

EDI DISTRIBUTOR

QUICK START

INSTALLATION MANUAL

US PATENT NO. 5,803,695
OTHER US AND FOREIGN PATENTS PENDING

V3xx[F][N][D][6] ROMS

10/20/2008



Before using this manual please read and understand the warnings and cautions in the Operation Manual to avoid serious personal injury.

This manual describes the wiring and setup for EDI distributors and is a supplement to the EDI Operation Manual.

⚠ WARNING

- Failure to comply with installation and maintenance instructions in this manual 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.

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Pre-Installation Questions & Answers

What Are the Power Requirements?

The control requires 120 volt 50/60 Hz control power, .5 amp max., and a motor power supply, usually 230 volt or 480 volt for the 1/2 HP motor with brake. Contact us if you will be using voltages other than these. If the optional cold weather package is used (see below), 115 volt must also be available at the brake motor.

Where Should the Control Be Mounted?

Most installations place the control at the most convenient location for the operator, often the office, control room or scale room. The control enclosure is NEMA 12 (dust tight) but the display is not weather proof or dust tight. Some dust won't hurt the display but water certainly will. The control enclosure or the display terminal are not rated for placement in a hazardous environment.

What Kind of Sensor Wire must Be Used?

There are 2 sensors for each driven spout on the distributor and each sensor requires 2 wires. These sensors are intrinsically safe so the 4 wires can be as light as 26 ga., unshielded and up to 1000' long. Door bell or thermostat wire is just fine if you are so inclined.

Do Sensor Wires Have to Be Run in Conduit?

There is no electrical reason to put it in conduit but most people do to protect it from mechanical damage. Do not run sensor wires in a conduit with any power wiring.

Why Does it Use a Reversing Starter?

The EDI control uses a reversing motion control even on full round distributors. Its purpose is to not only select the closest path to the newly selected duct but also to back up and re-read the spout location on power up or if there were a reading error. It also eliminates the need for the electrician to check the motor for proper rotation.

Can We Use a Different Starter?

The starter supplied with the control has been tested extensively to operate more than 500,000 cycles while generating only a minimum amount of electrical noise. In addition, keeping the starter in the control box simplifies troubleshooting if it becomes necessary. If the starters are moved to a different location it is advisable to keep them in the same area as the control. We recommend using the starter we supply.

What about Cold Weather Operation?

All drives are filled with Mobil 1 synthetic oil rated for -20°(F). If the distributor is installed in an area that is subject to freezing we recommend that the optional motor heater be used. This is a 115v, 25w unit that fits on the back end of the brake motor and can be left on year around.

What Is the Learn Mode Program?

Only once, at the initial installation, the control must learn certain details about the distributor it is connected to. Information such as the number of ducts, timing elements and spout centering information must be gathered and put into permanent memory. Most of the information will be obtained automatically but you must enter the spout centering data. This information is saved in battery backed memory.

What Happens If Power Is Lost?

When power is restored, all programmed information is recalled from the battery backed memory so the setup program doesn't have to be run again. The control/distributor must then be reset from the keypad.

Can the Display Be Placed in Another Location?

The display may be removed from the control and placed up to 50' away. We can supply the cable if you wish to do this.

Can the Distributor Be Controlled from a PLC?

Yes. Both Network and Digital I/O options are available. Call us for more information.

Wiring The Control

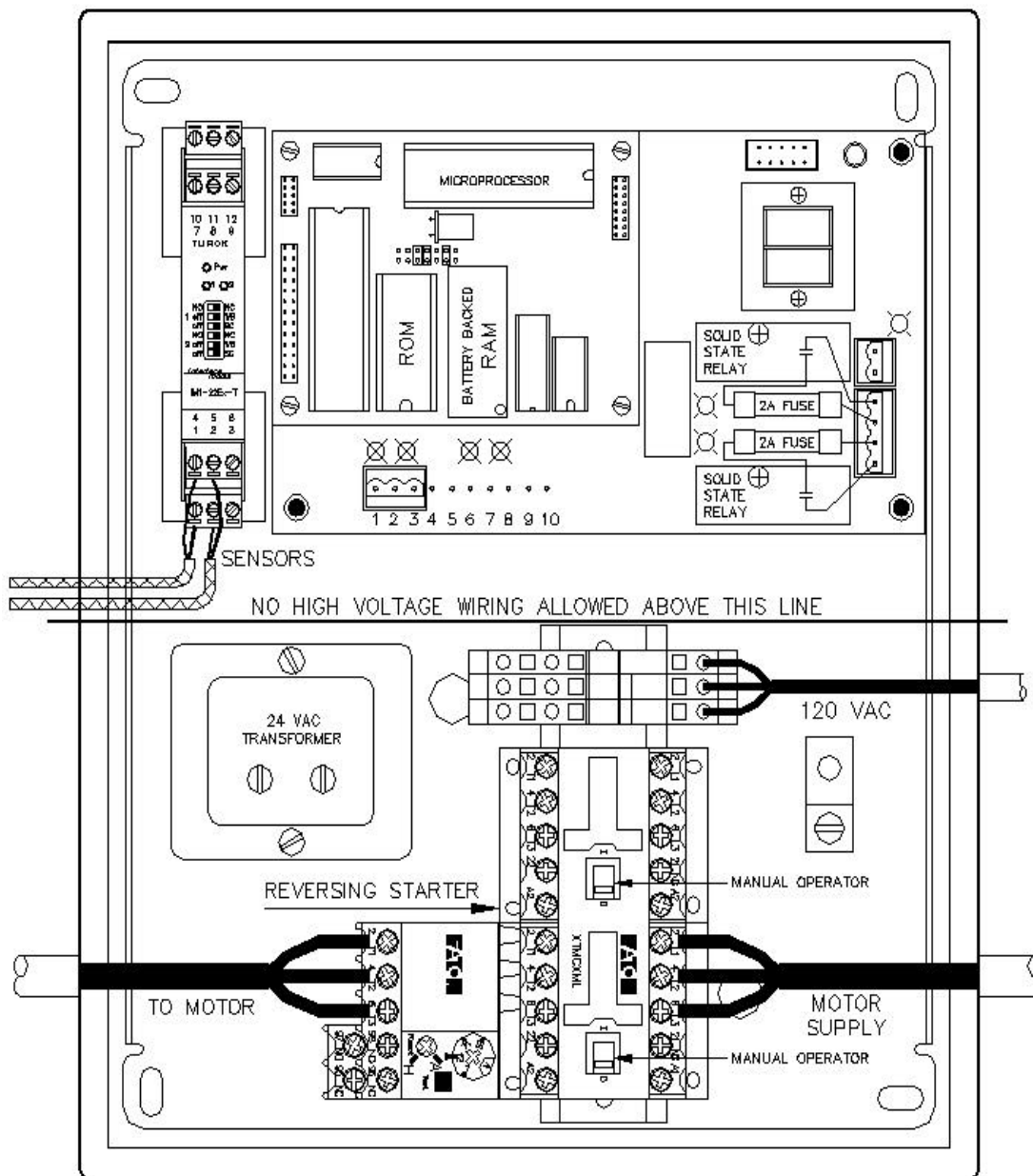


Figure 1. Control component identification.

Figure 1 shows the interior of the EDI control. Note the arrangement of the field attached wiring, particularly how it is routed into and out of the control enclosure. **Any high voltage wiring that is looped or routed differently than as shown can cause interference with the electronic components and cause the EDI operation to intermittently fail.**

The high voltage entrance and exit conduits can be located anywhere in the lower half of the control but it is important not to 'loop' the wiring inside the control box. Because this power wiring is in the same enclosure as the electronics, it is good practice to twist each set of wires together to minimize electromagnetic interference (EMI).

Observe Figure 1 and note the location of the wiring. It is very important to keep the high voltage wires away from the electronic components.

110 VOLT CONTROL POWER

The 110 volt circuit powers the electronics and through the transformer, the 24 volt starter coils. At initial startup, and during any future troubleshooting, the operator will have to reset the control electronics by removing the 110 volt control power. A provision should be made for switching this circuit near the control. The power requirement is .5 amp.

- Place a disconnect close to the control, marking it properly to identify it with the control.
- Bring this circuit into the control and terminate it at the 110v terminal strip.
- Apply power to the panel. The 24 volt lamp must be lit on the right side of the control board and the display will boot to the reset mode. Turn the power off and continue wiring the motor circuit.

MOTOR CIRCUIT

Most EDI drives use 1/2 HP 3 phase 60 hz 230/460 volt motors. All EDI drives require an electric brake on the motor. **The brake must be wired properly within the motor to the motor windings.** The motor brake combination varies so be sure to locate and follow the wiring instructions for the brake inside the brake housing cover.

A 110 volt,25 watt, optional brake heater may be supplied. If so, a power source must be available at the distributor drive site. This heater may be left on year round or switched on only during cold weather.

Special order motors will be indicated on the packing slip. These motors may include explosion proof enclosures, 50 hz, and 575 volt. These special motors still require brakes. We do not directly support single phase motors. Please contact us if this is a requirement.

Current draw in AMPS for various voltages*. (Motor & Brake)

	115 V 1 Phase	230V 1 Phase	208 V 3 Phase	230V 3 Phase	480V 3 Phase	575V 3 Phase
½ HP	9.8	4.6	2.0	1.8	0.9	0.8
¾ HP				2.5	1.25	1.1

Typical values. Always use motor nameplate rating.

The standard overload on our starters are adjustable from .9 to 1.6 amps. Overloads that operate with a higher current are available on special order.

- Provide power from a fused disconnect to the starter on terminals **L1,L2,L3**.
- Supply power to the distributor motor from terminals **T1,T2,T3**.
- Wire the motor and brake at the distributor. Record the full load current shown on the motor name plate for future use.

- Attach and wire the brake heater to 110 volt. This heater must be connected to a power source that is always on or can be switched on during the winter months.
- Adjust thermal overload to full motor load current. You may order a different overload if the standard unit does not cover the required amp range.
- Make sure the overload is properly reset. Manufacturers often change the reset configuration so it is important to understand the procedure and convey the information to maintenance personnel.
- Manually operate the starter thru either manual operator window on top of the starter. Confirm distributor rotation in both directions. There is no need to check for proper motor rotation.

Connecting The Sensors

The sensors are part of an intrinsically safe circuit. There are (2) two wire sensors, thus 4 wires required for each drive. Use 26 ga. or heavier, stranded or solid, shielded or unshielded wire up to 1000' in length (thermostat wire is fine). **Do not run sensor wires with power wiring.** Route the sensor wiring as shown in Figure 1.

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!

- Make sure **all** of the small switches on the relay are in the rightmost position as shown in Figure 2.
- 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 switching status of each sensor.
- Manually engage either side of the starter to begin spout motion. If you are installing a flatback or swingset distributor, the spout may be at one end or the other so there may be no motion unless the other side of the starter is engaged.
- The **RIGHT** lamp on the relay should blink off rapidly in sets of 5 blinks per burst.
- The **LEFT** lamp on the relay should blink off intermittently during each burst.
- If the blink pattern is opposite exchange the sensor wiring. Likewise, if one side or the other does not blink, correct the wiring problem before going further.

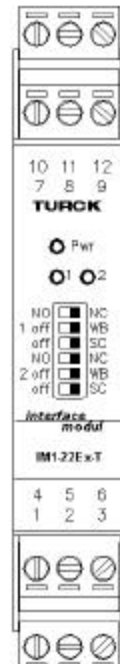


Figure 2. Turk IM1-22EX-T Barrier Relay

Note: The 'IM1' barrier relay lamps on the 2 lamps marked 1 & 2. 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.

Installation Checklist

Important:

Be sure the correct ROM is being used for the type of distributor being controlled. The ROM name is located on a chip with a white label on the Microprocessor board. A common mistake in multiple control installations is attempting to control a Full Round distributor with a Flatback ROM. Please refer to the packing list for the correct ROM type.

Before you startup the control, use this checklist to make sure everything is ready.

- 110 volt control supply is on.
- 3 phase motor supply is on and fused. It is not necessary to check for proper rotation.
- The reset on the starter is set.
- The barrier lamps have been checked for the proper blink pattern.
- The brake on the motor has been wired and is working. Instructions are usually inside the motor conduit box and on the outside of the motor or brake housing.
- The distributor spout has been fully turned and has been checked for free movement.
- The sensors are properly spring loaded and shimmed. This should only be necessary if they have been moved from the factory setting.

Learn Mode - Full Round Distributors

Display reads:	Your action:	Comment:
RESET=0 NEW=1 or ENTER=RESET	1	This is always the power up display. Action '1' begins installation of the distributor to the EDI control. Action '0' puts the distributor into normal operation.
INPUT ADDRESS: (Networked Distributors only)	-STOP-	This prompt will show only with Networked distributors. Do not proceed further until reading the <u>Network Addressing Instructions</u> on the back page of this manual.
WAIT... COUNT=x	(Wait)	Wait while the distributor runs thru an automatic setup sequence that counts the number of ducts. During this time the display shows the count as each position found on the distributor. When finished, this number must match the actual number of positions on the distributor. It then moves the spout to duct number 1 for the centering adjustment.
75 ADJ #	100<enter> (Example only)	You now enter numbers from 1 to 1000 or more followed by <enter> until you are satisfied that the spout centers properly. Each time the spout will re-center it self using your new number. A beginning default centering number of 75 is used by the control. Let's assume it's a little short of centering on the duct. Spout will re-center itself on duct 1 using 100 as the centering number.
100 ADJ #	90<enter> (Example only)	Now, assume it went a little too far. The spout will re-center itself once more on duct 1.
90 ADJ #	0<enter>	Looks good. The '0' tells the control that you're satisfied with the centering for duct 1.
RESET MEMORY 1=YES 2=NO	1	The control will now setup the display with default names & numbers if you press '>1'. The control stores all this information into permanent memory and does some house keeping chores. The lights on the display will blink as default bin numbers and names are put into memory.
< n> POS n		You're done. Go ahead and use the distributor. Read the Operation Manual on how to program the control in order to use your custom numbers and names.

Learn Mode - Flatback Or Swingset Distributors

Display reads:	Your action:	Comment
RESET=0 NEW=1 Or ENTER=RESET	1	This is always the power up display. Action '1' begins installation of the distributor to the EDI control. The spout starts in motion. Action '0' puts the distributor into normal operation.
INPUT ADDRESS: (Networked Distributors only)	-STOP-	This prompt will show only with Networked distributors. Do not proceed further until reading the <u>Network Addressing Instructions</u> on the back page of this manual.
	(WAIT)	Wait while it runs thru an automatic setup sequence to find duct 1. When the spout stops it is not properly centered. You will adjust this in the next sequence.
200 ADJ #1	400<enter> (Example only)	You can now enter numbers from 1 to 2000 or more followed by <enter> until you are satisfied that it is centered properly. Each time the spout will re-center it self using your new number. Let's assume it's a little short of centering on the duct. The spout will backup up and re-center itself on duct 1 using 400 as an adjustment number.
400 ADJ #1	350<enter> (Example only)	Now, assume it went a little too far. The spout will backup up and re-center itself on duct 1 using 350 as an adjustment number.
350 ADJ #1	325<enter> (Example only)	The spout will backup up and re-center itself on duct 1 using 325 as an adjustment number. Let's assume this looks good.
325 ADJ #1	0<enter>	The '0' tells it you're satisfied with the centering for duct 1. The spout will now go into motion searching for the last duct, counting the number of ducts as it moves. When it finds the last duct it will stop and request a centering number while also displaying the last duct number.
75 ADJ #n	90<enter> (Example only)	Proceed as with duct number 1 keeping in mind that the centering number used for the last duct is also automatically used for all other ducts except duct 1. #n = Number of ducts on your distributor. Keep entering numbers until you are satisfied with the centering.
95 ADJ #n	0<enter>	Looks good. The '0' completes the adjustment phase.

RESET MEMORY 1=YES 2=NO	1	<p>The control will now setup the display with default names & numbers if you press >'1'.</p> <p>The control stores all this information into permanent memory and does some house keeping chores. The lights on the display will blink as default bin numbers and names are put into memory.</p>
< n> POS n		<p>You're done. Go ahead and use the distributor.</p> <p>Read the Operation Manual on how to program the control in order to use your custom numbers and names.</p>

Completing The Installation & Programming

The EDI control is highly field customizable. Information and instruction on customization is contained in the Operation Manual included with this distributor. A very important operating programming option is the 'IN-POSITION-CHECK'. **We recommend you enable the 'IN-POSITION-CHECK' programming option as described in the Operation Manual.**

Other programming options allow you to name the distributor on the display, name and assign numbers to each position, add speed-dial buttons to certain positions and control the start-up display. Also included are instructions for reading diagnostic information. In addition the Operation Manual contains operational theory, maintenance and troubleshooting information.

Installation Troubleshooting

Before You Call for Help

Please check these items if there are startup problems.

Manually engaging the starter will move the spout. If the spout fails to move, confirm that :

- there is power to the motor.
- the brake on the motor is wired properly.
- the clutch on the gear reducer is not slipping.
- mechanical blockage preventing spout motion.
- all of the drive components are functioning.

Most start up problems occur because the left and right barrier relay lamps are wired improperly or are wired backward (left/right). Please re-check the instructions on page 7 to re-affirm that

- Both lamps, left and right (1 and 2), blink during spout movement.
- The rapid blink pattern is on the right.
- The intermittent, more random blink pattern, is on the left.

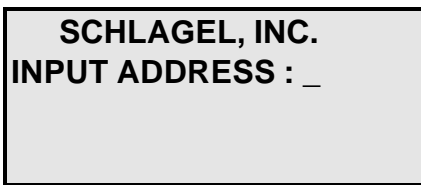
Reset the control and press the '1' key for the LEARN MODE and follow the steps on page 9 or 10. The starter should have pulled in right away. If it doesn't, check the reset on the starter overload.

More troubleshooting information is presented in the Operation Manual. You may want to refer to this manual to review the operating principles of the EDI distributor.

After checking the above and you have not corrected the problem, please call us for technical support. It is very helpful if you can be at the control with a phone. Be sure to have the model and serial number ready. It is located on the label in front of the control box.

Network Addressing Instructions

If you get this message you must assign a network address before proceeding further.

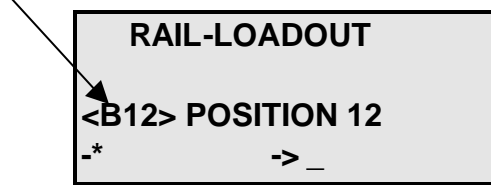


All networked EDI distributors must be addressed properly in order to work with the PLC. An improper character address will prevent the PLC from communicating with this distributor.

The person responsible for interfacing the computer to the EDI control should know the proper address for this distributor.

The letter address assignments are made on the EDI Terminal and, once set, are displayed on the terminal with other position information. Shown below is an example of a display for an operating distributor that has been assigned the address 'B'.

Distributor Address 'B'



Input the address character on the display by using the Shift key once or twice, then one of the other keys with the desired character at the top of the key, then press enter to continue with the LEARN MODE programming.

For further details on this procedure and general network instructions refer to the "EDI Network Interface Manual".

How To Contact Us

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Field Service: We have field service personnel covering the entire United States and Canada. Please contact us for details.

For future use write the name of the distributor and the adjustment numbers here or on the inside of the control enclosure.	
Adjustment #1 (All Distributors)	
Adjustment #2 (Flatback & Swingset Distributors only)	