

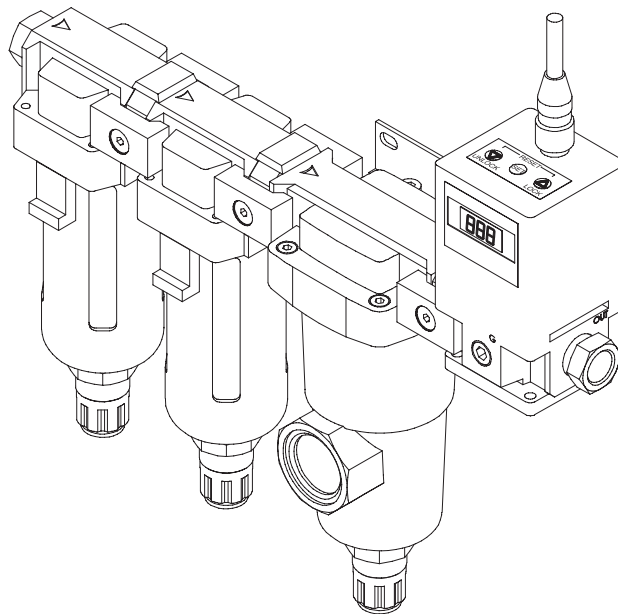
# Pattern Air Control Kit (PACK)

**WARNING:** Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

## Introduction

The pattern air control kit (PACK) assembly automatically increases or decreases the pattern air pressure for a spray application based on the speed of the production line by converting an electronic line-speed reference signal from a parent machine to a corresponding output air pressure. Two PACKs are available: one for a 0–10 VDC signal and one for a 4–20 mA signal. The kits may be used with either pressure-fed or metering applicators.

The PACK assembly is composed of three filters and a micro-processor-controlled electro-pneumatic regulator. The filters remove oil, water, and particulates from the pattern air before it is supplied to the applicator. Figure 2 shows the key parts of the PACK assembly.



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Figure 1 PACK assembly

## Key Parts

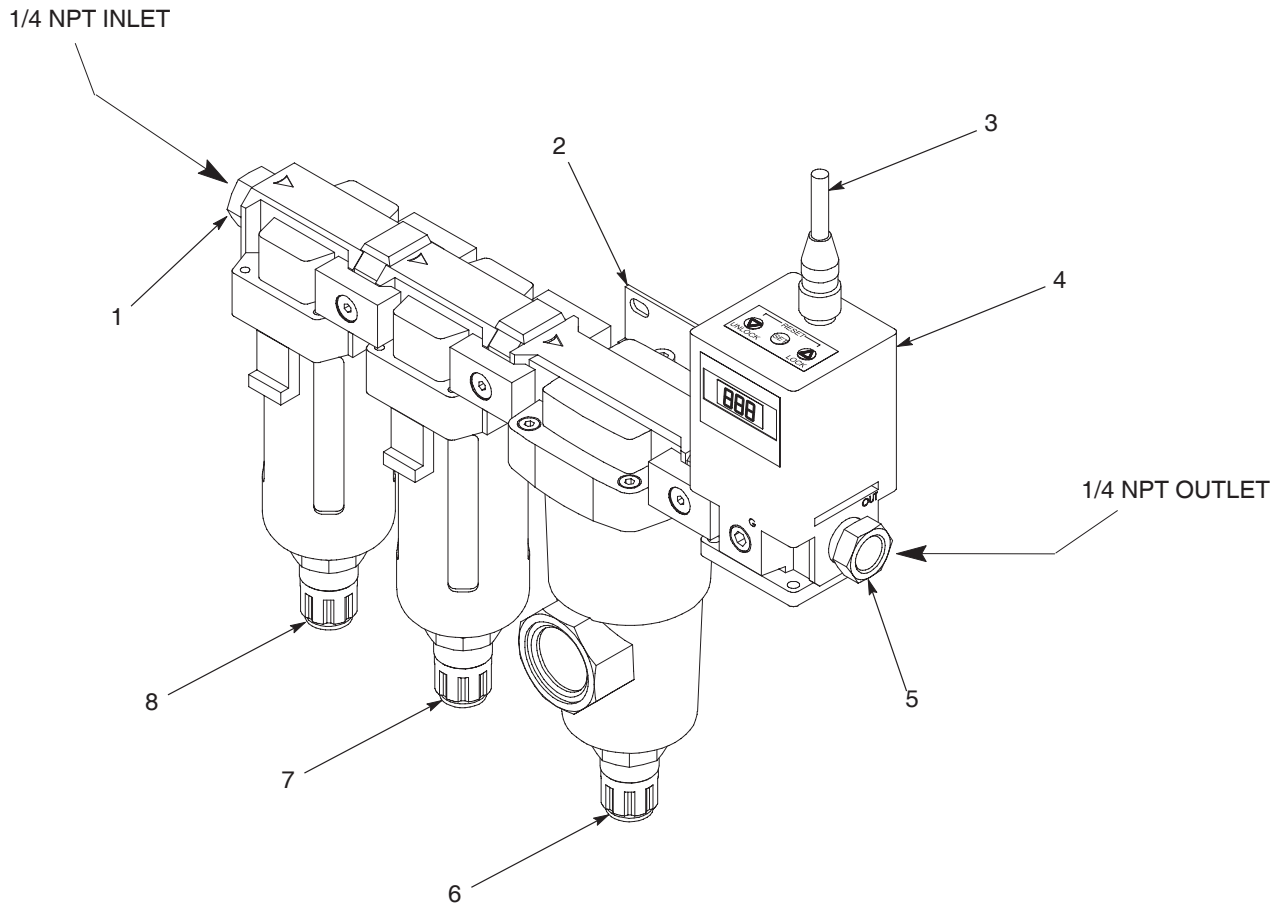


Figure 2 Key parts of the PACK assembly

- |                           |                         |                       |
|---------------------------|-------------------------|-----------------------|
| 1. Air inlet (1/4 NPT)    | 4. Regulator            | 7. Oil filter         |
| 2. Mounting bracket       | 5. Air outlet (1/4 NPT) | 8. Particulate filter |
| 3. Reference signal cable | 6. Water filter         |                       |

## Installation

1. See Figure 3. Mount the PACK assembly using the mounting bracket. For the dimensions of the assembly, refer to *Dimensions* under *Technical Data* at the end of this instruction sheet.

**WARNING:** Improper wiring will damage the internal circuitry. Allow only qualified personnel to connect wiring.

2. Connect the reference signal cable to the regulator and to the parent machine. Refer to *Wiring Diagrams* under *Technical Data* at the end of this instruction sheet.
3. Connect the pattern air supply line to the air inlet and outlet on the assembly. See Figure 2 for the location of the outlets.
4. Continue to the next procedure to program the regulator.

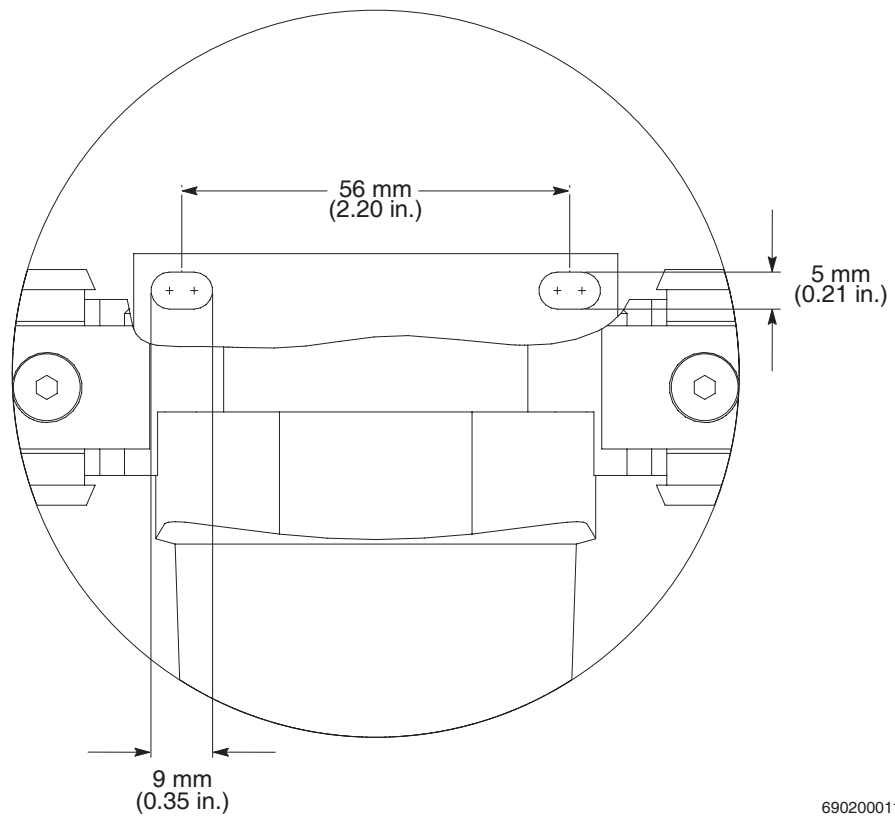


Figure 3 Mounting bracket dimensions

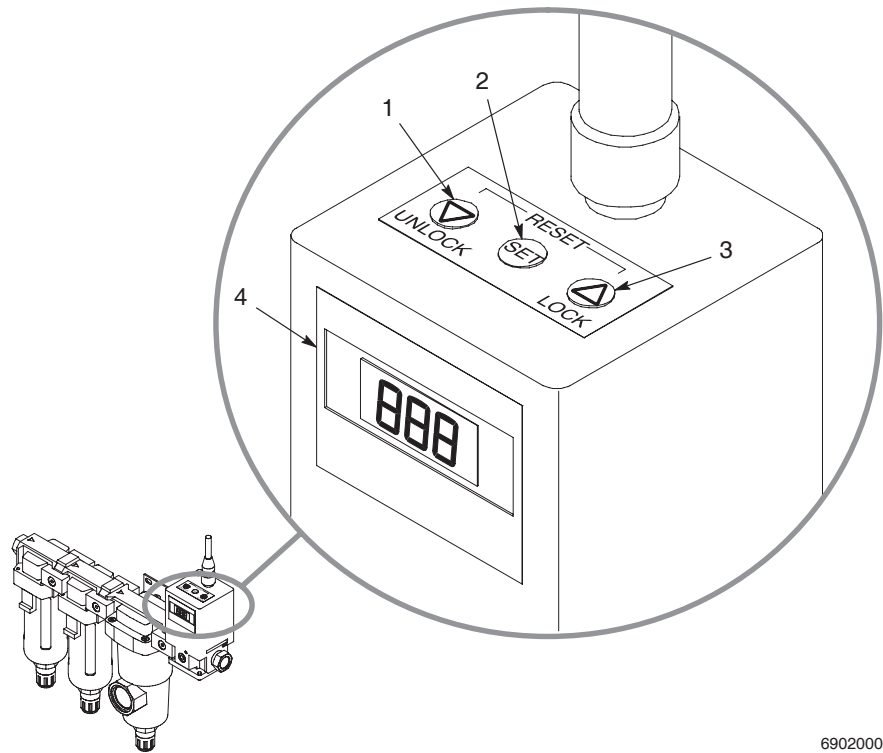
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## Regulator Setup

This section includes the following procedures:

- *Unlocking/Locking the Keys*
- *Programming Minimum and Maximum Pressures*

Use these procedures to program the regulator for your application. Figure 4 shows the location of the regulator keys and display.



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Figure 4 Location of the regulator keys and display

- |                            |                        |
|----------------------------|------------------------|
| 1. UNLOCK (down arrow) key | 3. LOCK (up arrow key) |
| 2. SET key                 | 4. Display             |

## Unlocking/Locking the Keys

To prevent unauthorized changes, the regulator has a key lock feature that allows you to disable the programming keys. By default, the keys are locked when the power is turned on. The keys must be unlocked to change any settings. The display will show *Loc* if a key is pressed while the keys are locked.

See Figure 4 for the location of the keys on the regulator.



Locked



Unlocked

### To Unlock

1. Press and hold the UNLOCK (down arrow) key for 2 seconds or longer. The display will blink *Loc*.
2. Press the SET key to **unlock** the keys, or press the LOCK (up arrow) key to cancel.

### To Lock

1. Press and hold the LOCK (up arrow) key for 2 seconds or longer. The display will blink *UnL*.
2. Press the SET key to **lock** the keys, or press the UNLOCK (down arrow) key to cancel.

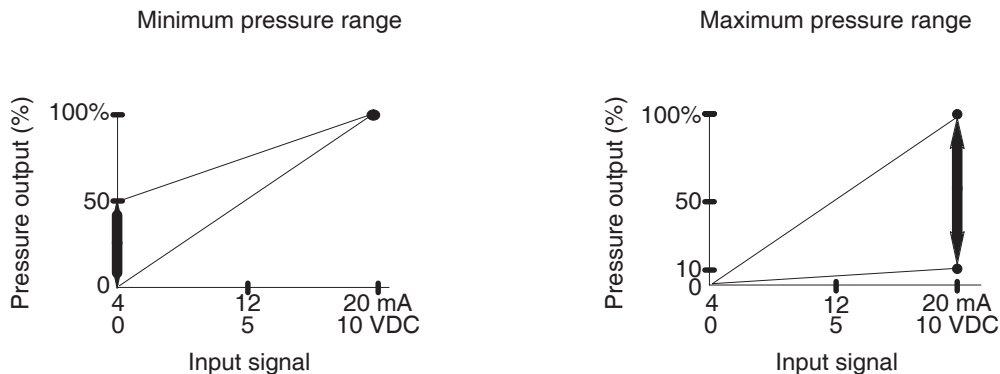
## Programming Minimum and Maximum Pressures

For the PACK assembly to automatically increase or decrease the pattern air pressure based on the line speed, you must program the regulator to set the minimum and maximum air pressure values that will work for your application.

Set the minimum pressure (zero point) at 0% of the input (line-speed reference) signal and set the maximum pressure (span) at 100% of the input signal. The minimum pressure can be set as low as 0% and as high as 50% of the full span. The maximum pressure can be set as low as 10% and as high as 100% of the full span.

For example, the regulator could be set to output 2.4 bar (35 psi) at 0% input signal and 3.0 bar (43 psi) at 100% input signal. There must be at least 0.6 bar (8 psi) separation. Similarly, the regulator could be set to output 0 bar (0 psi) at 0% input signal and 0.6 bar (8 psi) at 100% input signal.

Figure 5 shows how the pressure changes based on the input signal.



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Figure 5 Pressure changes based on line-speed reference signal

## Programming Minimum and Maximum Pressures (contd)

**CAUTION:** Risk of equipment damage or personal injury. When you change the minimum and maximum pressure values, the new values take effect as soon as the SET key is pressed.

See Figure 4 for the location of the keys on the regulator.

### ***To Unlock the Keys***

1. Press and hold the UNLOCK (down arrow) key for 2 seconds or longer. The display will blink *Loc*.
2. Press the SET key to unlock the keys.
3. Press the SET key to continue to the next step.

### ***To Set the Minimum Pressure (F\_1)***

1. Press the up and down arrow keys until the display shows the desired minimum pressure.
2. Press and release the SET key to continue to the next step.

### ***To Set the Maximum Pressure (F\_2)***

1. Press the up and down arrow keys until the display shows the desired maximum pressure.
2. Press and release the SET key to continue to the next step.

## Maintenance

Replace all filter elements as follows:

- Whenever there is a drop in pressure or air flow
- Every 3–6 months, as appropriate for your operation

## Troubleshooting

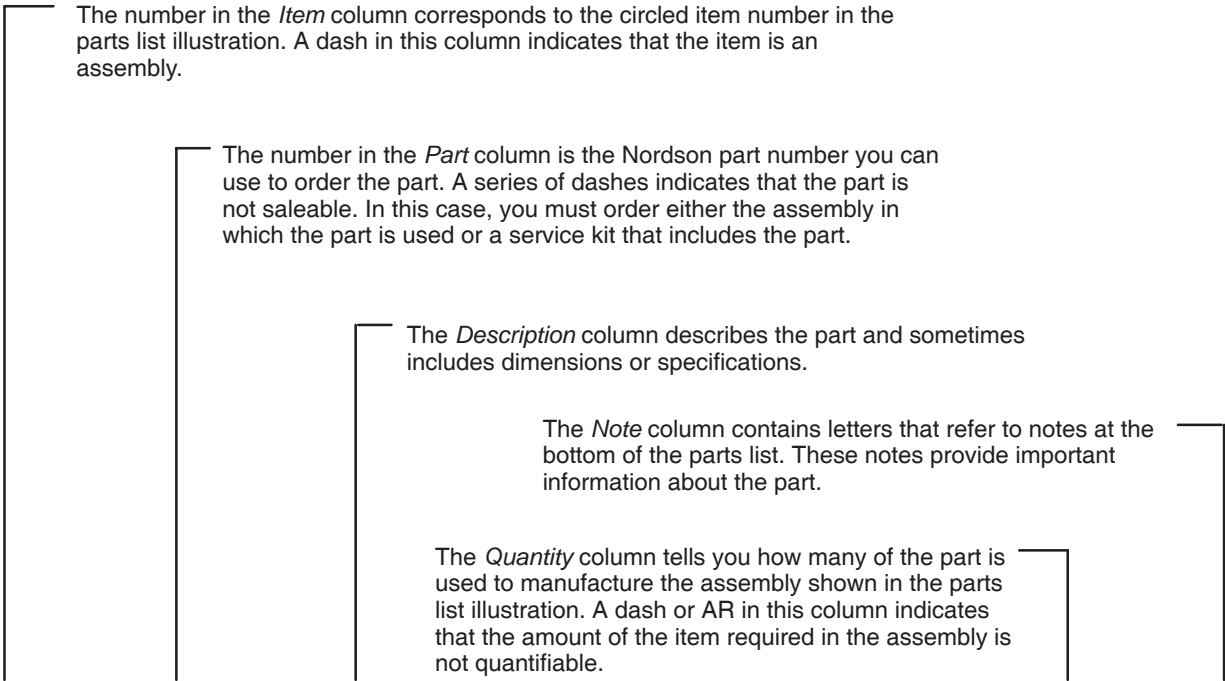
Use the following table to troubleshoot the PACK assembly based on the error code shown on the regulator display.

See Figure 4 for the location of the display on the regulator.

Error Code	Problem	Corrective Action
Er1	Line-speed reference signal exceeds the signal range	Check your programmed settings for minimum and maximum pressure. Refer to <i>Programming Minimum and Maximum Pressures</i> .
Er2	EPROM read/write error	Reset the regulator (see Note).
Er3	Memory read/write error	Reset the regulator (see Note).
Er3	Internal solenoid valve malfunction	Replace the regulator.
Er0	Other	Contact your Nordson representative.
<p><b>NOTE:</b> To reset the regulator, simultaneously press and hold the up and down arrow keys for 3 seconds or longer.</p>		

# Parts

To order parts, call the Nordson Customer Service Center or your local Nordson representative. Use these five-column parts lists, and the accompanying illustrations, to describe and locate parts correctly. The following chart provides guidance for reading the parts lists.



Item	Part	Description	Quantity	Note
—	0000000	Assembly A	—	
1	000000	• Part of assembly A	2	A
2	-----	•• Part of item 1	1	
3	0000000	••• Part of item 2	AR	
NS	000000	•••• Part of item 3	2	
NOTE A: Important information about item 1				
AR: As Required				
NS: Not Shown				

## Pattern Air Control Kit Parts

See Figure 6.

Item	Part	Description	Quantity	Note
—	1036518	Kit, pattern air control, 4–20 mA, 0–3.5 bar	—	
1	1044432	• Regulator, air control, 4–20 mA, 0–3.5 bar (present in 1036518 kit)	1	
—	1056192	Kit, pattern air control, 4–20 mA, 0–1 bar	—	
1	1056194	• Regulator, air control, I/P, 4–20 mA, 0–1 bar (present in 1056192 kit)	1	
—	1036520	Kit, pattern air control, 0–10 VDC, 0–3.5 bar	—	
1	1059047	• Regulator, air control, 0–10 VDC, 0–3.5 bar (present in 1036520 kit)	1	
—	1056193	Kit, pattern air control, 0–10 VDC, 0–1 bar	—	
1	1056195	• Regulator, air control, 0–10 VDC, 0–1 bar (present in 1056193 kit)	1	
2	1044033	• Filter element, particulate	1	
3	1044035	• Filter element, coalescing (oil)	1	
4	1044036	• Filter element, water separator	1	
NS	1044037	• O-ring, filter bowl	1	

NS: Not Shown

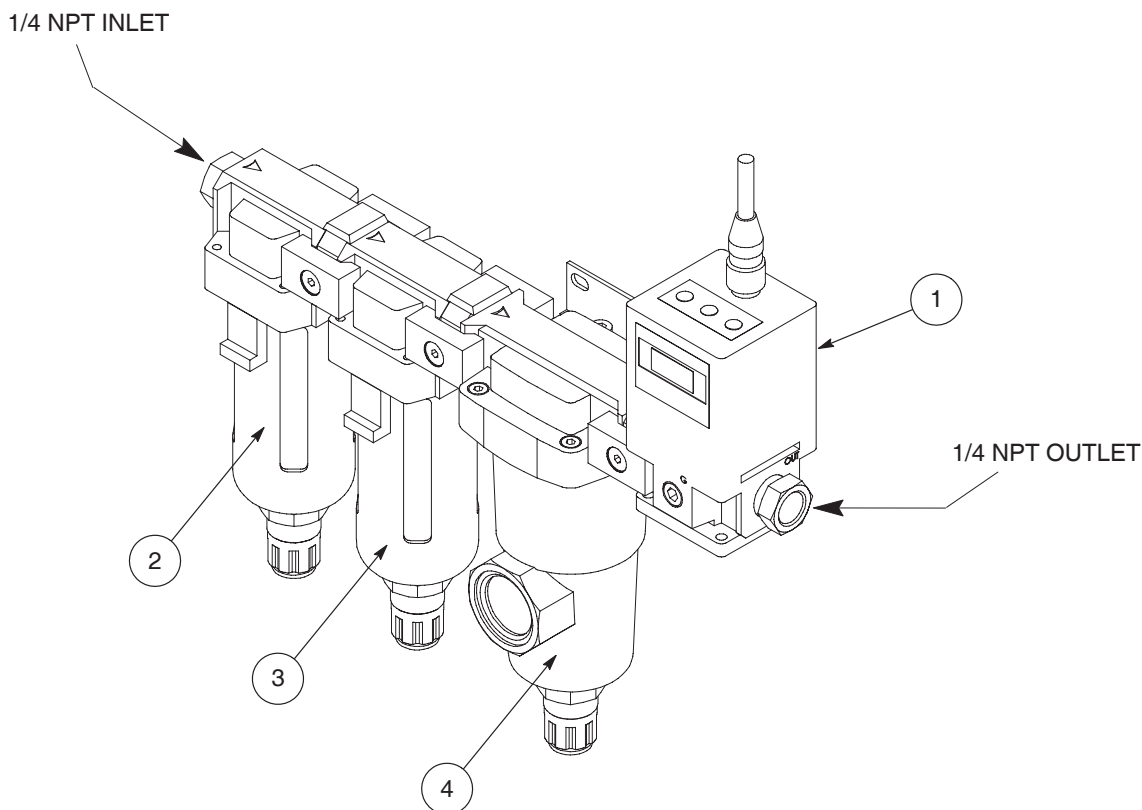


Figure 6 PACK assembly parts

## Cable Part Numbers

See Figure 7.

Item	Part	Description	Quantity	Note
1	1059045	Cable, regulator, air control, 10 m	AR	
1	1059041	Cable, regulator, air control, 20 m	AR	
1	1058993	Cable, regulator, air control, 30 m	AR	
2	1059046	Cable, regulator, air control, 30 m, bare end	AR	
3	1053125	Connector, 4-conductor, air control	AR	A

NOTE A: For best results use a four-conductor, 24 AWG, shielded conductor cable (Belden cable no. 9534 or equivalent) with this connector.  
AR: As Required

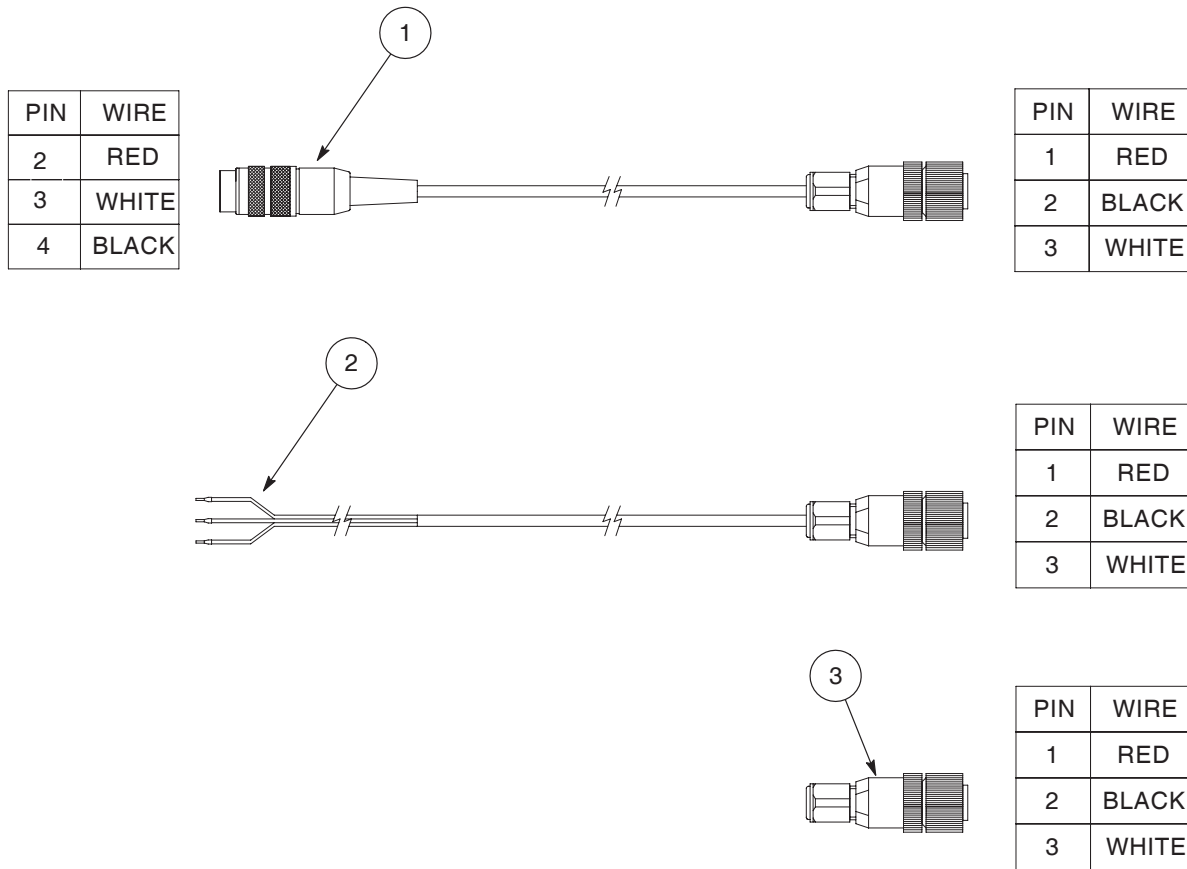


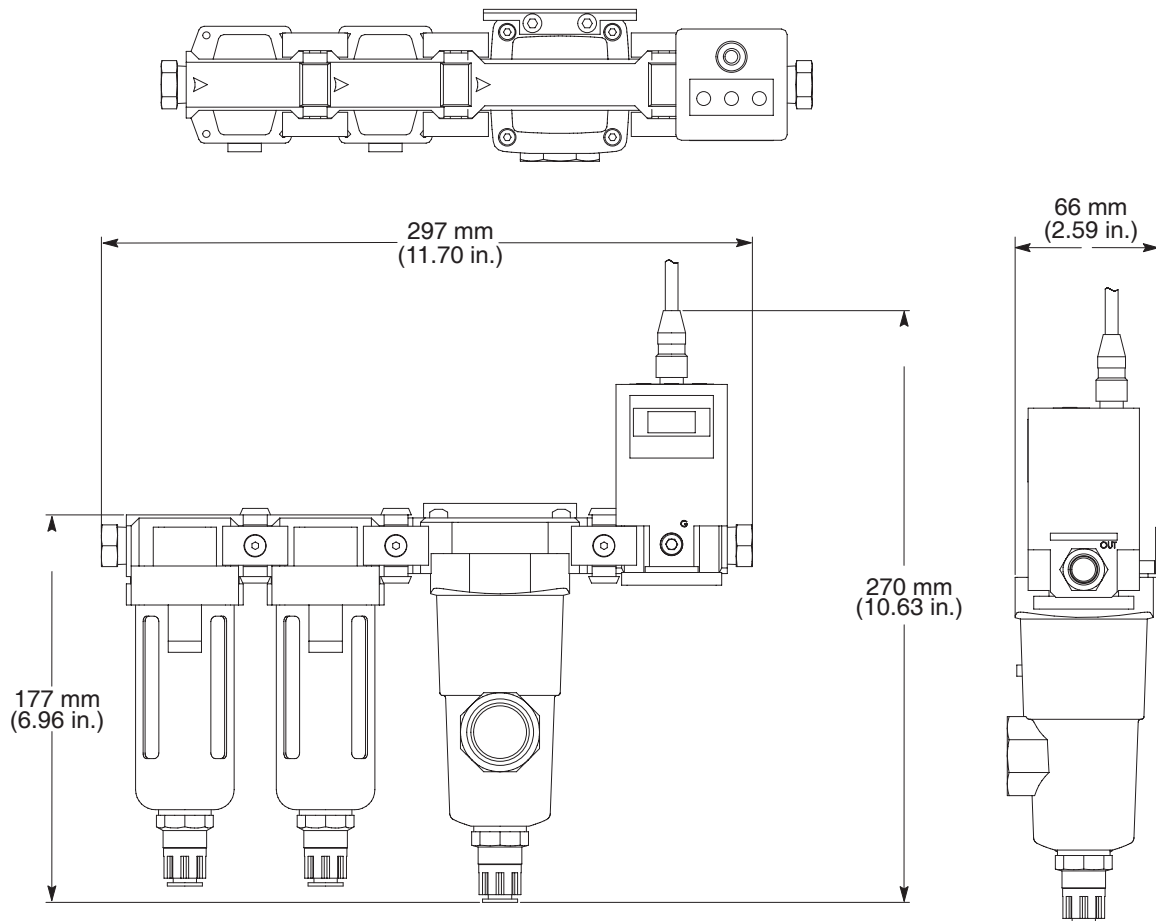
Figure 7 Cables for PACK kits

# Technical Data

## Specifications

Item	Specification
Supply Pressure	[set pressure + 1 bar (14.5 psi)] to 10 bar (145 psi)
Output Pressure	0.05–1 bar (0.7–14.7 psi), or 0.05 –3.5 bar (0.7–51.5 psi)
Maximum Flow	52.5 scfm
Supply Voltage	24 VDC $\pm$ 10%
Input Signal	0–10 VDC or 4–20 mA DC
Linearity	$\pm$ 1% full span
Hysteresis	0.5% full span
Repeatability	$\pm$ 0.5% full span

## Dimensions

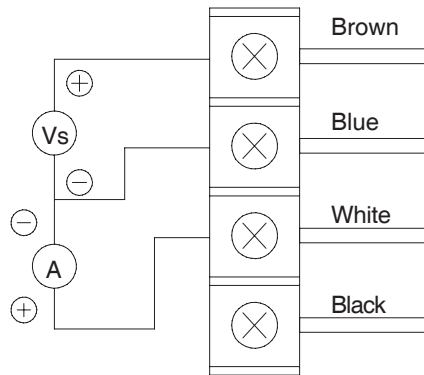


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Figure 8 PACK assembly dimensions

## Wiring Diagrams

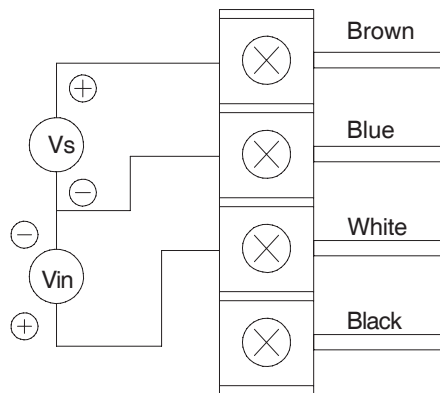
### 4–20 mA PACK Assembly



Supply voltage = 24 VDC

Figure 9 Wiring diagram for 4–20 mA signal

### 0–10 VDC PACK Assembly

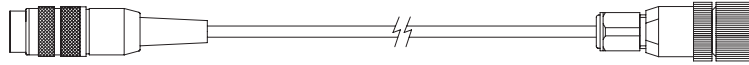


Supply voltage = 24 VDC

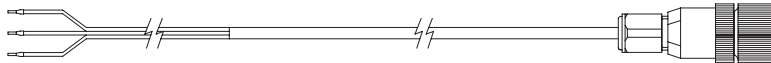
Figure 10 Wiring diagram for 0–10 VDC signal

### Reference Signal Cables

PIN	WIRE
2	RED
3	WHITE
4	BLACK



PIN	WIRE
1	RED
2	BLACK
3	WHITE



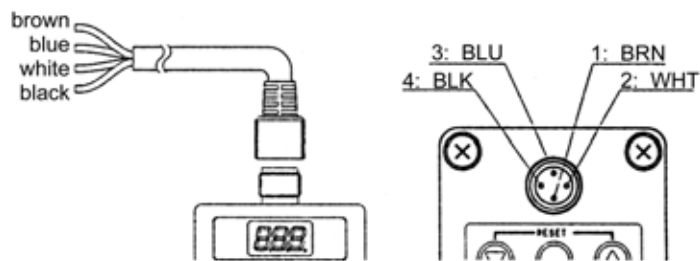
PIN	WIRE
1	RED
2	BLACK
3	WHITE

Figure 11 Reference signal cable wiring diagrams

### Reference Signal Cable Pin Positions

Table 1 Reference Signal Cable Pin Positions

Pin	Wire Color	Description
1	Brown	Supply voltage
2	White	Input signal
3	Blue	Ground
4	Black	Monitor output



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Figure 12 Reference signal cable pin positions

Issued 1/08

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