Isomet 2021-07-06

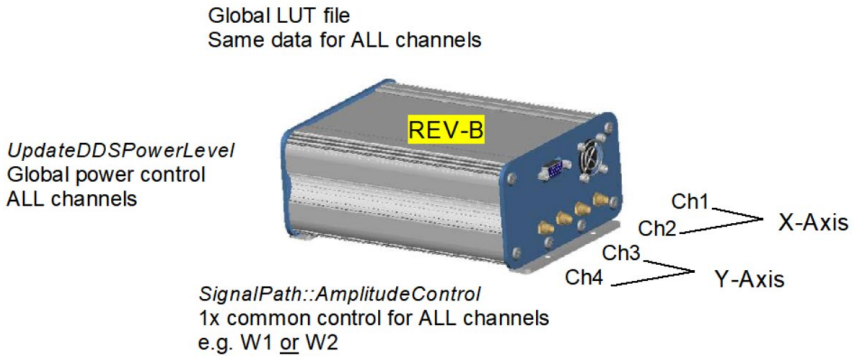
iMS4-P revision comparison table

iMS4-P	Rev-A	Rev-B	Rev-C	Rev-D
Status	Obsolete	Ending	Production	Design
Frequency range	12-200MHz	12-200MHz	10-210MHz	10-220MHz
Frequency resolution (SDK limit)	2.9KHz	2.9KHz	3.1KHz	0.014KHz
Ethernet ***	No	Yes	Yes	Yes
Image Clock Rate, Max	300KHz	1.2MHz	2.08MHz	4MHz (est)
Output power level control *	Common	Common	Independent	Independent
Compensation LUT / calibration *	Common	Common	Independent	Independent
Delay control from Image Clock	SDIO	SDIO	SDIO	SDIO and RF out
SDIO, output rise time	800nsec	800nsec	100nsec, Bits 0-3	100nsec, Bits 0-7
RS422 Encoder Inputs (target tracking apps)	No	Yes	Yes	Yes
Supports enhanced Image Sequences **	No	No	Yes	Yes
In-field Firmware Upgradeable	No	No	Controller only	All

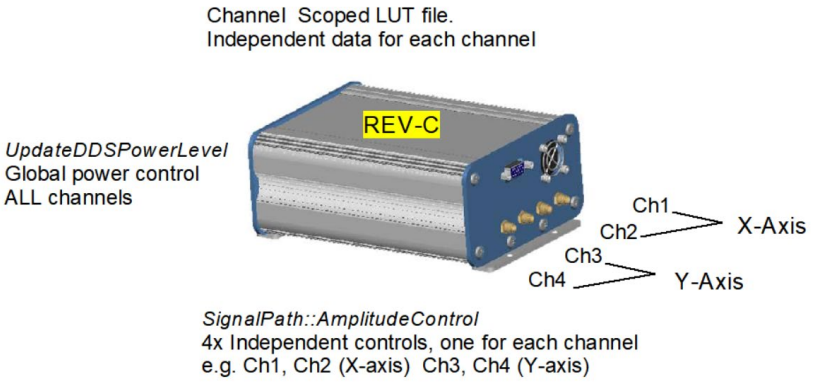
Key: Common = Common to all four output channels
Independent = Per channel or Per channel pairs (for X-Y scanning applications).
SDIO = Synchronous digital IO

Notes:

*** Programming Considerations when changing from rev-B to rev-C.**



Rev-C requires a different LUT file structure and uses channel specific amplitude controls.



**** Enhanced Sequence capability (SDK v 1.8.2 ->)**

1. Increased programmable repeat counter field from 256 to 16.7M repeats.
2. Eliminate the minimum duration requirement between one sequence entry and the next.
3. Additional *SequenceTermination* option to reinsert a sequence entry at an arbitrary location within the queue when sequence finishes instead of just at end.
4. Increase the flexibility of the software *SequenceManager* to allow the ability to:
    i) Stop sequence playback immediately.
    ii) Stop sequence playback at end of sequence entry (even if not end of sequence).
    iii) Stop sequence playback at end of current repeat.
    iv) Readback current queue status and position.
    v) Re-order sequences within the queue while the queue is stopped.
5. Unlimited' number of sequences. (Within the iMS4 memory resource).
6. Increase Image Table size from 4K to 64K.
7. Sequences may also have single frequency tone entries (*ToneSequenceEntries*).

A Tone entry programs each channel with a constant frequency and amplitude. The compensation LUT table still applies. The input trigger would start a Tone in the queue in much the same was as an Image. However, the clock input is ignored in Tone mode. The outputs remain static until the next trigger signal, which then increments the queue to the next Image or Tone.

***** Gb Ethernet Overview**

The iMS operates a TCP/IP server that listens on port 28244. The server responds to the binary messaging protocol that is defined for the iMS and which is common to both the USB and Ethernet interface - it is only the underlying transport that is different. It also listens on UDP port 28242 for packets broadcast to the network for device discovery and responds with an "announce" packet, describing the device's model and serial number.

Images are transferred to the iMS4 using the TFTP protocol.

The details of these protocols are abstracted away by the iMS API (and associated SDK) such that application software is not required to be developed at the socket level.

The iMS can be configured to operate with a fixed IP address / subnet mask or to obtain an address using DHCP.

In terms of transfer speed, much depends on network and host OS latency, and the task in hand. The physical device is Gigabit capable, and we have measured raw TCP throughput at 530Mbps (allowing for overhead in the firmware). Actual Image data transfer rate is estimated at 30-40MB/s (1-1.5M Image Pts/s), and thus slightly faster than the USB transfer rate.