RLE TH140 Temperature And Humidity Sensor Installation Guide

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FMS to TH140/TH140D Integration

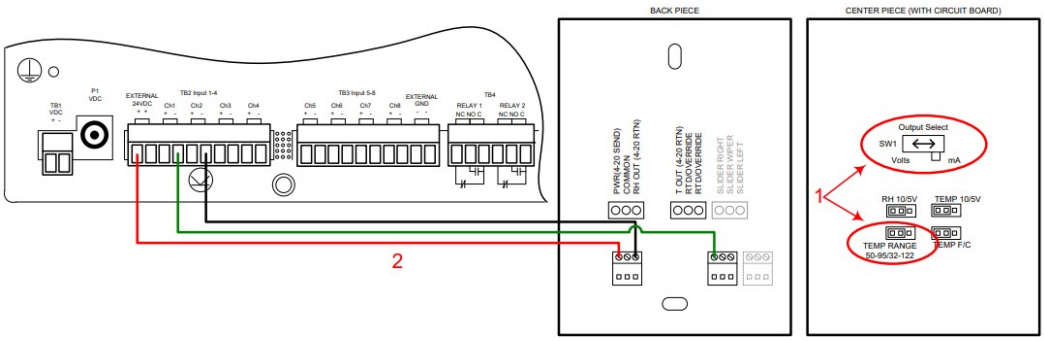


Figure 1.1: FMS Wiring with the TH140/TH140D

SETUP

1. Set the switch position to mA. Set the temperature range to 50-95 or 32-122. The Sensor is shipped from the factory with the switch in the volts position and the temperature range is set for 50-95F. The switch position must be set to the mA position.
2. Wire the sensor as shown
3. Configure the Falcon Input channel (temperature) for “Analog 4-20mA” and enter the Gain and Offset values. For the 50-95F range use Gain 11.25, Offset 38.75. For 32-122F range use Gain 22, Offset 10
4. Configure the Falcon Input Channel (humidity) for “Analog 4- 20mA” and enter the Gain of 25 and Offset of -25
5. . Verify the “Calc” Value displays the correct room temperature. The temperature can also be viewed on the Falcon main page

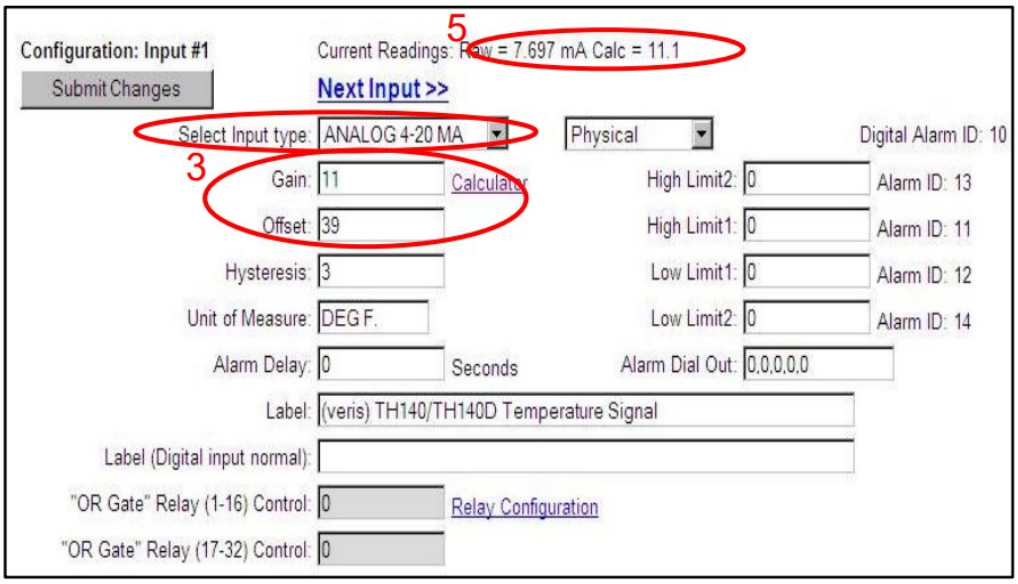


Figure 1.2: Temperature Setup 50 – 95 Degree F Range

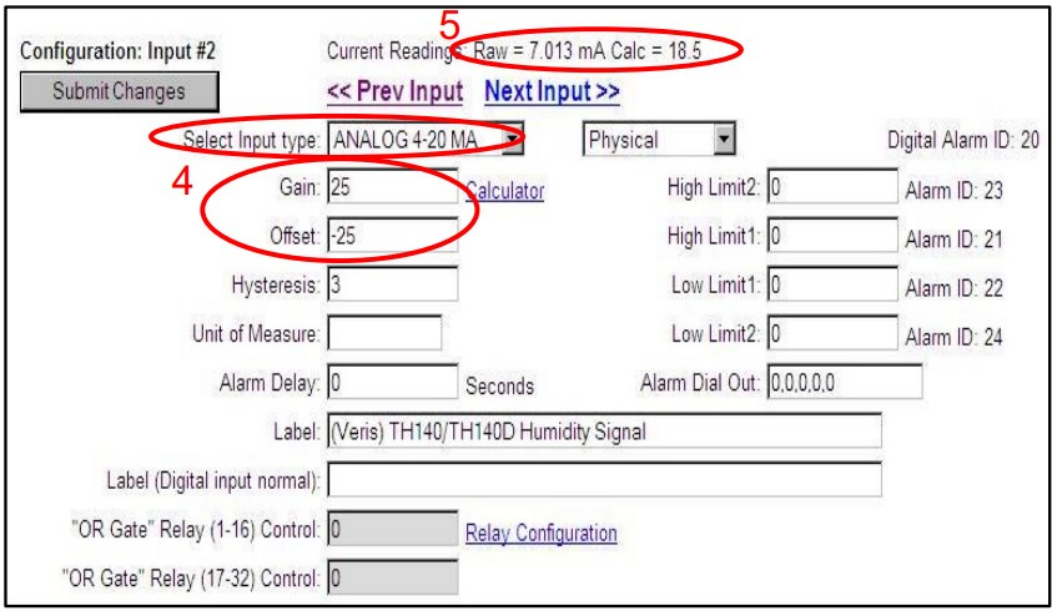


Figure 1.3: Humidity Setup

TROUBLESHOOTING

1. Calculate the TH140 Output current for temperature Formula for calculating the correct RAW value ((Actual temp – Sensor Low) / (Sensor High – Sensor Low)) x 16 + 4 Example if Room Temp is 70F and your sensor has a range of 50-95 (70 – 50) / (95 – 50)) x 16 + 4 = 11.11
2. . Measure the current flowing into the Falcon Ch- terminal with a current meter. Verify that it is close to the calculated current (+/-1%)
3. If measured current current does not match calculated current then check wiring and check TH140/TH140D jumper and switch settings.
4. . Compare the measured current matches the current reading in the Falcon. 5.
5. Check the wiring if the Falcon current reading does not match
   the measured current reading.

6. If the Falcon current reading matches the measured current and the Falcon calculated value does not match the room temperature then the offset and gain values are wrong. Double check the Gain and Offset values
7. If the temperature displayed in the Falcon is 1 or 2 degrees above or below the room temperature then adjust the offset by 1 or 2. Do not adjust the gain. Only tweak the offset once the previous troubleshooting steps have been performed.
8. If the Falcon still does not display the correct temperature contact RLE Technologies technical support at 970.484.6510.
9. Use similar troubleshooting procedure except use the following formula to calculate the humidity mA output

FMS to T120D Integration

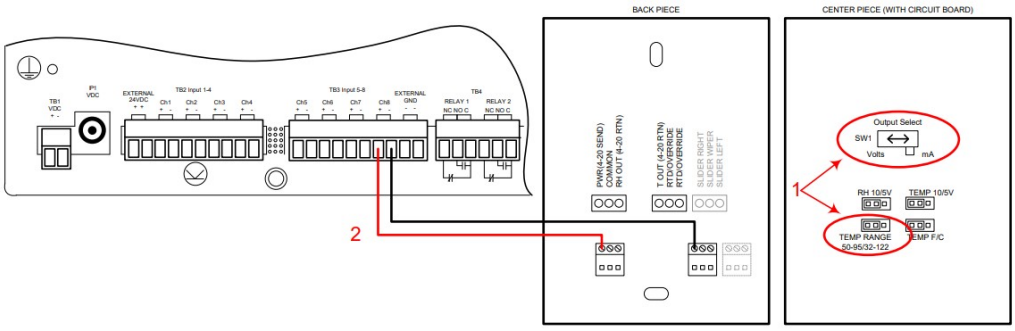


Figure 2.1: FMS Wiring with the T120D

SETUP

1. Set the switch position to mA. Set the temperature range to 50-95 or 32-122. The sensor is shipped from the factory with the switch in the volts position and the temperature range is set for 50-95F. The switch position must be set to the mA position
2. Wire the sensor to the CH # being used
3. Configure the Falcon Input channel (temperature) for “Analog 4-20mA” and enter the Gain and offset values. For the 50-95F range use Gain 11.25, Offset 38.75. For 32-122F range use Gain 22, Offset 10.
4. . Verify the “Calc” value displays the correct room temperature. The temperature can also be viewed on the Falcon main page.

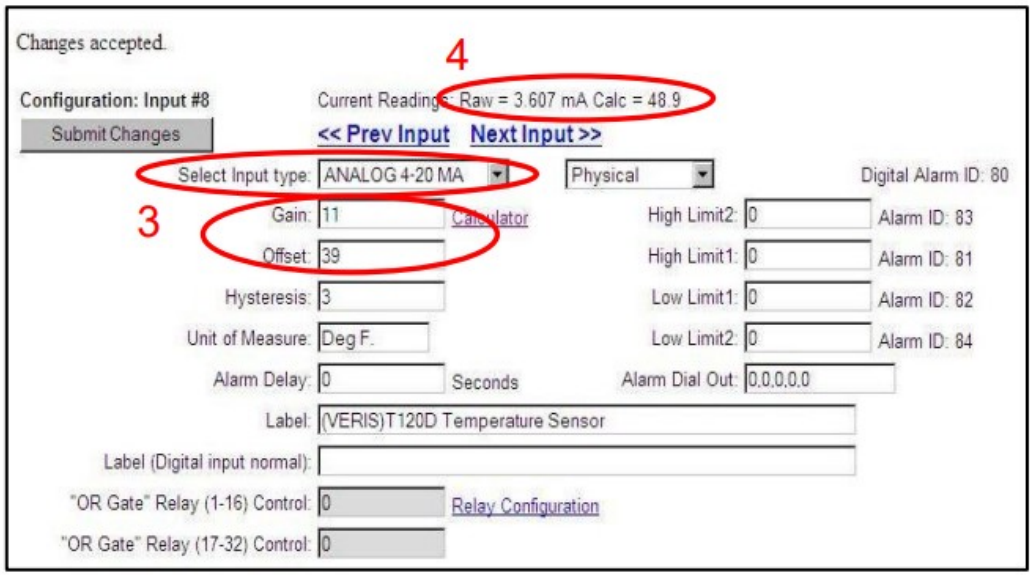


Figure 2.2: 50-95F Range Setup

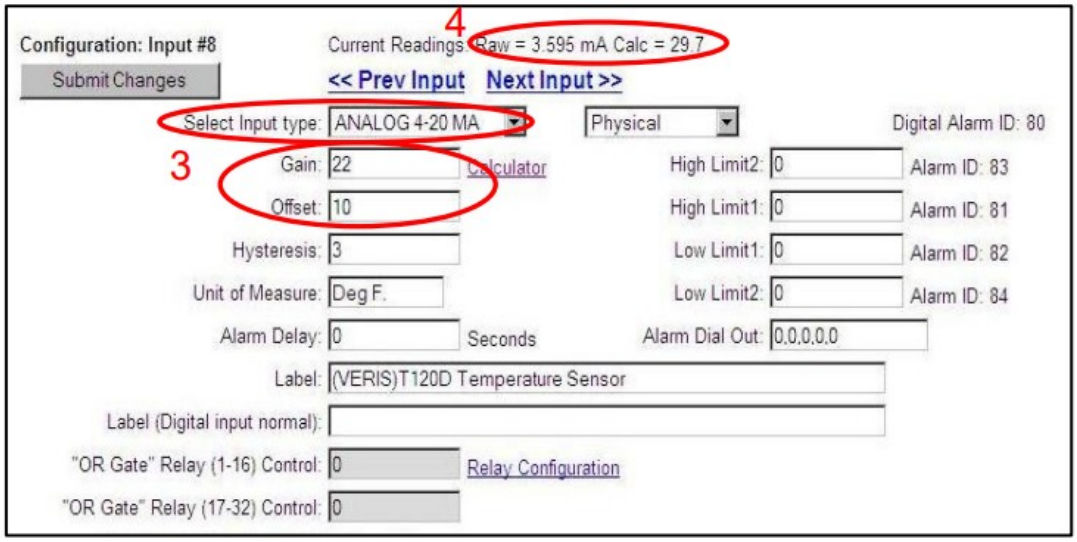


Figure 2.3: 32-122F Range Setup

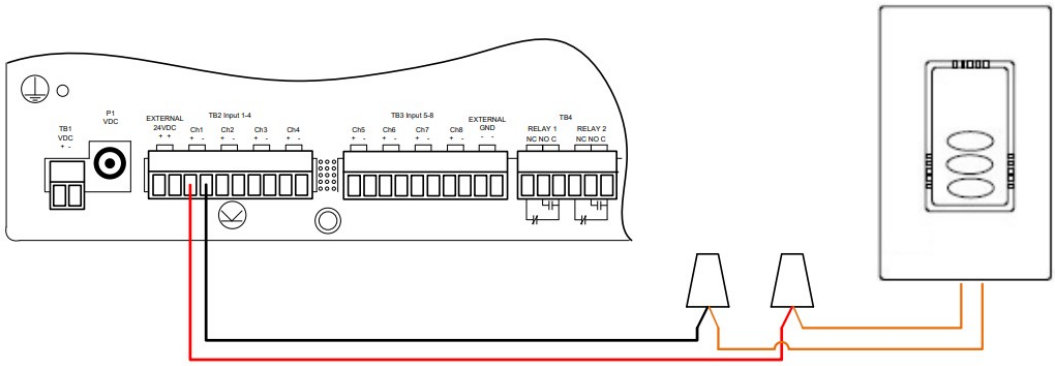
TROUBLESHOOTING

1. Calculate the T120D Output current for temperature Formula for calculating the correct RAW value ((Actual temp – Sensor Low) / (Sensor High – Sensor Low)) x 16 + 4 Example if Room Temp is 70F and your sensor has a range of 50-95 (70 – 50) / (95 – 50)) x 16 + 4 = 11.11
2. Measure the current flowing into the Falcon Ch- terminal with a current meter. Verify that it is close to the calculated current (+/- 1%)
3. If measured current does not match calculated current then check wiring and check T120D jumper and switch settings.
4. Compare the measured current matches the current reading in the Falcon.
5. Check the wiring if the Falcon current reading does not match the measured current reading.
6. If the Falcon current reading matches the measured current and the Falcon Calculated value does not match the room temperature then the offset and gain values are wrong. Double check the Gain and Offset values.

7. If the temperature displayed in the Falcon is 1 or 2 degrees above or below the room temperature then adjust the offset by 1 or 2. Do not adjust the gain. Only tweak the offset once the previous troubleshooting steps have been performed.
8. If the Falcon still does not display the correct temperature contact RLE Technologies technical support at 970.484.6510.

FMS to HEW3MSTA Integration

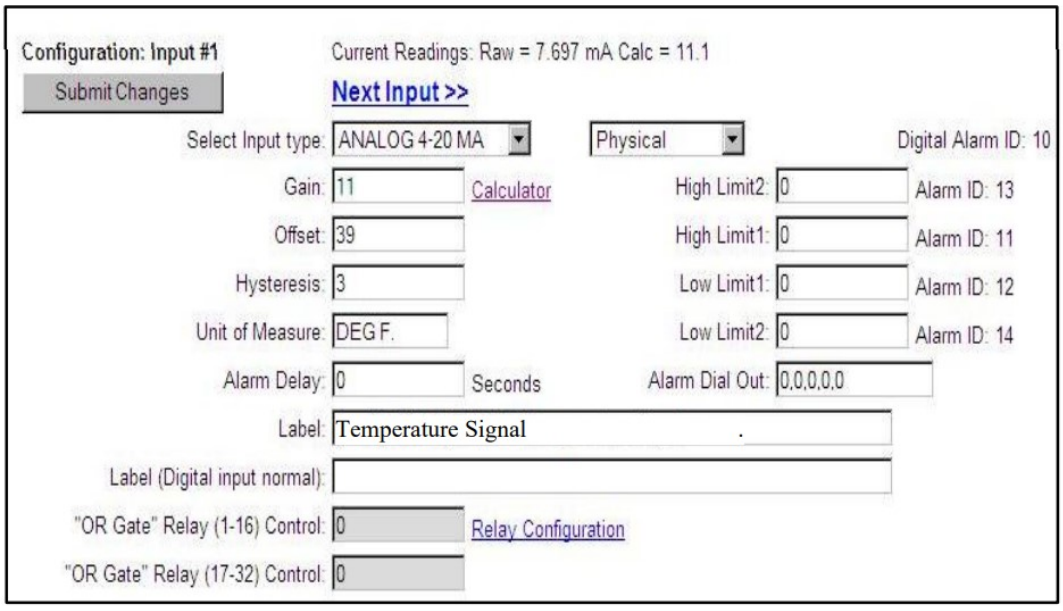
Figure 3.1: FMS Wiring with the HEW3MSTA



SETUP

1. The temperature range is 50-95 degF
2. Wire the sensor as shown. Orange wires are polarity independent
3. Configure the Falcon Input channel (temperature) for “Analog 4-20mA” and enter the Gain and Offset values. For the 50-95F range use Gain 11.25, Offset 38.75
4. Verify the “Calc” Value displays the correct room temperature. The temperature can also be viewed on the Falcon main page

Figure 4.2: Temperature Setup 50 – 95 Degree F Range



1. Calculate the output current for temperature Formula for calculating the correct RAW value ((Actual temp – Sensor Low) / (Sensor High – Sensor Low)) x 16 + 4 Example if Room Temp is 70F and your sensor has a

range of 50-95 ((70 – 50) / (95 – 50)) x 16 + 4 = 11.11

2. Measure the current flowing into the Falcon Ch- terminal with a current meter. Verify that it is close to the calculated current (+/-1%)
3. If measured current current does not match calculated current then check wiring.
4. Compare the measured current matches the current reading in the Falcon
5. Check the wiring if the Falcon current reading does not match the measured current reading
6. If the Falcon current reading matches the measured current and the Falcon calculated value does not match the room temperature then the offset and gain values are wrong. Double check the Gain and Offset values.
7. If the temperature displayed in the Falcon is 1 or 2 degrees above or below the room temperature then adjust the offset by 1 or 2. Do not adjust the gain. Only tweak the offset once the previous troubleshooting steps have been performed
8. f the Falcon still does not display the correct temperature contact RLE Technologies technical support at 970.484.6510.

CT120/CT300/CT800/CT2400 FMS Integration

Figure 5.1: FMS Wiring

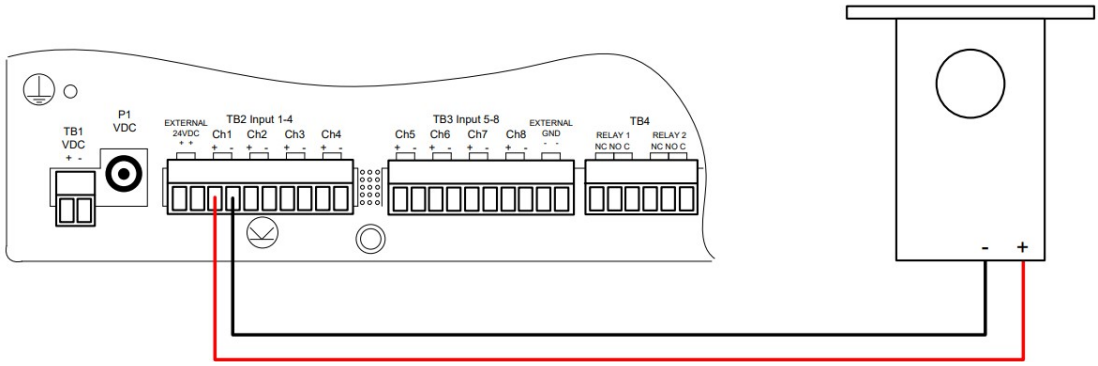
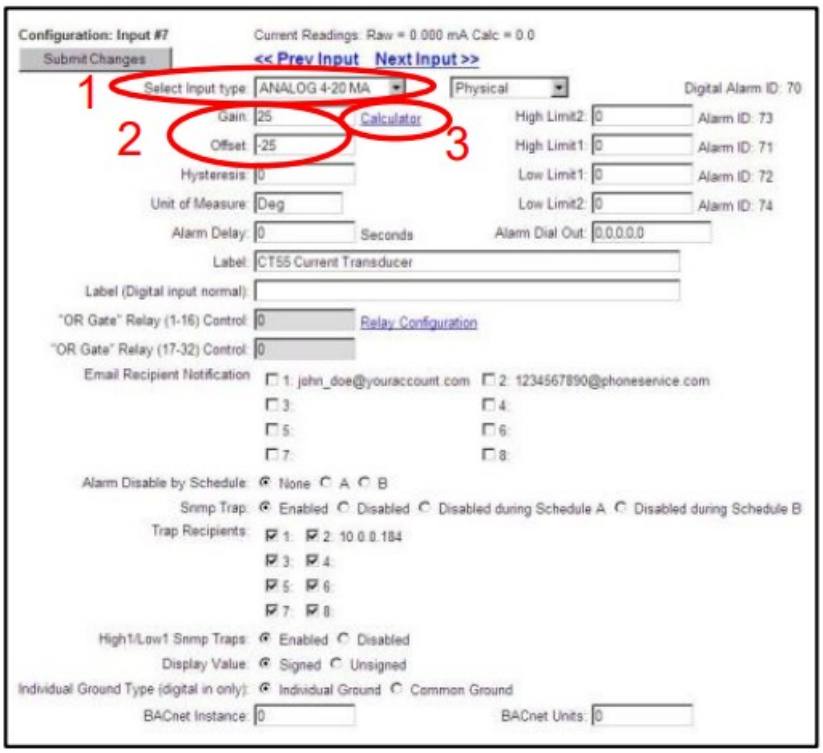


Figure 5.2: FMS Input Configuration Interface

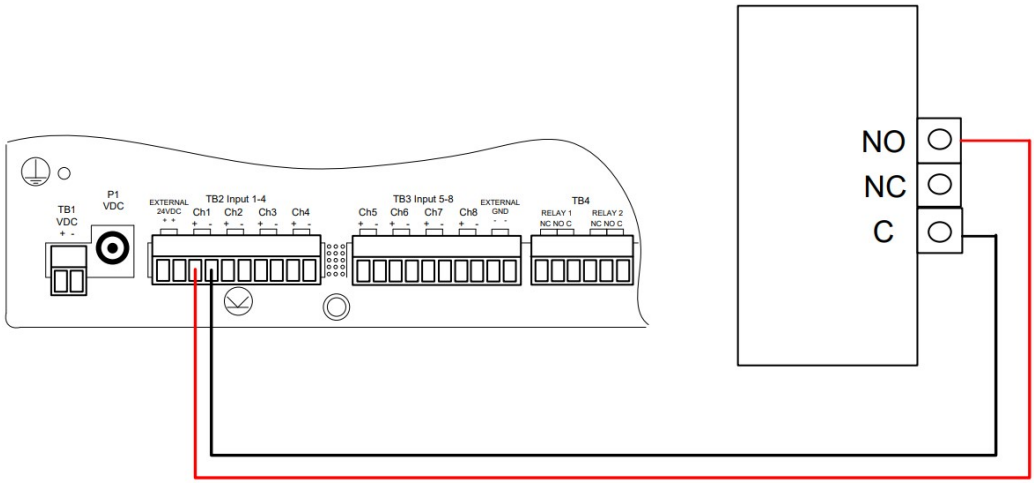


FMS Configuration

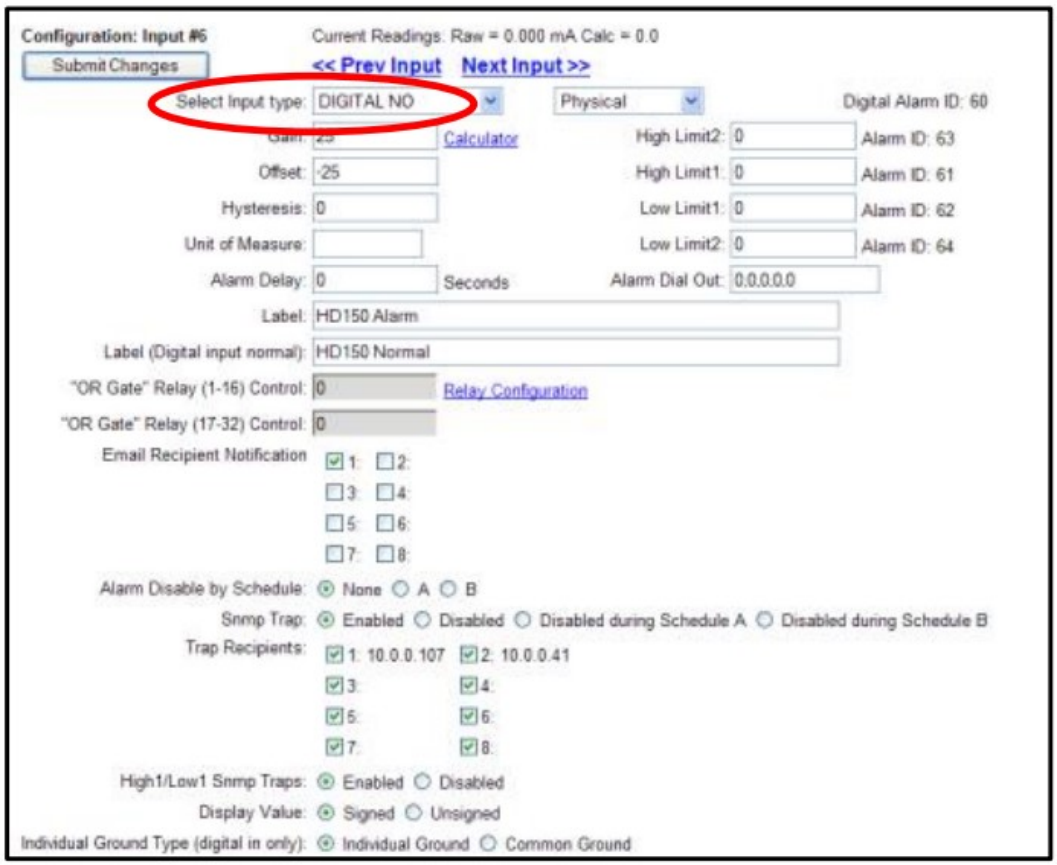
1. Set Input Type to an Analog 4-20 mA Input.
2. For a 0-100 Amp setting, use a gain of 25 and an offset of -25.
3. For other settings, use the integrated gain/offset calculator.

PFM FMS Integration

Figure 6.1: FMS Wiring



FMS Input Configuration Interface

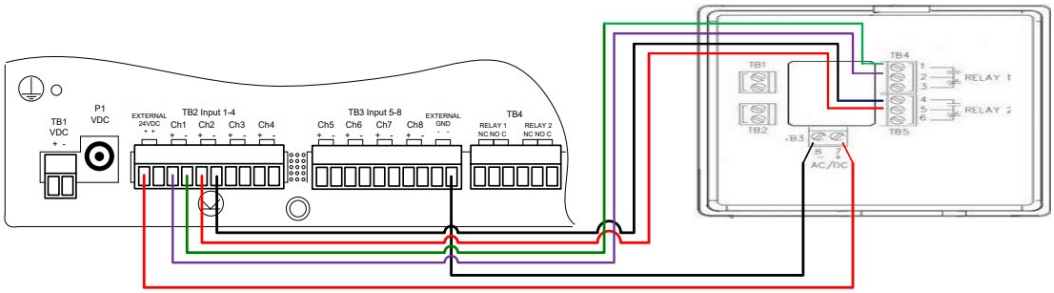


FMS Configuration

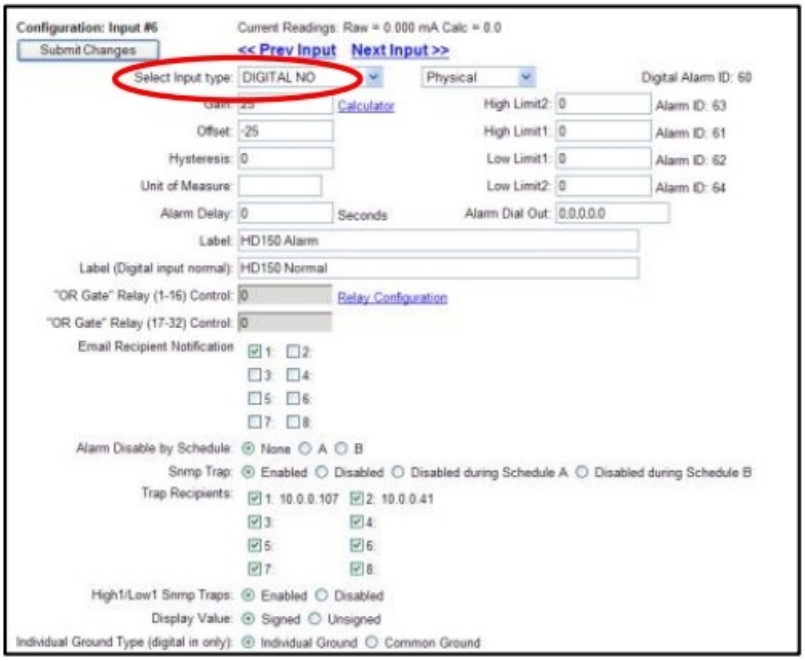
Set Input Type to a Digital NO Input type for each PFM Relay Output wired into the Falcon.

GD100 FMS Integration

Figure 7.1: FMS Wiring



FMS Input Configuration Interface

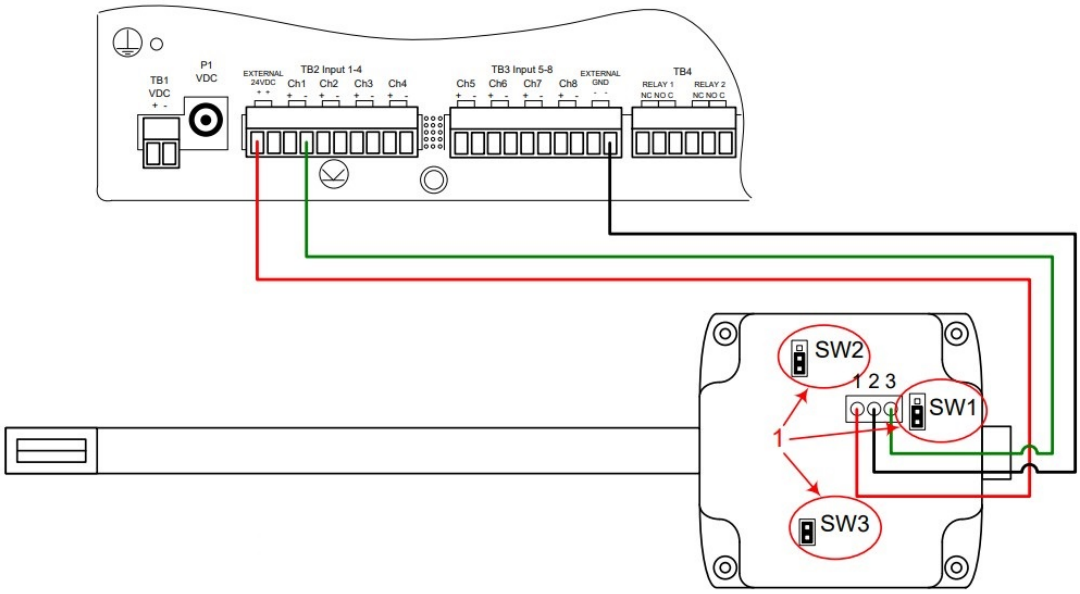


FMS Configuration

Set Input Type to a Digital NO

AFS-(WM/DM) F200 Integration

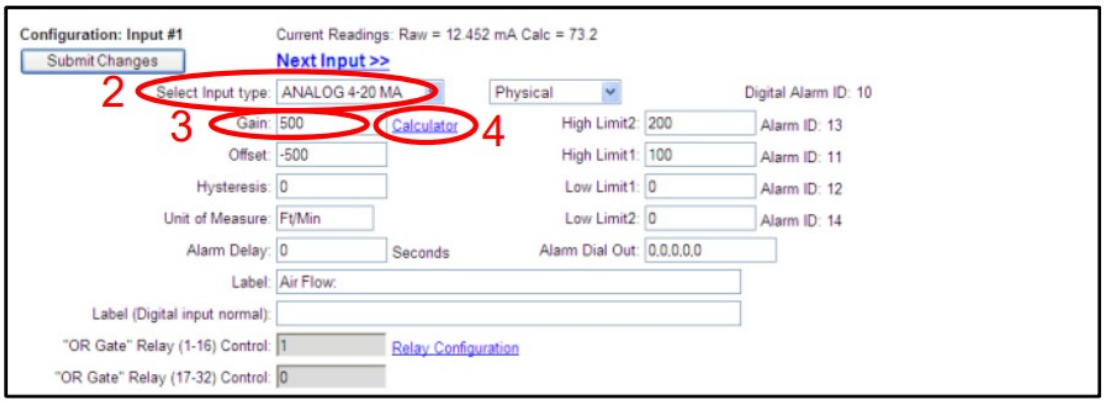
Figure 8.1: FMS Wiring



1. Set Jumper Switches on AFS-XX to appropriate settings. Output Selection SW1: 4-20mA Output Working Range SW2: 0-2000 Ft/Min Range 0-3000 Ft/Min Range 0-4000 Ft/Min Range Response Time SW3: Fast Slow
2. Set FMS Input Channel to an Analog 4-20 mA. 3. For a 0-2000 Ft/Min Range, use a gain of 500 and an offset of -500. 4. For other settings, use the integrated gain/offset calculator.

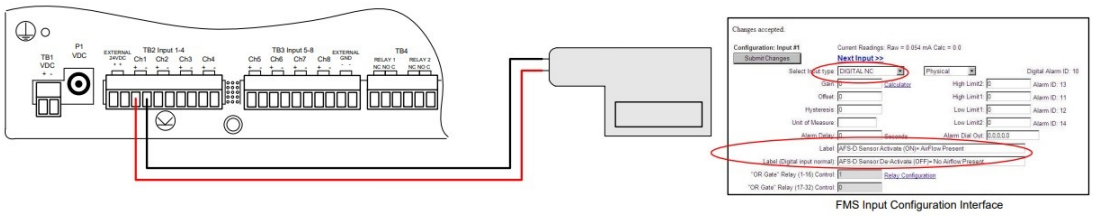
FMS Configuration

FMS AFS-xx Input Configuration Interface



AFS-D FMS Integration

Figure 9.1: FMS Wiring



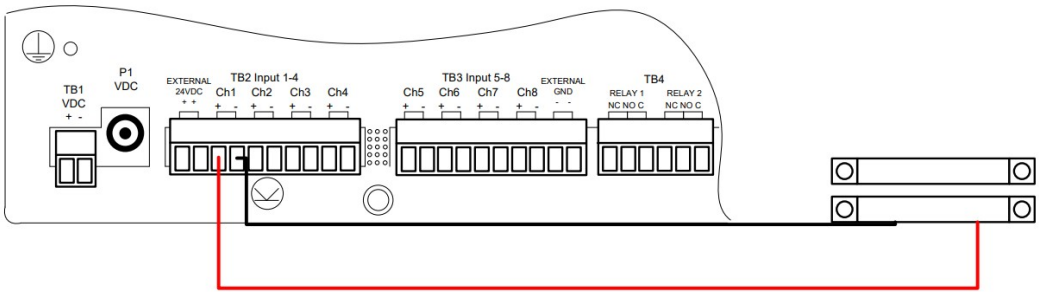
FMS Configuration

Set Input Type to a NC Digital Contact for each AFS-D wired into the Falcon. Assign an on/ off label for each

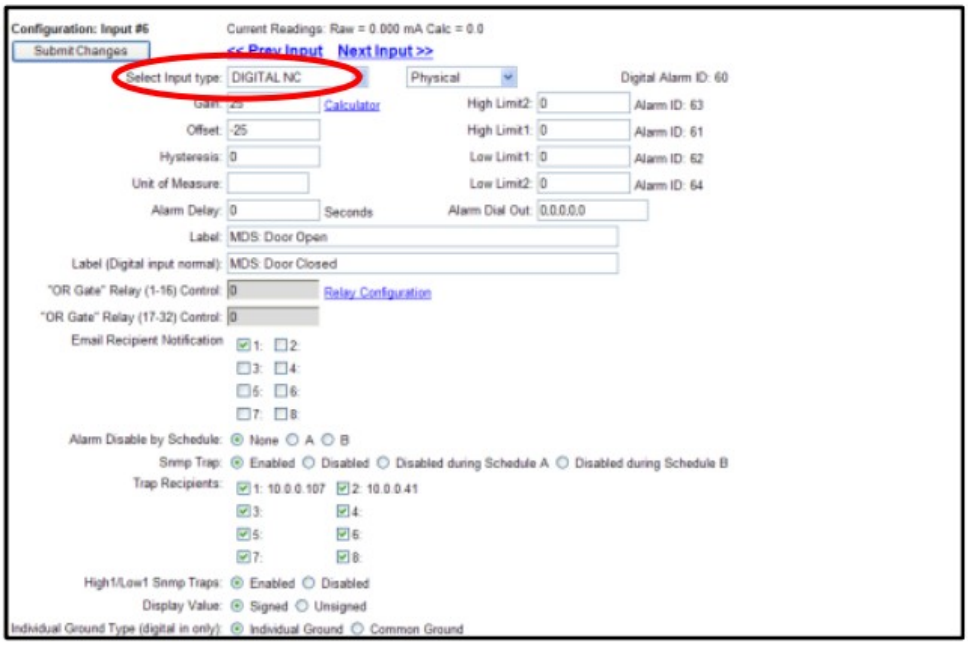
sensor connected.

MD3 FMS Integration

Figure 10.1: FMS Wiring



FMS Input Configuration Interface

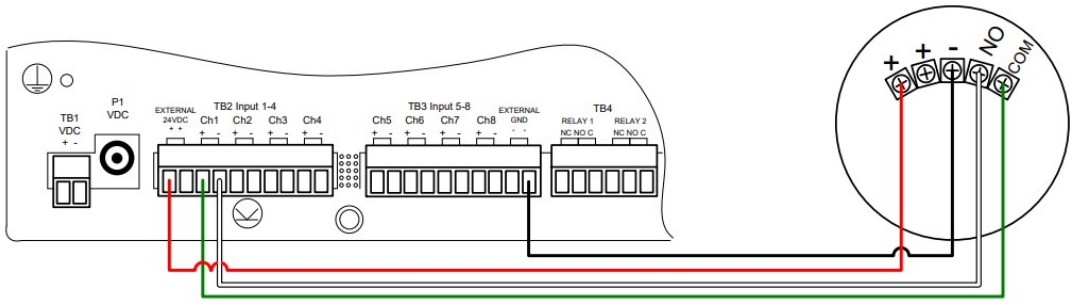


FMS Configuration

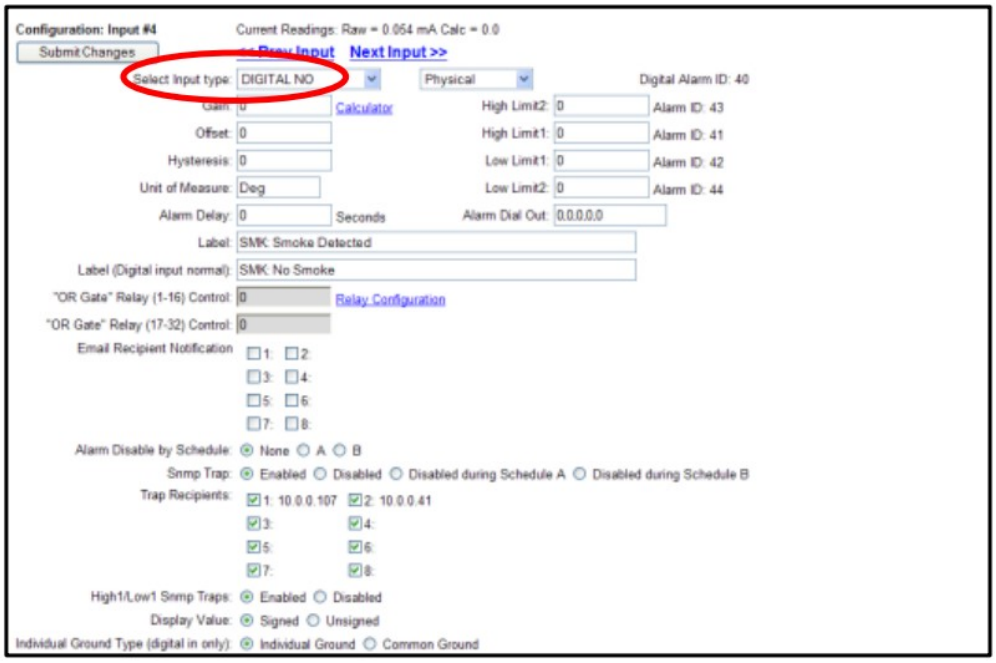
Set Input Type to a Digital NC Input Type for each MDS wired into the Falcon.

SMK FMS Integration

Figure 12.1: FMS Wiring



FMS Input Configuration Interface

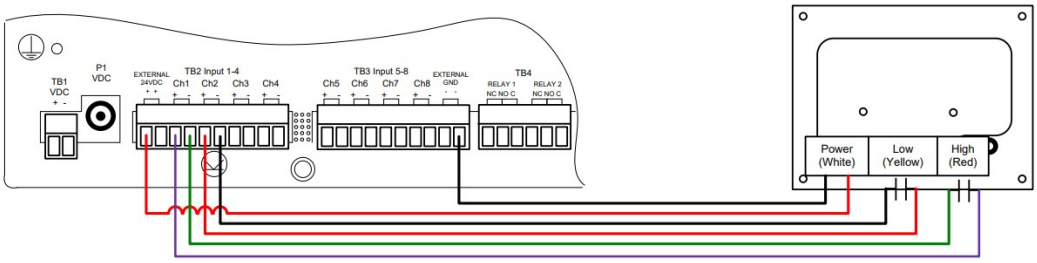


FMS Configuration

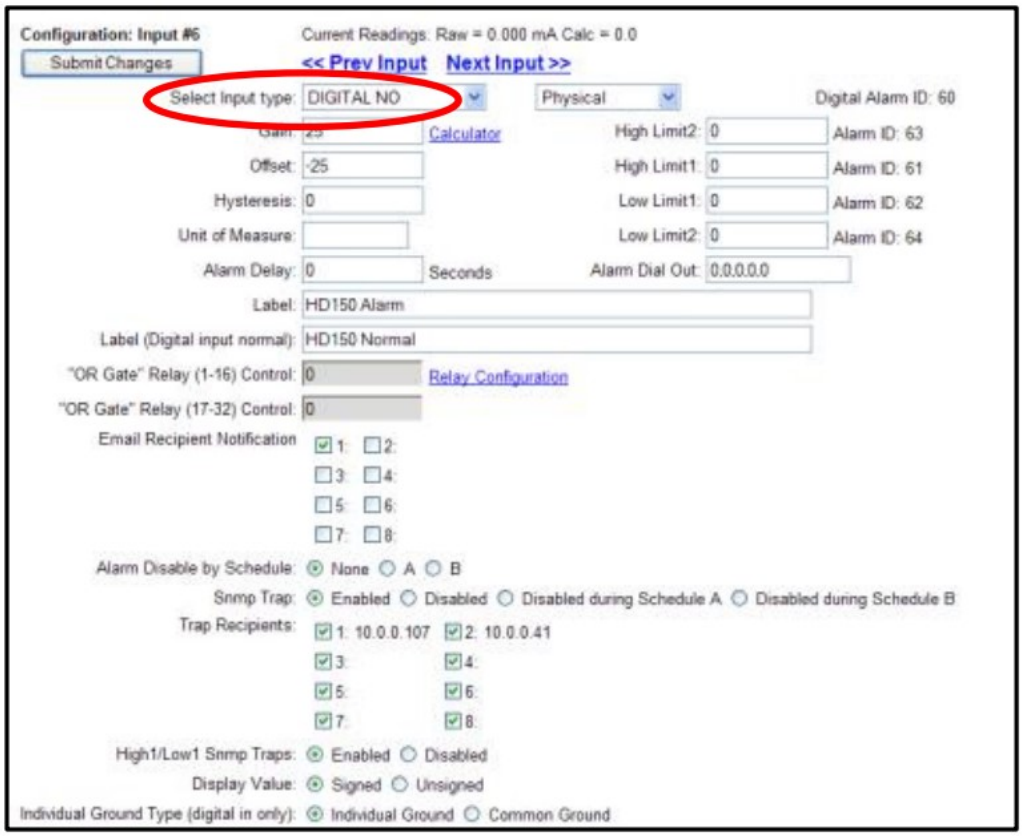
Set Input Type to a NO Digital Contact for each SMK wired into the Falcon.

HD150 & HD150-2 FMS Integration

Figure 13.1: FMS Wiring



FMS Input Configuration Interface



FMS Configuration

Set Input Type to a Digital NO Input type for each HD150/HD150-2 Relay Output wired into the Falcon.

KPO Falcon Integration

Figure 14.1: FMS Wiring with KPO

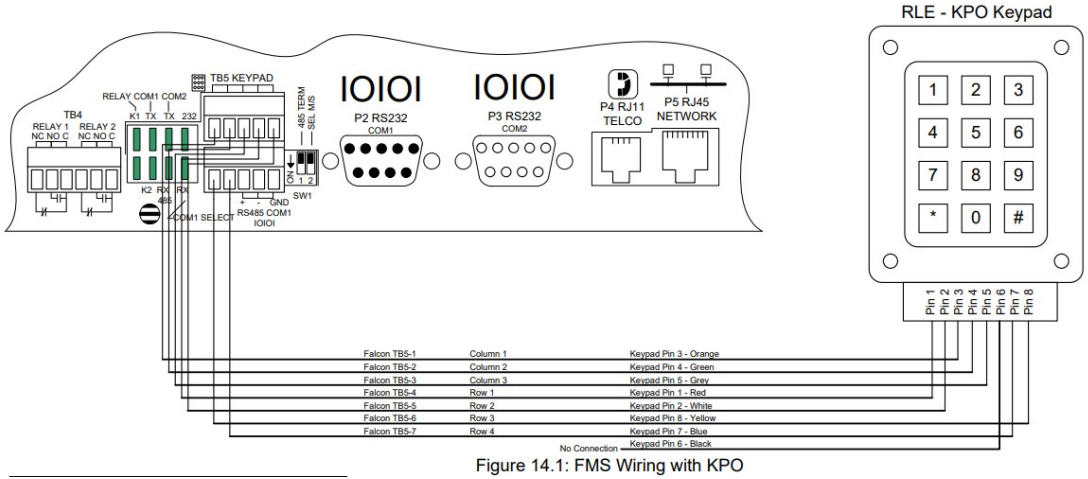
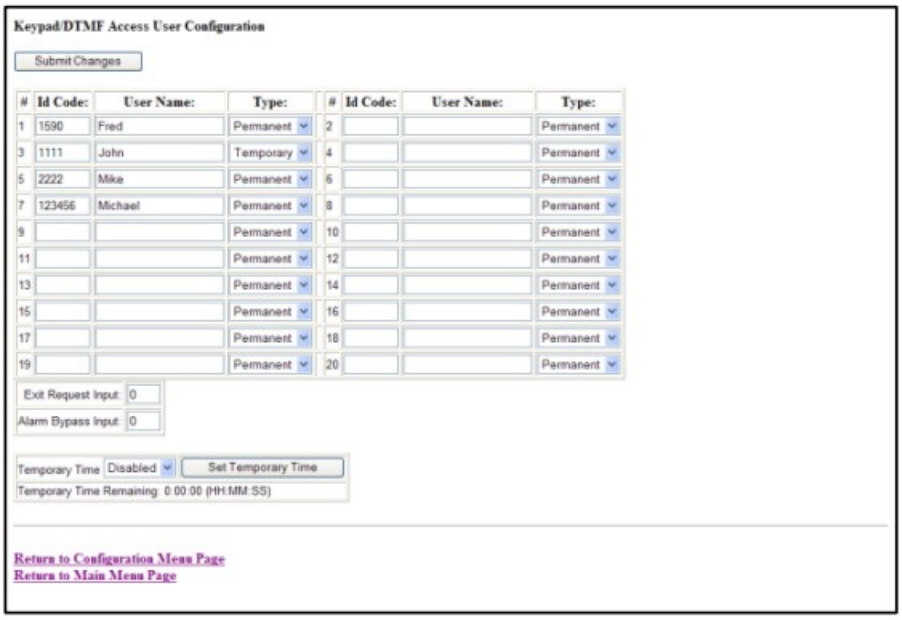


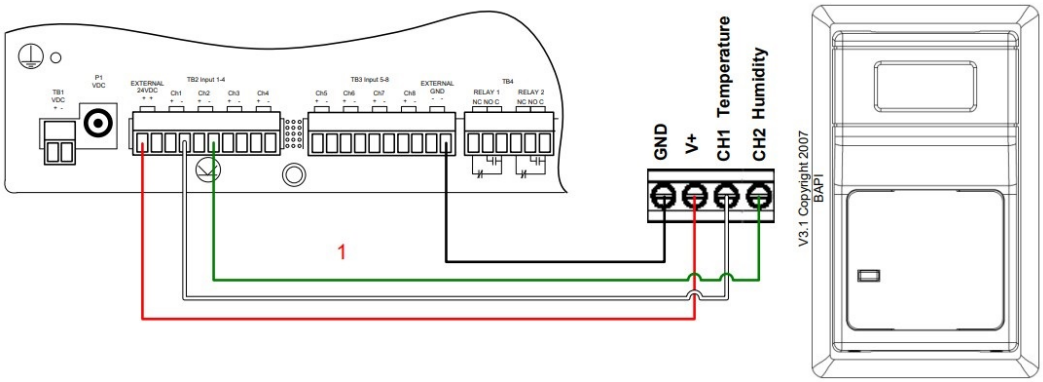
Figure 14.1: FMS Wiring with KPO



FMS Configuration
Enter in Keypad users and corresponding codes in the Falcon's Keypad/DTMF Access User Configuration menu.

FMS BAPI Temperature/Humidity Falcon Integration

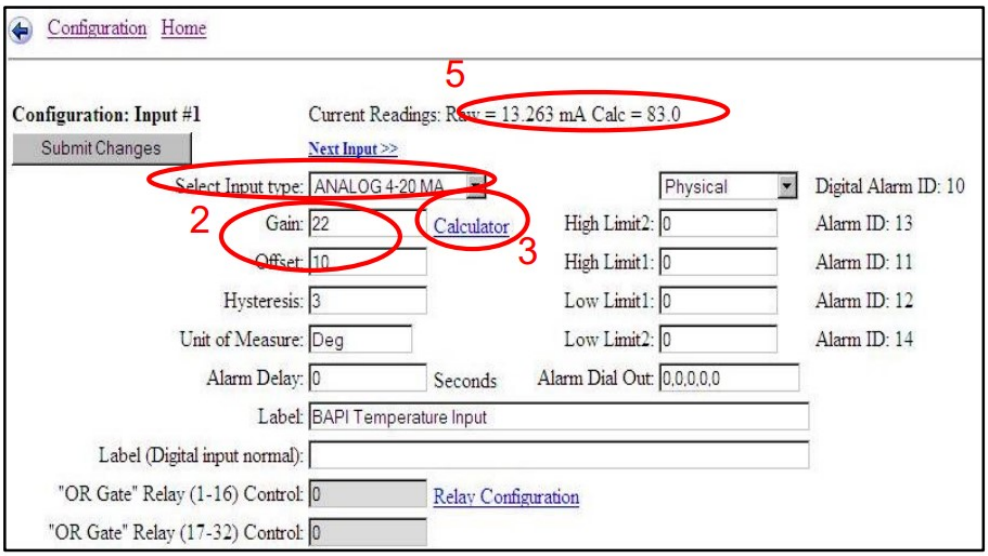
Figure 15.1: Falcon Wiring with the BAPI Temperature/Humidity sensor



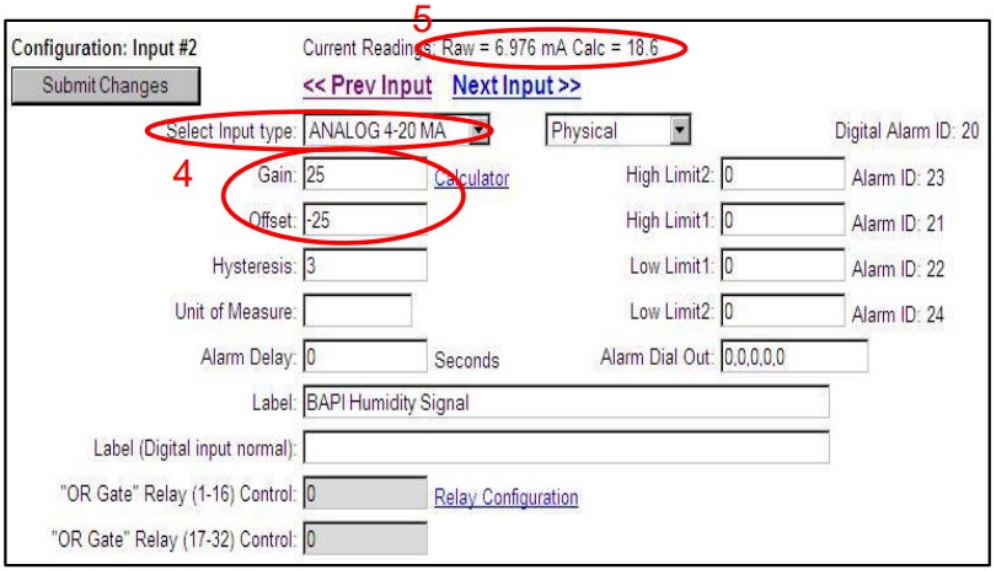
SETUP

1. Wire the sensor as shown
2. . Configure the Falcon Input channel (temperature) for "Analog 4-20mA" and enter the gain and offset values. For the 32- 120F range use Gain 22, Offset -10
3. For other temperature ranges, use the Calculator function on T the webpage
4. Configure the Falcon Input Channel (humidity) for "Analog 4- 20mA" and enter the Gain of 25 and Offset of -25.
5. Verify the "Calc" Value displays the correct room temperature. The temperature can also be viewed on the Falcon main page.

Temperature Setup 2 – 120 Degree F Range



Humidity Setup



TROUBLESHOOTING

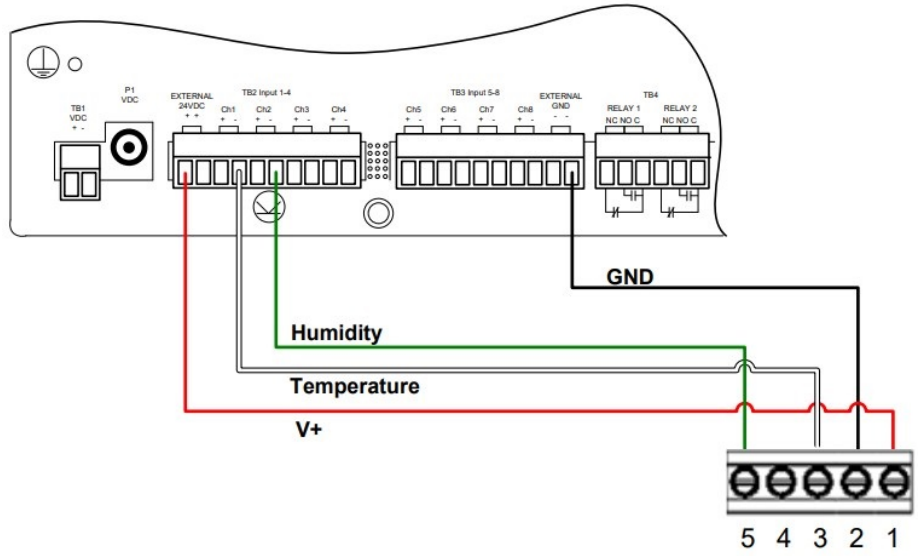
1. Calculate the BAPI Output current for temperature ((Actual temp – Sensor Low) / (Sensor High – Sensor Low)) x 16 + 4 Example if Room Temp is 70F and your sensor has a range of 32-120 ((70 – 32) / (120 – 32)) x 16 + 4 = 10.90
2. Measure the current flowing into the Falcon Ch- terminal with a current meter. Verify that it is close to the calculated current (+/-1%)
3. If measured current current does not match calculated current then check wiring and check the BAPI switch settings.
4. Compare the measured current matches the current reading in the Falcon
5. Check the wiring if the Falcon current reading does not match the measured current reading
6. If the Falcon current reading matches the measured current and the Falcon calculated value does not match the room temperature then the offset and gain values are wrong. Double check the Gain and Offset values.
7. If the temperature displayed in the Falcon is 1 or 2 degrees above or below the room temperature then adjust the offset by 1 or 2. Do not adjust the gain. Only tweak the offset once the previous troubleshooting steps have been performed.
8. If the Falcon still does not display the correct temperature contact RLE Technologies technical support at

970.484.6510.

9. Use similar troubleshooting procedure except use the following formula to calculate the humidity mA output

FMS HW2XA2A Temperature/Humidity Integration

Figure 16.1: Falcon Wiring with the HW2XA2A Temperature/Humidity sensor

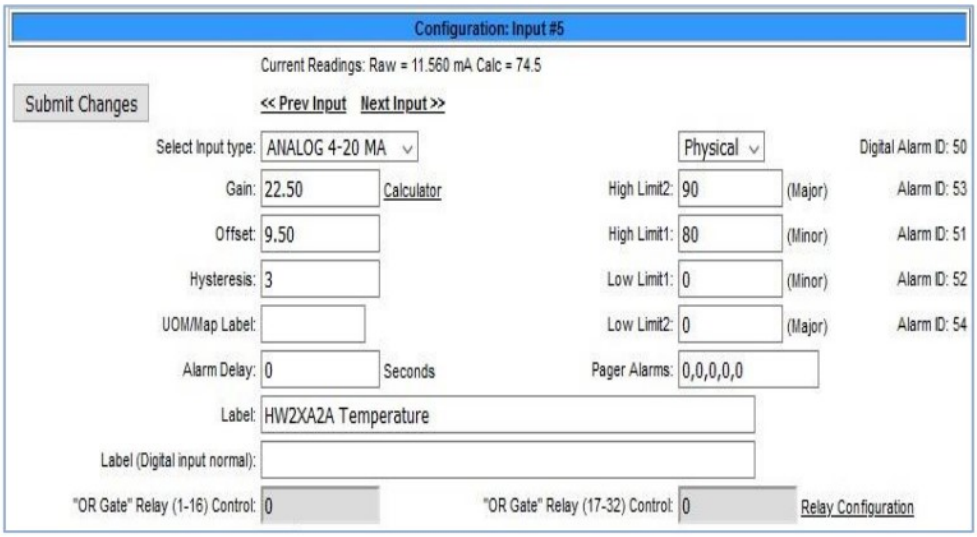


SETUP

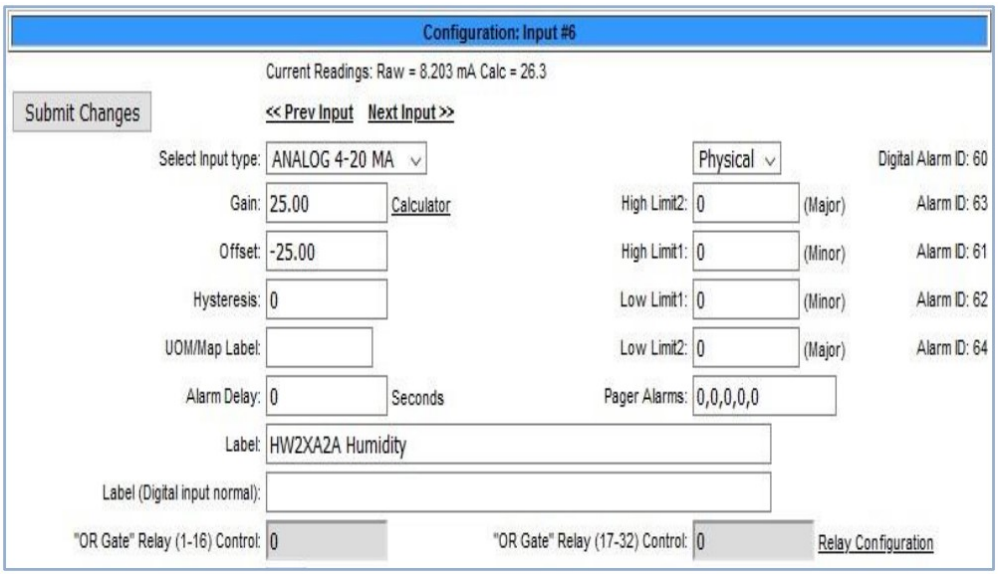
1. Wire the sensor as shown
2. Configure the Falcon Input channel (temperature) for “Analog 4-20mA” and enter the gain and offset values. For the 32- 122F range use Gain 22.5, Offset 9.5.
3. For other temperature ranges, use the Calculator function on the webpage
4. Configure the Falcon Input Channel (humidity) for “Analog 4- 20mA” and enter the Gain of 25 and Offset of -25.
5. Verify the “Calc” Value displays the correct room temperature. The temperature can also be viewed on the

Falcon main page

Temperature Setup 32 – 122 Degree F Range



Humidity Setup



TROUBLESHOOTING

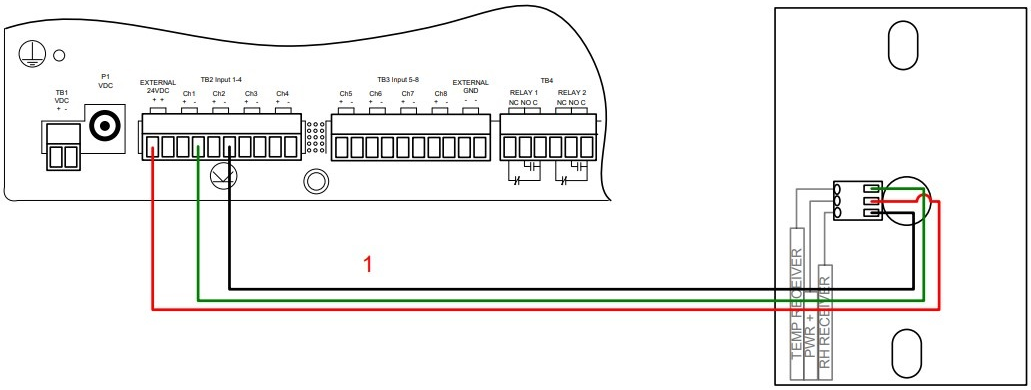
1. Calculate the output current for temperature (Actual temp – Sensor Low) / (Sensor High – Sensor Low)) x 16 + 4 **Example if Room Temp is 70F and your sensor has a range of 32-122** (70 – 32) / (122 – 32)) x 16 + 4 = 10.75
2. Measure the current flowing into the Falcon Ch- terminal with a current meter. Verify that it is close to the calculated current (+/-1%)
3. If measured current current does not match calculated current then check wiring.
4. Compare the measured current matches the current reading in the Falcon.
5. Check the wiring if the Falcon current reading does not match the measured current reading.
6. If the Falcon current reading matches the measured current and the Falcon calculated value does not match the room temperature then the offset and gain values are wrong. Double check the Gain and Offset values.
7. If the temperature displayed in the Falcon is 1 or 2 degrees above or below the room temperature then adjust the offset by 1 or 2. Do not adjust the gain. Only tweak the offset once the previous troubleshooting steps have

been performed.

8. If the Falcon still does not display the correct temperature contact RLE Technologies technical support at 970.484.6510.
9. Use similar troubleshooting procedure except use the following formula to calculate the humidity mA output

FMS Dwyer Temperature/Humidity Falcon Integration

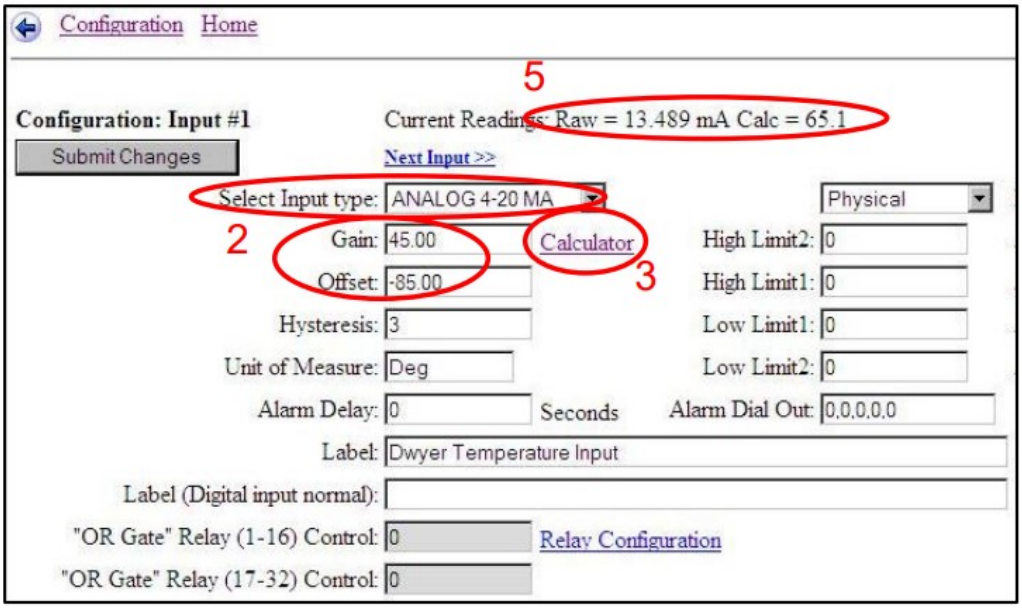
Figure 16.1: Falcon Wiring with the Dwyer Temperature/Humidity sensor



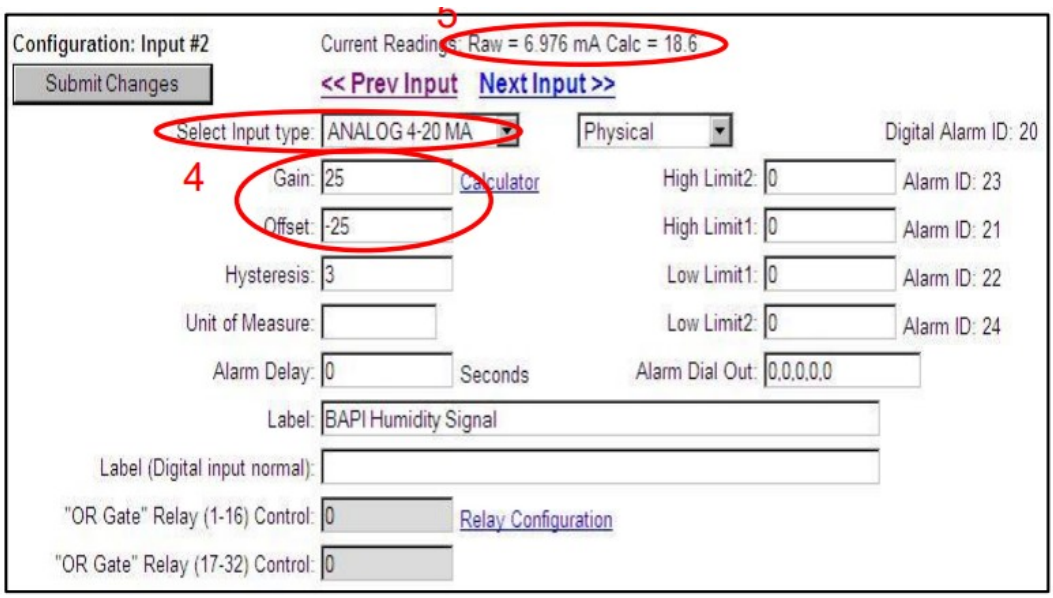
SETUP

1. Wire the sensor as shown
2. Configure the Falcon Input channel (temperature) for “Analog 4-20mA” and enter the gain and offset values. For the -40 – 140F range use Gain 45, Offset -8
3. For other temperature ranges, use the Calculator function on the webpage
4. Configure the Falcon Input Channel (humidity) for “Analog 4- 20mA” and enter the Gain of 25 and Offset of -25
5. Verify the “Calc” Value displays the correct room temperature. The temperature can also be viewed on the Falcon main page

Temperature Setup -40 – 140 Degree F Range



Humidity Setup

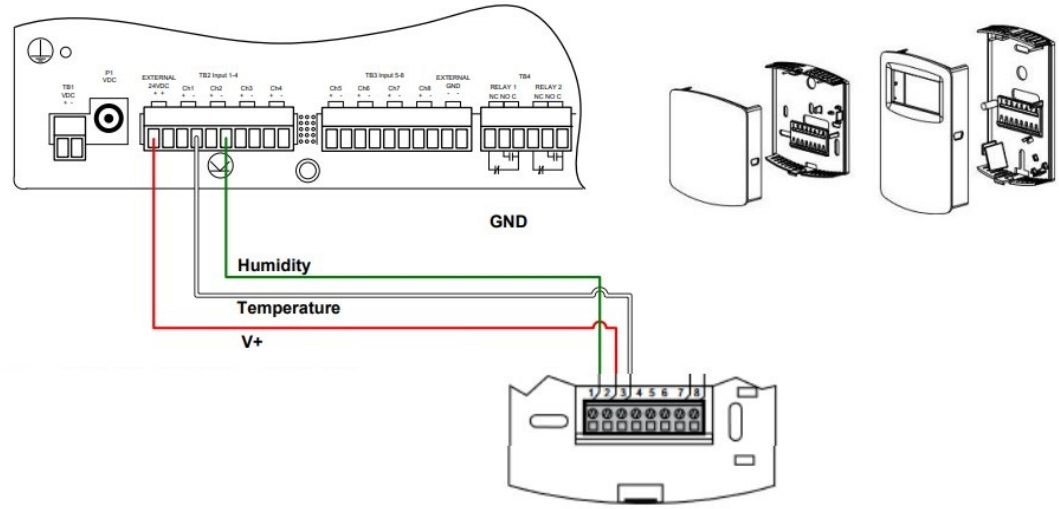


TROUBLESHOOTING

1. Calculate the Dwyer Output current for temperature. ample if Room Temp is 70F and your sensor has a range of -40 – 140 ((Actual temp – Sensor Low) / (Sensor High – Sensor Low)) x 16 + 4 ((70 – -40) / (140 – -40)) x 16 + 4 = 13.77
2. Measure the current flowing into the Falcon Ch- terminal with a current meter. Verify that it is close to the calculated current (+/-1%)
3. If measured current current does not match calculated current then check wiring.
4. Compare the measured current matches the current reading in the Falcon.
5. Check the wiring if the Falcon current reading does not match the measured current reading.
6. If the Falcon current reading matches the measured current and the Falcon calculated value does not match the room temperature then the offset and gain values are wrong. Double check the Gain and Offset values.
7. If the temperature displayed in the Falcon is 1 or 2 degrees above or below the room temperature then adjust the offset by 1 or 2. Do not adjust the gain. Only tweak the offset once the previous troubleshooting steps have been performed.
8. If the Falcon still does not display the correct temperature contact RLE Technologies technical support at 970.484.6510.
9. Use similar troubleshooting procedure except use the following formula to calculate the humidity mA output

FMS WIRED-TH Temperature/Humidity Integration

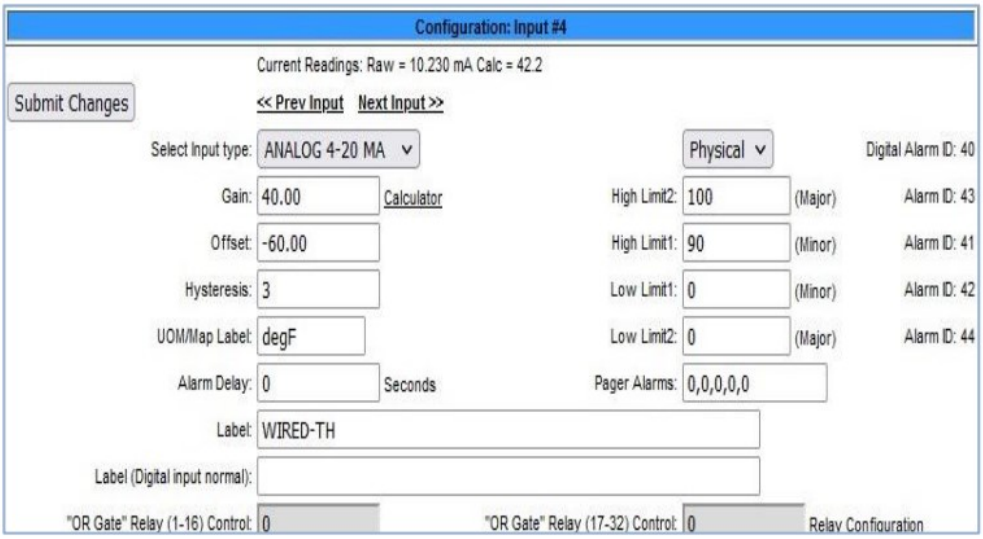
Figure 16.1: Falcon Wiring with the WIRED-TH Temperature/Humidity sensor

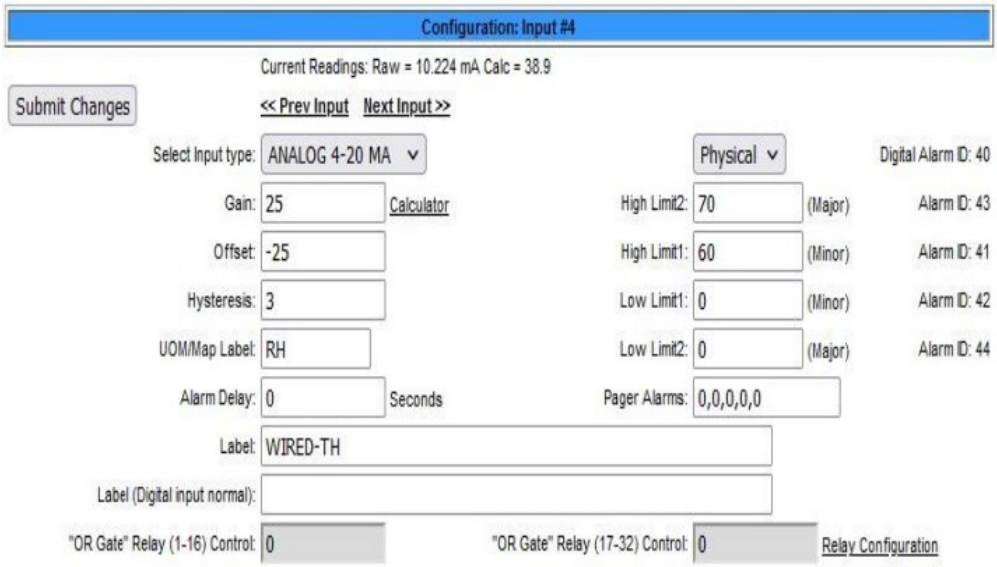


SETUP

1. Wire the sensor as shown
2. Configure the Falcon Input channel (temperature) for “Analog 4-20mA” and enter the gain and offset values. For the -20- 140F range use Gain 40.0, Offset 60.0
3. For other temperature ranges, use the Calculator function on the webpage
4. Configure the Falcon Input Channel (humidity) for “Analog 4- 20mA” and enter the Gain of 25 and Offset of -25
5. Verify the “Calc” Value displays the correct room temperature. The temperature can also be viewed on the Falcon main page

Temperature Setup -20 – 140 Degree F Range

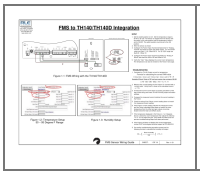




TROUBLESHOOTING

1. Calculate the output current for temperature ((Actual temp – Sensor Low) / (Sensor High – Sensor Low)) x 16 + 4 ((70 – -20) / (140 – -20)) x 16 + 4 = 13.0
2. Measure the current flowing into the Falcon Ch- terminal with a current meter. Verify that it is close to the calculated current (+/-1%) 3. If measured current current does not match calculated current then check wiring.
3. Compare the measured current matches the current reading in the Falcon.
4. Check the wiring if the Falcon current reading does not match the measured current reading.
5. If the Falcon current reading matches the measured current and the Falcon calculated value does not match the room temperature then the offset and gain values are wrong. Double check the Gain and Offset values.
6. If the temperature displayed in the Falcon is 1 or 2 degrees above or below the room temperature then adjust the offset by 1 or 2. Do not adjust the gain. Only tweak the offset once the previous troubleshooting steps have been performed.
7. If the Falcon still does not display the correct temperature contact RLE Technologies technical support at 970.484.6510.
8. Use similar troubleshooting procedure except use the following formula to calculate the humidity mA output

Documents / Resources

	RLE TH140 Temperature And Humidity Sensor [pdf] Installation Guide TH140 Temperature And Humidity Sensor, TH140, Temperature And Humidity Sensor, Humidity Sensor

References

- RLE Tech | Data Center Environment Monitoring & Leak Detection