11/08
FASTRAX® INDUSTRIES INC
8152 SouthPark Lane
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FASTRAX® SCANNER HEATING SYSTEM

Complete Heating, Automated Sensing and Control System: *For Heated Cover Style*

Installation Guide

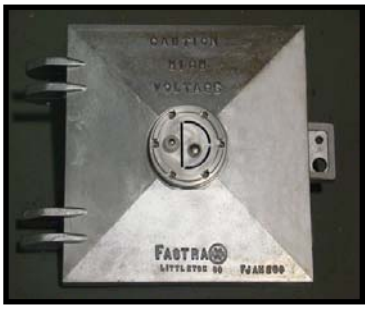
SYSTEM COMPONENTS:

FSC2210732
CONTROL PANEL

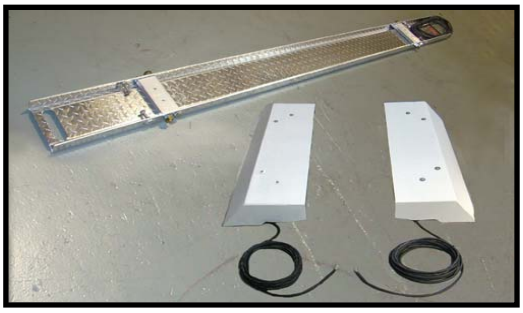
FAS1A SNOW SENSOR
& FMA5 SUPPORT MAST

FJA200
JUNCTION BOX ASSEMBLY

FJCM200HD
JUNCTION BOX COVER
WITH SENSOR (OPTIONAL)



FCH152409 CRIB HEATER ASSEMBLY
and (2) FSH4244W HEATED COVERS



FA04
INSTALLATION ACCESSORY KIT

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Installation

System Components With Description:

Single Track

QTY REQ'D	UPRR PART NO FASTRAX® PART NO	DESCRIPTION
1	FSC2210732	**Fastrax® Stand Alone Scanner Control Panel:** Controls up to two Fastrax® crib heater platform assemblies and up to four Fastrax® single ended scanner heaters. 7 KW maximum capacity, (2) 32 ampere, 240 volt, terminals provided for line feed. Includes FAS1A snow sensor and support mast. Enclosure size: 20"H X 16"W X 6"D.
1	FCH152409	**Fastrax® Crib Heater Platform Assembly:** 1,350 total watts, 240 volts, 150 watts per foot of platform length. 8 foot 8 inches length, 8 inch width, 2-1/2 inch height. Includes (4) jack-bolt clamps.
2	FSH4244W	**Fastrax® Shield - Heated White:** 4 foot in length, white color with anti-slip surface, heated 750 watts, 240 volts, 1 phase includes mounting hardware.
1	FJA-200	**Fastrax® Junction Box Assembly**
1	FJCM200HD	**Fastrax® Junction Box Cover only With FJS1A Snow Sensor:** Includes Fastrax® heated delfector with thermostat, installation instructions and FJAS24F support post assembly.
1	FAFSH2	**Fastrax® Installation Accessory Kit For 2 Heated Shields:** Includes entrance gland, insulated connector blocks, liquit tight extra flexible protective conduit, flexible conduit connectors, stainless steel hose clamp.

Double Track

QTY REQ'D	UPRR PART NO FASTRAX® PART NO	DESCRIPTION
1	FSC2210732	**Fastrax® Stand Alone Scanner Control Panel:** Controls up to two Fastrax® crib heater platform assemblies and up to four Fastrax® single ended scanner heaters. 7 KW maximum capacity, (2) 32 ampere, 240 volt, terminals provided for line feed. Includes FAS1A snow sensor and support mast. Enclosure size: 20"H X 16"W X 6"D.
2	FCH152409	**Fastrax® Crib Heater Platform Assembly:** 1,350 total watts, 240 volts, 150 watts per foot of platform length. 8 foot 8 inches length, 8 inch width, 2-1/2 inch height. Includes (4) jack-bolt clamps
4	FSH4244W	**Fastrax® Shield - Heated White:** 4 foot in length, white color with anti-slip surface, heated 750 watts, 240 volts, 1 phase includes mounting hardware.
1	FJA-200	**Fastrax® Junction Box Assembly**
1	FJCM200HD	**Fastrax® Junction Box Cover only With FJS1A Snow Sensor:** Includes Fastrax® heated delfector with thermostat, installation instructions and FJAS24F support post assembly.
1	FAFSH4	**Fastrax® Installation Accessory Kit For 4 Heated Shields:** Includes entrance gland, insulated connector blocks, liquit tight extra flexible protective conduit, flexible conduit connectors, stainless steel hose clamp.

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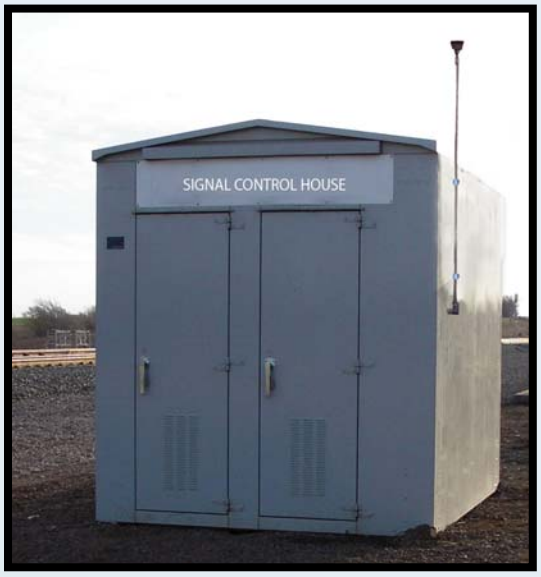
IMPORTANT NOTICE

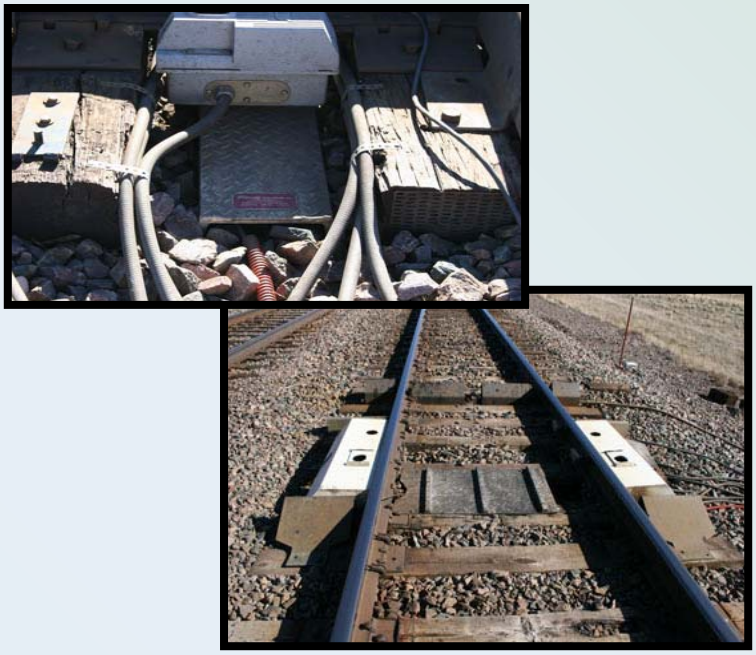
WARNING

Follow all railroad safety procedures.
Install all equipment to meet requirements of:
NFPA-70 (National Electrical Code), related
Railroad standards / specifications and any
applicable third party standards.

EQUIPMENT:

Step 1.
Check equipment provided to be sure all items are present and undamaged from shipping and handling.





LAYOUT:

Step 2.
Layout panel installation area inside Signal Control House (SCH). Check to allow for the complete panel height of 20 inches and panel width of 16 inches to mount flat and unobstructed on the inside wall.

Before mounting panel make sure the outside of the Signal Control House (SCH) wall is clear of obstructions directly behind where panel will be mounted. This will allow for the sensor control support mast to exit the panel and extend up the outside wall to above the roof line. If necessary move the panel to a location that provides clearance on the inside and outside wall.

Choose the mounting height of the panel to allow the control sensor support mast to extend above the roof line when completely assembled.

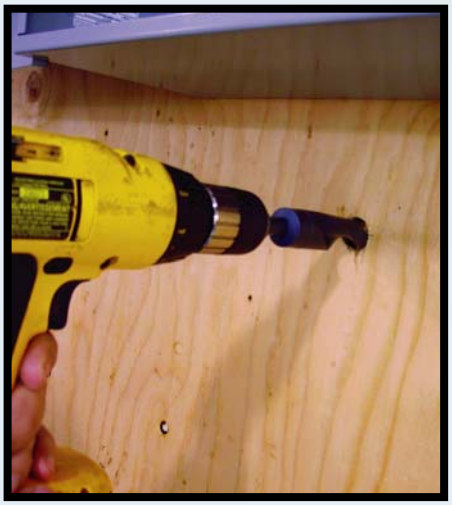
PANEL AND SENSOR SUPPORT MAST INSTALLATION:

Step 3.
Install the FSC2210732 control panel inside the SCH by marking the screw location on the plywood wall board or other support backing for the panel. If proper support backing does not exist on inside wall, install plywood or other suitable support for the panel. Install screws through pre-drilled holes in back of the inside of the panel and loosely tighten in place until other control sensor support mast assembly is installed.

Step 4 A.
Locate and again check for clearance for where the sensor support mast assembly will be located on the outside wall of the SCH.

Inside the SCH, carefully measure 4 1/8 inches below the bottom of the control panel and mark the location. This will mark the centerline of where the 1/2 inch x 6 inch galvanized steel nipple will go through the SCH wall.

Drill a 1 inch diameter hole through the SCH wall. Smooth rough edges and de-burr any sharp metal.



Step 4 B.
Pre-assemble the control sensor support mast to include the 1/2 inch x 5 foot long main support riser, the 1/2 inch conduit elbow and the 1/2 inch x 6 inch nipple to extend through the SCH wall.

Install the control sensor support mast through the wall and position the support mast level and to extend above the roof line of the SCH. Using the clamps provided, secure the mast to the outside wall of the SCH.

Installation

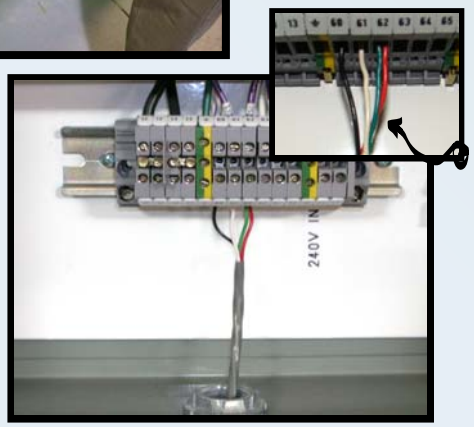
Step 5.
Inside the SCH, install the 1/2 inch conduit elbow on the 1/2 inch nipple extending through the wall. Tighten until the 1/2 inch female threaded opening is in the upward position toward the bottom of the control enclosure. Measure and mark the bottom of the control enclosure and install a 1/2 inch conduit opening above the 1/2 inch female threaded opening into the conduit elbow.

Loosen and remove the control panel from the SCH wall. Install the 1/2 inch x 2 inch short nipple into the conduit elbow and install the 1/2 inch locknut in the upward position on the male threaded end of the nipple.

Set panel back in place on the SCH wall and position the male threaded portion of the nipple through the 1/2 inch conduit opening. Install the second locknut on the 1/2 inch short nipple inside the control panel and tighten in place. Tighten screws to hold panel firmly in place.

AERIAL SENSOR INSTALLATION:

Step 6.
Thread FAS1A sensor cable through support mast conduit and fittings with cable ending in control panel enclosure. Pull excess cable through and out the control enclosure while positioning the sensor on top of the support mast. Align the 1/2 inch union pieces together and tighten together without twisting the cable or sensor. The conduit union is provided so no twisting of the sensor or wires is required. **Caution:** *Excessive twisting of the sensor wires will cause damage to the sensor and render it inoperable.*



Leave a small amount of slack in the sensor wire and measure to allow for proper connection to the terminal blocks in the lower portion of the control panel. Cut off excess wire and strip away outer insulation. Strip insulation off each wire end to expose approximately 5/8 inch of bare wire.

Install the black aerial sensor wire to terminal # 60
Install the white aerial sensor wire to terminal # 61
Install the red, along with the green wire to terminal #62

CONTROL PANEL SUPPLY POWER INSTALLATION:

Step 7.

Caution: *Only qualified personnel trained to install electrical equipment rated up to 600 volts AC shall be permitted to connect electrical service to this equipment.*

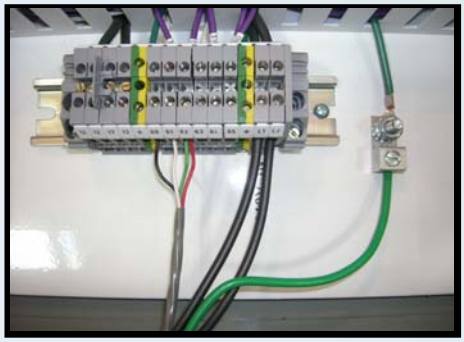
The Scanner Heater Control Panel requires a 240 volt AC, 30 ampere dedicated feeder from the Signal Control House (SCH) power panel.

Locate SCH power panel. Check panel to be sure there is room to install a 2-pole, 30 ampere circuit breaker to feed power to the Scanner Heater Control Panel.

Using National Electrical Code (NFPA 70) or equivalent approved methods and following all railroad safety procedures, install the 30 ampere 2-pole circuit breaker in the SCH power panel. **Caution:** *If space is not available in the existing SCH power panel for the 30 ampere 2-pole circuit breaker, do not connect the scanner heating panel and consult with Fastrax Industries, Inc., Director of Signal Maintenance or the Union Pacific Railroad engineering staff for further instructions.*

Install a minimum of 3 conductors, 10 AWG rated at 30 ampere from the SCH power panel to the scanner heater control panel. This cable and raceway is not provided by Fastrax® Industries, Inc. and will need to be provided by the user. Use approved raceway and wiring methods. Preferably two black conductors and one green conductor shall be used. In all cases one conductor shall be green or bare and shall be used as the equipment grounding conductor.

Leaving proper slack in wire at connection points:



Connect the green or bare conductor to the equipment grounding buss at the SCH power panel. At the scanner control panel connect the green or bare wire to the equipment ground lug provided and attached directly to the panel enclosure.

Connect one black conductor from one pole of the 2-pole circuit breaker at the SCH power panel to terminal L1 (Line 1) at the scanner heater control panel.

Connect the next black conductor from the second pole of the 2-pole circuit breaker at the SCH power panel to terminal L2 (Line 2) at the scanner heater control panel.

Note: A neutral (generally white color) is not required to feed the scanner heating control panel.

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FIELD WIRING TO FJA200 JUNCTION BOX AND OPTIONAL JUNCTION BOX SENSOR:

Step 8.
Using National Electrical Code (NFPA 70) or equivalent approved methods and following all railroad safety procedures, provide a minimum of 14 AWG copper direct burial multi-conductor cable to the FJA200 junction box. This cable and raceway is not provided by Fastrax® Industries, Inc. and will need to be provided by the user. A minimum of 7 conductor, 14 AWG cable should be installed. Be sure that the junction box is grounded with an equipment grounding conductor of appropriate size for the largest rated feeder in the box. Terminate the cable with appropriate approved fitting at each termination location.

Step 9.- **SINGLE TRACK**
When only one crib heater and two heated covers are used, connect wire #1 of the 7 conductor, 14 AWG cable to either terminal #12 in the scanner heater control panel. Connect the junction box end of wire #1 using the connectors provided to the black lead wire from the crib heater. Next take the black leads from the FSH4244W heaters and insert them into each of the remaining ports on the #1 wire connector and tighten with an allen wrench and re-cap.

Connect wire #2 of the 7 conductor, 14 AWG cable to either terminal #13 in the scanner heater control panel. Connect the junction box end of wire #2 using the connectors provided to the red lead wire from the crib heater. Next take the two red leads from the FSH4244W heaters and insert them into each of the remaining ports on the #2 wire connectors and tighten with an allen wrench and re-cap.

Connect all green (or otherwise identified) equipment grounding conductors to the junction box grounding lug in an approved fashion.

Step 9 - **Double Track**
When a double track installation requires a second crib heater along with two additional FSH4244W heaters, connect wire #3 of the 7 conductor, 14 AWG cable to the remaining terminal #12 in the scanner control panel. Connect the junction box end of wire #3 using the connectors provided to the black lead wire form the crib heater. Next take the two black leads from the FSH4244W heaters and insert them into the remaining ports on the connector and tighten with an allen wrench and re-cap.

Connect wire #4 of the 7 conductor, 14 AWG cable to the remaining terminal #13 in the scanner heater control panel. Connect the junction box end of wire #4 using the connectors provided to the red lead wire form the crib heater. Next take the two red leads from the FSH4244W heaters and insert them into the remaining ports on the connector and tighten with an allen wrench and re-cap.

Connect all green (or otherwise identified) equipment grounding conductors to the junction box grounding lug in an approved fashion.

Installation

Step 10.
When the optional junction box mounted snow sensor is used connect as described below:

Connect wire #5 of the 7 conductor, 14 AWG cable to terminal number 63 in the scanner heater control panel. Connect the junction box end of wire #5 to the black ground snow sensor wire with the connector provided.

Connect wire #6 of the 7 conductor, 14 AWG cable to terminal number 64 in the scanner heater control panel. Connect the junction box end of wire #6 to the single white ground snow sensor wire with the connector provided.

Connect wire #7 of the 7 conductor, 14 AWG cable to terminal number 65 in the scanner heater control panel. Connect the junction box end of wire #7 to the red and remaining white ground snow sensor wires with the connector provided.

CRIB HEATER INSTALLATION

Remove ballast in crib below scanner where crib heater is to be installed. Allow for a minimum of 2 ½ inches of clearance for proper clearance to install heater.

Slide heater into position below scanner and unscrew Jack-bolts and tighten into tie until secure. Tighten stainless steel locking nut against hub at heater to lock bolt in place. Install protective orange raceway over heater lead wire and secure on crib heater with stainless steel hose clamp at termination end of heater

Route wire in protective orange raceway to junction box. Cover lead wire in ballast to prevent tripping hazard. Terminate cable at junction box by using the proper ¾ inch flexible conduit connector provide with heater system.

Connect wiring as outlined above.

Installation