

## ***How EVSW Display the Calibrated Raw Data***

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There are two versions of encr files. One is old calculation method and one is new.

CC Gain: data flash raw data 0x7F71205C, EVSW reading with new \*.encr file: 10.124

Raw data (0x7F71205C) -> first two byte is for exp gain. The exp is 0x7F -> 127, so gain is:  $(127-128-24) = -25 \rightarrow 2^{(-25)}$

The rest is the low address to high address hex read from gauge and it is big endian. Bit 7 of the MSB is used for the sign bit, but in the conversion the mantissa is considered to be shifted so the bit 7 would always be a 1, to preserve the most possible significant bits in the mantissa. So after determining the sign here, the implied high bit must be set back to one for the conversion to be correct.

0x71205C OR with 0x80 = 0xF1205C -> convert into DEC and times  $2^{(-25)} = 15802460 * 2^{(-25)} = 0.47095$

New encr file: CC Gain =  $4.768/x = 4.768/0.47095 = 10.124$  (matches!)

Old encr file: CC gain =  $4.7095/x = 4.7095/0.47095 = 10$

CC Delta: data flash raw data 0x940898C0, EVSW reading with new \*.encr file: 10.147

Raw data (0x940898C0) -> first two byte is for exp gain. The exp is 0x94 -> 148, so gain =  $(148-128-24) = -4$

0x0898C0 OR with 0x80 = 0x8898C0 -> convert into DEC and times  $2^{-4} = 559500$

New encr file: CC delta =  $5677445/x = 5677445/559500 = 10.147$

Old encr file: CC delta =  $5595388/x = 5595388/559500 = 10.001$

Board Offset: data flash raw data 0xF8. EVSW reading with new \*.encr file: -0.24

F8 -> convert to DEC = -8.

New encr file: Board offset =  $x * 0.48/16 = -8 * 0.48/16 = -0.24$

Old encr file: Board offset =  $x * 4.7095/64 = -8 * 4.7095/64 = -0.5886875 \rightarrow -0.6$

CC Offset: data flash raw data 0xFA89, EVSW reading with new \*.encr file = -0.67

0xFA89 -> convert to DEC = -1399.

New encr file: Board offset =  $x * 0.00048 = -1399 * 0.00048 = -0.67$

Old encr file: Board offset =  $x * 4.7095/64000 = -1399 * 4.7095/64000 = -0.1029 = -0.103$

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