INSTALLATION AND OPERATING INSTRUCTIONS

APPLICATION
The 31040 universal single zone switching relay is operated by low voltage thermostats or any other low voltage controllers having a SPST switching action. The 31040 provides intermediate switching to permit up to two separate line voltage loads such as circulators.

FEATURES
- Modern Design with Indicator lights (LEDs) on the front panel which provide functional status
- Fuse protection
- Power surge protection
- High Quality Electronics Circuit Board which simplifies wiring and control Operation
- High Capacity Transformer
- Easy-Connect Terminals/Screwless Terminals for Thermostat Connections
- Common 24VAC transformer terminal provides compatibility with electronic thermostat
- Compatible with Most Digital/Mechanical Thermostats
- 100% Factory Tested

APPLICATION
The 31040 universal single zone switching relay is operated by low voltage thermostats or any other low voltage controllers having a SPST switching action. The 31040 provides intermediate switching to permit up to two separate line voltage loads such as circulators.

SPECIFICATIONS
- Model: 31040 Single Zone Switching Relay
- Power Supply: 120 VAC, 50/60Hz
- Dimensions: 6 3/8"(W) x 6 5/8"(H) x 2 3/4"(D)
- Electrical Switch Rating: 10 A 1/3 HP @ 120VAC
- Thermostat Anticipator Setting: 0.18 A
- Enclosure: Flame Retardant Plastic 94V0
- Shipping Weight: 2 lbs.

CAUTION!
1. To prevent electrical shock hazard, disconnect power supply before installing.
2. All wiring must comply with national and local electrical codes, ordinances, and regulations.
   Never connect the load terminals to a load that takes more current than the amount listed for the relay in the electrical ratings.
3. Infloor Sales & Service is not responsible for damages resulting from misuse of its products.
4. 14 gauge wire is recommended for 120 VAC connections; 18 gauge wire is recommended for thermostat connections.
5. This literature is provided for informational purposes only.

ROUGH-IN WIRING
Loosen the screws on the top and bottom of the enclosure and remove the wiring covers by swinging them away from the base(grey color) with the edges of the covers as pivot(see Figure 1).
The base has standard 7/8" (22mm) knockouts which accept common wiring hardware and conduit fittings. Before removing the knockouts, check the wiring diagrams and use the chamber with common voltages.

MOUNTING
Mount the 31040 to a suitable surface. Slotted keyholes and standard holes are provided for mounting purposes.

SIDE VIEW

L.E.D. SYSTEM STATUS INDICATION LIGHTS:
RED light indicates thermostat calling for heat.
GREEN light indicates presence of power supply.

ROUGH-IN WIRING
Loosen the screws on the top and bottom of the enclosure and remove the wiring covers by swinging them away from the base(grey color) with the edges of the covers as pivot(see Figure 1).
The base has standard 7/8" (22mm) knockouts which accept common wiring hardware and conduit fittings. Before removing the knockouts, check the wiring diagrams and use the chamber with common voltages.

MOUNTING
Mount the 31040 to a suitable surface. Slotted keyholes and standard holes are provided for mounting purposes.

ROUGH-IN WIRING
Loosen the screws on the top and bottom of the enclosure and remove the wiring covers by swinging them away from the base(grey color) with the edges of the covers as pivot(see Figure 1).
The base has standard 7/8" (22mm) knockouts which accept common wiring hardware and conduit fittings. Before removing the knockouts, check the wiring diagrams and use the chamber with common voltages.

MOUNTING
Mount the 31040 to a suitable surface. Slotted keyholes and standard holes are provided for mounting purposes.

ROUGH-IN WIRING
Loosen the screws on the top and bottom of the enclosure and remove the wiring covers by swinging them away from the base(grey color) with the edges of the covers as pivot(see Figure 1).
The base has standard 7/8" (22mm) knockouts which accept common wiring hardware and conduit fittings. Before removing the knockouts, check the wiring diagrams and use the chamber with common voltages.
When the thermostats (or any other low voltage controller having SPST switching action) calls for heat, the relay is energized to turn on both circulator (or line voltage load) and boiler controller.

Thermostat calling for heat (R/T and W/T circuit is made):
- Terminals 3/C & 4/NO are closed to turn on the circulator (jumper must be installed between L/JUMPER and 3/JUMPER)
- Terminals 3/C & 4/NC are open
- Terminals 5/C & 6/NO are closed to turn on the boiler/burner control
- Terminals 5/C & 6/NC are open

Thermostat not calling for heat (R/T and W/T circuit is not made):
- Terminals 3/C & 4/NO are open (circulator is turned off)
- Terminals 3/C & 4/NC are closed
- Terminals 5/C & 6/NO are open (boiler/burner control is turned off)
- Terminals 5/C & 6/NC are closed

**JUMPER PLACEMENT**

Factory installed jumper between L(JUMPER) and 3(JUMPER) allows power to be switched on terminal 4NC and 4NO.

**TERMINAL DESCRIPTION**

*Line Voltage Terminals (from left to right)*
- N: 120 VAC Neutral Terminal Output to Circulator
- N: 120 VAC Neutral Terminal Input
- L: 120 VAC Hot Terminal Input
- L/JUMPER: See JUMPER PLACEMENT section
- 3/JUMPER: See JUMPER PLACEMENT section
- 4/NC: Normally Closed Terminal
- 3/C: Common Terminal for 4/NC & 4/NO (connected to 3/JUMPER)
- 4/NO: Normally Open Terminal (120 VAC Hot Output to Circulator with jumper installed)

**Low Voltage Terminals**
- 6/NO: Normally Open Terminal
- 5/C: Common Terminal for 6/NO & 6/NC
- 6/NC: Normally Closed Terminal
- R/24VAC: 24VAC Hot Terminal Output
- C/24VAC: 24VAC Common Terminal Output
- R/T: 24VAC Thermostat Hot Terminal
- R/W: Thermostat Switching Terminal

Note: 24VAC outputs (R & C Terminals) can be used to power

**TROUBLE SHOOTING**

When 120VAC is supplied to 31040, the green indicator light should be on. When the thermostat calls for heat, both the red indicator light and the circulator should be on.

- If the green light is on and the circulator cannot be turned on by the thermostat (red light is off), remove the thermostat and put a piece of wire across the thermostat terminals (R/T and W/T) to simulate thermostat calling for heat. If the circulator can be turned on along with the red light, then check the thermostat for functionality.

- If both green light and red light are on and the circulator cannot be turned on, re-tighten the screws for the jumper on terminal L and 3 and try again.

- If red light is on all the time, check the thermostat for functionality. Remove the thermostat from the 31040 and put a piece of wire across R/T and W/T terminal to simulate the thermostat calling for heat. If everything works properly, then the thermostat is faulty.

- If the green light is off, check for the presence of 120VAC power supply.

**TYPICAL WIRING DIAGRAM**

503 Gregg Dr.  
Buena Vista, Co 81211  
Ph:(800) 608-0562  
Email: info@infloor.com