OTN-X3M-N42E NODE

Introduction

The Open Transport Network (OTN) is a private communication system providing an extension over fiber for voice, data, LAN and video communications. The system is based on "nodes" interconnected by two point-to-point fiber-optic links forming two counter-rotating rings. This topology, in combination with the system's built-in fault recovery features, ensures extremely high system availability. This sheet describes the N42E node to be used for OTN-X3M.

Description

The OTN system is completely modular. The common equipment consists of the 19" mountable chassis with one or two system power supply modules (redundant) and one or two BORA-X3M/ETX/ULM common logic cards (redundant). Two hot-swap optical transceiver modules are plugged on each BORA-X3M/ETX/

ULM common logic card. The N42E nodes have eight universal interface slots for interface modules in any mixture. Moreover, two extra slots are provided for extension cards.

A Node Support Module (NSM) is part of the N42E node, but can be replaced if needed. It offers additional functionality (external alarm contacts, beeper, fan control and monitoring etc.) and is hot-swap replaceable.

The common logic card BORA-X3M/ETX/ULM is the node's central control block. It holds the connections and configuration settings that are programmed by the network operator via the OTN Management System (OMS). In case two common logic cards are installed in one node, one of them functions as a hot standby card. The Optical Transceivers convert the ring's optical signal to an equivalent electrical signal, and vice versa. The distance that can be spanned between two consecutive OTN

Features

Very high system availablity and reliability

Wide choice of interfaces to match specific applications

Universal interface slots

Redundant common logic card

Redundant AC or DC power supply

Replaceable cooling shelf with 3 temperature controlled fans provides excellent cooling

Choice of hot-swappable optical transceivers to meet fiber and/or distance requirements

Extremely fast reconfiguration times in case of cable breaks or equipment failures

Hot swap: all traffic-carrying elements can be replaced without shutting down the node

Bit Error Rate better than 10^{-9}

Standard 19" rack mountable

For OTN-X3M networks

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nodes in the network depends on the type of fiber and the types of Optical Transceivers used.

The optical transceiver modules provide an OC-12C/48C /192C (Optical Carrier) connection in SONET mode or an optical STM-4C/16C/64C (Synchronous Transport Module) connection in SDH mode.

The OTN-X3M network can extend over a couple of hundred meters or up to thousands of kilometers. In this way, OTN-X3M offers a solution for mixed transmission over medium to large distances.

All available interface cards have been designed to operate on the physical level of the various communications standards. In this way all traffic for voice, data, LAN and video is handled completely transparent for the higher protocol levels.

Operation

The N42E node can be used in OTN-X3M networks. It is compatible with N42, N42C and N415 nodes, which can work at the same backbone speeds.

For detailed information about the common logic cards, please refer to the following specification sheets:
- BORA622-X3M,
  Ref. No. AD-S138-E-8

- BORA2500-X3M,
  Ref. No. AD-S153-E-5

- BORA2500-X3M-ETX,
  Ref. No. AD-S154-E-5

- BORA2500-X3M-ULM,
  Ref. No. AD-S139-E-7

- BORA10G-X3M-ETX,
  Ref. No. AD-S405-E-5

- BORA10G-X3M-ULM
  Ref. No. AD-S410-E-2

Ordering information

N42E node
S30826-B31-X
(For OTN-X3M)

Power Supply Units
90-264 VAC and 125 VDC
V30812-A5020-A42
18-60 VDC   V30812-A5020-A43

Specifications

Dimensions
This chassis is 19"
rack mountable
Width   482 mm
Height (8 HU)   355 mm
Depth   329 mm

Power consumption
max. 400 W

Weight
Approx. 14.6 kg
(including 2 PSUs, and a BORA2500-X3M card)

Cooling
The cooling is realized by the combination of an air inlet at the bottom of the node and a fan tray at the top of the node. The fan tray contains 3 fans which cool the node when required. The fan speed is controlled based on the internal temperature in the node. Failure of a fan can be detected and the fan tray can be replaced while the node remains operational.
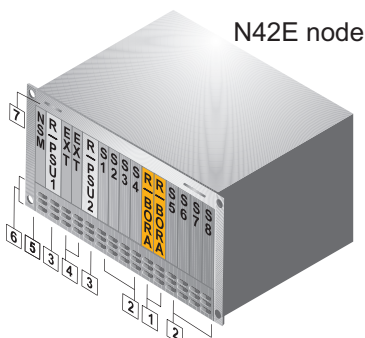
CE marking
EMC directive 2004/108/EC
LVD directive 2006/95/EC

MTBF (50°C / 122°F)
MTBF of the power supply module: 11 years

EMC tight, designed for 10 GHz radiation

The node is made in vibration resistant (according to IEC 68-2-6) Aluminum.

N42E node

① Common Logic Card(s):
BORA622-X3M,
BORA2500-X3M,
BORA2500-X3M-ETX or
BORA2500-X3M-ULM, BORA10G-X3M-ETX or BORA10G-X3M-ULM
The BORA card has two hot-swap optical transceiver modules for OTN-X3M dual ring connection (single mode and multi-mode fiber optics available). Different modules for different distances are available.

② Interface slots
The 8 interface slots can accommodate any combination of interface cards. Max. 784 Mbps capacity per interface card, 100 % user bandwidth utilization.
③ 270 Watt System Power Supply Unit(s), 10 TE width Supply voltage: 90 to 264 VAC (including 125 VDC) or 18 to 60 VDC, or any combination of both.
④ Extension cards
Two extra slots are provided for auxiliary cards
⑤ Node Support Module (is part of the N42E node)
Front accessible via 25-pin SUB-D connector 4 optically isolated digital IN, 4 optically isolated digital OUT (2 alarm relays, 2 general purpose), beeper, fan control & monitoring, node number, NSM self test button. Contains all active elements in node chassis, hot-swap replaceable
⑥ Air Inlet
⑦ Fan tray containing 3 temperature controlled fans. Tray can be replaced while the node is in operation

OTN
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