

IDENTIFY Locate Measure

Application Note

Bluetooth LOW ENERGY WIRELESS TEMPERATURE SENSOR

DATALOGGER USE AND SPECIFICATIONS



1/8



1 INTRODUCTION

This document describes how to use the **Blue** PUCK **T** & **Blue** COIN **T** datalogger and provides precise information for setting up the device using the ELA Device Manager configuration application.

2 APPLICABLE PRODUCT





It is important to note that the above product list is not exhaustive. It reflects our product line of Bluetooth Low Energy (BLE) sensors with datalogging features at the time this document was written. Nonetheless, all our wireless BLE-enabled sensor products offering datalogging are based on the same principles.

3 OPERATION

Blue PUCK **T** & **Blue** COIN **T** are designed to provide temperature information. Temperature data is included in the **BLE advertising frame**:

Name: Temperature

Type: org.bluetooth.characteristic.temperature Download / View

Assigned Number: 0×2A6E

Value Fields

Names	Field Requirement		Minimum Value	Maximum Value	Additional Information
Temperature	Mandatory	sint16	N/A	N/A	None
Information:					
Unit is in degrees Celsius with a resolution of 0.01 degrees Celsius					
Unit:					
org.bluetooth.unit.thermodynamic_temperature.degree_celsius					
Exponent: Decimal, -2					

Specifications could be modified without any notification. Non-contractual document. <u>www.elainnovation.com</u> Copyright © 2018 ELA Innovation 2/8



The temperature information contained in the advertising frame is also stored on the device. Device memory holds up to 4,000 values.

You may configure the time period for recording temperature values.

IDENTIFY LOCATE MEASURE



Note

Data storage is based on a **First-in First-Out** (FIFO) mechanism, with the most recent temperature value overwriting the oldest value when memory is full.

4 CONFIGURATION

- 4.1 Launch the Device Manager application
 - 1. Click on **Programmers**
 - 2. Select the NFC **reader connected to your PC** (the reader is detected automatically by the Windows Device Manager)
 - 3. Place the product on the reader
 - 4. Read parameters by clicking on
 - 5. **Configure** settings as shown below, then click on

Ela Core N	Manager					-	×
				Prog	rammers D		
~			ACS ACR122 0				
ŵ	Home						 ~
8	Profile		ACS ACR122 0	🛞 Configure Ta	an 🔗		
ŝ	Configuration		State	Car Connigure re			
	Readers	\odot	State				
{}	Programmers	\odot		Parameters	🗟 🕐 🖉		
\bigtriangledown		\odot	Features				
		-		Firmware Version :	v0.7		
<u></u>	Applications	<u>></u>		Name :	BPUCK 800A12		
?	About			Enable :	True ~		
			Informations	Power :	0 ~		
			Device Name : ACS Al	Format : Advertising interval :	T ~ 10000		
				Log interval :	120000		
				UUID (iBeacon) :	0102030405060708090A0B0C0D0E0F10		
				Major (iBeacon) :	020B		
				Minor (iBeacon) :	010A		
				NID (Eddystone) :	0102030405060708090A		
				BID (Eddystone) :	010203040A0B		
							\sim

3/8



4.1.1 Information about temperature values

1. The value contained in the advertising frame at the interval configured in the field:

Intervale d'émission 10000 : 10000 ms corresponds to 10 seconds.

Value range in milliseconds: [100 ms ; 10000 ms] ; from 0.1s to 10s.

2. Temperature value recorded at the interval configured in the field:

IDENTIFY LOCATE <u>MEAS</u>URE

Intervale de log : 120000 : 120000 : 120000 ms corresponds to 120 seconds.

Value range in milliseconds: [10000 ms ; 86400000ms] ; from 10s to 24h.

⇒ Summary

- In the previous configuration example, the BLE frame is emitted once every 10 seconds and contains temperature information.
- That information is also recorded in device memory every 120 seconds.
- Recorded information is available at any time using the device in Connected Mode.

5 RETRIEVING STORED TEMPERATURE DATA

- 5.1 Connecting to an ELA Innovation BLE TAG
 - 5.1.1 BLE Connected Mode to download data
 - Solution State State
 - Using the NUS Service: Nordic UART Service (Tx and Rx characteristics)
 - 5.1.2 Tools

Here is an example of using an application to view stored temperature data. Using the **nRF Toolbox application** on a smartphone.



Available on the Google Play Store.

4/8



5.1.3 Installation and use

- 1. Use the Play Store to install the nRF Toolbox application on your Android® smartphone
- 2. Activate Bluetooth on your smartphone

IDENTIFY LOCATE MEASURE

3. Launch the application



5/8



4. Launch the **UART widget**, which is the NUS service used to download data

IDENTIFY

LOCATE MEASURE



5. The connection window is displayed



6. Click on CONNECT

A list of Bluetooth devices appears

3PUCK_MATMAT_01 E:1C:1C:F0:31:2A	•
n/a 12:4D:54:F5:EA:7C	
BLUET0800A09 F1:01:13:BC:1D:B2	÷
n/a 22:22:95:FB:7A:35	÷
BPUCK ID 000A21 C1:0F:8C:A8:47:2C	÷
SLIM ID1 D1:9C:10:4C:7F:D1	÷
n/a 6F:55:C3:3C:85:18	÷
PUCK T 800B1B D8:65:82:83:66:7C	÷
BPUCKID X E2:75:D7:38:E4:D8	÷
BPUCK T 800A01	

Specifications could be modified without any notification. Non-contractual document. <u>www.elainnovation.com</u> Copyright © 2018 ELA Innovation 6/8



IDENTIFY LOCATE MEASURE

- 7. **Select** the **Bluetooth device** to which you want to connect, such as the above: BLUET0800A09
- 8. Once the smartphone is connected to the selected device, that device is shown as being **Connected**.



9. Swipe the screen from left to right with your finger to see the UART service terminal

← Fi	rst configuration	•	EDIT	
15:50:08.310	Creating service			
15:50:08.322	Binding to the service	•		
15:50:08.356	Service started			
15:50:08.376	Connecting			
15:50:08.385				
	device.connectGatt(au false)	toCor	nnect =	
15:50:08.511	Activity bound to the se	ervice		
15:50:08.646	[Callback] Connection s			
	changed with status: 0 and new state: 2 (CONNECTED)			
15:50:08.660	Connected to F1:01:13:BC:1D:B2			
15:50:08.699	Discovering Services			
15:50:08.718	gatt.discoverServices()			
15:50:09.219	Services Discovered			R
15:50:09.229	Primary service found			\triangleleft
15:50:09.256	gatt.setCharacteristicNotificatio			
	n(6e400003-b5a3-f393-e0a9- e50e24dcca9e, true)			_
15:50:09.279	Enabling notifications for			
	6e400003-b5a3-f393-e0a9-			
	e50e24dcca9e			
15:50:09.287	09.287 gatt.writeDescriptor(00002902-0			
	000-1000-8000-00805f9b34fb, value=0x01-00)			
15:50:09.382	r i i i i i i i i i i i i i i i i i i i			
	0000-1000-8000-00805f9b34fb, value: (0x) 01-00			
1 5.50.00 201	Notifications anablad			
Write comr	nand	S	END	

Specifications could be modified without any notification. Non-contractual document. <u>www.elainnovation.com</u> Copyright © 2018 ELA Innovation 7/8



10. Enter an "L" character in the Write command zone and tap on SEND



- 11. Temperature values are listed on the screen
- The following information is displayed in green:
 "Interval Log": "Temperature"
 "0:2700"
 "10:2706"
 "20:2700"
- "30:2700"
- The log interval here is set to 10 seconds:



Scroll through the terminal page by swiping upwards (bottom to top) with your finger to see all recorded values

← El	A INNOVATION	•	EDIT	:
16:41:58.805	Writing characteristic b5a3-f393-e0a9-e50e (WRITE REQUEST)			
16:41:58.812	gatt.writeCharacterist b5a3-f393-e0a9-e50e			
16:41:58.881	Data written to 6e400 f393-e0a9-e50e24dco (0x) 4C			
16:41:58.892	"L" sent			
16:41:58.902	Notification received 6e400003-b5a3-f393 e50e24dcca9e, value 54-65-6D-70-65-72-61 20-4C-6F-67-3A-20-0/	-e0a9- : (0x) 1-74-75	5-72-65-	
16:41:58.912	"Temperature Log: " received			R
16:41:58.981	Notification received from 6e400003-b5a3-f393-e0a9- e50e24dcca9e, value: (0x) 30-3A-32-37-30-30-0A-31-30-3A-32 -37-30-36-0A-32-30-3A-32-37-30-30 -0A-33-30-3A-32-37-30-30-0A-00-0 0-00-00-00-00-00-00-00-00-00-00-00			N
16:41:58.988				
Write comn	nand	SI	END	

8/8

AN Datalogger

UK.docx

BLE temperature



Important: Remember to disconnect the device after transferring data After all values have been retrieved, disconnect from the BLE device so that the device switches back to advertising mode and continues to record subsequent temperature values.

Note

- Recorded values are automatically erased following transmission after receiving the "L" command.
- **Values are not time-stamped**. We recommend using the time on the receiving system as T0.