

XM500 4-20mA Analog Inputs

Loop resistance = 220 Ohms 1% Tolerance

A/D Converter Voltage Input = 0 – 5Vdc

A/D Converter Resolution = 1024 Counts (0 – 1023)

A/D Count = (Amps * 220)/5 * 1024 nominal

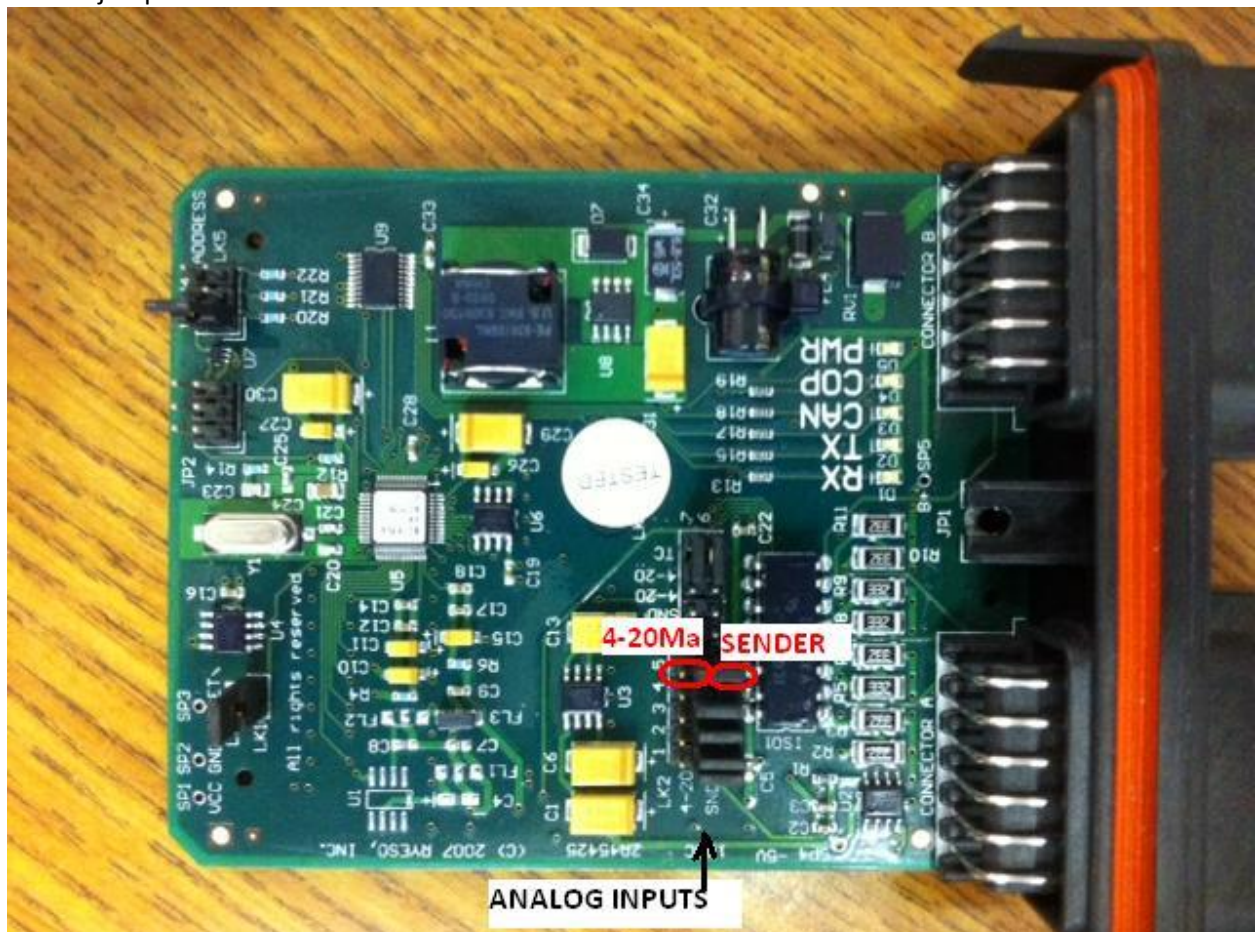
4ma = 180 A/D counts nominal

20mA = 901 A/D counts nominal

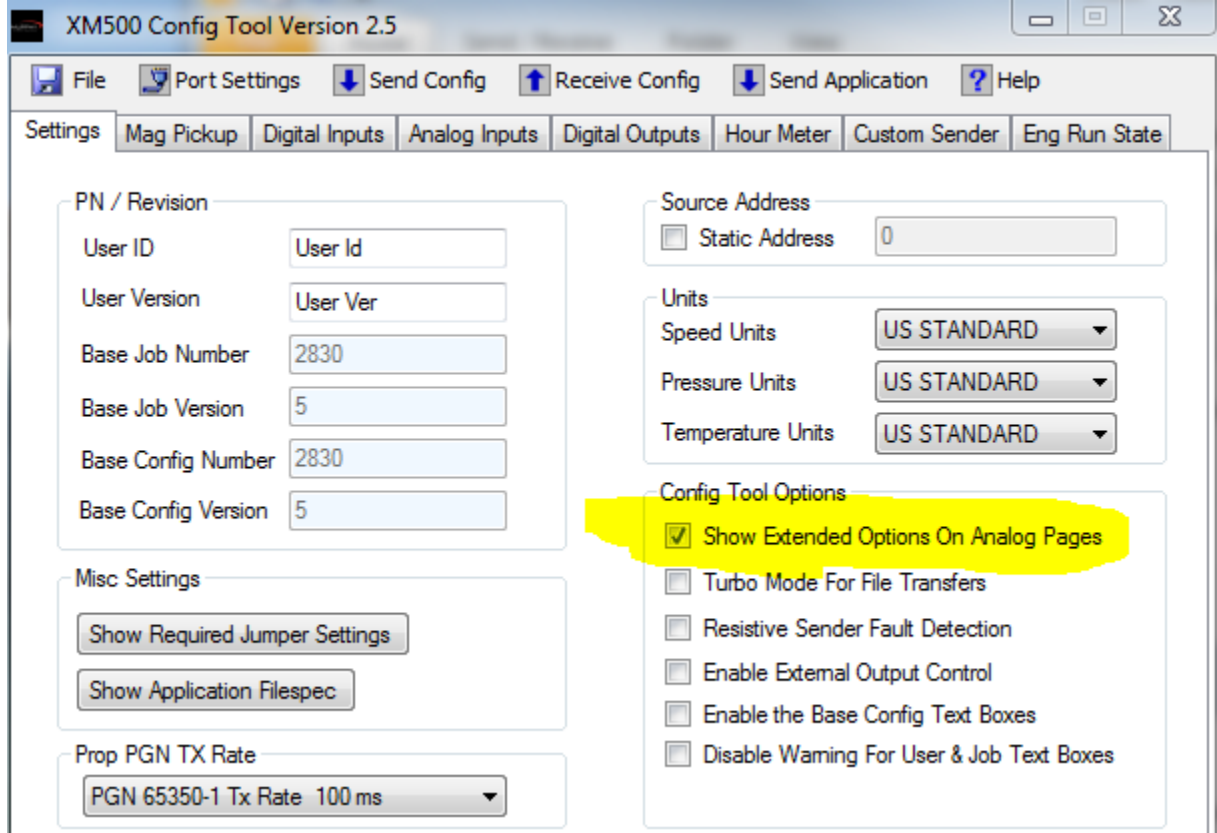
Note About Resolution – The 4 – 20mA input signal is spread out over a count of 901 – 180 or 721 counts. If you are using a 0-100psi pressure transmitter then your resolution will be 100/721 or about 0.14psi per A/D count. If you are using a 0-1000psi pressure transmitter then your resolution will be about 1.4 psi. Select a transmitter to achieve a balance between the maximum process value you will see and the best resolution you can achieve.

Setting up the XM500 for a 4-20mA input.

- 1) Set the jumper on the circuit board to 4-20mA for the desired channel.



2) In the XM500 configuration tool select “Show extended Options on Analog Pages”



3) Select a SPN for the desired analog input (these instructions apply to SPN 52301-52307 as well).
Important: The SPN selected must have a max value that is equal to or greater than the pressure you will be measuring. Example: SPN100 oil pressure has a maximum value of 145psi per SAE J1939 specification, you can use a pressure transmitter with a scale of 0 – 200psi, however the actual pressure being measured must be less than 145psi.

4) Set the Min & Max Values – these will be the measurement at 4mA and at 20mA.
As an example for a 400psi pressure transmitter these will be 0 and 400.
The units will be psi for pressure and degrees F for temperature.

5) Set the Min & Max A/D counts – these represent the A/D counts at 4mA and at 20mA and they are calculated using the formula $A/D \text{ Count} = (\text{Amps} * 220) / 5 * 1024$
4mA = 180 Counts nominal; (@182 including tolerances losses)
20mA = 901 Counts nominal (@912 including tolerances losses)
If using a range other than 4 – 20mA simply calculate the A/D count for the min and max current and enter those values.

The limits are as follows:

0 Counts = 0mA

1024 Counts = 22.7mA

XM500 Config Tool Version 2.5

File Port Settings Send Config Receive Config Send Application Help

Settings Mag Pickup Digital Inputs Analog Inputs Digital Outputs Hour Meter Custom Sender Eng Run State

Analog 0 Analog 1 Analog 2 Analog 3 Analog 4 Analog 5 Analog 6 Analog 7

Parameter 1

Active USED

SPN 1762 - Hydraulic Pressure

Parameter 2

Hardware 4-20 ma

Sender MURPHY 100 PRESS

Min Val (psi) 0

Max Val (psi) 400

Min A/D 180

Max A/D 901

Offset 0

Fault 1

Type NONE

Condition Input Greater Than Setpoint

Setpoint (psi) 0

Delay (sec) 0

FMI 0

Fault 2

Type NONE

Condition Input Greater Than Setpoint

Setpoint (psi) 0

Delay (sec) 0

FMI 0

Use As Digital Input