

# User Manual

## sensorCUE

Version 03

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User Manual sensorCUE

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# 1. Introduction

## 1.1. Overview .....

sensorCUE is a temperature and daylight sensor in one small enclosure. The temperature sensor can be used for temperature monitoring and heating control. The daylight sensor enables the controller to automatically dim lights when available daylight is high, or brighten lights when daylight is low in order to maintain a specific light level in the space. It may be calibrated for daylight sensitivity by programming the controller. The unit is fully compatible with CUE controllers and the connection is provided via standard CUEwire system bus.

## 1.2. Models .....

This User Manual describes products itemized in the table below.

Model	Product code	Description
sensorCUE	CS0265	Temperature and daylight sensor in one small enclosure.

## 1.3. Features .....

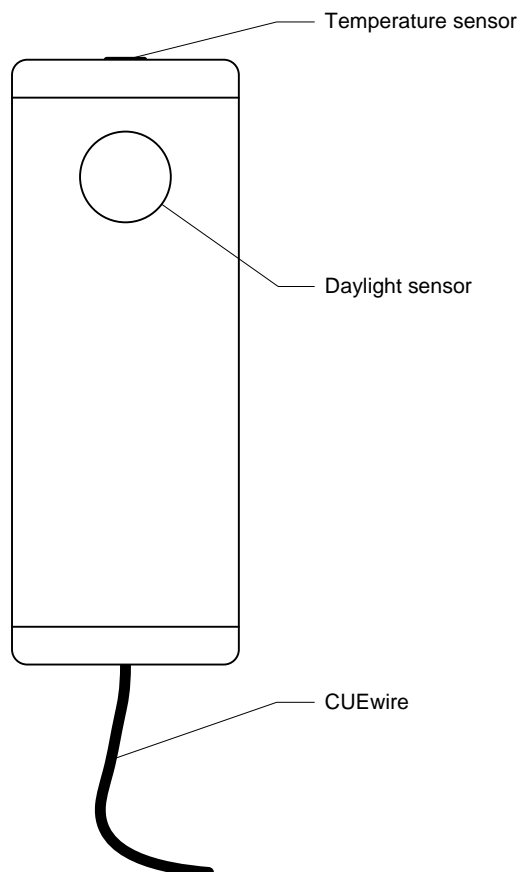
- Temperature measurement range -55°C to +125°C
- Integrated daylight sensor
- Metal enclosure
- Fully compatible with ipCUE controllers
- Small size
- Easy installation
- System connection by CUEwire

## 1.4. Programming .....

The sensorCUE is programmed using **Cue Director** XPL programming tool.

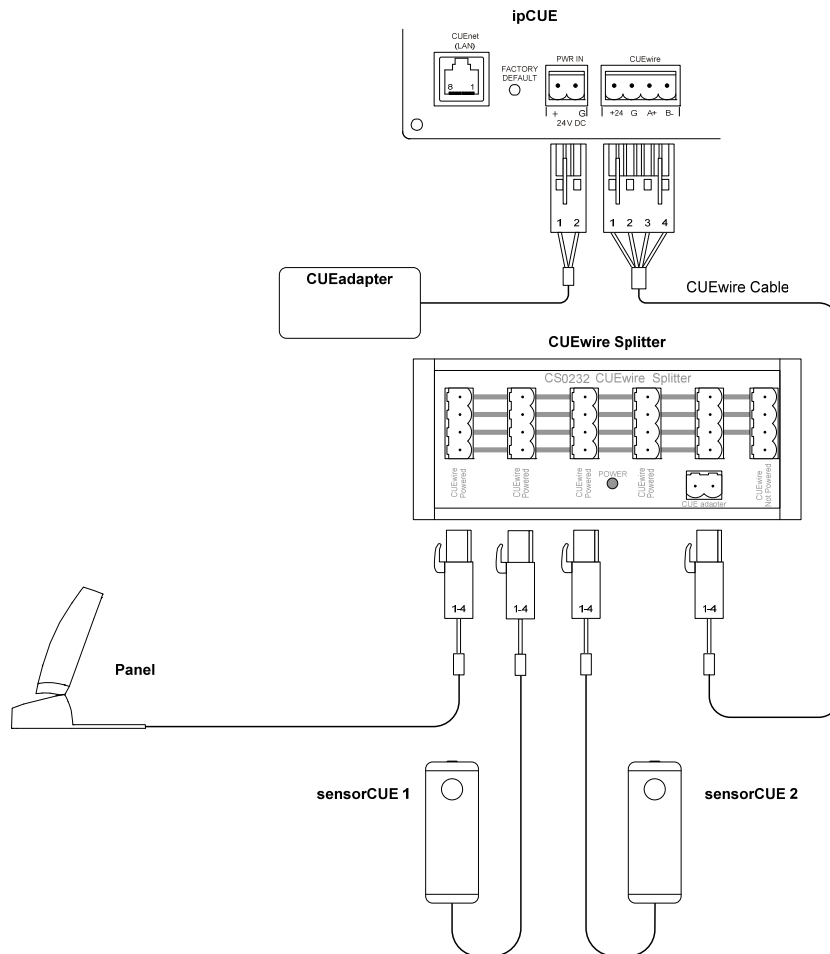
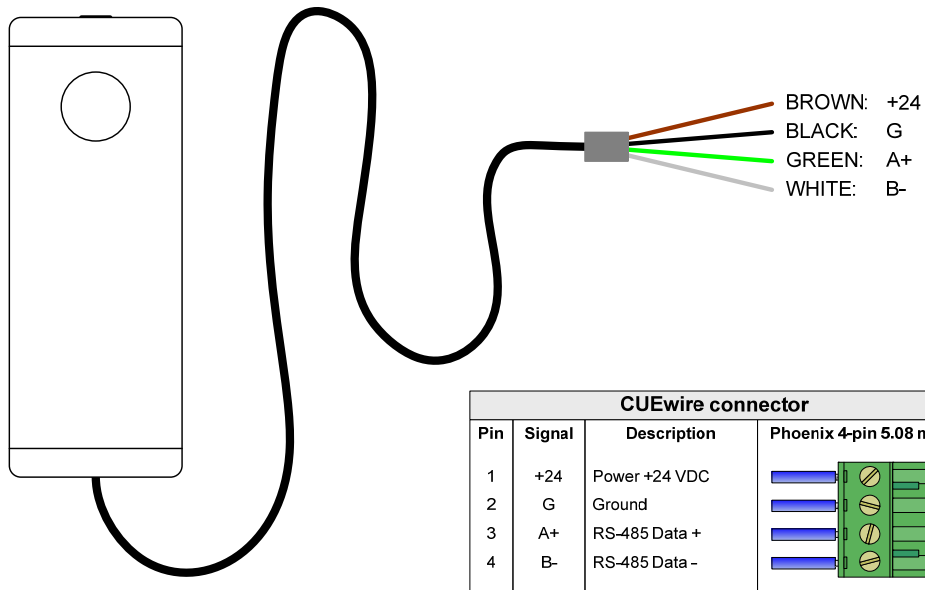
## 2. Description

The enclosure of sensorCUE is a small metal box (80 x 30 x 15 mm) which allows simple installation into the environment, for example using double-sided adhesive tape. The temperature and daylight sensors must not be covered so that the functionality of sensorCUE is ensured. The standard CUEwire is connected via 4-conductor cable, containing the 24 VDC power supply and RS-485 data.



# 3. Connecting

The connection of sensorCUE is described in the picture below.



## 4. Addressing

Each unit connected to the CUEwire bus must have its unique address. These addresses for touchpanels and keyboards are set in configuration and are called „panel addresses“. The same type of address is set for each sensorCUE. Its value must be unique for each unit on the CUEwire bus.

Each sensorCUE has its production number in the following format: CS0265.*abcd*. The number *cd* is pre-set in the factory as a default panel address value for each sensorCUE. For example, a sensorCUE with serial number CS0265.0258 has the panel address 58.

## 5. Programming

(REMARK: the following text is relevant for sensorCUE firmware versions 20 and higher)

The standard command for reading out the data from sensorCUE is:

*RemoteVariableGet (reference as Word, paneladdress As Byte) as Word*

The *reference* allows to identify which measured value should be read while the *paneladdress* identifies which sensorCUE unit is to answer.

The following reference values are supported:

- Reference = 0                sensorCUE firmware version
- Reference = 1                temperature value
- Reference = 2                lighting level value

### Reference = 0                sensorCUE firmware version

Response value is in range 0 - 65535  
The latest firmware version is 20.

Example: *Fw = RemoteVariableGet (0, 34)*

This command has assigned the firmware version number of sensorCUE-W (with the serial number CS0265.0134) to the *Fw* variable.

### Reference = 1                temperature value

The temperature is measured using 12bit resolution sensor. It covers the measuring range from +125 °C to -55 °C  
The temperature value is encoded into a 16-bit response value according to the following rules:

#### Response value bit weight

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	S	S	S	S	S	$2^6$	$2^5$	$2^4$	$2^3$	$2^2$	$2^1$	$2^0$	$2^{-1}$	$2^{-2}$	$2^{-3}$	$2^{-4}$

S means sign.

S=0 for positive and S=1 for negative values.



**Temperature –Response data relationship:**

TEMPERATURE	RESPONSE VALUE (binary)	RESPONSE VALUE (hex)
+125°C	0000 0111 1101 0000	07D0H
+25.0625°C	0000 0001 1001 0001	0191H
+10.125°C	0000 0000 1010 0010	00A2H
+0.5°C	0000 0000 0000 1000	0008H
+0°C	0000 0000 0000 0000	0000H
-0.5°C	1111 1111 1111 1000	FFF8H
-10.125°C	1111 1111 0101 1110	FF5EH
-25.0625°C	1111 1110 0110 1111	FE6FH
-55°C	1111 1100 1001 1000	FC90H

Example:  $T = RemoteVariableGet (1, 68)$

This command has assigned the temperature from sensorCUE-W (with the serial number CS0265.0168) to the  $T$  variable.

**Reference = 2            the lighting level value**

The expected response value range is ( 1 - 30000).  
The lowest values mean the highest lighting levels and the highest values mean dark.

The typical expected return values are as follows:  
For straight full light the return values are below 100  
For bright room the return values are about 700-800  
For dark room the return values are about 3500-5000

Example:  $Light = RemoteVariableGet (2, 47)$

This command has assigned the lighting level from sensorCUE-W (with the serial number CS0265.0047) to the  $Light$  variable.

## 6. Program module for sensorCUE

For easier programming you can use the module sensorCUE.csm. You can find it on the CUE Application CD in folder XPL Drivers and Modules.

This module has two functions:

### **Public Function GetTemperature (PanelAddress As Word, ByRef TemperatureAsText As String) As Integer**

*GetTemperature* returns current temperature measured in 1/10 degrees of Celsius as integer value (it allows negative values). Returned values are -550 (-55 °C) to 1250 (+125 °C). The first parameter is the panel address of sensorCUE-W, the second parameter is string, where temperature value will be stored as string ("-55.0" to "+125.0").

Example:

Declarations:

*Public TemperatureInt As Integer*

*Public TemperatureString As String \*10*

Program:

*TemperatureInt = GetTemperature(38, TemperatureString)*

This command has assigned the temperature from sensorCUE-W (with the serial number CS0265.0138) to the *TemperatureInt* variable. If current temperature is for example +23.5 °C, in *TemperatureInt* variable will be value 235. In string *TemperatureString* will be value "+23.5".

### **Public Function GetLight(PanelAddress As Word) As Word**

*GetLight* returns current lighting level as a word value. Returned values are 1 (straight full light) to cca 30000 (dark).

Example:

Declarations:

*Public LightLevel As Word*

Program:

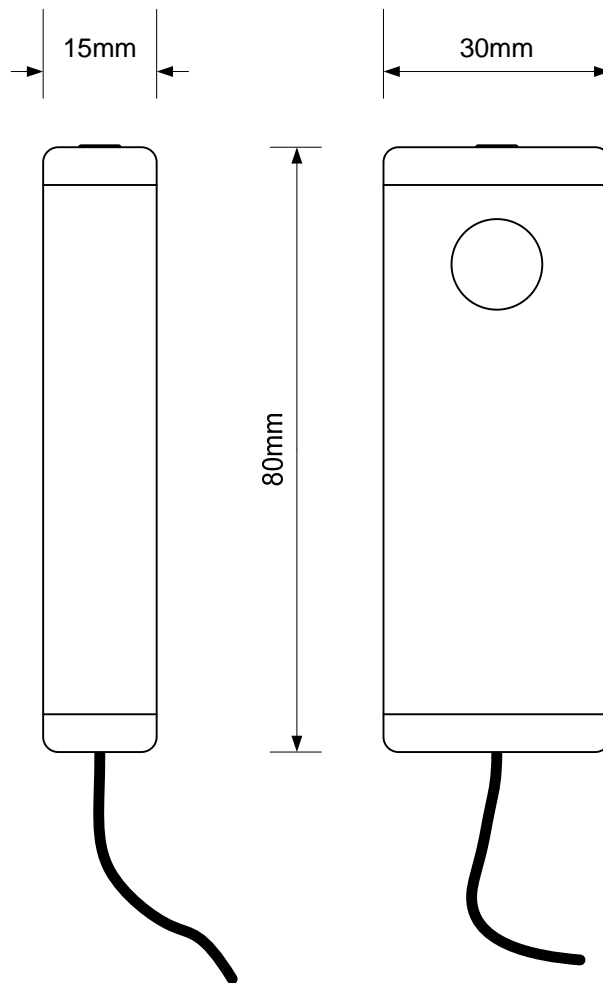
*LightLevel = GetLight(48)*

This command has assigned the lighting level from sensorCUE-W (with the serial number CS0265.0248) to the *LightLevel* variable.

## 7. Specifications and Mechanical Drawings

Temperature measurement.....	Range -55°C to +125°C
Daylight sensing .....	May be calibrated for day / night light level recognition
System connection .....	CUEwire (RS-485)
Power supply .....	24 VDC (+/- 20%), 1 W
Enclosure.....	Metal
Dimensions (WxHxD) .....	30 mm (1.2") x 80 mm (3.2") x 15 mm (0.6")
Weight.....	0.2 kg / 0.4 lb

All dimensions are in mm.



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