Fuji Electric
e-Front runners

APPLICATION NOTE	FECA-AN-145

RS-485 Data Format 12 Procedure

Inverter type	FRENIC-Mini/Eco/Multi/MEGA series
Software version	All versions
Required options	None
Related documentation	RS-485 User's Manual MEH448c
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Date	4/05/2012
Revision	

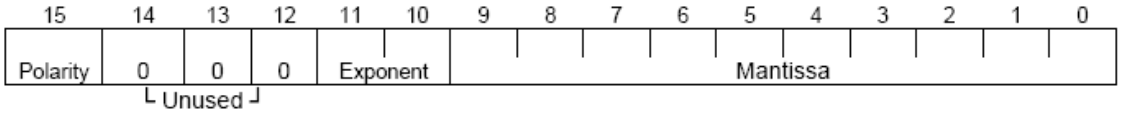
Introduction:

This application note will diagram how to correctly enter data to register addresses with data format 12 in the **RS-485 User's Manual** (**MEH448c**, page 5-50) over RS-485 communications.

Format:

Data format 12 has the following specification as displayed in the **RS-485 User's Manual**, page 5-50:

Data format [12] Floating point data (accel./decal. time, PID display coefficient)



Polarity: 0 → Positive (+), 1 → Negative (-) Exponent: 0 to 3 Mantissa: 1 to 999

Value expressed in this form = (polarity) Mantissa x (Exponent - 2) power of 10

Value	Mantissa	Exponent	(Exponent - 2) power of 10
0.01 to 9.99	1 to 999	0	0.01
10.0 to 99.9	100 to 999	1	0.1
100 to 999	100 to 999	2	1
1000 to 9990	100 to 999	3	10

(Example) When F07 (acceleration time 1) = 20.0 seconds

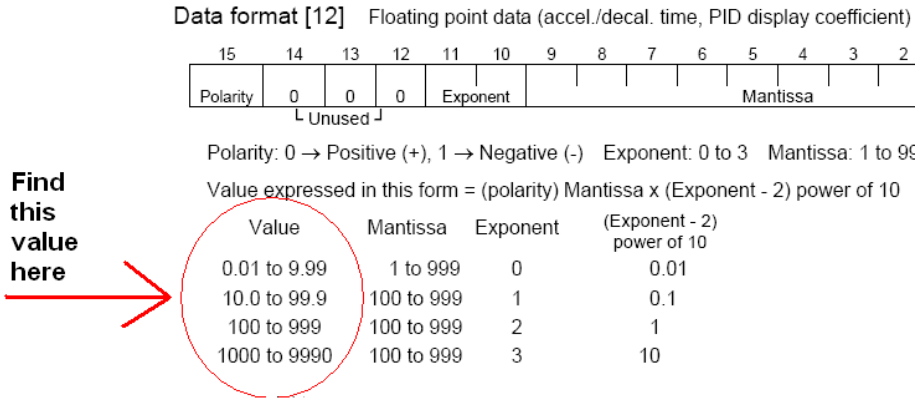
$20.0 = 200 \times 0.1 \Rightarrow 0000\ 0100\ 1100\ 1000_b = 04C8_H$ ⇒ Consequently,

04_H	$C8_H$

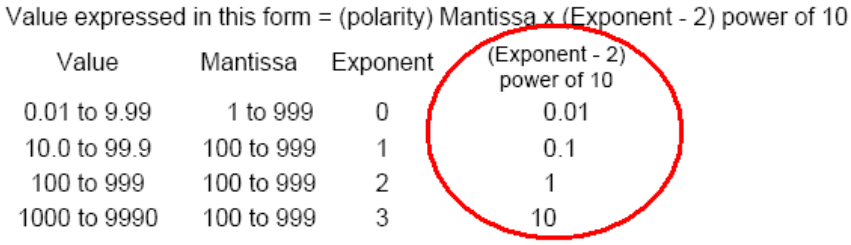
Procedure:

To ensure you send the correct data to the inverter corresponding to the desired value, follow the procedure outlined below.

STEP 1: Determine the decimal value you want to send to the register address with data format 12.
For example, let's say you want to set the acceleration time (F07) to 5 seconds. The decimal number 5 falls into the first group of values (0.01 to 9.99).



STEP 2: Find the "(Exponent – 2) power of 10" value your decimal number corresponds to.
Our example of setting acceleration time to 5 corresponds to 0.01.



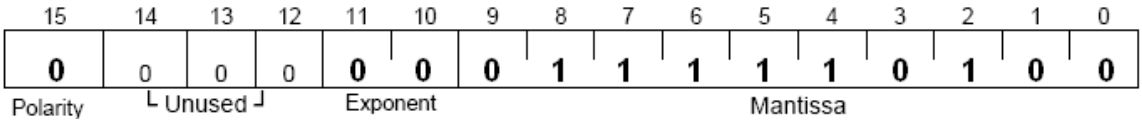
STEP 3: Take your decimal value from STEP 1 and divide it by the "(Exponent – 2) power of 10" value from STEP 2.
For our example, take 5 and divide it by 0.01 to get 500.

STEP 4: Take your value found in STEP 3 and convert it to binary. This is the value you will enter in the Mantissa, bits 0 to 9.
Our example: 500 decimal = 0111110100 binary.

STEP 5: Find the Exponent that your decimal number from STEP 1 corresponds to and convert it to binary. This value will go in bits 11 and 10
Our example: 5 corresponds to Exponent 0.

STEP 6: Find the Polarity of your value from STEP 1. If the value from STEP 1 is positive, the polarity is 0. If the value from STEP 1 is negative, the polarity is 1. This value will go in bit 15.

STEP 7: Plug your binary values into their corresponding bits. This may need to be converted to hexadecimal to be communicated to drive.
For our example, the binary number is:



000000011111110100 binary = 01F4 hex