

S3100-4040

Install Guide

100Mbps to 2.5Gbps Fiber-to-Fiber Repeater

- Supports various physical media types
- Fiber repeater, performs 1R signal regeneration
- DMI (Diagnostic Monitoring Interface)
- Link pass through
- Auto link restore
- No packet size limitation



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Introduction

Transition Networks' ION x3100 is a SFP-to-SFP fiber repeater with two SFP ports for direct physical connection back to back. The x3100 performs signal reamplify (1R) signal regeneration. The x3100 also supports:

- CWDM Wavelength transponder, general wavelength to specific wavelength.
- Connections between different types of fiber, such as SM-to-MM.
- Fiber repeater; MM-to-MM or SM-to-SM.

The x3100 can be used in telecom and enterprise applications where 100Mb - 2.5Gb links require fiber extension or where 100Mb - 2.5Gb links require an interface between two fiber networks.

The x3100 performs a variety of protocol transparent services; it supports virtually any protocol from 100Mbps to 2.5Gbps. The x3100 can inter-connect with another x3110 and can support:

- 100Mb (FE/FDDI)
- 1.25Gb (GE)
- 150Mb (ION x6120 and 6010)
- 200Mb (ESCON/SBCON)
- 155/622Mb (OC-3/12)
- 2488Mb (OC-48)
- 2.500Gb (2.5 InfiniBand/PCI-E)
- 1.06/2.12 (2/1 GFC)

The x3100 is a "similar rate" to "similar rate" converter with no rate conversions. The x3100 is protocol independent. Rate configuration is not required. LPT is always enabled.

Model Numbers

C3100-4040: 100M - 2.5Gbps Fiber Repeater, ION Chassis version (dual SFP).

S3100-4040: 100M - 2.5Gbps Fiber Repeater, Standalone version (dual SFP).

Transition Networks' SFP modules fully comply with Multi-Sourcing Agreement (MSA) as described at www.transition.com/TransitionNetworks/Landing/SFP-XFP/SFP-XFP.aspx.

Management Features

Manageable **C3100** features are available when used in an ION chassis with an ION Management Module (IONMM) including:

- Provides port link statistics (C3100 only).
- Provides information on type of SFP installed (C3100 only).
- Supports Digital Diagnostics (DMI) on both ports.
- Link-pass-through (LPT) is always supported and can not be disabled.

Manual Overview

The purpose of this manual is to provide the information needed to install the S3100 to the point of operation. Note that there is a separate install guide for the C3100.

Related Manuals and Online Help

A printed documentation card is shipped with each x3100 device. Context-sensitive Help screens, as well as cursor-over-help (COH) facilities are built into the Web interface. A substantial set of technical documents, white papers, case studies, etc. are available on the Transition Networks web site at www.transition.com. Note that this manual provides links to third party web sites for which Transition Networks is not responsible. Other ION system and related device manuals are listed below.

1. Product Documentation Postcard, 33504
2. ION C3100 Install Guide, 33580
3. ION S3100 Install Guide, 33581 (this manual)
4. ION x3100 Web User Guide, 33582
5. ION x3100 CLI Reference, 33583
6. Focal Point™ 3.0 Management Application User Guide, 33293
7. ION Management Module (IONMM) Install Guide, 33420 and User Guide, 33457
8. ION System NID User Guides (33432, 33457, 33472, 33493, 33494, 33495, 33496)
9. Release Notes (firmware version specific)

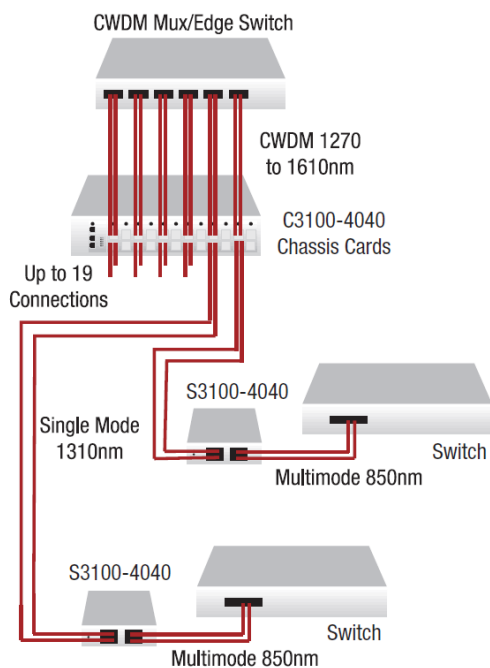
Note: Information in this document is subject to change without notice. All information was deemed accurate and complete at the time of publication. This manual documents the latest software/firmware version. While all screen examples may not display the latest version number, all of the descriptions and procedures reflect the latest software/firmware version, noted in the [Record of Revisions](#) on page 17.

Application Example

Transition Networks' ION x3100 is a SFP-to-SFP fiber repeater with two SFP ports for direct physical connection. The x3100 performs signal reamplify (1R) signal regeneration. The x3100 can be used in telecom and enterprise applications where 100Mb - 2.5 GB links require fiber extension or where 100Mb - 2.5Gb links require an interface between two fiber networks. The x3100 performs a variety of protocol transparent services; it supports virtually any protocol from 100Mbps to 2.5Gbps.

This fiber to fiber converter is a protocol independent device that supports data rates from 100Mbps up to 2.5 Gbps. It provides reliable and cost-effective conversion between single mode and multimode fiber, while also providing wavelength conversion in CWDM applications. As an SFP based device, this any-rate to similar-rate converter offers great application flexibility. Supported protocols, fiber connectors, and transmission distances are determined by the SFP module used on the converter.

CWDM Application



Single mode to Multimode Application

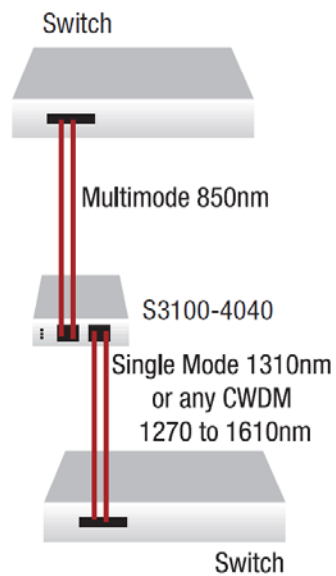


Figure 1: Network Scenarios

Pre-Installation

CAUTION: Observe electrostatic discharge precautions when handling the S3100. Failure to observe this caution could result in damage or failure of the S3100.

Safety

Before installing the S3100, read these “Safety Cautions” and ensure that the requirements noted are met. During installation and maintenance, avoid direct exposure to laser beams. Specifically, do not look into laser ports. Ensure that each SFP port at which laser beams are (or will be) present is occupied by an SFP that is locked in position. See the related SFP manual for details.

See "[Electrical Safety Warnings](#)" on page 16 for Electrical Safety Warnings translated into multiple languages.

Unpacking

1. Carefully unpack all S3100 contents.
2. Verify receipt of all S3100 components; see “[Ship Kit Contents](#)” below.
3. Place the S3100 and related materials in the desired install location.
4. Save the S3100 shipping carton and packing materials for future use.

Ship Kit Contents

The S3100 is shipped with some standard and some optional components. Make sure you have received the following standard items:

- One S3100 device
- One AC Power Cord/Adapter
- One printed Product Documentation postcard

Installation and Setup

General

This section describes how to install the S3100 and the procedures to access and initially set it up via either a local serial interface (USB) or a remote Ethernet connection (Telnet session or Web interface).

Install the S3100

The S3100 is a standalone module. The following section describes how to install the S3100.



Caution: Failure to observe electrostatic discharge precautions when installing the S3100 could result in damage or failure of the module.

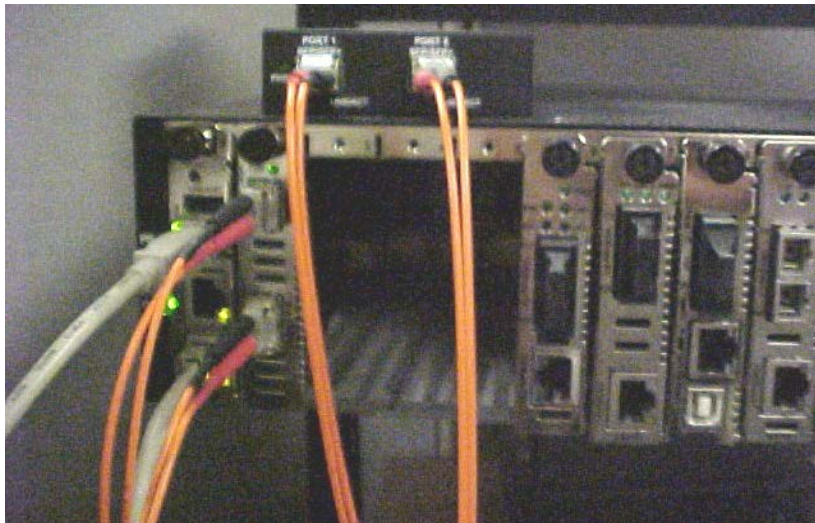


Figure 2: Installation

1. Locate the S3100 in its final install location.
2. Install SFP Devices in PORT 1 and PORT 2. See “[Installing SFP Devices](#)” below.
3. Perform cabling from the S3100.
4. Make the Power Connection. See the “[Power Connection](#)” section below.

Installing SFP Devices

The S3100 lets you install SFP devices of choice to make a fiber connection. The S3100 has two SFP ports as shown below.

SFP Optical Transceivers

Transition Networks SFP devices are small form factor, hot-pluggable transceivers which allow for a single piece of network equipment to be connected to a multitude of interfaces, protocols, and transmission media via the SFP port. All of Transition's SFPs devices are compliant with the Multi-Sourcing Agreement (MSA) ensuring interoperability with all other MSA compliant networking devices.

The SFP module used defines the fiber length and type that can be used. Identical SFP modules must be used at each end of a link for each port on the device.



Figure 3: Port Locations and SFP Installation

To install an SFP device in the S3100:

1. Position the SFP device at either installation slot, with the label facing up.
2. Carefully slide the SFP device into the slot, aligning it with the internal installation guides.
3. Ensure that the SFP device is firmly seated against the internal mating connector.
4. Connect the fiber cable to the fiber port connector of the SFP device.

See the TN [SFP/XFP Optical Transceivers](#) web page for the latest information.

Cabling

The x3100 can be used in telecom and enterprise applications where 100Mb - 2.5Gb links require fiber extension or where 100Mb - 2.5Gb links require an interface between two fiber networks.

The x3100 performs a variety of protocol transparent services; it supports virtually any protocol from 100Mbps to 2.5Gbps.

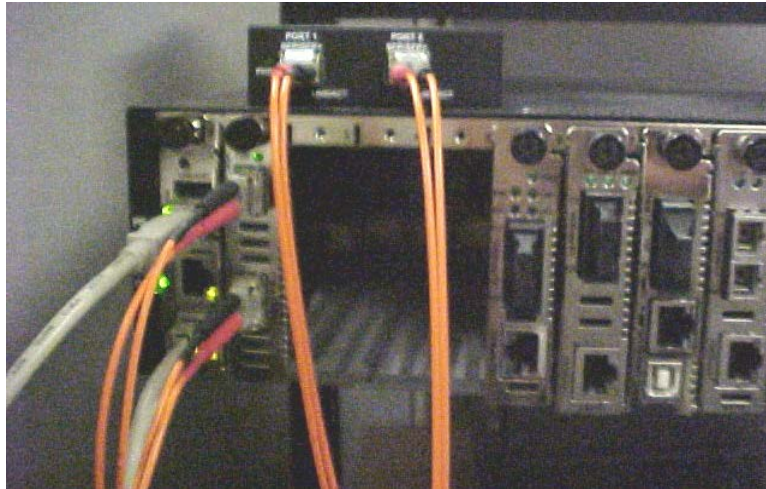


Figure 4: C3100-to-S3100 Connection

The figure above shows cabling a C3100 to an S3100. The procedure is provided below.

1. Locate a fiber cable with male, two-stranded TX to RX connectors installed at both ends. See “[Cable Specifications](#)” on page 27 for details.
2. Connect the fiber cable to the SFP fiber port (Port 2 labeled **SFP**) on the S3100:
 - Connect the male TX cable connector to the female TX connector.
 - Connect the male RX cable connector to the female RX connector.
3. Connect the fiber cables to the SFP fiber port on the other device (*C3100*):
 - Connect the male TX cable connector to the female RX connector.
 - Connect the male RX cable connector to the female TX connector.

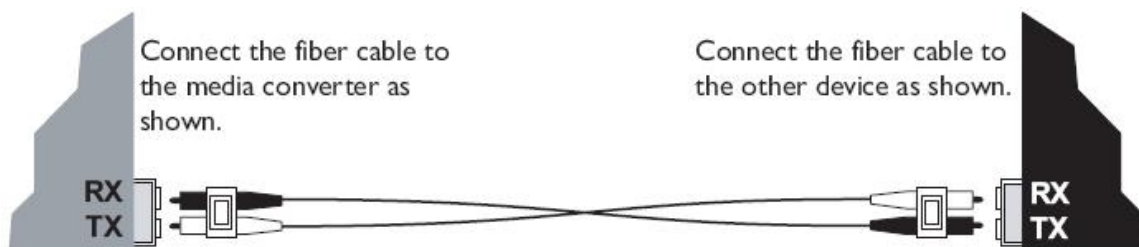


Figure 5: Fiber Connection

Power Connection

The S3100 ships with a power supply module that provides power via a barrel connector to the S3100 power receptacle.

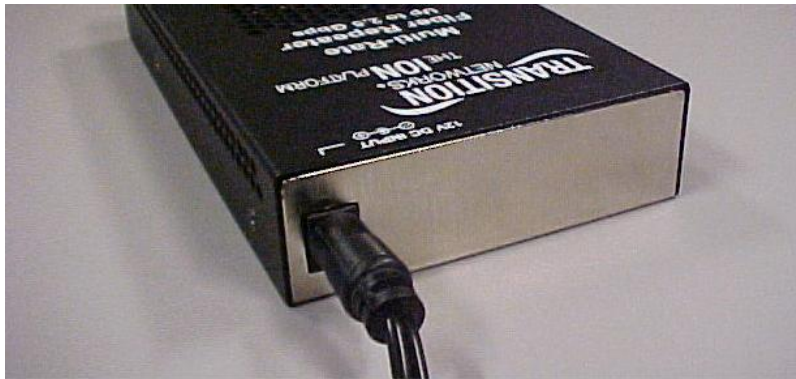


Figure 6: Power Connection

Make the power connection as described below.

1. Plug the power supply's barrel connector into the standalone module See the figure below.
2. Plug the power supply's cord into a live AC power outlet.
3. Verify that the green **P** (Power) LED lights.

Operation

Power and Fiber Status LEDs

The status LEDs (labeled **PWR** and **LINK** are shown below. Use the status LEDs to monitor S3100 operation in the network.

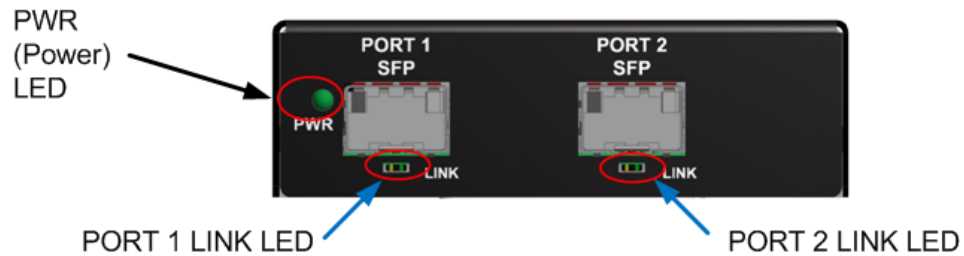


Figure 7: Power and Fiber Status LEDs

The Power and Fiber Status LEDs are described below.

LED Label	Meaning	Operation
PWR	Power	Green ON for power applied to board.
PORT 1 LINK LED	SDF Fiber Status 1	On = Fiber Signal Detected. Off = Fiber Signal Not Detected.
PORT 2 LINK LED	SDF Fiber Status 2	On = Fiber Signal Detected. Off = Fiber Signal Not Detected.

Product Features

The features described and illustrated in this section include:

- Link Pass through
- Digital Monitoring Interface (DMI)

Link Pass Through (LPT)

This function causes loss of link on one side of a media converter to be passed through to the other side, so that upstream equipment can see fault conditions that would otherwise be hidden by the media converters.

The LPT feature allows the Device to monitor the Fiber RX (receive) ports for loss of signal. For example, when the Fiber #1 link on the near end device is lost (1), the local Device turns off the fiber transmit on Fiber #2 (2), thus, “passing through” the link loss. The remote Device disables the Fiber #1 link to the far-end device (3), which prevents the loss of valuable data unknowingly transmitted over an invalid link.

Note that although the link from local fiber #2-Tx to remote #2-Rx is disabled, the link from remote #2-Tx to local #2-Rx is still alive(4). The LPT process is illustrated in the figure below.

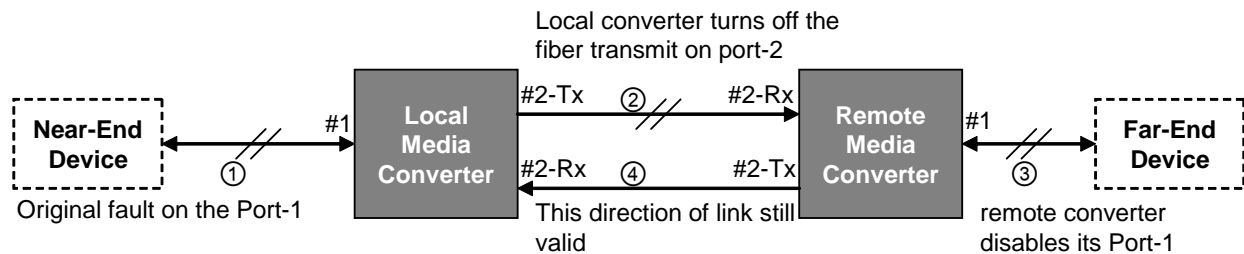


Figure 9: Link Pass Through (LPT)

Technical Specifications

Standards:	IEEE802.3ae / ITU.G.709 / SFF8431
Data Rate	100 Mbps - 2.5 Gbps
Dimensions	Width: 3.25 inches (82 mm) Depth: 6.5 inches (165 mm) Height: 1.0 inches (25 mm)
Power Source	External AC/DC required, 12 VDC, 145 mA
Power Consumption	1.7 watts typical; will vary with SFP type
Operating Temperature	0 to 50 degrees C
Storage Temperature	-40 to 85 degrees C
Altitude	0-10,000 feet
Operating Humidity	5% to 95% (non-condensing)
Shipping Weight	2 lbs. (0.90 kilograms)
MTBF	Greater than 250,000 hours (MIL-HDBK-217F) Greater than 687,000 hours (Bellcore)
Regulatory Compliance for:	
Emission	FCC Class A; EN55022 Class A
Immunity	EN55024
Safety Compliance	CE Mark
Warranty:	Lifetime
Max. Frame Size:	16384 bytes jumbo frame support

The information in this user's guide is subject to change. For the latest information, see the online user's guide at: www.transition.com.

WARNING: Visible and invisible laser radiation when open. DO NOT stare into the beam or view the beam directly with optical instruments. Failure to observe this warning could result in an eye injury or blindness.

WARNING: Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

Troubleshooting

1. Is the **PWR** (power) LED lit?
NO
 - Is the S3100 inserted properly into the chassis?
 - Is the power cord properly installed in the S3100 and in the grounded AC outlet?
 - Does the grounded AC outlet provide power?
 - Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.YES
 - Proceed to step 2.
2. Is the **LINK** LED lit?
NO
 - Check that the SFP device is supported and properly connected. See “[Installing SFP Devices](#)” on page 7.
 - Check the fiber cables for proper connection.
 - Re-seat the SFPs. Note that with two copper SFP modules are used in the converter, no link is established. At least one of the two SFPs must be a fiber SFP.
 - Verify that the cable specs are met. See “[Cable Specifications](#)” on page 27.
 - Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

Contact Us

Technical Support

Technical support is available 24 hours a day.

US and Canada: 1-800-260-1312

International: 00-1-952-941-7600

Transition Now 7:00 AM to 6:00 PM CST

Chat live via the Web with Transition Networks Technical Support.

Log onto www.transition.com and click the **Tech Support/Transition Now** link.

Web-Based Seminars

Transition Networks provides seminars via live web-based training.

Log onto www.transition.com and click the Learning Center link.

E-Mail

To ask a question anytime, send an e-mail to our technical support staff at techsupport@transition.com.

Address

Transition Networks

10900 Red Circle Drive,

Minnetonka, MN 55343, U.S.A.

telephone: 952-941-7600

toll free: 800-526-9267

fax: 952-941-2322

Compliance Information

Declaration of Conformity

< to be supplied >

FCC Regulations

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la lass A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Regulations

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung !

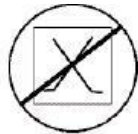
Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fall ist der Benutzer für Gegenmaßnahmen verantwortlich.

Attention !

Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.



In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.



CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EGMitgliedstaaten verstösst gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer

Electrical Safety Warnings

Electrical Safety

IMPORTANT: This equipment must be installed in accordance with safety precautions.

Elektrische Sicherheit

WICHTIG: Für die Installation dieses Gerätes ist die Einhaltung von Sicherheitsvorkehrungen erforderlich.

Elektrisk sikkerhed

VIGTIGT: Dette udstyr skal • nstallers I overensstemmelse med sikkerhedsadvarslerne.

Elektrische veiligheid

BELANGRIJK: Dit apparaat moet in overeenstemming met de veiligheidsvoorschriften worden geïnstalleerd.

Sécurité électrique

IMPORTANT : Cet équipement doit être utilisé conformément aux instructions de sécurité.

Sähköturvallisuus

TÄRKEÄÄ : Tämä laite on asennettava turvaohjeiden mukaisesti.

Declaration of Conformity

< To be supplied.>

Sicurezza elettrica

IMPORTANTE: questa apparecchiatura deve essere installata rispettando le norme di sicurezza.

Elektrisk sikkerhet

VIKTIG: Dette utstyret skal • nstallers I samsvar med sikkerhetsregler.

Segurança eléctrica

IMPORTANTE: Este equipamento tem que ser instalado segundo as medidas de precaução de segurança.

Seguridad eléctrica

IMPORTANTE: La instalación de este equipo deberá llevarse a cabo cumpliendo con las precauciones de seguridad.

Elsäkerhet

OBS! Alla nödvändiga försiktighetsåtgärder måste vidtas när denna utrustning används

Record of Revisions

Rev	Date	Notes
A	07/29/14	Initial release for v 1.2.

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