

# EDI-V5 CONTROL INSTALLATION MANUAL

## WIRING and SETUP INSTRUCTIONS



### For EDI-V5 Controls Using The Inverter Drive

- **Wiring The Control**
- **Configuring The Control**
- **Customizing The Display**
- **Access Code Description**
- **How To Use The Option Codes**
- **Screen Alerts And Alarms**
- **EDI-V5 Accessories**

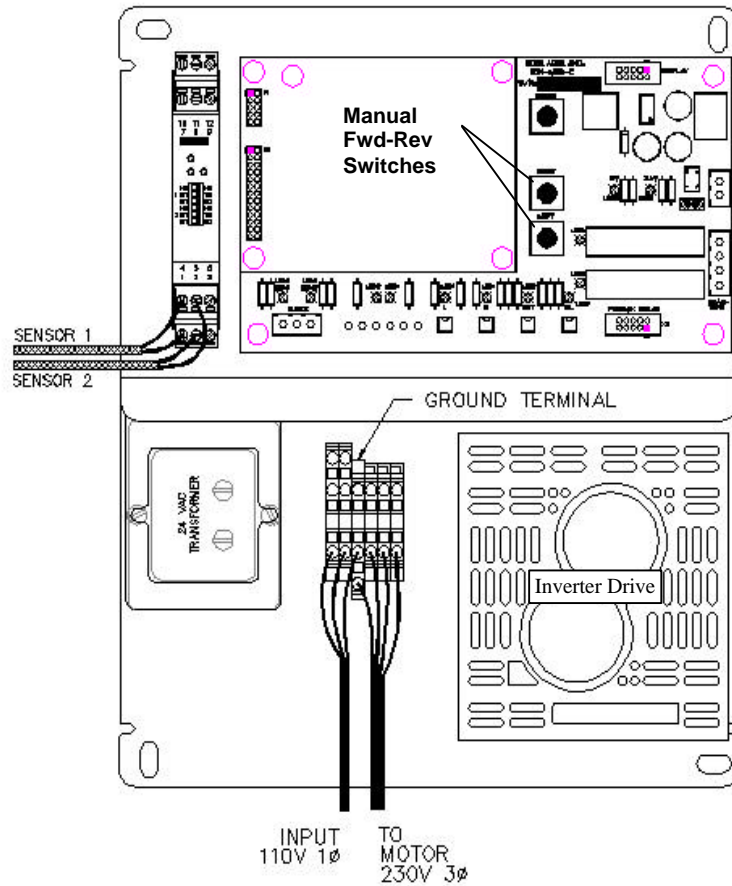
For Controls with firmware revision EDI-V5.100.5 and earlier.

**WARNING**

Failure to comply with the wiring instructions in this document could lead to improper operation, equipment damage or serious injury or death.

The EDI control should only be installed and wired by experienced electricians. Make sure the wiring meets all applicable regulations and codes including local and national standards and codes.

High voltage can kill or seriously injure personnel. All maintenance personnel must be trained and follow the proper Lockout/Tagout procedures established by the facility management.



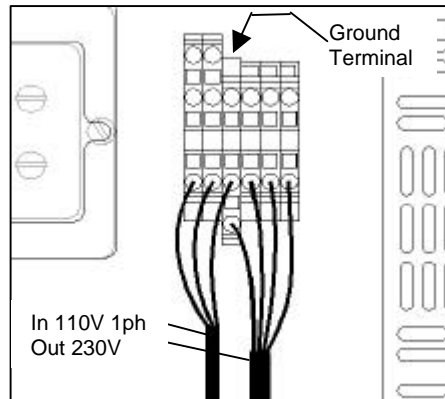
**Figure 1** General wiring layout

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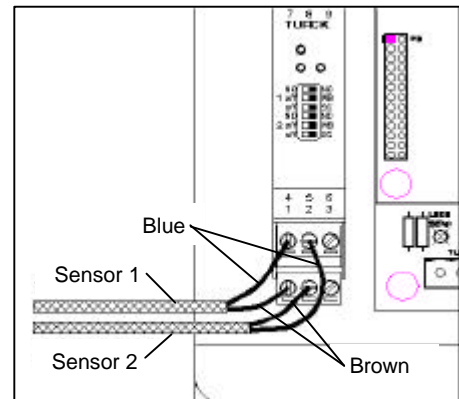
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## WIRING THE CONTROL



**Figure 2** High voltage layout.



**Figure 3** Sensor connections.

This EDI-V5 control is furnished with an inverter drive, therefore a mechanical reversing starter is no longer used. Since the inverter can stop the motor in a pre-determined time, regardless of load, it also eliminates the need for a brake motor. The installation is further simplified by using a 110 volt supply to power both the control and the inverter. The inverter converts this single phase supply to the 220 Volt 3 Phase power needed by the motor.

**Caution:** The inverter drive has been factory adjusted to function properly with any EDI distributor. Changes to these adjustments will alter the positioning of the distributor spout.

Figure 1 shows the field wiring required for the 110 volt supply, sensor and motor connections. Wire these using the following 3-step procedure.

### Panel Power 110 Volt Wiring

#### Step 1 – Supply Voltage

The 110 Volt supply may come from a fused disconnect or a panel mounted circuit breaker and the connections are made to the 3 terminal block. This supply should be rated for 10 Amps and is connected at the 'cage clamp' terminals on the control backplane. .

Refer to Figure 2. The hot and neutral wires are connected to either of the gray colored terminals. Connect the ground wire to the green/yellow terminal.

### Motor Power 230 Volt Wiring

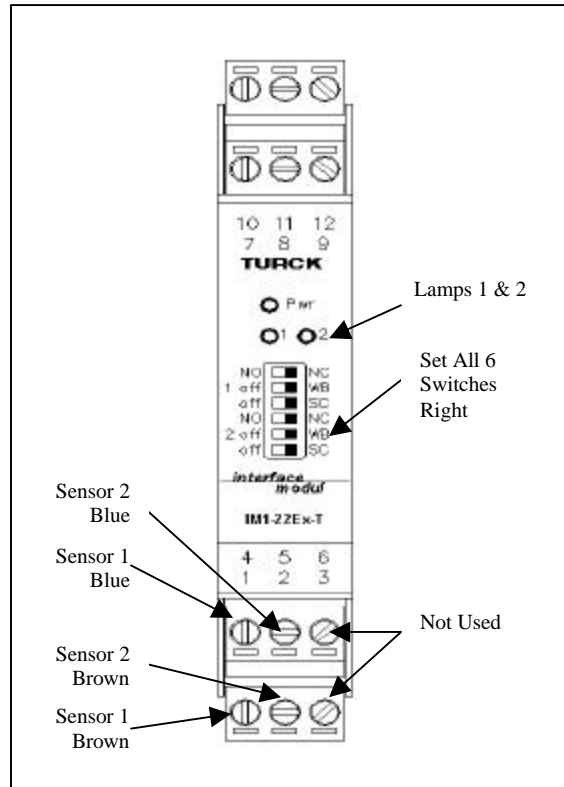
#### Step2 – Motor Connections

**The 3 phase distributor motor must be wired for 230 volts.**

The motor wires, T1, T2 and T3, are connected to the 3 terminals indicated in figure 2. The ground wire is attached to the green/yellow terminal. Motor rotation is not important.

**Sensor  
Intrinsically Safe  
Wiring**

The sensors are part of an intrinsically safe circuit created by the barrier relay. There are 2, two wire sensors, thus 4 wires required for each drive. Almost any wire, 26 ga. or heavier, up to 1000' in length can be used. **Do not run these wires in a conduit or cable tray with other power circuits.**



**Figure 4. Turk IM1-22Ex-T Barrier Relay**

**Step 3 – Wiring the Sensors**

Refer to Figure 1 and 3 and route the 4 sensor wires into the upper left section of the control box as shown.

Connect the 4 sensor wires to the screws labeled 1, 2, 4 and 5 on the barrier relay as shown in Figures 3 and 4.

**Note:** Do not run sensor wires in a conduit or cable tray with power wiring.

**Note:** Sensors are polarity sensitive but will not be damaged by a temporary reversal. You can't smoke anything by hooking it up backwards...it just won't work!

**Check the Wiring**

Note: The 'IM1' barrier relay has 2 lamps marked 1 & 2 and are shown in Figure 4. If either of these lamps are red, it is an alarm indicating either an open circuit or short circuit in the wiring of the corresponding sensor.

Make sure **all** of the small switches on the relay are in the rightmost position as shown in Figure 4.

Apply 110v control power to the panel. At least the green lamp on the relay marked **PWR** should light.

There are 2 lamps side-by-side on the relay designated **1** & **2**. These will be referred to as the left & right lamps for the rest of the procedure. These lamps indicate the switched status of each of the 2 sensors and will turn on and off as each code cluster on the codewheel passes by.

See the diagram on the previous page for the location of the switches that manually operate the motor. Manually press the Fwd or Rev buttons to begin spout motion. If you are installing a Flatback or Swingset distributor, the spout may be against one end or the other so there may be no motion unless the other side of the starter is engaged.

The **RIGHT** lamp (#2) on the relay should blink **off** rapidly in sets of 5 blinks per burst.

The **LEFT** lamp (#1) on the relay should blink **off** intermittently during each burst.

If either one or both sensors do not blink or the blink pattern is the opposite hand, the wiring must be corrected before proceeding further with the installation.

This completes the wiring of the EDI Control.

**The control must now configure itself to operate the distributor it is wired to. This procedure is covered in the next section of the manual.**

## CONFIGURING THE CONTROL

The EDI-V5 control uses an automated setup routine to recognize the distributor and configure the control. This is done once, only when installing the control.

The control must be wired and the sensors connected properly as described earlier in this manual. This setup will fail if those instructions are not followed first.

Note: Some of the information on the sample screens shown may be different than your screen depending on the type of the distributor being installed.

### Starting the Setup Routine

Upon Power-up or Reset, the control will display the following screen:

```
(*)  SCHLAGEL, INC.  
     EDI-V5.001  
     PRESS ANY KEY TO  
     INSTALL DISTRIBUTOR
```

To begin the automated setup from this screen, press 'Enter'

The screen will now display the following information as the automated setup progresses. This process may take a few minutes depending on the style and size of the distributor. The control will determine the type of distributor, code pattern, number of ducts and will correct the motor direction if necessary.

```
ACQUIRING INFORMATION  
SLOTS=5 TYPE=1 DIR=0  
DUCTS=8 POSITION=03  
=====
```

Without user intervention the control begins the Autotune sequence. This attempts to find, and self adjust, the spout to the best duct centering adjustment.

```
AUTOTUNE IN PROGRESS  
  
DUCT 2    TRYING 149  
=====
```

Upon completion of the Autotune process an information screen will appear with the information it has acquired. Be sure to confirm that these details are correct.

```
FLATBACK/SWINGSET
V5.001      10 DUCTS
Dir=0  Slr=5  W/2=27
```

Press 'Enter' after confirming this data.

```
EVENT TOTALS
Access=1
Sen=0      Pos=0
Alm=0
```

Press 'Enter' to finish the setup and begin normal operation.

```
(* )  SCHLAGEL, INC.

<002> POSITION    2
-*          ->_
```

This is the OPERATING Screen. All operator control begins with this screen.

**IMPORTANT**

**It is imperative that the spout centering adjustment just described be physically verified at the distributor. The Autotune process cannot guarantee that proper centering was accomplished.**

**If necessary, centering can be improved using the directions contained later in this manual. (See Access Codes 5992 and 5997)**

Customization of captions, spout access numbers, destination names and many other options may now be made. Information on how to do this can be found in the next section of this manual.





## CUSTOMIZING THE DISPLAY FORMAT AND SPEED-DIAL KEYS



During the initial installation, default information is set so that the distributor can be operated without further changes. However, most operators would like familiar names and access codes assigned to each position of the distributor. The EDI-V5 control allows customization of Line1 and Line 3 using the control keypad to make the changes.

Line 1 →	( *) SCHLAGEL, INC.	( *) RECEIVING LEG
Line 2 →		
Line 3 →	<001> POSITION 1	<031> BIN 31
Line 4 →	- * ->	- * ->

In the examples above, the default OPERATING screen is shown on the left and a fully modified display on the right. These changes are made using special 4-digit access codes. The following changes were made to the default OPERATING screen:

**Line 1** The caption on this line has been changed from “SCHLAGEL, INC.” to “RECEIVING LEG”.

**Line 2** This line is used for system alerts and information and cannot be modified.

**Line 3** the access code <001> has been changed to <031>. This allows the operator to move the distributor spout to this position by entering 31, a more logical choice for accessing this position. Also, the name for the destination has been changed to the more logical name.

Each distributor position can be individually programmed and displayed on this line.

**Line 4** This line is used for system status and keypad input and cannot be modified.

**Modify Line 1  
(Access code 8004)**

Changing the Line 1 caption is a good example of using the special access codes and character programming so we will explain all of the details here.

At the OPERATING screen press 8004 *Enter*. That is the access code for changing the caption. The blinking cursor shows where each character will be entered.

Pressing any numeric key will enter that number and move the cursor right to the next position.

The *Shift* key is used to enter an alpha character. Consider the number 7 key. On the top left of the key is the character **A** and at the top right is the character **B**. To enter an **A** press the *Shift* key once and a ‘-’ will appear under the cursor. Now press the 7 key and the **A** character will be entered. If the *Shift* had been pressed twice, a “=” would have been shown and after pressing the 7 key, a **B** would have been entered. Pressing the *Shift* key multiple times changes the cursor background between “ “, “-“, “=”, and back to “ “.

Up to 16 characters may be entered. A space is entered with a single *Shift* and *Space*. A backspace can be executed by a double *Shift* and *Space*. When finished, press the *Enter* key. The display will return to the OPERATING screen showing the new caption. Changing the caption is a good way to build your editing skills without affecting the operation of the distributor.

**Modify Line 3  
(Access code 5993)**

**Note:** To modify duct information, the spout must first be set to the position you intend to modify.

At the OPERATING screen press 5993 *Enter*. This displays the first prompt screen (see below) requesting the access number. This can be any number, 1 thru 255, and will be the number used to move the spout to this duct from the OPERATING screen. After entering the access number press *Enter*.

```

EDIT DUCT NUMBER 01

ACCESS NUMBER <001>
->

```

The next prompt screen asks for the *F-KEY* number. There are 6 ‘speed-dial’ keys on the keypad that can be used for frequently accessed positions. Here is where you can specify the assignment of a function key for this position by entering a number, 1 thru 6. Enter a 0 (zero) if no function key will be assigned to this position. When finished, press *Enter*.

```

EDIT DUCT NUMBER 01

ENTER F-KEY NBR <1>
->

```

The last screen allows the assignment of a logical name for this duct. Use the same procedure as explained above for editing the caption. Up to 14 characters may be entered. When finished, press the *Enter* key. The display will return to the OPERATING screen showing the new information.

```
EDIT DUCT NUMBER 01  
  
NAME: POSITION    1  
->
```

**Hint:** The position of the distributor can always be moved to the desired position, regardless of which access number was programmed, by pressing the *Minus* key and then the 'absolute' position required. The 'absolute' position is the physical number of the duct, 1 through the total number of ducts on the distributor.

## ACCESS CODE DESCRIPTION

Two access codes have been explained previously, 8004 and 5993. Using these codes allowed changes to the configuration and operation of the EDI-v5 control. There are other access codes used to change the operation of the distributor. **Most of these must be used with caution because they can adversely affect reliable operation of the distributor.**

Below is a list of access codes and a brief description of each. These are available to the user that is familiar with the use of these codes. Please contact our technical support group if you are unsure of any modification you wish to make.

*Note: The following codes are for controls with firmware revision EDI-V5.100.5 or earlier. It is possible that some may be eliminated or changed in future revisions.*

Access Code	Name	Description
5991	New	Configure the EDI Control to a new distributor.
5992	Global Spout Adjustment	Manually input the stop position adjustment numbers for any duct. This number will then be used for all spout positions.
5993	Define Duct Data	Assign Access numbers, Function numbers and Names for any duct.
5994	Erase Memory	Erase all duct names, numbers and definitions and replace them with default information.
5995	Display EDI Data	Displays 3 screens of critical setup and operation information.
5996	Set Options	Used to set various modes of operation and communication. See the 'Options' table for details.
5997	Individual Spout Adjustment	Manually input the stop position adjustment numbers for the current spout position. This number will then be used for this spout to duct position only.
8002	Auto Mode	Starts operation of the distributor in a random mode. Distributor then runs continuously until any key is pressed.
8003	Reset Counters	Zeros all Access, Alarm and Position Error counters.
8004	Edit Caption	Change the Line 1 distributor name.
8005	Edit Net Addr	Allows a change to a network address letter.
9001	Auto Tune Full	Auto tune every spout to duct position in the distributor
9002	Auto Tune Limited	Auto tune only one spout position in the distributor and use this number for all positions.

## HOW TO USE OPTION CODES

Some accessories and operating functions of the EDI-V5 control require software switches to be turned on or off. These switches are called Options and are made accessible by the special access code 5996. To change an option, press 5996 *Enter* at the OPERATING screen. The following example screen will appear.

```
MODIFY OPTIONS
1110000000010000
OPTION NBR TO CHANGE
->
```

The Ones and Zeros on Line 2 signify which of 16 option switches are on and which are off. Starting from the left, Options 1-3 are on, 4-11 are off, 12 is on and 13-16 are off. Refer to the EDI-V5 OPTIONS chart on the next page to determine the action for each switch.

As an example, option 16 turns the motor heater on or off. In the screen above it is shown as being off. To turn it on, press 16 *Enter*. The following screen then appears showing the present status of this option and requests a 0 or 1 input to change it, or *Enter* to leave it unchanged.

```
MODIFY OPTIONS
1110000000010000
HEATER ON=0
0=Off, 1=On ->
```

Press 1 (for on) and the first screen will re-appear, showing the change and awaiting the selection of another option. Pressing *Enter* without entering a number will return the control to the OPERATING screen.

Many of the options shown in the chart are used for enabling auxiliary devices to the EDI-V5 control. **Most of these must be used with caution because they can adversely affect reliable operation of the distributor.** Please contact our technical support group if you are unsure of how to use these options.

See the chart on the following page for a complete list of options.

*Note: The following codes are for controls with firmware revision EDI-V5.100.5 or earlier. It is possible that some may be eliminated or changed in future revisions.*

EDI-V5 OPTIONS			
Option	Name	Range	Default
1	Boot Prompt	0=Base, 1=Alternate	1
2	In Position check	0=Off, 1=On	1
3	Position Alarm	0=Off, 1=On (a)	1
4	N/A		0
5	I/O Discrete (c)	0=Off, 1=On (b)	0
6	I/O Binary (c)	0=Off, 1=On (b)	0
7	I/O Network (d)	0=Off, 1=On (b)	0
8	N/A		0
9	Auto Mode Speed	0=1 Sec, 1=4 Sec	0
10	N/A	Options	0
11	Simulator Mode	0=Off, 1=On	0
12	10 Second Timeout	0=Off (5 Sec.), 1= On	1
13	N/A		0
14	N/A		0
15	N/A		0
16	Motor Heater	0=Off, 1=On	0

Notes

- (a) Special relay option hardware must be added.
- (b) Only one of Options 5, 6 or 7 can be on at any time. Others will be automatically turned off.
- (c) Must be off when using the UIO interface.
- (d) Must be off when using the UIO interface in Digital mode.  
Must be on when using the UIO interface in Network mode.

## SCREEN ALERTS AND ALARMS

The EDI-V5 control continuously monitors the distributor for abnormal behavior and will notify the operator when a detectable error occurs. The notification is displayed on Line 2 of the display. Various interfaces are available to activate audible or visual alarms, or to notify PLCs or other computer equipment of the error. Please contact us if you are interested in any of these accessories.

### **TIMEOUT**

**Reason:** The control has attempted to move the spout but has not received any feedback that it is moving. If it does not receive feedback for 10 seconds, the control will turn off the motor and display this error message.

**Cause:** The spout is jammed, the clutch is slipping or the sensor circuit is not functioning.

**Remedy:** This is a fatal error. Press *Enter* and the control will return to the RESET screen. This is almost always a mechanical obstruction at the distributor.

### **POSITIONING ERROR**

**Reason:** When the control was positioning the spout over a duct, it was not able to set it to the exact predetermined position.

**Cause:** The spout adjustment number may be off or there is some mechanical difficulty preventing proper final positioning.

**Remedy:** This is not a fatal error but the alarm will stay in the screen until a successful position has been achieved. To clear the alarm, re-enter the access number so the spout can reset itself to the correct position.

### **SPOUT MOVED**

**Reason:** This error message indicates that the spout has been moved out of position after a successful stop. EDI-V5 controls continuously monitor spout position and raise this alarm if the spout moves out of position.

**Cause:** Something has electrically or mechanically disturbed the spout position over the duct.

**Remedy:** This is a fatal error. Press *Enter* and the control will return to the RESET screen. Check for a loose clutch or loose drive chains in the drive assembly.

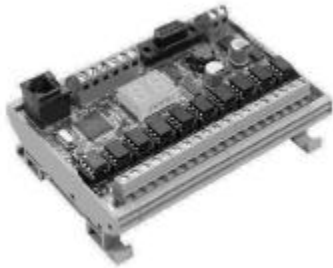
### **SENSOR ERROR**

**Reason:** While the control is moving the spout it continuously anticipates the next code it will encounter. If the next code does not match the anticipated code, the control will attempt to re-read it up to 3 times. If it fails on the 3rd try, the control will issue this error.

**Cause:** An improperly positioned sensor block in the distributor usually causes this error.

**Remedy:** This is a fatal error. Press *Enter* and the control will return to the RESET screen. Position and shim the sensor block properly. Clean the surface of the codewheel.

## EDI-V5 Accessories



### UIO Interface Module

The UIO is a multi-function interface to the EDI control. It can act as a digital I/O device or a network scanner to combine multiple EDI controls and communicate with a PLC via protocols such as Ethernet/IP, Modbus-RTU, Modbus/TCP and DF1. It can also directly operate motor starters, push buttons, lamps and alarms. This DIN rail mounted module can be placed up to 4000' from the nearest EDI control, next to a PLC or MCC.



### UCOM Adaptor Board

This adaptor board provides the connection from each EDI control to the UIO interface module. One UCOM is used on each EDI control that will connect to a UIO interface module..



### Remote Keypad/Display Kit

Remote keypad/displays allow operation of an EDI control from multiple locations. The display can be furnished loose or installed in a 8 x 10 x 5 NEMA 12 cabinet.

### Alarm Relay

Several relay options are available to indicate when a error occurs or to confirm that the distributor is in the indicated position. In addition to the relay, these accessories can include audible or lamp indicators.

Please contact us if you need custom enclosures for multiple EDI controls, UL/CSA labeling, special interfaces or other options that are necessary to meet specific site requirements.

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