

# Test of thermostat Setpoint Command Class

## Heatit Z-TRM3



**Date:** 15.05.2020-22.05.2020  
**Product:** Heatit Z-TRM3  
**Gateway specific:** Reports from multiple gateways (openHAB, HomeAssistant, HomeSeer)

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### Fault explained by customer

Thermostat does not accept setpoint values.

# TEST RESULTS

## Thermostat Setpoint Set Command

### 4.114.3 Thermostat Setpoint Set Command

This command is used to specify the target value for the specified Setpoint Type at a supporting node.

A supporting node **MUST** support the same format of *Precision*, *Scale* and *Size* fields values as it sends in the Thermostat Setpoint Supported Report Command or Thermostat Setpoint Capabilities Report Command.

7	6	5	4	3	2	1	0
Command Class = COMMAND_CLASS_THERMOSTAT_SETPOINT (0x43)							
Command = THERMOSTAT_SETPOINT_SET (0x01)							
Reserved				Setpoint Type			
Precision		Scale		Size			
Value 1							
..							
Value N							

Sending setpoint set command with **correct parameters**.

The thermostat replies with a report to indicate success.

Sending setpoint set command with **incorrect parameters**.

The thermostat does not reply. This indicates a failed attempt.

## Thermostat Setpoint Set Command

### 4.114.8 Thermostat Setpoint Capabilities Get Command

This command is used request the supported setpoint value range for an actual Setpoint Type.

The Thermostat Setpoint Capabilities Report Command **MUST** be returned in response to this command.

This command **MUST NOT** be issued via multicast addressing.

A receiving node **MUST NOT** return a response if this command is received via multicast addressing. The Z-Wave Multicast frame, the broadcast NodeID and the Multi Channel multi-End Point destination are all considered multicast addressing methods.

7	6	5	4	3	2	1	0
Command Class = COMMAND_CLASS_THERMOSTAT_SETPOINT (0x43)							
Command = THERMOSTAT_SETPOINT_CAPABILITIES_GET (0x09)							
Reserved				Setpoint Type			

### 4.114.9 Thermostat Setpoint Capabilities Report Command

This command is used advertise the supported setpoint value range for an actual Setpoint Type.

7	6	5	4	3	2	1	0
Command Class = COMMAND_CLASS_THERMOSTAT_SETPOINT (0x43)							
Command = THERMOSTAT_SETPOINT_CAPABILITIES_REPORT (0x09)							
Reserved				Setpoint Type			
Min Value Precision			Min Value Scale		Min Value Size		
Min Value 1							
..							
Min Value N							
Max Value Precision			Max Value Scale		Max Value Size		
Max Value 1							
..							
Max Value N							

**According to Z-Wave documentation, setpoint set **MUST** be set according to this command response.**

When sending thermostat setpoint capabilities get:

Command class **0x43 - COMMAND\_CLASS\_THERMOSTAT\_SETPOINT ver.3**  
 Command **0x09 - THERMOSTAT\_SETPOINT\_CAPABILITIES\_GET**

▼ Properties1

Setpoint Type  hex  dec  ▼  
 Reserved  hex  dec

We get capabilities report from thermostat:

```
10:39:44.518 Send THERMOSTAT_SETPOINT_CAPABILITIES_GET to node 2 started
10:39:44.658 Send THERMOSTAT_SETPOINT_CAPABILITIES_GET to node 2 completed in 00:00:00.139
10:39:44.669 Rx THERMOSTAT_SETPOINT_CAPABILITIES_REPORT(43 0A) + 01 22 00 32 22 01 5E
```

Below is a table explaining in detail what the thermostat is sending:

Byte #	Bit	Raw data (Hex)	Translated to binary if needed	Translated
0	7-0	43		Command_Class_Thermostat_setpoint
1	7-0	0A		Thermostat_setpoint_capabilities_Report
2	7-4	01		Reserved
2	3-0	01		Indicates setpoint type: Heating
3	7-5	22	001	Precision: 1 decimal Example (20.5/21.0)
3	4-3	22	00	Scale: Celsius.
3	3-0	22	010	Size: 2 bytes
4, 5	7-0, 7-0	00 32		Min= 50 (5.0C)
6	7-5	22	001	Precision: 1 decimal Example (20.5/21.0)
6	4-3	22	00	Scale: Celsius.
6	3-0	22	010	Size: 2 bytes
7, 8	7-0, 7-0	01 5E		Max= 350 (35.0C)

## Conclusion

The thermostat operates accordingly to Z-Wave specification.

When using the correct parameters for sending setpoint set, the thermostat works as intended.

The cause of the issue is most likely incorrect formatting of Scale, Size, & precision when setting Thermostat Setpoint Set Command.