



MEOS™ Capture HRR v3

High Rate Recorder

The MEOS Capture HRR is an autonomous, high performance data recorder for the most demanding professional users, developed to bring all your data safely home, always. This mission statement translates into the key properties of all MEOS Capture products: **Performance, Reliability and Flexibility.**

MEOS Capture HRR is designed to record and store data, primarily for backup purposes. Data storage is automated, and data are available when needed using standard file transfer mechanisms.

Performance

Automatically record data for backup purposes

- Data driven or scheduled recording
- One or several satellites

Get data from current and future satellites

- Supporting data rates up to 1 Gbps

Get all data right from the start of every satellite contact session

- Acquiring all data; raw or frame processed/decoded

Automated data storage system

- No manual actions needed; oldest data is automatically deleted if more space is needed

Data retrieval

- Standard file transfer mechanisms

Key features & benefits

- Autonomous operation, data driven or scheduled
- Multi mission support, pre-qualified configurations
- Real-time acquisition
- State of the art FPGA based hardware
- Data rates up to 1 Gbps
- Extensive monitoring and control capabilities, locally and remotely.
- Instant status information on ongoing recording
- Java based Graphical User Interface

Reliability

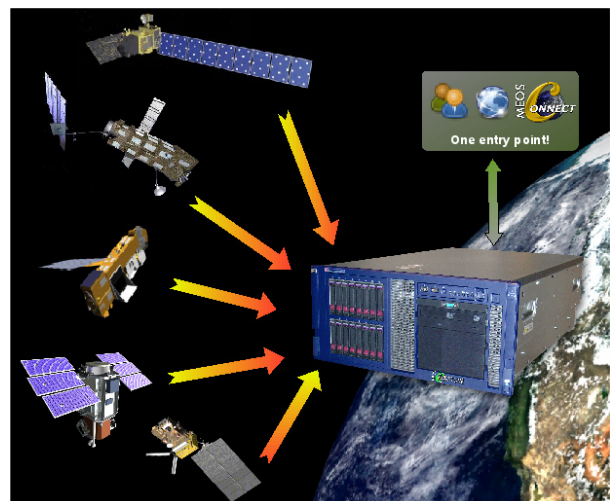
Reduce your operations cost by automated "lightsout" operations

- Fully automated operations in both scheduled and data driven modes.
- Data driven mode: Automatic data detection - no schedules.
- Schedule driven mode: Autonomous operation according to schedule.
- Very stable Linux system, supporting 24/7 operations without operator intervention.

Flexibility & modularity

Keep your original system, just add functionality if needed

- Extra input channels may be added
- Demodulator may be added
- Automatic scheduling, based on ephemeris data, may be added
- Storage to removable media may be added



MEOS Capture HRR

Front End

- Data driven or scheduled recording of data to disk
- Dual channel data recording - fully independent
- Scalable by adding more data channels

Distribution

- Data stored on disk available through FTP server
- Standard file transfer mechanisms (FTP, SFTP)

Graphical User Interface

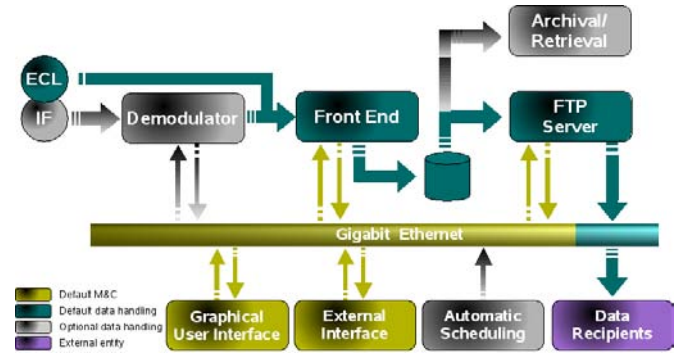
- Programmable(XML definition), Java based GUI. Stand alone or through a web browser.

External Interface

- TCP socket and XML based external interface
- Access authentication
- MEOS Connect ready

Reporting

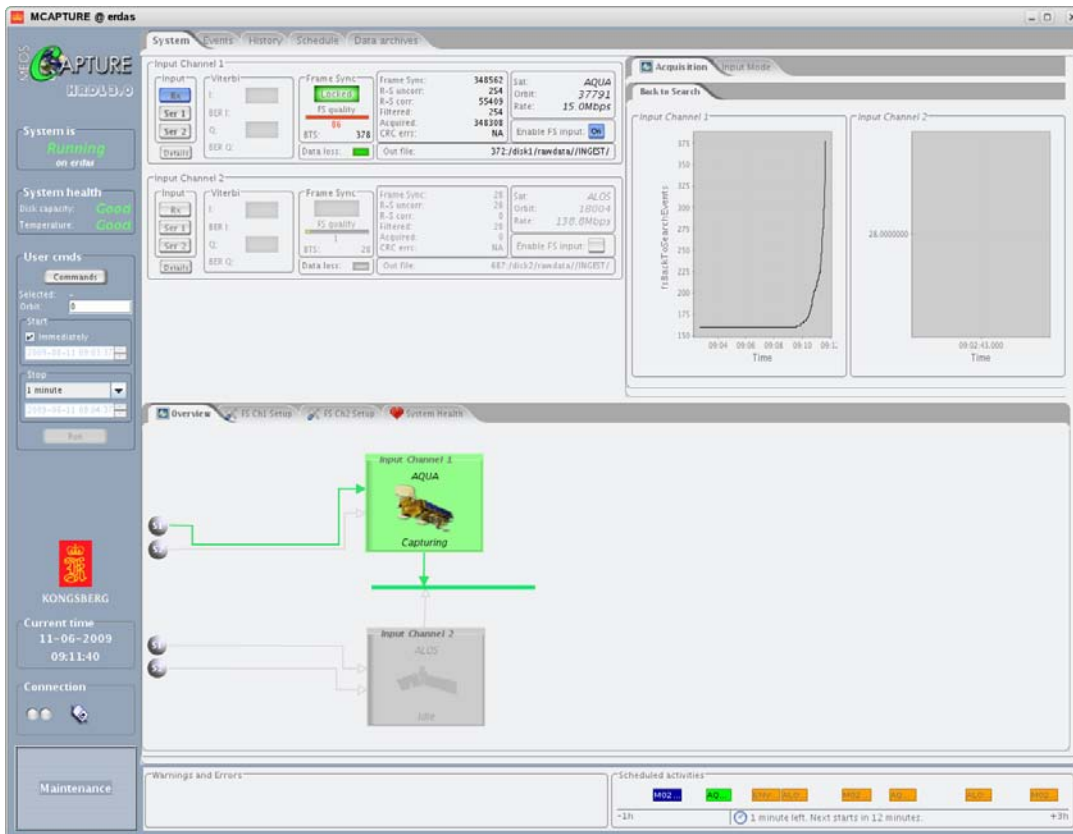
- Historical view of qualitative and quantitative status information for previous activities, based on satellite and orbit. Both as numeric values and graphs
- Automatic generation of WEB reports, including quality and quantitative status information, plots and events. Available through standard WEB browser



Options

- **Archival & Retrieval:** Archival and retrieval of data to/from removable media (requires additional HW).
- **Automatic scheduling:** Based on orbit prediction (propagation) for configurable missions (including reception of ephemeris data).
- **Demodulator:** Input IF directly. Note that when using IF input, only single mission support in data-driven mode,
- **Additional channel:** Increase system flexibility by adding additional input channel

Graphical User Interface



MEOS Capture HRR user interface



IF Input

- Dual serial clock/data inputs – separate or merged data
- Data rates:
 - 500 Mbit/s per input
- Data polarity:
 - Normal/Inverted
- Clock input phases
 - Small step phase adjustments
- Clock duty cycle:
 - 50% ± 10%
- Electrical standard: Differential ECL (standard), LVDS, RS-422: Specify on order
- All female SMA connectors

Decoding

- Modulo 4 Differential Decoding
- Modulo 2 Differential Decoding (PCM):
 - NRZ-M, NRZ-S, NRZ-L
- Viterbi decoder:
 - CCSDS compliant Viterbi polynomial
 - Rates 1/2, 3/4, 2/3, 5/6, 7/8
 - Viterbi BER estimation

Frame Processing

- Automatic data ambiguity resolution
- Advanced frame synchronization:
 - Sync options: CCSDS AOS/PT, TDM, DVB-S*
 - Fixed length, variable length, adaptive modes
 - Frame length: Up to 64 kBytes
 - Sync pattern: Up to 64 bits
 - Bit error tolerance: Up to 31 bit errors
 - Search-Check-Lock-Flywheel strategy:
 - 0 to 15 frames thresholds
 - Bit slips: Up to ± 7 bits

**) Specify format interleaving when ordering*

Physical

- Rack mountable chassis
- Height x Width x Depth in cm: 21.92 x 44.45 x 67.31
- Weight: appr. 35 kg
- Power:
 - 90-132 volts / 180-264 volts, 47 – 63 Hz
 - Dual power supplies
 - Consumption: 500 W
- Temperature:
 - Operating: 10°C to 35°C (non-operating: -30°C to 60°C)
- Relative humidity (non condensing):
 - Operating: 10% to 95% (non-operating: 5% to 95%)
- Separate keyboard and monitor unit (optional)



Integrating your ground station network

The challenge

A network of satellite ground stations typically consists of many sites. Each site may have one or more antennas and associated switching matrices and receivers. The stations may have individual technical solutions that may also evolve during the operational life. Operations are typically under a combination of local and centralized control. Equipment diagnostic tools are available primarily at the station level. Generating and distributing status reports and statistics to support operational decisions, is typically a manual process.

Operational schedules are distributed from the central site to the stations. In some cases manual work is required to run the stations according to these schedules. Manual work is also required at the central site to assemble reports, make statistics available and present this during operations briefings.

The solution

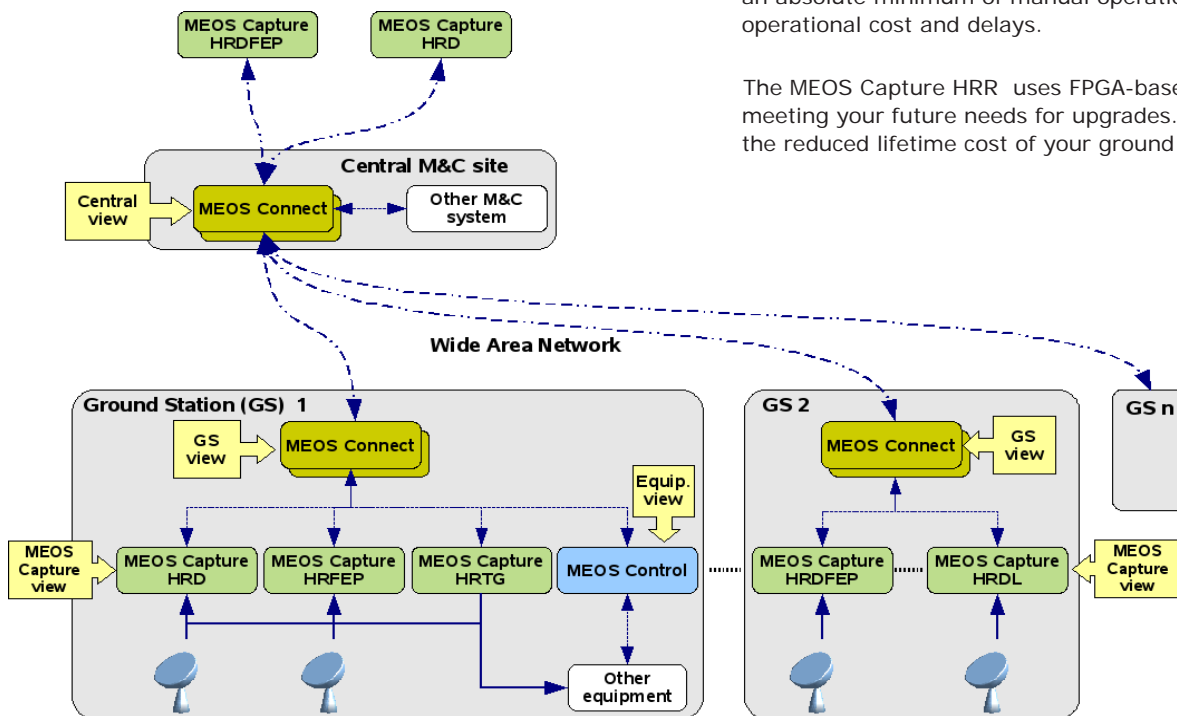
The MEOS Capture HRR is designed for seamless integration in ground station networks. Its GUIs and remote monitoring and control capability provides detailed system visibility and control from any location in the network, with minimal bandwidth requirements. Network capacity utilization is optimized by automatic and adaptive bandwidth allocation and retransmission.

System status and data quality statistics are automatically generated and disseminated for central archiving and report compilation. The MEOS Capture HRR and the MEOS Connect are the ideal elements for building your ground station network.

Benefits

The MEOS Capture HRR, MEOS Control and MEOS Connect can be combined into a ground station network requiring an absolute minimum of manual operations. This reduces operational cost and delays.

The MEOS Capture HRR uses FPGA-based hardware, meeting your future needs for upgrades. This contributes to the reduced lifetime cost of your ground station network.



Related Products

- MEOS Capture HRFEP - High Rate Front End Processor
- MEOS Capture HRDFEP - High Rate Demodulator and Front End Processor
- MEOS Capture HRTG - High Rate Test Generator
- MEOS Capture HRTG - High Rate Test Generator
- MEOS Connect - Ground Station Networking / Systems-of-systems
- MEOS Control - Controlling external equipment from one system

Delivery

MEOS Capture HRR is delivered with SuSe Linux, and normally configured, tested and pre-qualified at Kongsberg Spacotec AS premises.

Alternative configurations may be available upon request.

MEOS™ is a registered trademark of Kongsberg Spacotec AS in Norway and in other countries.

Note! Specifications are subject to change without notice.

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