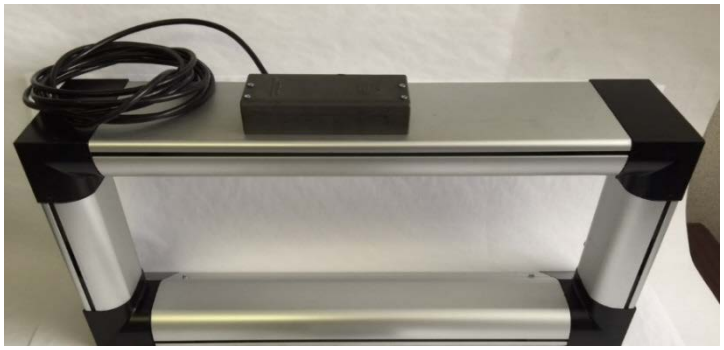
NJK PRECISION
Air Flow Measurement Products

NJK-02 series Airflow Monitoring Station Installation and Operators Manual



NJK-02 Product Specifications

Measurement:

Working range	30-3000 ft/min
Sensor accuracy (CFM)	+/- 0.5% of reading
Sensor repeatability	+/- 0.5% of reading
Installed accuracy	+/- 2% of reading
Response time	0.5 seconds
Output	1 - 10 VDC
Output reading	Cubic Feet per Minute
Humidity range	0-95% Relative Humidity

General:

Power supply	24VDC +/- 20% (Optional 24 VAC)
Current consumption (w/Display-O.I.)	AC 75mA
Electrical connections	Screw terminal
Display Protection class	Polycarbonate NEMA 4X (IP-65) UL-94 HB / Sensor Probe IP20
Working temperature (probe)	-25F - 230F
Working temperature (elect.)	-13F - 160F
Temperature Probe (Optional)	-25F - 230F

NJK-02 Sensor Wiring

The NJK Display/Operator Interface will receive 24 VDC or isolated 24 VAC power from the control electrician. NJK Sensor Probe and Transmitter will receive their power from the NJK Display/Operator Interface .

NJK Sensor Probe and Transmitter will receive their power from the NJK Display/Operator Interface via RJ-45 connecting cables. The NJK Display/Operator Interface and is fused internally.

The NJK Sensor Module will contain the Sensing Probe and the Sensor Transmitter. This will come with a factory cable that will be 25 feet in length to connect to the Display/Operator Interface.

All connections to the Sensor-Transmitter and to the NJK Display/Operator Interface will be an RJ-45 plug-in and will be delivered in 25 foot lengths.

All connections will have a liquid tight screw-on cover housing protecting the RJ-45 connections.

NJK-02 Sensor Power Requirements

All wiring to NJK Sensor shall be a 4-wire. 24 VDC or 24 VAC power/common and 0 to 10 VDC signal / common.

Direct Current Wiring (24 VDC):

NJK Sensors powered from the same 24 VDC power source as the Building Automation System control field panel should operate without any issues with either the electrical or the BAS signal.

Optional - Alternating Current Wiring (24 VAC):

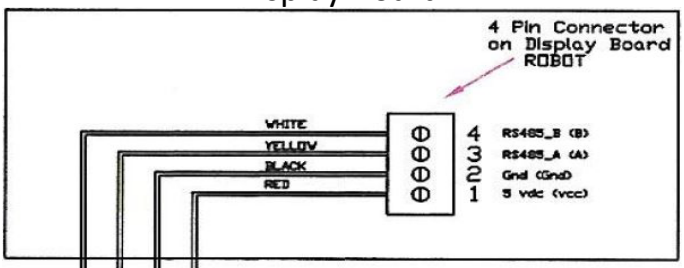
An **Isolated Transformer**(s) will be required to power the 24 VAC power for the NJK Sensors if either of the following situations are true.

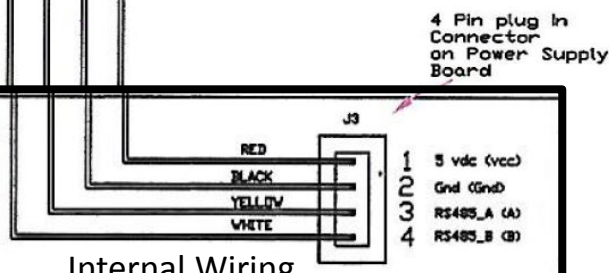
- If the NJK Sensors will be powered by a 24 VAC power system that has any part of the power transformer or system externally earth grounded to a building electric casing or panel buss bar or field panel.
- Or, if the NJK Sensors will be powered from a different transformer source than the building automation system.

NJK Display and Operator Interface

Power Supply and Display Board are located in the NJK Display/Operator Interface

Display Board

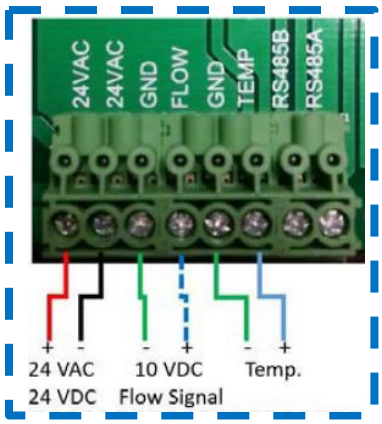


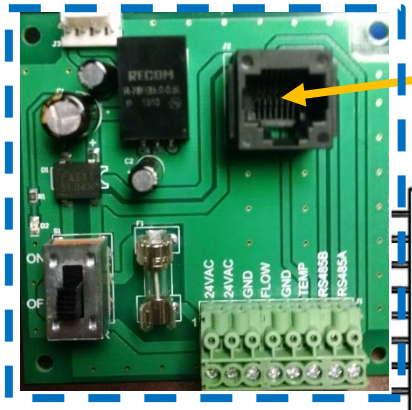


Internal Wiring

Power Supply and Display Interface Board

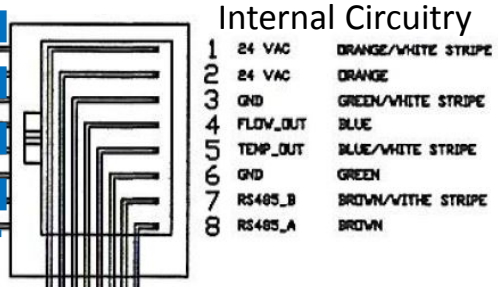
External wiring is done in the Display/Operator Interface ONLY.
Connection to the Sensor Module is via RJ-45 sensor wire plug in.

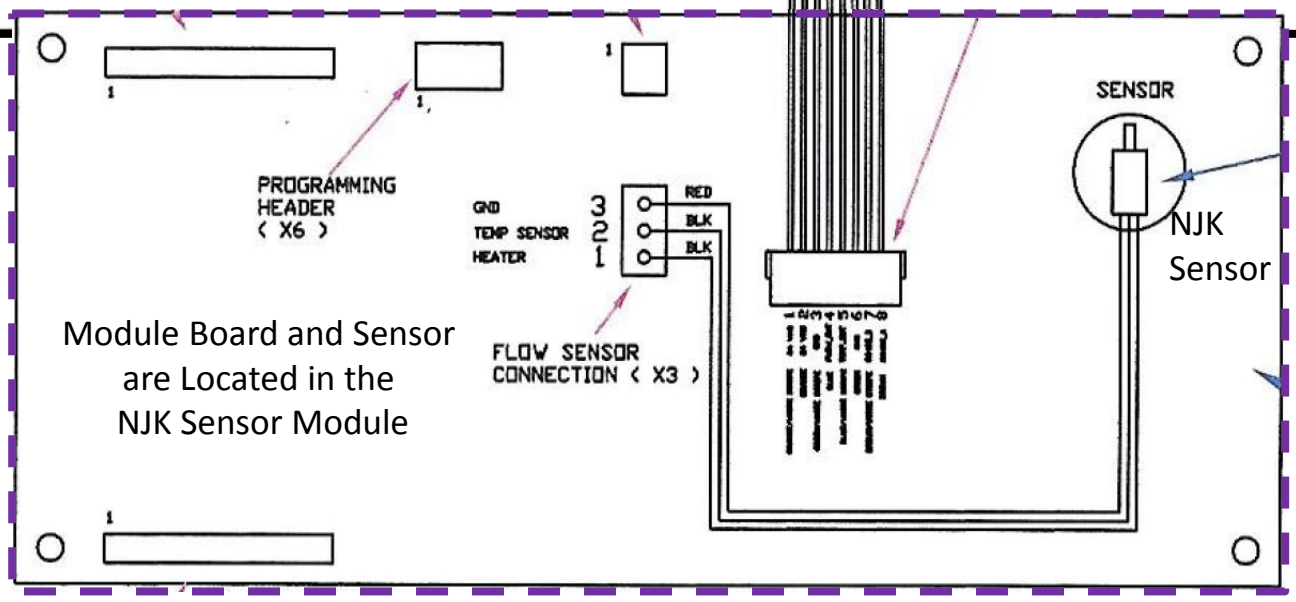




Sensor Module
RJ-45 Connection

Internal Circuitry





Module Board and Sensor are Located in the NJK Sensor Module

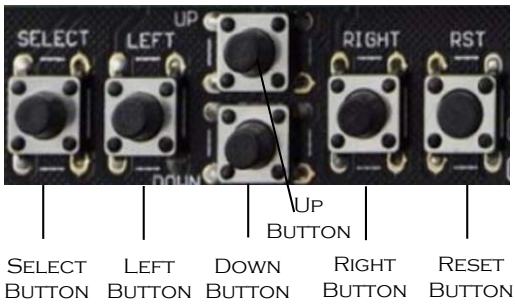
NJK Sensor Module Board

To View Display Parameters

Press Select Button Once to enter **Display Setup Mode (To Exit Display Setup Mode press right button until Return to Flow – Exit is shown, press Select button to return to display flow)**

Press right button to view parameter settings:

Display	Flow Range
Output Gain	Filtering
Update Rate	Minimum Flow



Setting the Sensor Area

Step #1

1. Press Select button
2. Press right button until Display Area is shown
3. Press Select button again (Curser will Blink under number)
4. Set Display Area to the NJK Sensor Area (Sq Ft) by adjusting settings using up and down buttons. Use left and right buttons to move curser. Use reset button to clear entry.
5. Press Select button again
6. Press Right button until Return to Flow – Exit is shown
7. Press Select button to return to display flow reading

Setting the Signal Update Rate:

Step #2

1. Press Select
2. Press right button until Update Rate is shown
3. Press Select button again (Curser will Blink under number)
4. Set desired Update Rate (7.5, 15, 30, 60, or 90 seconds)
5. Press Select Button again
6. Press Right Button until Return to Flow – Exit is shown
7. Press Select Button to return to display flow reading

Setting the Signal Output Filter:

Step #3

1. Press Select
2. Press right button until Filtering is shown
3. Press Select button again (Curser will Blink under number)
4. Set Filtering adjustment as desired (0, 1, or 2)
5. Press Select button again
6. Press Right Button until Return to Flow – Exit is shown
7. Press Select button to return to display flow reading

Setting the Minimum Flow:

Step #4

1. Press Select Button
2. Press right button until Minimum Flow is shown
3. Press Select button again (Curser will Blink under number)
4. Set Minimum Flow to the NJK Sensor minimum flow in Feet Per Minute by adjusting settings using up and down buttons. Use left and right buttons to move curser..
5. Press Select button again
6. Press Right Button until Return to Flow – Exit is shown
7. Press Select button to return to display flow reading

The NJK Flow Station will deliver a flow signal to the Building Automation System with an Output Gain of 1.0. Input Point Scaling must be done at the Building Automation System. BAS Scaling Range can be changed by following **Step #5** below

To add a Flow Correction Factor to the BAS, the Display/Operator Interface will need to be set up by following **Step #6** below.

Setting the Output Flow Range (Building Automation High Scale):

Step #5

1. Press select Button
2. Press right button until Flow Range is shown.
3. Press Select button again (Curser will Blink under number)
4. Set Output Scaling to desired Scale (750, 1500, or 3000) by adjusting settings using up and down buttons. Use left and right buttons to move curser. Use reset button to clear entry.
5. Press Select button again.
6. Press Right Button until Return to Flow – Exit is shown.
7. Press Select button to return to display flow reading.

Setting the Signal Output Gain (Correction Factor):

Step #6

1. Press Select Button.
2. Press right button until Gain is shown.
3. Press Select button again. (Curser will Blink under number)
4. Set Gain to desired Correction Factor (a percentage of 1.0.) by adjusting settings using up and down buttons. Use left and right buttons to move curser. Use reset button to clear entry.
5. Press Select button again.
6. Press Right Button until Return to Flow – Exit is shown.
7. Press Select button to return to display flow reading.

The NJK Display/Operator Interface will receive 24 VAC or 24 VDC power from the electrician. NJK Sensor Probe /Transmitter will be powered from the NJK Display/Operator Interface.

The NJK Sensor Module will contain the sensing probe and signal transmitter. This will come with a factory cable that will be 25 feet in length. Custom cables can be purchased at 50', 75', and 100'.

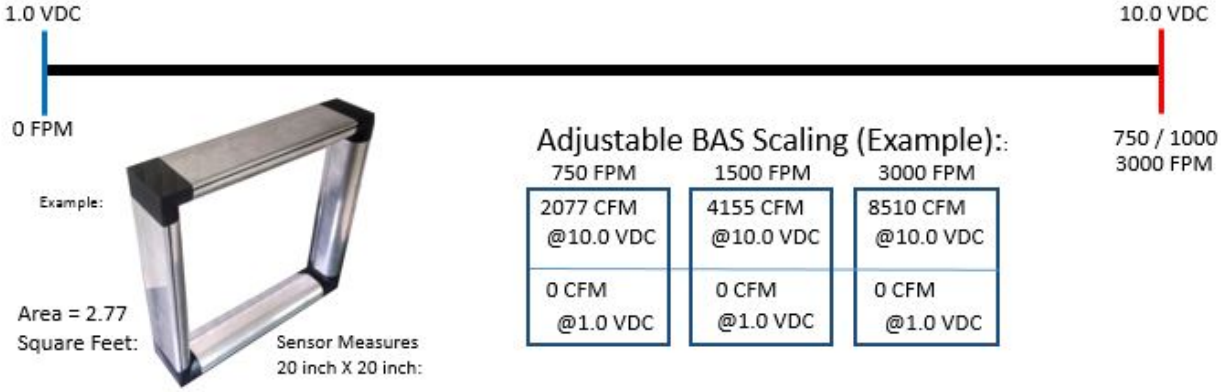
Connections will be an RJ-45 plug-in to the Sensor Module and to the NJK Display/Operator Interface. All plug in connections will have a screw-on cover housing protecting the RJ-45 connection.

NJK Air Flow Station input point is to be defined as a 1 *to* 10 VDC only and will directly reflect minimum and maximum airflow in Cubic Feet per Minute (CFM). Input point must be scaled as labeled on the NJK Air Flow Station label with 1 VDC representing the low flow (in Cubic Feet per Minute) and with 10 VDC representing the high flow (in Cubic Feet per Minute). (See Below).

The NJK Display/Operator Interface will have a User Adjustable - Integral Signal Dampening feature (output filter), BAS Signal Range Adjustment, and a Display Range Adjustment

NJK-02 Adjustable Analog Output Point Scaling is linear across the full range of the sensor.
To adjust the analog output scaling from the NJK Display to the Building Automation System follow step #5 in the NJK Display Setup procedures on Page 3 of the Installation and Operators Manual

To display flow at the Building Automation System in Cubic Feet per Minute multiply the sensor area by the above setting entered at the NJK Display by programmed setting (750, 1500 or 3000). Use this number as your high end of the scale (10 VDC) while using 0 CFM at 1.0 VDC



Adjustable BAS Scaling (Example):

750 FPM	1500 FPM	3000 FPM
2077 CFM @10.0 VDC	4155 CFM @10.0 VDC	8510 CFM @10.0 VDC
0 CFM @1.0 VDC	0 CFM @1.0 VDC	0 CFM @1.0 VDC

NJK Precision NJK-02 Product Maintenance:

The NJK-02 Air flow sensor "Flow Frame" and "Sensor Module" will need to be kept clear of debris that can inhibit the operation of the air flow sensor. In an unfiltered outdoor air application the sensor "Flow Frame" will need to be free of leaves and or airborne items that can plug the sensor frame. Cottonwood and other such particulates will have very little effect on the operation of the flow frame.
The "Sensor Module" can be cleaned by removing the four mounting screws that attach the module to the flow frame and flushing the sampling port with either a small amount of air or water or electrical contact cleaner. Caution must be used to not damage the internal sensing probe with a large blast of air or water.

NJK Precision Product Warranty:

The NJK-02 Air flow sensor "Flow Frame", sensing module and probe, and Display/Operator Interface all come with a 3 year factory warranty. The serial number is matched to the job to which the sensor was delivered.