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IST Medical End-Users: Mobile Applications

Supplement to the IST Installation Manual

Overview:

The IST system should be installed by an experienced technician familiar with the medical trailer or the system where the IST is to be installed. These instructions are designed to assist a technician already familiar with the medical trailer and the IST.

The IST Mobile system is an IST system mounted to an enclosure housing all the necessary power supplies and relays to accurately measure multiple room temperatures as well as monitoring HVAC and Generator fault conditions. The system can also monitor generator run time and alarm when the run time hour meter has been exceeded. Thus ensuring preventative maintenance schedules do not get exceeded.

The system can communicate via standard fax lines from inside the trailer. The system requires a POTS(Plain Old Telephone Service) or fax line to communicate to the IST server. Digital phone networks are not compatible with the IST board. The IST unit will automatically dial 1-800..., 9,1-800... and 8,1-800... on each call in an attempt to dial out successfully. There is also a cellular option for those applications that require communication when not hooked to hospital or outside phone networks.

Setup:

General setup for the IST is relatively simple. The box should be located inside the trailer in a position where the front panel can be seen and opened for service if necessary. Access to the IST should be a rare occurrence as the unit is fully automatic once installed properly.

The Hoffmann enclosure should be bolted securely to the wall. The wires and power can be brought in via conduit hole on the side of the box or through the bottom of the box. The main panel inside the Hoffmann enclosure has 2 rubber grommets located in the bottom right corner for routing the signal and power wires to the correct locations in the box if the wire holes are drilled in the bottom of the box. Holes will need to be made in the Hoffmann enclosure onsite once it is decided how to route the signal and power wires to the electronics.

Wiring:

Temperature sensors:

IST supplies the digital temperature sensors. Because the sensors are digital they cannot be replaced or changed. Thermistors, thermocouples and RTDs are not compatible with the IST system. The Digital temperature sensors are color coded and they are polarity sensitive. The ground and signal wires must be connected to their perspective terminals in order for the sensor to function. Splicing to increase the length of the sensor wire is fine but the wire used should be twisted pair. Shielded wire

should never be used with the temperature sensors. The shielding adds capacitance that will cause the temperature sensors to malfunction or give intermittent errors.

12Vdc & 24Vac Relays:

The relays are used on this board to electrically isolate the IST board and the power system from the HVAC unit and the generator power systems. The sensors and systems connected to the relays must be capable of driving the relays. The relay specifications are given at the end of this document. The IST can be configured to alarm on the relays in either state (energized or non-energized).

Telephone:

The telephone is required to allow the IST board to call out to report alarms and be reprogrammed. The IST board requires a standard telephone service in order to dial out to the IST server successfully. Digital phone networks common at most hospitals are not compatible with the IST board. As a result, the IST should be connected to the fax line. As a general rule, if a fax machine will work – so will the IST.

Because some phone networks require users to dial “9” or “8” to access an outside line, the IST board will automatically attempt to call out 1-800... and if that fails the board will attempt 9,1-800... and then 8,1-800... if needed. These number variations occur on each call so there is no need for users to reconfigure or adjust the IST board for different dialing methods as the unit is moved from hospital to hospital or phone network to phone network.

Run-Time Hour Meter:

Per customer request a run-time hour meter was incorporated into the IST firmware. The “Opdelay 4” is used to set the number of run time hours used in the meter. Due to server limitations, the number entered in the “Opdelay 4” is multiplied by 5. A maximum value of 51 which corresponds to 255hours is the maximum length of time the hour meter is capable of measuring. Periods from 0 to 255hours in 5 hour increments are set by entering the number of hours/5 in the “Opdelay 4” minutes box on the server. Any value entered above 50(250hours) will greatly increase the delay by 100hours for every one “minute”. In other words a value of 54 will be 250 hours plus 100hours *4 which equals 650hours. The equations are as follows:

Delay ≤ 50

Each “minute” *5hours = delay (max delay 250hours)

Delay > 50 (max 99)

Each “minute” *100 hours =delay (max delay 5150hours)

The hour meter can be implemented on any of the digital or thermo inputs and will not be affected by power failures or other alarms. Once the hour meter goes into alarm the hour meter will reset itself and begin counting down again. In order to reset the hour meter the unit must have the counter value “loaded”:

“Load” the counter by the following method:

V3.22W hour: a technician can temporarily short pins “T1” on J2 just as would be done if the phone number was to be changed.

V3.23W hour: Connect “X3” to 24v at “24R” located adjacent to the “X3” connector

A message “Reset Hour Counter” will be seen if viewing the data on the serial port when the hour counter has successfully been reset. *V3.23W hour* allows the unit to be configured to alarm when the hour counter is reset.

Loading the Run Time Hour Meter:

This process is different from other methods of changing variables and alarms on the IST. First the number of hours needs to be set on the “Opdelay 4” and the appropriate input needs to be selected and configured to be normally open or closed depending on the application. Next the board needs to be updated via a standard call in (pushbutton reset, alarm, or scheduled call). Finally, the technician needs to “load” the new hour counter value into memory. Until the new hour counter value is loaded; the IST board will not have the correct run time hour time in the memory.

Specifications:

	Min.	Max.	Typ.	Units
Temperature Measurement				
Accuracy			+-.5	Deg.
Temperature range				
Operating	-30	85		C
Storage	-30	100		C
System Power				
Supply Voltage	105	130	115	VAC
Supply Current			60	Milliamps
Relay Inputs				
24VAC	16.8	26.4	24	Volt AC
12VDC	9.6	13.2	12	Volt DC
Relay Coil Current				
24VAC			46	Milliamps
12VDC			75	Milliamps
Relay Coil Power				
24VAC			1.1	Watts
12VDC			.9	Watts

Note: See the IST instruction manual for a full list of system specifications.