



General

The HEIM DATaRec 4 MRG100 Module is an 8 channel PCM merger input or output module.

The module can operate as a standalone recording front-end (PC connection via USB 2.0 / max. data rate 40 MBit/s¹) or linked together with additional HEIM DATaRec 4 Modules to a multi channel system via HeimLink.

Each input / output channel is completely independent.

The HEIM DATaRec 4 represents leading edge technology.

8 channel PCM merger input or output

Mode	record or replay, E to E mode
Input signal	8 independent PCM input streams
Input format	NRZ or BiPhase PCM code
Signal rate	10 kbit/s to 30 Mbit/s NRZ-L, -M, -S: per channel 10 kbit/s to 10 Mbit/s BiPhase-L, -M, -S: per channel
Clock rate	any fixed clock rate is possible, the receiver synchronizes automatically to the incoming bit rate
Clock source	external or internal (internal clock is asynchronous to data in the range of 10 kbit/s - 30 Mbit/s)
Clock edge	rising or falling edge selectable
Signal level	symmetrical or asymmetrical, RS 422, TTL, PECL, NECL per channel configurable
Input derandomizer	Off, RND-R11, RND-R15, RND-R17, RND-F11, RND-F15, RND-F17
Symmetrical signal level limits	from -5.0 V to 5.0 V (RS422, LVDS, LVPECL, NECL, ...)
Absolute maximum signal Level limits	from -10.0 V to 10.0 V
Asymmetrical threshold level	from 0 V to 5.0 V selectable in 0.1 V steps. (TTL, CMOS, ...)

Input impedance	75 Ω or 100 Ω or 22 kΩ
Time stamping	100 ns
Connector	separate input and output input 44-pin D-Sub (male) output 44-pin D-Sub (female)
Interfaces	HeimLink and USB interface
Display, button, LED	yes
Power consumption	max. 15 watts (8*30 Mbit/s), if the output is disabled or not connected to a receiver max. 18 watts (8*30 Mbit/s) if the outputs are driving 8 times 100 Ω
Power input range	17 – 28 V DC
Dimensions	standard HEIM DATaRec 4 housing 37.1 x 184 x 124.5 mm (w x h x d) including fixing system
Weight	860 g typical

PCM mode recording

Recording modes	throughput, packed and unpacked
Minor frame synch word length	7 to 33 bits
Minor frame synch word mask	a bit mask can be defined for each bit of the minor frame synch. The zero bits in the mask mean "don't care" bits for the frame synchronisation
Maximum minor frame size Unpacked mode	up to 4096 16-data words including the synch word
Packed mode	65536 data bits including the synch word

Technical Specification HEIM DATaRec 4 MRG100

Minor frame synch lock criteria	programmable number of found synch patterns
Minor frame synch lost criteria	programmable number of lost frames
Major frame size	not limited, however major frames exceeding 64 Kbytes will be split into more than one data packet
Word shifting	
Unpacked mode	MSB first or LSB first mode selectable on every word
Packed and throughput mode	MSB first or LSB first mode selectable for the whole packet
Watch word check	one up to 16 bit data word can be defined at any position in a bit-mask as watch word, and if it is defined its absence is continuously checked and indicated as error status.
Status indicators	no clock, no data status, measured bitrate
Lock indication	minor frame locked, major frame locked, watch word checking

Output

Output signal	8 independent PCM output streams for replay or one monitor output for all inputs
Monitor mode	one selectable monitor channel or E to E for all channels
Output format	NRZ or BiPhase code
Output randomizer	Off, RND-R11, RND-R15, RND-R17, RND-F11, RND-F15, RND-F17
Signal rate	
Data + clock mode	10 kbit/s to 30 Mbit/s
Clock rate	the recorded data rate is automatically reconstructed
Clock format	synchronous to the data, rising or falling edge selectable
Signal level	RS-422 differential
Timing reconstruction	1 µs

Functions

Supported dataformat	each channel provides an independent IRIG 106 chapter 10 data stream
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Environmental specifications

Vibration	5 g
Shock	10 g
Temperature operational	IEC 60068-2-14-Nb
Standalone module	-20 °C - 70 °C -30 °C - 70 °C ²⁾
Link chain system	-10 °C - 55 °C -20 °C - 55 °C ²⁾
Storage	-40 °C - 85 °C
Humidity	0 - 93% relative, non-condensing
EMI	DIN EN61000 / DIN EN61326 ³⁾

Notes

Performance varies depending on the installation environment. The shown values were measured using an appropriately designed test system including the HEIM DATaRec 4 power supplies under nominal conditions of temperature, voltage, etc..

Performance is significantly influenced by storage medium type, host computer performance and load, used acquisition software, signal module configuration, power supplies and cabling.

- ¹⁾ under development
- ²⁾ special start-up procedure required
- ³⁾ for operation in industrial environment (according to DIN EN 61326) earthing of the module and / or shielded cable is necessary to prevent influences by external electromagnetic distortions.

Applications



Miniature system
Single module system with direct link to the PC via USB 2.0



Distributed data acquisition system
Remotely located modules (up to 768 channels)



Compact system
Centralized acquisition system with up to 768 channels



Distributed multi channel system
Remotely located groups of modules (up to 768 channels)



GSS base system, up to six internal Signal Modules



Decentralized system
Base system, module extender and external storage