

C-Bus Application Messages & Behaviour

Chapter 9 – Temperature Broadcast

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Comments on this document should be addressed to:

**Engineering Manager
Clipsal Integrated Systems
PO Box 103 Hindmarsh
South Australia 5007**

C-Bus Temperature Broadcast Application

TABLE OF CONTENTS

9	TEMPERATURE BROADCAST Application	3
9.1	Application ID.....	3
9.2	Description.....	3
9.3	Document Convention	3
9.4	Message Structure.....	3
9.4.1	Command Header.....	3
9.4.2	Temperature Group	4
9.4.3	Temperature Byte	5
9.5	Programming of Devices	5
9.6	Message Priority	5
9.7	Internetwork Routing.....	5
9.8	Concatenated Commands	6
9.9	Status Reporting	6
9.10	Limitations.....	6
9.11	Examples	6
9.12	Notes	6

C-Bus Temperature Broadcast Application

9 TEMPERATURE BROADCAST APPLICATION

NOTICE: *The temperature broadcast application is documented and supported for compatibility with existing products.*

Use of this application and its message formats is discouraged for new designs. Instead, use the C-Bus Measurement Application.

9.1 Application ID

\$19

Note that to ensure consistent operation of C-Bus networks, this Application ID shall not be reassigned.

9.2 Description

The Temperature Broadcast Application is used to broadcast details of the temperature of special Temperature Sensors.

For historical reasons and for compatibility with C-Bus Lighting Application commands, the commands used for the Temperature Broadcast Application look like Lighting Application ON, OFF and Ramp to Level commands.

9.3 Document Convention

Numbers are shown in decimal (base ten) with no other special prefixes or indications.

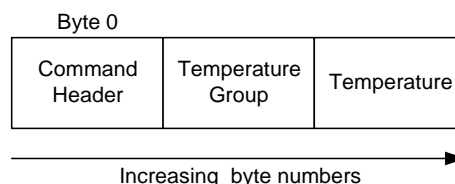
Binary numbers (base 2) are shown with the prefix %.

Hexadecimal numbers (base 16) are shown with the prefix \$.

Example: 157 = %10011101 = \$9D

9.4 Message Structure

Temperature Broadcast Application commands are always fixed 3 bytes long, and have the following format:

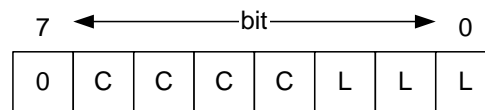


9.4.1 Command Header

The command header is a byte, broken into bit-fields to support encoding of a command type and the number of bytes following as parameters.

The command header format is:

C-Bus Temperature Broadcast Application



Where “C” represents a bit of a command type, and “L” represents a bit of the length.

This command header format provides compatibility with the C-Bus Lighting Application, and is therefore suitable for backward compatibility with older devices and interoperability with lighting units.

For the Temperature Broadcast Application, the permitted command headers are:

BROADCAST EVENT¹: %0 xxxx 010

The bits “xxxx” can have any value, however 0000 is recommended for all new designs. There is no guarantee that the use of values other than 0000 will be supported in future. All devices responding to the Temperature Broadcast Application shall accept these bits in any combination and ignore them. New devices shall always transmit these bits as 0000.

The (3 bit) length field reflects the number of arguments, which is always 2.

All other possible encodings of the command header byte are reserved, and shall not be issued on the Temperature Broadcast Application.

Devices receiving a message containing a command header that is not supported shall ignore the command, and use the length bits to determine the number of subsequent bytes to skip before checking for another concatenated command as described in section 9.8.

9.4.2 Temperature Group

The Temperature Group² is a byte, used as a filter or selection byte by a device that responds to Temperature Broadcast commands.

If the received Temperature Group byte matches the Temperature Group(s) programmed into the device, the command is considered for further processing.

If the received Temperature Group byte does not match the Temperature Group(s) programmed into the device, the command is ignored.

The following convention is used:

Temperature Group:

Size: 8-bit byte

Range: \$00 .. \$FF

Special Cases: None.

¹ This command corresponds to a Lighting Application RAMP command.

² Corresponding to the Lighting Application Group Address.

C-Bus Temperature Broadcast Application

9.4.3 Temperature Byte

The Temperature Byte³ is the temperature of the temperature sensor broadcasting the message.

The following convention is used:

Temperature Byte:

Size: 8-bit byte

Range: \$00 .. \$FF

Conversion: $\text{Temperature} = \text{Temperature Byte} / 4 \text{ }^{\circ}\text{C}$

Examples :

Temperature Byte	Temperature
0	0 °C
8	2 °C
102	25.5 °C

Note that the accuracy of the temperature sensor is only guaranteed up to 50°C.

9.5 Programming of Devices

C-Bus devices that respond to Temperature Broadcast Application messages should have some means of programming the Temperature Group numbers to which they respond, and the various responses they can generate.

This programming may performed using:

- some kind of C-Bus data load facility;
- panel programming buttons or keys;
- participation in C-Bus Lighting Learn mode;
- listening for C-Bus network traffic as part of a dedicated learn function;
- a direct connection from a programming device (for example, a PC); or
- some other technique at the discretion of device manufacturer.

9.6 Message Priority

Temperature Broadcast Application messages shall always be transmitted at Class 4 (lowest) priority.

9.7 Internetwork Routing

Temperature Broadcast Application messages may be routed via one or more C-Bus bridges or gateway devices. Such messages will be received with a message type indicating point-multipoint, but will have a non-zero Network routing.

The Network routing information is irrelevant, as responses are not required for Temperature Broadcast Application messages.

³ Corresponding to a Lighting Application Level, when used in a RAMP command.

C-Bus Temperature Broadcast Application

9.8 Concatenated Commands

A Temperature Broadcast Application device may receive a message containing more bytes than a single command. This permits a single C-Bus transmission to contain multiple commands for a single Application.

Devices using C-Bus Temperature Broadcast Application messages must process all received bytes. This may be achieved by placing the received bytes in a buffer, and using the following simple algorithm, or any other algorithm that is functionally equivalent:

```
WHILE the buffer contains bytes LOOP
```

```
    The first byte defines the command header and argument  
    count (refer section 9.4).
```

```
    Process the first (command) byte and its arguments
```

```
    Once processed, remove the command and argument bytes  
    from the buffer
```

```
END LOOP
```

9.9 Status Reporting

Devices using the Temperature Broadcast Application do not support or respond to C-Bus status requests (MMI) issued against the Temperature Broadcast Application Address.

9.10 Limitations

None.

9.11 Examples

Refer to section 9.4 (Page 3).

These examples assume that a device is broadcasting a Temperature message. This device interfaces to C-Bus using the C-Bus Serial Interface, which is described in more detail in CBUS-SIUG.

The examples assume the Serial Interface SRCHK option is set, so that data transfer both to and from the Serial Interface uses a checksum.

To broadcast the temperature (25 °C) for Temperature Group 5, the message sent to the PCI will be :

```
\051900020564
```

9.12 Notes

Because Temperature Broadcast Application commands have the same format as Lighting Application instantaneous Ramp to Level commands, standard C-Bus Lighting input devices can be used to broadcast (fixed) temperature values (settings) using the Temperature Broadcast Application.