

# Specifications

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# Mnemonics Database

We store our mnemonic definitions within a flat tab delimited plain text format. The format has evolved over time to support required functionality.

The first row contains the header. The header defines the columns contents. The columns can be in any order.

Each row defines a single mnemonic and is uniquely identified by the `DATA_ID`. `DATA_ID` is also often referred to as `Housekeeping ID` or `HKID` for shorthand.

If required, the column must exist but row values may still be empty. Empty values will be default initialized.

| Column         | Type    | Description  | Required | Empty Allowed | Default Value               |
|----------------|---------|--|----------|---------------|-----------------------------|
| SUB_SYSTEM     | String  | The subsystem.<br>May be empty. Ex:<br>CDH               | Yes      | Yes           | Empty String                |
| NAME           | String  | The mnemonic's<br>name. Ex:<br>PowerSupplyCurrent        | Yes      | No            |                             |
| DESCRIPTION    | String  | The mnemonic's<br>description                            | Yes      | Yes           | Empty String                |
| ADC_#          | Integer | The ADC channel  | No       | Yes           | 0                           |
| DATA_ID        | Integer | The unique ID  | Yes      | No            |                             |
| PACKET_TYPE    | Integer | The packet type or<br>CCSDS Application<br>ID            | Yes      | No            |                             |
| PACKET_SUBTYPE | Integer | Packet subtype   | No       | Yes           | 0                           |
| PACKET_NAME    | String  | The name of the<br>packet the<br>mnemonic belongs<br>to  | No       | Yes           | Empty String                |
| APPLY_WHEN     | String  | Apply when<br>condition of the<br>format:<br>HKID=RANGE. | No       | Yes           | No apply when<br>conditions |
| DECODE_TYPE    | Integer | The decoder type   | Yes      | No            |                             |
| DECODE_ID1     | Integer | Decode ID 1  | Yes      | No            |                             |
| DECODE_ID2     | Integer | Decode ID 2  | Yes      | No            |                             |
| DECODE_ID3     | Integer | Decode ID 3  | Yes      | No            |                             |
| DECODE_ID4     | Integer | Decode ID 4  | Yes      | No            |                             |
| CLOCK          | String  | The clock's name   | No       | Yes           | Empty String                |
| RAW_FMT        | String  | The raw format   | Yes      | No            |                             |

| Column         | Type    | Description  | Required | Empty Allowed | Default Value |
|----------------|---------|--|----------|---------------|---------------|
| ENG_FMT        | String  | The string formatting when engineering conversion is applied                               | Yes      | No            |               |
| ENG_EQ_TYPE    | Integer | The type of conversion to apply to the raw value   | Yes      | No            |               |
| ENG_K1         | Double  | Eng Coefficient 1  | Yes      | No            |               |
| ENG_K2         | Double  | Eng Coefficient 2  | Yes      | No            |               |
| SCI_UNITS      | String  | The science units  | Yes      | Yes           |               |
| SCI_FMT        | String  | The string formatting when science conversion is applied                                   | Yes      | No            |               |
| SCI_EQ_TYPE    | Integer | The type of conversion to apply  | Yes      | No            |               |
| SCI_FROM_ENG   | bool    | If true, the engineering conversion will be applied before applying the science conversion | Yes      | No            |               |
| SCI_K1         | Double  | Science Coefficient 1  | Yes      | No            |               |
| SCI_K2         | Double  | Science Coefficient 2  | Yes      | No            |               |
| SCI_K3         | Double  | Science Coefficient 3  | Yes      | No            |               |
| SCI_K4         | Double  | Science Coefficient 4  | Yes      | No            |               |
| SCI_K5         | Double  | Science Coefficient 5  | Yes      | No            |               |
| SCI_K6         | Double  | Science Coefficient 6  | Yes      | No            |               |
| SCI_K7         | Double  | Science Coefficeint 7  | Yes      | No            |               |
| SCI_K8         | Double  | Science Coefficient 8  | Yes      | No            |               |
| MUX_CH         | Integer | The corresponding mux channel for this mnemonic  | No       | Yes           |               |
| LIMIT_TYPE_1   | Integer | Bit pattern defining the limit configuration   | No       | Yes           |               |
| YELLOW_LIMIT_1 | Double  | The yellow limit value   | No       | Yes           |               |
| RED_LIMIT_1    | Double  | The red limit value  | No       | Yes           |               |

| Column          | Type    | Description  | Required | Empty Allowed | Default Value |
|-----------------|---------|--|----------|---------------|---------------|
| LIMIT_TYPE_2    | Integer | Bit pattern defining the limit configuration           | No       | Yes           |               |
| YELLOW_LIMIT_2  | Double  | The yellow limit value                                 | No       | Yes           |               |
| RED_LIMIT_2     | Double  | The red limit value                                    | No       | Yes           |               |
| LIMITS          | JSON    | The limit set definition                               | No       | Yes           |               |
| EXTRA_1         | String  | Used for various purposes depending on the SCI_EQ_TYPE | No       | Yes           |               |
| XINA_MINE_TYPE  | Integer | The XINA mining mode                                   | No       | Yes           |               |
| XINA_MINE_RAW   | bool    | Whether or not to mine the RAW values                  | No       | Yes           |               |
| XINA_MINE_ENG   | bool    | Whether or not to mine the ENG values                  | No       | Yes           |               |
| DISCRETE_LABELS | String  | Maps a value to string                                 | No       | Yes           |               |
| BUNDLE_ID       | Integer | The XINA bundle ID                                     | No       | Yes           |               |

# Metadata File