RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# FMS to TH140/TH140D Integration

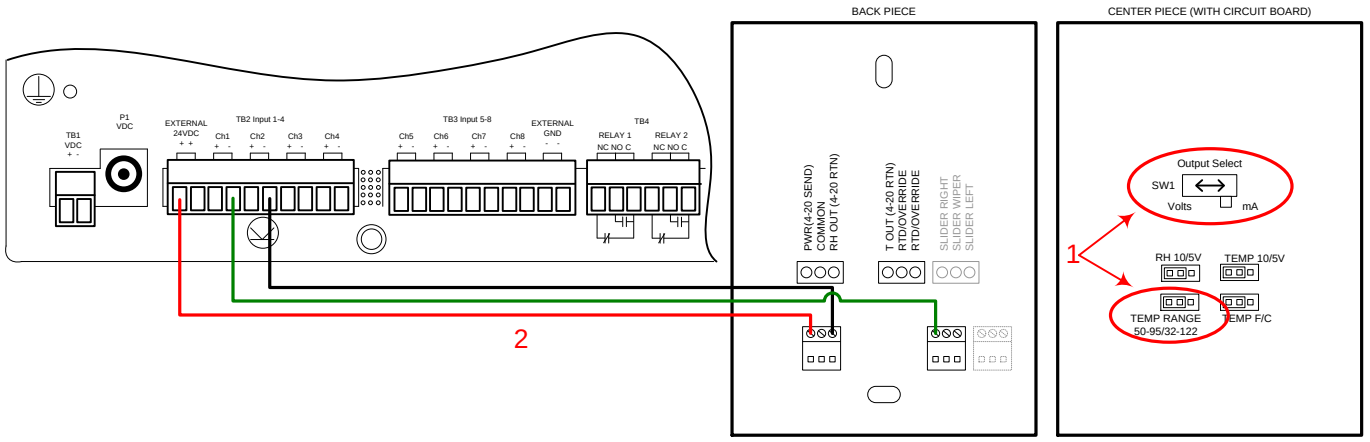



Figure 1.1: FMS Wiring with the TH140/TH140D

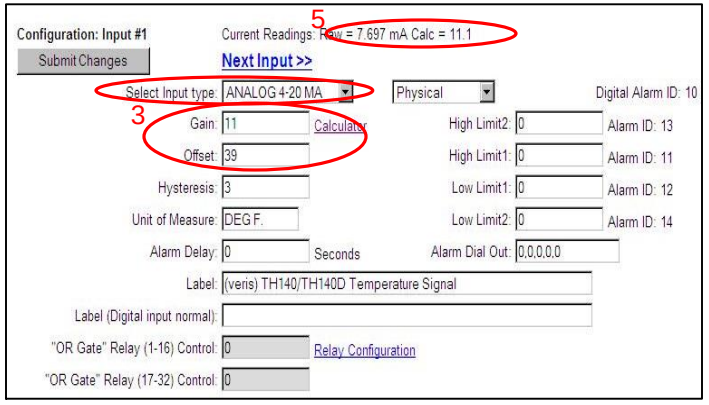



Figure 1.2: Temperature Setup
50 – 95 Degree F Range

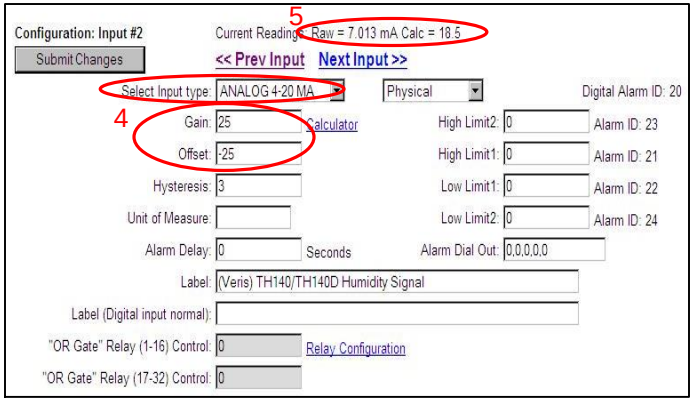



Figure 1.3: Humidity Setup

## 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.

## 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. 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.

$$mA = \left(\frac{\text{Room Humidity}}{100}\right) \times 16 + 4$$

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# FMS to T120D Integration

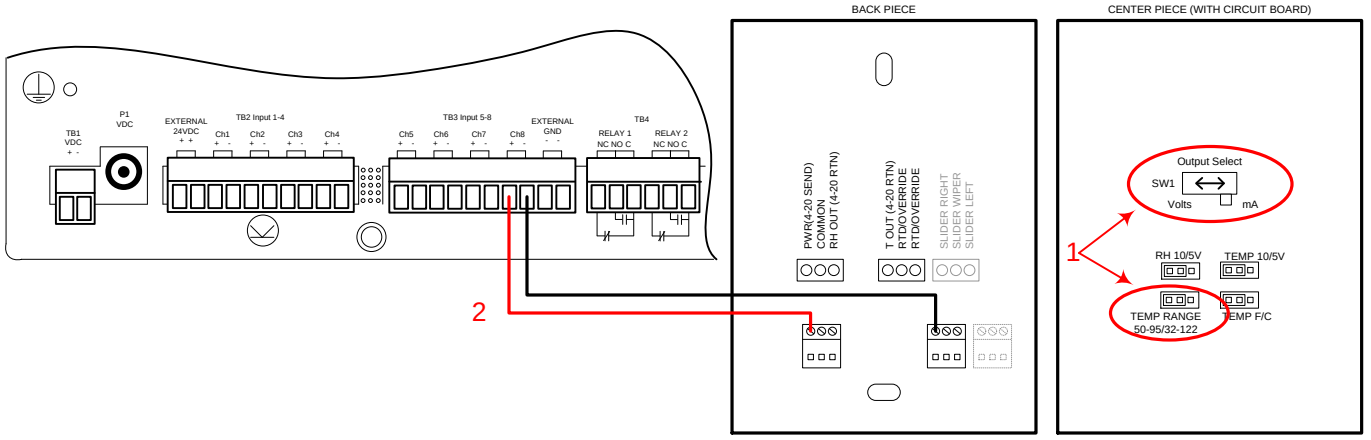



Figure 2.1: FMS Wiring with the T120D

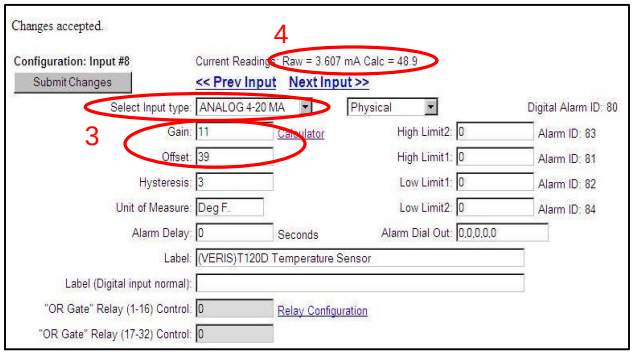



Figure 2.2: 50-95F Range Setup

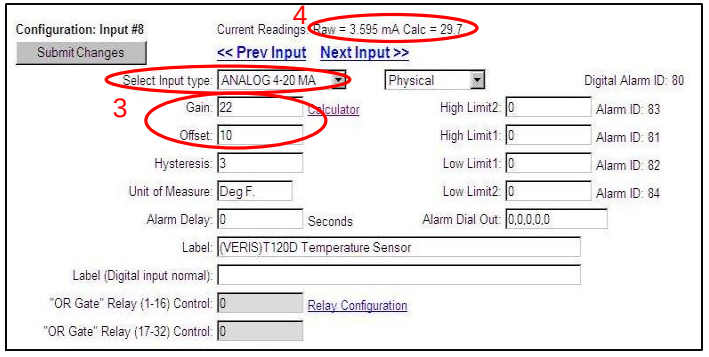



Figure 2.3: 32-122F Range Setup

## 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.

## 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.

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# FMS to HEW3MSTA Integration

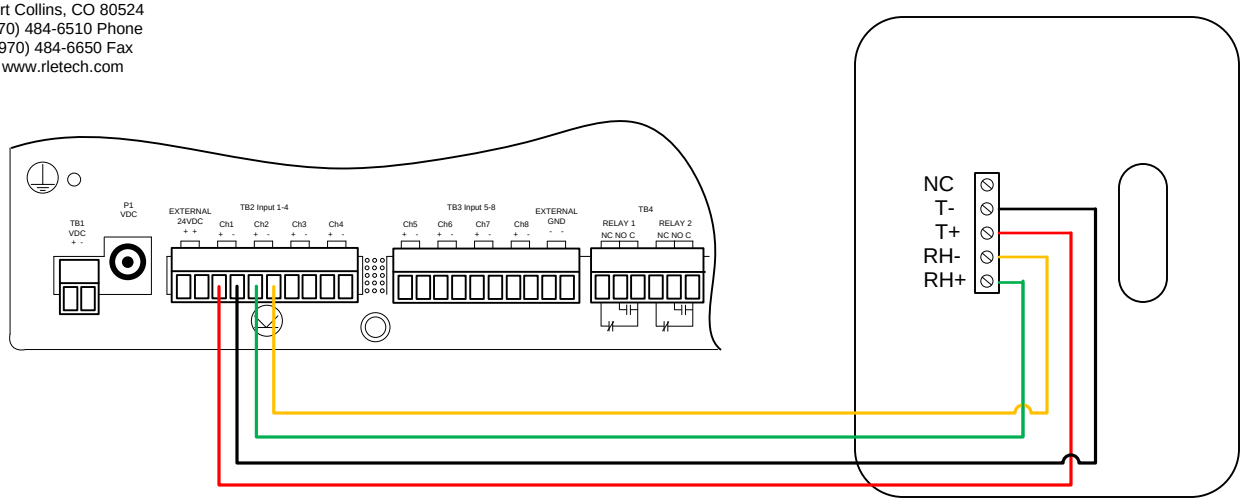



Figure 3.1: FMS Wiring with the HEW3MSTA

**SETUP**

1. The temperature range is 50-95 degF
2. Wire the sensor as shown.
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. 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.

**TROUBLESHOOTING**

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. 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.

$$mA = \left(\frac{\text{Room Humidity}}{100}\right) \times 16 + 4$$

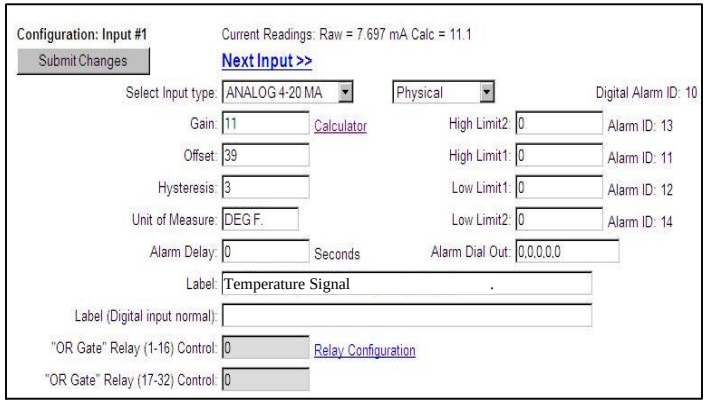



Figure 3.2: Temperature Setup
50 – 95 Degree F Range

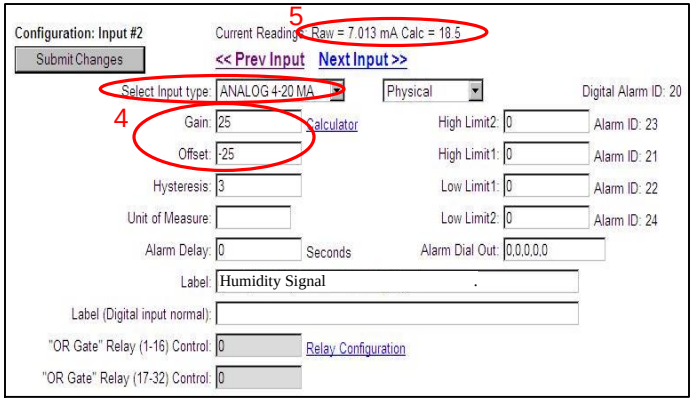



Figure 3.3: Humidity Setup

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# FMS to TEAMS Integration

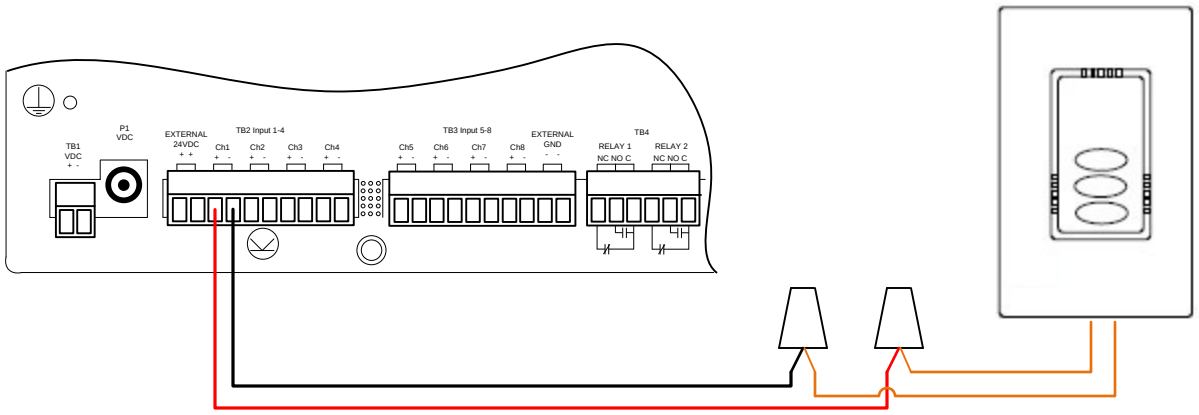



Figure 4.1: FMS Wiring with the TEAMS

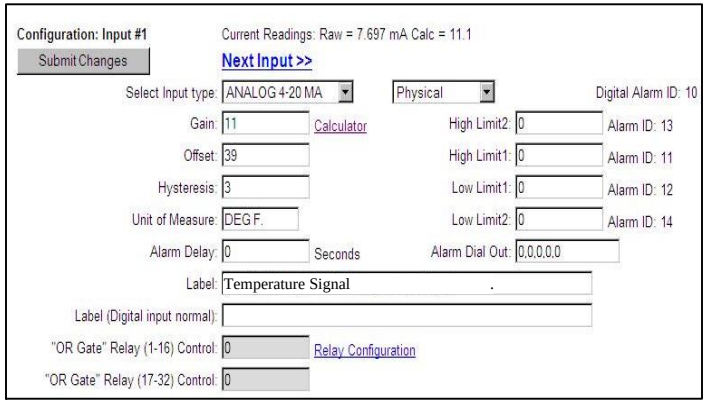



Figure 4.2: Temperature Setup
50 – 95 Degree F Range

**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.

**TROUBLESHOOTING**

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. If the Falcon still does not display the correct temperature contact RLE Technologies technical support at 970.484.6510.

# CT120/CT300/CT800/CT2400 FMS Integration

104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

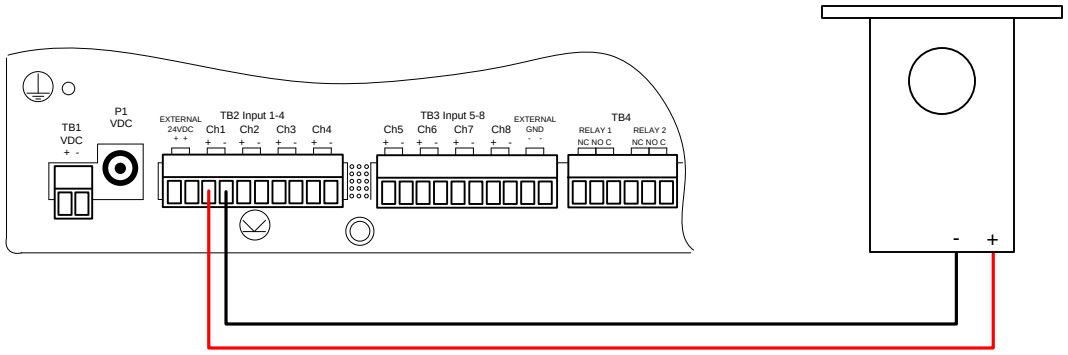



Figure 5.1: FMS Wiring

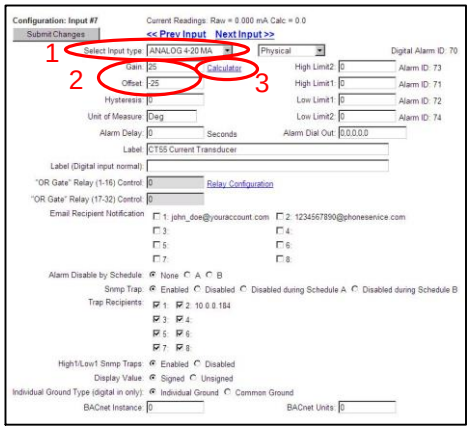



Figure 5.2: FMS Input Configuration Interface

## 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.

104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# PFM FMS Integration

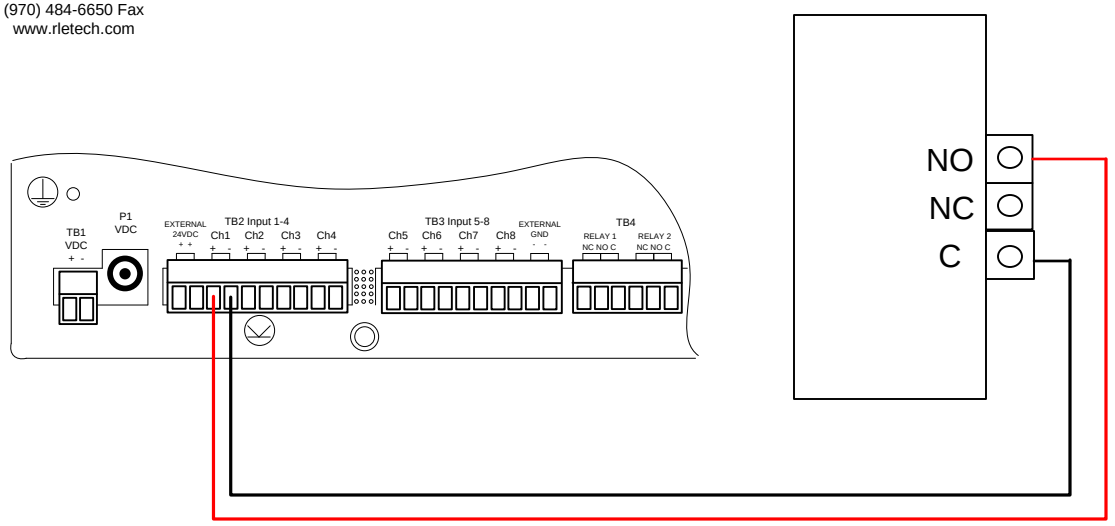
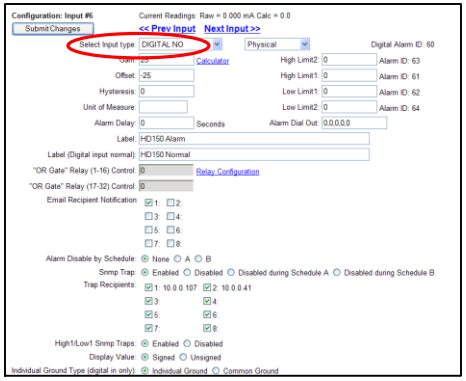



Figure 6.1: FMS Wiring




FMS Input Configuration Interface

## FMS Configuration

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

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# GD100 FMS Integration

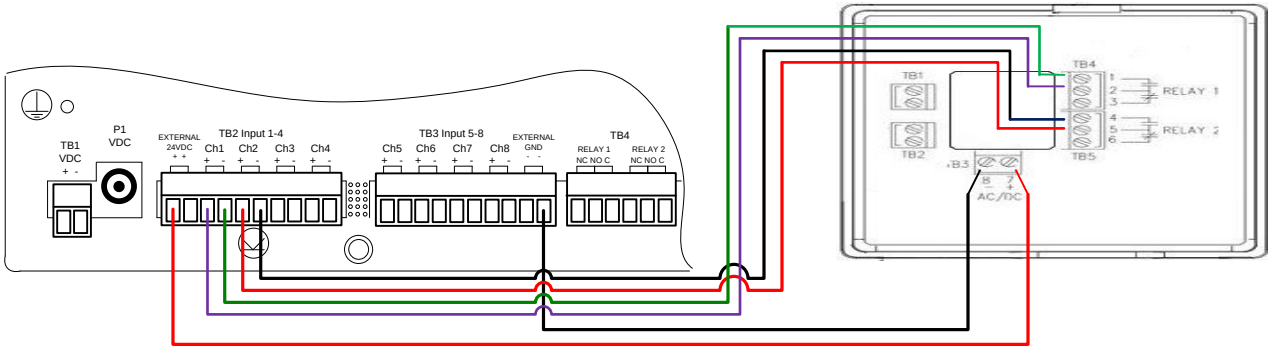
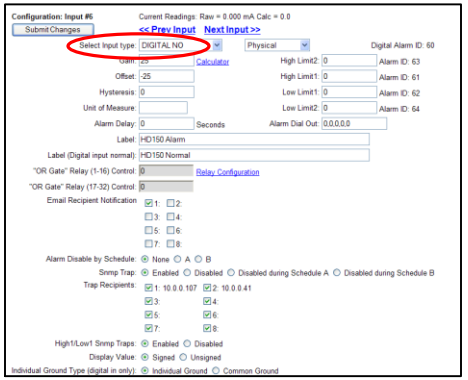



Figure 7.1: FMS Wiring




FMS Input Configuration Interface

## FMS Configuration

Set Input Type to a Digital NO

# AFS-(WM/DM) F200 Integration

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

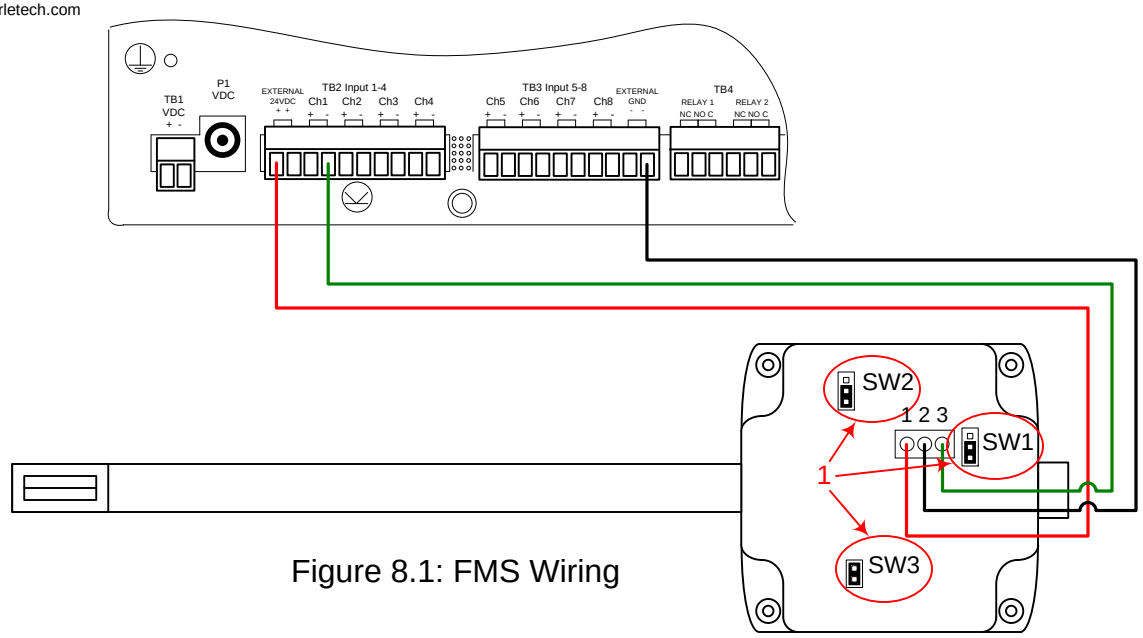



Figure 8.1: FMS Wiring

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

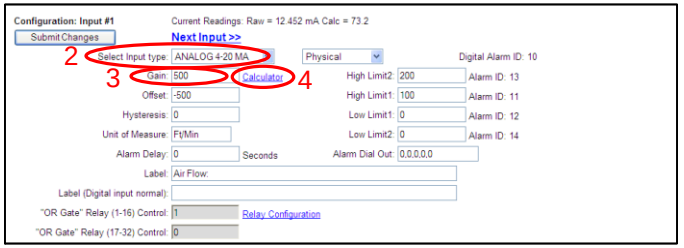
Response Time SW3:
- Fast
- Slow

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

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# AFS-D FMS Integration

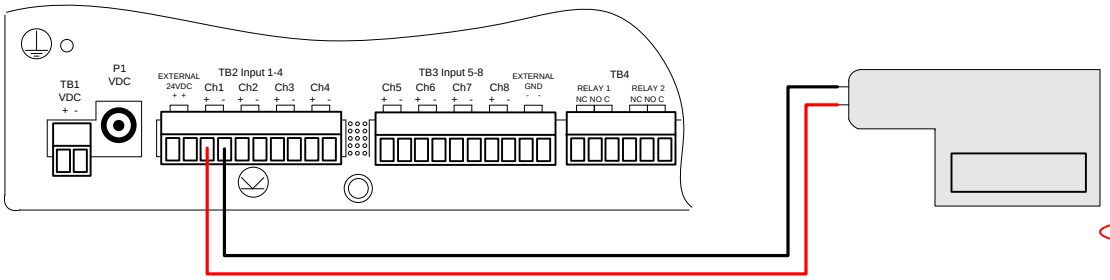
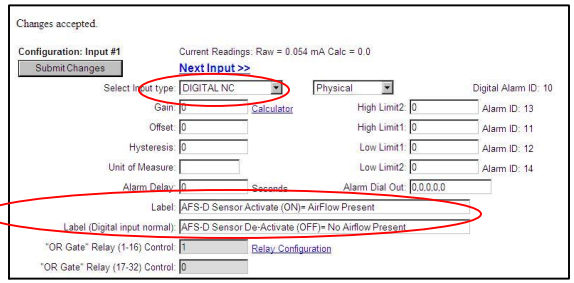



Figure 9.1: FMS Wiring




FMS Input Configuration Interface

## 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.

104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# MD3 FMS Integration

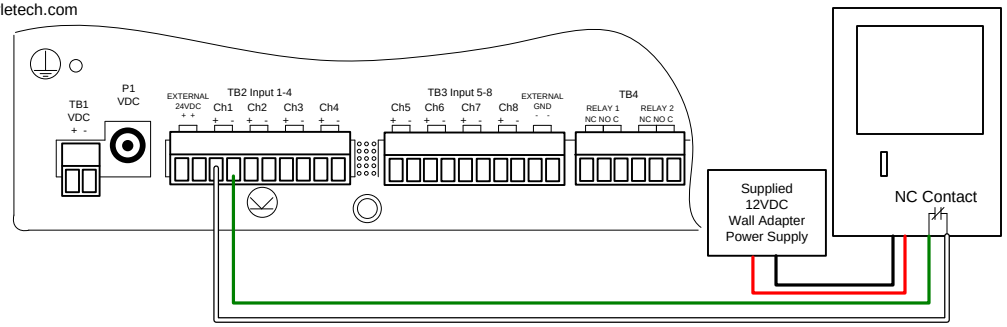
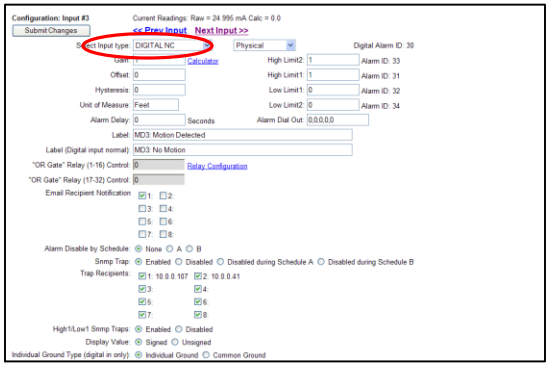



Figure 10.1: FMS Wiring




FMS Input Configuration Interface

## FMS Configuration

Set Input Type to a Digital NC Input Type for each MD3 wired into the Falcon.

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# MDS FMS Integration

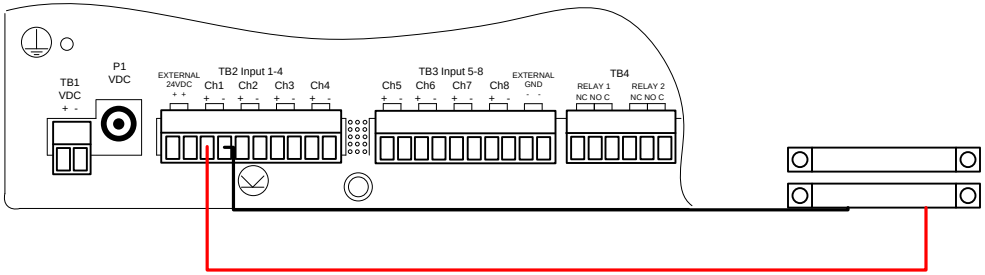
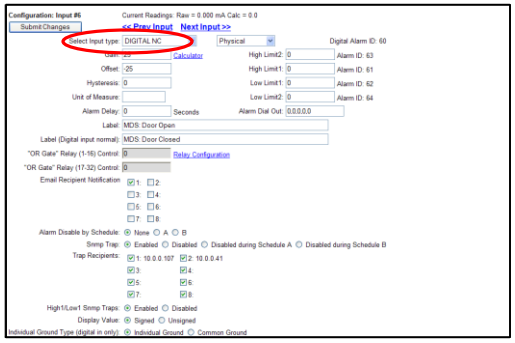



Figure 11.1: FMS Wiring




FMS Input Configuration Interface

## FMS Configuration

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

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# SMK FMS Integration

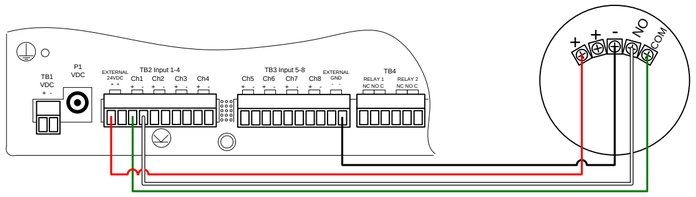
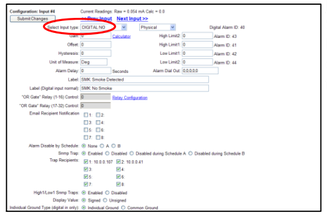






Figure 12.1: FMS Wiring




FMS Input Configuration Interface

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

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# HD150 & HD150-2 FMS Integration

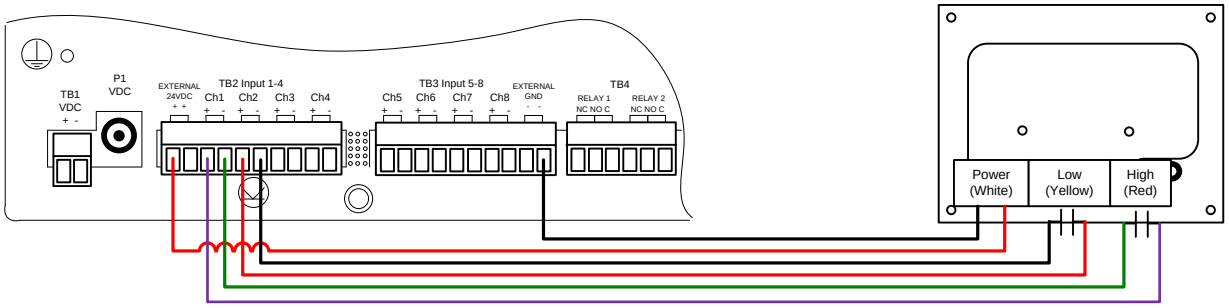
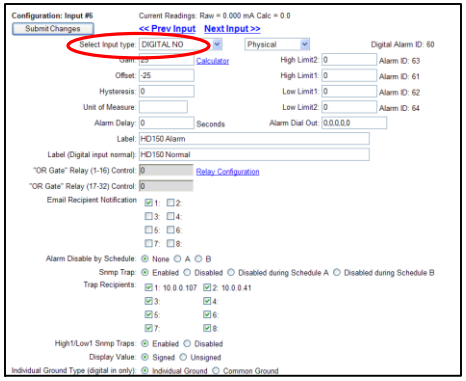



Figure 13.1: FMS Wiring



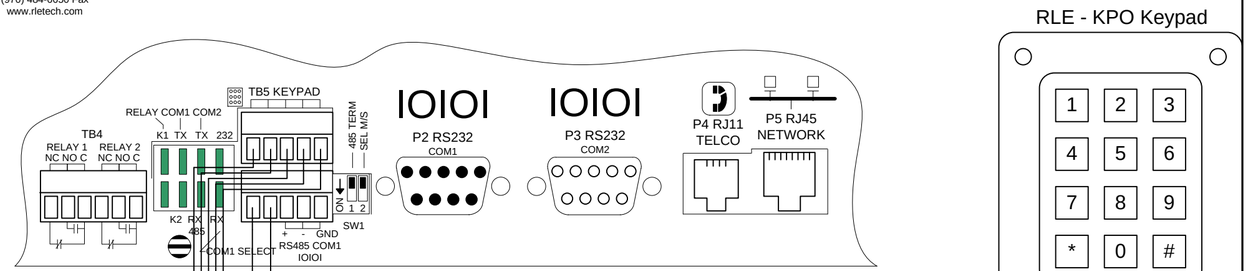

FMS Input Configuration Interface

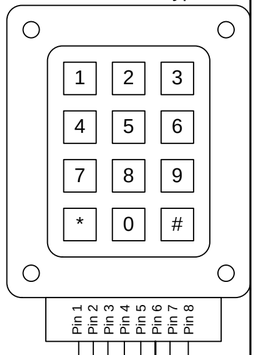
## FMS Configuration

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

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

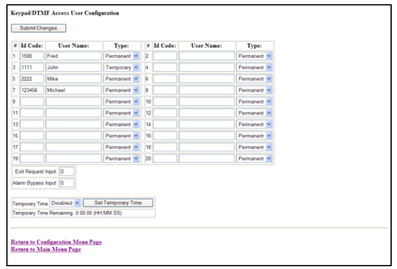
# KPO Falcon Integration




| | | |
|---|---|---|
| Falcon TB5-1 | Column 1 | Keypad Pin 3 - Orange |
| Falcon TB5-2 | Column 2 | Keypad Pin 4 - Green |
| Falcon TB5-3 | Column 3 | Keypad Pin 5 - Grey |
| Falcon TB5-4 | Row 1 | Keypad Pin 1 - Red |
| Falcon TB5-5 | Row 2 | Keypad Pin 2 - White |
| Falcon TB5-6 | Row 3 | Keypad Pin 8 - Yellow |
| Falcon TB5-7 | Row 4 | Keypad Pin 7 - Blue |
| No Connection | | Keypad Pin 6 - Black |

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.

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# FMS BAPI Temperature/Humidity Falcon Integration

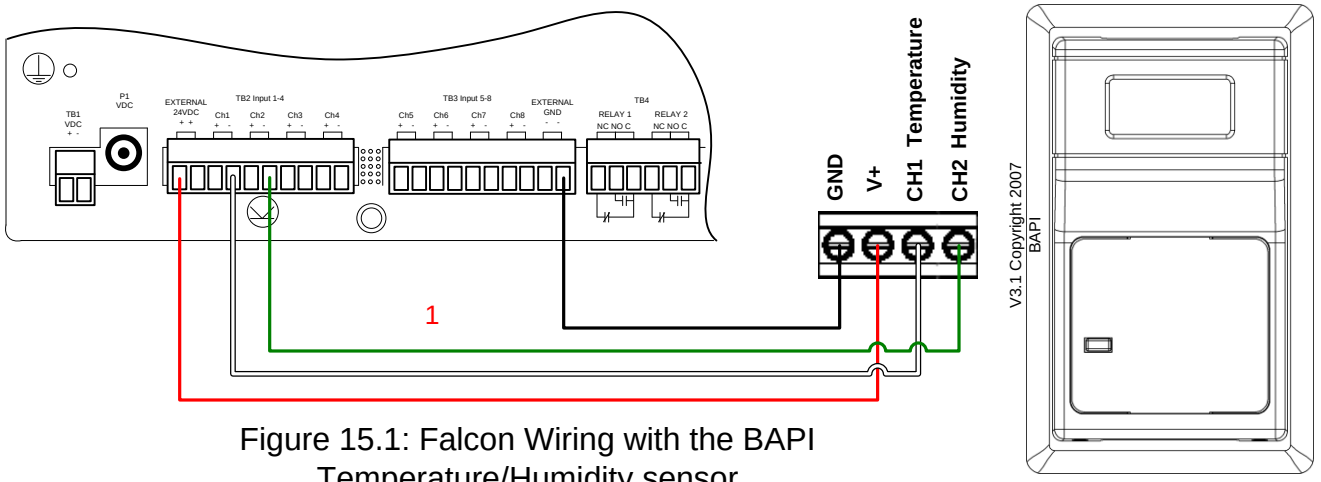
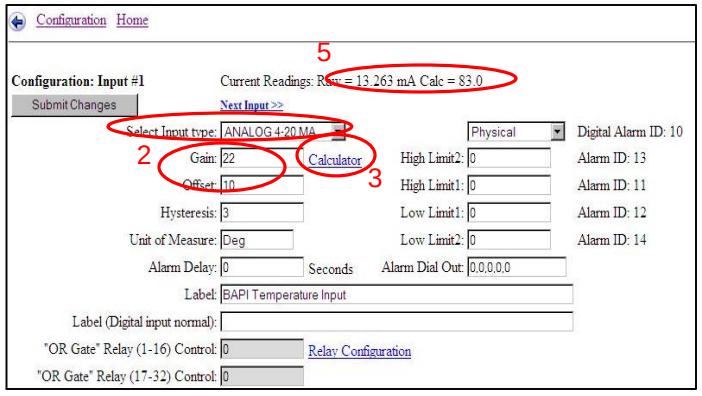
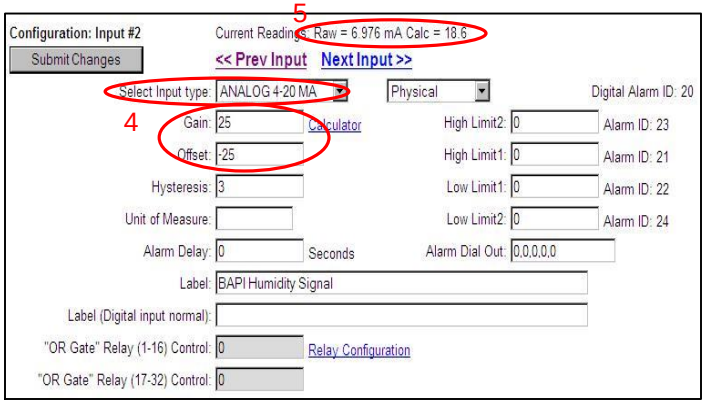



Figure 15.1: Falcon Wiring with the BAPI Temperature/Humidity sensor




Temperature Setup
32 - 120 Degree F Range




Humidity Setup

## 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 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.

## 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.

$$mA = \left(\frac{\text{Room Humidity}}{100}\right) \times 16 + 4$$

RLE Technologies
104 Racquette Drive
Fort Collins, CO 80524
(970) 484-6510 Phone
(970) 484-6650 Fax
www.rletech.com

# FMS Dwyer Temperature/Humidity Falcon Integration

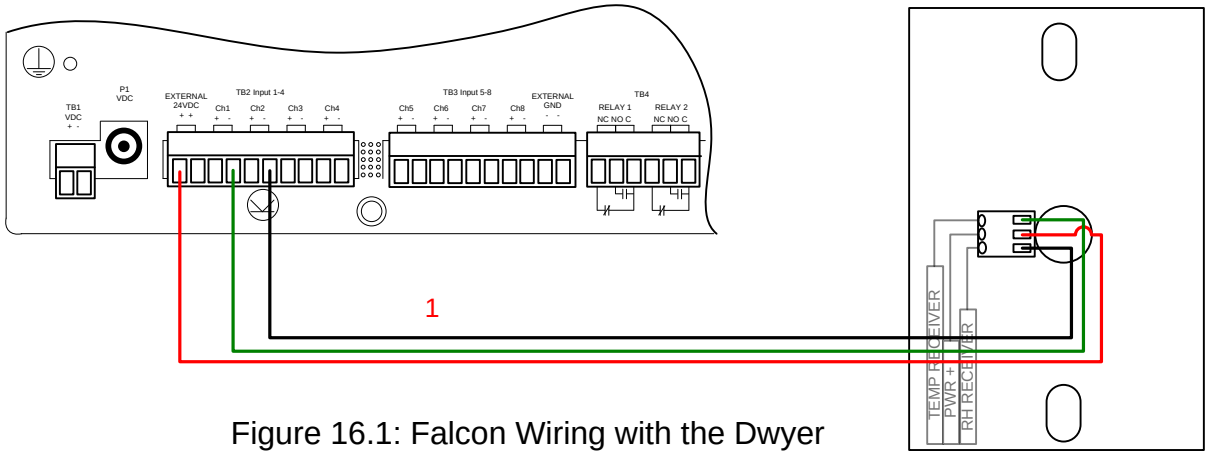



Figure 16.1: Falcon Wiring with the Dwyer Temperature/Humidity sensor

## 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 -85.
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.

## TROUBLESHOOTING

1. Calculate the Dwyer Output current for temperature.

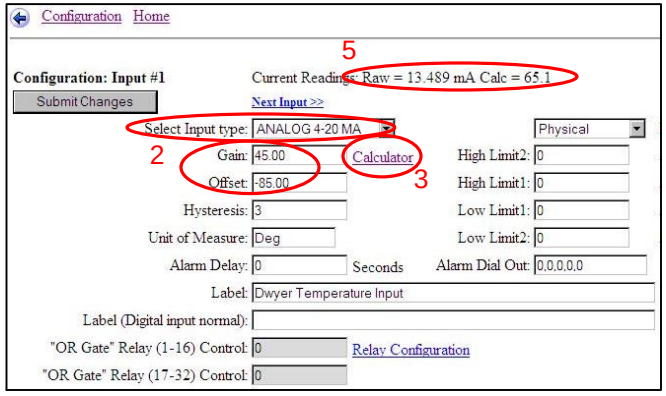
( (Actual temp - Sensor Low) / (Sensor High - Sensor Low)) x 16 + 4

Example if Room Temp is 70F and your sensor has a range of -40 - 140

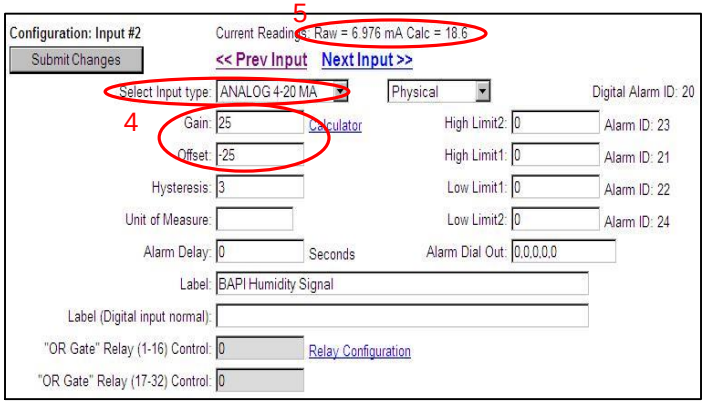
( (70 - -40) / (140 - -40)) x 16 + 4 = 13.77

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.

$$mA = \left(\frac{\text{Room Humidity}}{100}\right) \times 16 + 4$$




Temperature Setup
-40 - 140 Degree F Range




Humidity Setup