

# USERS MANUAL

## eScan2

(c) Emit 12<sup>th</sup> of May 2021



**eScan2 is Emit's new tag reader, which reads all types of Emit e-cards and emiTags, as well as barcodes. The contents of the tags are simultaneously transferred to a PC and to the included wireless printer. eScan2 has a graphical display, a built-in LED, speaker and vibrator, that indicates that the tag is read. eScan2 has rechargeable batteries, which are charged via the USB cable.**

eScan2 comes with the following equipment included:

- EPR3 - wireless printer with battery charger
- USB extension cable
- «Emergency charger» - extra battery pack
- Two rolls of thermal paper

### **Batteries and charging**

eScan2 has two Nickel Metal Hydride (NiMH) 2000 mAh rechargeable batteries built-in. The batteries are charged with an USB cable, either using the included charger, a connected PC or the emergency charger. Charging the batteries takes a maximum of 5 hours, if the batteries were empty at the start of charging. When the batteries are fully charged, they should last for over 16 hours of use.

### **Keypad**

In addition to the numeric keypad, eScan2 has the following keys:

- 'Clear / ON' - turns eScan2 on / off, deletes the last character or exits the menu
- 'Scan' - reads emiTags or barcodes
- 'Menu' - enters menu mode or skips one step backwards in the menu
- 'Enter' - confirms selection
- In addition, the red arrow keys are used to move around in the menus



## Connections/ports

eScan2 has two connection ports, as well as a slot on the end of the device:



The port on the left is a serial port, which is used for connecting various external equipment, such as serial printer, starter gate, photocells, etc. The port in the middle is used to connecting an USB cable - to transfer data to PC with suitable results program, and for charging eScan2. The slot on the right is used for reading QR codes and barcodes.

## Starting eScan2

eScan2 is started by pressing the key marked 'Clear / ON'. The LED at the top left lights up in quick succession green, red and blue and a welcome sound is played. The Emit logo appears briefly on the display, before the current settings are shown:

```
Code=250  
Passings=527  
Sn=857200002  
ESCAN2 v1.00 r595
```

The first line shows which code eScan2 is set to (250). Second line shows how many passes / readings, that are registered for this event. The third line shows the serial number of the eScan2 and the fourth line shows which firmware version is used.

After about 3 seconds, the display switches to operating mode, showing the current time at the top line, as well as the battery status. If BLE is activated, the text «BLE» will flash between current time and battery status on the top line. Similarly, if the printer is activated, a printer icon appears on the top line, between “BLE” and the battery status.

eScan2 is now ready for use.

## Key lock

eScan2 has a key lock feature, which turns on automatically if eScan2 has not been used for one minute. This is to avoid accidental touching any of the keys while using eScan2. Turn off the key lock by pressing the '7' key for two seconds. It is possible to change the key lock settings in the menu system.

## Reading emiTags

To read an emiTag, press the key marked 'Scan' while the eScan2 is held an inch or two away from the tag. When a tag is successfully read eScan2 will vibrate and emit a sound, as well as showing the tag number on the second top line of the display (the line below the running time). If the printer is connected, it will produce a printout, which looks like this:

### Normal printout emiTags

Printout				Explanation
Tag: 4161048				Tag number
Version: 01.12				Tag's version number
Date: 05.02.2021 Time: 12:49:50				Date and time for printout
emiTag II				Type of emiTag
0	00:00:00	00:00:00	0	Start
1	00:01:37	00:01:37	116	Control no.1, split time from start to first control, used time, control code for the first control
2	00:03:33	00:05:10	133	Control no.2, split time from first to second control, used time, control code for the second control
3	00:08:29	00:13:39	146	Control no.3, split time from second to third control, used time, control code for the third control
...				
8	00:01:24	00:50:05	90	Finish, time from last control to finish, finish time, control code for the finish control

Total time: 00:50:05

## Reading e-cards

To read an e-card, place it on top of the eScan2, inside the field that is marked with a thin red line. Upon successfully reading, the eScan2 will vibrate and emit a sound, as well as showing the e-card number on the second top line of the display (the line below the running time). If the printer is connected, it will produce a printout, which looks like this:

### Normal printout e-cards

Utskrift				Forklaring
Tag: 503806				Tag number
Date: 05.02.2021 Time: 12:49:50				Date and time for printout
Production: Week 12 Year 17				Production week and year
Emit EPT V6.00				Type of e-card
0	00:00:00	00:00:00	0	Start
01	00:01:37	00:01:37	116	Control no.1, split time from start to first control, used time, control code for the first control
02	00:03:33	00:05:10	133	Control no.2, split time from first to second control, used time, control code for the second control
03	00:08:29	00:13:39	146	Control no.3, split time from second to third control, used time, control code for the third control
...				Up to 48 controls

8	00:01:24	00:50:05	90	Finish, time from last control to finish, finish time, control code for the finish control
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Total time: 00:50:05

## Reading barcodes

eScan2 can be used to read barcodes and QR-codes.

To read barcodes, point with eScan2 at the barcode that should read, and press the key marked 'Scan'. A white LED lights up the barcode, at the same time as the built-in barcode reader projects a red light on the barcode. If the barcode can be read, the start number will be shown on the display of eScan2, while eScan2 vibrates and emits a sound. If the barcode cannot be read, the text «Error CRC» appears in the display and eScan2 beeps. "Incorrect CRC" means that the barcode is of the wrong type.

## Turn off eScan2

eScan2 automatically turns off if it has not been used for one hour. It can also be turned off manually, by pressing the 'Clear / ON' key for two seconds.

## MENU SYSTEM

The menu system is used to customize different settings for eScan2. In this section we will go through all the menu items and explain how they work. Press the 'Menu' button to enter the main menu. By pressing 'Menu' again, you will return to operating mode. By pressing 'Clear' you always return to operating mode. Use the red arrow keys (2, 4, 6 and 8) to maneuver in the menus and 'Enter' to confirm selection.

### 1: New race

*This function resets the counter for registered tags/e-cards. This is recommended to do before each new race / event!*

### 2: Code

eScan2 can be set to four different "reading codes", in addition to an optional code, if it is not to be used to read tags/e-cards. Choose between code A (250), code B (251), code C (252), code D (253) and the optional code. If you select an optional code, you must enter three digits and the code must be less than 250.

### 3: Competitor

In the competitor menu you can enter name, start number and up to two tags/e-cards per competitor. Select the function 'New' to add a new competitor. The name of the competitor is written using the number keys with letters (as on old mobile phones). For example, you get the name "Ola" by pressing the 6 key three times, the 5 key three times and the 8 key once. The 0 key is used for spaces, and the 'Enter' key to confirm the entered value. By holding down the 'Menu' button for at least two seconds, you can switch between uppercase and lowercase letters, as well as numbers. Then you register the competitor's start number and tag/e-card number(s).

The 'Search' function allows you to search for a competitor among those who have been entered. Enter the name, or parts of the name, of the competitor you

are looking for and press 'Enter'. The 'List' function shows the names of all registered competitors. Use the arrow keys to scroll through the list, and the 'Enter' key to display additional information (start number, tag/e-card number(s) of the relevant competitor. The 'Edit' function is used when you want to change some of the information entered on a competitor. Use the arrow keys to scroll down to the competitor you want to change, and press the 'Enter' key to display the competitor's information. When you get to what you want to change (name, start number, tag/e-card number), the 'Clear / ON' key is used to delete the values entered, and the correct value is entered - in the same way you do when you enter to a new competitor. 'Delete' is used when you want to delete a competitor, while 'Delete all' deletes all competitors. This menu selection must be confirmed with 'Enter'.

## **4: Information**

The information menu is divided into three submenus. Use the arrow keys to navigate between the different submenus.

### **4.1: General**

General information about eScan2. The first line shows which code eScan2 is set to. The second line shows how many passes have been registered for the event in question. The third line shows the eScan2 serial number.

### **4.2: Power**

The current menu shows current information about the batteries in eScan2. The first line shows how many volts the battery has. Second line shows the charging voltage, while third line shows the level of the battery (10 = fully charged, 1 = almost empty battery)

### **4.3: Version**

The first line shows which firmware version is running on eScan2. The second line shows which version of BLE is used.

## **5: Settings**

The settings menu has a number of submenus, which allow the user to change the layout of eScan2. Use the arrow keys to scroll through the submenus and confirm the desired selection with 'Enter'.

### **5.1: Set clock:**

Select this menu option to change the time and / or date. New time (in the format TT: MM: SS) is entered with the number keys and you acknowledge with the 'Enter' key when the clock is exactly equal to the second equal to the time you have tested. New date is entered in the same way (in the format DD / MM / YYYY).

### **5.2 ACK:**

Turn off or 'ack' (acknowledgment) for emiTags. If ack is on, eScan2 confirms that the chip has been read, so that the chip does not send the same message several times. If 'ack' is off, emiTag sends all messages three times. Default choice is that 'ack' is on.

### **5.3 Printer:**

In the printer menu, you have three options. Select 'printer' to decide whether the printer should be turned off, whether you want to connect a serial printer, or whether you want to connect a wireless printer. The 'Read / Scan' menu option allows you to search for a wireless printer (remember to turn on the printer), while the lower menu option, 'Name' allows you to name the printer, if you want an easier-to-read name. When the printer is enabled, a printer icon appears on the top line, between the current time and the power icon.

### **5.4 Save all:**

This menu selection determines which emiTags to store in eScan2. If you choose to turn on 'Save All', eScan2 will save all emiTags that are registered, regardless of which code the emiTag registered. If you have this menu option turned off (which is the default), only emiTags that have been read with eScan2's own code will be registered.

### **5.5 Reset alt:**

Selecting this menu option resets all passes and readings, as well as all participant data. In addition, eScan2 is set to the default settings.

### **5.6 Protocol:**

Select protocol (for transferring data to PC):

- *Normal*: Default values (default setting)
- *Short*: Sends 34 bytes. Used with some external devices.
- *Ext dump*: Sets an extended information protocol, which is used to read emiTags.

### **5.7 Font:**

Choose from three font sizes; small, medium or large. Large is the default choice.

### **5.8 Language:**

eScan2 supports six different languages; Norwegian, English, Swedish, Finnish, French and German. English is the factory default setting.

### **5.9 BLE:**

BLE is used to send data to Emit's online server, via a mobile phone. An app (which is not yet fully developed) is installed on the user's mobile phone and ensures that reading data from eScan2 is forwarded to the Emit's online server.

### **5.10 Barcode:**

eScan2 can read a variety of barcodes and QR codes. Select 'On' if you want to activate barcode reading, or 'Off' if you do not want to read barcodes.

### **5.11 Sounds:**

This menu option allows you to select which sounds to play at the following events; reading of eCard and reading of emiTag, as well as if you want key sound. Choose whether you want sound 'On' or 'Off', as well as which sound you want for the various readings.

### 5.12 Power saving:

To save power, eScan2 has a power saving feature, which turns off the display if eScan2 has been idle for a while. You can choose between the following options; 5 min, 10 min, 30 min, 1 hour, 2 hours, or never.

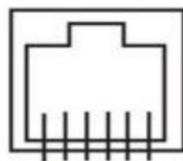
### 5.13 Lock keyboard:

Choose whether you want the key lock to turn on after 1 minute or not. The default choice is that the key lock is on.

### Connection of external equipment:

The serial port on the back of the eScan2 uses an RJ11 connector with six contact points, which are connected as follows

RJ11 has the following pinout:



6 5 4 3 2 1

1 = INPUT1 (Start/Sync)

2 = INPUT2 (Finish)

3 = RS232 RX (Port for serial printer)

4 = RS232 TX (Port for serial printer)

5 = GROUND

6 = OUTPUT

### Synchronization of ETS2 and / or ESD2:

eScan2 can be used to synchronize the clock to ETS2 or ESD2. After setting the clock on eScan2, a positive pulse is sent for 100 ms between pin5 (ground) and pin6 (output). If you have connected ETS2 or ESD2, the clock in the connected device will be synchronized with eScan2.

### Uploading start list

It is possible to enter the name, start number and chip number of the participants under menu option 3 - participants. However, it is also possible to transfer a participant list from the registration system, if this supports transfer to Emit ET6. In that case, use the utility 'EmitET6', which can be downloaded from [www.emit.no](http://www.emit.no), for this purpose. However, eScan2 does not support transfer of classes and start times - only name, start number and tag number.

### Upgrading eScan2

eScan2 can be upgraded to the latest firmware version using the eUpgrade program, which can be downloaded from [www.emit.no](http://www.emit.no). USB drivers for eScan2 are usually installed automatically, but if you have problems with the communication between eScan2 and PC, you can download the latest version of the USB driver from <https://ftdichip.com/drivers/vcp-drivers/>