

## C-Bus Application ID Numbers

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## C-Bus Application ID Numbers

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### 1 INTRODUCTION

#### 1.1 Document Purpose

This document outlines the allocation of C-Bus Application ID Numbers and the usage of the different Applications.

***Installations that do not comply with the requirements of this document may be incompatible with present or future C-Bus devices.***

C-Bus point to multipoint messages are addressed to an "Application" rather than a specific device. Such messages are broadcast to all devices, but only devices using the Application process and use the message.

***Different Applications are used to transfer different information, and are not interchangeable.***

#### 1.2 Document Conventions

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

Binary numbers (base 2) are shown with the prefix %, and Hexadecimal numbers (base 16) are shown with the prefix \$.

Example: 157 = %10011101 = \$9D

#### 1.3 Precedence

Additional information on Application usage is available via the C-Bus Enabled Program. Where this document contradicts the C-Bus Enabled Program documentation, the C-Bus Enabled Program documentation shall take precedence.

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## 2 APPLICATION ID NUMBERS

### 2.1 Purpose

C-Bus application numbers are used to segregate different uses (applications) of the bus. Within an application, all devices must use an identical formatting of the data payload transmitted over the bus. This permits those devices to inter-operate.

Different applications do not necessarily format the data payload the same. When different data formatting rules are applied, the **only** means available for devices to work out how to interpret the data they receive is by the application number.

Consequently:

**Only those Application ID numbers allocated by Clipsal Integrated Systems Pty Ltd shall be used.**

Application ID Numbers Range of 0 to 255 (\$00 to \$FF).

### 2.2 Rules

The following rules apply to Application ID numbers:

#### 2.2.1 Reserved

Application ID numbers **\$00**, **\$FE** and **\$FF** are reserved and shall not be used. Application ID number **\$FD** is reserved for use by C-Bus installation software.

#### 2.2.2 Free Use

Application ID numbers **\$01** to **\$0F** are available for free use by other parties manufacturing C-Bus devices. However, use of these Application ID numbers is discouraged. Future C-Bus network device compatibility cannot be assured if these Application ID numbers are used.

#### 2.2.3 Lighting

Clipsal Lighting units default to application **\$38**, but can be re-programmed if needed. Historically, they could be allocated to any application address.

For future compatibility, lighting is restricted to the range **\$30** to **\$5F**.

#### 2.2.4 Reserved for Specific Purpose

For future installations, non-lighting device application numbers are limited to the range **\$01** to **\$2F** and **\$80** to **\$FC**. Some of these may use the same message formatting as lighting.

#### 2.2.5 Reserved for Future Expansion

Most of Applications **\$60** - **\$7F** are unallocated, but are reserved for future expansion.

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### **2.3 *Application Compatibility***

C-Bus has historically grown from a basis of lighting control. Most C-Bus installations are based on lighting and lighting control. Some C-Bus Applications have a message structure which is the same as the Lighting Application, and they are known as "Lighting Compatible" Applications. Applications which have full or partial compatibility with Lighting Application messages are indicated where applicable.

Most C-Bus devices (Key Input Units, Relays, Dimmers etc) only generate and respond to Lighting compatible messages. These devices can only be used with Lighting compatible Applications.

The use of Lighting Application messages on Applications which are not compatible with Lighting (Time, Security, Telephony etc) may cause undesirable side effects and shall be avoided.

### **2.4 *Application Number Allocation***

Table 1 shows C-Bus Applications with their location within the Application ID domain. This also shows those that have not yet been defined but will be used in the future.

## C-Bus Application ID Numbers

**Table 1 C-Bus Applications**

<b>Application ID</b>	<b>Application</b>	<b>Lighting Compatible?</b>
\$00	Reserved	N/A
\$01...\$0F	Free Use	N/A
\$1F...\$18	Reserved	N/A
\$19	Temperature Broadcast	No
\$1A...\$25	Reserved	N/A
\$26	Room Control System (Clipsal 5 Star)	Yes
\$27...\$2F	Reserved	N/A
\$30...\$5F \$38 (Default)	Lighting	Yes
\$60...\$6F	Reserved	N/A
\$70	Ventilation (dampers and fans)	Yes
\$71	Irrigation Control	Yes
\$72	Pool, spa, pond and fountain control	Yes
\$73...\$87	Reserved	N/A
\$88	Heating (Clipsal 5 Star)	Yes
\$89...\$AB	Reserved	N/A
\$AC	Air Conditioning	No
\$AD...\$C9	Reserved	N/A
\$CA	Trigger Control (Clipsal SceneMaster, IR Output)	Yes, but restrictions
\$CB	Enable Control	Yes, but restrictions
\$CD	Audio & Video	Yes, but restrictions
\$CE...\$CF	Reserved	N/A
\$D0	Security	No
\$D1	Metering (gas, water, electricity, oil, etc)	No
\$D2...\$D4	Reserved	N/A
\$D5	Access Control (including card reading)	No
\$D6...\$DE	Reserved	N/A
\$DF	Clock and Timekeeping	No
\$E0	Telephony Status & Control	No
\$E1...\$E3	Reserved	N/A
\$E4	Measurement (light, liquid, temperature, etc)	No
\$E5...\$F9	Reserved	N/A
\$FA	Testing	N/A
\$FB...\$FF	Reserved	No

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### 3 APPLICATION USAGE

#### 3.1 Temperature Broadcast (\$19)

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

**NOTE:** *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.*

#### 3.2 Room Control System (\$26)

This Application is no longer supported, and should not be used for new designs.

#### 3.3 Lighting (\$30 - \$5F with Default \$38)

The Lighting Application is used to control and monitor lighting. This is usually comprised of incandescent or fluorescent lighting and associated control devices such as switches, dimmers and relays. It can also be used for lighting messages destined to other protocols, such as DALI.

Traditionally, Lighting was the only Application available, and hence is commonly used for purposes such as curtain control, irrigation and so forth. It is recommended that where there is an Application ID allocated for a particular purpose it should be used.

#### 3.4 Ventilation (\$70)

This application is defined to confine the messages and use of C-Bus devices, used for ventilation control (such as, but not limited to, Fans and Airconditioning Dampers).

The messages used for this application are identical to standard C-Bus lighting control messages.

#### 3.5 Irrigation Control (\$71)

This application is defined to confine the messages and use of C-Bus devices, used for irrigation control (such as, but not limited to, switching watering systems and zones on and off).

**Important Note:** *Irrigation systems that make measurements (for example of moisture level) and want to transmit those measurements using C-Bus shall:*

- a. be controlled using this application, and*
- b. transmit their measurements using the C-Bus Measurement Application.*

The messages used for this application are identical to standard C-Bus lighting control messages.



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### **3.6 Pool, Spa, Pond and Fountain Control (\$72)**

This application is defined to confine the messages and use of C-Bus devices, used for switching on and off Pools, Spas, Ponds, Fountains and similar.

The messages used for this application are identical to standard C-Bus lighting control messages.

### **3.7 Heating (\$88)**

This Application may be used for controlling heating. The messages used for this application are identical to standard C-Bus lighting control messages. It is recommended that the Air Conditioning Application is used for new designs.

### **3.8 Air Conditioning (\$AC)**

The Air Conditioning Application is used to control and monitor air conditioners using a C-Bus network.

In an air conditioning system, the C-Bus interface is typically connected to the Air Conditioning Controller, and optionally to a C-Bus thermostat or other control & monitoring device.

***The air-conditioning application is currently in development.***

### **3.9 Trigger Control Application (\$CA)**

The Trigger Control Application is used to cause a number of actions in response to a single C-Bus message.

Devices that respond to Trigger Control Application Messages causes a defined set of actions to occur, one time only, each time the trigger message is received.

Devices that respond to Trigger Control Messages can generally be programmed in some manner, so that the exact trigger message and the actions taken can be set up at the time the device is installed.

The actions taken are typically to emit one or more new C-Bus messages (generally on another Application), or to output information on some other medium (for example, simple Infra-Red codes to control Televisions, VCRs, etc).

Typical devices that respond to Trigger Control Application messages are the Clipsal Scene Controller or the C-Bus Touchscreen (to set specific lighting conditions), and the Clipsal IR output unit (to control simple Infra-Red devices).

The messages used for this application are identical to standard C-Bus lighting control messages, however only instantaneous ramp to level commands should be used. On, Off and Ramp to Level with a non-zero ramp rate are all meaningless in the Trigger Control Application.

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### 3.10 *Enable Control (\$CB)*

The Enable Control Application is used to set one or more shared C-Bus Network Variables. Devices on the bus (and which can accept Enable Control Messages) take some defined set of actions, based on the value of the shared Network Variable(s). These actions are dependent on the device using the Network Variable. They may lead to the generation of other C-Bus messages.

Devices which respond to Enable Control Application Messages can generally be programmed in some manner, so that exact values of the Network Variables and the actions taken can be set up at the time the device is installed.

A typical device using the Event Control Application is a scheduling system, where different schedules can be selected using the Network Variables. Complex scheduling can be created using several of these devices on the same network.

The messages used for this application are identical to standard C-Bus lighting control messages, however only instantaneous ramp to level commands should be used. On, Off and Ramp to Level with a non-zero ramp rate are all meaningless in the Enable Control Application.

### 3.11 *Audio & Video (\$CD)*

The Audio and Video Application is used to control Audio and Video C-Bus equipment. This may include audio multiplexers, amplifiers and other distribution equipment.

Audio and Video Application devices are typically categorised as:

- a. input units, which people interact with and which ultimately have a control function; and
- b. output units, which are typically connected to an A/V source and an output device such as a speaker or video monitor.

Other devices on a network can also issue Audio and Video Application commands. If they do so, they must adopt the behaviour of Audio and Video Application input units.

The Audio and Video Application uses shared Network Variables to make the associations between input and output units and to modify the tonal and volume content of the A/V information. These Network Variables are known as Group Address Variables.

***The messages used for this application are identical to standard C-Bus lighting control messages, however the Group Addresses have specific usages, and can not be used in arbitrary ways.***

### 3.12 *Security (\$D0)*

The Security Application is used to control and monitor a security system.

A security system usually makes use of proprietary devices such as sensors, keypads, and a monitor panel, but can also respond to C-Bus messages and announce status onto C-Bus for other devices to use if they desire.

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### **3.13 Metering (\$D1)**

The Metering Application is used to obtain information about consumption from utilities such as electricity, water, gas, oil, etc.

Meters are normally proprietary, and use some kind of interface device to convert data from the meter into a form where it can be transported using C-Bus.

### **3.14 Access Control (\$D5)**

The Access Control Application is used to control and monitor an access control system.

An access control system usually makes use of proprietary devices such as card sensors, and a monitor/control interface, but can also respond to C-Bus messages and announce status onto C-Bus for other devices to use if they desire.

### **3.15 Clock & Timekeeping (\$DF)**

The Clock & Timekeeping Application is used to broadcast date and time information to devices on a network. This application allows changes to date and time made on a C-Bus device to be synchronously propagated to all other interested devices on the C-Bus network.

Devices which could use the Clock and Timekeeping Application include Security Systems, the C-Touch Touchscreen, a C-Bus master time server, and so on.

### **3.16 Telephony (\$E0)**

The Telephony Status & Control Application is used by C-Bus Telephone Devices to broadcast status onto C-Bus, and to enable other devices to control a C-Bus Telephone Device.

### **3.17 Measurement (\$E4)**

The Measurement Application is used to obtain information using basic units of voltage, current and resistance. This information is scaled as required to obtain units which can relate to real world quantities such as temperature, liquid level, light level, etc.

Measurement Application devices are typically categorised as:

- a. input units, which measure the quantities concerned; and
- b. output units, which are used to display or otherwise use the measured information.

The General Input Unit is currently the only device using the Measurement Application.

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#### **3.18 Test (\$FA)**

The Test Application is intended for broadcasting test messages for which you want to guarantee that nothing will happen as a consequence.