



Data + Clock and BiPhase Module	
DCM12	
1 Channel module for signal input and output	
Input	
Input signal:	Data + Clock, Data only, BiPhase, PCM code
Signal rate:	Data + Clock: 1 kbit/s – 20 Mbit/s Data only mode: 1 kbit/s – 8 Mbit/s BiPhase PCM Code: 7 kbit/s to 10 Mbit/s
Clock rate:	Any fixed clock rate is possible, the receiver synchronizes automatically to the incoming bit rate.
Clock source:	External or internal
Clock format:	Data + Clock mode: Synchronous to the data, rising, or falling edge selectable.
Signal level:	RS 422 differential, or single ended, TTL, additional low level input for BiPhase (min. 1 V _{peak})
Input impedance:	100 Ω, 150 Ω or 20 kΩ selectable for RS422, 330 Ω for TTL
Connector:	37-pin D-Sub
Output	
Output signal:	Data + Clock, Data only, BiPhase PCM code
Signal rate:	Data + Clock: 1 kbit/s – 20 Mbit/s Data only mode: 1 kbit/s – 8 Mbit/s BiPhase PCM Code: 1 kbit/s to 20 Mbit/s
Clock rate:	The recorded data rate is automatically reconstructed
Clock format:	Data + Clock mode: Synchronous to the data, rising, or falling edge selectable. NRZ Data + Clock and BiPhase code are always available.
Signal level:	RS 422 differential or single ended for all Data, Clock and BiPhase.
Output impedance:	75 Ω
Connector:	37-pin D-Sub, same as the input

DCM40	
1 Channel module for signal input and output	
Input	
Input signal:	Data + Clock: Data and clock mode (DCM) Data only: Asynchronous Sampling mode (ASM) BiPhase: BiPhase mode (BPM)
Signal rate:	DCM and ASM mode: NECP or PECL input: 10 kbit/s – 100 Mbit/s RS-644 (LVDS) input: 10 kbit/s – 80 Mbit/s RS-422, RS-485 or analog input: 10 kbit/s – 40 Mbit/s TTL input : 10 kbit/s – 20 Mbit/s BPM mode: All input levels: 10 kbit/s – 12 Mbit/s
Clock rate:	DCM and BPM mode: Any specified fixed clock rate is possible ASM mode: Internal clock rate all signal levels: 10 kbit/s – 100 Mbit/s
Clock source:	External or internal depending on selected mode
Clock format:	DCM mode: Synchronous to the data ASM mode: The internal receiver clock samples the data asynchronously. BPM mode: The internal receiver synchronizes automatically to the incoming BiPhase coded signal.
Clock edge:	Rising or falling edge selectable
Single ended input signals	
Signal level:	TTL or High speed single ended analog
High speed single ended analog	
Coupling:	AC or DC coupled
Input range:	± 10 V _{peak} single ended
Input threshold:	- 5 V – + 5 V (selectable in 100 mV steps)
Input hysteresis:	30 mV, 100 mV or 300 mV selectable
Differential input signals	
Signal level:	RS-422, RS-485, RS-644 (LVDC), NECL, PECL differential standards or high speed differential analog

High speed differential analog	
Coupling:	DC coupled only
Input range:	$\pm 10 V_{\text{peak}}$ differential
Input threshold:	30 mV, 100 mV or 300 mV selectable
Max. common mode:	$\pm 4 V$
Input impedance:	NECL or PECL: 100 Ω differential RS-422 or RS-485: 51 Ω , 100 Ω or 12 k Ω selectable RS-644: 51 Ω , 100 Ω or 4 k Ω selectable TTL: 800 Ω , bus hold circuit High speed analog: 75 Ω or 22 k Ω selectable Common: 50 k Ω
Connector:	37-pin D-Sub

Output

Output signal:	DCM mode: Data + Clock BPM mode: BiPhase-L, BiPhase-M or BiPhase-S
Signal rate:	NECL or PECL output: 10 kbit/s – 100 Mbit/s RS-644 output: 10 kbit/s – 80 Mbit/s RS-422, RS-485 output: 10 kbit/s – 40 Mbit/s
Clock rate:	The output clock is synchronous to the data
Clock format:	DCM mode: NRZ-L, NRZ-M or NRZ-S output coding selectable rising or falling edge selectable
Signal level:	NECL, PECL, RS-422, RS-485, RS-644 differential standards selectable
Data randomizer:	Off, Forward P11/P15/P17, Reverse P11/P15/P17 selectable
Pseudorandom generator:	Off/P07/P15/P23 pattern selectable
Connector:	37-pin D-Sub, same as the input

Data + Clock and BiPhase Module with burst option

DCB12

1 Channel module for signal input and output

All specification valid as specified for DCB12 module with the following extensions:

Burst mode selectable	
Min. burst size:	32 bit
Minimum gap between bursts:	3 ms

PCM Merger

MRG12

4 Channel PCM Merger module for signal input and output

Input

Input signal:	up to 4 independent PCM input streams
Input format:	NRZ PCM code
Signal rate:	Data + Clock: 1 kbit/s – 5 Mbit/s
Data only mode:	1 kbit/s – 2 Mbit/s
Total bitrate:	12 Mbit/s for the module
Clock rate:	Any fixed clock rate is possible, the receiver synchronizes automatically to the incoming bit rate.
Clock source:	External or internal

Clock format:	Data + Clock mode: Synchronous to the data, rising, or falling edge selectable.
Signal level:	RS 422 differential or single ended TTL
Input impedance:	100 Ω , 150 Ω or 20 k Ω selectable for RS422, 330 Ω for TTL
Connector:	37-pin D-Sub

Output

Output signal:	up to 4 independent PCM output streams, short circuit protected
Output format:	NRZ code
Signal rate:	Data + Clock: 1 kbit/s – 5 Mbit/s
Data only mode:	1 kbit/s – 2 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, or single ended, TTL
Connector:	37-pin D-Sub, the same as input

MRG40

8 Channel PCM Merger module for signal input and output

Input

Input signal:	up to 8 independent PCM input streams
Input format:	NRZ or BiPhase PCM code
Signal rate:	Data + Clock: 1 kbit/s – 20 Mbit/s per channel BiPhase-L: 10 kbit/s – 10 Mbit/s per channel
Total bitrate:	160 Mbit/s for the module
Clock rate:	Any fixed clock rate is possible, the receiver synchronizes automatically to the incoming bit rate.
Clock source:	External or internal
Clock edge:	Rising, or falling edge selectable.
Signal level:	Symmetrical or asymmetrical RS 422, TTL, PECL, NECL per channel configurable
Input impedance:	100 Ω or 22 k Ω selectable
Time stamping:	100 ns

Output

Output signal:	1 out of 8 selectable for monitoring up to 8 independent PCM output streams for replay
Output format:	NRZ or BiPhase code
Signal rate:	Data + Clock: 1 kbit/s – 20 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 μ s
Connector:	50-pin D-Sub

PCM Merger with burst option**MRB12**

4 Channel PCM Merger module for signal input and output with burst option

All specification valid as specified for MRG12 module with the following extensions:

Burst option:	Channel 1 to 4 (selectable)
Minimum burst size:	32 bits
Gap between bursts:	> 3 ms
Burst switch-off time:	3 ms
BiPhase input:	Channel 1 and 3 (selectable)
Data rate range:	BiPhase mode: 7 kbit/s – 4 Mbit/s
BiPhase signal level:	RS 422 differential, single ended TTL
Selectable radar data input:	Channel 2 and 4
Oversampling rate:	1 bit/s – 5 Mbit/s

MIL-STD-1553 bus modules**MBR12**

2 channel input module for dual redundant MIL-STD-1553 B buses

Input

Input signal:	Two dual-redundant MIL-STD-1553 B bus or four single MIL-STD-1553 B busses, direct or transformer coupled selectable
Signal level:	Direct coupled: $1,2 V_{pp} - 30 V_{pp}$ Transformer coupled: $0,86 V_{pp} - 30 V_{pp}$
Operation mode:	Bus monitor only
Total bus recording:	Yes
Selected bus recording:	No
Bus load identification:	Bus load computed and displayed
Time stamping:	Absolute time stamps for all messages
Time resolution:	100 ns
Connectors:	4 x 2-pin LEMO for 1553 buses

UAR40

4 channel input module for dual redundant MIL-STD-1553 B buses

Input

Input signal:	4 dual-redundant MIL-STD-1553 B bus or 8 single MIL-STD-1553 B busses, direct or transformer coupled selectable
Signal level:	Direct coupled: $1,2 V_{pp} - 20 V_{pp}$ Transformer coupled: $0,86 V_{pp} - 14 V_{pp}$
Operation mode:	Bus monitor only
Total bus recording:	Yes
Selected bus recording:	No
Selected message recording:	No
Bus load identification:	Bus load computed and displayed
Error detection:	Command continuity, data continuity, Manchester coding, parity, command length errors
Time stamping:	Time stamps for all messages, exact response time recording
Time resolution:	100 ns
Connectors:	25-pin D-Sub

MBP12

2 channel output module for dual redundant MIL-STD-1553 B buses

Output

Output signal:	2 dual-redundant MIL-STD-1553 B bus or 4 single MIL-STD-1553 B busses, direct or transformer coupled selectable
Signal level:	Direct coupled: $6 V_{pp} - 9 V_{pp}$ on $35 \square \pm 2\%$ load Transformer coupled: $18 V_{pp} - 27 V_{pp}$ on $70 \square \pm 2\%$ load
Total bus replay:	Yes
Selected bus reconstruction:	No
Bus load identification:	Bus load computed and displayed
Timing accuracy:	200 ns
Connectors:	4 x 2-pin LEMO for 1553 buses

UAP40

4 channel output module for dual redundant MIL-STD-1553 B buses

Output

Output signal:	4 dual-redundant MIL-STD-1553 B bus or 8 single MIL-STD-1553 B busses, direct or transformer coupled selectable
Signal level:	Direct coupled: $7,6 V_{pp} +/- 10\%$ on $35 \square \pm 2\%$ load Transformer coupled: $21,6 V_{pp} +/- 10\%$ on $70 \square \pm 2\%$ load
Total bus replay:	Yes
Selected bus reconstruction:	No
Selected message reconstruction:	No
Bus load identification:	Bus load computed and displayed
Timing accuracy:	200 ns
Connectors:	25-pin D-Sub

ARINC 429 bus modules**ARR12**

8 channel input module for ARINC 429 high speed or low speed buses

Input

Input signal:	ARINC 429 high speed or low speed bus
Signal level:	ARINC 429 standard
Operation mode:	Bus monitor only
Total bus recording:	Yes
Bus speed identification:	Automatic
Bus load identification:	Bus load computed and displayed
Time stamping:	Absolute time stamps for all messages
Time resolution:	100 ns
Connectors:	25-pin D-Sub

ARR40

24 channel input module for ARINC 429 high speed or low speed buses

Input

Input signal:	ARINC 429 high speed or low speed bus
Signal level:	ARINC 429 standard
Operation mode:	Bus monitor only
Total bus recording:	Yes
Selected bus Recording:	Yes
Bus speed identification:	Automatic
Bus load identification:	Bus load computed and displayed
Time stamping:	Time stamps for all messages, exact response time recording
Time resolution:	100 ns
Connectors:	62-pin D-Sub

ARPI2

8 channel output module for ARINC 429 high speed or low speed buses

Output

Output signal:	ARINC 429 high speed or low speed bus
Signal level:	ARINC 429 standard
Total bus replay:	Yes
Bus load identification:	Bus load computed and displayed
Timing accuracy:	200 ns
Connectors:	25-pin D-Sub

CSDB bus modules**CSR12**

8 channel input module for CSDB buses

Input

Input signal:	CSDB bus messages
Signal level:	RS 422A standard
Operation mode:	Bus monitor only
Total bus recording:	Yes
Bus speed identification:	Automatic
Bus load identification:	Bus load computed and displayed
Time stamping:	Absolute time stamps for all messages
Time resolution:	10 μ s
Connectors:	25-pin D-Sub

CSP12

8 channel output module for CSDB buses

Output

Output signal:	CSDB bus messages
Signal level:	RS 422A standard
Total bus replay:	Yes
Bus load identification:	Bus load computed and displayed
Timing accuracy:	10 μ s
Connectors:	25-pin D-Sub

ASCB bus modules**RSR12**

4 channel input module for ASCB buses (Avionic Standard Communication Bus, Honeywell)

Input

Input signal:	ASCB bus messages
Signal level:	Direct or transformer coupled, selectable
Operation mode:	Bus monitor only
Total bus recording:	Yes
Bus load identification:	Bus load computed and displayed
Time stamping:	Absolute time stamps for all messages
Time resolution:	1 μ s
Connectors:	4 x 2-pin LEMO

RSP12

4 channel output module for ASCB buses (Avionic Standard Communication Bus, Honeywell)

Output

Output signal:	ASCB bus messages
Signal level:	Direct or transformer coupled, selectable
Total bus replay:	Yes
Bus load identification:	Bus load computed and displayed
Timing accuracy:	1 μ s
Connectors:	4 x 2-pin LEMO

Analog signal modules**ANR20**

8 channel input module for differential analog voltages with ICP sensor power

Input

Input signal:	Differential analog voltage
Signal level	± 1 V, ± 2 V, ± 5 V and ± 10 V _{peak}
Signal coupling	AC, DC or ICP
ICP power:	4 mA constant current, up to 30 V
Differential input impedance	100 k Ω
Common input Impedance:	1 M Ω
Analog to digital Conversion:	24 bit Sigma-Delta, 16 bit recorded
Dynamic range:	> +80 dB
Distortion:	< -80 dB
Crosstalk:	Better than the dynamic range
Phase error:	max 0.2°
Input filters:	digital FIR-filters with linear phase
AC and DC accuracy:	0.4 %
Analog bandwidth:	DC – 500 Hz to DC – 45 kHz, selectable
Calibration:	automatically after power on or manually
Connector:	37-pin D-Sub

ANR41

8 channel input module for differential analog voltages with ICP sensor power up to 80 kHz

Input

Input signal:	Differential analog voltage
Signal level	± 1 V, ± 2 V, ± 5 V and ± 10 V _{peak}

Signal coupling	AC, DC or ICP
ICP power:	4 mA constant current, up to 30 V
Differential input impedance	100 k Ω
Common input Impedance:	1 M Ω
Analog to digital Conversion:	24 bit Sigma-Delta, 16 bit recorded
Dynamic range:	> +80 dB
Distortion:	< -80 dB
Crosstalk:	Better than the dynamic range
Phase error:	max 0.2°
Input filters:	digital FIR-filters with linear phase
AC and DC accuracy:	0.4 %
Analog bandwidth:	DC – 800 Hz to DC – 80 kHz, selectable (no mirroring)
Calibration:	automatically after power on or manually
Connector:	37-pin D-Sub

ANP20

8 channel output module for single ended analog voltage	
Output signal:	Single ended analog voltage
Signal level:	± 1 V, ± 2 V, ± 5 V and ± 10 V _{peak} full scale output without load
Output impedance:	75 Ω
External Load:	>1 k Ω (short circuit protected, but not recommended)
Analog bandwidth:	DC – 500 Hz to DC - 45 kHz, as recorded
Digital to analog converter	24 bit
Dynamic range	> 80 dB
Crosstalk	Better than the dynamic range
Distortion	< -80 dB (1 V, 2V, 5V Range) < -75 dB (10 V Range)
Bandwidths	Defined by recorded data
Calibration	automatically after power on or manually
Connector	37-pin D-Sub

ANP41

8 channel output module for single ended analog voltage	
Output signal:	Single ended analog voltage
Signal level:	± 1 V, ± 2 V, ± 5 V and ± 10 V _{peak} full scale output without load
Output impedance:	75 Ω
External Load:	>1 k Ω (short circuit protected, but not recommended)
Analog bandwidth:	DC – 500 Hz to DC – 80 kHz, as recorded (no mirroring)
Digital to analog converter	24 bit
Dynamic range	> 80 dB
Crosstalk	Better than the dynamic range
Distortion	> 80 dB (1 V, 2V, 5V Range); > 75 dB (10 V Range)
Bandwidths	Defined by recorded data
Calibration	automatically after power on or manually
Connector	37-pin D-Sub

ANH40	
1 channel, High Frequency Analog input/output Module	
Input	
Input signal:	Differential analog voltage
Signal range:	1 V _{rms}
Signal coupling	AC or DC
Differential input Impedance:	75 Ω or 100 k Ω selectable
Time stamping:	100 ns resolution absolute time
Connector:	3-pin LEMO

High bandwidth mode operation

Resolution:	12 bit (8 bit or 16 bit recorded)
Oversampling:	4x, 8x or 16x
Analog bandwidth:	DC-1.25 MHz to DC –10 MHz (selectable)
Dynamic range:	> 48 dB (8 bit), > 60 dB (16 bit)
Sampling rate:	Variable, 2.5 x Bandwidth, 3.125 MHz – 25 MHz

Low bandwidth mode operation

Resolution:	16 bit (8 bit or 16 bit recorded)
Oversampling:	8x, 16x or 32x
Analog bandwidth:	DC-125 kHz to DC – 1 MHz (selectable)
Dynamic range:	> 48 dB (8 bit), > 80 dB (16 bit)
Sampling rate:	Variable, 2.5 x Bandwidth, 312 kHz – 2.5 MHz

Output

Resolution	16 bit
Output type	Single ended
Signal level	1 V _{rms}
Impedance	75 Ω
Dynamic range	replay mode > 70 dB loopback mode > 60 dB
Output protection	Short circuit protected
Connector	2-pin LEMO

Voice and Serial Module**VSM12**

2 channel voice input, 2 channel voice output and 1 channel serial input/output

Voice

Input signal:	Microphone or line input / channel
Signal level:	Microphone: -40 dBV _{rms} Line: 0 dBV _{rms} , -40 dBV _{rms} (1 V _{rms} , 10 mV _{rms})
Input impedance:	Microphone: 100 k Ω Line: 100 k Ω
Frequency range:	20 Hz – 20 kHz

Max. Sampling frequency:	50 kHz
Coding:	8 / 16 bit linear, programmable
Connector:	6-pin LEMO

Serial Interface

Input signal:	Serial data stream, 8 bits
Signal level:	RS 232 or RS 422, selectable
Baud rate:	60 – 200,000 Baud, programmable
Connector:	9-pin D-Sub

Output

Output signal:	Headphone or line (75 Ω / 600 Ω)
Signal level:	1 V _{rms} without load
Signal to noise ratio:	48 / 80 dB (8 bit / 16 bit source)
Output impedance:	75 Ω
Frequency range:	20 Hz to 20 kHz
Connector:	4-pin LEMO
Output signal:	Serial data stream as recorded
Signal level:	RS 232 or RS 422, selectable
Baud rate:	60 – 200,000 Baud, programmable
Connector:	9-pin D-Sub

Asynchronous serial module**ASM12**

8 channel input and output module for asynchronous serial line

Input

Input signal:	Asynchronous serial data
Signal level:	RS 232 and RS 422, input and output, selectable
Data rate:	max. 230,4 kBaud, standard Baud-rates selectable

Recording method: Message oriented, characters are stored on 8 bits

Message timing: Longest gap between characters within a message is selectable from 2 bits to 16 characters. Message start is time-stamped with absolute time.

Timing accuracy:	10 μ s
Character format:	5, 6, 7 or 8 bits
Stop bits:	1, 1,5 or 2
Parity:	Even, Odd or None selectable

Parallel Input/Output Modules**PAR12**

Parallel Data (2-16 bit) Record/Replay Module

Input

Number of bits:	2, 4, 8, 16 bit word mode
Data rate range:	62 bit/s to 20 Mbit/s total bitrate 1 ks/s to 1.25 Ms/s (16 bit words) 1 ks/s to 2.5 Ms/s (8 bit words) 1 ks/s to 5 Ms/s (4 bit words) 1 ks/s to 10 Ms/s (2 bit words)
Clock rate:	Any fixed clock rate is possible, the receiver synchronises automatically for the incoming bit rate. (Maximum clock rate with analog inputs: 200 kHz)
Clock source:	External or internal
Clock format:	Parallel Data + Clock mode: Synchronous to the data, rising or falling edge selectable
Signal level:	RS 422 differential or TTL or analog +5 V _p , +12 V _p , +28 V _p single ended
Input impedance:	100 Ω or 20 k Ω selectable for RS 422 inputs, 75 Ω or 330 Ω for TTL inputs, 1 M Ω for the analog inputs
Time resolution:	100 ns
Connector:	37-pin D-Sub

DCR40

DCRsi compatible parallel data record module

Input

Data format:	8 bit parallel NRZ-L data
Control format:	8 bit parallel data + clock or DCRsi compatible mode selectable
Data rate:	8 kbit/s to 256 Mbit/s total bitrate
Clock rate:	1 kHz to 32 MHz internal or external
Signal level:	Data (WrDat0...7) + Clock (WrClk), Data Parity (WrPrty), Input data validation (WrDatRdy): differential NECL Auxiliary Data (WrAuxData), User event set (UsrSet): differential EIA-RS422
Input impedance:	120 Ω or 4 k Ω differential selectable

Output

Signal level:	Clock (RdClock), Block synchronisation (RdBlkSync), Record ready (DatTrRdy): differential NECL Buffer overflow (BuLimit): differential EIA-RS422
Time resolution:	100 ns
Connector:	37-pin D-Sub

DGP40

DCRsi compatible parallel data reconstruct module

Output

Data format:	8 bit NRZ-L data
Control format:	8 bit parallel data + clock or DCRsi compatible replay mode selectable
Data rate:	8 kbit/s to 265 Mbit/s total bitrate
Clock rate:	1 kHz to 32 MHz
Clock source:	Parallel mode: Internal reconstruction of recorded clock frequency DCRsi mode: WrClk replay clock input using the WrDatRdy control signal

Signal level:	Data (RdDat0..7), Clock (RdClk), Data parity (RdPrty), Output data validation (RdDatVal), Block synchronisation (RdBlkSync), Replay readiness (DafTrRdy): differential NECL Auxiliary data (RdAuxData), Auxiliary clock (RdAuxClk): differential EIA-RS422
Output impedance:	390 Ω pull down to $-5,1$ V (NECL)

Input

Signal level:	Clock (WrClk), Output data enable (WrDatRdy): differential NECL
Time resolution:	1 μ s
Connector:	37-pin D-Sub

Network Interface Modules

ETH40

2-channel Ethernet interface module

Input format:	10/100 Mbit/s Ethernet bus communication
Input connector:	2 x 9-pin D-Sub (male)
Network Interface:	Ethernet IEEE 802.3 industry standard 10 Mbps baseband CSMA/CD (10BASE-T) and 100 Mbps baseband CSMA/CD (100BASE-TX) standards
Local Buffer:	64 MByte
Max. average data rate:	200 Mbit/s
Recorded information:	Destination address, source address, length, data, FCS (checksum). The module also records "runt packets" (collision fragments).
IP address:	All messages received on the Ethernet are recorded.
Timing accuracy:	5 μ s
Message generation:	A free message (up to 1.5 kByte long) can be programmed for both channels independently to be transmitted on the Ethernet bus
Message rate:	1 ms to 60 s, settable in 1 ms steps

Video Modules

VCRI2

2 Channel Analog Audio/Video record interface

Video input signal:	Analog video signal CVBS (Composite) and Y/C (S-Video)
Video input level:	0.5 to 1.4 V_{pp} with AGC (Nom.: 1 V_{pp})
Video input Impedance:	75 Ω
Video input format:	NTSC, up to 720 x 480 PAL, SECAM up to 720 x 576
Video output resolution filter:	D1, 3/4 D1, 2/3 D1, HD1, SIF, QSIF
Video sampling Format:	4:2:0
Video encoding algorithm:	MPEG-2 (MP@ML) with VBR or CBR
Audio input signal:	Dual (Stereo) or Mono analog audio signal (per channel)
Audio input level:	1 V_{rms}

Audio input impedance:	100 $k\Omega$
Audio sampling frequency:	48 kHz
Audio bitrate:	32 Kbps, 96 Kbps, 192 Kbps, 384 Kbps
Audio encoding algorithm:	MPEG-1 (Layer 2)
Recorded data rate:	0.5 ... 15 Mbit/s per channel
Time stamping resolution:	33.3 ms (NTSC), 40 ms (PAL, SECAM)
MPEG2-TS Output:	Data & Clock (RS422 differential or single ended TTL-Level)
Connector	37-pin D-Sub

VCP12

2 Channel Analog Audio/Video output module

Video output signal:	Analog video CVBS or Y/C or RGB
Video output level:	1 V_{pp}
Video output Impedance:	75 Ω with 75 Ω termination
Video input resolution filter:	D1, 3/4D1, 2/3D1, HD1, SIF (all expanded to D1)
Audio output Signal:	Dual (Stereo) or Mono analog audio signal
Audio output level:	1 V_{rms}
Audio output Impedance:	100 Ω with 47 $k\Omega$ termination
Time annotation:	Inserted into the video signal
Output format:	NTSC, PAL or SECAM as recorded
MPEG2-TS ¹ Input:	Data & Clock (RS422 differential or single ended TTL-Level)
Connector	37-pin D-Sub

GPS Modules	
GPS12/GPS40	
GPS record interface with time synchronization of internal clock	
Frequency:	Single frequency (L1) (GPS12) Dual frequency (L1 + L2) (GPS40) 20 Channel
Update rate:	1 Hz (GPS12) 10 Hz (GPS40) (real time position, raw data)
Max. Velocity:	514 m/s (GPS12) unlimited (GPS40)
Max. Altitude:	18.000 m (GPS12) unlimited (GPS40)
Differential GPS (Rover) and RTK:	Support for RTCM SC104 version 2.1 and 2.2
Acquisition time:	Cold: < 60 sec Hot: < 1 sec
Acceleration:	max. 7 g
1 PPS accuracy:	100 ns
RF antenna:	Active antenna: 5 V or 12 V Passive antenna
Antenna Connector:	TNC female
Input	
Configuration:	GPS Receiver Interface Language (RS-232 level)
DGPS Input:	Differential GPS correction data (RS-232 level)
Output	
Message format:	NMEA versions 2.1, 2.2, 2.3, 3.0 (RS-232 level)
Timing Signals:	1 PPS GPS (synchronized to GPS or UTC) 1 PPS / 10 PPS / 100 PPS Recorder (timing signals: TTL level)
Connector:	9-pin D-Sub 4-pin LEMO

Options and Accessories:

DATARec®-Wxxx Digital Playback units

Playback units for SCSI replay and dubbing of DATARec®, records. Includes copy software for PC.

Software Support

FTrans - Data

The FTrans program is a GUI for any Windows PC operating system to support the DATARec®, data acquisition systems via SCSI, RS-232 or Ethernet (not D20 series) interface:

- Recorder configuration
- Remote Control
- Search functions
- Channel monitoring, measurements
- Front-end transfer
- Signal display
- Data transfer from media into different data formats (SCSI only)

Transfer Software

DATWare – DATARec®, Source Library

The DATWare library contains the source code routines to help the integration of any DATARec®, recorder or DATARec®, media into a user analysis package.

The basic parts are:

Connection to the recorders via different interfaces, Recorder configuration, Remote control, Various data transfer from media, Front-end transfer, Tape directory, Search functions



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