

BROMIC SMART-HEAT™ LINK

HOME AUTOMATION

INSTALLATION INSTRUCTIONS



⚠ IMPORTANT

**READ THIS MANUAL CAREFULLY.
SEE INSIDE COVER FOR IMPORTANT
INFORMATION ABOUT THIS MANUAL.
KEEP INSTRUCTION WITH APPLIANCE
FOR FUTURE REFERENCE.**



IMPORTANT

This manual contains important information about the installation, and operation of Bromic Smart-Heat™ Link. Please pay close attention to the important safety information shown throughout this instruction manual. Any safety information will be accompanied by the following safety alert symbols:

 DANGER  WARNING  IMPORTANT

- READ THIS MANUAL CAREFULLY before installing or servicing this product.
- Use this device only as described in this manual. Any other use not recommended by the manufacturer may cause radio interference, fire, electric shock, or injury to persons
- This controller is intended for installation with a DC power supply.
- Installation MUST be carried out by a licensed and authorised technician in accordance with local electrical codes.
- For Commercial Use Only

NOTE: IMPORTANT INSTRUCTIONS, SAVE THESE INSTRUCTIONS



WARNING

- The inputs are NOT protected against short circuits which can damage the electronic board.
- The radio signal reception of the device can be affected by the presence of electrical disturbances being transmitted by other appliances working on the same frequency or if the product is shielded by metal parts.
- Do not use the device in places where systems are sensitive to radio emissions.
- Do not keep or use the device in places that are damp, where there is steam, high air humidity, dust or where it is exposed to direct sunlight or similar environmental conditions.
- Do not drop the device. This could damage or reduce the range of transmission.
- Keep device out of reach of children.

BROMIC[®]
HEATING

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IMPORTANT NOTES AND WARNINGS



WARNING

- Read all instructions before installing or using this device.
- Use this device only as described in this manual. Any other use not recommended by the manufacturer may cause radio interference, fire, electric shock, or injury to people.
- Improper installation, adjustment, or alteration and failure to follow the warnings and instructions in this manual could result in personal injury, or property damage.
- The manufacturer is not responsible for any damage that could happen from improper use. The manufacturer emphasises that this controller should be used in a responsible manner and that all procedures, warnings, and safety instructions contained in this book be followed strictly.
- The product must be located on surfaces which cannot be damaged by high temperature. It must be placed in a well ventilated location. It cannot be hermetically closed.
- The connection cables must be protected against any accidental impacts.
- This device is not intended for use in outdoor or kitchens, bathrooms, laundry areas and similar indoor locations.
- Do not install the device directly near high humidity areas or where exposed to water such as outdoor, or indoor near a bathtub, shower or swimming pool.
- This device is not intended for use by people (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Keep packaging materials out of reach of children
- Children should be carefully supervised when they are in the area of the device.
- Do not attempt to alter the device in any manner.
- Do not paint any surface of the device.
- Do not touch the device with wet hands at any time.
- Do not use or store flammable materials near this device.
- Do not spray aerosols or flammable materials in the vicinity of the device while it is in operation
- Never operate the device in an explosive environment such as areas where petrol or other flammable liquids or vapours are stored.

INSTALLATION

- **IMPORTANT** - Installation must be carried out by a licensed and authorised person.
- The installer is to ensure that the requirements of the local authority, local electrical installation code, municipal building codes, and any other relevant statutory regulations are carried out.
- After unpacking, make sure the device shows no signs of visible damage or tampering. If the device appears damaged, contact the place of purchase for assistance.
- Remove transit protection before use.

- This device must only be used on a 5 Volt DC electrical supply. Correct polarity must be used or the device will be damaged.
- This controller is NOT intended to be installed on recreational vehicles and/or boats.
- Do not run cord under carpeting. Do not cover with throw rugs, runners or the like arrange cord away from traffic area and where it will not be tripped over
- This Installation and Operation manual should not be removed from the site of installation. Installer should leave manual with the customer for future reference.
- If the device has not been used, or will not be used, for a long period of time, disconnect power supply

MAINTENANCE/ REPAIR

- This product does not require maintenance and cannot be repaired.
- Installation must be carried out by a qualified & licenced technician only.
- The device should be inspected before use and at least annually inspected by a qualified & licenced service person.
- If damage to the device is suspected, discontinue use immediately and contact the supplier or qualified person to replace.
- Device has no serviceable parts inside.
- Do not open the device.
- At the end of this product's useful life, it must not be disposed of as domestic waste, but must be taken to a collection centre for waste electrical and electronic equipment. It is the user's responsibility to dispose of this device through the appropriate channels at the end of its useful life. Failure to do so may incur the penalties established by laws governing waste disposal. Proper differential collection and the subsequent recycling, processing and environmentally compatible disposal of waste equipment avoids unnecessary damage to the environment and possible related health risks, and also promotes recycling of the materials used in the appliance. For further information on waste collection and disposal, contact your local waste disposal service, or the place of purchase

ELECTRICAL CONNECTIONS

- Installation must be carried out by a qualified & licenced technician only.
- The device requires the use of an AC to DC transformer with 5 Volt DC output (not supplied.) Correct polarity must be used or the device will be damaged.
- Ensure all device wiring is separated from high voltage wiring.
- Ensure all wiring is protected from high temperature surfaces and correctly sized for the rating.

GETTING STARTED

Integration must be performed by a Home Automation Integrator or licenced technician with software and communication debugging experience.

You will need the following from Bromic

- Bromic Smart-Heat™ Link device (for Bromic Part Numbers refer to table on next page)
- Bromic Heater controller (ON/OFF or Dimmer) supplied with pre-programmed paired remote control and installed by licenced electrical contractor.



Electrical hazard when connected to 240V AC



Electrical connections exist and potential to damage product if incorrect polarity or short circuit.



Wireless radiation emitted by this product

TO BE INSTALLED BY ELECTRICIAN



BROMIC ON/OFF

OR



BROMIC DIMMER



**BROMIC HEATER
REMOTE CONTROL**

You will need the following supplied by others

- A compatible Home Automation system with RS232 communication port and RS232 programming interface. Refer to your Home Automation dealer for assistance with compatibility on RS232 3rd party integration.
- Power supply +5VDC (500mA)
- RS232 cable (DB9 Male to DB9 Female connector)
- PC with COM port or USB to RS232 convertor (note you need to install the USB drivers.)
- Software installed on PC to read and send RS232 in hexadecimal codes, such as Docklight®

Docklight® Disclaimer: Refer to <http://www.docklight.de> for more information. Docklight® is a 3rd party software tool developed by Flachmann und Heggelbacher with no association with Bromic. Refer to the software end licence agreement before downloading and choosing to use this software tool. Bromic accepts no liability for the download or use of such 3rd party software.

TECHNICAL SPECIFICATION

Model	Bromic Smart-Heat™ Link
Part no.	For AU P/N: 2620279 For US/CA P/N: BH3130097 For EU P/N: BH3130098
Power Supply	+5VDC
Carrier frequency	US/CA/AU 916 MHz, EU 868 MHz
Transmission Range to Controller	30m or 100 feet
Working temperature	-10°C to +55°C (14°F to 131°F)

INSTALLATION INSTRUCTIONS

SETTING UP

The integration process requires

- 1) Program the device using a PC (covered by this manual)
- 2) Program the Home Automation System (by 3rd party integration).

This instruction manual will detail the steps to program the device using a PC.

The Home Automation System programming needs to be performed by the integrator (others.)

It is recommended the programming steps are performed on the Bromic Smart-Heat™ Link and controller remote first using a PC. This will ensure correct operation of devices and correct programming.

Before The installation

The Bromic controller remote has been pre-programmed at the factory to operate with the supplied controller.

Check the operation of the remote and controller before beginning. Refer to the instruction manual supplied with the controller.

IF THE PAIRED REMOTE DOES NOT WORK WITH THE CONTROLLER, THE Bromic Smart-Heat™ Link PROGRAMMING STEPS BELOW WILL NOT WORK.

In this case, troubleshoot the controller and remote devices using the instruction manual supplied with the controller. The controller and paired remotes are pre-programmed with unique codes for each button operation.

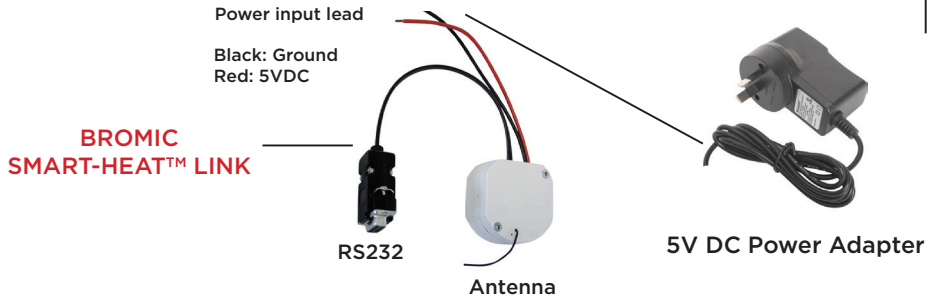
PROGRAMMING INSTRUCTIONS

STEP 1 – Connection of devices

Wire the Bromic Smart-Heat™ Link to a 5VDC supply, by connecting the RED (+) and BLACK (-) wires ensuring correct polarity.

5VDC adaptor and RS232 cable/RS232 convertor are not supplied by Bromic.

TO BE INSTALLED BY HOME INTEGRATOR



Connect the Bromic Smart-Heat™ Link DB9 to the PC via the COM port or to a USB to RS232 convertor.



Check the connections before plugging in the power supply and turning on.

If using a USB to RS232 convertor for the first time, install the USB driver by following the instructions supplied with the USB product.

PROGRAMMING INSTRUCTIONS

Instructions are based on Docklight[®] but any other product with RS232 debugging reading and writing features can be used.

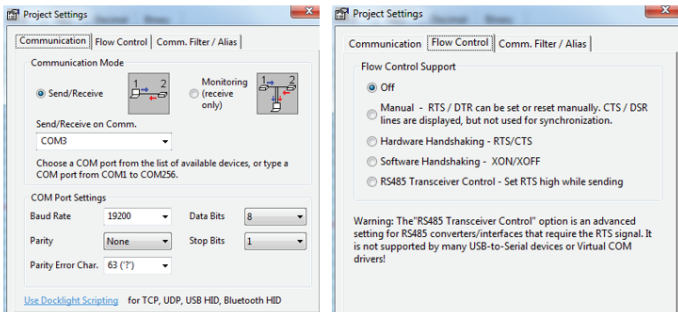
Docklight[®] Disclaimer: Refer to <http://www.docklight.de> for more information. Docklight[®] is a 3rd party software tool developed by Flachmann und Heggelbacher with no association with Bromic. Refer to the software end licence agreement before downloading and choosing to use this software tool. Bromic accepts no liability for the download or use of such 3rd party software.

STEP 2 – Software Configuration

Configure the RS232 port with the following settings:

RS232 SERIAL COMMUNICATION SETTINGS:

Baud rate	19200
Data bits	8
Parity	none
Stop bits	1
Flow control	none



To start communication, open the COM port that appears (COM port 3 in example).

STEP 3 – Understanding the Bromic Smart-Heat™ Link protocol

The Bromic Smart-Heat™ Link can learn operations from up to 50 remotes with each remote having 7 button operations/codes. (Each code is a button operation on the controller remote.) The command protocol for the Bromic Smart-Heat™ Link is documented in the below manual. Please refer to this document for detailed understanding of the command structure, checksum calculation, and error codes. This is available from Bromic website:

www.bromic.com/us/outdoor-heaters/technical-resources/



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RS232 interface for TVLINK systems

Product code:

TVTRX232-916

TVTRX232-916 works with the following devices:

- receivers
- transceivers
- transmitters
- temperature, water and sun sensors.

PROGRAMMING INSTRUCTIONS

STEP 4 - Learning the ON operation

Example 1: Using a Bromic controller remote, set the Bromic Smart-Heat™ Link to learn on Location ID 500 for button operation ON.

NOTE: Each location ID can only be used to learn codes from one controller. Each controller can only be memorised to one location ID.

To set the Bromic Smart-Heat™ Link to memorise, use the command string A (hexadecimal 41)

To set the Bromic Smart-Heat™ Link to memorise at location ID 500 (hexadecimal 01 F4)

Calculate the checksum and use last two significant digits (Hexadecimal 36)

Data to send (hexadecimal): 41 01 F4 36

Now program this command into Docklight.

Ensure Communication port is opened

Send	Name	Sequence
---	deleteAll	44 45 4C 45 54 45 20 41 4C 4C AC
---	MCH500	41 01 F4 36

Double click the name field to create new command

Set command window to display in hexadecimal

Create Name for command

Control Characters Shortcuts

1 - Name MCH500

2 - Sequence Edit Mode ASCII HEX Decimal Binary Pos. 5 / 4

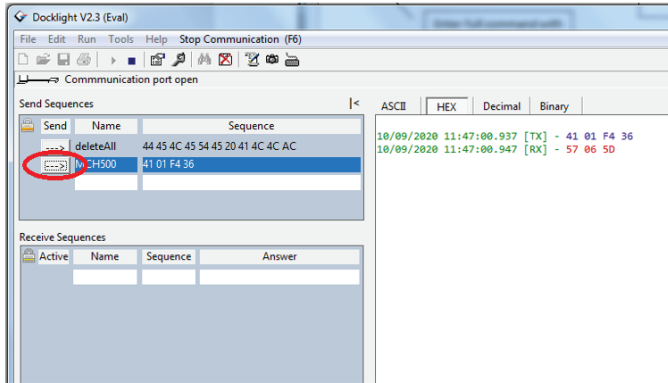
41 01 F4 36

Set to HEX

Enter full command with checksum

PROGRAMMING INSTRUCTIONS

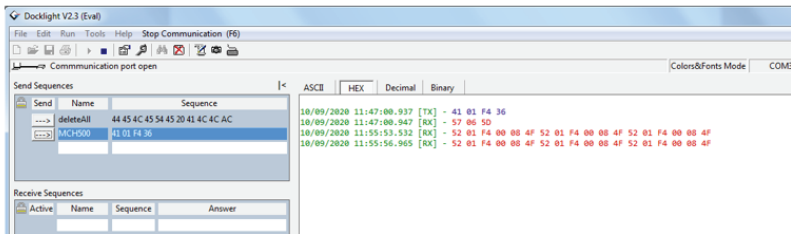
Press the Send button as shown below and the command window on right will display the send command blue - [TX] and return acknowledgement command red -[RX].



The return command 57 06 5D means it is waiting in **LEARN MODE**. Now press the power button on the controller remote twice in sequence.



The code is returned from the Bromic Smart-Heat™ Link and shown in red below.



The returned code is represented 3 times in sequence 52 01 F4 00 02 49.

10/09/2020 12:16:52.573 [RX] - 52 01 F4 00 02 49 52 01 F4 00 02 49 52 01 F4 00 02 49

The first 2 digits 52 (ASCII character R for receive)

The next 4 digits 01 F4 is the location ID (500 in decimal format)

The next 4 digits 00 02 is the channel number (2 in decimal format)

The last 2 digits is the checksum.

PROGRAMMING INSTRUCTIONS

Now to determine the transmit code:

- First 2 byte's is the character T for transmit. In Hexadecimal this is 54
- The next series of digits is the location ID and channel number 01 F4 00 02 in hexadecimal format.
- The last 2 digits is the calculated checksum (in hexadecimal)
=54+01+F4+00+02=14B but only the 2 least significant digits are used for checksum = 4B.

Record this hexadecimal code 54 01 F4 00 02 4B and the button name/function. This will be required for programming into the Home Automation system.

STEP 5 - Test the Bromic Smart-Heat™ Link memorised command with your Bromic Controller.



NOTE: Use only licenced electrical contractors to connect the Bromic controller. The product operates on hazardous high voltage.



Your Bromic controller is expected to be connected and powered on. Refer to operating instructions for the controller to ensure this is working.

Setup Docklight with a new command with the transmit code 54 01 F4 00 02 4B as shown below.

Send	Name	Sequence
--->	deleteall	44 45 4C 45 54 45 20 41 4C 4C AC
--->	M ID500	41 01 F4 36
--->	T ID500 CH2 ON	54 01 F4 00 02 4B
--->	M ID 201	41 00 C9 0A
--->	T ID 201 CH1 ON	54 00 C9 00 01 1E
--->	T ID 201 CH2 OFF	54 00 C9 00 02 1F

Turn off the heater using the remote OFF button and ensure the heater is off.

Now using Docklight®, press the send button for the newly created command. The command window in Docklight® will show the transmitted command in Blue - [TX] and return acknowledgement command in red - [RX].

ASCII	HEX	Decimal	Binary
27/11/2020 16:09:32.499	[TX] - 54 01 F4 00 02 4B		
27/11/2020 16:09:32.512	[RX] - 54 06 5A		

PROGRAMMING INSTRUCTIONS

STEP 6 - Repeat the same operation for other button operations.

Remember that this example uses the location ID 500 location and holds up to 7 codes. Any ID location can be used from 201 to 2000 for other remotes/controllers. ID locations 1 to 200 are reserved.



Controllers can be paired to a common remote (series of common button/codes). Refer to controller manual for instructions.

Supplementary information

For further assistance with programming commands and examples, refer to **Bromic Protocol tool** available from **Bromic website**:

www.bromic.com/us/outdoor-heaters/technical-resources/

The following table will assist with recording of codes

Controller Type	Remote Button Operation	Remote Code	Transmit Code	Confirm operation with PC & controller
 ON / OFF	ON 1			
	OFF 1			
	ON 2			
	OFF 2			
 DIMMER	POWER OFF			
	PRESET 100%			
	PRESET 75%			
	PRESET 50%			
	MIN.			
	DIM UP			
	DIM DOWN			

INSTALLATION INSTRUCTIONS TO HOME AUTOMATION SYSTEM

Now that all remote functions have been programmed into the Bromic Smart-Heat™ Link device, the RS232 connection can be made to the Home Automation System.

Your Home Automation System Integrator is required to perform this operation and program the codes and button functions into the Home Automation Interface.

Contact your Home Automation System dealer for technical support.



TROUBLESHOOTING

It is recommended that all button operations are confirmed using the device connected to a PC before integration of commands to a Home Automation System.

The Docklight® command window is a useful tool to confirm the Bromic Smart-Heat™ Link is transmitting, receiving commands and any error codes that are generated.

Refer to the Bromic Smart-Heat™ Link protocol document for command debugging. The error definition table is shown below

Error Codes					
		Byte	ASCII	HEX	
Error Command		1	E	45	
Error		1	Refer to table below		
Checksum		1	Calculated		

Error Types	HEX	Returned Code
Framming error	00	450045
Checksum error	01	450146
Wrong command error	02	450247
ID = 0 error	03	450348
ID > 2000 error	04	450449
Number of code to read/delete = 0 error	05	450550
Number of code to read > 16 or >128 error	06	450651
Number of code to read/delete > 2000 (out of range) error	07	450752
Serial code already stored error	08	450853
ID < 201 error	09	450954
Empty location transmission attempt error	10	451061
Value out of valid codes range memorization attempt error	11	451162

IF THE PAIRED REMOTE DOES NOT WORK WITH THE CONTROLLER, THE Bromic Smart-Heat™ Link TROUBLESHOOTING STEPS IN THE TABLE WILL NOT WORK. In this case, troubleshoot the controller and remote devices using the instruction manual supplied with the controller

TROUBLESHOOTING

Symptom	Cause	Resolution
Command not working	Device is not on	Check power to device is ON Check power to controller is ON Check remote control operates controller functions
	Device is not plugged into RS232	Check RS232 connection working with PC first, then debug RS232 on Home automation system
	Device transmission out of range	Move device within 30m of controller or check for radio interference from other devices
	Command has not been learned	Check remote functions with controller Check remote code matches transmit code (as seen in image below) and if not re-program Debug the transmission and receive commands using a RS232 transmission debugger and check for error codes Check for correct use of command protocols and checksum calculation
Docklight returns 'FF'	Device is not on	Check device is plugged into a power supply Check power to device is ON Restart Docklight
'Windows Error #5 - Access Denied'	RS232 connection from device lost	Check device RS232 is plugged in Check RS232 connection working with PC first, then debug RS2332 on Home automation system

Transmit code location ID (500 => 01 F4) does not match the received code location ID (201 => 00 C9) signifying that the button/command was not learned.

```

ASCII  HEX  Decimal  Binary
15/12/2020 10:26:22.030 [TX] - 41 01 F4 36
15/12/2020 10:26:22.043 [RX] - 57 06 5D
15/12/2020 10:26:29.166 [RX] - 52 00 C9 00 01 1C 52 00 C9 00 01 1C 52 00 C9 00 01 1C
    
```

To re-program, transmit the delete all command (found in the Protocol tool) which will clear all user programmed codes and start again.