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The following material resulting from the investigation under the above numbers is enclosed.

Issue

<u>Date</u>	<u>Vol</u>	<u>Sec</u>	<u>Pages</u>	<u>Revised Date</u>
2004/07/27	1	1	Revised Description Page(s) 1,3,3A,4,11	2008/12/05

Inspections at your plant will be conducted under the supervision of CLAUD SCHAEFER, UL INSPECTION CENTER GERMANY, UL INTERNATIONAL GERMANY GMBH, FRANKFURTER STR 229, NEU-ISENBURG, Germany, 63263., PHONE: 6-102-3690, FAX: 6-102-369480, EMAIL: CLAUD.SCHAEFER@DE.UL.COM

Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

Please review this material and report any inaccuracies to UL Germany Customer Service, PHONE: +49 6102 369 0, FAX: +49 6102 369 280, E-MAIL: CustomerService.de@de.ul.com, referring to the above Project and/or PD Numbers.

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FRK File

UL INSPECTION CENTER 287

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<u>Product</u>	<u>US</u>	<u>CN</u>	<u>Section</u>
Network Insulator EN-1, EN-2, EN-10, EN-20, EN-20G, EN-10VG, EN-10HG, EN-30, EN-30G, EN1000RM, EN-25G, EN-50HG-Y, EN-50HG-A, EN-50HG-S, EN-50VG-Y, EN-50VG-A, EN-50VG-S, EN-50SG-Y, EN-50SG-A, EN-50SG-S	x	x	1

DESCRIPTION

PRODUCT COVERED:

*USR, CNR: Network insulator for Ethernet Networks, EN-1, EN-2, EN-10VG, EN-10HG, EN-10V, EN-10H, EN-20, EN-20G, EN-30, **Safeline**, EN-25G, EN-50HG-Y, EN-50HG-A, EN-50HG-S, EN-50VG-Y, EN-50VG-A, EN-50VG-S, EN-50SG-Y, EN-50SG-A, EN-50SG-S

ELECTRICAL RATING:

Passive Insulating device

CLASSIFICATION:

1. Protection against electric shock (5.1, 5.2).

Not electrically powered

No applied parts

2. Protection against harmful ingress of water (5.3).

Ordinary

3. Degree of safety in the presence of flammable anesthetics mixture with air or with oxygen or Nitrous Oxide(5.5).

Not suitable for use in the presence of flammable anesthetic mixture with air or with oxygen or nitrous oxide.

4. Mode of operation (5.6).

Continuous

ACCESSORIES:

The following accessories may be provided with the equipment:

MODEL DIFFERENCES:

EN-1, EN-10V, EN-10H, EN10-VG, EN10-HG, EN-50HG-Y, EN-50HG-A, EN-50HG-S, EN-50VG-Y, EN-50VG-A, EN-50VG-S, EN-50SG-Y, EN-50SG-A, EN-50SG-Sfor build in enclosures

- * EN-2, EN-20G, EN-30 and **Safeline** for external use

EN-10H, EN-10HG, EN-50HG-Y, EN-50HG-A, EN-50HG-S with horizontal outlet connector, EN-10V, EN-10VG, EN-50VG-Y, EN-50VG-A, EN-50VG-S with vertical outlet connector.

EN-50SG-Y, EN-50SG-A, EN-50SG-S with vertical clamping outlet connectors

Last letter in model number designates type of front connectors for EN-50 family as follows:

- Y with Yamaichi front connector
- A with Locking front connector
- S with Standard front connector

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

The products in this report are in conformance with all of the following standards:

Products designated USC or USR have been investigated using requirements contained in [UL 60601-1, First Edition] (National Differences for USA). The requirements of UL 60601-1, First Edition are identical to those of UL 2601-1, Second Edition.

Products designated CNC or CNR have been investigated using requirements contained in CAN/CSA C22.2 No. 601.1-M90 (R1997), CAN/CSA C22.2 No. 601.1S1-94, and CAN/CSA C22.2 No. 601.1B-98 (National Differences for Canada)

IEC 60601-1:1998, A1:1991 and A2:1995
EN 60601-1:1990, A1:1993, A2:1995 and A13:1996 (Group Differences for CENELEC countries)
(except compliance with Clause 36, EMC limitations not evaluated, IEC 60601-1-2 and EN 60601-1-2)
(except applicability/compliance with Clause 48, Biocompatibility not evaluated, EN 10993-1)

Compliance with Electromagnetic Compatibility (Clause 36), Bio- Compatibility (Clause 48) and Software Reliability (Sub- Clause 52.1) requirements was not investigated by UL and is not covered by this Report.

For use only in (or with) complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

Conditions of Acceptability - When installed in the end product, consideration shall be given to the following:

1. This component has been judged on the basis of the required spacings in the Standard for Electrical Medical Equipment, UL 2601-1, and CAN/CSA C22.2 No. 601.1, Sub-clause 57.10, which would cover the component itself if submitted for Classification.
2. The following safety separation barriers are provided (En-1 and EN-2): Basic Insulation for 250V between primary and secondary and Reinforced between primary to enclosure. Refer to Ill. 1 Insulation Diagram of the equipment.
 - 2a The following safety separation barriers are provided (except for models EN-1 and EN-2): Reinforced Insulation for 250V between primary and secondary and Reinforced between primary to enclosure. Refer to Ill. 4 Insulation Diagram of the equipment.
3. Compliance with Electromagnetic Compatibility (Clause 36), Bio-Compatibility (Clause 48) and Software Reliability (Sub- Clause 52.1) requirements was not investigated by UL is not covered by this Report.
4. EN-1, EN-10H, EN-10G, EN10-VG and EN10-HG, **EN-50XX-X** have to be build in an fire enclosure in the end product.

Function of Equipment -

Providing Basic Insulation for 250V between Input and Output of the Network Insulator (EN-1 and EN-2).

Providing Reinforced Insulation for 250V between Input and Output of the Network Insulator for all models except for EN-1 and EN-2.

Considerations -

Not applicable

The following circuits have been evaluated as LP circuits (Limited Power- A circuit with maximum available power of 15W or less):

Engineering References - Following Illustrations are provided for engineering references:

Fig. 1	Top view EN-1
Fig. 2	Inside EN-1
Fig. 3	Backside EN-1
Fig. 4	Top view EN-2
Fig. 5	Inside EN-2
Fig. 6	Backside EN-2
Fig. 7	Top view EN-10
Fig. 8	Inside EN-10
Fig. 9	Backside EN-10
Fig. 10	Top view EN-20
Fig. 11	Inside EN-20
Fig. 12	Backside EN-20
Fig. 13	Top view EN-10HG
Fig. 14	Front view EN-10HG
Fig. 15	Top view EN-20VG
Fig. 16	Inside EN-10VG
Fig. 17	Top view EN-20G
Fig. 18	Backside EN-20G
Fig. 19	Inside EN-20G
Fig. 20	Inside EN-30
Fig. 21	Top EN-30
Fig. 22	Front view EN-30
* Fig. 23	Top Safeline
* Fig. 24	Inside Safeline
Fig. 25	Front view EN-25
Fig. 26	Inside view EN-25
Fig. 27	Front view EN-50HG-Y
Fig. 28	RJ-45 Inlet of EN-50HG-Y
Fig. 29	RJ-45 Outlet of EN-50HG-Y
Fig. 30	Overall view EN-50VG-S
Fig. 31	Overall view EN-50SG-S
Fig. 32	Inside Top view EN-50SG-S
Fig. 33	Inside Bottom view EN-50SG-S

ILL. 1	Insulation diagram of the equipment (EN-1 and EN-2).
ILL. 2	Schematics and Layouts (EN-1 and EN-2)
ILL. 3	Insulation diagram of the equipment (EN-10 and EN-20).
ILL. 4	Schematics and Layouts (EN-10 and EN-20)
ILL. 5	Construction Vogt Transformer
ILL. 6	Construction Vogt Transformer T-1000-04-00
ILL. 7	Schematics and Layouts (EN-10HG and VG)
ILL. 8	Enclosure drawing EN-30
* ILL. 9	Construction layout of Model Safeline
ILL. 10	Construction Vogt Transformer 5437400300
ILL. 11	Construction Wuerth Transformer 749014010
ILL. 12	Construction Wuerth Transformer 749024011
ILL. 13	Construction Wuerth Transformer 749024010
ILL. 14	Construction VOGT Transformer NI 080 515 11 01
ILL. 15	Network Cable Receptacle Reichle & De Massari AG 304557 Printklemme PK94
ILL. 16	Enclosure drawing EN-25G
ILL. 17	Schematics EN-50XX-X
ILL. 18	Description and depiction of model differences in EN-50XX-X

CONSTRUCTION DETAILS:

Except for items specifically addressed in this Section, all Sec. Gen. requirements apply.

Markings - The following IEC Symbols shown in Sec. Gen. (ILLS. 1 and 2) are provided:

Table D1: Nos. 14

Table D2: Nos.

Insulation Diagram -

Insulation Designator	Insulation Type	Maximum Circuit Voltage	Distances/mm Required Creepage Clearance		Distances/mm Measured Creepage Clearance		Dielectric Test Voltage
A (EN-1)	Basic	250	4	2.5	5.3	5.3	1500
B (EN-2)	Basic	250	4	2.5	5.3	5.3	1500
	-	-	-	-	-	-	-
D (EN-10)	Reinforced	250	8	5	10.1	10.1	4000
E (EN-20)	Reinforced	250	8	5	10.1	10.1	4000
*F EN-20G, EN-25G, EN-10VG, EN-10HG, EN-30, Safeline	Reinforced	250	8	5	9	9	4000
G EN-50HG-Y, EN-50HG-A, EN-50HG-S, EN-50VG-Y, EN-50VG-A, EN-50VG-S, EN-50SG-Y, EN-50SG-A, EN-50SG-S	Reinforced	250	8	5	11.7	11.7	4000

Accompanying Documents - The following documentation is provided in the User's or Operator's manual in addition to that specified in Section General:

None