS – radiated emission

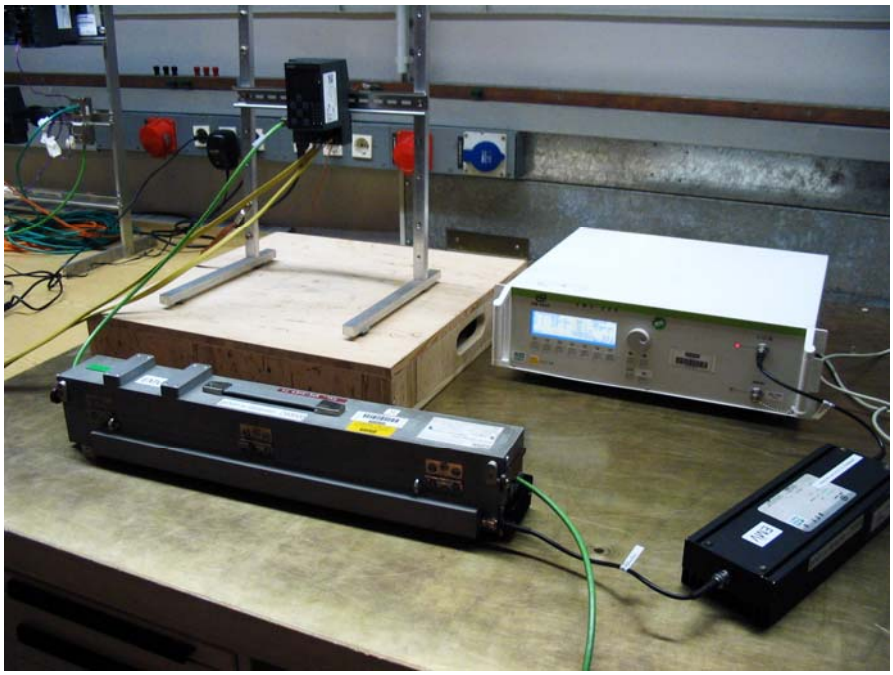
Test-setup current injection and burst



Test-setup Surge



Test-setup current injection



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www.phoenix-testlab.de

Test Report

No.: E60828

Designation of equipment under test: IE/ASi-Link PN IO 6GK1411-2AB20

EMC Test Laboratory
accredited by
DATech e.V.
in compliance with DIN EN ISO/IEC 17025
under the
Reg. No. DAT-P-105/94-32

The copying of excerpts from this report is not permitted without written the consent of the testing body. The test results indicated in this report refer exclusively to the equipment under test specified below. It is not permitted to transfer the results to other systems or configurations.

Testing body:	PHOENIX TESTLAB GmbH Königswinkel 10 D-32825 Blomberg
Client:	Siemens AG Electronic Design and Manufacturing Services Am Brabrinke 14 D-30519 Hannover
Order number:	60828
Type of test:	Testing of the electromagnetic immunity characteristics

Tested on the basis of:

Immunity interference: - EN 61000-4-2:1995 + A1:1998 Electrostatic discharge immunity test

The limits and requirements according to
EN 61000-6-2:2001 Generic standards - Immunity for industrial environments

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The tests were requested by the customer.

Equipment under test, EUT:	IE/ASi-Link PN IO
Type identification:	6GK1411-2AB20
Serial number:	SVPSMAB9894561
Manufacturer:	Siemens AG Electronic Design and Manufacturing Services
Date the EUT was received:	27.04.2006
Annex:	Photos of the test set-ups and the test subject
Client represented during the test by the following person(s):	Mr. Buhr
Place of test:	PHOENIX TESTLAB Blomberg
Date of test:	27.04.2006
Test result:	The requirements made in the test documents were fulfilled by the equipment under test. The complete test results are presented in the following.

Blomberg, 04.05.2006

Test Engineer: M. Pohl

approved by authorized Engineer

PHOENIX TESTLAB

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3.1 Immunity test for discharge of static electricity according to EN 61000-4-2 7

4 Annex 9

1 Operational states and test set-up

The following states were defined as the operating conditions:

- communication of EUT on Ethernet and ASi

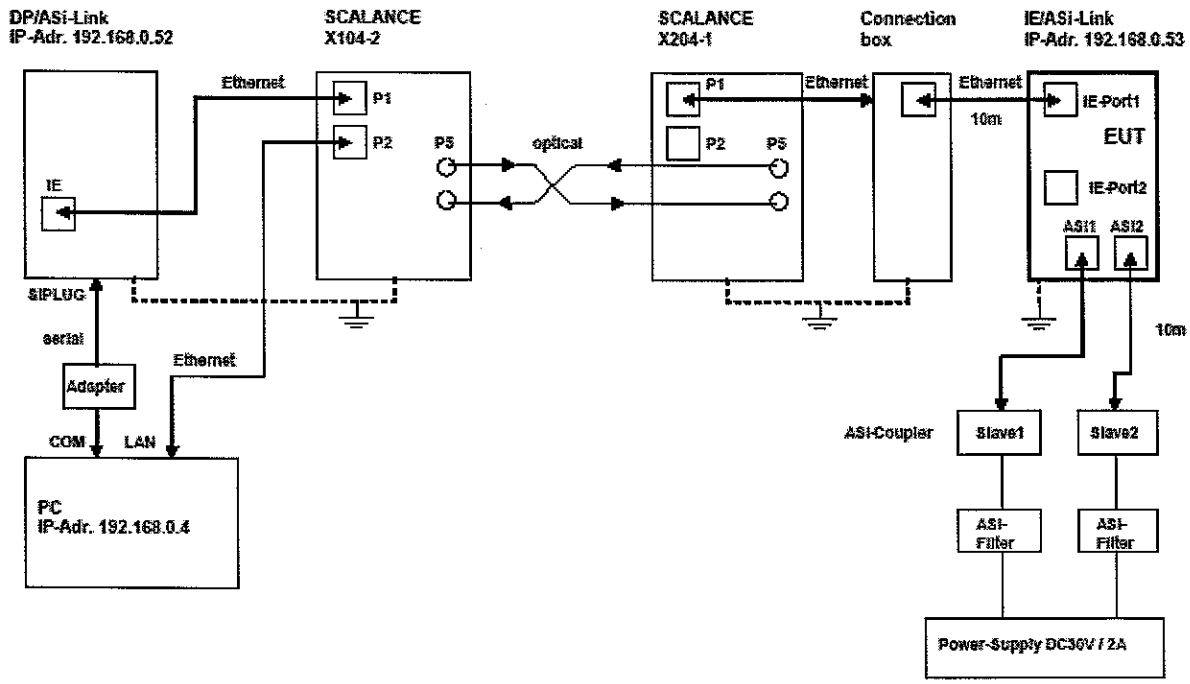
Definition of the functions to be monitored and corresponding tolerance limits:

- no failure of communication

Special EMC measures:

- none

The system was set up as follows:



2 List of test modules and results

2.1 EMC Immunity

Definition of evaluation criterion:

A: No apparant impairment of function within the tolerance limits.
B: Partial impairment of function, however self-regulating through eg. automatic restart. Function must be restored within the tolerance limits after the test; a safe state must be guaranteed at all times.
C: Partial impairment of function, however non self-regulating, eg. manual start-up is necessary (Reset, Program start); a safe state must be guaranteed at all times.
D: Permanent impairment of function due to destruction.

Immunity - Enclosure Port					
Environmental phenomena	Test specification and units	Basic standard	Remark	Performance criteria	Status
Mains frequency magnetic field	50Hz / 60Hz 30A/m	EN 61000-4-8	see note 1 and 5	A see note 2	---
Radio frequency electro-magnetic field	80-1000 MHz, 10 V/m, 80% AM (1 kHz)	EN 61000-4-3	see notes 3	A	---
Electrostatic discharge (ESD)	up to ± 6 kV charging voltage for contact discharge	EN 61000-4-2	see note 4	B	fulfilled
	up to ± 8 kV charging voltage for air discharge			B	fulfilled

note 1	Applicable only for apparatus containing devices susceptible to magnetic fields, e.g. Hall elements, electrodynamic microphones, etc. CRT display interference is allowed above 3 A/m.
note 2	For CRT's, the acceptable jitter depends upon the character size and is calculated for a test level of 1 A/m as follows: $J = (3 \times C + 1) / 40$ where jitter J and character size C are in millimetres. As jitter is linearly proportional to the magnetic field strength, tests can be carried out at other test levels extrapolating the maximum jitter level appropriatly
note 3	Except for the ITU broadcast frequency bands: 87 MHz to 108 MHz, 174 MHz to 230 MHz and 470 MHz to 790 MHz where the level shall be 3 V/m.
note 4	Only for industrial area: see basic standard for applicability of contact and/or air discharge test
note 5	The test shall be carried out at the frequencies appropriate to the power supply frequency. Equipment intended for use in areas supplied only at one of these frequencies need only be tested at that frequency..

3 Test sequence and test results electromagnetic immunity characteristics

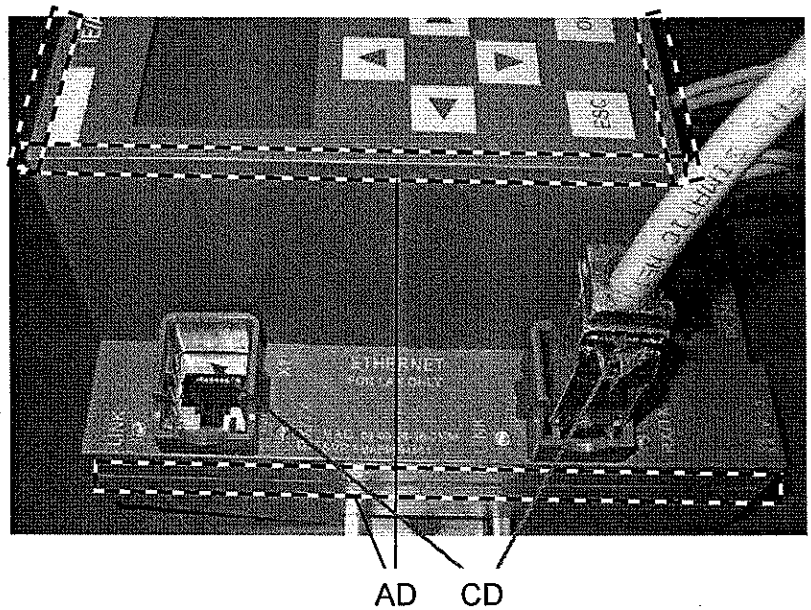
3.1 Immunity test for discharge of static electricity according to EN 61000-4-2

Test set-up:

- Table set-up
- Photos of the test set-up can be referred to in the annex.

Test plan:

- The equipment under test is triggered with 10 positive and negative impulses each per discharge location and test voltage.
- Contact discharge (CD) is carried out on the conductive parts of the equipment under test and on the coupling plates for the indirect discharge.
- Air discharge (AD) is carried out on isolating parts of the equipment under test.
- The discharge locations can be seen on the following figure(s).



Measuring devices: Schaffner ESD simulator NSG 435 (PM-No. 480027)
testing table Numerik PTi (PM-No. 480049)

Measuring records:

The tests in the table below were carried out.

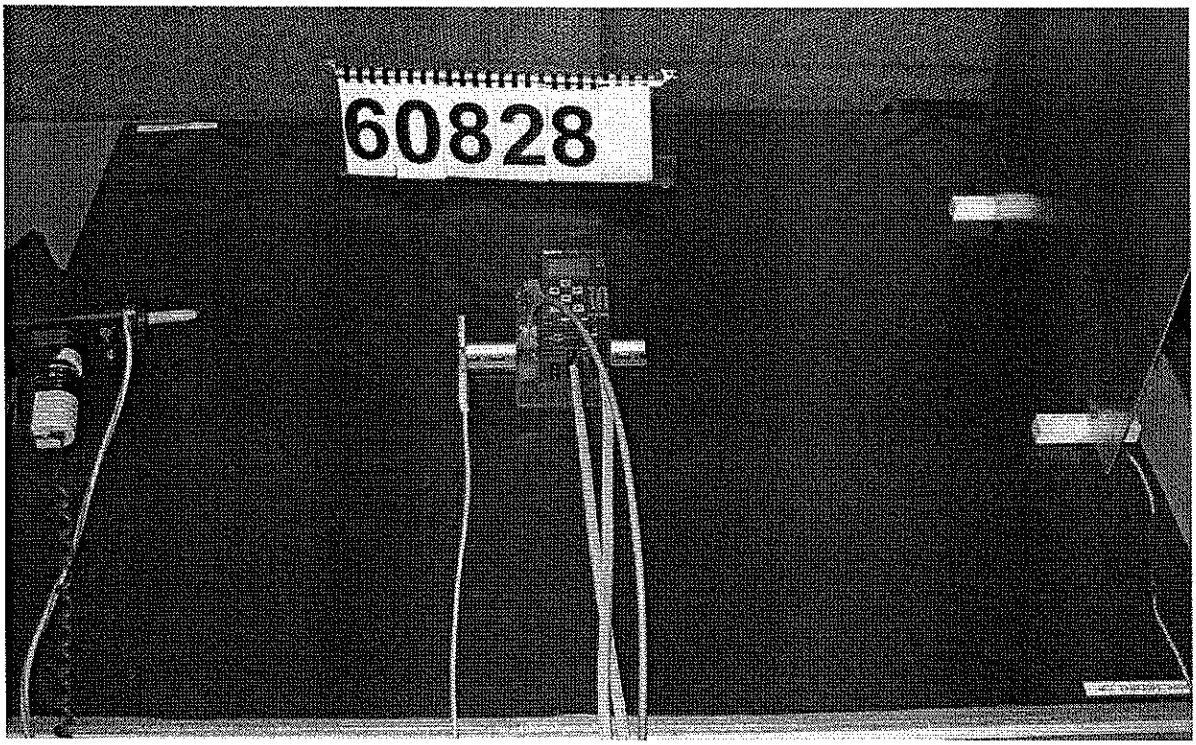
Date of test:	27.04.2006
Ambient conditions:	48% F_{rel}, 19°C; Air pressure conforms to the requirements of the standard
Number of impulses:	10 per polarity, test voltage and discharge location

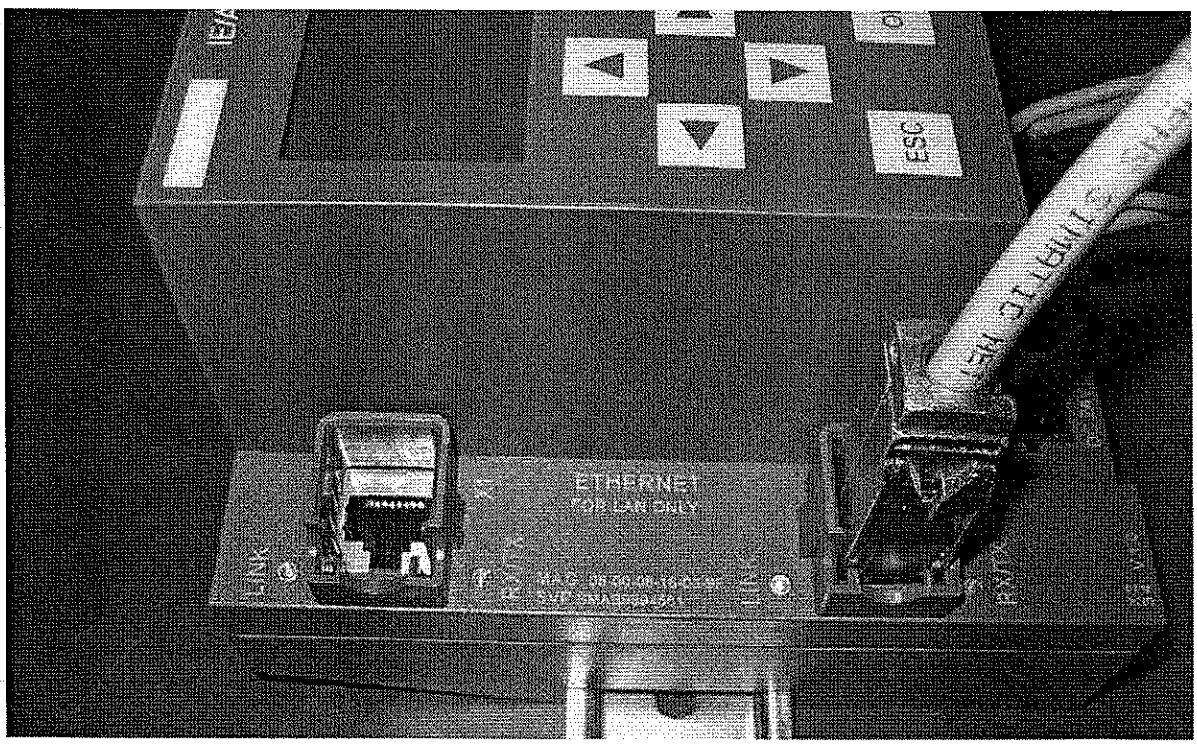
Method of discharge	Discharge location	EUT reaction	Result
indirect coupling ± 2 kV	HCP/VCP	none detected	A
indirect coupling ± 4 kV	HCP/VCP	none detected	A
indirect coupling ± 6 kV	HCP/VCP	none detected	A
contact discharge ± 2 kV	CD	none detected	A
contact discharge ± 4 kV	CD	none detected	A
contact discharge ± 6 kV	CD	none detected	A
air discharge ± 2 kV	AD	none detected	A
air discharge ± 4 kV	AD	none detected	A
air discharge ± 8 kV	AD	none detected	A

Test results: The requirements of the test documents were fulfilled.

4 Annex

Pictures of the test set-up for ESD:





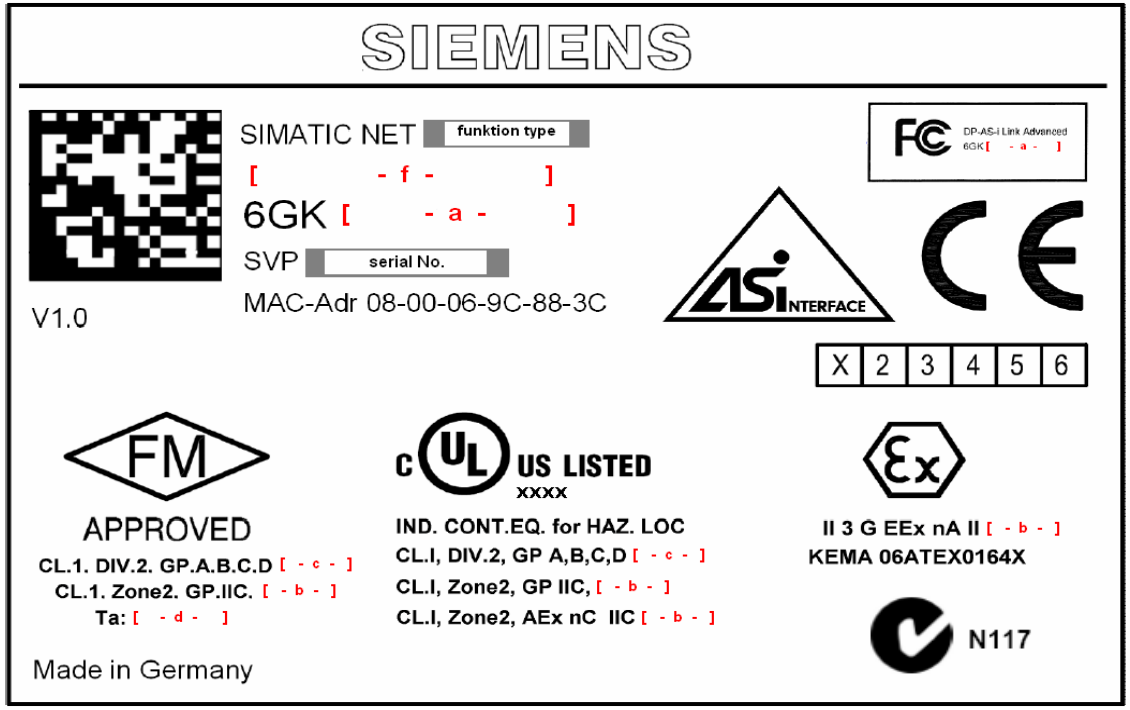
Approval summary: AS-i Link

Description [f]	Type/MLFB No. [a]	Temp. Class NEC 505 [b]	Temp. Class NEC 500 [c]	Ambient Range Ta: [d]	Technical Data [e]	Supply Volt.	Ex ATEX Cat. 3	FM Approved CL.I, DIV.2 CL.I, Zone2	cULus Listed xxxx	cULus Haz.Loc Listed xxxx
IE/AS-i Link	6GK1411-2AB10	T4	T4	0...+60°C	INPUT DC 24V NEC Class 2	30 Vdc 24 Vdc	X	CL. I, DIV.2	X	X
IE/AS-i Link	6GK1411-2AB20	T4	T4	0...+60°C	INPUT DC 24V NEC Class 2	30 Vdc 24 Vdc	X	CL. I, DIV.2	X	X
DP/AS-i Link	6GK1415-2BA10	T4	T4	0...60°C	INPUT DC 24V NEC Class 2	30 Vdc 24 Vdc	X	CL. I, DIV.2	X	X
DP/AS-i Link	6GK1415-2BA20	T4	T4	0...60°C	INPUT DC 24V NEC Class 2	30 Vdc 24 Vdc	X	CL. I, DIV.2	X	X

Approval summary System AS-i Link

Description	Type/MLFB No.	Temp. Class	Ambient Range	Supply Voltage	Input Circuits	Output Circuits	Assembly Drawing	Parts List	Schematics
IE AS-i Link (single master)	6GK1411-2AB10	T4	0...+60°C	ext. Supply: 24V/350mA AS-i supply: 30V/250mA	AS-i Bus: 30V/250mA		A2B00058954C_01 Rev.01	A2B00047447 Rev.08 A2B00047445 Rev.06 A2B00047450 Rev.08	A2B00047447A_02_SLP Rev.02 A2B00047445A_03_SLP Rev.03 A2B00047450A_03_SLP Rev.03
IE AS-i Link (double master)	6GK1411-2AB20	T4	0...+60°C	ext. Supply: 24V/350mA AS-i supply: 30V/250mA	AS-i Bus: 30V/250mA		A2B00058954C_01 Rev.01	A2B00047447 Rev.08 A2B00047446 Rev.05 A2B00047451 Rev.14	A2B00047447A_02_SLP Rev.02 A2B00047446A_03_SLP Rev.03 A2B00047451A_04_SLP Rev.04
DP AS-i Link (single master)	6GK1415-2BA10	T4	0...60°C	ext. Supply: 24V/350mA AS-i supply: 30V/250mA	AS-i Bus: 30V/250mA	Profibus DP: 5V /70mA	A2B00058954C_01 Rev.01	A2B00047447 Rev.08 A2B00047445 Rev.06 A2B00047448 Rev.12	A2B00047447A_02_SLP Rev.02 A2B00047445A_03_SLP Rev.03 A2B00047448/9A_03_SLP Rev.03
DP AS-i Link (double master)	6GK1415-2BA20	T4	0...60°C	ext. Supply: 24V/350mA AS-i supply: 30V/250mA	AS-i Bus: 30V/250mA	Profibus DP: 5V /70mA	A2B00058954C_01 Rev.01	A2B00047447 Rev.08 A2B00047446 Rev.05 A2B00047449 Rev.17	A2B00047447A_02_SLP Rev.02 A2B00047446A_03_SLP Rev.03 A2B00047448/9A_03_SLP Rev.03

Label Drawing: System AS-i Link



Note:

Suffix [a]: For Type No, see Approval summary	A2B00050667B	Rev. 01
Suffix [b]: For Temp-Class (NEC 505), see Approval summary	A2B00050667B	Rev. 01
Suffix [c]: For Temp-Class (NEC 500), see Approval summary	A2B00050667B	Rev. 01
Suffix [d]: For Ambient-Range., see Approval summary	A2B00050667B	Rev. 01
Suffix [e*]: For Technical-Data , see Approval summary	A2B00050667B	Rev. 01
Suffix [f]: For Model Name , see Approval summary	A2B00050667B	Rev. 01

* Information is located next to supply connector, not on type label

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FM Approvals
1151 Boston-Providence Turnpike
P.O. Box 9102 Norwood, MA 02062 USA
T: **781 762 4300** F: 781 762 9375 www.fmapprovals.com

CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

6GK Series. Modules for the SIMATIC Network System
NI / I / 2 / ABCD / T*
NI / I / 2 / IIC / T**

Model No.	Description	T-Code*	T-Code**	Tambient
6GK1411-2AB10-a	*IE/AS-i LINK PN IO (Single Master)*	T4	T4	60°C
6GK1411-2AB20-a	*IE/AS-i LINK PN IO (Double Master)*	T4	T4	60°C
6GK1415-2BA10-a	*DP/AS-i LINK Advanced (Single Master)*	T4	T4	60°C
6GK1415-2BA20-a	*DP/AS-i LINK Advanced (Double Master)*	T4	T4	60°C

a = Options not affecting safety, any 2, 3 or 4 digit letter or number referring to non-electrical properties as product associates, language, delivery packing, documentation, etc.

Special Condition of Use:
1. The equipment shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application, including a tool removable cover.

Equipment Ratings:

Nonincendive for Class I, Division 2, Groups A, B, C & D, and Class I, Zone 2, Group IIC hazardous (classified) locations

FM Approved for:

SIEMENS AG – I&S EDM QAM ERL
Frauenauracherstraße 98
D-91056 Erlangen
Germany

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This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

Class 3600	1998
Class 3611	2004
Class 3810	2005

Original Project ID: 3026630 Approval Granted: October 2, 2006

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
061005	October 13, 2006		

FM Approvals LLC

Robert L. Martell, Jr.
Assistant Vice President

October 13, 2006
Date

FM APPROVED PRODUCT/SPECIFICATION-TESTED REVISION REPORT
OR ADDRESS/MAIN CONTACT CHANGE REPORT

Manufacturer's Tracking Number:

RECEIVED OCT 5 – 2006 BY

FM Approvals™ Member of the FM Global Group

SENDER: Forward **one original copy** with updated drawings or other appropriate changes to the attention of **FM Approvals**. Original forms will be returned showing course of action taken.

Please provide the following information below: Attention of, Company Name, Address, State & Zip Code.

Phone: +49 721 595 7058 **Fax: +49 721 595 6959**

Mr. Mark Temmes
Siemens AG - A&D SE RD53
Oestliche Rheinbrueckenstrasse 50
D-76187 Karlsruhe
Germany
Customer-ID: 1000004041

FORWARD TO:
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P.O. Box 9102 Norwood, MA 02062 USA
T: **+1 (1)781 762 4300** F: +1 (1)781 762 9375
E-mail: approvals@fmglobal.com
FM Approvals Representative: Gary Walkerpaa

DATE (MM/DD/YY): 10/05/06
SENDER: Mark Temmes
TITLE:

PRODUCT(S): SIMATIC NETWORK COMPONENTS
DP/AS-i Link modules and IE/AS-i Link modules

MODEL(S) AFFECTED: 6GK51415-2BA20, 6GK51415-2BA10, 6GK51411-2AB20, 6GK51411-2AB10

DOES THIS REVISION RESULT IN MODEL/TYPE NUMBER CHANGE TO THE CURRENT *APPROVAL GUIDE* LISTING? IF YES, EXPLAIN BELOW OR USE SEPARATE SHEET IF REQUIRED.	☐ YES	☒ NO
HAS THE MANUFACTURING LOCATION, LISTING ADDRESS, TELEPHONE NUMBER OR MAIN CONTACT PERSON CHANGED? IF YES, EXPLAIN BELOW:	☒ YES	☐ NO
DOES THIS REVISION AFFECT ANY **CANADIAN CERTIFICATIONS**? IF YES, INDICATE PROJECT IDENTIFICATION(S)	☐ YES	☒ NO

INDICATE FM APPROVALS PROJECT ID:

J.I. 3026630 + 3021908

Customer P.O.: 2500.01

REASON FOR CHANGE(S)/COMMENTS:

Design and production control has changed to Siemens AG Erlangen facility, Frauenauracherstraße 98, which is subjected to FM's facilities & procedures audits, as well.

REVISION DETAILS	AFFECTED DRAWING NUMBER	REVISION	NEW DRAWING NUMBER	REVISION

Manufacturing location is to be changed to:

SIEMENS AG
I&S EDM QAM ERL
Frauenauracherstraße 98
D-91056 Erlangen
GERMANY

Main contact person responsible for design and production:
Mr. Georg Distler
SIEMENS AG, Dept.: I&S EDM QAM ERL
Frauenauracherstraße 98
D-91056 Erlangen / GERMANY
Tel.: +49 9131 18 84137
Fax: +49 9131 18 84982

FM customer ID: 106925

FOR FM APPROVALS USE ONLY

CUSTOMER NUMBER: 1000004041

Master Agreement Implementation Date: 11-25-02

Attachments Received: ☐ YES ☒ NO

COMMENTS:
- CHANGES DO NOT AFFECT FIT, FORM OR FUNCTION OR ELECTRICAL SAFETY OF DEVICES UNDER INVESTIGATION.
- CDL UPDATED.
- COF C UPDATED.
- TO NOTIFY F&PA DEPT.

REVISION REPORT J. I.	ACCESS IDENTIFICATION	CLASS NUMBER
	016013-283	3611

REVISION ACCEPTED ☒ Yes ☐ No ☒ Third Signature Required

	DATE
EXAMINED BY: Gary Walkerpaa	10/6/06
REVIEWED BY:	10/10/06
APPROVED BY (Third signature required for listing changes only): Robert L. Mottau	10/13/06

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APPROVAL REPORT

SIMATIC NETWORK COMPONENTS
FOR USE IN
HAZARDOUS (CLASSIFIED) LOCATIONS

Prepared for:

Siemens AG – A&D ATS 63
Östliche Rheinbrückenstraße 50
D-76187 Karlsruhe
Germany

Project ID: 3026630
Supplements Project ID: 3021908
Class: 3611
Date of Approval: October 2, 2006
Authorized by:
Roger L. Allard, Asst. Vice President

FM Approvals
1151 Boston-Providence Turnpike
PO Box 9102
Norwood, MA 02062

**SIMATIC NETWORK COMPONENTS
FOR USE
IN
HAZARDOUS (CLASSIFIED) LOCATIONS**

from

**Siemens AG – A&D ATS 63
Östliche Rheinbrückenstraße 50
D-76187 Karlsruhe
Germany**

I INTRODUCTION

1.1 Siemens AG has requested Approval of the apparatus listed in Section 1.4 to be in compliance with the applicable requirements of the following standards listed in Section 1.3.

1.1.1 The units identified in Section 1.4 are additional to those which have been previously investigated under Project ID 3021908. Siemens AG has repeated the examination to verify conformity. This report supplements the applicable portions of Project ID 3021908 and any subsequent revisions. All drawings and data relevant to this examination will be filed under Project ID 3021908.

1.2 This Report may be freely reproduced only in its entirety and without modification.

1.3 **Standards**

Title	Class Number	Date
Electrical Equipment for Use in Hazardous (Classified) Locations – General Requirements	3600	November 1998
Nonincendive Electrical Equipment for Use in Class I & II, Division 2, and Class III, Divisions 1 & 2, Hazardous (Classified) Locations	3611	December 2004
Electrical Equipment for Measurement, Control and Laboratory Use	3810	January 2005

1.4 **Evaluation:** The following was evaluated as described.

1.4.1 The following was evaluated as Nonincendive for use in Class I, Division 2, Groups A, B, C & D, and Class I, Zone 2, Group IIC Hazardous (Classified) Locations. The product will appear in the Approval Guide, a publication of FM Approvals, as follows:

6GK Series. Modules for the SIMATIC Network System.
NI/I/2/ABCD/T*
NI/I/2/IIC/T**

Model No.	Description	T-Code*	T-Code**	Tambient
6GK1411-2AB10-a	***IE/AS-i LINK PN IO (Single Master)***	T4	T4	60°C
6GK1411-2AB20-a	***IE/AS-i LINK PN IO (Double Master)***	T4	T4	60°C
6GK1415-2BA10-a	***DP/AS-i LINK Advanced (Single Master)***	T4	T4	60°C
6GK1415-2BA20-a	***DP/AS-i LINK Advanced (Double Master)***	T4	T4	60°C

a = Options not affecting safety, any 2 or 4 digit letter or number referring to non-electrical properties as product associates, language, delivery packing, documentation, etc.

Special Conditions of Use:
1. *Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application, including a tool removable cover.*

II DESCRIPTION

2.1 **General** – SIMATIC is the family name of a large range of Siemens (fail-safe) Control Automation Systems; including PLCs (Programmable Logic Controllers), PCs (Personal Computers), and observation and control instruments, which can be used for solving extended automation tasks such as storing signals from push buttons, evaluating the position of selector switches, processing signals from limit and safety switches, counting low frequency pulses controlling motor valves, actuators, etc.. The Central Processing Unit Modules are used to provide control over the Simatic Programmable Controller System, while the Extension Memory modules are used to provide internal memory for the Interface Modules, and the Interface Modules are used to provide communication with other Central Processing Unit Modules. Communication between I/O Modules and the CPU takes place exclusively via HART (Highway Addressable Remote Transducer) protocol (transmission lines of the 4-20mA system), MPI (Message Passing Interface), PROFIBUS DP (PROcess FIeld BUS Distributed Peripherals, or remote I/O) or PROFINET PN (PROcess FIeld industrial etherNET communication). The Siemens AG Simatic Network Component modules are designed for industrial and hazardous (classified) location applications.

The AS-Interface master forms the link to the higher-level controllers. It autonomously organizes the data exchange on the AS-Interface cable and, if necessary, supplies the signals of the sensors and actuators over an interface to a higher-level bus system (i.e., PROFIBUS). As well as scanning the signals, the master also transfers parameter settings to the individual nodes and monitors and carries out diagnostics.

The IE/AS-i LINK PN IO is a PROFINET IO device and AS-Interface Master, and enables transparent data access to the AS-Interface from Industrial Ethernet. The IE/AS i LINK PN IO is suitable for the distributed structure configuration and for linking an underlying AS-Interface network. Simple diagnostics and startup take place on site using a pixel-graphics display and operator keys or using the integrated web interface via remote standard browser. The device is available in two different configurations: (*i*) Single Master Device with one AS-Interface line (maximum number of operable AS-i Slaves: 62); and (*ii*) Double Master Device with two AS-Interface lines (maximum number of operable AS-i Slaves: 124).

The DP/AS-i LINK Advanced is a PROFIBUS DPV1-Slave and AS-Interface Master, and enables transparent data access to the AS-Interface from PROFIBUS DP. The DP/AS-i LINK Advanced is suitable for distributed structure configuration and for linking an underlying AS-Interface network. Simple diagnostics and startup take place on site using a pixel-graphics display and operator keys or using the integrated web interface via remote standard browser. The device is available in two different configurations: (*i*) Single Master Device with one AS-Interface line (maximum number of operable AS-i Slaves: 62); (*ii*) Double Master Device with two AS-Interface lines (maximum number of operable AS-i Slaves: 124).

All AS-i Link modules are supplied via the AS-i1 bus connector or an external power supply. Both supplies are SELV (Safety Extra Low Voltage) and the external power supply must be connected to limited output NEC Class 2 circuits, as outlined in the National Electrical Code® (ANSI/NFPA 70). They are suitable for supply voltages as outlined in Section 7 (Electrical Data) of the attached Siemens' Approval Drawing No. A2B00050667A, Rev. 01. The equipment is classified as Pollution Degree 2 and Installation (Overvoltage) Category II. The Simatic Network Component modules are intended to operate at an ambient temperature range of 0°C to +60°C (+32°F to +140°F).

2.1.1 The Simatic Network Component modules (IE/AS-i Link module 6GK1411-2AB10-a & IE/AS-i Link module 6GK1411-2AB20-a) provide data access connection between PROFINET IO and the Actor-Sensor-Interface (AS-i). The modules consist of three printed circuit boards (AS-i-PCB, Backplane-PCB & PS-Board) rated at least +105°C (+221°F), having a flammability classification of ANSI 94V-0 (FV-0) flame class and Listed by an OSHA certified NRTL, and an LCD Display which is via a flex cable connected to the foil key pad, which are housed in a thermoplastic enclosure constructed of the plastic identified as Noryl® modified PPE+PS (polyphenylene ether), type GFN1-SE1, manufactured by General Electric, having a flammability classification of ANSI 94V-1 (FV-1) flame class rated with a RTI (Relative Thermal Index) rated minimum +105°C (+221°F) and listed by an OSHA certified NRTL. All printed circuit boards and components are mechanically captive by the design of the enclosure, where disassembly is required to access the make/break, critical parts. After mounting, the assembly is mechanically locked. The power supply is functionally galvanically isolated from the AS-i1/AS-i2/shield and peripheral bus signals. Disconnection of connectors is not required under normal operation conditions. All present functional connectors not operating in nonincendive ignition levels are either soldered in place, mechanically secured by mounting configuration or screws upon installation, or inaccessible upon installation.

2.1.2 The Simatic Network Component modules (DP/AS-i Link module 6GK1415-2BA10-a & DP/AS-i Link module 6GK1415-2BA20-a) provide data access connection between PROFIBUS DP and the Actor-Sensor-Interface (AS-i). The DP/AS-i Link modules are connected to a DP Master (i.e., programmable controller) via the DP-Profibus. The modules consist of three printed circuit boards (AS-i-PCB, Backplane-PCB & PS-Board) rated at

least +105°C (+221°F), having a flammability classification of ANSI 94V-0 (FV-0) flame class and Listed by an OSHA certified NRTL, and an LCD Display which is via a flex cable connected to the foil key pad, which are housed in a thermoplastic enclosure constructed of the plastic identified as Noryl® modified PPE+PS (polyphenylene ether), type GFN1-SE1, manufactured by General Electric, having a flammability classification of ANSI 94V-1 (FV-1) flame class rated with a RTI (Relative Thermal Index) rated minimum +105°C (+221°F) and listed by an OSHA certified NRTL. All printed circuit boards and components are mechanically captive by the design of the enclosure, where disassembly is required to access the make/break, critical parts. After mounting, the assembly is mechanically locked. The power supply is functionally galvanically isolated from the AS-i1/AS-i2/shield and peripheral bus signals. Disconnection of connectors is not required under normal operation conditions. All present functional connectors not operating in nonincendive ignition levels are either soldered in place, mechanically secured by mounting configuration or screws upon installation, or inaccessible upon installation.

2.2 **Changes/Additions** – There is a change to the Approval Guide listing as a result of the examination of the added Simatic Network Component modules.

2.3 For more details concerning construction and description, please see the attached KEMA Quality B.V. Assessment Report and manufacturer's sales literature.

2.4 The system is a fixed installation device that is intended to be mounted in a vent-free enclosure, meeting the equipment enclosure requirements in accordance to ISA S82.02.01, where the Approved equipment will be installed. All unused openings should be closed off. Installation shall be in accordance with the manufacturer's installation and operation manual.

2.5 The manufacturer has made available all necessary component information, system specification and test procedures, which have been examined. Installation and operation manuals are available which thoroughly describe each major assembly, initial installation, testing and trouble shooting techniques.

2.6 All installation wiring is intended to be wired using Division 2 incendive wiring techniques which comply with the relevant requirements of the National Electrical Code® (ANSI/NFPA 70).

III EXAMINATIONS AND TESTS

Representative samples of the Simatic Network Component modules were examined by KEMA Quality B.V., which is an accredited ExNB located in the Netherlands, to determine their acceptability for use in the specified hazardous (classified) locations. The KEMA project ID number for this examination is 209.1905.00. Examination and testing by KEMA Quality B.V. was conducted under guidelines set forth by the FM Approvals Contract and Testing Report Agreement with KEMA Quality B.V. The assessment report is an attachment to this report. Test results compiled by KEMA Quality B.V. have been reviewed and the results were deemed to satisfactorily meet the requirements of FM Approvals.

IV MARKING

4.1 The Simatic Network Component modules are each provided with a label that is permanently laser or electro-etched into the polymeric housing. The label markings are

reproduced from drawing numbers A2B00058954D_01_ZEI, A2B00058955D_01_ZEI, A2B00058957D_01_ZEI and A2B00058958D_01_ZEI which are included as attachments to this report. The following information appears on the apparatus identified in Section 1.4 which meets Standard requirements:

- Manufacturer's name and manufacturing location
- Type number and date code
- Maximum input and output ratings
- Maximum ambient temperature and temperature class
- The FM Approvals mark
- Hazardous (Classified) Location Ratings

4.2 Zone markings for the Nonincendive Approval are based on Division evaluations and the marking acceptance of Article 505 of the National Electrical Code® (ANSI/NFPA 70).

V REMARKS

5.1 Installations shall comply with the relevant requirements of the National Electrical Code® (ANSI/NFPA 70).

5.2 Installations shall comply with the latest edition of the manufacturer's instruction manual.

5.3 Tampering and replacement with non-factory components may adversely affect the safe use of the system.

5.4 Insertion or withdrawal of removable electrical connectors or modules is to be accomplished only when the area is known to be free of flammable vapors.

5.5 The Simatic Network Component modules must be connected to limited output NEC Class 2 circuits, as outlined in the National Electrical Code® (ANSI/NFPA 70), only. If the devices are connected to a redundant power supply (two separate power supplies), both must meet this requirement.

5.6 **WARNING** – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR DIVISION 2

5.7 **WARNING** – DO NOT OPEN WHEN ENERGIZED

5.8 **WARNING** – DO NOT DISCONNECT EQUIPMENT UNLESS AREA IS KNOWN TO BE NONHAZARDOUS

VI FACILITIES AND PROCEDURES AUDIT

Siemens AG controls the design of the Simatic Network Component modules. The Simatic Network Component modules will be manufactured by Siemens AG at their Karlsruhe, Germany facility. The facility and quality control procedures were examined and were found to be satisfactory to manufacture the products identical to that described herein. The facility is subject to follow-up audit inspections.

VII MANUFACTURERS RESPONSIBILITIES

7.1 Documentation considered critical to this Approval is on file at FM Approvals and listed in the Documentation Section (VIII) of this report. No changes of any nature shall be implemented unless notice of the proposed change has been given and written authorization obtained from FM Approvals. The Approved Product Revision Report, Form 797, shall be forwarded to FM Approvals as notice of proposed changes.

7.2 The manufacturer shall make the Special Conditions of Use available to the user of the Simatic Network Component modules, where applicable.

7.3 The manufacturer shall inform the end user of details of the equipment enclosure requirements. Further requirement details may be found in ISA S82.02.01 or other applicable standards.

VIII DOCUMENTATION

The following drawings are considered critical and describe the Simatic Network Component modules. The drawings are filed within the blueprint files under Project ID 3021908:

Drawing No.	Drawing Title	Revision
A2B00047445A_03_SLP	Schematic, AS-i Board 1 x AS-i	N/A
A2B00047446A_03_SLP	Schematic, AS-i Board 2 x AS-i	N/A
A2B00047447A_02_SLP	Schematic, PS-Board	N/A
A2B00047448/9A_03_SLP	Schematic, DP/AS-i Link BP-Board	N/A
A2B00047450A_03_SLP	Schematic, IE/AS-i Link BP-Board	N/A
A2B00047451A_04_SLP	Schematic, IE/AS-i Link BP-Board	N/A
A2B00050667A	Approval drawing	01
A2B00058954C_01	Assembly Drawing / Instruction	01
A2B00058954D_01_ZEI	Label Drawing, DP/AS-i Link (6GK1415)	01
A2B00058955D_01_ZEI	Label Drawing, DP/AS-i Link (6GK1415)	01
A2B00058957D_01_ZEI	Label Drawing, DP/AS-i Link (6GK1411)	01
A2B00058958D_01_ZEI	Label Drawing, DP/AS-i Link (6GK1411)	01
CG046-4003-03-SCHA00	Schematic, Display, OEM	N/A

Note: Schematics and Bill Of Materials (BOM's) are for reference only and are not controlled at the revision level.

IX CONCLUSION

The apparatus described in Section 1.4 meets FM Approvals requirements. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this report.

EXAMINATION AND TESTING BY: C. Meijerman, KEMA Quality B.V

REPORT WRITTEN BY: G. Walkeapaa, FM Approvals

PROJECT DATA RECORD: 3026630, filed with 3021908
KEMA Report No. 209.1905-1, filed with 3021908

ORIGINAL TEST DATA: 3021908, 3026630

ATTACHMENTS: KEMA Assessment Report No. 209.1905-1, 9 pages
Label Drawing, DP/AS-i Link (6GK1415), A2B00058954D_01_ZEI, Rev. 01
Label Drawing, DP/AS-i Link (6GK1415), A2B00058955D_01_ZEI, Rev. 01
Label Drawing, DP/AS-i Link (6GK1411), A2B00058957D_01_ZEI, Rev. 01
Label Drawing, DP/AS-i Link (6GK1411), A2B00058958D_01_ZEI, Rev. 01
Approval Drawing, A2B00050667A, Rev. 01

REPORT BY:

Gary Walkeapaa
Senior Engineer
Hazardous Locations

REPORT REVIEWED BY:

David Styrcula
Technical Team Manager
Hazardous Locations

ASSESSMENT REPORT

Report No.:	209.1905-1	**Date:**	14 August 2006
Order No.:	209.1905.00		
FM J.I. No.:	3026630		
Siemens No.:	2500.01		
Subject:	Simatic Network Components		
Applicant:	Siemens AG, I&S EDM QAM ERL Frauenauracherstraße 98 D-91056 Erlangen Germany Contact person: Mr. G. Distler tel.: +49 9131 18 84137 fax: +49 9131 18 84982		
Manufacturer:	As applicant		
Classification:	NI, Class I, Div 2, Groups A, B, C and D NI, Class I, Zone 2, Groups IIC		
Standards:	Class No. 3600 Class No. 3611 Class No. 3810 ANSI/ISA S82.02.1		
Issued:	C.H. Meijerman	**signed:**	
Reviewed:	H. Zetzema	**signed:**	
Annexes:	Checklist ANSI/ISA 82.02.01-2004 Checklist Class Number 3611-December 2004		

1 DOCUMENTATION

Approval drawing, schematic diagrams, label drawings, assembly drawings and photo's.

1.1 Samples

Of all equipment, samples examined at Siemens AG, Karlsruhe.

1.2 Photographs

Of all equipment, as enclosed.

2 MODEL CODING OF THE EQUIPMENT

The following new models have been assessed for addition to the approved model list:

Model code	Description
6GK1411-2AB10	IE/AS-i LINK PN IO (single master)
6GK1411-2AB20	IE/AS-i LINK PN IO (double master)
6GK1415-2BA10	DP/AS-i LINK Advanced (single master)
6GK1415-2BA20	DP/AS-i LINK Advanced (double master)

3 ELECTRICAL DATA

Approval Drawing No. :
A2B00050667A Rev. 1

4 DETAILED ASSESSMENT OF THE CONSTRUCTION

4.1 Compliance with FM Approval Standard Class Number 3600, General Requirements

Reference to applicable paragraphs.

II General information.

Assessment for compliance with FM Approval Standard Class Number 3810 in accordance with 2.3, refer to section 4.2 of this report.

IV Marking.

In accordance with 4.1, 4.2 and 4.3 if applicable.

V Performance requirements.

System to be installed in an enclosure, providing a degree of ingress protection of at least IP54, in accordance to EN 60529, so that its circuits are accessible by the use of a tool only.
This enclosure was not examined as a part of this approval but was considered to comply with the requirements of 5.1. to 5.4.

4.2 Compliance with FM Approval Standard Class Number 3810, Electrical and Electronic Test, Measuring, and Process Control Equipment

Reference to applicable paragraphs.

II General information.

2.1 Equipment complies with following standards:

ANSI/ISA 82.02.01-2004

Refer to section 4.3 of this report.

2.2 Equipment complies with FM Approval Standard Class Number 3611.

Refer to section 4.4 of this report.

III Marking requirements.

In accordance with this requirement and with the requirements of standard per 2.2.

4.3 Compliance with ANSI/ISA standards 82.02.01 (as far as applicable)

ANSI/ISA 82.02.01-2004, Safety Standard for Electrical and Electronic Test, Measuring, Controlling and Related Equipment; General Requirements.

Refer to checklist ANSI/ISA 82.02.01-2004, taking into account following notes to specific Clauses in ANSI/ISA S82.02.01-2004 (ANAL = analysis).

1.4 Ambient temperature range:

0 °C .... +60 °C

Overvoltage category II;

Pollution degree 2.

4.3.1 The equipment is tested under „Reference test conditions" (as far as applicable). The tests and results are described in the specific Clauses.

4.4 No Single Fault Conditions are performed because each SFC will cause a defect fuse F1/F2 and the external power supply connected to the modules conforming to NEC as Class 2 circuits. (limited-energy)

5.1 The equipment marking complies with the requirements as far as applicable.

5.3 The durability of the markings is tested as follows.
The markings are rubbed by hand, first for 15 s with a cloth soaked in water and then for 15 s with a cloth soaked with isopropyl alcohol. The markings are clear and legible after the test.

5.4 The documentation contains all information, relevant to installation, use, maintenance and safety matters

6.3 The maximum input voltage is 24 V in both „Reference test condition" and „Single fault condition" and is not hazardous live (according to Clause 6.3.1 and 6.3.2).

7 The requirements of this Clause are not applicable, because the equipment is installed in a cabinet

which meets these requirements.

8 The requirements of this Clause are not applicable, because the equipment is installed in a cabinet which meets these requirements.

9.3 The circuits are supplied by an external power supply conforming to NEC as Class 2 circuits (limited-energy) and/or supplied by a voltage wich is not hazardous live (24Vdc) and there is a fuse (rated 1.5A) at the input which limits the power to 36 VA. This is lower than 150 VA (power limited) and no fire hazard exam is conducted.No fire hazard exam is conducted.

The modules also have some communication inputs/outputs according the DP requirements (5 Vdc / 100 mA) and LAN requirements (3.3 Vdc / 12 mA). This is also lower than 150 VA and no fire hazard exam is conducted.

14.1 All applicable components are employed and rated according to their requirements and according to the applicable Clauses.

14.8 Printed circuit boards are UL R/C (ZMPV2) components, rated at least 105 °C, 94 V-0.

4.4 Compliance with FM Approval Standard Class No. 3611, Electrical Equipment for Use in Class I, Division 2, Class II, Division 2 and Class III, Division 1 and 2 Hazardous Locations

4.4.1 GENERAL

All requirements of the FM Approval Standard Class No. 3611 are discussed in detail.

2.3. a) Ambient temperature:
0 °C .... +60 °C;

(b) Oxygen concentration: 21 percent (20.9) by volume;

(c) Pressure 86 to 106 kPa.

5.1.1 Make/break components are described in sub sections per model.

5.2 Electrical equipment is installed in an enclosure to protect from conditions which could adversely affect the suitability for use in Division 2 hazardous locations.

5.4 Fuses, when applicable, described in sub sections per model.

8.1 Make/break components, if applicable, described in sub sections per model.

9 Marking in accordance with Clauses 9.1 through 9.5, unless otherwise noted in sub sections per model or refer to applicable approval drawing.

10.1 All temperature measurements are performed at a real ambient temperature of 60 °C (not referred to 60 °C).

The following pages list the specific constructional aspects of the different modules:

4.4.2 IE/AS-i LINK PN IO MODULES

Model codes 6GK1411-2AB10
6GK1411-2AB20

Approval Drawing: A2B00050667A Rev. 1

The IE/AS-i Link module provides connection between Profinet IO and the Actor-Sensor-Interface (AS-i). It allows data access from the Profinet IO to the AS-i Interface.

The modules consists of three printed circuit board and a LCD-Display housed in an plastic enclosure, rated at least 105 °C, flame class V-1. The printed circuit board are UL R/C (ZPMV2), rated at least 105 °C, flame class V-0.

4.4.2.1 Requirements per FM Class No. 3611

BP-Board (Backplane pcb)

Connectors	Connects to
X1	External power supply, separating force > 15N.
X2,X3	AS-i1-Bus, AS-i2-Bus, separating force > 15N.
X4	Ethernet, separating force > 15N.
X5	Ethernet, separating force > 15N.
X20, X21, X22, X23	Power supply board, disconnection is impossible when module is assembled.
X30, X31, X32, X33, X34	AS-i board, disconnection is impossible when module is assembled.
X10, X37	Not used.

Disconnection of connector X1, X2, X3, X4 and X5 is not required during operational maintenance and testing was conducted to verify compliance with the 15N separation requirement. Test results are considered satisfactory in that the connectors did not loosen or separate as a result of the application of a separating force of 15N.

Fuse:

F1, F2	SMD Fuse 1.5 A/125 V, soldered in place.

The fuse is housed in a general purpose enclosure because of overcurrent protection of circuits which are not subject to overloading in normal use.

Relay:

K1	Relays Serie Type FP2 (manufacturer: Axicom) 24 Vdc coil supply, contact 2 A, 220 Vdc resitive load, have been tested in accordance with Clause 13.5 (oven aging test and air leakage test) and have been found to comply with the requirements for sealed device.

AS-i-Board:

Connectors	Connects to
X30, X31, X32, X33, X34	Main board, disconnection is impossible when module is assembled.

Fuse:

F1, F1_2	microfuse 630 mA/250 V, soldered in place.

The fuse is housed in a general purpose enclosure because of overcurrent protection of circuits which are not subject to overloading in normal use.

BS-Board (Power supply pcb)

Connectors	Connects to
X24	C-Plug, Tool secured.
X25	Display board, disconnection is impossible when module is assembled.
X21, X22, X23, X24	Main board, disconnection is impossible when module is assembled.

Fuse:

F1	SMD Fuse 2 A/63 V, soldered in place.

The fuse is housed in a general purpose enclosure because of overcurrent protection of circuits which are not subject to overloading in normal use.

Display Board:

Connectors	Connects to
H1	Power supply board, disconnection is impossible when module is assembled.
Z1	Keyboard, non-incendive circuits. (max. 3.3 V / 0.33 mA).

Keyboard: determined nonincendive by comparison method according to FM-3611 App. B-1.

4.4.2.2 Temperature measurement

See Clause 4.4.3.2.

4.4.3 DP/AS-i LINK Advanced MODULES

Model codes 6GK1415-2BA10
6GK1415-2BA20

Approval Drawing: A2B00050667A Rev. 1

The DP/AS-i LINK module provides connection between Profibus DP and the Actor-Sensor-Interface (AS-i). It allows data access from the DP-Profibus to the AS-i-Interface. The DP/AS-i LINK module is connected to a DP Master (e. g. programmable controller) via the DP- Profibus.

The modules consists of three printed circuit board and a LCD-Display housed in an plastic enclosure, rated at least 105 °C, flame class V-1. The printed circuit board are UL R/C (ZPMV2), rated at least 105 °C, flame class V-0.

4.4.3.1 Requirements per FM Class No. 3611

BP-Board (Backplane pcb)

Connectors	Connects to
X1	External power supply, separating force > 15N.
X2,X3	AS-i1-Bus, AS-i2-Bus, separating force > 15N.
X5	Ethernet, separating force > 15N.
X6	DP-Master, secured by screws.
X20, X21, X22, X23	Power supply board, disconnection is impossible when module is assembled.
X30, X31, X32, X33, X34	AS-i board, disconnection is impossible when module is assembled.
X10, X37	Not used.

Disconnection of connector X1, X2, X3, X5 is not required during operational maintenance and testing was conducted to verify compliance with the 15N separation requirement. Test results are considered satisfactory in that the connectors did not loosen or separate as a result of the application of a separating force of 15N.

Fuse:

F1, F2	SMD Fuse 1.5 A/125 V, soldered in place.

The fuse is housed in a general purpose enclosure because of overcurrent protection of circuits which are not subject to overloading in normal use.

Relay:

K1	Relays Serie Type FP2 (manufacturer: Axicom) 24 Vdc coil supply, contact 2 A, 220 Vdc resitive load, have been tested in accordance with Clause 13.5 (oven aging test and air leakage test) and have been found to comply with the requirements for sealed device.

AS-i-Board:

Connectors	Connects to
X30, X31, X32, X33, X34	Main board, disconnection is impossible when module is assembled.

Fuse:

F1, F1_2	microfuse 630 mA/250 V, soldered in place.

The fuse is housed in a general purpose enclosure because of overcurrent protection of circuits which are not subject to overloading in normal use.

BS-Board (Power supply pcb)

Connectors	Connects to
X24	C-Plug, Tool secured.
X25	Display board, disconnection is impossible when module is assembled.
X21, X22, X23, X24	Main board, disconnection is impossible when module is assembled.

Fuse:

F1	SMD Fuse 2 A/63 V, soldered in place.

The fuse is housed in a general purpose enclosure because of overcurrent protection of circuits which are not subject to overloading in normal use.

Display Board:

Connectors	Connects to
H1	Power supply board, disconnection is impossible when module is assembled.
Z1	Keyboard, non-incendive circuits. (max. 3.3 V / 0.33 mA).

Keyboard: determined nonincendive by comparison method according to FM-3611 App. B-1.

4.4.3.2 Temperature measurement

Temperature measurement has been performed under the following conditions:

Input voltage: 18 Vdc

Input current: 0.325 A

Ambient temperature: 60 °C

Maximum temperature found at components V1 (AS-i-Board), 114 °C

Conclusion: At a maximum ambient temperature of 60 °C at 18 Vdc input voltage, taking into account
a 5 K uncertainty, a maximum temperature of 119 °C was determined.

The heating test was performed on module 6GK1415-2BA20 only, due to the higher power dissipation then modules 6GK1411-2AB10, 6GK1411-2AB20 and 6GK1415-2BA10.

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SIEMENS

SIMATIC NET Link
DP/AS-i LINK Advanced
6GK1415-2BA10
SVP SMAU3940155
MAC-Adr 08-00-06-9C-88-3C

V1.0

DP-AS-i Link Advanced
6GK1 415-2BA10

X	2	3	4	5	6

FM APPROVED
CL.1. DIV.2. GP.A.B.C.D T4
CL.1. Zone2. GP.IIC. T4
Ta: 0°C...+60°C

c UL US LISTED
IND. CONT.EQ. for HAZ. LOC
CL.I, DIV.2, GP A,B,C,D T4
CL.I, Zone2, GP IIC, T4
CL.I, Zone2, AEx nC IIC T4

II 3 G EEx nA II T4
KEMA 06ATEX0164X

N117

Made in Germany

				Massstab :	
				Datum	11.07.2006
				Name	Buhr
				Gepr.	Gutzmer
Zust.	Mitteilung	Datum	Name		

Siemens AG I&S
Electronic Design and
Manufacturing Services

Aufkleber DP/AS-i Link

6GK1415-2BA10

A2B00058954D_01_ZEI

Blatt 1
1 Bl.

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SIEMENS

SIMATIC NET Link
DP/AS-i LINK Advanced
6GK1415-2BA20
SVP SMAU3940255
MAC-Adr 08-00-06-9C-88-3C

V1.0

DP-AS-i Link Advanced
6GK1415-2BA20

X	2	3	4	5	6

FM
APPROVED
CL.1. DIV.2. GP.A.B.C.D T4
CL.1. Zone2. GP.IIC. T4
Ta: 0°C...+60°C

c UL US LISTED
IND. CONT.EQ. for HAZ. LOC
CL.I, DIV.2, GP A,B,C,D T4
CL.I, Zone2, GP IIC, T4
CL.I, Zone2, AEx nC IIC T4

II 3 G EEx nA II T4
KEMA 06ATEX0164X

N117

Made in Germany

				Massstab :	
				Datum 11.07.2006	**Aufkleber DP/AS-i Link**
				Name Buhr	
				Gepr. Gutzmer	**6GK1415-2BA20**
Zust.	Mitteilung	Datum	Name		Blatt 1
Siemens AG I&S Electronic Design and Manufacturing Services					**A2B00058955D_01_ZEI** 1 Bl.

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SIEMENS

SIMATIC NET Link
IE/AS-i LINK PN IO
6GK1411-2AB10
SVP SMAU3940455
MAC-Adr 08-00-06-9C-88-3C

V1.0

IE/AS-i LINK PN IO
6GK1411-2AB10

X 2 3 4 5 6

FM
APPROVED
CL.1. DIV.2. GP.A.B.C.D T4
CL.1. Zone2. GP.IIC. T4
Ta: 0°C...+60°C

Made in Germany

c UL US LISTED
IND. CONT.EQ. for HAZ. LOC
CL.I, DIV.2, GP A,B,C,D T4
CL.I, Zone2, GP IIC, T4
CL.I, Zone2, AEx nC IIC T4

Ex
II 3 G EEx nA II T4
KEMA 06ATEX0164X

N117

				Massstab :	
				Datum 11.07.2006	**Aufkleber IE/AS-i Link**
				Name Buhr	
				Gepr. Gutzmer	**6GK1411-2AB10**
Zust.	Mitteilung	Datum	Name		Blatt 1
Siemens AG I&S Electronic Design and Manufacturing Services				**A2B00058957D_01_ZEI**	1 Bl.

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1 2 3 4

A B C D E

SIEMENS

SIMATIC NET Link
IE/AS-i LINK PN IO
6GK1411-2AB20
SVP SMAU3940355
MAC-Adr 08-00-06-9C-88-3C

V1.0

IE/AS-i LINK PN IO
6GK1411-2AB20

X	2	3	4	5	6

FM APPROVED
CL.1. DIV.2. GP.A.B.C.D T4
CL.1. Zone2. GP.IIC. T4
Ta: 0°C...+60°C

Made in Germany

c UL US LISTED
IND. CONT.EQ. for HAZ. LOC
CL.I, DIV.2, GP A,B,C,D T4
CL.I, Zone2, GP IIC, T4
CL.I, Zone2, AEx nC IIC T4

II 3 G EEx nA II T4
KEMA 06ATEX0164X

N117

				Massstab :	
				Datum	11.07.2006
				Name	Buhr
				Gepr.	Gutzmer
Zust.	Mitteilung	Datum	Name		

Aufkleber IE/AS-i Link

6GK1411-2AB20

Siemens AG I&S
Electronic Design and
Manufacturing Services

A2B00058958D_01_ZEI

Blatt 1
1 Bl.

1. Model number:

6GK1411-2AB10	IE/AS-i LINK PN IO (single master)
6GK1411-2AB20	IE/AS-i LINK PN IO (double master)
6GK1415-2BA10	DP/AS-i LINK Advanced (single master)
6GK1415-2BA20	DP/AS-i LINK Advanced (double master)

2. Document list (for reference only):

All models:

A2B00047447A_02_SLP Rev.2	Schematics (PS-Board)
CG046-4003-03-SCHA00	Schematics (Display, OEM)
A2B00058954C_01 Rev. 1	Assembly Drawing / Instruction

6GK1411-2AB10:

A2B00047450A_03_SLP Rev. 3	Schematics (IE/AS-i Link BP-Board)
A2B00047445A_03_SLP Rev. 3	Schematics (AS-i Board 1 x AS-i)
A2B00058957D_01_ZEI Rev. 1	Label Drawing (DP/AS-i Link)

6GK1411-2AB20:

A2B00047451A_04_SLP Rev. 4	Schematics (IE/AS-i Link BP-Board)
A2B00047446A_03_SLP Rev. 2	Schematics (AS-i Board 2 x AS-i)
A2B00058958D_01_ZEI Rev. 1	Label Drawing (DP/AS-i Link)

6GK1415-2BA10:

A2B00047448/9A_03_SLP Rev. 3	Schematics (DP/AS-i Link BP-Board)
A2B00047445A_03_SLP Rev. 2	Schematics (AS-i Board 1 x AS-i)
A2B00058954D_01_ZEI Rev. 1	Label Drawing (DP/AS-i Link)

6GK1415-2BA20:

A2B00047448/9A_03_SLP Rev. 3	Schematics (DP/AS-i Link BP-Board)
A2B00047446A_03_SLP Rev. 2	Schematics (AS-i Board 2 x AS-i)
A2B00058955D_01_ZEI Rev. 1	Label Drawing (DP/AS-i Link)

3. General:

The DP/AS-i LINK module provides connection between Profibus DP and the Actor-Sensor-Interface (AS-i). It allows data access from the DP-Profibus to the AS-i-Interface. The DP/AS-i LINK module is connected to a DP Master (e. g. programmable controller) via the DP- Profibus.
The IE/AS-I Link module provides connection between Profinet IO and the Actor-Sensor-Interface (AS-i). It allows data access from the Profinet IO to the AS-i Interface.
All AS-i LINK modules are supplied via the AS-i1bus connector or via external power supply. Both supplies are SELV and the external power supply is defined as NEC Class 2.

4. Construction:

4.1 Housing:

The module has a plastic housing of UL R/C plastic (QMFZ2), type Noryl SE1GFN1, manufactured by General Electric, rated at least 105°C, 94 V-1.
Overall dimensions are 90 mm by 132 mm by 85 mm

4.2 Electronics:

The module consists of three printed circuit boards and a LCD-Display which is via a flex cable connected to the key pad foil.
The printed circuit boards are UL R/C (ZPMV2)
rated at least - BP-Board (Backplane): 110 °C, 94 V-0
- AS-i-Boards: 125 °C, 94 V-0
- PS-Board and Display: 105 °C, 94 V-0
Solder time and temperature in accordance with the Recognized Components Directory.

5. Galvanic isolation:

The following circuits are functionally galvanic isolated against each other:

- 24V DC Input
- AS-i1/AS-i2/Shield
- Ethernet
- DP-Profibus

6. Ambient temperature:

Ambient temperature range 0°C ... +60°C

7. Electrical data:

24Vdc (18.0 - 32.0Vdc) from external supply, NEC CLASS 2, max. 320mA
30Vdc (29.5 - 31.5Vdc) via AS-i1-Bus, max. 320mA

8. Components, critical for Class I, Div. 2 installation:

8.1 Make/break components

BP-Bboard (Backplane):

Connectors:	Connects to:	
X1	ext. power supply	(seperating force > 15N)
X2, X3	AS-i1-, AS-i2-Bus	(seperating force > 15N)
X4 [1)]	Ethernet	(seperating force > 15N)
X5	Ethernet	(seperating force > 15N)
X6 [2)]	DP-Master (via DP-Profibus)	(secured by screws)
X20, X21, X22, X23	Power-supply board	(blocked by enclosure)
X30, X31, X32, X33, X34	AS-i board	(blocked by enclosure)
X10, X37	not used	(not accessable, inside enclosure)

[1)] model IE/AS-i Link PN IO, only
[2)] model DP/AS-i Link Advanced, only

Fuse:

- SMD Fuse F1, F2 , soldered in place, T1.5A / 125V, slow blow, UL-R/C

Relay:

- Relay K1, soldered in place, 200mW/24V, max. Switching current 2A, UL-R/C, Sealed Device (immersion cleanable)

AS-i-Board:

Connectors:	Connects to:	
X30, X31, X32, X33, X34	Main board	(blocked by enclosure)

Fuse:

- SMD Fuse F1, F1_2, soldered in place, F630mA / 250V, quick acting, UL-R/C

PS-Board (Power-supply):

Connectors:	Connects to:	
X24	C-Plug	(Tool secured)
X25	Display board	(blocked by enclosure)
X21, X22, X23, X24	Main board	(blocked by enclosure)

Fuse:

- SMD Fuse F1 soldered in place, 2A / 63V, slow blow, UL-R/C

Display Board:

Connectors:	Connects to:	
H1	Power-supply board	(blocked by enclosure)
Z1	Keyboard *	(blocked by enclosure)

* determined nonincendive by comparisonmethod according to FM 3611 App. B

8.2 Temperature class

Components on witch the temperature class is based:

Transistor V1 114°C on AS-i Board

9. Critical components for General Purpose installation:

All components, critical for fire and shock hazards are CSA accepted or listed and/or UL accepted, recognized or listed.

10. Marking:

SIEMENS AG
6GK1411-2AB10 or 6GK1411-2AB20 or
6GK1415-2BA10 or 6GK1415-2BA20
FM Approval Mark
CL. I, DIV. 2, GP. A, B, C, D T4
CL. I, Zone 2, GP IIC, T4
Ta: 0 °C ... +60 °C

Notes:

1. All components used in this assembly are operating within their ratings as specified by the manufacturers of the components for the rated ambient temperature range.

The drawing and the items mentioned herein may not be changed without notifying the certifying agency.

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NOTICE OF AUTHORIZATION TO APPLY THE UL MARK

2006-07-20

Mr Georg Distler
Siemens Electronic Design & Mfg Services Gmbh & Co Kg
Frauenauracherstrasse 98
Erlangen, 91056
Germany

E-mail: georg.distler@siemens.com

Reference: File E208174 Project 06CA24647 P.O. Number REG-NR 2500.01

Product: USL/CNL- CONTROLLERS MODELS IE/AS-i Link Advanced AND DP/AS-i Link PN IO

Dear Mr Distler,

Any information and documentation provided to you involving UL Mark services are provided on behalf of Underwriters Laboratories Inc.

UL's investigation of your product has been completed under the above project number and the subject product was determined to comply with the applicable requirements.

This letter temporarily supplements the UL Follow-Up Services Procedure and serves as authorization to apply the UL Listing Mark only at the factory under UL's Follow-Up Service Program to the subject product, which is constructed as described below:

> Similar to the subject model, which was submitted to UL for this investigation. The UL Records covering the product will be in the Follow-Up Services Procedure, File E208174, Volume 1.

This authorization applies only to the address on this letter.

This authorization is effective from the date of this Notice and only for products at the indicated manufacturing locations. Records in the Follow-Up Services Procedure covering the product are now being prepared and will be sent to the indicated manufacturing locations in the near future. Please note that Follow-Up Services Procedures are sent to the manufacturers only unless the Applicant specifically requests this document.

Products that bear the UL Mark shall be identical to those that were evaluated by UL and found to comply with UL's requirements. If changes in construction are discovered, appropriate action will be taken for products not in conformance with UL's requirements and continued use of the UL Mark may be withdrawn.

Sincerely,

Walter Hofmair

Walter Hofmair
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NOTICE OF AUTHORIZATION TO APPLY THE UL MARK

2007-01-24

Mr. Mark Temmes
Siemens Ag
I&s Is 6 E Frauenauracherstrasse 98
Erlangen, 91056
Germany
E-mail: mark.temmes@siemens.com

Reference: File E309104 Project 06CA52867

Product: USL - Open-Type Programmable Controllers, DP/AS-i Link Advanced (Single Master) consisting of Model No. 6GK51415-2BA10, DP/AS-i Link Advanced (Double Master) consisting of Model No. 6GK51415-2BA20, IE/AS-i Link PN IO (Single Master) consisting of Model No. 6GK51411-2AB10, and IE/AS-i Link PN IO (Double Master) consisting of Model No. 6GK51411-2AB20, for use in Class I, Div.2, Groups A, B, C, and D Hazardous Locations.

Dear Mr. Temmes,

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

UL's investigation of your product has been completed under the above project number and the subject product was determined to comply with the applicable requirements.

This letter temporarily supplements the UL Follow-Up Services Procedure and serves as authorization to apply the UL Listing Mark only at the factory under UL's Follow-Up Service Program to the subject product, which is constructed as described per the attached draft procedure revision material:

> Identical to the subject model, which was submitted to UL for this investigation. The UL Records covering the product will be in the Follow-Up Services Procedure, File E309104, Volume 1, Section 1.

This authorization applies only to the address on this letter.

This authorization is effective from the date of this Notice and only for products at the indicated manufacturing locations. Records in the Follow-Up Services Procedure covering the product are now being prepared and will be sent to the indicated manufacturing locations in the near future. Please note that Follow-Up Services Procedures are sent to the manufacturers only unless the Applicant specifically requests this document.

Products that bear the UL Mark shall be identical to those that were evaluated by UL and found to comply with UL's requirements. If changes in construction are discovered, appropriate action will be taken for products not in conformance with UL's requirements and continued use of the UL Mark may be withdrawn.

Sincerely,

Erin O'Shea

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File E309104
Project 06CA52867

0000-00-00

REPORT

on

PROGRAMMABLE CONTROLLERS FOR USE IN HAZARDOUS LOCATIONS

Siemens Ag
Erlangen, Germany

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DESCRIPTION

PRODUCT COVERED:

USL Open-Type Programmable Controllers, DP/AS-i Link Advanced (Single Master) consisting of Model No. 6GK51415-2BA10, DP/AS-i Link Advanced (Double Master) consisting of Model No. 6GK51415-2BA20, IE/AS-i Link PN IO (Single Master) consisting of Model No. 6GK51411-2AB10, and IE/AS-i Link PN IO (Double Master) consisting of Model No. 6GK51411-2AB20, for use in Class I, Div. 2, Groups A, B, C, and D Hazardous Locations.

GENERAL:

The DP/AS-i Link Advanced and the IE/AS-i Link PN IO are open type data converters that are intended to be installed in an end use enclosure. They are designed to be DINRail mounted and have a Class 2 power supply via the AS-i1-Bus connector or an external supply. The devices are available in two configurations, the single master with one AS-Interface line or the double master with two AS-Interface lines. These products should comply with this description and also with File E208174, Vol. 1, Sec. 3. In case of any discrepancy between this file and E208174, this file has precedence.

The DP/AS-i Link module provides connection between Profibus DP and the Actor-Sensor-Interface (As-i). It allows data access from the DP-Profibus to the AS-i interface. The DP/AS-i Link module is connected to a DP Master via the DP-Profibus. The IE/AS-i Link module provides connection between the Profinet IO and the Actor-Sensor-Interface (AS-i). It allows data access from the Profinet IO to the AS-I Interface.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):

USL indicates investigation to U.S. Standards UL 1604 "Electrical Equipment for Use in Class I and II, Division 2 and Class III Hazardous Locations", Third Edition, and UL 508 "Industrial Control Equipment", Seventeenth Edition.

ELECTRICAL RATINGS:

Table 1

			Temperature Codes	
Module Designation	Model No.	Ratings	Zones	Divisions
DP/AS-i Link Advanced	6GK51415-2BA20	External Supply: 24 V dc, max 320 mA AS-i1-Bus: 30 V dc, max 320 mA Ambient Temperature Range: 0°C to 60°C.	T4	T4
	6GK51415-2BA10			
IE/AS-i Link PN IO	6GK51411-2AB20			
	6GK51411-2AB10			

MARKINGS:

Marking Content

1. Listee's name.
2. Catalog or Model number.
3. Electrical ratings.
4. Hazardous Locations Classes, Divisions, and Groups as indicated under "Product Covered".
5. Ambient Temperature as referenced in the ratings section.
6. Operating Temperature Code.
7. May also be marked "Class I, Zone 2, Group IIC".

INSTALLATION INSTRUCTIONS:

Installation Instructions are provided with each device and shall include the following or equivalent wording. Installation instructions shall also contain a statement that "power, input and output (I/O) wiring must be in accordance with Class I, Div. 2 wiring methods - Article 501-10B of the National Electrical Code."

1. This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D / Class I, Zone 2, Group IIC Hazardous Locations or non-hazardous locations only.

2. "WARNING - EXPLOSION HAZARD - Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous."

3. "WARNING - EXPLOSION HAZARD - Substitution of components may impair suitability for Class I, Division 2."

CONSTRUCTION DETAILS:

These devices are constructed in accordance with File E208174, Vol. 1, Sec. 3 and the following description, figures, and illustrations.

Tolerances - Unless specified otherwise, all indicated dimensions are nominal.

Printed Wiring Boards - Any R/C (ZPMV2) rated 105°C with a flammability rating of 94V-1 minimum unless otherwise noted whose solder time and temperature can be confirmed in the Recognized Component Directory.

Make/Break Devices and Connectors - There are no make/ break components (switches, potentiometers and electro-mechanical relays) besides those specifically described in this description. There are no connectors except those specifically mentioned in the description.

Fuses - All fuses are soldered into place unless specifically mentioned in the description. They are not subject to overloading.

INDEX OF FIGURES AND ILLUSTRATIONS:

Fig. No.	Ill No.	Manufacturer's Drawing No.	Rev. Level	Description
1	-	-	-	DP/AS-i Link Advanced
2	-	-	-	IE/AS-i Link PN IO
-	1	A2B0004744A_02_SLP	2	PS-Board Schematics (All Models)
-	2	CG046-4003-03-SCHA00	1	Display Schematics (All Models)
-	3	A2B00047448_9A_03_SLP	3	DP/AS-i Link BP-Board (Model Nos. 6GK51415-2BA10 and 6GK51415-2BA20)
-	4	A2B00047450A_03_SLP	3	IE/AS-i Link BP-Board (Model No. 6GK51411-2AB10)
-	5	A2B00047451A_04_SLP	4	IE/AS-i Link BP-Board (Model No. 6GK51411-2AB20)
-	6	A2B00047445A_03_SLP	3	AS-i Board - 1 x AS-i (Model Nos. 6GK51411-2AB10 and 6GK51415-2BA10)
-	7	A2B00047446A_03_SLP	3	AS-i Board - 2 x AS-i (Model Nos. 6GK51411-2AB20 and 6GK51415-2BA20)

Module DP/AS-i LINK ADVANCED

(Model Nos. 6GK51415-2BA10 or 6GK51415-2BA20)

FIG. 1

General - Model Nos. 6GK51415-2BA10 and 6GK51415-2BA20 are identical except for the number of AS-Interface lines. Model No. 6GK51415-2BA10 has one line and Model No. 6GK51415-2BA20 has two lines.

1. Module Housing - R/C (QMFZ2), "Noryl" Type SE1GFN1 by General Electric. Rated at least 105°C and 94V-1 with a thickness of 1.0 mm. Approximately 90 by 132 by 85 mm deep.

2. BP-Board (Backplane) - R/C (ZPMV2), rated minimum 94V-0, 110°C.

3. As-i Board - R/C (ZPMV2), rated minimum 94V-0, 125°C.

4. PS-Board (Power Supply) - R/C (ZPMV2), rated minimum 94V-0, 105°C.

5. LCD Display - R/C (ZPMV2), rated minimum 94V-0, 105°C.

The only make/break components found in this module are the following:

BP-Board (Backplane) -

X1 - Connector for the external power supply that is mechanically latching.

X2, X3 - Connectors for the AS-i1 and As-i2 bus respectively that are mechanically latching.

X5 - Connector for Ethernet that is mechanically latching.

X6 - Connector for DP-Master via the DP-Profibus that is held in place by screws.

X10 - Unused connector.

X20, X21, X22, X23 - Internal connectors between the PS-Board and BP-Board that are held in place by the design of the module.

X30, X31, X32, X33, X34 - Internal connectors between the As-i and BP-Board that are held in place by the design of the module.

X37 - Unused connector.

F1, F2 - Fuses, R/C (JDYX2/JDYX8), rated 1.5A, 125V, that are soldered in place.

K1 - Relay rated 200 mW, 24V, 2A, that is soldered in place. R/C (NRNT2/NRNT8), Type FP2 manufactured by Tyco Electronics (Axicom). Enclosure material R/C Plastic (QMFZ2), LCP Vectra E130i for the top cover and Vectra H140 for the bottom plate both manufactured by Ticona. Sealant material for final closing UV epoxid 1 component, Katiobond 4594/1, manufactured by Delo.

As-I Board -

X30, X31, X32, X33, X34 - Internal connectors between the As-i and BP-Board that are held in place by the design of the module.

X37, X38, X39 - Unused connectors.

F1, F1_2 - Fuses, R/C (JDYX2/JDYX8), rated 630 mA, 250 V, that are soldered in place.

PS-Board (Power Supply) -

X20, X21, X22, X23 - Internal connectors between the PS-Board and BP-Board that are held in place by the design of the module.

X24 - Connector for the C-Plug that is secured by means of a tool.

X25 - Internal connector between the PS-Board and the Display Board that is held in place by the design of the module.

F1 - Fuse, R/C (JDYX2/JDYX8), rated 2A, 63V, that is soldered in place.

Display Board -

H1 - Internal connector between the Display Board and the PS-Board that is held in place by the design of the module.

Z1 - Internal connector between the Display Board and Keypad that is held in place by the design of the module.

Keypad - Located in a nonincendive circuit (24 V dc, 320 mA).

The highest heat-producing components are the following:

BP-Board:

IC - D4
Fuse - F1, F2
Relay - K1
Coil - L10
Connector - X1, X2, X32

As-I Board:

IC - D2
Transistor - V1
Fuse - F1

PS-Board:

Coil - L1
IC - N1
Diode - V15
Mosfet - V2
Opto-Coupler - U1

Housing (vent openings)
Keyboard (between cursor keys)

Module IE/AS-i LINK PN IO

(Model Nos. 6GK51411-2AB10 or 6GK51411-2AB20)

FIG. 2

General - Model Nos. 6GK51411-2AB10 and 6GK51411-2AB20 are identical except for the number of AS-Interface lines. Model No. 6GK51411-2AB10 has one line and Model No. 6GK51411-2AB20 has two lines. The IE/AS-I Link PN IO module has identical construction, make/break components, and heat producing components as the DP/AS-i LINK ADVANCED module, except as noted below.

Make/break components:

BP-Board (Backplane) -

X4 - Connector for Ethernet that is mechanically latching. (IE/AS-I Link PN IO module only)

X6 - Connector for DP-Master via the DP-Profibus that is held in place by screws. (DP/AS-i LINK ADVANCED module only)

Supplier's Declaration of Conformity

Radiocommunications Act 1992 Section 182

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C-Tick No. **PT2 / V11 / 07.06**

Instructions for completion

THIS COMPLETED FORM REMAINS WITH THE SUPPLIER
AS PART OF THE DOCUMENTATION REQUIRED FOR THE "COMPLIANCE FOLDER"

Suppliers details

Name (NAME OF MANUFACTURER OR IMPORTER)	**Australian Company Number** (A C N)
Siemens Automation & Drives, A&D	N 117

Address (ADDRESS OF MANUFACTURER OR IMPORTER)

VIC 3153 Bayswater
885 Mountain Highway

Product details

Product Name, Type and Model, Lot, Batch or Serial Number (IF AVAILABLE)

SIMATIC NET
see Appendix

Title, Number, Date of Issue of Australian Standard(s)

AS/NSZ 2064:1997

Declaration

We hereby declare under our sole responsibility that the product mentioned above to which this declaration relates complies with the above mentioned standard(s).

Signature of authorised person	**Date**
B. Kienlein	10/07/06

Bernhard Kienlein

PRINT NAME

General Manager

POSITION IN ORGANISATION

SIEMENS

Supplier's declaration of conformity

Radiocommunications Act 1992 Section 182

C-Tick No. **PT2 / V11 / 07.06**

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Communication Processors CP

CP 1401	6GK1140-1AA00
CP 1411	6GK1141-1AA00
CP1604	6GK1160-4AA00
CP 1613	6GK1161-3AA00
CP 1616-MC	A5E00320933
CP 5511	6GK1551-1AA00
CP 5512	6GK1551-2AA00
CP 5611	6GK1561-1AA00
CP5611 A2	6GK1561-1AA01
CP 5613	C79458-L8000-A77
CP 5613 FO	A5E00047996
CP 5614	C79458-L8001-A77
CP 5614 FO	A5E00047997
CP 5613 A2	A5E00200963
CP 5614 A2	A5E00219170
EB 400	A5E00267496
Ertec 200 (EB 200)	A5E00377026
CP 243-2	6GK7243-2AX01-0XA0
CP 342-5	6GK7342-5DA02-0XE0
CP 342-5 FO	6GK7342-5DF00-0XE0
CP 343-5 12MB	6GK7343-5FA01-0XE0
CP 343-1	6GK7343-1EX11-0XE0
CP 343-1	6GK7343-1EX20-0XE0
CP 343-1 Standard	6GK7343-1EX21-0XE0
CP 343-1 IT	6GK7343-1GX11-0XE0
CP 343-1 IT	6GK7343-1GX20-0XE0
CP 343-1 Advanced	6GK7343-1GX21-0XE0
CP 343-1 PN	6GK7343-1HX00-0XE0
CP 343-2	6GK7343-2AH00-0XA0
CP 343-2 P	6GK7343-2AH10-0XA0
CP 443-1	6GK7443-1EX11-0XE0
CP 443-1	6GK7443-1EX40-0XE0
CP 443-1 IT	6GK7443-1GX11-0XE0
CP 443-5 Extended 3	6GK7443-5DX03-0XE0
CP 443-5 Extended	6GK7443-5DX04-0XE0
CP 443-5 Basic	6GK7443-5FX01-0XE0
CP 443-5 Basic	6GK7443-5FX02-0XE0

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Links

AS-i-Repeater	6GK1210-0SA00
AS-i-Extender	6GK1210-1SA00
IE/PB Link	6GK1411-5AA00
IE/PB Link	6GK1411-5AA20
IE/PB Link PN IO	6GK1411-5AB00
DP/AS-Interface Link 20E	6GK1415-2AA01
DP/AS-I Link	6GK1415-2BAx0
IE/AS-I Link	6GK1411-2ABx0

Optical/Electrical Switch Modules OSM/ESM/ELS, Optical Media Converter OMC

OMC TP11	6GK1100-2AB00
OMC TP11-LD	6GK1100-2AC00
ELS TP40	6GK1102-6AA00
ELS TP40M	6GK1102-6AB00
ELS TP80	6GK1102-7AA00
OSM ITP62	6GK1105-2AA10
OSM TP62	6GK1105-2AB10
OSM ITP62-LD	6GK1105-2AC10
OSM ITP53	6GK1105-2AD10
OSM TP22	6GK1105-2AE00
ESM ITP80	6GK1105-3AA10
ESM TP80	6GK1105-3AB10
OSM TP40	6GK1105-3AC00
OSM BC08	6GK1105-4AA00
SCALANCE X104-2	6GK5104-2BB00-2AA3
SCALANCE X106-1	6GK5106-1BB00-2AA3
SCALANCE X108	6GK5108-0BA00-2AA3
SCALANCE X204-2	6GK5204-2BB00-2AA3
SCALANCE X204-2	6GK5204-2BB10-2AA3
SCALANCE X204-2LD	6GK5204-2BC00-2AA3
SCALANCE X204-2LD	6GK5204-2BC10-2AA3
SCALANCE X206-1	6GK5206-1BB00-2AA3
SCALANCE X206-1	6GK5206-1BB10-2AA3
SCALANCE X206-1LD	6GK5206-1BC00-2AA3
SCALANCE X206-1LD	6GK5206-1BC10-2AA3
SCALANCE X208	6GK5208-0BA00-2AA3
SCALANCE X208	6GK5208-0BA10-2AA3

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Radiocommunications Act 1992 Section 182

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SCALANCE X208 PRO	6GK5208-0CA00-2AA6
SCALANCE X208 PRO	6GK5208-0HA00-2AA6

Optical Link Modules OLM

OLM/P11	6GK1502-2CA10
OLM/G11	6GK1502-2CB10
OLM/G11-1300	6GK1502-2CC10
OLM/P12	6GK1502-3CA10
OLM/G12	6GK1502-3CB10
OLM/G12-1300	6GK1502-3CC10
OLM/G12-ECC	6GK1502-3CD10

Power Supply

PS791-1PRO	6GK5791-1PS00-0AA6

Bus terminals

OBT Optical Bus Terminal	6GK1500-3AA00

Manuals

PROFIBUS Networks	6GK1970-5CA20-0AA1
Industrial Ethernet ITP- and Fiber Optic Networks	6GK1970-1BA10-0AA1
Manual AS-Interface	6GK1971-2SA01-0AA1

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Accessories

Not marked, tested together with components of SIMATIC NET product series:

• C-Plug	6GK1900-0AB00
• Bus Connector	6ES7 972-...-0XA0
• Bus Terminal and Connectors	6GK1 500-....
• Fiber Optic Cable	6XV1820-..
• Plastic Fiber Optic Cable	6XV1821-...
• PROFIBUS Cable	6XV1830-...
• ITP cable	6XV1850-....
• AS-Interface Cable	3RX90 . .-0AA00