

NOKIA

Product Overview

Ethernet bridge adapters
100BASE-T, E66210.32
10/100BASE-T, E66210.33

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Product description

The Nokia ET-adapter is a plug-and-play Ethernet interface adapter for Dynanet (DNT) modems. This Ethernet interface adapter can be installed to the adapter port of a DNT modem.

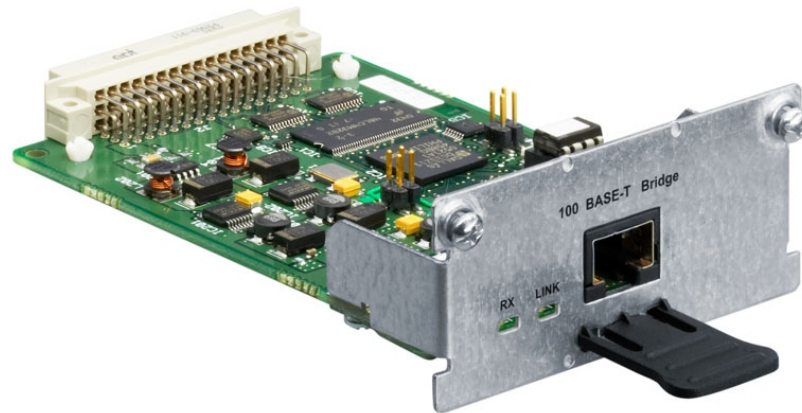


Figure 1. ET adapter

The main function of the ET-adapter is to bridge two LANs over the WAN. Ethernet frames received from the LAN are encapsulated inside the HDLC frames and the HDLC frames are sent to the WAN according to the serial data speed of WAN. The WAN interface of ET-adapter is connected to the interface port of DNT-series modem. Packets that are received from WAN are decapsulated from HDLC frame and then sent to Ethernet interface of an ET-adapter.

WAN transmission rate and used time slots are selected from the modem end. The modem can indicate adapter type and Ethernet link status. All other settings

are fixed. There are three selectable Ethernet interface settings in E66210.33: 10BASE half and full duplex and 100BASE full duplex.

The data path and main components of ET-adapter are described in the block diagram below.

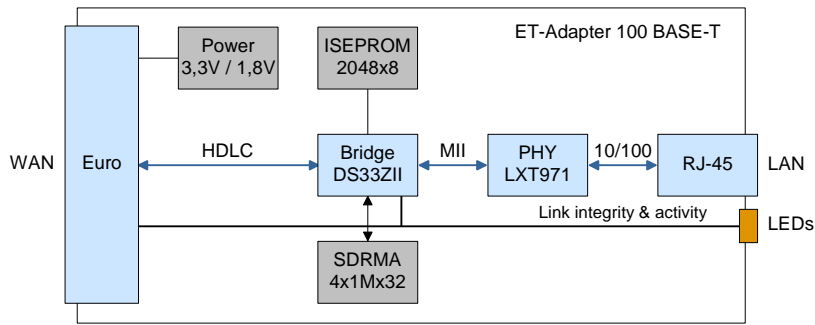


Figure 2. Block diagram

ET-adapter is compatible to virtual LANs and 802.1Q VLAN tags are forwarded transparently over the WAN. Using virtual LANs several subnets can be combined to the one Ethernet link, but only if also Ethernet switches support VLANs.

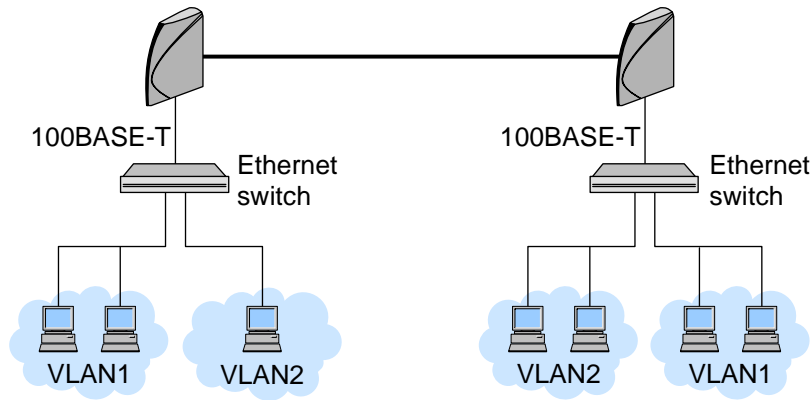


Figure 3. VLAN

Ethernet bridge adapter makes rate adaption and it can be connected to 10BASE-T ET-adapter or DYNANET EIU.

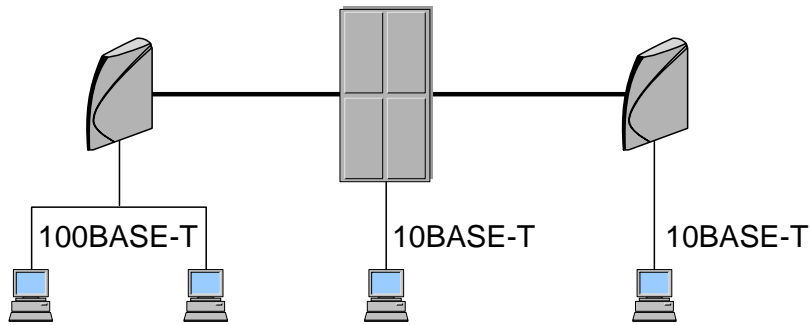


Figure 4. E66210.32 connected

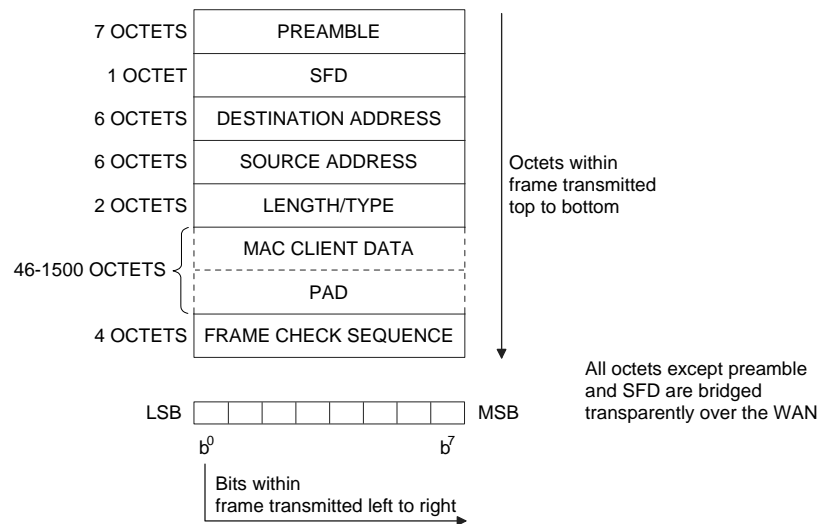


Figure 5. MAC frame

The figure above describes the standard Ethernet frame without VLAN tag. Standard maximum frame length is 1518 bytes. The ET-adapter supports frames included in 802.1Q VLAN tag. 1522 bytes long frames are forwarded from LAN to WAN.

2 Hardware installation instructions

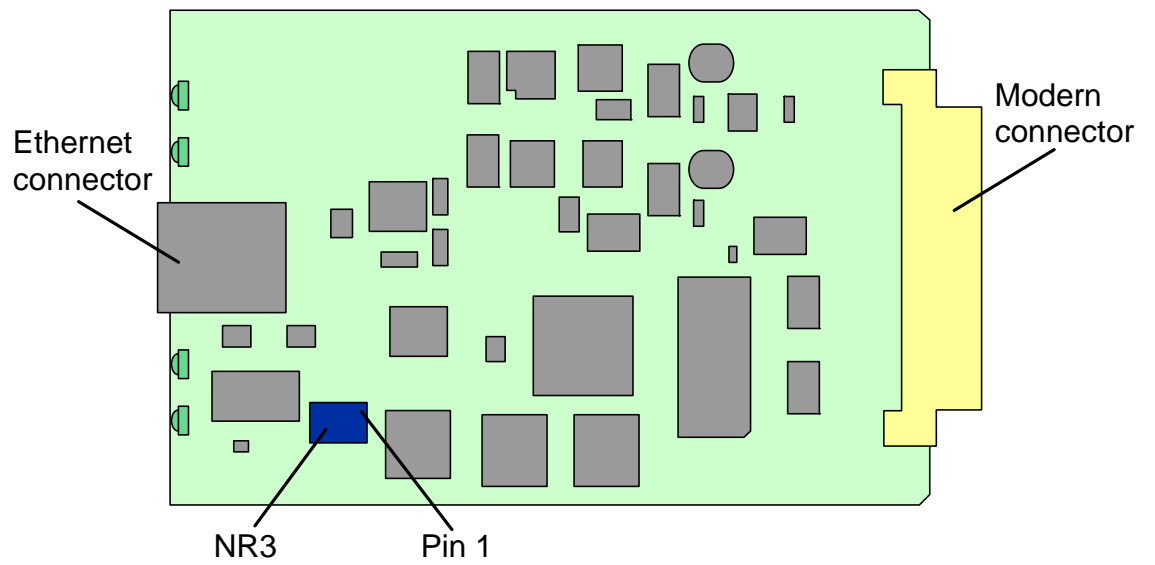


Figure 6. ET Adapter card E66210.33

Table 1. E66210.33 bridging

Link speed	10BASE	10BASE	100BASE
Duplex status	Half	Full	Full
Closed pins	1-2	3-4	5-6
LED 100	Off	Off	On
LED HD	On	Off	Off



Installing E66210.32

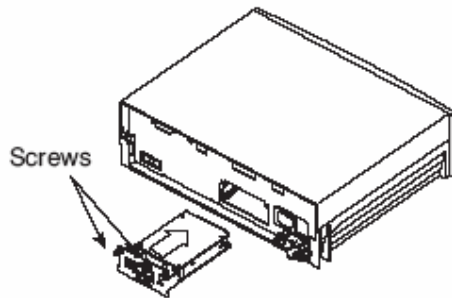


Figure 7. Installing the adapter

1. Switch off the modem power, plug the ET-adapter into the slot and tighten two screws. Then switch on the modem. The ET-adapter is ready to use.



Installing E66210.33

1. Select Ethernet interface configuration and close pins of NR3 according to Table 1.
2. Switch off the modem power, plug the ET-adapter into the slot and tighten two screws. Then switch on the modem. The ET-adapter is ready to use.

2.1 Front panel

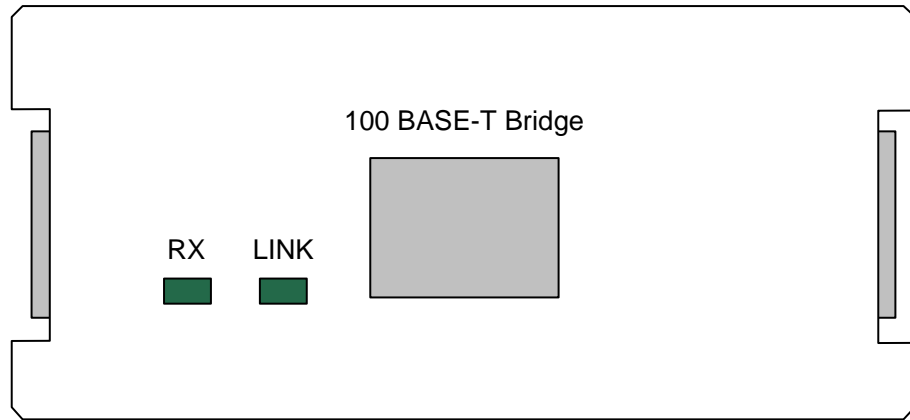


Figure 8. Front panel

RX displays **receive status**: LED blinks every time when an Ethernet packet is received from the LAN.

LINK displays **link status**: LED is lit when cable is connected to another Ethernet equipment and the link is up. Link status is also shown at the DNT modem: if the link is down there is no incoming signal alarm.

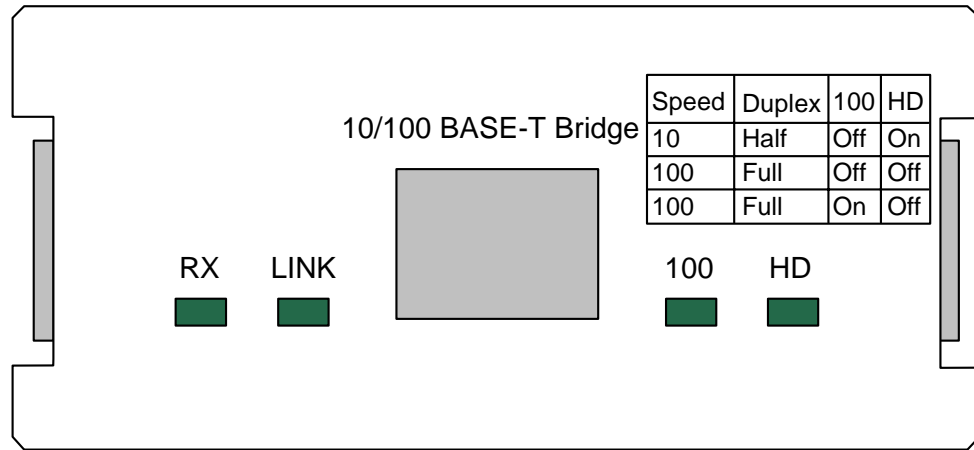


Figure 9. Front panel E66210.33

RX displays **receive status**. LED blinks every time when an Ethernet packet is received from the LAN.

LINK displays **link status**. LED is lit when cable is connected to another Ethernet equipment and the link is up. Link status is also shown at the DNT modem: if the link is down there is no incoming signal alarm.

100 displays **speed status**. LED is lit when the ET-adapter is configured to 100BASE mode, otherwise the adapter is configured to 10BASE mode.

HD displays **duplex status**. LED is lit when the ET-adapter is configured to half duplex mode, otherwise the adapter is configured to full duplex mode.

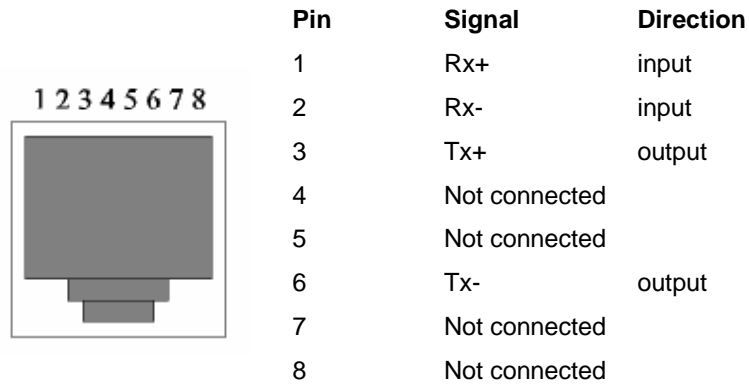


Figure 10. Ethernet connector and pin numbering

2.2 Cabling

ET-adapter is connected to the network adapter with a direct Ethernet cable. The maximum length of a category 5 cable is 100m. If the ET-adapter is connected to the Ethernet hub or switch then use a cross-connected Ethernet cable.

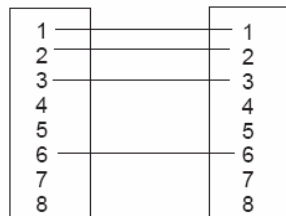


Figure 11. Direct cabling

Ensure that the Ethernet port that is connected to ET-adapter has the same configuration as the ET-adapter. Port speed and duplex status have to be the same at both Ethernet ports. It is not recommended to use auto-negotiation option. Port configuration should always be fixed.

3 Product features

3.1 Bridge

All received frames are forwarded transparently to the WAN.

Receive buffer size 1728 MAC frames

Transmit buffer size 320 MAC frames

Receive buffer is queue for data that was received from the Ethernet (LAN) to be transmitted to the HDLC (WAN).

Transmit buffer is for data that was received from the WAN to be transmitted to the Ethernet.

Receive buffer high watermark 1632 MAC frames

Receive buffer low watermark 1536 MAC frames

If the receive buffer size exceeds higher watermark, the ET adapter will send a pause frame to LAN. Pause frame is sent every time when a frame is received from LAN until the low watermark is reached. The pause frame is sent to a multicast destination address 01-80-C2-00-00-01. Pause time parameter of pause frame is 80 slots. Pause frame is sent only when full duplex mode is selected.

3.2 LAN

Selectable configuration 10 Mbps and half duplex
10 Mbps and full duplex
100 Mbps and full duplex

Maximum transfer unit 2016 bytes

Any frame larger than the maximum transfer unit (MTU) value will be rejected. The frame size includes destination address, source address, type, length, data and CRC. Standard Ethernet frame maximum length is 1518 bytes (destination address 6 bytes + source address 6 bytes + type 2 bytes + data 1500 bytes + CRC 4 bytes).

Cable UTP CAT5, maximum cable length 100m

3.3 WAN

HDLC	RFC1662
FCS	16 bits
Idle signal flag	7E (0111 1110)

Idle flags are sent continuously to WAN when there are no packets in the receive buffer. Two idle flags are sent between every HDLC packet.

Line speed n x 64 kbps (n = 1...32)

3.4 Environmental

Climatic	Operation:	EN 300 019, class 3.2
	Transport:	EN 300 019, class 2.3
	Storage:	EN 300 019, class 1.2
EMC:		EN 300 386
Power consumption:		800 mW

3.5 Modem requirements

The ET-adapter can be installed to the following modems. The modem adapter type is displayed as V.35 or Ethernet E66210.32 depending on the DNT modem software version.

DNT2M-sp	T65620
DNT2M-mp	T65630
DNT2Mi-sp	T65670
DNT2Mi-mp	T65680
DNT2M-G-sp	T65650
DNT2M-G-mp	T65660

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