

## Dewesoft Instructions:

### Chapter 10

This document presents basic functionality of Chapter 10 plugin in DEWESoft software. We show how to enable and use needed plugins for decoding streams and perform measurement.

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#### 1. Needed files

To start we need following files:

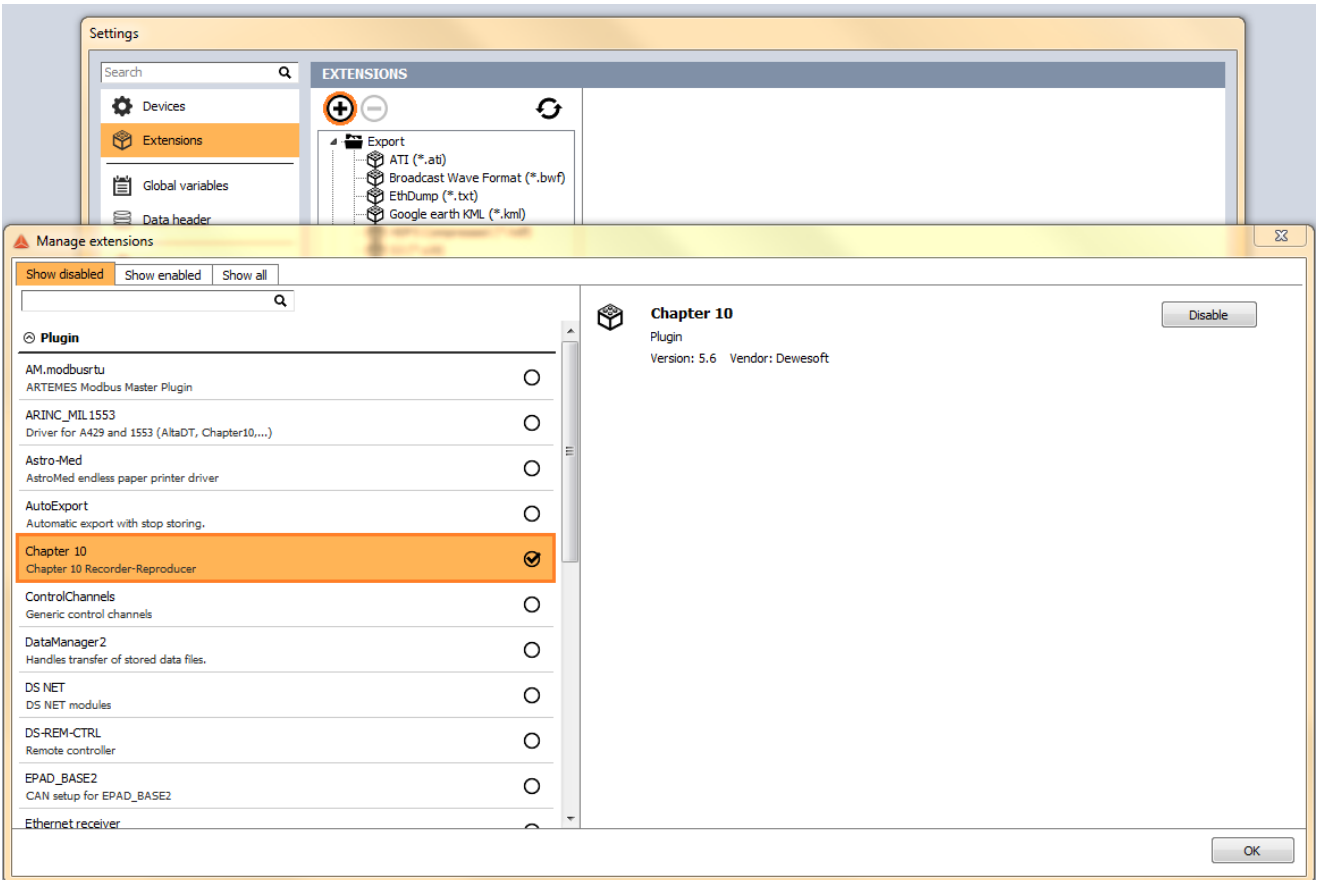
- DEWESoft X2 b7 or newer: *DEWESoftX.exe*
- Chapter 10 plugin: *Chapter10.dll*
- PCM Telemetry plugin: *Tarsus.dll*
- Telemetry cam plugin files: *TelemetryCam.cdv*, *VideoAPI.dll*, *VideoJ2kAPI.dll*

All files can be downloaded from <http://www.dewesoft.com/download>

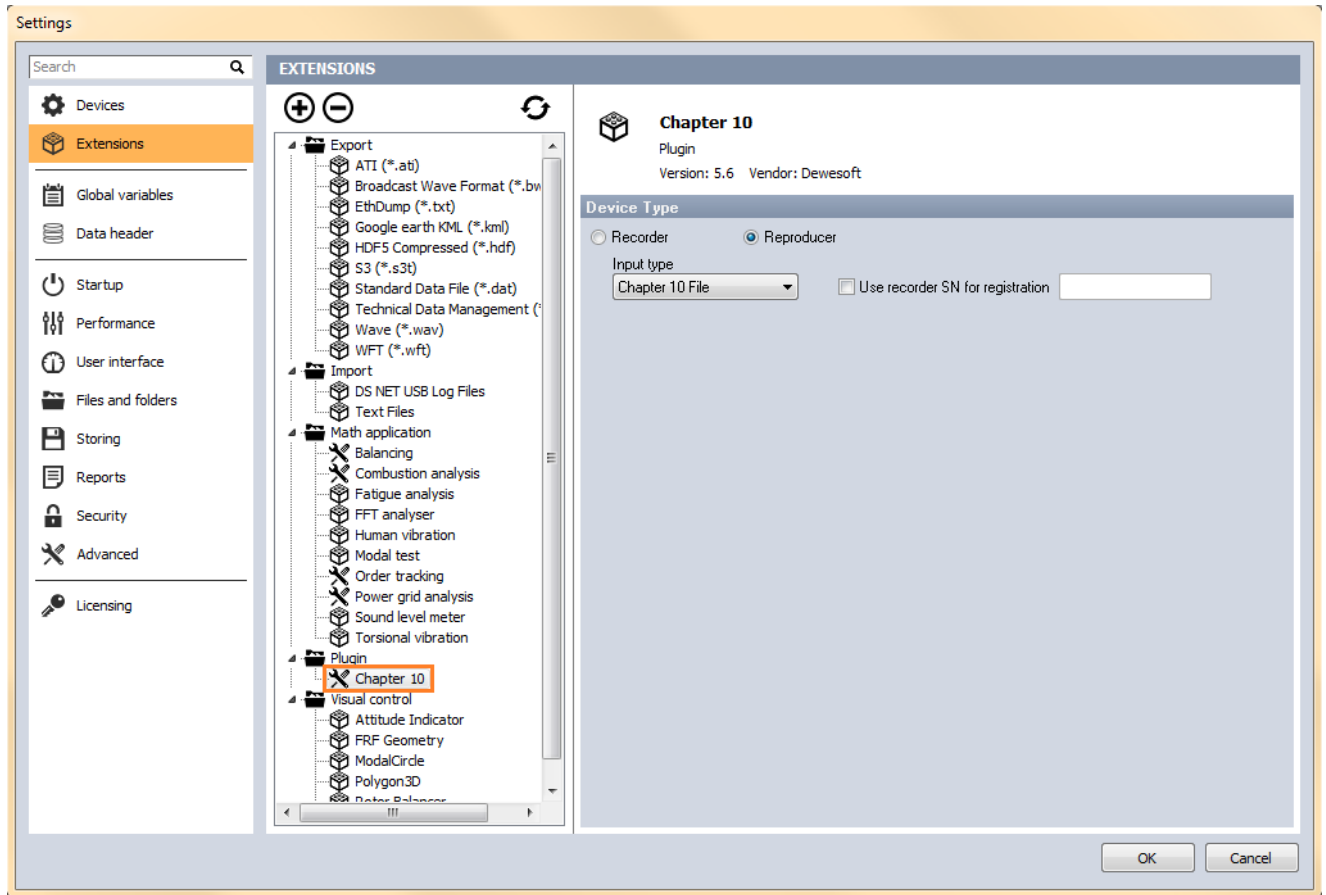
To download beta software, free registration and login is required.

## 2. Chapter 10 plugin

1. Copy all plugin files under DEWESoft folder 'Addons'.
2. Run Dewesoft, go to Settings > Hardware setup > Extensions:
  - a. To add an extension, press “+” button
  - b. Find Chapter 10 plugin, check the checkbox and press “OK”

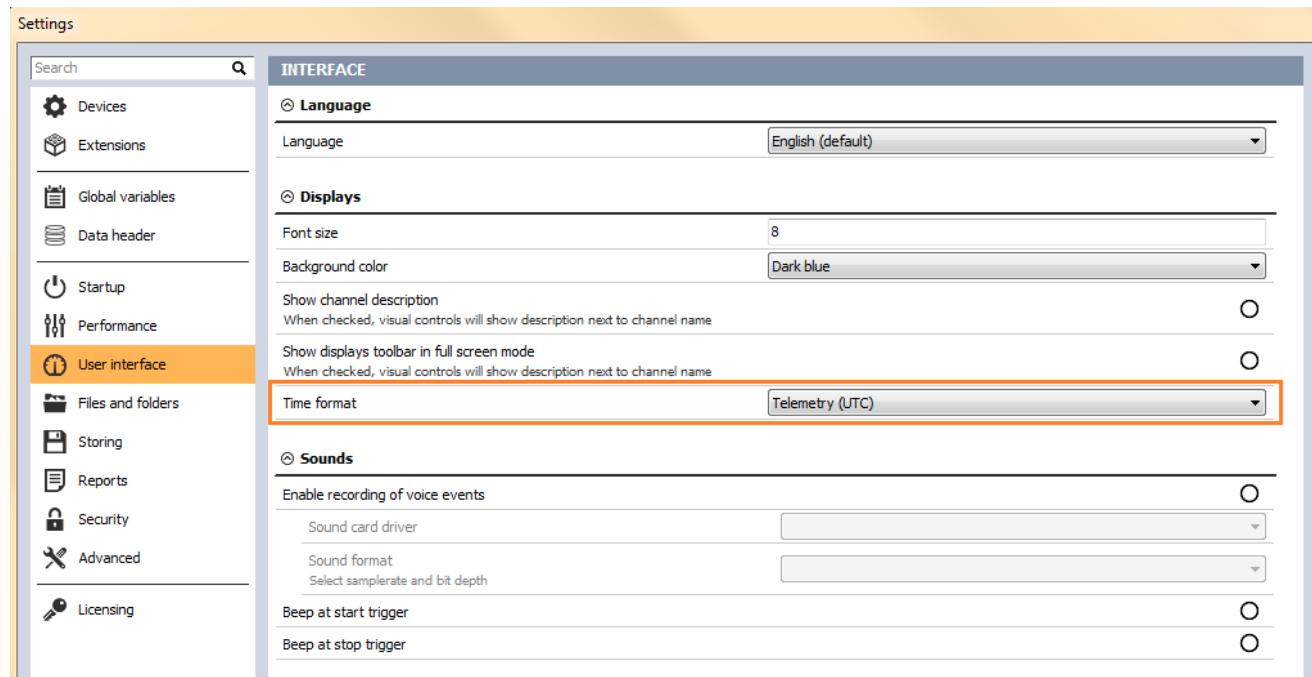


3. Choose Device type:
  - a. After plugin is added, it should appear on extension list
  - b. Clicking on it will show some settings:

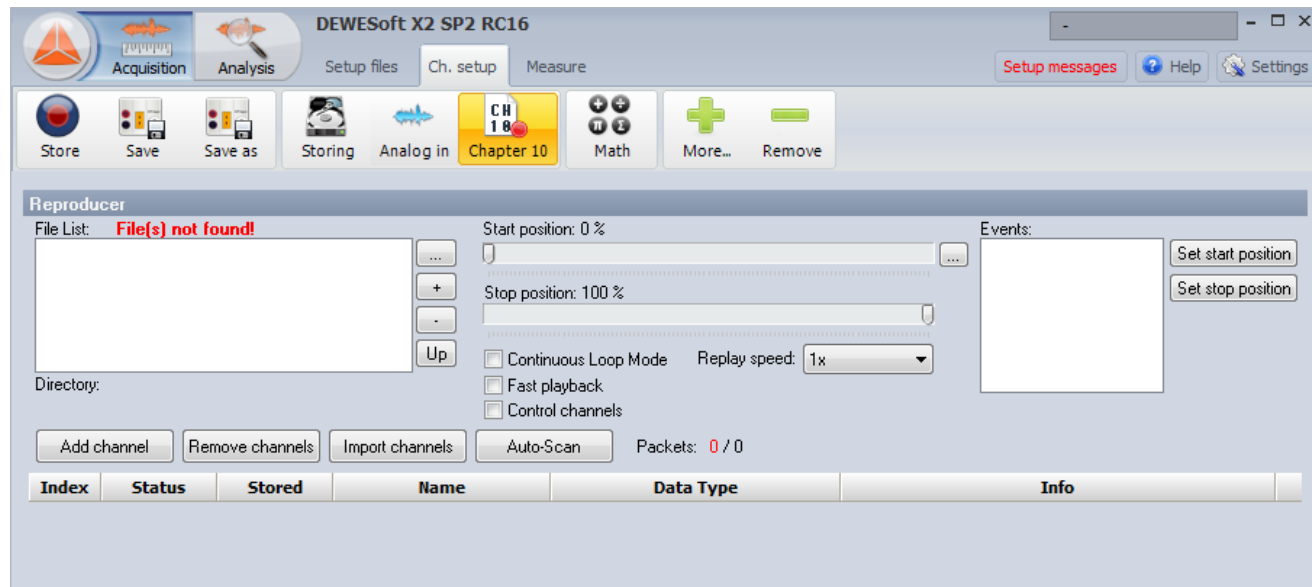


- a. Recorder: Dewesoft can record ch.10 to file or UDP Ethernet (Output type)
- b. Reproducer: Dewesoft reads ch.10 from file or UDP Ethernet (Input type)

- Make sure that 'Telemetry (UTC)' is chosen under Settings > Settings > User interface > Time format:



- Click OK, go to 'Ch. Setup' tab and click 'Chapter 10' icon. Following setup screen appears:





6. We open demo Chapter 10 file (with .ch10 extension) and choose 'Auto-Scan' button to get channels that are recorded in the file:

**File List:** MDR2\_MDSRC32\_100KB\_Datarate.ch10

**Start position:** 1/16/2014 11:46:38 AM (0 %)

**Stop position:** 1/16/2014 11:51:13 AM (100 %)

**Events:** .RECORD(E) at 1/16/2014 11:46:38 AM  
.STOP at 1/16/2014 11:51:13 AM

**Directory:** C:\Users\Uporabnik\Primof\Test and manu

**Buttons:** Add channel, Remove channels, Import channels, Auto-Scan, Packets: 0 / 60039

Index	Status	Stored	Name	Data Type	Info	Setup
0	Unused	Unused	Setup Record	Computer Generated Data, Format 1	TMATS generated by b2tmats	Set ch.
0	Unused	Store	Recording Events	Computer Generated Data, Format 2	No Data	Set ch.
1	Unused	Store	1-TIMEChannel	Time Data, Format 1	1/16/2014 11:50:56 AM	Set ch.
2	Unused	Store	1-GPSChannel	UART Data, Format 0	No Data	Set ch.
3	Unused	Store	2-GPSChannel	UART Data, Format 0	Status OK	Set ch.
4	Unused	Store	1-VOICE_Channel	Analog Data Packets, Format 1	No of AI Channels: 1	Set ch.
5	Unused	Store	1-VOICE_Channel	Analog Data Packets, Format 1	No of AI Channels: 1	Set ch.
7	Used	Store	Status Channel	UART Data, Format 0	Status OK	Set ch.
15	Used	Store	1-MDSC32Channel	Discrete Data Packets, Format 1	Discrete Data	Set ch.

Packets started to appear in format  $0/n$ , where  $0$  is number of error messages out of all messages  $n$ .

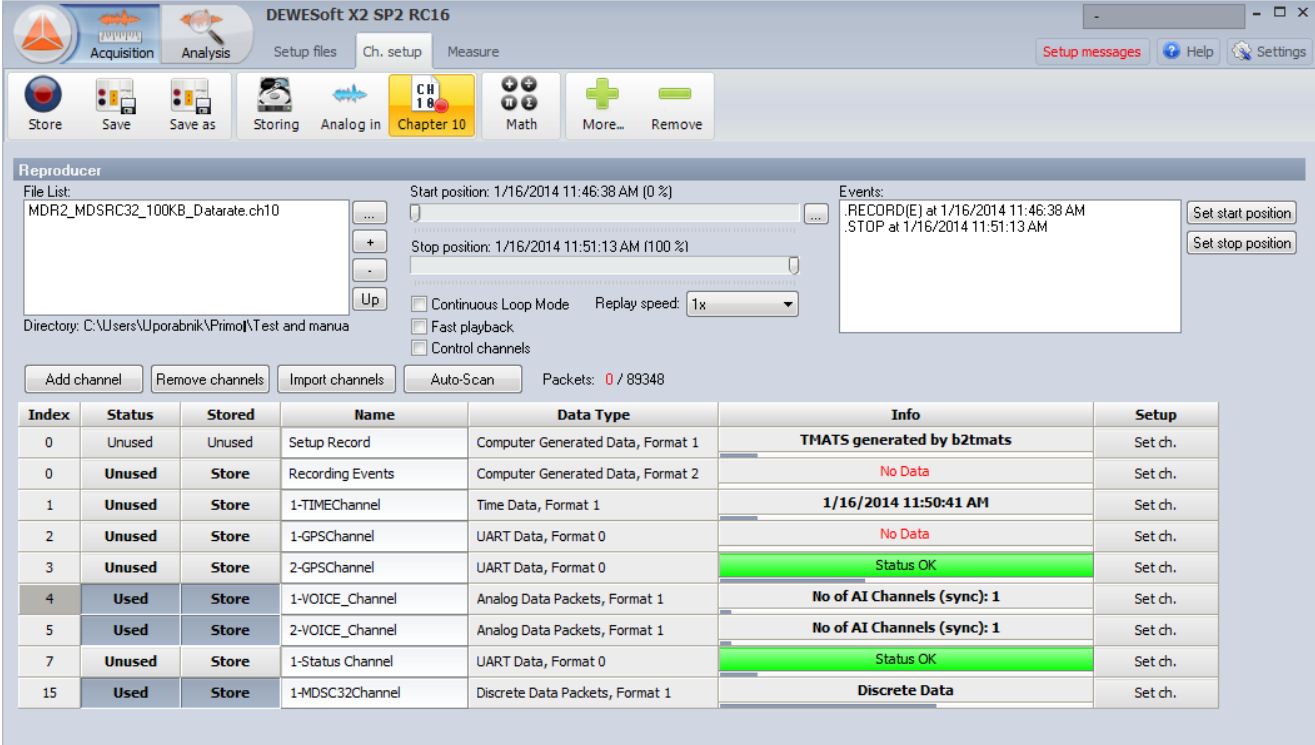
Following options can be set in Chapter 10 setup screen:

- select multiple files (that have same setup),
- choose position and speed of replay,
- add or remove channels,
- enable wanted channels, change its names or see details in setup.

In this way we can preview and enable any type of channels like AI, Time, UART, discrete, video data and more. Next chapters shows how to do this.

## 2.1 Analog and discrete channels

To enable analog or discrete data packets, we set wanted channels to used:

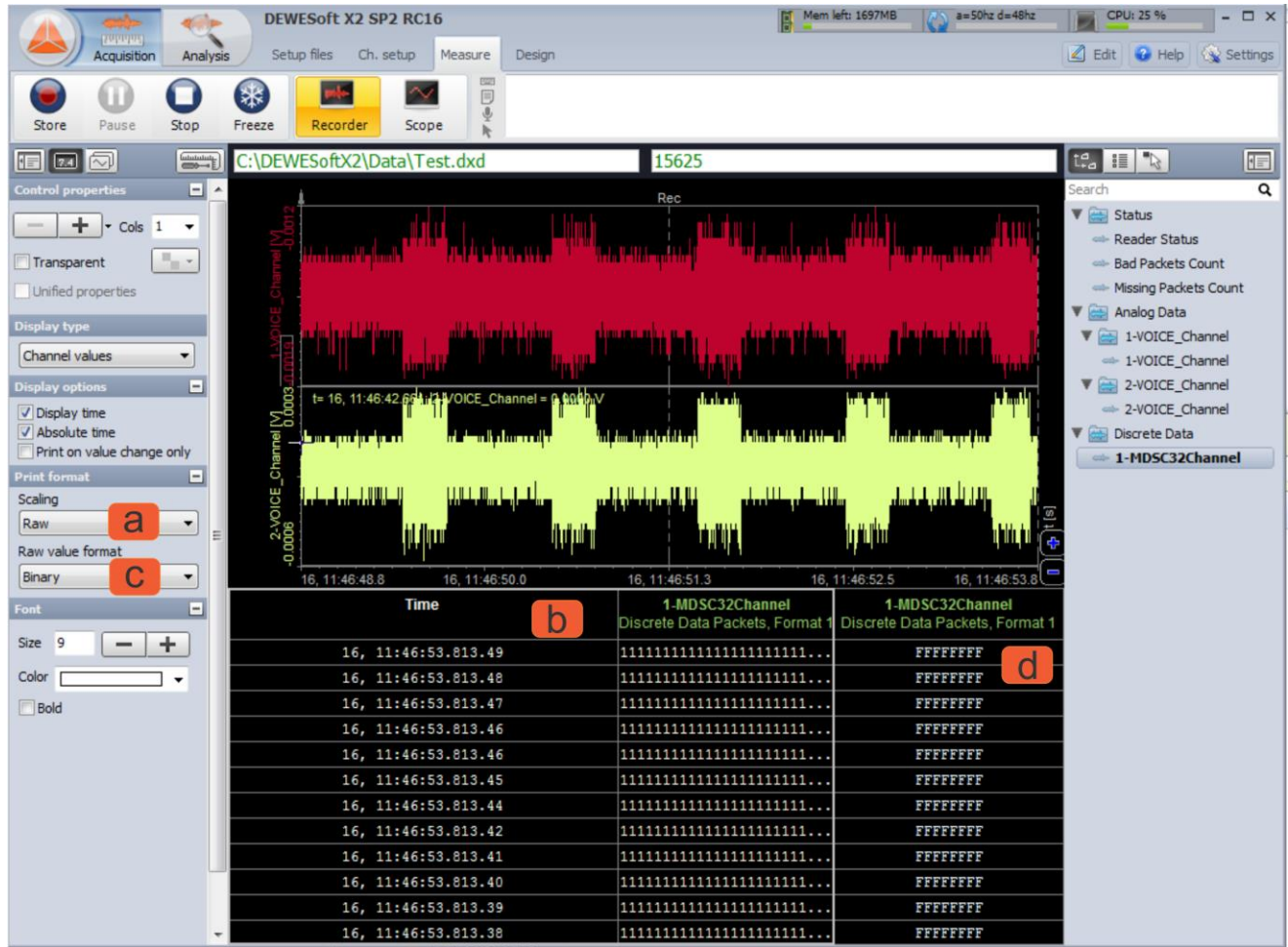


The screenshot shows the DEWESoft X2 SP2 RC16 software interface. The top menu bar includes Acquisition, Analysis, Setup files, Ch. setup, and Measure. Below the menu is a toolbar with icons for Store, Save, Save as, Storing, Analog in, Chapter 10, Math, More..., and Remove. The main window is divided into several sections:

- Reproducer:** Contains a File List with "MDR2\_MDSRC32\_100KB\_Datarate.ch10". It also shows Start position (1/16/2014 11:46:38 AM [0 %]), Stop position (1/16/2014 11:51:13 AM [100 %]), and Events (.RECORD[E] at 1/16/2014 11:46:38 AM, .STOP at 1/16/2014 11:51:13 AM). There are buttons for "Set start position" and "Set stop position".
- Directory:** Shows "C:\Users\Uporabnik\Primo\Test and manua".
- Buttons:** Add channel, Remove channels, Import channels, Auto-Scan, and Packets: 0 / 89348.
- Channel Setup Table:** A table with columns: Index, Status, Stored, Name, Data Type, Info, and Setup.

Index	Status	Stored	Name	Data Type	Info	Setup
0	Unused	Unused	Setup Record	Computer Generated Data, Format 1	TMATS generated by b2tmats	Set ch.
0	Unused	Store	Recording Events	Computer Generated Data, Format 2	No Data	Set ch.
1	Unused	Store	1-TIMEChannel	Time Data, Format 1	1/16/2014 11:50:41 AM	Set ch.
2	Unused	Store	1-GPSChannel	UART Data, Format 0	No Data	Set ch.
3	Unused	Store	2-GPSChannel	UART Data, Format 0	Status OK	Set ch.
4	Used	Store	1-VOICE_Channel	Analog Data Packets, Format 1	No of AI Channels (sync): 1	Set ch.
5	Used	Store	2-VOICE_Channel	Analog Data Packets, Format 1	No of AI Channels (sync): 1	Set ch.
7	Unused	Store	1-Status Channel	UART Data, Format 0	Status OK	Set ch.
15	Used	Store	1-MDSC32Channel	Discrete Data Packets, Format 1	Discrete Data	Set ch.

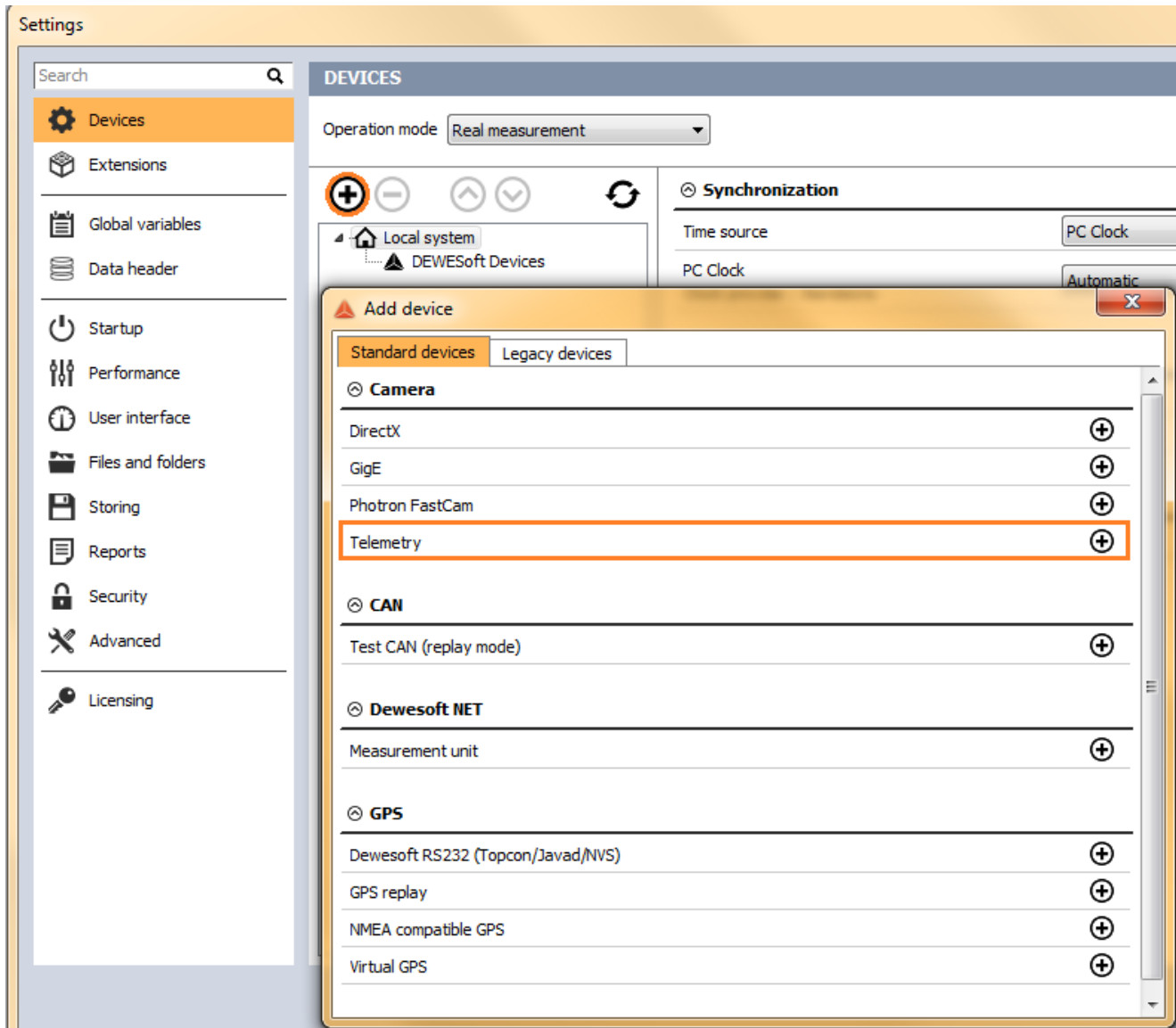
To present it we go to Measure > Design mode. We would want to present signals on two different controls: 'Recorder' for analog signals and 'Tabular values display' for discrete signals. We add it to wanted place and assign channels to it:



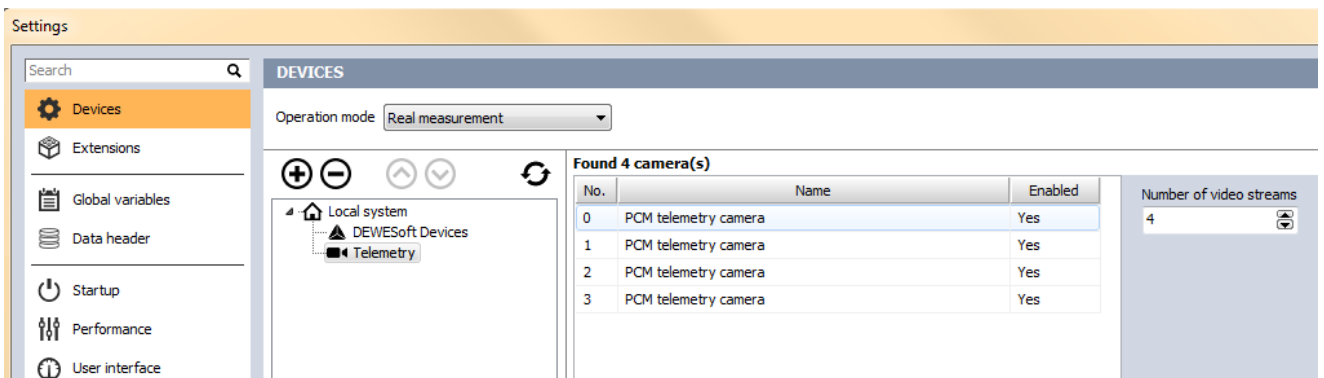
Discrete value channel is displayed in Raw scaling (a); on bottom left (b) Binary format was selected from the menu on left (c) and on second display (d) Hex format was selected.

## 2.2 Video stream

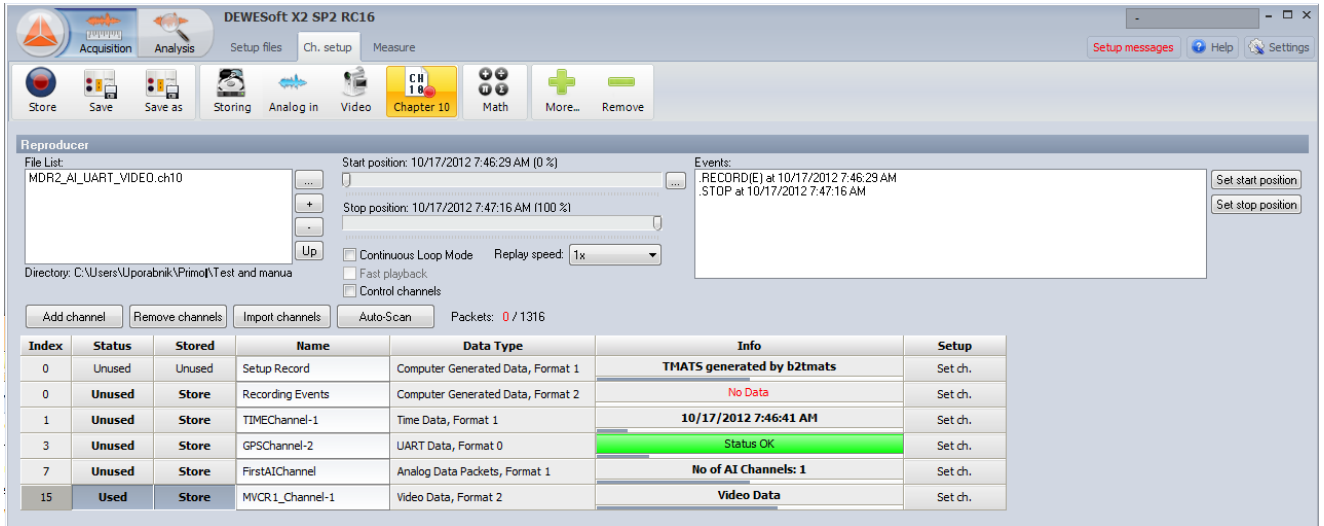
1. To enable Video stream, enable “Telemetry” video under “Devices “, “+”, “camera”:



In devices tab, Telemetry camera will be added and there we need to choose the maximum number of systems we want to decode.



2. Under Chapter 10 setup enable Video Data channel:



Index	Status	Stored	Name	Data Type	Info	Setup
0	Unused	Unused	Setup Record	Computer Generated Data, Format 1	THATS generated by b2tmats	Set ch.
0	Unused	Store	Recording Events	Computer Generated Data, Format 2	No Data	Set ch.
1	Unused	Store	TIMEChannel-1	Time Data, Format 1	10/17/2012 7:46:41 AM	Set ch.
3	Unused	Store	GPSChannel-2	UART Data, Format 0	Status OK	Set ch.
7	Unused	Store	FirstAIChannel	Analog Data Packets, Format 1	No of AI Channels: 1	Set ch.
15	Used	Store	MVC1_Channel-1	Video Data, Format 2	Video Data	Set ch.

3. Video channels are now seen under 'Video' tab:

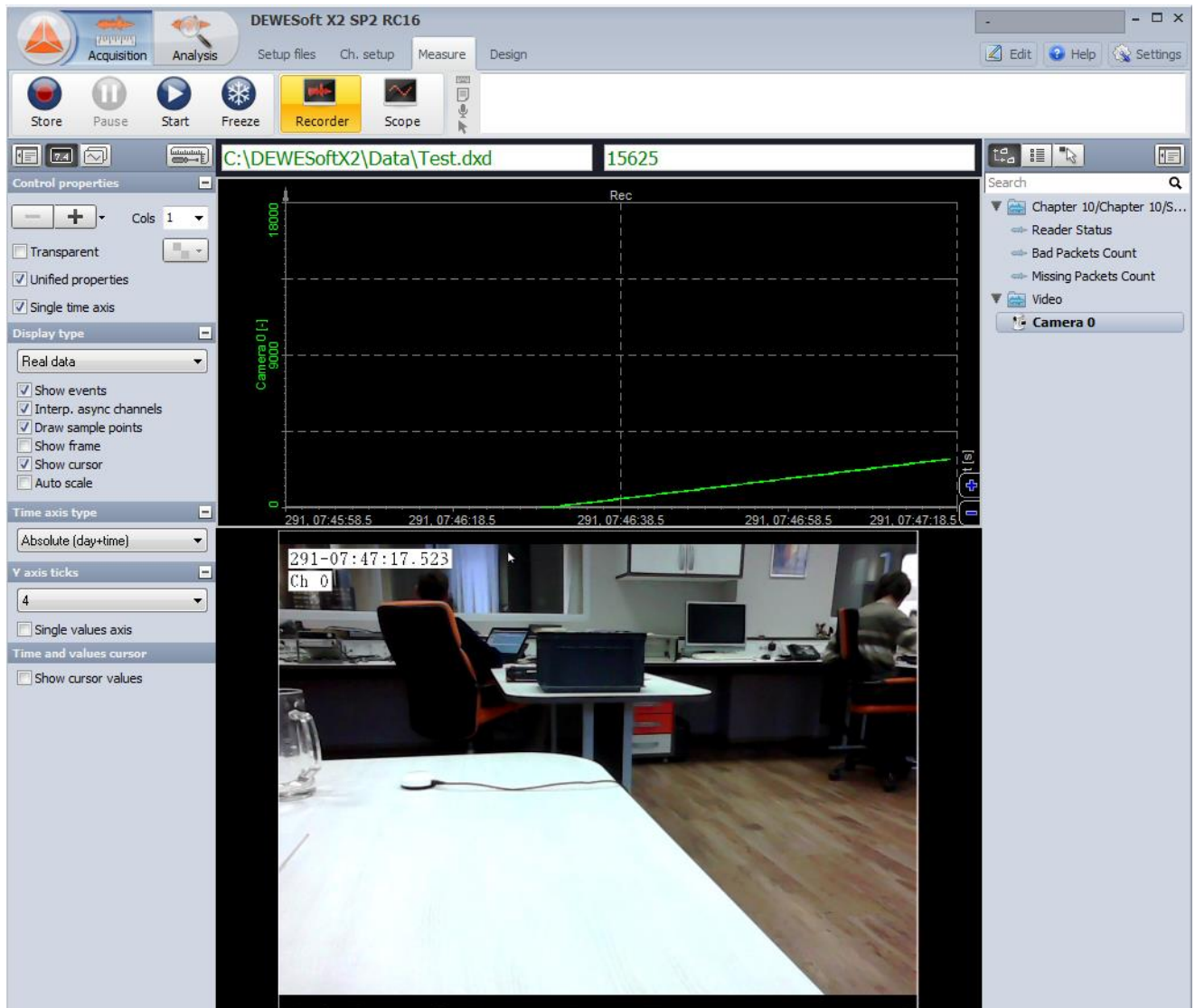


ID	Used	Name	Values	Set
0	Used	Camera 0	PCM telemetry camera mpegts / h264 1024 x 768 @ 60.0	Setup
1	Unused	Camera 1	PCM telemetry camera Waiting for data	Setup
2	Unused	Camera 2	PCM telemetry camera Waiting for data	Setup
3	Unused	Camera 3	PCM telemetry camera Waiting for data	Setup

We can preview video stream under 'Setup'.

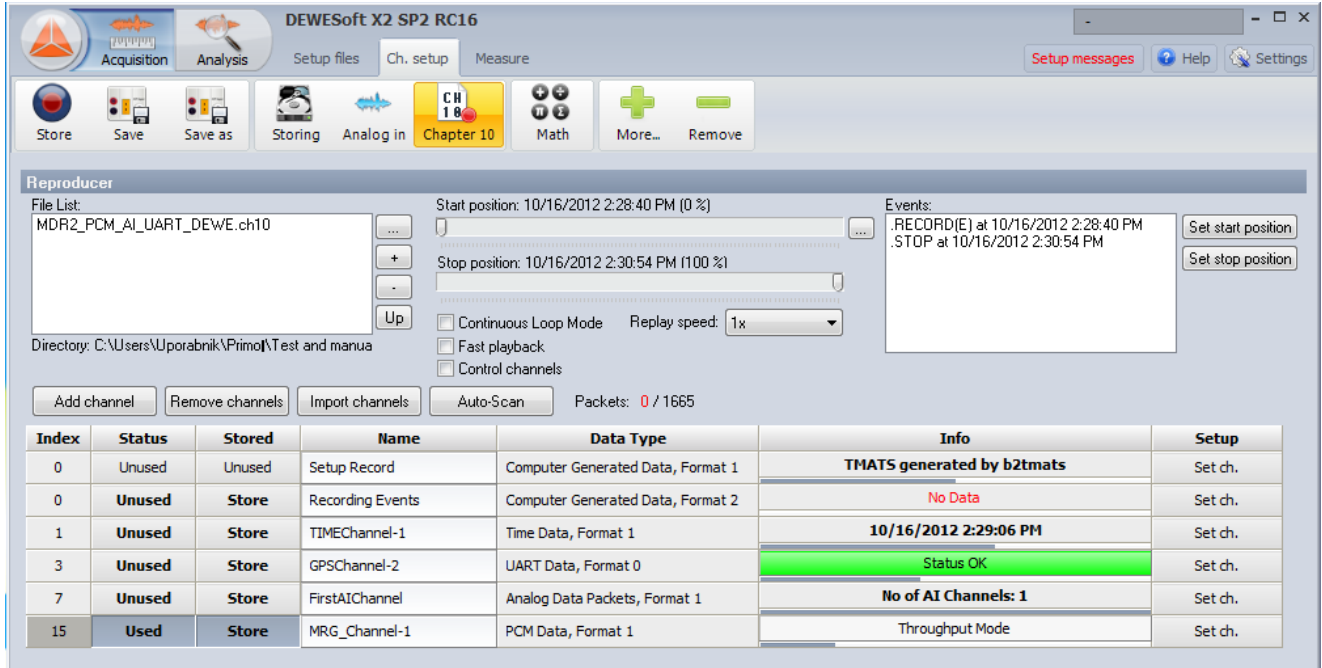


4. Finally we present video stream in Measure mode under Design: we choose 'Video' visual control and assign 'Camera 0' channel to it:



## 2.3 PCM stream

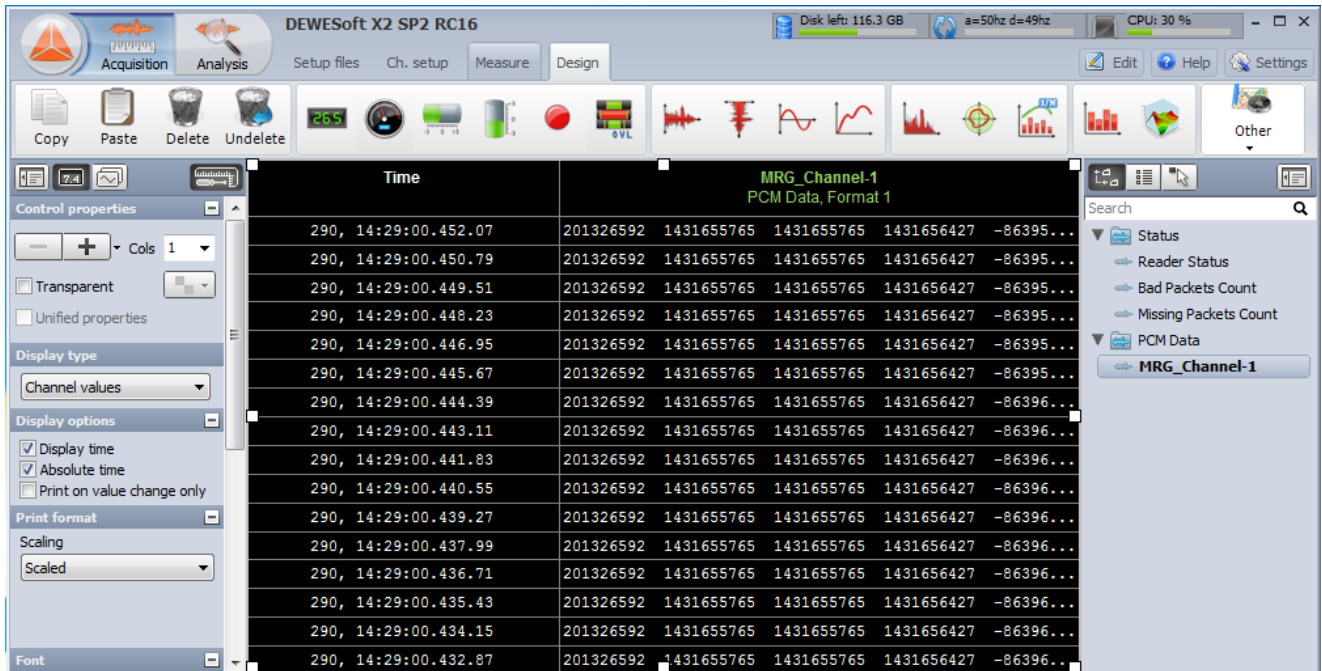
First we enable PCM channels:



The Reproductor window shows the file list with 'MDR2\_PCM\_AI\_UART\_DEWE.ch10' selected. The start position is 10/16/2012 2:28:40 PM (0 %) and the stop position is 10/16/2012 2:30:54 PM (100 %). The directory is C:\Users\Uporabnik\Primo\Test and manual. The table below shows the channel setup:

Index	Status	Stored	Name	Data Type	Info	Setup
0	Unused	Unused	Setup Record	Computer Generated Data, Format 1	TMATS generated by b2tmats	Set ch.
0	Unused	Store	Recording Events	Computer Generated Data, Format 2	No Data	Set ch.
1	Unused	Store	TIMEChannel-1	Time Data, Format 1	10/16/2012 2:29:06 PM	Set ch.
3	Unused	Store	GPSChannel-2	UART Data, Format 0	Status OK	Set ch.
7	Unused	Store	FirstAIChannel	Analog Data Packets, Format 1	No of AI Channels: 1	Set ch.
15	Used	Store	MRG_Channel-1	PCM Data, Format 1	Throughput Mode	Set ch.

Now we can show PCM channel values in Measure tab > Design > Add tabular display data > select 'PCM Data' channel on right. We enabled 'Raw' scaling and 'Hex' format on in the left section:



The Measure window shows the Design tab with the 'MRG\_Channel-1 PCM Data, Format 1' channel selected. The table below shows the PCM data values:

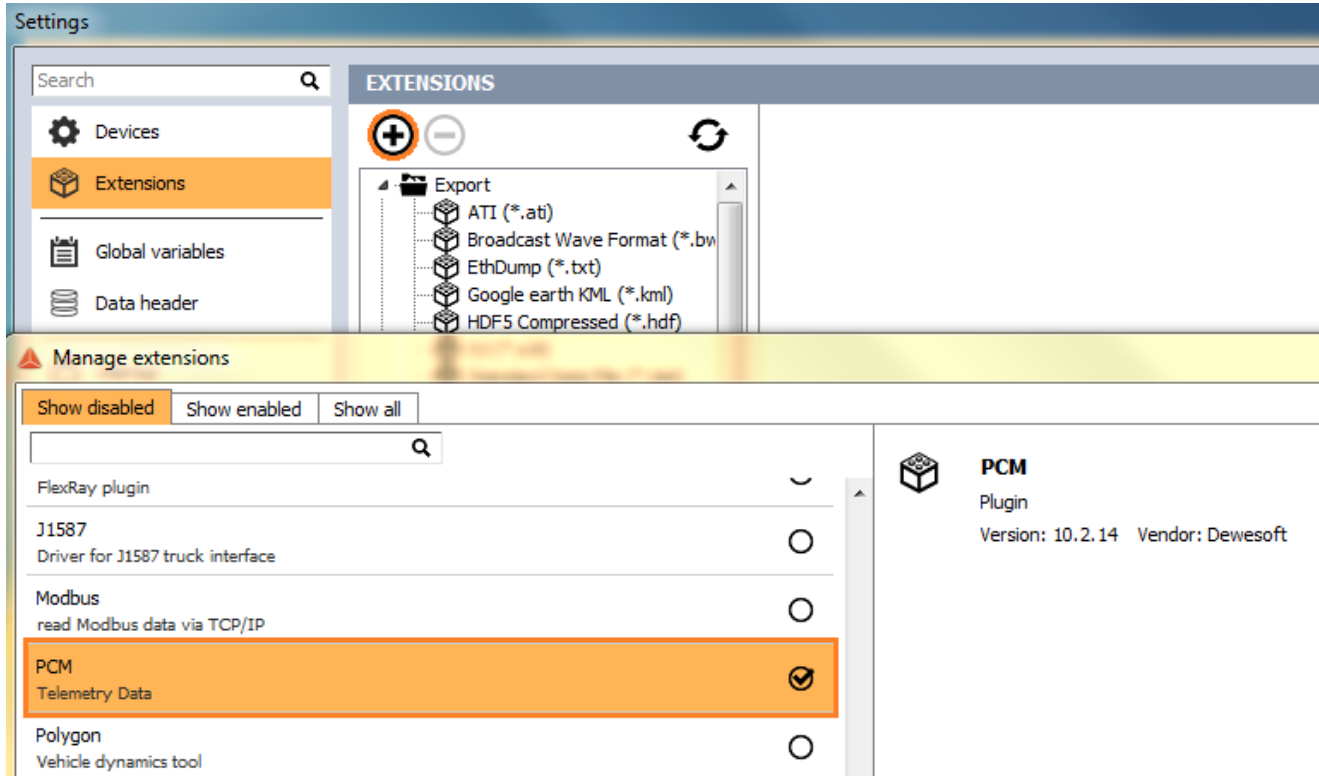
Time	MRG_Channel-1 PCM Data, Format 1
290, 14:29:00.452.07	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.450.79	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.449.51	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.448.23	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.446.95	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.445.67	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.444.39	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.443.11	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.441.83	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.440.55	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.439.27	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.437.99	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.436.71	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.435.43	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.434.15	201326592 1431655765 1431655765 1431656427 -86395...
290, 14:29:00.432.87	201326592 1431655765 1431655765 1431656427 -86395...



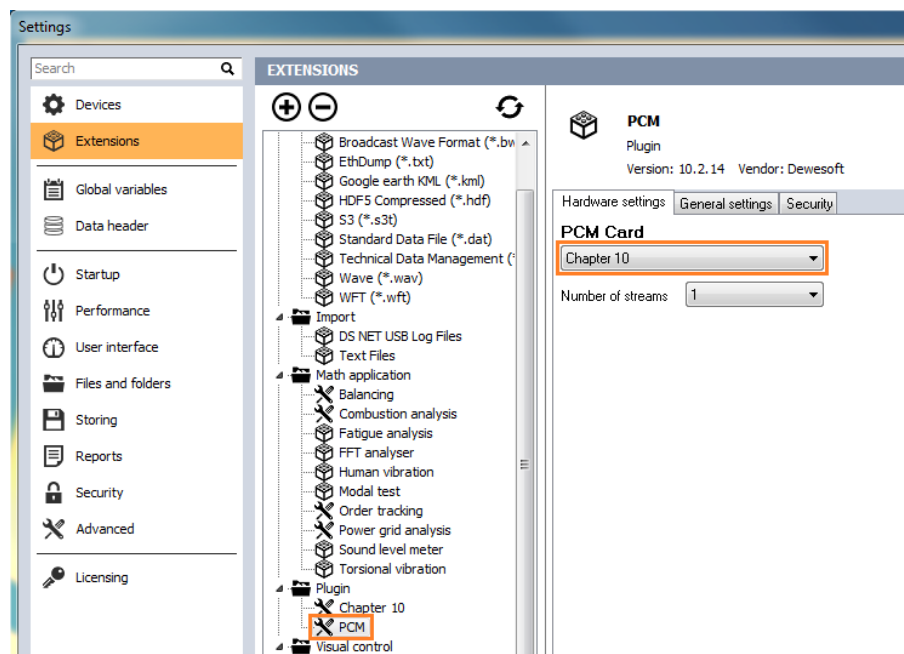
## 2.3.1 Decoding PCM stream

DEWESoft PCM plugin supports decoding of PCM stream.

1. Go to Settings > Extensions > “+” and enable PCM plugin.



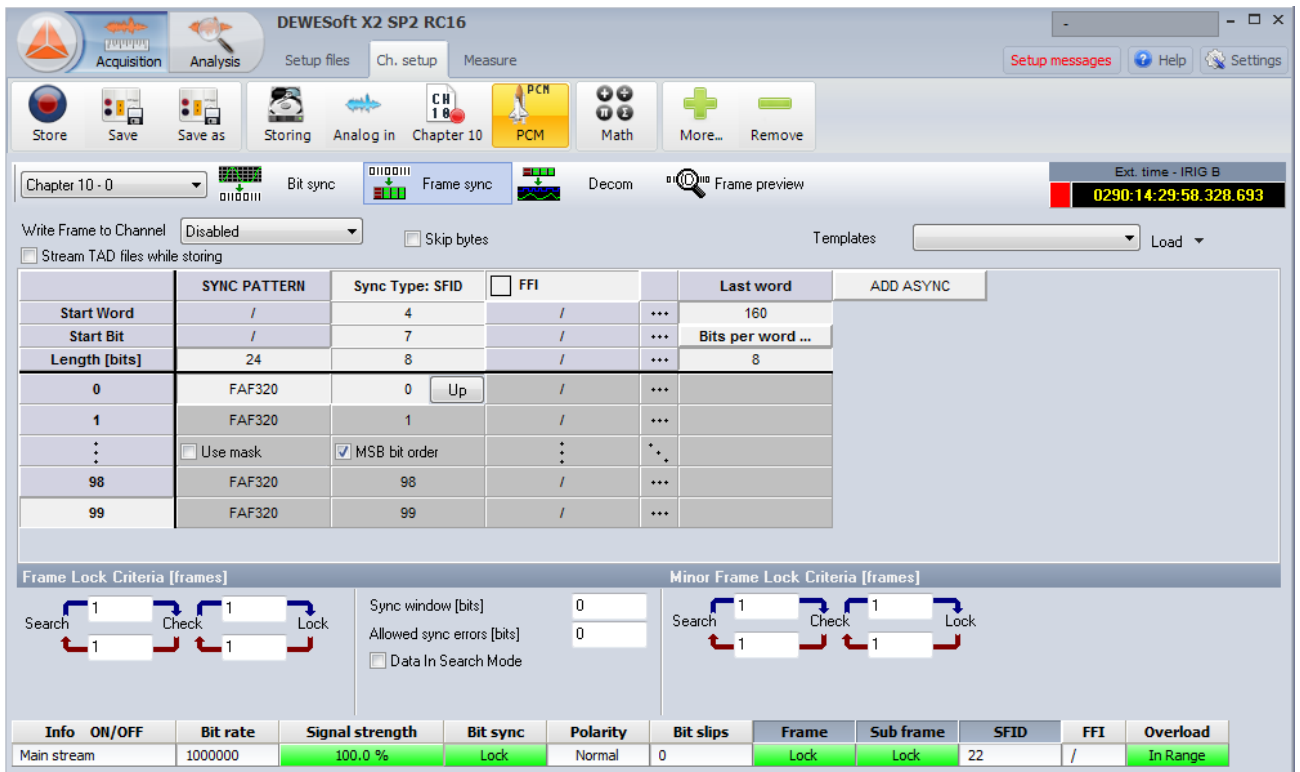
Find PCM plugin under extensions and select 'Chapter 10' as PCM card:



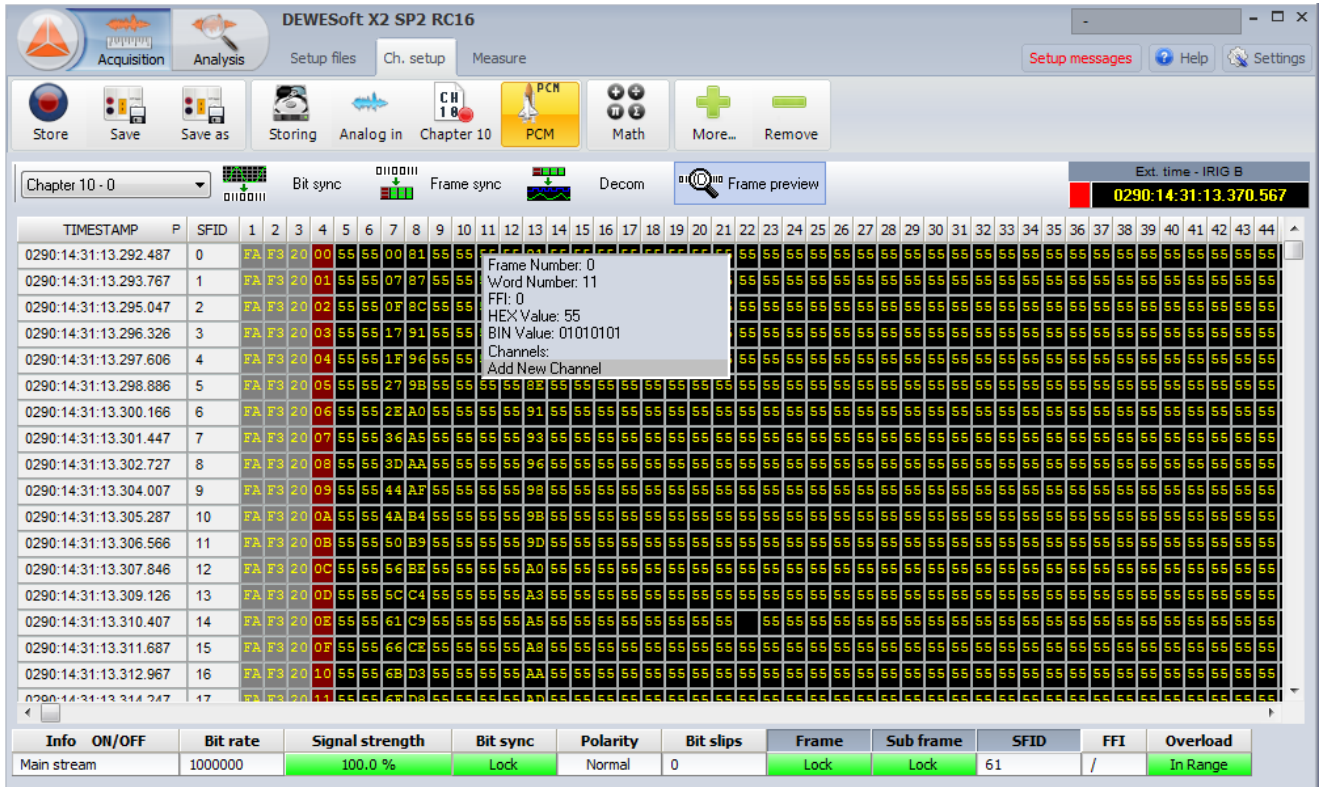
- Click OK, go to 'Ch. Setup', click 'PCM' icon, select PCM data as 'Input Channel' (it is available if PCM channel is enabled in Ch.10 setup) and click 'Load Settings from Channel' button to load setting from Chapter 10 file (TMATS settings):



Now we can view 'Frame sync' window:



3. To add channel go to 'Frame preview' and click on the PCM frame > 'Add New Channel':

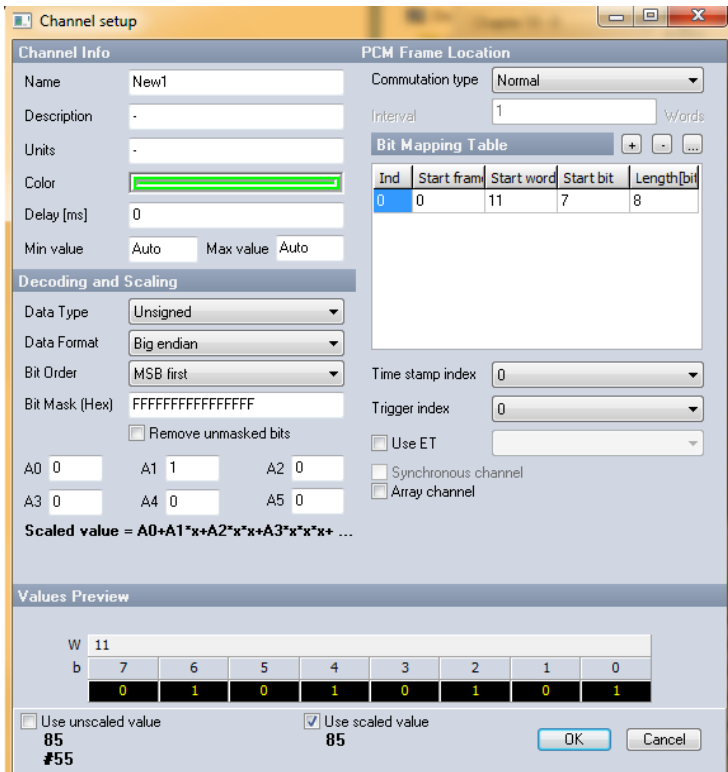


The screenshot shows the DEWESoft X2 SP2 RC16 software interface. The 'Frame preview' window is active, displaying a grid of PCM frames. A context menu is open over a frame, showing options like 'Frame Number: 0', 'Word Number: 11', 'FFI: 0', 'HEX Value: 55', 'BIN Value: 01010101', 'Channels:', and 'Add New Channel'. The 'Add New Channel' option is highlighted.

Timestamp	P	SFID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44		
0290:14:31:13.292.487	0	FA F3 20	00	55	55	00	81	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.293.767	1	FA F3 20	01	55	55	07	87	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
0290:14:31:13.295.047	2	FA F3 20	02	55	55	07	8C	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
0290:14:31:13.296.326	3	FA F3 20	03	55	55	17	91	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.297.606	4	FA F3 20	04	55	55	1F	96	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.298.886	5	FA F3 20	05	55	55	27	9B	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.300.166	6	FA F3 20	06	55	55	2E	A0	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.301.447	7	FA F3 20	07	55	55	36	A5	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.302.727	8	FA F3 20	08	55	55	3D	AA	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.304.007	9	FA F3 20	09	55	55	44	AF	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.305.287	10	FA F3 20	0A	55	55	4A	B4	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.306.566	11	FA F3 20	0B	55	55	50	B9	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.307.846	12	FA F3 20	0C	55	55	56	BE	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.309.126	13	FA F3 20	0D	55	55	5C	C4	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.310.407	14	FA F3 20	0E	55	55	61	C9	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.311.687	15	FA F3 20	0F	55	55	66	CE	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.312.967	16	FA F3 20	10	55	55	6B	D3	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	
0290:14:31:13.314.247	17	FA F3 20	11	55	55	6F	DB	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	

Info	ON/OFF	Bit rate	Signal strength	Bit sync	Polarity	Bit slips	Frame	Sub frame	SFID	FFI	Overload
Main stream		1000000	100.0 %	Lock	Normal	0	Lock	Lock	61	/	In Range

New window opens where parameters of new channel can be set:



The screenshot shows the 'Channel setup' dialog box. The 'Channel Info' section includes fields for Name, Description, Units, Color, Delay [ms], Min value, and Max value. The 'PCM Frame Location' section includes a dropdown for Commutation type, a text field for Interval, and a 'Bit Mapping Table' with columns for Ind, Start frame, Start word, Start bit, and Length [bit]. The 'Decoding and Scaling' section includes dropdowns for Data Type, Data Format, and Bit Order, a text field for Bit Mask (Hex), and checkboxes for 'Remove unmasked bits', 'Use ET', 'Synchronous channel', and 'Array channel'. The 'Values Preview' section shows a preview of the scaled value, with a checkbox for 'Use unscaled value' and a checkbox for 'Use scaled value'.

**Channel Info**

Name: New1  
Description: -  
Units: -  
Color: [Color selection]  
Delay [ms]: 0  
Min value: Auto Max value: Auto

**PCM Frame Location**

Commutation type: Normal  
Interval: 1 Words  
Bit Mapping Table:

Ind	Start frame	Start word	Start bit	Length [bit]
0	0	11	7	8

**Decoding and Scaling**

Data Type: Unsigned  
Data Format: Big endian  
Bit Order: MSB first  
Bit Mask (Hex): FFFFFFFF  
☐ Remove unmasked bits  
A0: 0 A1: 1 A2: 0  
A3: 0 A4: 0 A5: 0  
Scaled value = A0+A1\*x+A2\*x\*x+A3\*x\*x\*x+ ...

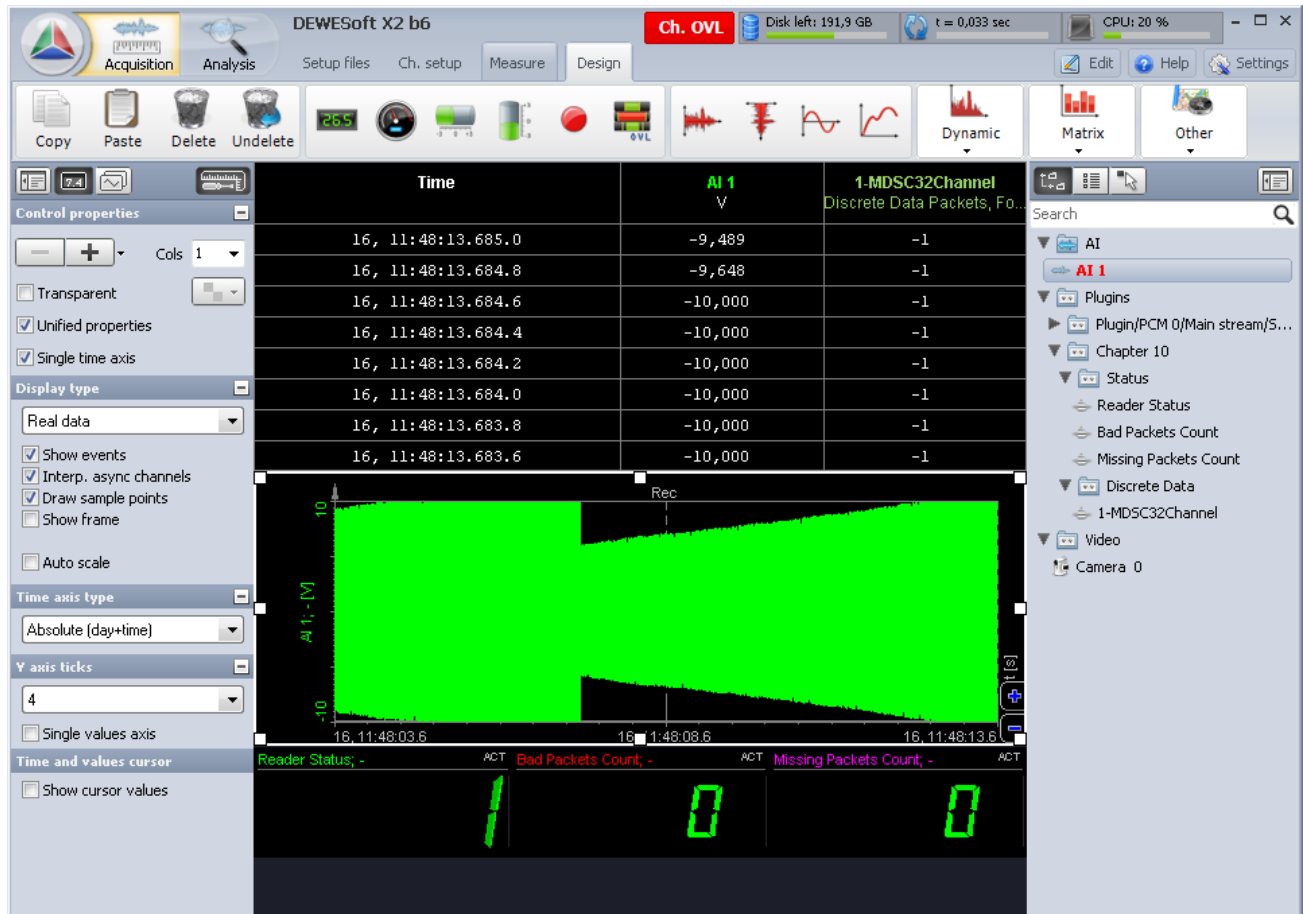
**Values Preview**

W: 11  
b: 7 6 5 4 3 2 1 0  
0 1 0 1 0 1 0 1  
☐ Use unscaled value 85  
☒ Use scaled value 85

OK Cancel

### 3. Measure

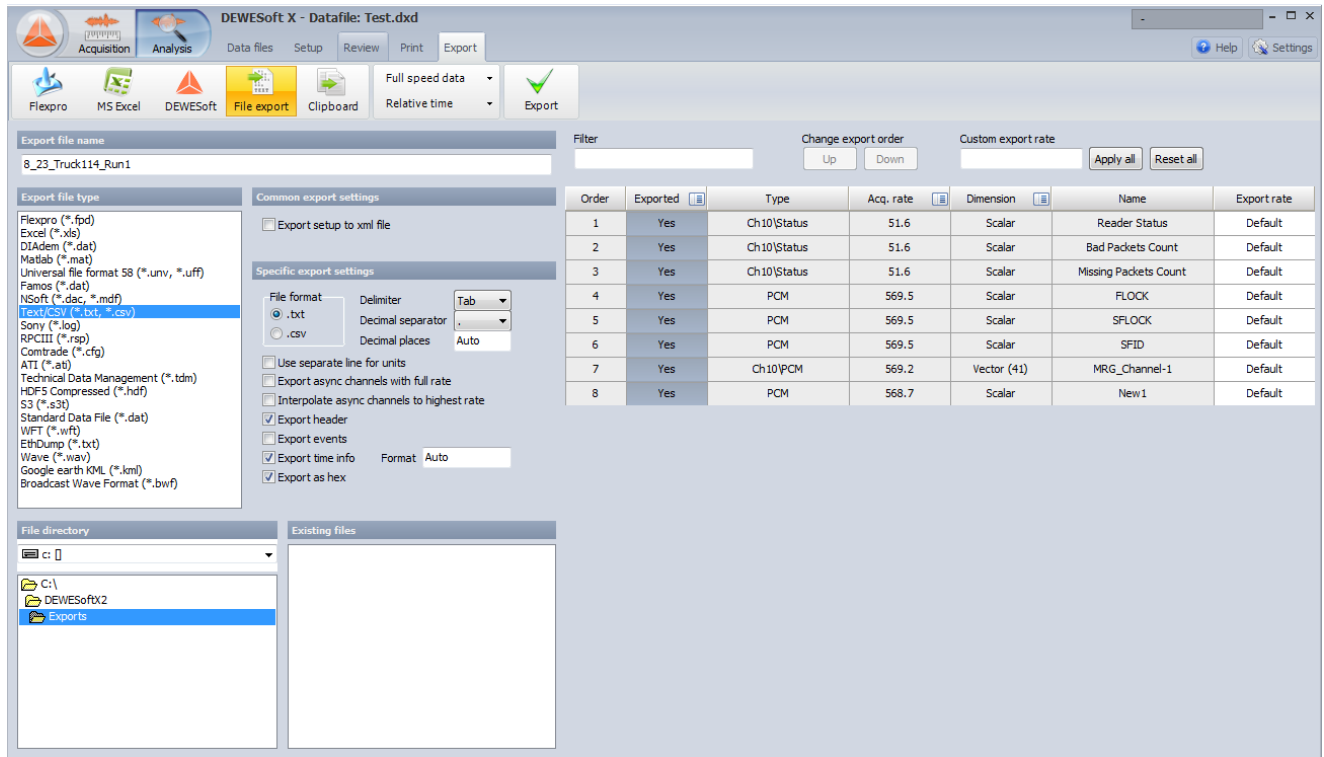
We can view all enabled channels in 'Measure' tab on appropriate visual control that we can select and present in 'Design' mode. To visualize wanted channels on the displays, we just click on the names on the right panel:



Additionally we can do mathematics live or in 'Analysis' mode on all channels under Ch. Setup > Math.



Stored channels can be exported in various formats that DEWESoft supports:



Specific help on the topic can be found by pressing F1 key in the DEWESoft menu where help is needed. While Manuals, Tutorials and How-to documents can be found online:

<http://www.dewesoft.com/download#Manuals>