

# MN410 (C-band) MN420 (Ku-band)

## MENOS TV Satellite Interactive Terminal (SIT)

# MENOS

### Description

The MENOS TV SIT is one of the terminal types that can be used within the MENOS satellite network environment. The terminal is intended for network members who need to exchange or distribute professional television content with remote sites in a fast, reliable and efficient way. It also provides high-speed Internet, VPN and VoIP services independently of the availability of terrestrial links.

The core of the TV SIT is the Multimedia Exchange Unit (MMX), which processes both live video signals and video files. The MMX of the SIT exchanges video content with the MMX of the MENOS hub for:

- Live TV contribution/distribution (reserved channel)
- High speed Streaming on Reserved channel or Best Effort File transfer
- Store and forward: short time storage in the SIT or long term archiving in the HUB

These exchange sessions are synchronized and activated automatically by the hub's Multimedia Reservation Server (MRS).

The TV SIT is connected to the MENOS hub via two satellite subsystems: a MF-TDMA (Multiple Frequency and Time Division Multiple Access) broadband subsystem for data and voice communication, and a RAMA (Reservation Access Multiple Access) subsystem for video and fast file transfers.

The MENOS concept starts with the end-users in mind. The terminals require little maintenance, are easy to install and operate and are configured for specific applications while being made of common building blocks using standardized technologies.

### Applications

#### Television Contribution and Distribution:

The MENOS TV SIT can be used to contribute digital master video content from a remote station to the MENOS hub where it can be stored in a central repository for distribution or archiving. The TV SIT can also be used to receive and store locally a signal distributed from the hub's central archive to the remote stations. Users can access the central archive to browse, preview and request content. The store and forward capability allows the contributor/distributor to use low bandwidth channels or to schedule the exchange of the TV content at a time when the load of the network is lower, thereby saving on the cost of transmission. The content can be digitally secured to limit access to specified MENOS stations.

#### IP access services:

As an integrated satellite IP access platform, the MENOS TV SIT provides an 'always-on' high-bandwidth Intranet and Internet connection, both for unicast and multicast traffic. Network members also use this connection for capacity reservations, access to the central archive, and VoIP collaboration.

#### Secure Virtual Network Operation:

Professional users have the ability to create Virtual Private Networks connections among several SIT's to allow secured access for exchanging private data. The Virtual Private Networks are implemented by the tunnel mode IPSec Internet standard, encrypting and authenticating the entire IP packet contents for maximal security.

#### VoIP collaboration channels:

The VoIP collaboration channels enable cost-effective SIT to SIT voice communication and multi-party conferences for daily operations, while consuming very little satellite bandwidth. The embedded Quality of Service (QoS) features ensure high quality VoIP.

### Features

- Fully integrated, easy to install turn-key terminal system
- Sat3Play MF-TDMA IP Broadband Access
- DVB-S2 SCPC Return Channel for high bandwidth contributions/distributions
- High speed IP connection with embedded acceleration
- Two satellite frequency bands supported (Ku / C-band)
- Integrated video encoder/decoders (max 5 decoders per SIT)
- Video Multimedia Exchange Services (MMX):
  - MPEG-2 4:2:0MP@ML, 4:2:2P@ML
  - Automated interface with Multimedia Reservation Server/interface to the Multimedia reservation server (MRS)
- Supports IP broadband unicast and multicast applications
- Integrated encryption on sessions and data available
- Secure Virtual Network Operation
- Fully integrated VoIP services
- Quality of Service (QoS) (dynamic & constant bit rate)
- Remote monitoring and diagnostics
- Remote software upgradeable

### Related Products And Documents

#### Other MENOS products

- MN610 and MN620 IP SITs
- MN510 and MN520 Radio exchange SITs

#### Application notes

- MENOS applications – broadband access
- MENOS applications – Real time TV exchange



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# Specifications – MN410/420

## SATELLITE INTERFACE

### MF-TDMA Broadband access system

- Forward Channel:
  - Modulation: DVB-S2 QPSK/8PSK CCM
  - Rates: 3 to 30 Mbaud
- Return Channel:
  - Modulation: GMSK
  - Rates: 0.256 Mbaud or higher (\*)
- Outdoor unit (MN420):
  - TX Frequency: 13.75 to 14.25 GHz
  - TX Output power: 4 W
  - RX Frequency: 11.7 - 12.75 GHz (optional 10.7 - 11.8 GHz)
  - Polarisation: linear (Tx/Rx orthogonal)
  - Antenna: 1.2m offset – Tx/Rx 43.3/41.8 dBi
- Outdoor unit (MN410):
  - TX Frequency: 5.85 to 6.425 GHz
  - TX Output power: 5 W
  - RX Frequency: 3.7 to 4.2 GHz
  - Polarisation: circular (Tx/Rx orthogonal)
  - Antenna: 1.8m offset – Tx/Rx 39.5/35.4 dBi

### RAMA system

- DVB-S2 Forward and Return Channel
  - QPSK, 8PSK, 16APSK: 0.256 to 45 Mbaud
  - 32APSK: 1 to 33 Mbaud
- Outdoor unit (MN420):
  - TX Frequency: 13.75 to 14.25 GHz
  - TX Output power: 4 W
  - RX Frequency: 11.7 - 12.75 GHz (optional 10.7 - 11.8 GHz)
  - Polarisation: linear (Tx/Rx orthogonal)
  - Antenna: 1.8m dual offset – Tx/Rx 47/45.5 dBi
- Outdoor unit (MN410):
  - TX Frequency: 5.85 to 6.425 GHz
  - TX Output power: 10 W
  - RX Frequency: 3.7 to 4.2 GHz
  - Polarisation: circular (Tx/Rx orthogonal)
  - Antenna: 2.4m dual optics – Tx/Rx 41.7/38 dBi

## VIDEO SUBSYSTEM

- Video encoder:
  - Thomson Vibe AS Encoder:
  - MPEG-2 4:2:0MP@ML and 4:2:2P@ML video encoding
  - CBR single pass encoding, max rate 4:2:0 15Mbps, 4:2:2 50Mbps
  - SDI (BNC) with embedded stereo audio
  - MPEG-1 Layer II audio compression
  - 100 Base T IP output
- Video Decoder (default 1 max 5 decoders per SIT):
  - MPEG-2 4:2:0MP@ML and 4:2:2P@ML video decoding
  - 100 Base T IP input unicast and multicast
  - SDI (BNC) with embedded audio
- Multimedia Exchange Server (MMX):
  - 250 GB HDD for local storage of video content
  - MPEG-TS over UDP (IETF RFC 2250)

## TELEPHONY

### Analog Telephone Adapter:

- GrandStream HT-386:
  - 2 FXS ports
  - G.723.1 codec

## IP PERFORMANCE

- IP data Throughput broadband access system:
  - Forward: Max. 2 Mbps Unicast, 16 Mbps Multicast
  - Return: 146 kbps (GMSK) / 1,5 Mbps (4CPM\*)
- IP data Throughput RAMA:
  - Forward: 20 Mbps
  - Return: 15 Mbps
- Collaboration channels:
  - Max. 2 VoIP connections simultaneously

## STANDARDS AND PROTOCOLS

### STANDARDS

EN 301790 (DVB-RCS (partially)), EN 302307 (DVB-S2), EN 301421 (DVB-S), IEEE 802.3 (10T Ethernet), IEEE 802.3u (100TX Ethernet), ISO/IEC 13818-1 (MPEG-2) ISO/IEC 14496-14 (MPEG-4)

### IP PROTOCOLS

RFC 768 (UDP), RFC 791 (IP), RFC 792 (ICMP), RFC 793 (TCP), RFC 826 (ARP), RFC 959 (FTP), RFC 2131 (DHCP)

### STREAMING PROTOCOLS

RFC 2250 (MPEG-TS over UDP)

## ENVIRONMENT

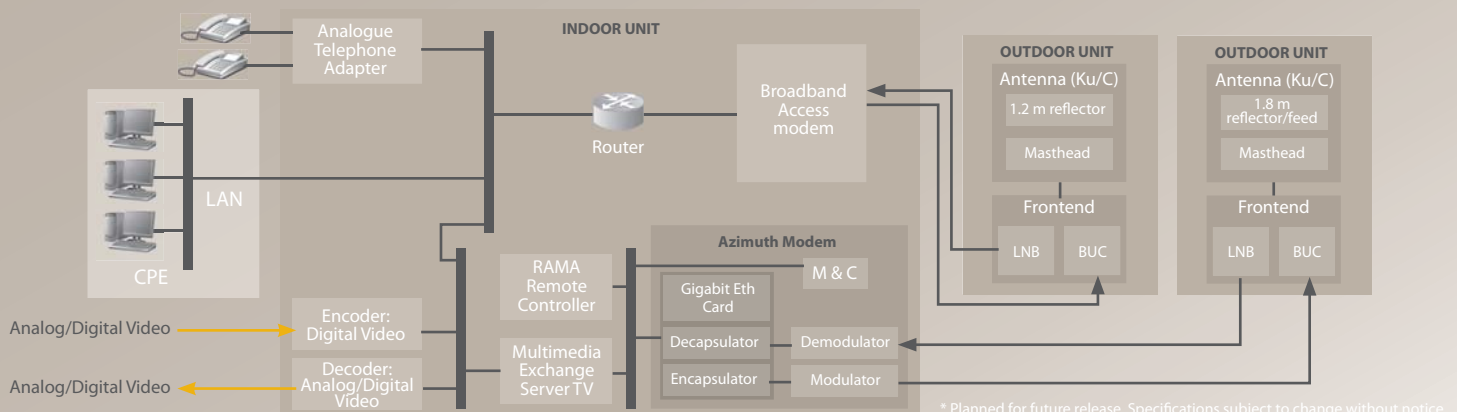
- Mechanical - 19" rack
  - Housing: 60cm W x 80cm H x 80cm D
  - Weight: 115 kg
- Temperature (indoor unit)
  - operational: 0 to 40 degC – non condensing
  - storage: -40 to 70 deg C up to 95% condensing
- Temperature (outdoor unit): -30 to 55 deg C
- Power Supply: 230V / 6A
- Power consumption: 740 W

## ORDERING INFORMATION

MN410: TV terminal with C Band RF Front End + Antenna (no mounts)  
 MN420: TV terminal with Ku Band RF Front End + Antenna (no mounts)

### Options:

- AN-xx: Non-penetrating mounts for antennas
- AL-xx: Non-standard IF cable lengths
- AR-xx: Non-standard antenna dish sizes
- AD-xx: High throughput demod capabilities
- AM-xx: High throughput mod capabilities
- AI-xx: Additional decoders (1 standard, max 5)
- AR-xx: Predefined high-power/throughput configurations
- AS-xx: LNBs for non-standard frequencies (e.g. 10.7 - 11.8 GHz)



\* Planned for future release. Specifications subject to change without notice

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