

User Manual

sensorCUE-W

Version 01

CUE, a.s., K Nouzovu 6, 143 00 Praha 4, Czech Republic

cue phone: +420 241 091 240
fax: +420 241 432 446
www.cuesystem.com
mail: info@cuesystem.com

User Manual sensorCUE-W

UM034_01, 19.04.2008

Copyright © CUE, a.s., Praha, Czech Republic 1990 - 2008.

All rights reserved. Specifications are subject to change without prior notice.

Table of Contents

1. Introduction	4
1.1. Overview	4
1.2. Models	4
1.3. Features	4
1.4. Programming	4
2. Description	5
3. Connecting	6
4. Addressing	7
5. Programming	8
6. Program module for sensorCUE	10
7. Specifications and Mechanical Drawings	11
8. Software and Firmware License	12

1. Introduction

1.1. Overview

sensorCUE-W is a temperature and daylight sensor for indoor installation compatible with ABB Time or Element design series. 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-W	CS0289	Temperature and daylight sensor for indoor installation.

1.3. Features

- Temperature measurement range -20°C to +50°C
- Integrated daylight sensor
- Compatible with Time and Element design series of ABB Switches
- Fully compatible with ipCUE controllers
- Small size
- Easy installation
- System connection by CUEwire

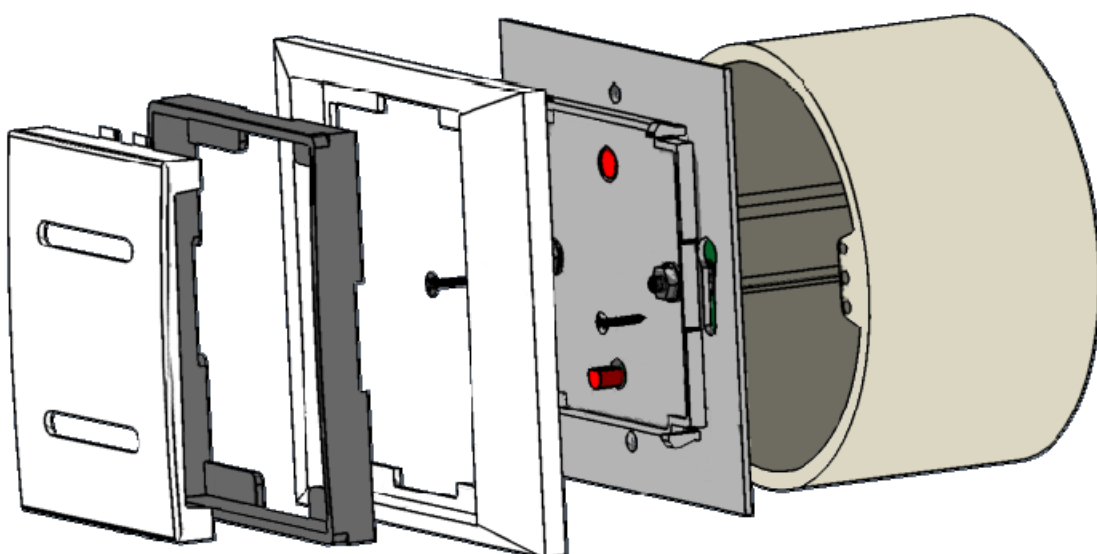
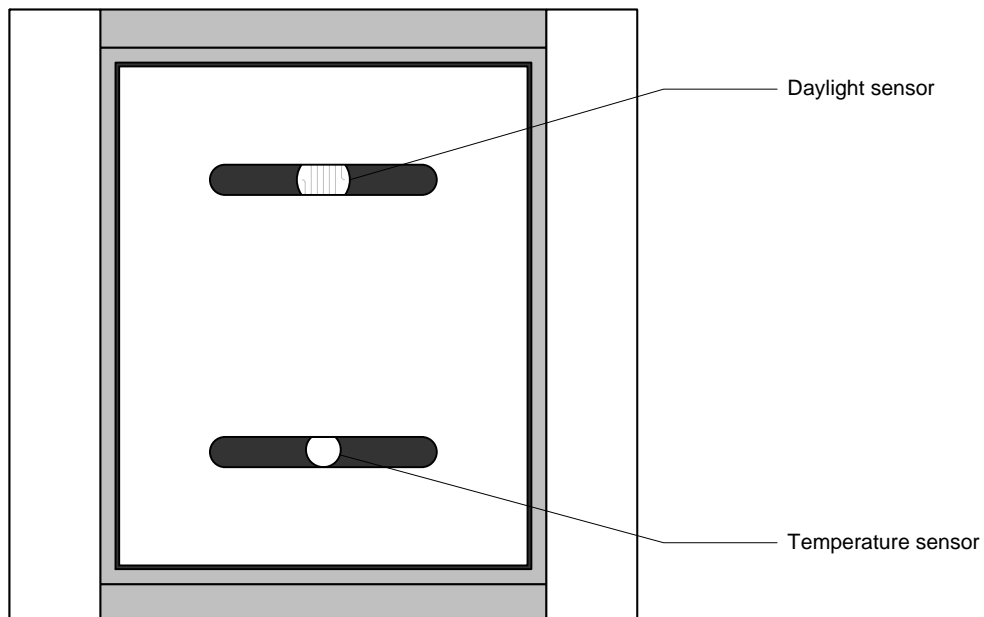
1.4. Programming

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

2. Description

The case of sensorCUE-W is a small plastic box (83 x 81 x 27 mm) which allows simple installation into the standard European electrical wall box. The temperature and daylight sensors must not be covered so that the functionality of sensorCUE-W is ensured. The standard CUEwire is connected via 4-conductor cable, containing the 24 VDC power supply and RS-485 data.

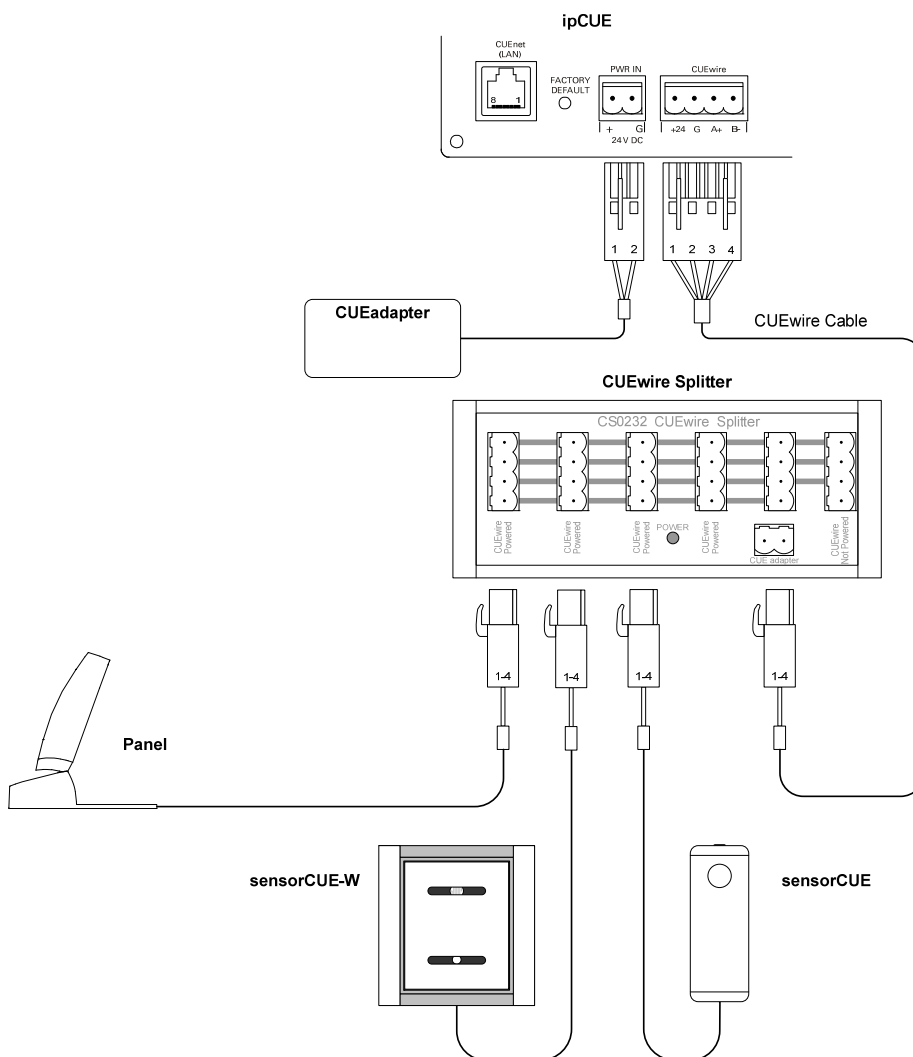
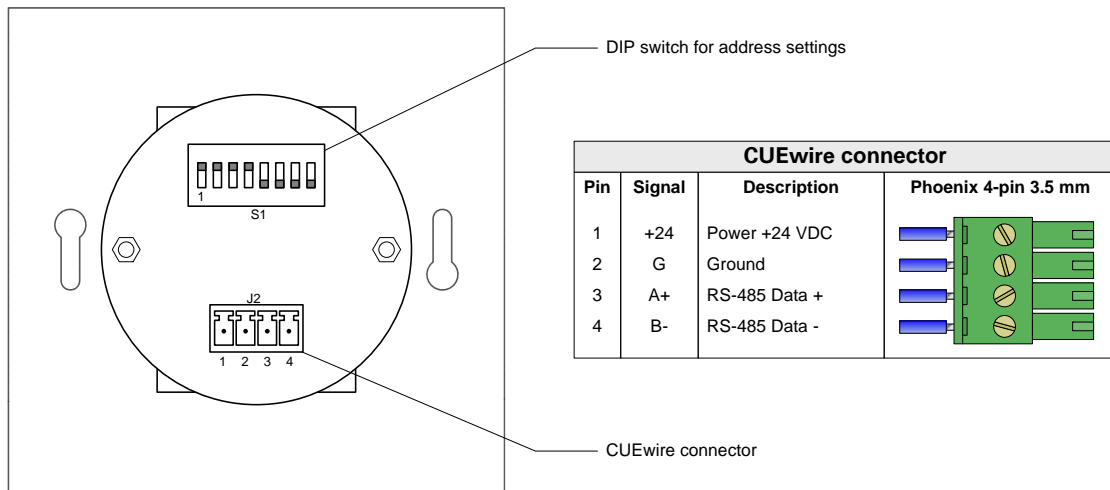
sensorCUE-W front view



3. Connecting

The connection of sensorCUE-W is described in the picture below.

sensorCUE-W rear view

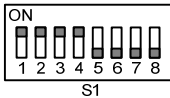


4. Addressing

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-W. Its value must be unique for each unit on the CUEwire bus.

The ADDRESS of the sensorCUE-W is binary coded by DIP switch located on the rear panel.

The ADDRESS can be set in the range **1 to 127**. Default ADDRESS is **15**.

Switch view	Switch nr.	Function	Address bit's weight				
	SW1	ADDRESS bit 0	1				
	SW2	ADDRESS bit 1	2				
	SW3	ADDRESS bit 2	4				
	SW4	ADDRESS bit 3	8				
	SW5	ADDRESS bit 4	16				
	SW6	ADDRESS bit 5	32				
	SW7	ADDRESS bit 6	64				
	SW8	Not used	Not used				
ADDRESS	SW1	SW2	SW3	SW4	SW5	SW6	SW7
1	ON	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF	OFF	OFF
5	ON	OFF	ON	OFF	OFF	OFF	OFF
6	OFF	ON	ON	OFF	OFF	OFF	OFF
7	ON	ON	ON	OFF	OFF	OFF	OFF
8	OFF	OFF	OFF	ON	OFF	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF	OFF
...
15	ON	ON	ON	ON	OFF	OFF	OFF
...
126	OFF	ON	ON	ON	ON	ON	ON
127	ON	ON	ON	ON	ON	ON	ON

5. Programming

The standard command for reading out the data from sensorCUE-W 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-W firmware version

Response value is in range 0 - 65535

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

This command has assigned the firmware version number of sensorCUE-W (with the address 34) to the *Fw* variable.

Reference = 1 temperature value

The temperature is measured with a 12-bit resolution sensor. It covers the measuring range from +50 °C to -20 °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)
+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

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

This command has assigned the temperature from sensorCUE-W (with the address 68) 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 address 47) 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 is also compatible with sensorCUE-W.

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 -200 (-20 °C) to 500 (+50 °C). The first parameter is the panel address of sensorCUE-W, the second parameter is string, where temperature value will be stored as string ("-20.0" to "+50.0")

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 address 38) 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
```

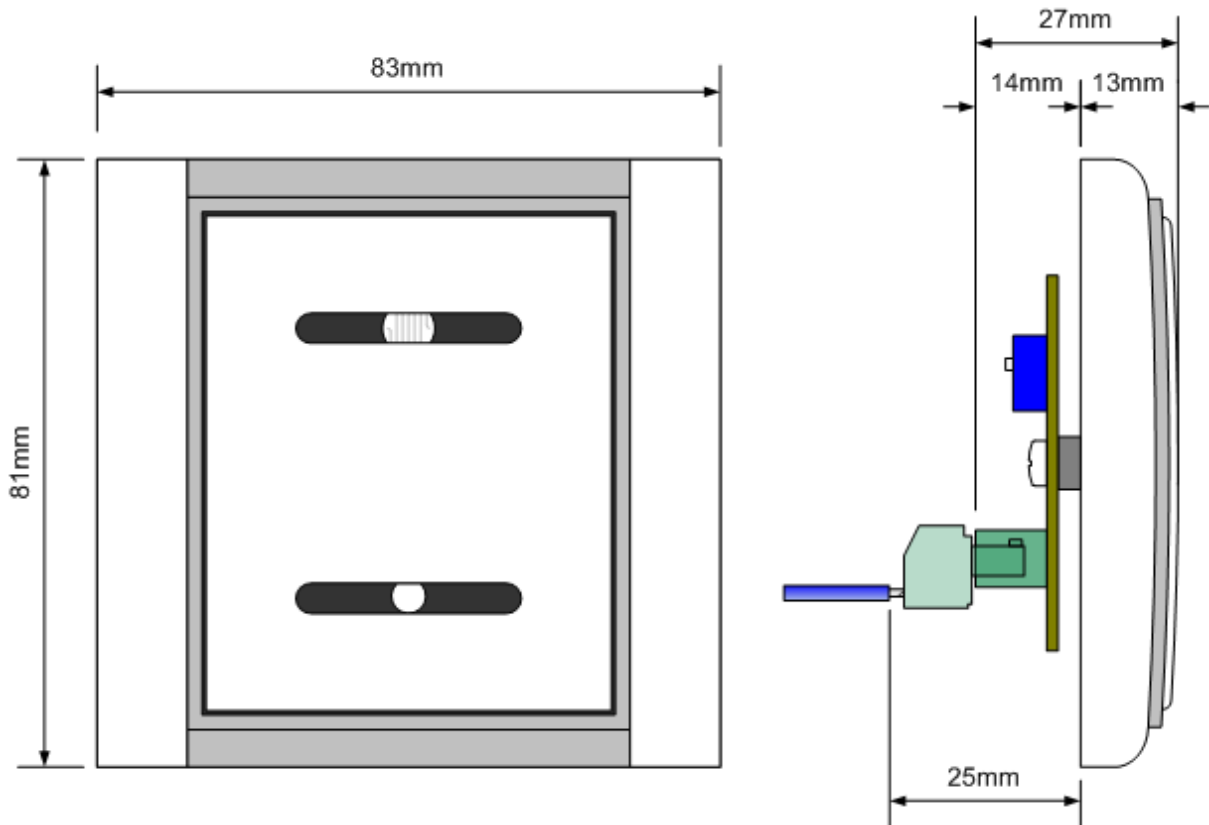
Program:

```
LightLevel = GetLight(48)
```

This command has assigned the lighting level from sensorCUE-W (with the address 48) to the *LightLevel* variable.

7. Specifications and Mechanical Drawings

Temperature measurement.....	Range -20°C to +50°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.....	Plastic
Dimensions (WxHxD)	83 mm (3.3") x 81 mm (3.2") x 27 mm (1.1")
Weight.....	0.1kg / 0.2 lb



8. Software and Firmware License

END-USER NOTICE AND LICENSE AGREEMENT FROM CUE, a.s.

NOTICE TO END-USER: CAREFULLY READ THE FOLLOWING LEGAL AGREEMENT (THIS "LICENSE"). INSTALLATION OR USE OF THE ENCLOSED CUE, a.s. SOFTWARE PROGRAMS (COLLECTIVELY, "SOFTWARE") ON YOUR COMPUTER SYSTEMS OR HARDWARE DEVICES CONSTITUTES YOUR ACCEPTANCE OF THESE TERMS. IF YOU DO NOT AGREE TO THE TERMS OF THIS LICENSE, PROMPTLY DELETE THE SOFTWARE FROM YOUR COMPUTER SYSTEMS AND HARDWARE DEVICES, DESTROY ANY COPIES YOU MADE OF THE SOFTWARE OR ANY INSTALLATION MEDIA OF THE SOFTWARE INCLUDED WITH YOUR SYSTEM, AND DISPOSE OF ALL WRITTEN MATERIALS IN YOUR POSSESSION REGARDING THE SOFTWARE.

License Grant: CUE grants to You, as an individual, a license to install and use one (1) copy of the Software on a single computer at a time; provided, however, that You may make copies of the Software solely for Your development of applications for CUE hardware and demonstration versions of such applications. Any applications created with the Software may only be used with Cue hardware. Your license to use the Software is conditioned upon Your compliance with the terms of this License. A License is required for each end-user of the Software. A license is required for each installation of the Software. You may make one (1) copy of the Software for archival purposes only. You may use this Software only in connection with CUE hardware. You must have acquired the Software directly in connection with the purchase of CUE hardware from CUE or from a CUE approved reseller for this license to be effective. If You have purchased a Site License, You may complete only the number of installations specified in the License Agreement accompanying the Software.

Copyright: The Software and software built into CUE hardware ("Firmware") are protected by copyright law and international treaty provisions. You acknowledge that no title to the intellectual property in the Software and Firmware is transferred to You. You further acknowledge that title and full ownership rights to the Software and Firmware will remain the exclusive property of CUE, and You will not acquire any rights to the Software and Firmware except as expressly set forth in this License. You agree that any copies of the Software will contain the same proprietary notices which appear on and in the Software.

Prohibited Uses: Without obtaining prior written permission from CUE, You may not (a.) use, copy, modify, alter, or transfer the Software or documentation except as expressly provided in this License; (b.) translate, disassemble, decompile, reverse program or otherwise reverse engineer the Software and Firmware; (c.) sublicense or lease the Software or its documentation (d.) use this Software with any hardware other than products produced by CUE or in connection with applications being developed for CUE hardware; or (e.) use the Software in a multi-user, network, or multiple computer environment or in a rental, time sharing or computer service business. Without prejudice to any other rights, CUE may terminate this License if You fail to comply with its terms and conditions. In such event, You must immediately destroy all copies of the Software.

No Other Warranties: CUE DOES NOT WARRANT THAT THE SOFTWARE AND FIRMWARE IS ERROR FREE. CUE DISCLAIMS ALL WARRANTIES WITH RESPECT TO THE SOFTWARE AND FIRMWARE, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATIONS OF HOW LONG AN IMPLIED WARRANTY MAY LAST, OR THE EXCLUSION OF LIMITATION OF INCIDENTAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION.

No Liability for Consequential Damages: IN NO EVENT SHALL CUE BE LIABLE TO YOU FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OF ANY KIND ARISING OUT OF THE PERFORMANCE OR USE OF THE SOFTWARE, EVEN IF CUE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Label on Hardware: Use of this hardware and the software programs controlling this hardware is subject to the terms of the Software and Hardware License Agreements (the "License Agreements"). You should not use the software and hardware until you have read the License Agreements. By using the software and hardware, you signify that you have read the Licenses Agreements and accept their terms. The "License Agreement" is available at www.cuesystem.com.

Trademark Notice: CUE and the CUE logo are trademarks of CUE, a.s. in the United States and in other countries.

