

DECOMMUTATION MODULE

IRIG

SOLUTION

CABINET

CONTROLLER

DEVICE

SOFTWARE BASE

DESCRIPTION



- Respect IRIG-106 Chapter 4
- From raw data to parameter
- Raw values and engineering units
- Video, audio management

- The decommutation extracts information from the raw data (minor frames) coming from the telemetry stream and convert them in the form required by the user.
- This information could be sub-frames included in embedded message or parameters values. The sub-frames contain parameters or other streams as video or audio streams.
- From the raw data, the parameters values are built on the form (quality, dating, value), whatever is the parameter format (number of bits, coding format, bit inversion ...). The value of the parameter can be defined in raw value or engineering unit value.
- The IRIG decommutation module respects the IRIG 106, chapter 4, class 1 and class 2.

MAIN FEATURES

Principle

From IRIG minor frames, optimized algorithms are designed to extract parameters according to the description defined in the test configuration.

Each value of parameter included in the message can be extracted:

- extracted whatever the format: number of bits, binary, 2's complement, 1's complement, float ...,
- Converted in engineering units, using a function from the standard list (linear, polynomial, look-up table, sensor database ...),
- With datation, elaborated with IRIG datation,
- With quality value, to confirm whether the value is correct or not.

Then each parameter can be used by other modules: visualization processes.

SOFTWARE MODULE

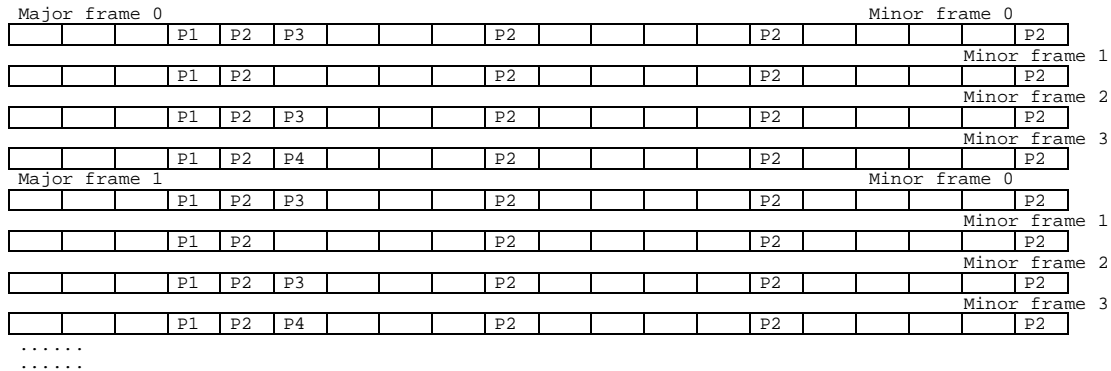
SERVICE

Distributed by:
 AA SYSTEL France
 9, rue RAVEL, 91620 NOZAY / France
 TEL: + 33 1 6963 8630
 FAX: + 33 1 6963 8474
 E-mail: wang.huiqin@a-a.fr
 Beijing mobile: +86 138 010 11504

Commutation

The IRIG decommutation module manages,

- commutated parameters: one location on each minor frame (i.e. P1)
- super-commutated parameters: several locations on each minor frame (i.e. P2)
- sub-commutated parameters: one or several locations on major frame (i.e. P3)



Embedded Messages

The embedded messages are extracted from the minor frames.

Then, the parameters can be extracted and decommuted.

Additional functions allow extracting video signal, voice, GPS, included in embedded messages.

Message Display

The minor frames and the embedded messages can be displayed in binary, decimal, octal or hexadecimal chart, with a dump function.

In post-processing, an additional tool allows to browse from one zone to another in order to analyse the messages in their raw form.

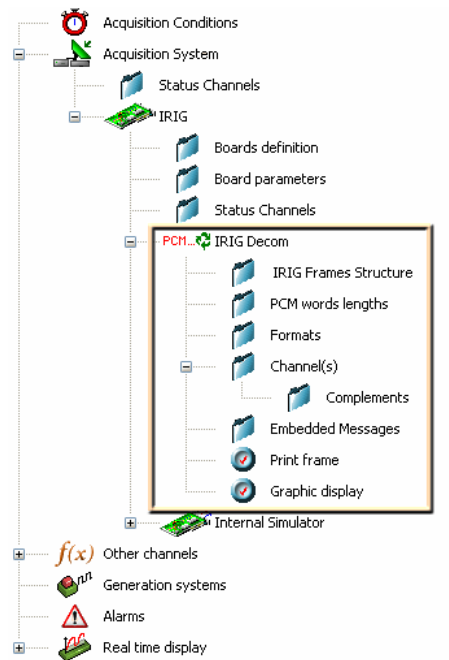
The messages display functions are very useful during the validation phases, and the debug phase when a wrong or suspicious value is detected.

Test Configuration

The global test configuration module defines

- ▪ Conditions of acquisition (start and stop mode for storage, visualization),
- ▪ Different inputs and outputs,
- ▪ Process parameters,
- ▪ Generated parameters,
- ▪ Alarms,
- ▪ Visualizations,

The configuration of the Telemetry PCM module with decommutation is included in the global test configuration module of MAGALI, as a node of the "different input and outputs".



Information defining the TM message structure, as well as configuration of the parameters included in the different data streams, are defined by the test configuration module.

The module defines the structure of the IRIG message and accurate definition of each parameter with its extraction and conversion in engineering units.

Example of information for the message structure

- ▪ Signal frequency
- ▪ Structure of the synchronization word
- ▪ Structure of the PCM word
- ▪ Structure of the major and minor frame
- ▪ Definition of the embedded message

Example of information for each parameter

- ▪ Channel label
- ▪ Unit name
- ▪ Conversion in engineering units function
- ▪ Datation
- ▪ Location in the frame
- ▪ LSB location
- ▪ Number of bits...

REFERENCES

Syst/IRIG	IRIG 106 decommutation module class 1 and class 2
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Options

Syst/IRIG/VIDEO/MPEG	Extraction embedded video and replay – MPEG2/4 – 1 channel
Syst/IRIG/VIDEO/MPEG2	Extraction embedded video and replay – MPEG2/4 – 2 channels
Syst/IRIG/AUDIO/CVSD	Extraction embedded audio and replay– CVSD format

See Also

Syst/CE83	CE83 format decommutation module
Syst/DANIEL	DANIEL format decommutation module
Syst/CCSDS	CCSDS format decommutation module