



Manual Supplement

Model Number: 8635-C-N2

Product/System Title: Room Pressure Controller with N2
Communications Protocol

Contents of this manual supplement include:

- 1) Sequence of Operation
- 2) Variable map
- 3) Description of software items added
- 4) Software items deleted
- 5) Description of variables
- 6) Wiring Diagrams

N2 communications are installed on the Model 8635-C-N2 room pressure controllers. This document provides the technical information needed for the host DDC system to communicate with 8635-C units. This document assumes the programmer is familiar with the N2 protocol. Further technical assistance is available from TSI if your question is related to TSI interfacing to a DDC system. If you need further information regarding N2 programming in general, please contact Johnson Controls.

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Sequence of Operation

The Model 8635-C-N2 measures the room pressure differential and receives temperature information from the thermostat. The 8635-C-N2 control algorithm modulates the supply and general exhaust air to provide adequate supply air while maintaining the room pressure differential and temperature control.

Temperature control is provided by a thermostat that provides temperature information to the Model 8635-C-N2 controller and controls the reheat coil. The thermostat will provide a 0-10V signal, corresponding to a 50-85°F temperature. Alternatively, the temperature can be sent to the controller over the N2 bus (Analog Input #3)

In occupied mode, the Model 8635-C-N2 has two supply flow set points: ventilation and temperature. The ventilation setpoint is the minimum supply flow for the space, used when the heating and cooling loads are met. The temperature supply set point is a higher flow, required to meet an increased cooling load in the lab.

Laboratory temperature is continuously transmitted to the Model 8635-C-N2. When the laboratory temperature is satisfied, the ventilation set point is maintained, unless additional supply air is required for the room pressure balance. When the space temperature is more than 1°F above the temperature setpoint, the 8635-C-N2 slowly will increase the supply air volume, to a maximum of the temperature minimum supply flow, until the space temperature returns to setpoint. When the space temperature is more than 1°F below the temperature setpoint, the 8635-C-N2 slowly will decrease the supply air volume, to a minimum of the ventilation minimum supply flow, until the space temperature returns to setpoint. If the supply volume is at the ventilation minimum supply flow, the thermostat will modulate the reheat valve to provide the necessary heating.

In unoccupied mode, the supply flow will remain at the unoccupied supply flow rate.

Supply air volumes will rise above the minimum setpoints, under all conditions, as required to maintain space pressurization. Temperature control and occupied/unoccupied modes will only affect the minimum supply flows, which are used, for example, when fume hood sashes are lowered.

NOTE: The 8635-C-N2 will not allow the temperature minimum supply volume to be less than the ventilation minimum supply volume.

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Menu Configuration

SETPOINTS

SETPOINT
REM SETPOINT
VENT MIN SET
TEMP MIN SET
UNOCCUPY SET
TEMP SETP
ACCESS CODE

ALARM

LOW ALARM
HIGH ALARM
REM LOW ALM
REM HIGH ALM
MIN SUP ALM
ALARM RESET
AUDIBLE ALM
ALARM DELAY
DOOR DELAY
MUTE TIMEOUT
ACCESS CODE

CONFIGURE

DISPLAY AVG
UNITS
SUP DCT AREA
FLO STA TYPE
TOP VELOCITY
ACCESS CODE

CALIBRATION

SENSOR ZERO
SENSOR SPAN
SUP FLO ZERO
ELEVATION
TEMP CAL
ACCESS CODE

CONTROL

SPEED
SENSITIVITY
CONTROL SIG
OUTPUT MODE
Kc VALUE
Ti VALUE
Td VALUE
ACCESS CODE

INTERFACE

NET ADDRESS
ACCESS CODE

DIAGNOSTICS

CONTROL SUP
CONTROL EXH
SENSOR INPUT
SENSOR STAT
SWITCH INPUT
SUP FLOW IN
TEMP INPUT
LOW ALM REL
HIGH ALM REL
ACCESS CODE

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Software Items Deleted

The following software items have been deleted from the 8635-C-N2:

<u>Menu</u>	<u>Item</u>
SETPOINTS	TEMP LOW TEMP HIGH
CONFIGURE	EXH DUCT AREA ROOM VOLUME
CALIBRATION	EXH FLOW ZERO
INTERFACE	NET PROTOCOL
DIAGNOSTICS	EXH FLOW IN



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Variable Map

NPT	NPA	UNITS ¹	DESCRIPTION
AI	1	ft/min, m/s, in. H ₂ O, Pa, mm H ₂ O	Room Pressure Value
AI	2	CFM, l/s	Supply Flow Rate
AI	3	°F, °C	Temperature
AI	4	ft/min, m/s, in. H ₂ O, Pa, mm H ₂ O	Control Setpoint
AI	5	CFM, l/s	Minimum Supply Setpoint
AI	6	#	Supply Control Output
AI	7	#	Exhaust Control Output
BI	1		Low Room Pressure Alarm 0=Normal 1=Low Alarm
BI	2		High Room Pressure Alarm 0=Normal 1=High Alarm
BI	3		Min. Flow Alarm 0=Normal 1=Low Flow Alarm
BI	4		Emergency Mode 0=Normal 1=Emergency Mode
BI	5		Room Mode 0=Main 1=Remote
BI	6		Occupied/Unoccupied Mode 0=Occupied 1=Unoccupied
BI	7		Data Error 0=Normal 1=Data Error
AO	1	ft/min, m/s, in. H ₂ O, Pa, mm H ₂ O	Low Alarm Setpoint
AO	2	ft/min, m/s, in. H ₂ O, Pa, mm H ₂ O	High Alarm Setpoint
AO	3	ft/min, m/s, in. H ₂ O, Pa, mm H ₂ O	Remote Low Alarm Setpoint
AO	4	ft/min, m/s, in. H ₂ O, Pa, mm H ₂ O	Remote High Alarm Setpoint
AO	5	CFM, l/s	Min. Flow Alarm Setpoint

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Description of Variables

NPT - Network Point Type

Variables are defined as analog inputs, binary inputs, and analog outputs. Analog inputs are current control parameters and items that the controller is measuring. Binary inputs represent controller states. Analog outputs are the programmable setpoints for the isolation room pressure controller and monitor. These setpoints can be changed through the keypad or by overriding the current setpoint.

NPA - Network Point Address

Address of the desired point.

Change of Status (COS) - Room Pressure Analog Input

The 8635-C-N2 has the ability to change control setpoints locally. The alarm setpoints need to be based on the controller's control setpoint (AI #4). For example the setpoint could go from -0.002 "H₂O to +0.001 "H₂O. If the COS alarm setpoints are not changed to accommodate you could get low alarm or low warning messages when the unit is working correctly. If these alarm points are set outside of the negative and positive setpoint values, incorrect alarm messages can be prevented.

Override Analog Input Command

Analog Input values can be set using the override command. These values will be reset to the correct items when the Override is released. There is not a time-out on the override command.

Override Binary Input Command

Overriding a 1 to Emergency binary inputs enables that mode. To release the controller from emergency state, override a 0 to the Emergency input or press either the emergency or reset key. Releasing the override will return the controller to the Normal state. If the 8635-C-N2 had been put into Emergency mode from the keypad, then it cannot be cleared remotely.

Overriding a 1 to Room Mode binary inputs enables Remote mode. To release the controller from remote state, override a 0 to the Room Mode. Releasing the override will return the controller to the Normal state.

Overriding a 1 to the Occupied/Unoccupied Mode binary inputs enables the unoccupied mode. To release the controller from the unoccupied state, override a 0 to the Occupied/Unoccupied Mode. The Occupied/Unoccupied Mode can only be accessed through N2 communications.

The alarm and data error variables can be overridden, but this will not affect the controller. Overriding the low alarm variable will result in a change of status, but will not put the controller into low alarm mode. The local alarm modes can only be controlled locally. Only override these variables for diagnostic purposes, and release them for normal operation.

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Binary Input Data Error

Data Error binary inputs are used to indicate if something has gone wrong with the controller. Data Error indicates when some of the data stored on the device has been corrupted. The calibration and setpoint values should be checked on the controller.

Override Analog Output Command

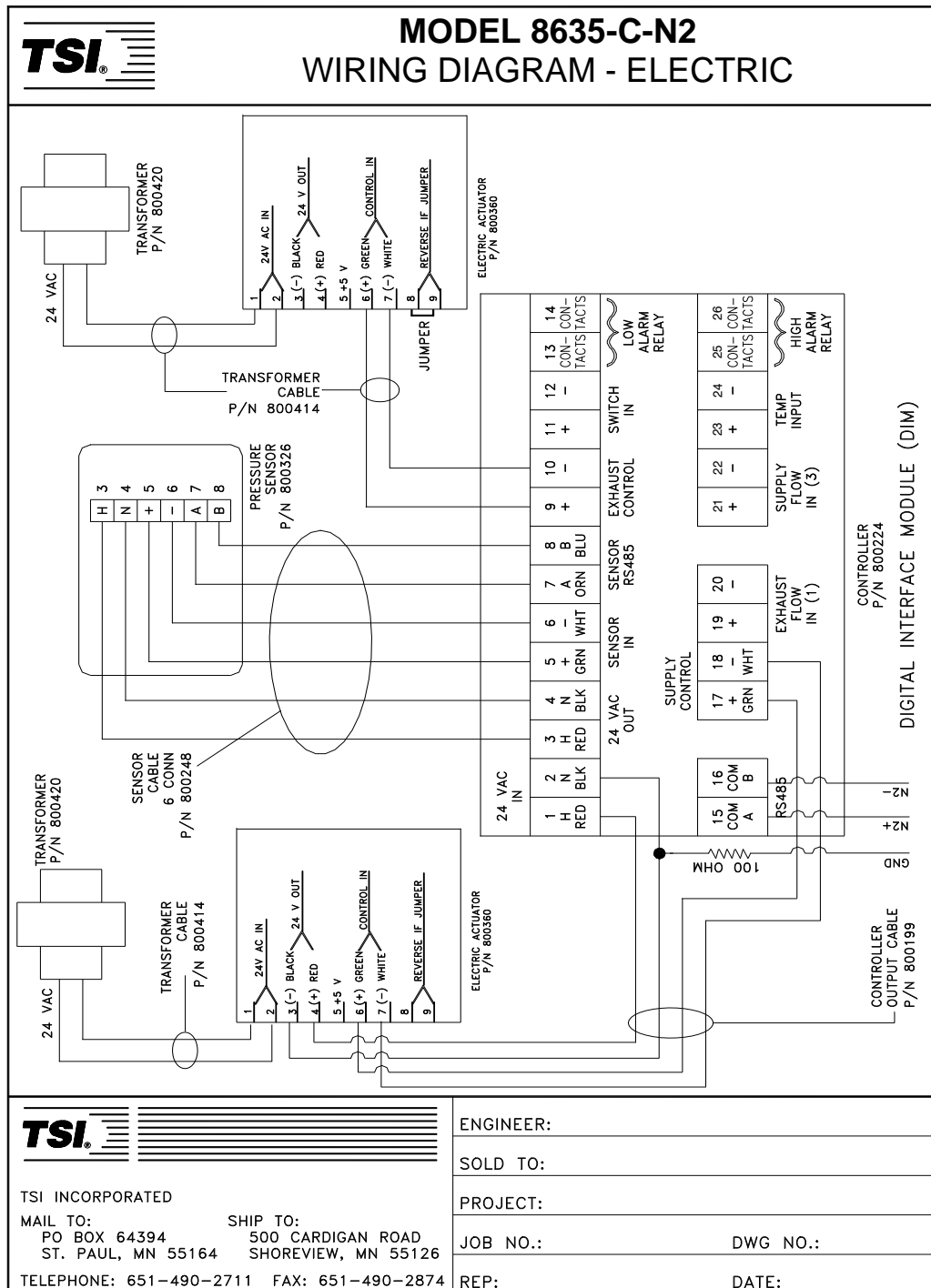
The analog output variables can be overridden to change their values. The overridden value will be checked for validity. If invalid, the override command will be ignored, and the value will not change. The override flag will not be set when the value is ignored. The override command will be cleared when the variable is reset in the menus. The variable will not reset with the release command.

Supported Commands

Command	Response
Request Device ID	Returns 0x10
Synchronize Time Command	Acknowledged. There Is No Internal Clock To Synchronize.
Poll Without/With Ack Message	Any Change Of Status Is Returned
Read Analog Input Command	Variable Value
Read Binary Input Command	Variable Value
Read Analog Output Command	Variable Value
Write Analog Input	Acknowledge
Write Binary Input	Acknowledge
Write Analog Output	Acknowledge
Override Analog Input Command	Acknowledge
Override Binary Input Command	Acknowledge
Override Analog Output Command	Acknowledge
Override Release Request	Acknowledge
Identify Device Type Command	Returns 0x10h

Note: Poll Without/With Ack Message will need to be sent twice in order to receive all of the possible change of status variables.

Wiring Diagrams



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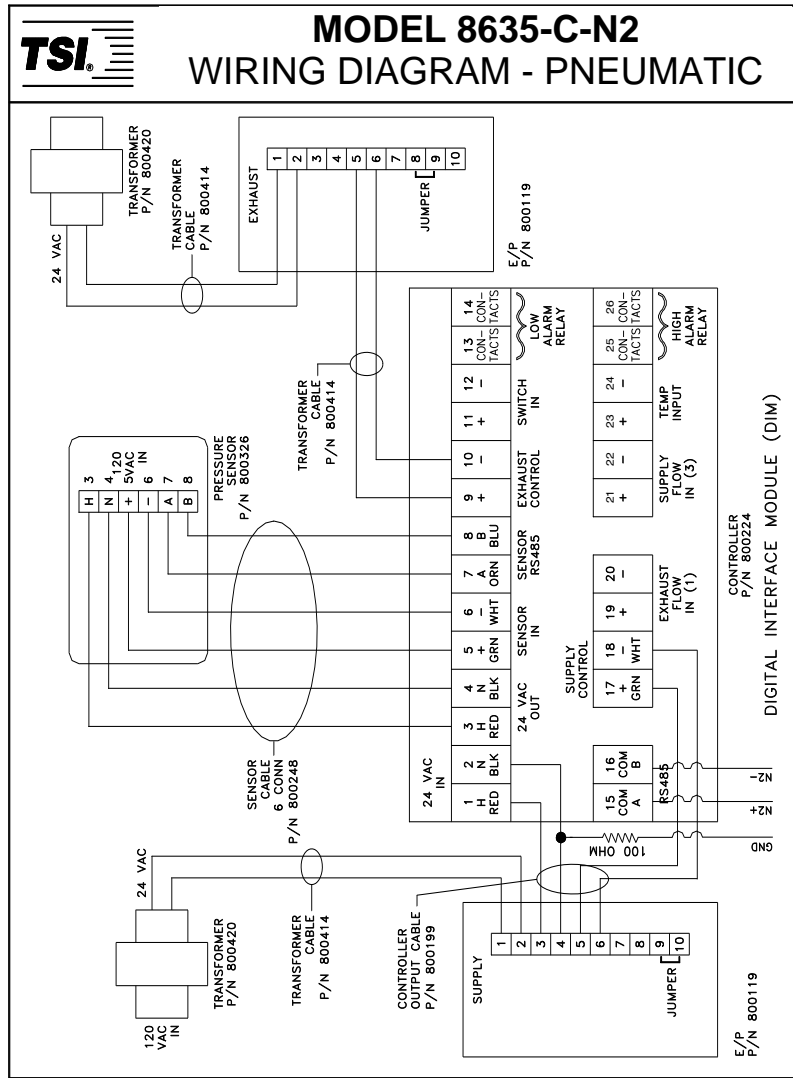
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