Smartzone RS485 Interface

Communication Protocol Guide

RC-SZ-RS485

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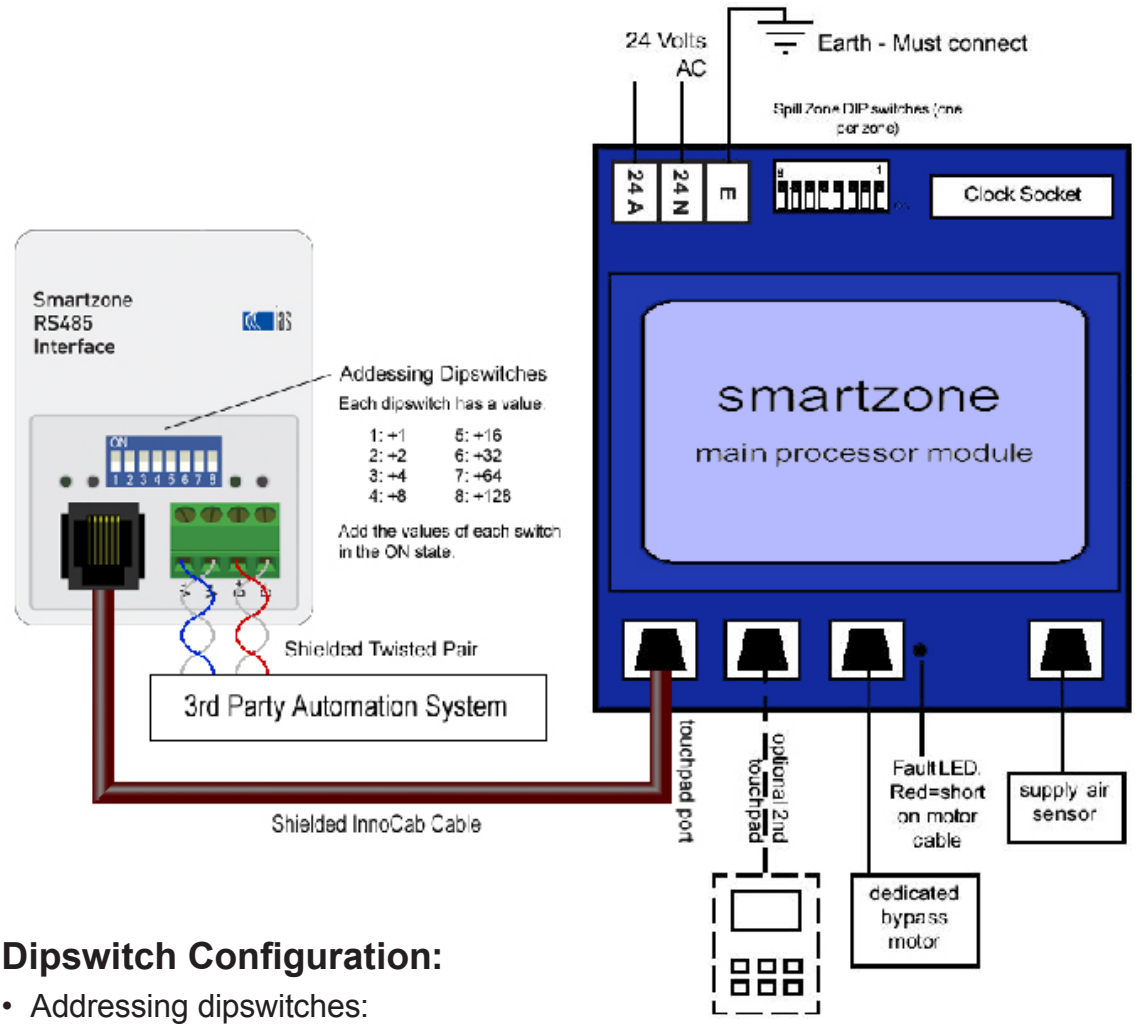
This Install Guide documents the Smartzone RS485 Interface

Sourcing
Proudly designed and manufactured in Australia by Innovative Air Systems Pty Ltd, an independent Australian-owned company.

Contents

Wiring Connections:

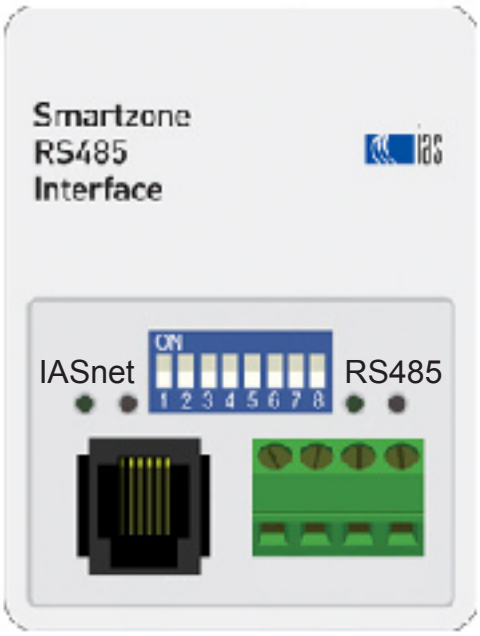
- 4-way terminal block for RS485 connectivity
- RJ12 socket for iasnet to Smartzone Plus connectivity



Dipswitch Configuration:

- Addressing dipswitches:
  - address 0 = all dipswitches in the off position.
  - address 1 = dipswitch 1 in the on position and all other dipswitches in the off position.
  - address 254 = all dipswitches in the on position and dipswitch 1 in the off position (Also all dipswitches in the on position for address 254).
- For long distance transmission there is a jumper to enable the 120 ohm termination resistor (**NOTE:** devices communicating over long distances, should have termination resistors enabled at each end).

Communication Indicator LEDs:



RS485 Communication Indicator LEDs:

These appear to the right of the dipswitches (as labeled in the above image).

- Green LED: lit when receiving data from a device connected via RS485 (usually a computer).
- Red LED: lit when transfering data to a device connected via RS485 (usually a computer).

IASnet Communication Indicator LEDs:

These appear to the left of the dipswitches (as labeled in the above image).

- Green LED: lit when data is received from the Smartzone system (this should be constantly flashing).
- Red LED: lit when the Smartzone RS485 Interface is sending data to the Smartzone system.

Establishing a Connection to a Smartzone system:

To interface with a Smartzone system, a connection needs to be established through a serial port on the interfacing computer. This serial port should be configured in the following way:

Baud Rate:	9600
Data:	8 bit
Parity:	none
Stop:	1 bit
Flow Control:	none

A program such as Tera Term (available from ***http://www.ayera.com/teraterm/***), or Hyper Terminal (in-built windows application) can be used to communicate with the Smartzone system. These programs are ideal to see how communication works between the Smartzone system and an interfacing computer, as well as how the data packet structure works; for requests and replys. See Smartzone Packet Structure for assistance with structuring communication data packets.

Smartzone Data Packet Structure:

All communication with the Smartzone system is initialised by the interfacing device using a query. A valid query is a collection of ASCII characters in the format '**Qa,z,n,s<cr>**':

- Where '**Q**' defines the data packet as a query command;
- '**a**' is the address of the Smartzone system (set by the dipswitches on the Smartzone RS485 Interface module) and will be a value between '**0**' & '**254**' or '*****' which references all Smartzone systems connected via RS485 (**NOTE:** All Smartzone systems must have unique addresses);
- '**z**' is the selected zone to view or edit, this will be a value between '**1**' & '**8**' (each Smartzone system can have up to 8 zones connected) or '*****' to reference all the active zones on the specified address;
- '**n**' is the desired on/off state of a zone, it will be '**0**' to turn the zone off, '**1**' to turn the zone on, or '**-**' to leave the current zone state unaltered;
- '**s**' is the desired setpoint in half degree steps and can be set between '**30**' & '**60**', (which corresponds to the degrees celcius range of '**15**' to **'30**'), or '**-**' to leave the selected zone's setpoint unaltered.

NOTE: All query requests made with a '*****' for the address and/or selected zone will not return a reply. All other query requests that reference a specific system and zone will return a reply. Also, two queries must be used to change the on/off state and setpoint of a zone. They are seen as two seperate operations.

All queries that do not include a '*****' for the address and/or the zone will return a reply. This reply is a collection of ASCII characters in the format '**Ra,z,n,s,t<cr>**':

- Where '**R**' defines the data packet as a reply;
- '**a**' is the address of the Smartzone system sending the reply, it will have a value between '**0**' & '**254**';
- '**z**' is the zone the reply refers to and will be a number between '**1**' & '**8**';
- '**n**' is the current on/off state of the replying zone and will be either '**0**' to indicate a zone is off or '**1**' to indicate it is on;
- '**s**' is the current setpoint of the corresponding zone and is a value between '**30**' & '**60**', this value is in half degree steps so it is double the actual value;
- '**t**' is the current room temperature, this is also in half degree steps so it will be double the actual room temperature value.

Communication Examples

Example 1

- On a Smartzone at address 0, change zone 1's on/off state to 'on'.
  Send: Q0,1,1,- **Reply:** R0,1,1,45,36

Explained: The query is constructed of the address = '**0**' (the address of the Smartzone system), the zone = '**1**' (selects zone 1), the on/off state = '**1**' (1 will alter the on/off state to 'on') and the setpoint = '**-**' (leaves the setpoint unaltered). The reply indicates that zone 1 is now **on**, has a setpoint of **22.5 °C** (45 / 2 = 22.5) and a room temperature of **18 °C** (36 / 2 = 18).

Example 2

- Change the setpoint on zone 3 to 25 °C on a Smartzone system at address 254.

  Send: Q254,3,-,50 **Reply:** R254,3,1,50,46

Explained: The query is contructed with the address = '**254**' (address of the Smartzone system), the zone = '**3**' (selecting zone 3), the on/off state = '**-**' (leaves the zone on/off state unaltered) and the setpoint = '**50**' (25 °C in half degree steps). The reply indicates that zone 3 is **on**, the zone 3's setpoint has been changed to **25 °C** (50 / 2 = 25) and the room temperature is **23 °C** (46 / 2 = 23).

Example 3

- Turns all zones 'off', on a Smartzone system at address 1.

  Send: Q1,*,0,- **Reply:** none

Explained: The query is constructured with the address = '**1**' (the address of the Smartzone system), the zone = '*****' (this query applies to all zones on the selected Smartzone system), the on/off state = '**0**' (0 turns the zone 'off'), setpoint = '**-**' (leaves the setpoint unaltered). This query gives no reply as it applies to more than one zone on a Smartzone system.

Example 4

- Changes the setpoint to 21 °C for all zones on all Smartzone systems.

  Send: Q*,*,-,42 **Reply:** none

Explained: The query request is constructured with the address = '*****' (this query is for all Smartzone systems connected to the RS485 bus), the zone = '*****' (this query is for all zones), on/off state = '**-**' (leave the zones on/off state unaltered) and the setpoint = **42** (21 °C in half degree steps). This query gives no reply as it changes more than one Smartzone system and more than one zone.

Notes:

Notes:

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Designed and manufactured in Australia by
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