Beanbag Receiver

Z-Wave Commissioning Notes

Beanbag Receiver is a mains-powered 2 channel programmable thermostat / programmer using Z-Wave Plus technology for controlling space and water heating in domestic dwellings.

The two relays can be configured to provide 2 zone space heating, or 1 zone plus water heating, and are accessed individually using the Multichannel Command Class.

When used in combination with the Beanbag Thermostat Interface, or with another Z-Wave device providing Setpoint and Ambient temperatures, the Beanbag Receiver utilises TPI control to optimise boiler firing to minimise overshooting of temperature in a heated environment.

This document provides information specific to the Z-Wave technology implemented in the Beanbag Receiver. This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

Inclusion / Exclusion of Beanbag Receiver

1. Put network controller in Inclusion / Exclusion mode.
2. Hold the button on the top of the Beanbag Receiver for 2 seconds until the Network Indicator LED turns red then release the button to put the Beanbag Receiver into Learn Mode. Refer to figure 1 for location of button.
3. Refer to figure 2 for Beanbag Receiver LED indicating whether unit has been addded/removed successfully.
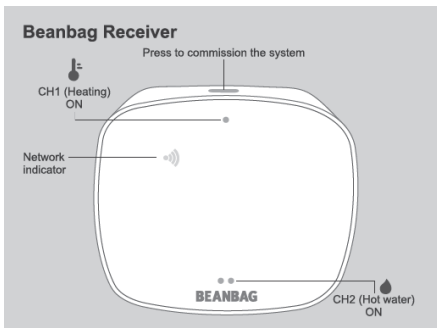

Figure 1

Receiver LEDs

State	LED type	LED colour	Illumination	Indication
Powerup / during commissioning	•)))	●	● Stable	Initialising
	•)))		☀ 3 s ON 30 s OFF	Ready for commissioning
	•)))		☀ Continuous	During pairing in network
	•)))		● Stable	Commissioning complete
Normal operations	•)))		● Stable	Network healthy
	•)))	🟡	🟡 Stable	Communication error
	🌡		● Stable	Switch ON
	🌡		No display	Switch OFF
	💧		● Stable	Switch ON
	💧		No display	Switch OFF

Figure 2

SECURE

BUTTON OPERATION

Button	Function
Commission Button	Short press – NIF
	2 second press – Join/Leave a network
CH1 Button	Short press – Toggle relay 1 on/off for Button Override Duration, subsequent press cancels override
	2 second press – Send Multichannel Capability Report for endpoint 1
CH2 Button	Short press – Toggle relay 1 on/off for Button Override Duration, subsequent press cancels override
	2 second press – Send Multichannel Capability Report for endpoint 1
Factory Reset (underside of unit)	4 second press – restore factory defaults (leave Z-Wave network)

SUPPORTED DEVICE AND COMMAND CLASSES

Z-Wave+ Device and Role Type	Implemented Type
Device Type	Thermostat, HVAC
Role Type	Always On Slave
Command Classes Supported	**Description**
Z-Wave Plus Info (v2)	Z-Wave Plus Version 1
	Role Type – ROLE_TYPE_ALWAYS_ON_SLAVE
	Node Type – NODE_ZWAVEPLUS_NODE
	Installer Icon – ICON_TYPE_GENERIC_THERMOSTAT
	User Icon – ICON_TYPE_GENERIC_THERMOSTAT
Manufacturer Specific (v2)	Secure Controls (UK) Manufacturer ID, Device serial number
Version (v2)	Provides the version number of the firmware and supported Command Classes.
Multichannel (v4)	Describes the 2 endpoints supported by the Beanbag Receiver: Endpoint 1 is a fixed endpoint of Thermostat, HVAC Endpoint 2 is dynamic endpoint that can be configured as Thermostat, HVAC (default) or On/Off Power Switch
Association (v2)	Lifeline Association Group (1 node max) Used for classic associations only; will not receive information from second endpoint
Multichannel Association (V3)	Lifeline Multichannel Association Group (1 node max) Set the destination endpoint to 0 to create a single Lifeline association to receive encapsulated reports appropriate to the Endpoint Device Type from each endpoint.
Association Group Info (v1)	Describes the Association group and what Command Classes and Commands will be returned through it: Thermostat Setpoint Report (mapped from endpoint 1) Thermostat Operating State Report (mapped from endpoint 1) Multilevel Sensor Report (mapped from endpoint 1) Alarm Report (mapped from endpoint 1) Schedule State Report (mapped from endpoint 1) Schedule Report (mapped from endpoint 1)
Powerlevel (v1)	For network maintenance functionality.
Device Reset Locally (v1)	Used to inform lifeline node that the device has been factory reset, and is leaving the network.
Firmware Update (v2)	For providing Over-The-Air firmware upgrades

| Configuration (v1)	Parameter (sequential order)	No	Size Bytes	Units	Resol-ution	Min value	Max Value	Default value
	Setpoint upper limit (endpoint 1)	1	1	ºC	1	35	90	35
	Setpoint lower limit (endpoint 1)	2	1	ºC	1	5	40	5
	Button override duration	3	1	Minute	1	10	120	60
	Relay State on Power (Switch endpoint only)	4	1	Boolean	1	0	1	0
	Endpoint 2 Device Type 0: Thermostat 1: Binary Switch	5	1	-	1	0	1	0
	Time sync (minutes past midnight, in 2 minute intervals)	6	1	Minutes	2	60	120	65
	Heating TPI Cycle 1: 3 cycles per hour 2: 6 cycles per hour 3: 9 cycles per hour 4: 12 cycles per hour	7	1	Enum	1	1	4	2
Thermostat Mode (v1)	Only 'Heat' Thermostat Mode supported							
Thermostat Setpoint (v1)	Used to directly read and control the current target temperature							
Thermostat Operating State (v1)	Read the state of the relay under control of the thermostat Idle: relay is off Heating: relay is on							
Schedule (v1)	Utilises the Thermostat Setpoint Command Class to provide up to 24 heating periods in a 7 day schedule. Note that to run a schedule, a valid Time Report and Date Report must be given to the Beanbag Receiver. The Receiver will request these from the lifeline node shortly after an association is created.							
Multilevel sensor (v1)	Provides ambient temperature reading This Endpoint can also receive Multilevel Sensor Reports in order to support external sensor reading from preferred location to maintain temperature							
Alarm (v1)	Uses Alarm Type of 0x09 with possible Alarm Levels: 0x00 No Alarm 0xFE Never received external temperature sensor reading 0xFF External temperature reading timed out (60 minutes since last Report) If Alarm Level is not 0x00, temperature will be controlled using backup scheme using internal temperature sensor.							
Basic (v1)	Basic Command is mapped to the Thermostat Setpoint Command Class as follows 0x00 Economy (5 degrees) 0xFF Comfort (20 degrees)							

THERMOSTAT ENDPOINTS - SUPPORTED DEVICE AND COMMAND CLASSES

Z-Wave+ Device and Role Type	Implemented Type
Device Type	Thermostat, HVAC
Command Classes Supported	Description
Z-Wave Plus Info (v2)	Z-Wave Plus Version 1
	Role Type – ROLE_TYPE_ALWAYS_ON_SLAVE
	Node Type – NODE_ZWAVEPLUS_NODE
	Installer Icon – ICON_TYPE_GENERIC_THERMOSTAT
	User Icon – ICON_TYPE_GENERIC_THERMOSTAT
Association (v2)	Nodes supported: 0. Create a multichannel association at the root device

	to receive reports through the lifeline for this endpoint
Association Group Info (v1)	Details on the commands sent through the lifeline: Thermostat Setpoint Report Thermostat Operating State Report Multilevel Sensor Report Alarm Report Schedule State Report Schedule Report

Configuration (v1)	Parameter (sequential order)	No	Size Bytes	Units	Resol-ution	Min value	Max Value	Default value
	Setpoint upper limit	1	1	ºC	1	35	90	35
	Setpoint lower limit	2	1	ºC	1	5	40	5

Thermostat Mode (v1)	Only 'Heat' Thermostat Mode supported
Thermostat Setpoint (v1)	Used to directly read and control the current target temperature
Thermostat Operating State (v1)	Read the state of the relay under control of the thermostat Idle: relay is off Heating: relay is on
Schedule (v1)	Utilises the Thermostat Setpoint Command Class to provide up to 24 heating periods in a 7 day schedule.
Multilevel sensor (v1)	Provides ambient temperature reading Can also receive Multilevel Sensor Reports in order to support external sensor reading from preferred location to maintain temperature.
Alarm (v1)	Uses Alarm Type of 0x09 with possible Alarm Levels: 0x00 No Alarm 0xFE Never received external temperature sensor reading 0xFF External temperature reading timed out (60 minutes since last Report) If Alarm Level is not 0x00, temperature will be controlled using backup scheme using internal temperature sensor.
Basic (v1)	Basic Command is mapped to the Thermostat Setpoint Command Class as follows 0x00　　　Economy (5 degrees) 0xFF　　　Comfort (20 degrees)

BINARY SWITCH ENDPOINTS - SUPPORTED DEVICE AND COMMAND CLASSES

Z-Wave+ Device and Role Type	Implemented Type
Device Type	On/Off Power Switch
Command Classes Supported	Description
Z-Wave Plus Info (v2)	Z-Wave Plus Version 1
	Role Type – ROLE_TYPE_ALWAYS_ON_SLAVE
	Node Type – NODE_ZWAVEPLUS_NODE
	Installer Icon – ICON_TYPE_GENERIC_ON_OFF_POWER_SWITCH
	User Icon – ICON_TYPE_GENERIC_ON_OFF_POWER_SWITCH
Association (v2)	Nodes supported: 0. Create a multichannel association at the root device to receive reports through the lifeline for this endpoint
Association Group Info (v1)	Details on the commands sent through the lifeline: Binary Switch Report Schedule State Report Schedule Report
Binary Switch (v1)	Used to directly read and control the state of the relay
Schedule (v1)	Utilises the Binary Switch Command Class to provide up to 24 switching periods in a 7 day schedule.
Basic (v1)	Basic Set and Get are mapped to the Binary Switch Command Class.

INSTALLATION AND FITTING
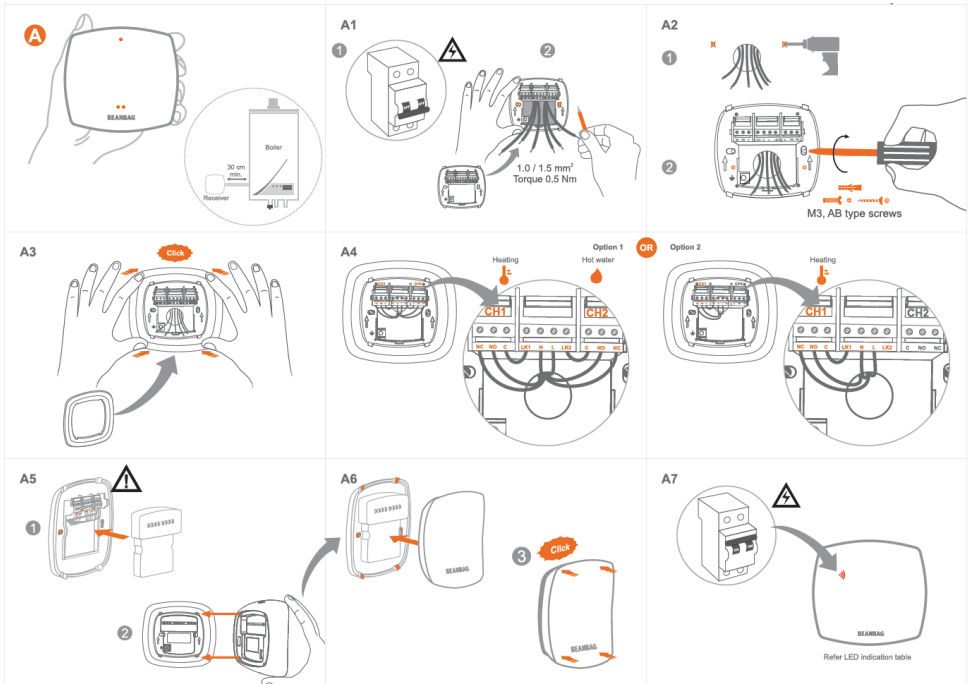
TECHNICAL SPECIFICATION

Mechanical			
Dimensions (LxWxD)	125 x 112 x 35 mm	Mounting	Wall mounting
Weight	161 grams aprox	Enclosure material	Polycarbonate, flame retardant
Environmental			
Storage temperature	-20°C to 70°C	Operating temperature	0°C to 40°C
Environmental humidity range	0 to 90%	Atmospheric range	980 to 1035 hPa above mean sea level
Pollution degree	2	Ingress protection	IP30
Electrical			
Rated voltage	230 VAC / 240 VAC + 10% and -6%	Frequency	50 Hz ± 5%
Insulation Category	CAT II	Relay input voltage CH1 and CH2	12V to 30V DC, or 230/240V AC (50 Hz)
Relay I/O current rating	3A maximum		
Radio			
Receiver Radio category	Category 3	Power Class	Class B
Transmitter frequency	868.42 MHz	RF range	100m line of sight in open air

COMPLIANCE