



TELENOR

SPECIFICATION

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Specification of the network side of the Digital Ethernet leased circuits' user- network interfaces.

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1 Scope

This document specifies the Network Termination Point (NTP) of the Digital Ethernet leased lines. The NTP is the connection point between the Telenor Network Terminating Equipment (NTE) and the Customer Premises Equipment (CPE) interface.

2 References

- [1] IEEE 802.3: *Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specification*
- [2] JARA product specification: *Digital Ethernet*
- [3] IEC 60874-14-10: *SC/APC Fibre Optic Pigtail or Patch Cord Connector Type SC-APC Untuned 8 Degrees Terminated on Single Mode Fibre Type B1 - Detail Specification*
- [4] IEC 61754-20: *Fibre Optic Connector Interfaces - Part 20: Type LC Connector Family*
- [5] IEC 60603-7-2: *Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 100 MHz)*
- [6] IEC 60603-7: *Detail specification for 8-way, unshielded, free and fixed connectors (Ed. Note: up to 3 MHz)*
- [7] IEEE 802.1Q: *Virtual Bridged Local Area networks*

3 Definitions and abbreviations

NTE	Network terminating equipment
CPE	Customer Premises Equipment
NTP	Network Termination Point
ODF	Optical Distribution Frame
MTU	Ethernet Maximum Transmission Unit

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4 Overview

4.1 General

The Digital Ethernet product provides point to point logical connections between accesses via Ethernet interfaces according to [1] IEEE 802.3.

The interfaces support virtual LANs according to [7] IEEE 802.1Q, as well as Q in Q and Cisco ISL.

4.2 Data rates

The supported data rates are usually below the access rate and will be rate-limited on the ingress to the network.

The nominal maximum data rates are listed in [2] JARA product specification.

The traffic should be shaped on the CPU egress for avoiding packet loss.

4.3 Interfaces and MTU

The following interfaces and MTU are supported:

Interface	MTU	Comments
10 Base-T	1548	
100Base-TX	1548 or 2000, depending on used production platform	Depending on used production platform MTU up to 10000 may be supported on request. If MTU > 2000 is possible, use of a media converter will limit the MTU to 2048 if Telenor must use the media converter for providing the interface.
100Base-LX10	2000	MTU up to 10000 may be supported on request. If MTU > 2000 is possible, use of a media converter will limit the MTU to 2048 if Telenor must use the media converter for providing the interface.
1000Base-LX10		

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5 Detailed Specification

5.1 10Base-T

5.1.1 Cable and Connectors

The customer must provide category 5 connection cords, or better, between the NTE and the CPE.

The network interface will be provided by means of a RJ-45 socket. The RJ45 connector shall be unshielded and is specified in [6] IEC 60603-7.

Only two pairs are terminated, 1&2 and 3&6

5.1.2 Range

The maximum cable length is 100 meters.

5.1.3 Supported product classes

The supported product classes are:

- 64 kbit/s
- N x 64 kbit/s
- 1984 kbit/s
- 4 Mbit/s
- 10 Mbit/s

The nominal data rate (L2) capacity for MTU=1518 are listed in [2] JARA product specification. Lower MTU will give lower L2 rate due to the increased overhead part.

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5.2 100Base-TX

5.2.1 Cable and Connectors

The customer must provide category 5 connection cords, or better, between the NTE and the CPE.

The network interface will be provided by means of a RJ-45 socket. The RJ45 connector shall be unshielded and is specified in [5] IEC 60603-7-2.

Only two pairs are terminated, 1&2 and 3&6.

5.2.2 Range

The maximum cable length is 100 meters.

5.2.3 Supported product classes

The supported product classes are:

- 64 kbit/s
- N x 64 kbit/s
- 1984 kbit/s
- 4 Mbit/s
- 10 Mbit/s
- 20 Mbit/s
- 50 Mbit/s
- 100 Mbit/s

The maximum data rates for MTU=1518 are listed in [2] JARA product specification.

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5.3 100Base-LX10

5.3.1 Fibre and Connectors

The customer must provide the fibre patch connection between the NTE and the CPE. The network interface will be provided on an optical distribution block by means of two optical sockets, one each for transmit and receive. Connectors to be used are normally SC-APC type complying with [3] IEC 60874-14-10. Optionally the network interface may be provided directly on the NTE by means of LC-PC connectors complying with [4] IEC 61754-20.

5.3.2 Optical power levels

Specification for Telenor interface.

Power levels (dBm)			
Tx max	Tx min	Rx max	Rx min
-8	-15	-9	-23

5.3.3 Supported product classes

The supported product classes are:

- 10 Mbit/s
- 20 Mbit/s
- 50 Mbit/s
- 100 Mbit/s

The maximum data rates for MTU=1518 are listed in [2] JARA product specification.

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5.4 1000Base-LX10

5.4.1 Fibre and Connectors

The customer must provide the fibre patch connection between the NTE and the CPE. The network interface will be provided on an optical distribution block by means of two optical sockets, one each for transmit and receive. Connectors to be used are normally SC-APC type complying with [3] IEC 60874-14-10. Optionally the network interface may be provided directly on the NTE by means of LC-PC connectors complying with [4] IEC 61754-20.

5.4.2 Optical power levels

Specification for Telenors interface.

Power levels (dBm)			
Tx max	Tx min	Rx max	Rx min
-3	-11	-4	-17

5.4.3 Supported product classes

The supported product classes are:

- 10 Mbit/s
- 20 Mbit/s
- 50 Mbit/s
- 100 Mbit/s
- 150 Mbit/s
- 300 Mbit/s
- 450 Mbit/s
- 600 Mbit/s
- 1000 Mbit/s

The maximum data rates for MTU=1518 are listed in [2] JARA product specification.

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