

PC485.S5 Module Product Guide

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Overview and General Concepts

The PC485.S5 multipurpose module can facilitate several functions in INNCOM's Integrated Room Automation System (IRAS). As an S5 to Floor Level Network (FLN5) protocol converter, the PC485.S5 provides room-gateway functionality for any S5bus member lacking inherent gateway functionality, such as the P564 door chime, S-Series S217 light dimmer, X06.DIN relay pack, D254.DIN 2-channel dimmer, RF e528 or e527 thermostats. With its one protected input and one 12VDC output, the PC485 is the preferred driver for external chimes and door switches. In conjunction with a power relay, the PC485 becomes a master lighting controller (the X09) as an interface between INNCOM's Energy Management System occupancy sensor logic and unit controlled lighting loads. And if need be, it can function as a one-input device where the device is located distant from the input.



Figure 1 PC485.S5 Module

Features

- Compact housing, designed to fit inside small enclosures such as single gang wall boxes
- Contains standard INNCOM headers and pin assignments
- FCC Listed and CE Mark

Network Typology

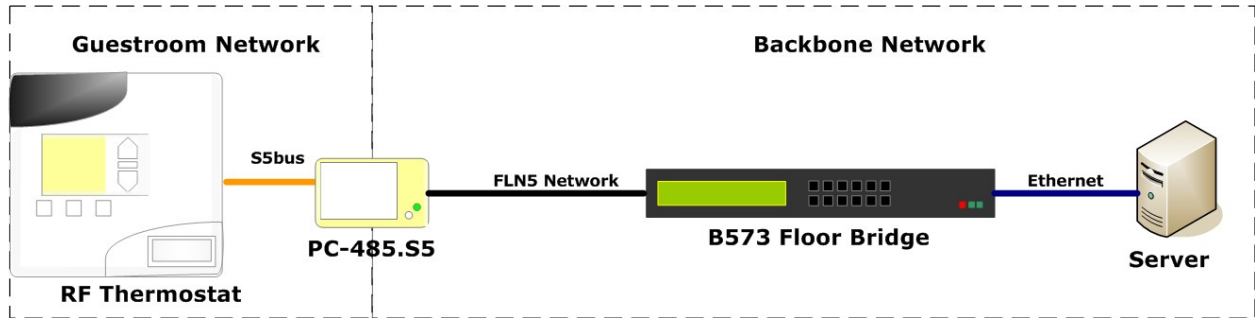


Figure 1 PC485.S5 Gateway Topology

The PC485.S5 is typically used where a centrally controlled system is desired but there are no in-room devices with the ability to connect to the FLN5 twisted pair wiring from a B573 Floor Bridge. Such an example is an RF in-room application. The in-room network between room devices is RF; the PC485.S5 connects using an S5bus to the RF thermostat to provide the room gateway function towards the FLN5 network.

X09 Configuration

Pairing the PC485, a relay, and a power source creates a simple Master lighting application with a small footprint but robust circuit protection. It can be deployed where only one relay is needed to control the lighting feed circuit rather than using INNCOM's larger 5-relay X05/X06. With a 30A relay, the X09 ensures that the typical 20A breaker will trip before the X09 burns out. The X09 can be used with a 2A or a 250 μ A power supply. Figure 2 shows the wiring for a typical X09 Master lighting application.

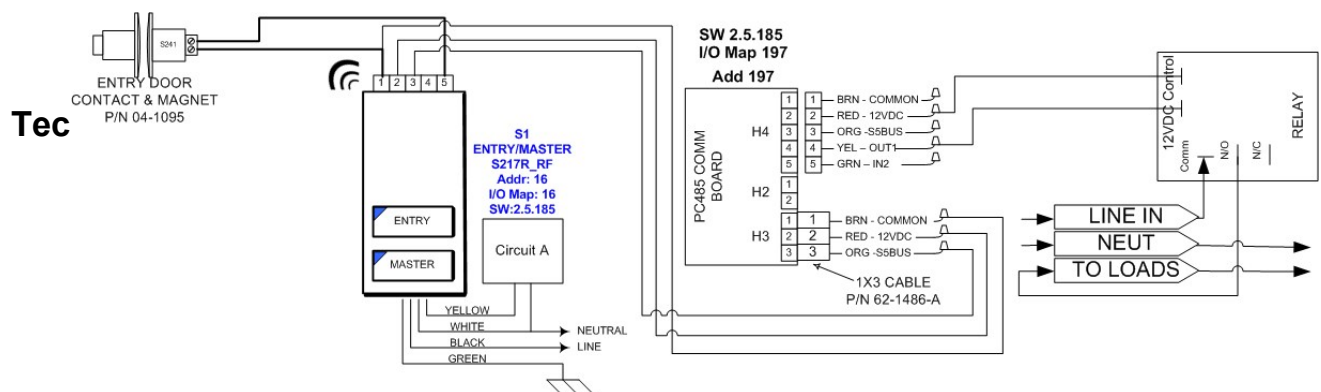


Figure 2 X09 Master Lighting Wiring

The X09 is designed to be installed by licensed electricians and requires additional installation materials (back boxes, separators, etc.) typically provided by them.

PC485.S5 Digital Input

The PC485.S5 digital input is a 5 volt logic pin. A voltage near 5V is interpreted as logic zero, while a voltage near 0V is considered a logic one. The input pin should never be connected to a voltage source greater than 5V or less than 0V, as damage to the circuit may occur. INNCOM does not recommend sourcing current from an input pin on PC-485.S5.

PC485.S5 Digital Output

The PC-485.S5 digital output is designed to drive indicator and status LED's on third party devices for Privacy, Service, Butler Call, as well as a variety of other status indication, and hotel service notifications. When using the PC-485.S5 digital output for status or indicator LED's, ensure that the LED is equipped with a current limit resistor appropriate to the source voltage as shown above.

The output can also drive relays for master contactor applications and other state change driven devices within the specification noted in the illustration above. Relay coil current flowing through H4 cannot exceed 100mA.

Headers

H1—ICP

Pin	Signal	Function	Wire Color
1-8	Various TTL signals	Programming	-

H2—CI Net

Pin	Signal	Function	Wire Color
1	RS-485 A	Non inverting receiver Input	Red
2	RS-485 B	Inverting receiver Input	Green

H3—S5bus

Pin	Signal	Function	Wire Color
1	GND	Common	Brown
2	12VDC	Input Voltage	Red
3	S5bus	Multi-drop communications	Orange

H4—S5bus

Pin	Signal	Function	Wire Color
1	GND	Common	Brown
2	12VDC	Input Voltage	Red
3	S5bus	Multi-drop	Orange
4	OUT1	Open-Collector Output	Yellow
5	IN2	0-5VDC Dry Contact Input	Green

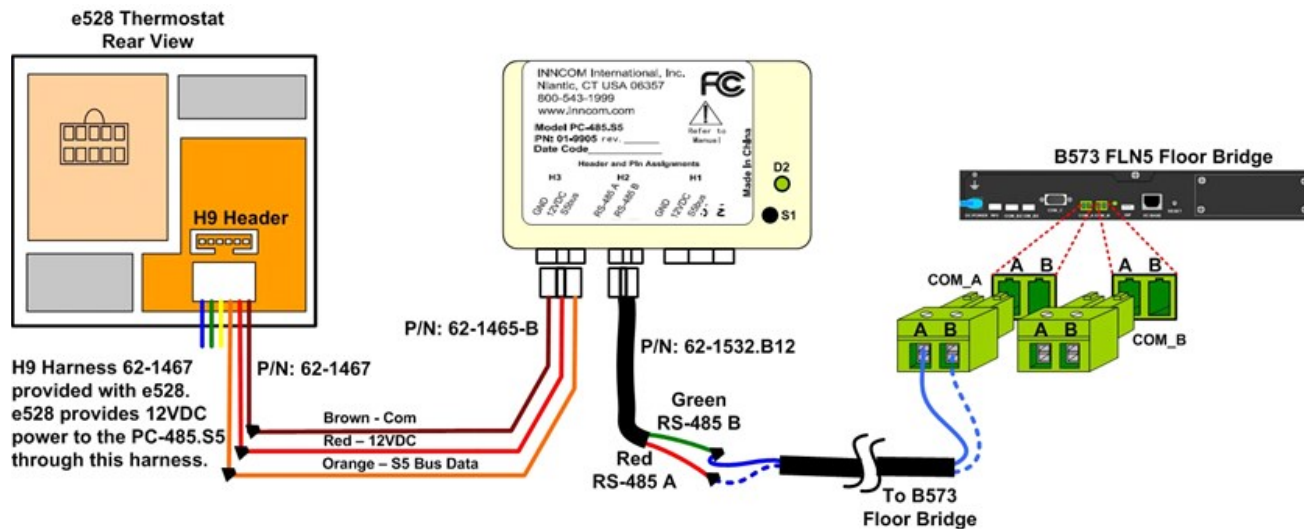
Operating Conditions

Parameter	Min	Max
Operating ambient temperature range	0°C	40°C
Operating supply voltage	11.75VDC	12.25VDC
Current Consumption	15mA	*25mA
Mechanical Dimensions	41.4mm x 26.4mm x 13mm	
FCC	Part 15b	

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

*Maximum current consumption is observed when the PC485.S5 is searching for the FLN5 network.

Installation



1. In a typical network installation, the PC485.S5 is placed inside the gang box along with the e528 thermostat. Connect GND, 12VDC, and S5bus Data of the PC485.S5 to GND, 12VDC, and S5bus Data of the e528 thermostat (pins 1-3 of H9) using the wiring harnesses provided with the PC485.S5 and e528. This provides the 12VDC power and S5bus communications to the PC485.S5 from the thermostat.
2. The PC485.S5 can hang on the cable assemblies inside the gang box. Ensure that Class-1 and Class-2 circuits and wire harnesses are separated inside the gang box to avoid damage to the equipment.
3. For other applications without the e528 where the PC485.S5 is used to provide the gateway functionality, find the S5bus header of the host device (e527, S217, D254.DIN, etc) and connect the signals to H3 of the PC485.S5 accordingly. The PC485.S5 requires a source of 12VDC power, so an appropriate 12VDC power supply (such as an INNCOM PS564 12V power supply) will be required if the host device does not supply 12VDC power (i.e., an e527 thermostat). Again, refer to provided commissioning wiring diagrams.
4. Connect the incoming RS-485 pair of wires to pins 1 and 2 (RS-485 A and RS-485 B) of H2 on the PC485.S5 using the 62-1532.B12 harness. Connect RS-485 A to the Red wire and RS-485 B to the Green wire. Plug the 621532.B12 harness into the H2 header of the PC485.S5 ONLY AFTER verifying no shorts or dangerous voltage levels exist on the FLN5 network wiring.
5. Power up the thermostat and PC485.S5. The PC485 Green D2 LED will display a slow blink pattern and then a rapid blink pattern during start up. Once the blink pattern has returned to a slow blink, the PC485.S5 has initialized.

Commissioning

Note: The steps below assume a working knowledge of using an e528 or e527 thermostat to commission and configure a room; specifically, using the thermostat Service Parameter mode to “ping” other devices, reset the thermostat and other device, and teach device addresses and channels. Consult the e4 Parameter Guide documentation for details as

well as any applicable commissioning procedures or checklists created for the specific installation.

1. Confirm S5bus connectivity between the PC485.S5 and the thermostat using the thermostat Service Parameter 17 Ping Test. If the PC485.S5 cannot be pinged from the thermostat, check the following:
 - Verify the S5bus wiring between the thermostat and PC485.S5 is correct.
 - Verify the Channel set in the thermostat and PC485.S5 is the same. It is possible that for the specific installation, devices in the room are set to channels other than the default channel 1. Consult the commissioning checklist for the specific room.
 - If the channel in the PC485.S5 must be changed, this can be done from the e528/e527 thermostat Service Parameter 15 Address/Channel Teach.
 - Set the e528/e527 to the desired channel (Service Parameter 224).
 - Go to Service Parameter 15 and set the value to 227, the device address of the PC485.S5.
 - Press the DISPLAY button on the e528/e527 to execute the Address/Channel teach command.
 - Confirm the Green D2 LED on the PC485.S5 begins to quickly flash, indicating it acquired the teach command.
 - Press the recessed S1 switch on the PC485.S5 (requires a paper clip or similar object) to accept the teach command.
 - Verify the PC485.S5 is powered.
2. Verify the Network ID set into the thermostat is correct (i.e., Service Parameters 10, 11, 12). This procedure assumes the thermostat (or network ID manager in the system if not the thermostat) has been properly configured per the property commissioning checklist and has the correct Network ID set.
3. Reset the thermostat. This will activate the Network ID in the thermostat and make the thermostat broadcast its Network ID after it resets. The PC485.S5 needs to see this Network ID broadcast in order to set the Network ID in the PC485.S5 in the next step.
4. Reset the PC485.S5. This stores the Network ID in the PC485.S5 and allows it to register with the INNCOM server as the room gateway.

Enter Service Parameter mode on the thermostat, set the value of Parameter 1 to 227, and press the DISPLAY button to send the reset command to the PC485.S5. (Reset can be accomplished by removing and restoring power to the PC485.S5 as well.)

5. If the PC485.S5 has been connected to a B573 Floor Bridge, verify the RS-485.S5 has FLN5 connectivity by observing a small dot in the lower right corner of the thermostat display, or verify FLN5 connectivity by performing the Service Parameter 2 WAN communications test from the thermostat.

Ordering Information

Model #	Description
01-9905.P	S5bus Protocol Converter

References

Title	Location
E4 Parameter Guide	T:\Library\INNCOM Documentation Library\Application Notes\Application Notes Source\AN200 e4 Parameters(Vers1.4)-AN.pdf

Document Revision History

Revision	Date issued	Reason for change
V0.1	23-Mar-2009	Release for manufacturing
V0.2	24-Mar-2009	Revised for formatting and readability
V1.0	15-Apr-2009	Released
V1.01	8-Jul-2009	Updated with Installation / Commissioning content. Added Network topology, and updated current consumption tables.
V1.02	9-Jul-2009	Scott updated installation and commissioning section
V1.03	15-Jul-2009	Edited for sense, grammar, formatting.
V1.1	03-Aug-2009	Incorporated Approvers' comments and released
V1.2	21-Jul-2013	Updated OPN to conform with SAP
V1.3	11-Sep-2013	Added X09 configuration.
V1.4	3-March-2015	Clarified digital input and output specification.
V1.5	10-Aug-2016	Rebranded as per Honeywell Documentation Standards

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