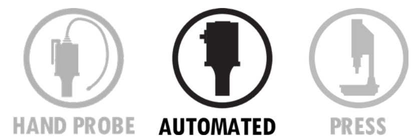
iQ Series

ULTRASONIC PROBE SYSTEM

AiM/Auto MPC



Programming Distance Feature in AiM and Auto MPC Generators

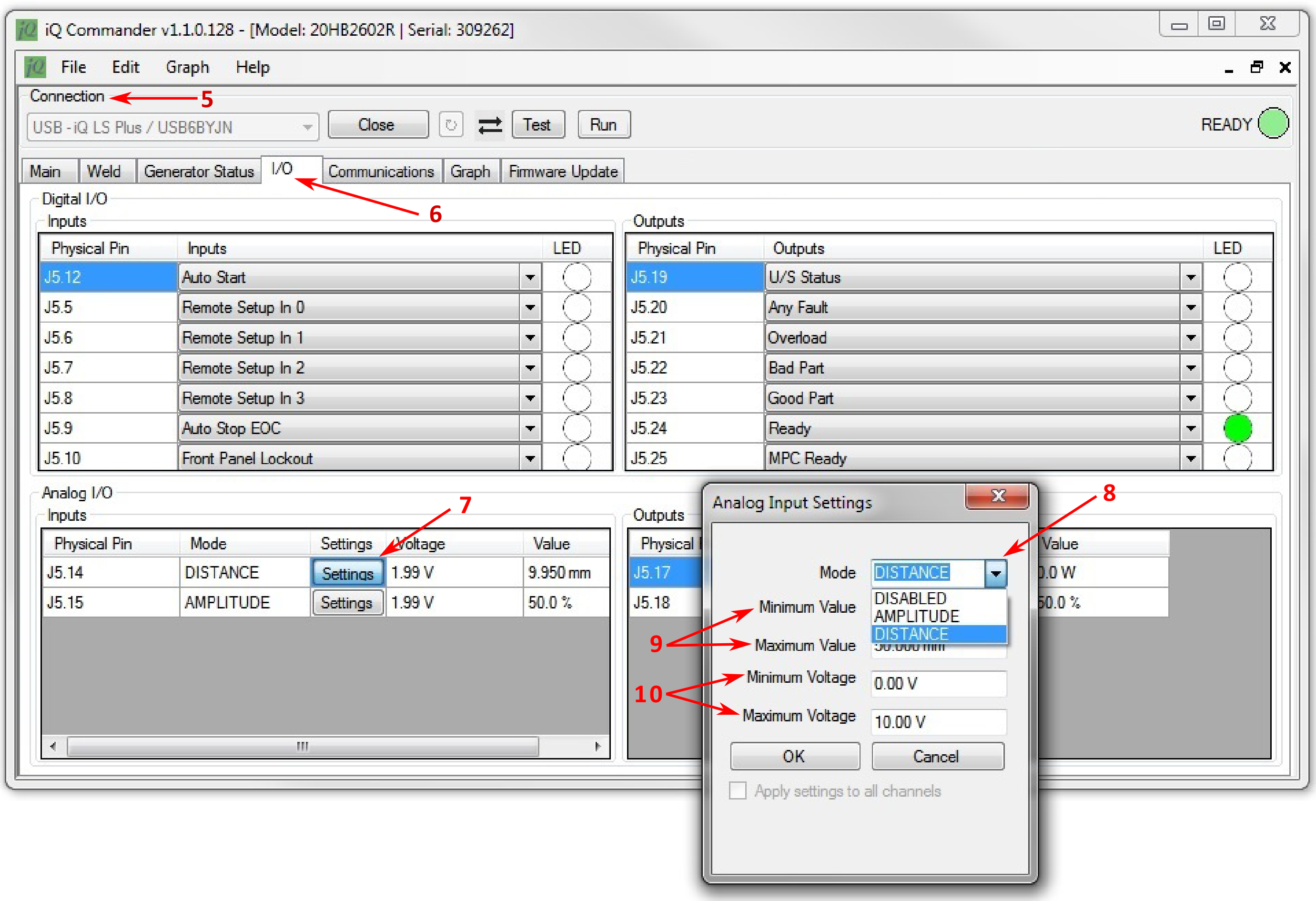
Contents

Configuring the Auto MPC/AiM for Distance

(Note: Auto MPC must be at v4.03.00 or greater to have distance capabilities)

Configuration Using iQ Commander

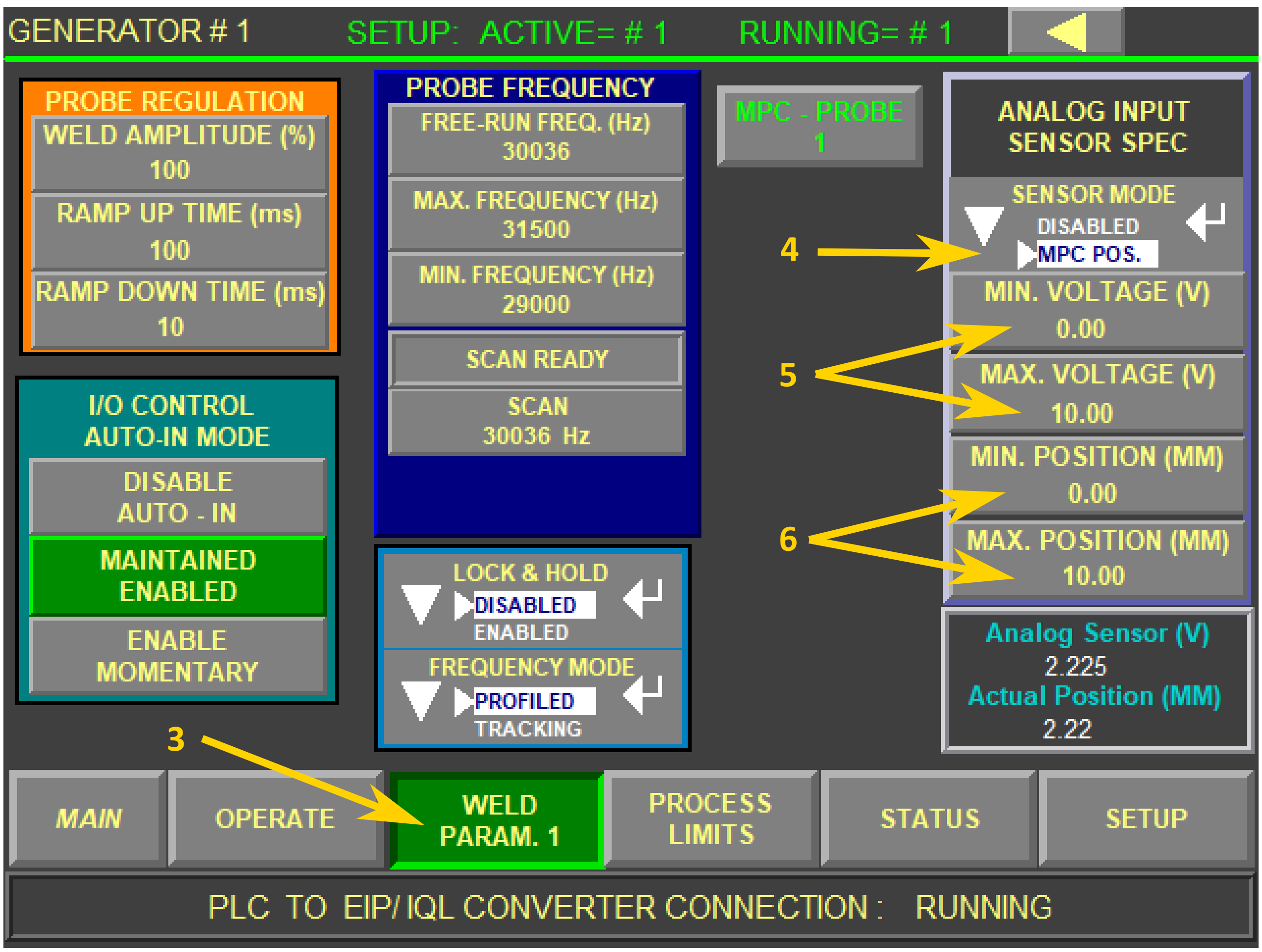
1. Install iQ Commander from the following website link: https://update.dukane.com
2. Connect the generator to the PC using a USB-A to USB-B cable.
3. Allow both the Dukane and FTDI driver sets to install on the PC. (Skip the “search online for drivers”)
4. Start iQ Commander.
5. If iQ Commander does not automatically connect to the generator, select the target generator using the drop-down list in the “Connection” section and click on “Connect”.
6. Once iQ Commander is connected to the generator, navigate to the “I/O” tab.
7. In the “Analog I/O” section under “Inputs”, click on the “Settings” button on the desired “Physical Pin” row.



8. On the pop-up menu, set the “Mode” to “DISTANCE” from the drop-down list.
9. Set the minimum and maximum distance.
10. Set the minimum and maximum voltage and click on “OK”.

Configuration Using EIP Demo

1. Connect the EIP demo to the generator.
2. Once the EIP demo is connected to the generator, select “Weld Parameters”.
3. Go to the second page of “Weld Parameters” by pressing on the right arrow on the top right corner.
4. Under “Analog Input Sensor Spec”, change the “Sensor Mode” from “Disabled” to “MPC Pos.”. (Regardless if an MPC is connected or not, still use “MPC Pos.”)
5. Set the minimum and maximum voltage.
6. Set the minimum and maximum position.

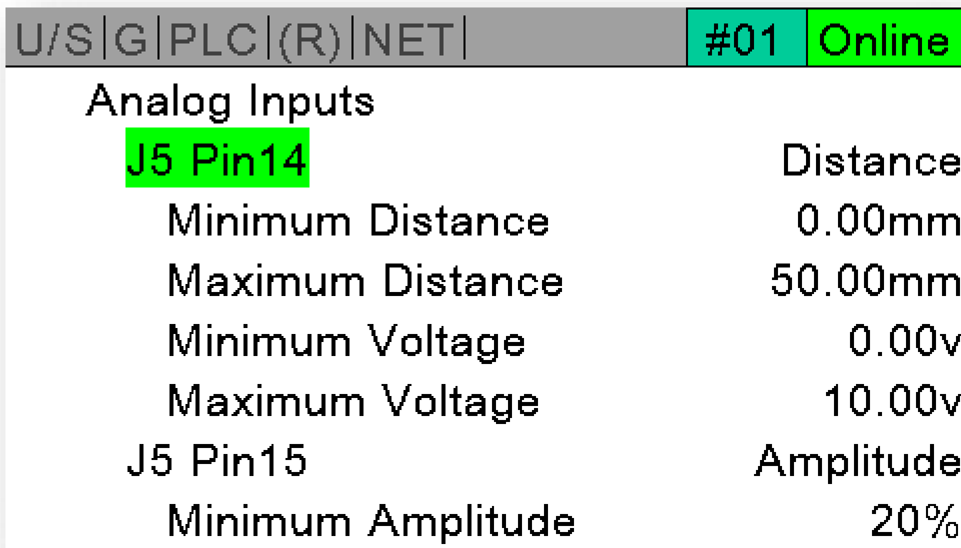


Note: If you do not have the EIP Demo, please contact Dukane Technical Support for information on how to obtain this Demo program. ustechsupport@dukane.com

Configuration Using GUI Front Panel (AiM, "R" models only)

- To expand an item, press "Enter" or the right arrow. To select an option, press "Enter". To close a menu, press "Cancel" or the left arrow.

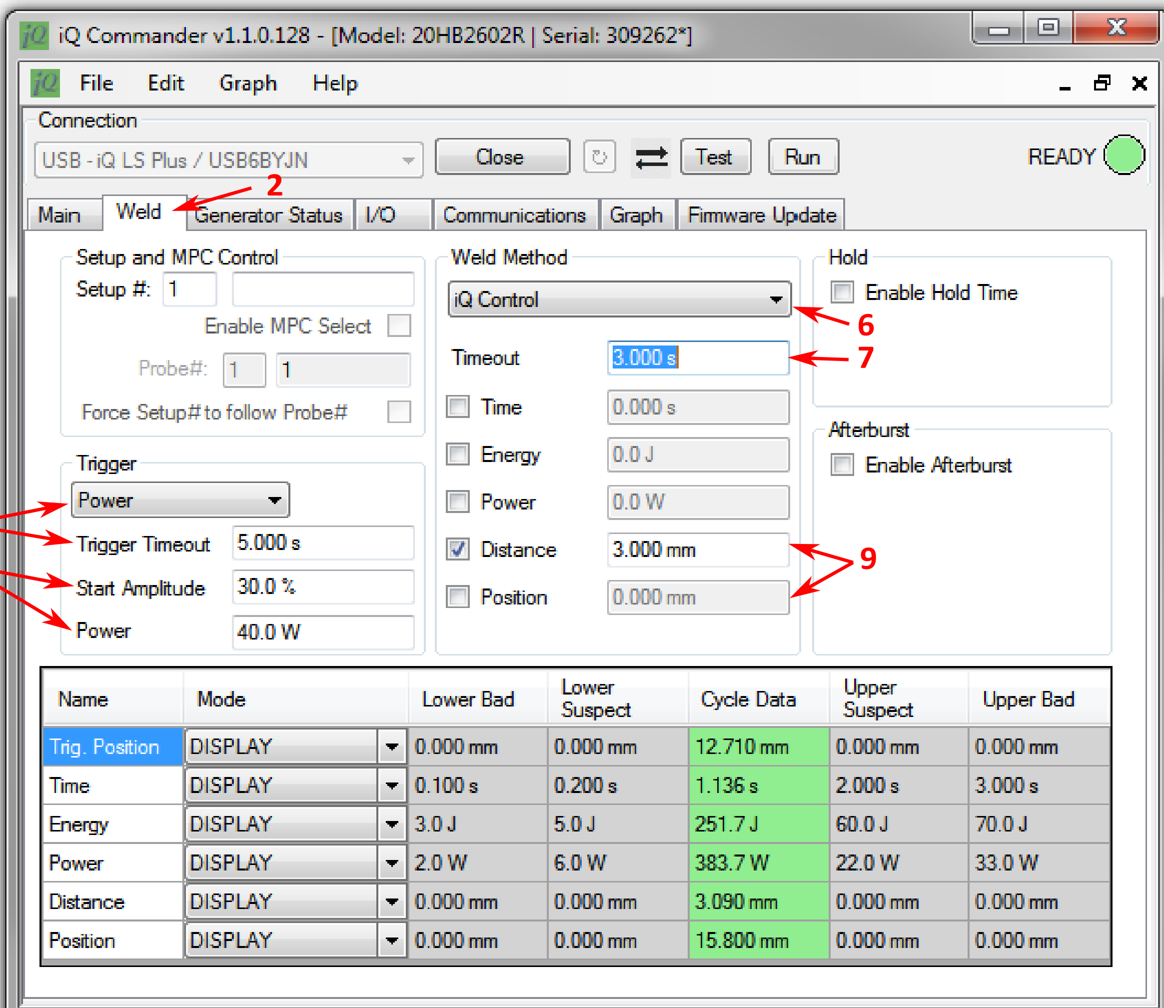
1. Select "Advanced Settings".
2. Select "System Status I/O".
3. Select "Analog Inputs".
4. Select the desired pin and enable "Distance" if no MPC is connected or "MPC Distance" if an MPC is connected.
5. Set the minimum and maximum distance.
6. Set the minimum and maximum voltage.



Creating Setups using Distance and/or Position

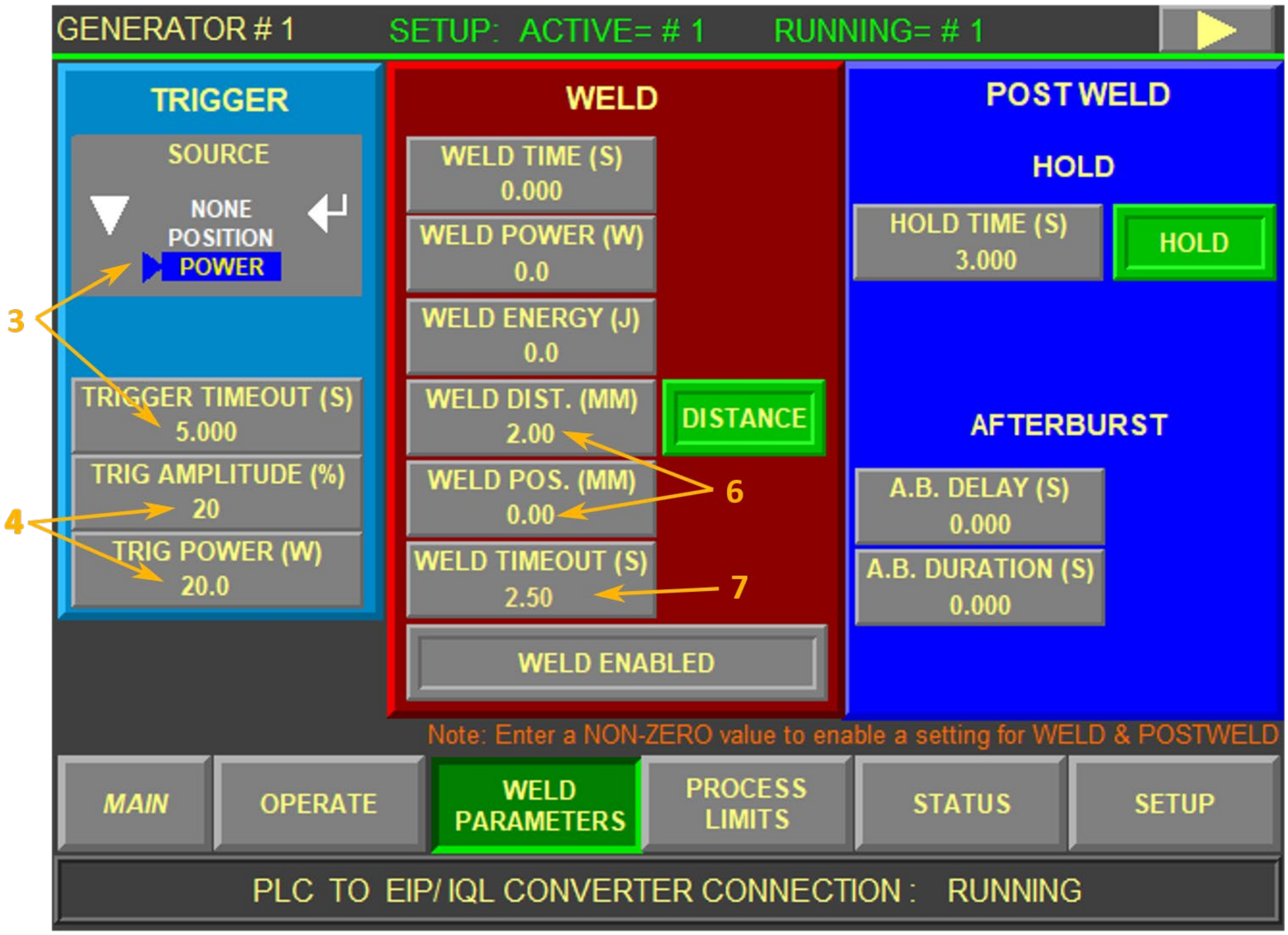
Programming Setups Using iQ Commander

1. Start iQ Commander and connect to the generator.
2. Once connected to the generator, navigate to the “Weld” tab.
3. Under the “Trigger” group, select “Power” or “Trig Position”. Enter the Trigger Timeout.
4. For Trigger by Power, Set the Start Amplitude and the trigger Power threshold.
5. For Trigger by Position, set the trigger position.
6. Under the “Weld Method” group, select “iQ Control” from the drop-down list.
7. Set a timeout.
8. Click on the checkbox for distance and/or position.
9. Set the value(s) in the textbox next to the selected weld method and press enter or leave the textbox.
10. In the data grid at the bottom of the tab, change the mode to the desired limit for the parameter to be monitored.
11. Click on the cell(s) to the right of the mode, enter the desired value(s), and press enter.



Programming Setups Using EIP Demo

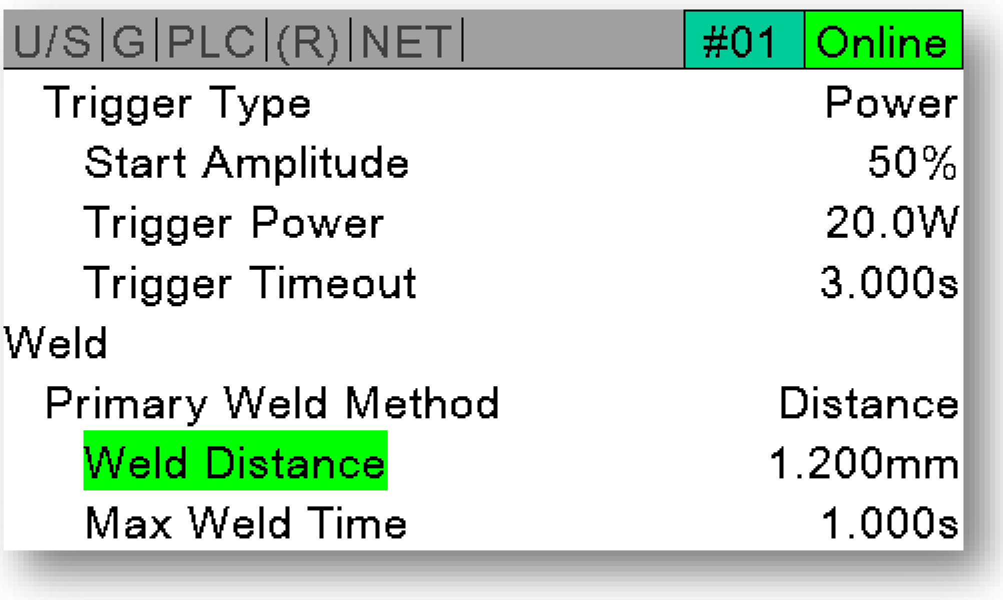
1. Connect the EIP demo to the generator.
2. Once the EIP demo is connected to the generator, select “Weld Parameters”.
3. Under the “Trigger” group, select “Power” or “Position”. Enter the Trigger Timeout
4. For Trigger by Power, set the Start Amplitude and the Trig Power threshold.
5. For Trigger by Position, program the Trig Position (mm).
6. Under the “Weld” group, select “Weld Dist. (mm)” and/or “Weld Pos. (mm)” and enter the desired values.
7. Enter a maximum time in either the “Weld Time” field or the “Weld Timeout” field. Note that if both values are set, then “Weld Time” will take priority over “Weld Timeout”.
8. Select “Process Limits”.
9. Enable the desired limit(s) and enter the desired value(s). Use the left and/or right arrow keys at the top right corner to navigate through the different limits.



Programming Setups Using GUI front panel (AiM, xxx model only)

- To expand an item, press “Enter” or the right arrow. To select an option, press “Enter”. To close a menu, press “Cancel” or the left arrow.

1. Select “Weld”.
2. Select “Primary Weld Method”.
3. Enable “Distance” or “Position”
4. Set the weld distance and the max weld time.
5. Select “Pre-Weld”.
6. Select “Trigger Type” and choose “Position” or “Power”. (NOTE: The “Primary Weld Method” CANNOT be “Automation” for trigger to be enabled)
7. For trigger by Position, Set the trigger position and Trigger Timeout.
8. For Trigger by Power, set the Start Amplitude and Trigger Power threshold.
9. Select “Limits”.
10. Select the desired parameter.
11. Choose if the parameter should be displayed in the “Cycle Data” section and/or set boundaries for the parameter.



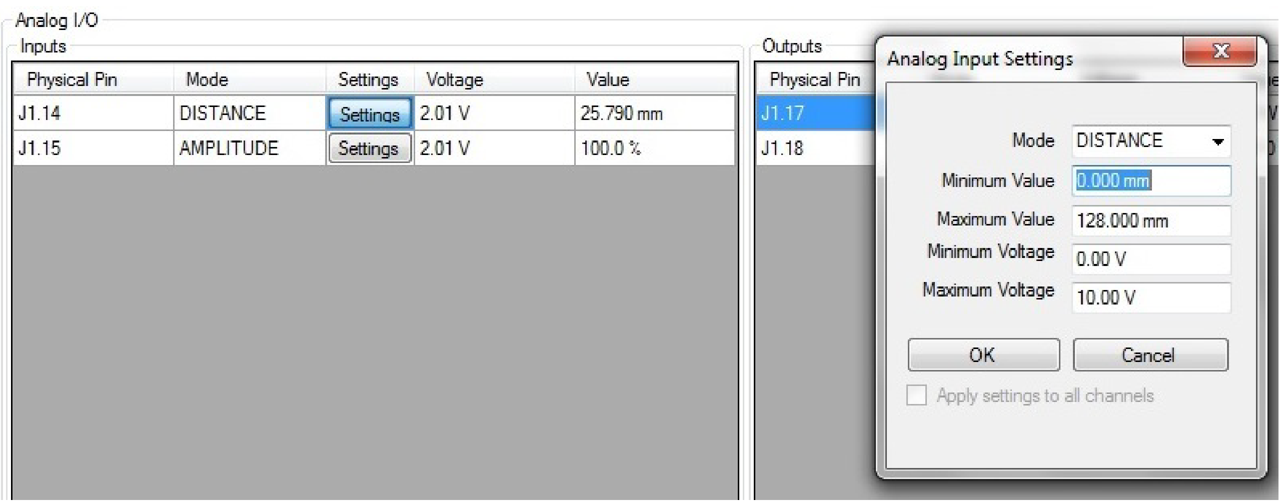
Additional information regarding analog input settings

Dukane recommends using the MPS series analog encoder made by SICK or equivalent. The default Analog Input settings should also be used, except for, the maximum distance setting. This setting should be set to the measuring range of the sensor. However, if different settings are required it is necessary that the user understand the relationship between total measurement range and the voltage range. The scaling is determined by the Total Length (Maximum Value – Minimum Value) divided by the Voltage Range (Maximum Voltage – Minimum Voltage) setting. For instance, if the top portion of the travel is not needed, the zero point can be offset. This can be accomplished by the following procedure.

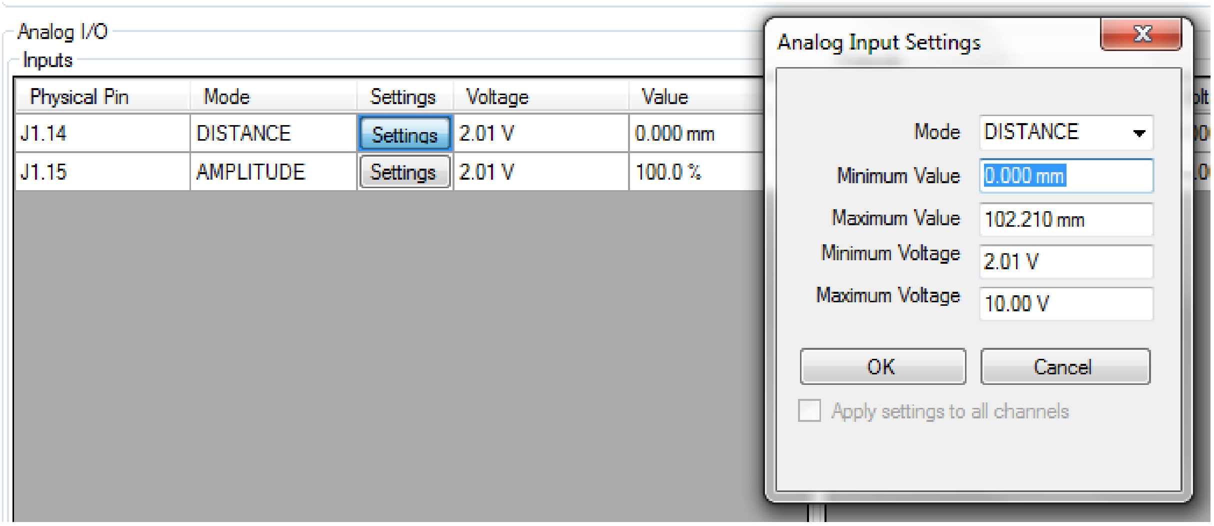
1. Determine the position of offset required. This is best done by setting up the encoder in the standard format, where the Minimum Distance is Zero, and the Maximum distance is the encoder measurement range.
2. Subtract the offset from the total encoder length. Enter this as the Maximum Value.
3. Calculate the Millimeters per volt by using the formula:
   Millimeters per volt = Total Length / Voltage Range
4. Divide the Offset by the Millimeters per volt value. Enter this value as Minimum Voltage.

Below is an example where the desired zero offset is 25.79 mm. The encoder measurement range is 128 mm.

Sample offset = 25.79mm (2.01 volts)

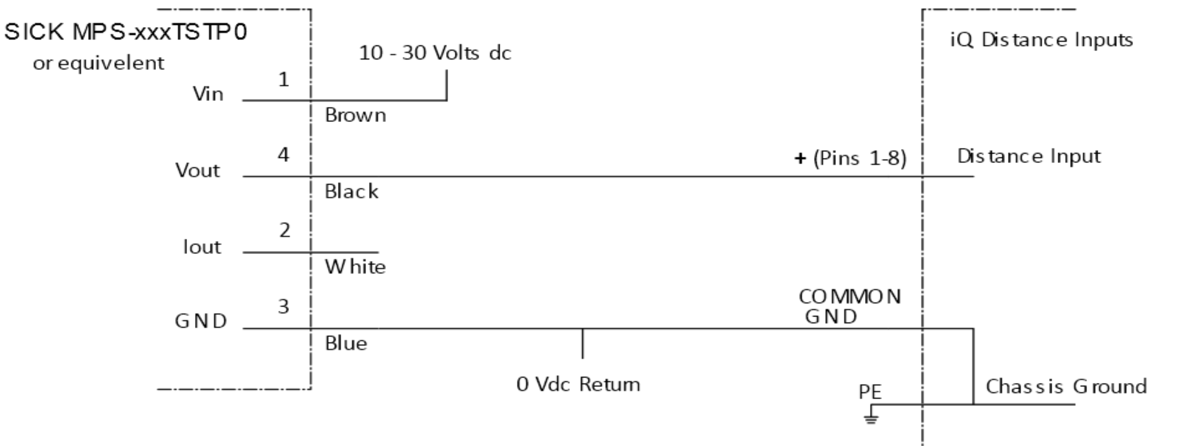


Maximum Value = 128mm – 25.79 mm = 102.210 mm
Millimeters per Volt = 128 mm / 10 V = 12.8 mm/V
Offset Voltage = 25.79mm / 12.8 mm/V = 2.014 volts
Minimum Voltage setting = 2.01V

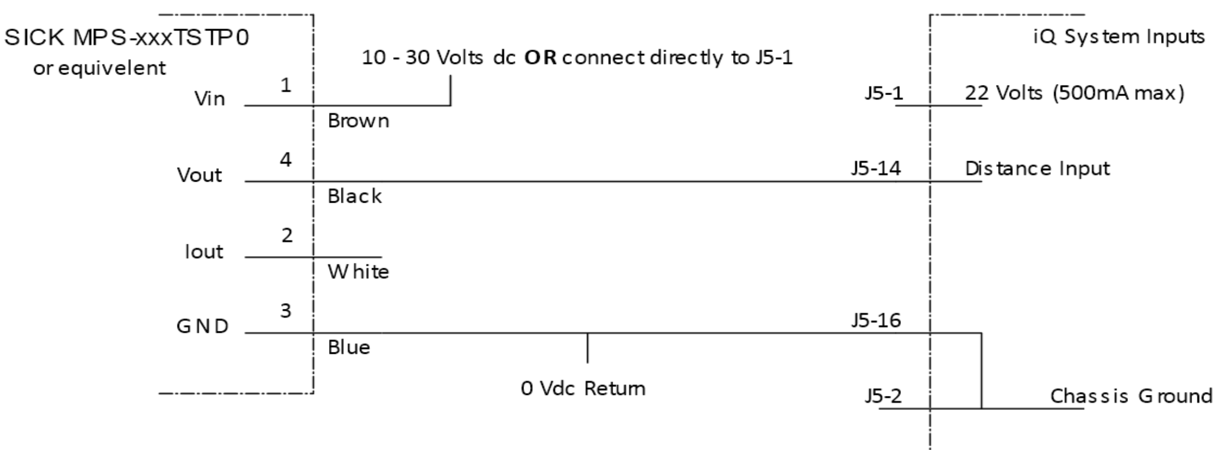


It should also be noted that reducing the measurement range will result in fewer millimeters per volt. While this may be usefull in some situations, the resolution of the reccomended sensor is such that this offers little benifit.

Distance encoder connections for Auto MPC and MPC-E



Distance Encoder connections for AiM



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