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KMT GATEWAY

PCM to ETHERNET Translator
MTP-NT/NTX Control Gateway

NEW

- PCM Input from all KMT Systems
- Data Rate up to 10000 kBit/s
- PTPv2 Time Synchronization
- KMT Encoder Setup via Bluetooth
- Gigabit Ethernet Interface
- TCP & UDP Data Format
- Several Protocols (incl. IENA)
- Data Logger Function

Short description:

The KMT GATEWAY decodes incoming PCM data streams and transmits the decoded measurement data over Ethernet. Various data formats (including Airbus IENA) are possible; customer-specific formats can be optionally integrated.

The data blocks sent contain a timestamp in the header; if a PTP Server is found, this timestamp is set to the realtime sample time. But even without a network time source, several KMT systems can be synchronized with one another by setting one of the GATEWAYs as PTP server.

Complete setup of the KMT MTP-NT systems is possible over Ethernet ("just-one-cable" solution).

The Device has a data logging function (file size is only limited by the USB stick used).

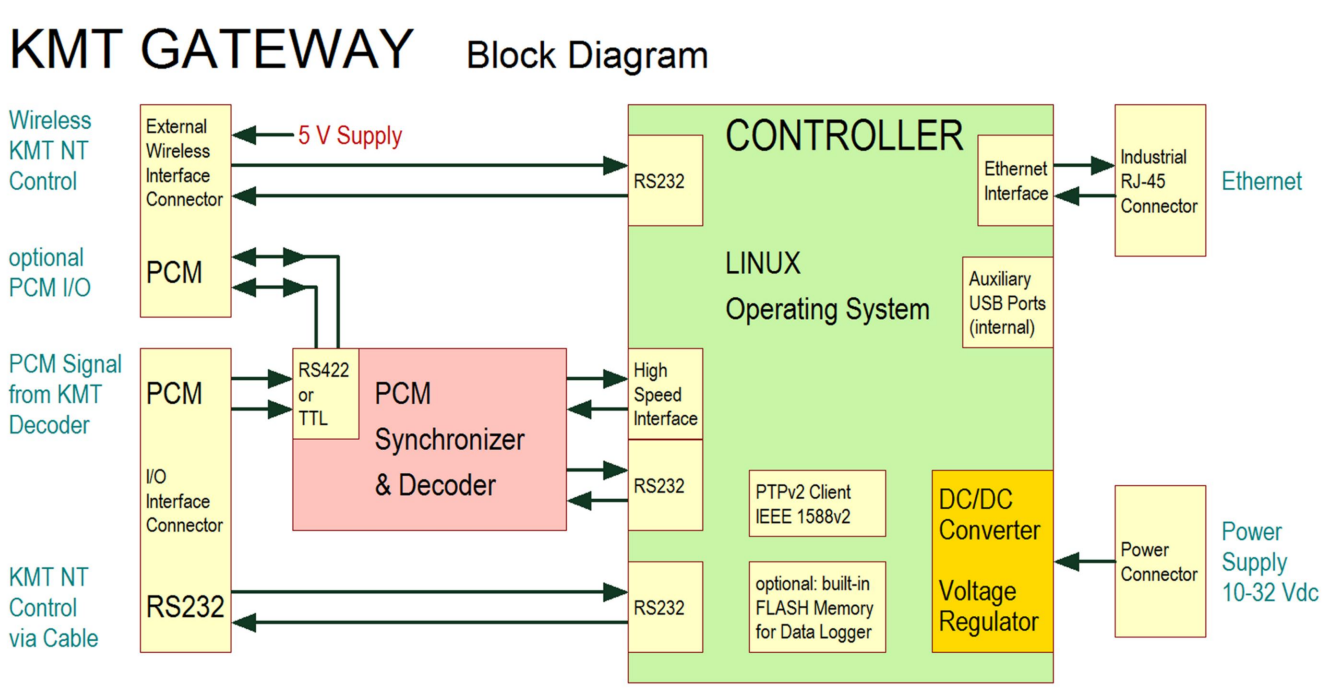
System Parameters:

PCM input:	RS422 or TTL
PCM data format:	KMT 320 Bit, NRZ
PCM bit rates:	312.5 / 625 / 1250 /2500 / 5000 / 10000 kBit/s
KMT MTP-NT Setup & Control:	RS232 or Bluetooth
Ethernet interface:	Gigabit (1000Base-T)
Protocol format:	IPv4, UDP or TCP
Destination IP addresses:	unicast, multicast, or broadcast
Packet protocols:	KMT (32 byte header), CAEMAX, IENA (and others)
Payload data resolution / format:	16 Bit or 24 Bit / big endian
Time Synchronization:	IEEE 1588v2 (PTPv2)
Data Logger:	internal FLASH Disc (optional)
Power supply input:	10-35 Vdc, power consumption < 25 Watt
Dimensions:	44 x 105 x 200 mm
Weight:	920 g without mounting plate & cables
Environmental	
Operating:	-20°C to +70°C
Humidity:	+80% not condensing (@ +20°C)
Vibration:	5g (TBD)
Static acceleration:	10g in all directions
Shock:	100g in all directions

Further resources and the latest document versions

MTP-NT Technical Resources Page:	https://www.kmt-telemetry.com/support/mtp-nt/
Latest version of this document:	https://www.kmt-telemetry.com/support/mtp-nt/_Files/KMT-GATEWAY-DS.pdf
GATEWAY Protocol Specification:	https://www.kmt-telemetry.com/support/mtp-nt/_Files/gateway_data_format.pdf

Block diagram



KMT GATEWAY Data Block Structure 9. Jun. 2021

HEADER & PAYLOAD FORMAT (KMT version)

Byte	Description	Comment / Example
	32 Byte HEADER	
0	Startbyte 0x84	start sequence for plausibility check
1	Startbyte 0x85	
2	Header Version	1
3	Header Size	32
4	Payload Size MSB	payload size in bytes
5	Payload Size LSB	
6	Counter MSB	circular counter 0x0000 to 0xFFFF
7	Counter LSB	
8	-mode-	(0x00; reserved for now)
9	**Bitrate (coded)	{MTP version, only for compatibility reasons}
10	**ChannelCount (coded)	
11	Data Format Specification	exxxxx00=16Bit, ..01=24Bit; e=endianness(0=big);
12	Channel Count MSB	number of channels per sample
13	Channel Count LSB	
14	Sample Count MSB	number of samples in the payload
15	Sample Count LSB	
16	Sample Rate MSB	time between two samples in nanoseconds format = unsigned long (the reciprocal value gives the sample frequency in samples per second)
17	Sample Rate	
18	Sample Rate	
19	Sample Rate LSB	
20	Unix Timestamp MSB	64 Bit UNIX Timestamp in nanoseconds = sample time of the first sample in payload (that's enough for a few hundred years)
21	Unix Timestamp	
22	Unix Timestamp	
23	Unix Timestamp	
24	Unix Timestamp	
25	Unix Timestamp	
26	Unix Timestamp	
27	Unix Timestamp LSB	
28	KMT system stream MSB	substream with system information (module types, channel settings, serial numbers, system status, etc.etc.)
29	KMT system stream LSB	
30	Header Checksum MSB	(0xF0F1 + Byte00 + ... + Byte29) & 0xFFFF
31	Header Checksum LSB	
	Here now follows the payload. Example of a system with two measurement channels: 16 Bit Data Examples (big endian): Ch1=0x6789; Ch2=0xABCD;	
32	Sample 1, Channel 1, MSByte	0x67
33	Sample 1, Channel 1, LSByte	0x89
34	Sample 1, Channel 2, MSByte	0xAB
35	Sample 1, Channel 2, LSByte	0xCD
36	Sample 2, Channel 1, MSByte	0x67
37	Sample 2, Channel 1, LSByte	0x89
38	Sample 2, Channel 2, MSByte	0xAB
39	Sample 2, Channel 2, LSByte	0xCD