**User guide**

**SCIEL READER IP2**
Ref. SCIBT68B

- Powerful "Active RFID gateway" for your Ethernet local network
- Compact and robust aluminium housing dedicated for the industrial applications
- Integrated PoE feature for the SCIEL READER IP2
- Multiples IP protocols supported for the network management with your LAN network
TABLE OF CONTENTS

1 MAIN SPECIFICATIONS.............................................................................................................. 3
2 PACKING INFORMATION............................................................................................................. 4
3 PHYSICAL INFORMATION........................................................................................................... 5
   3.1 ANTENNA CONNECTOR........................................................................................................... 5
   3.2 3 PINS TERMINAL BLOCK WIRING....................................................................................... 6
   3.3 POWER SUPPLY AND POWER OVER ETHERNET (POE)..................................................... 6
   3.4 LED INDICATORS................................................................................................................. 7
   3.5 RESET BUTTON .................................................................................................................... 8
   3.6 DIN RAIL MOUNTING.......................................................................................................... 8
4 READER’S OPERATING MODE .................................................................................................. 9
   4.1 PHYSICAL SETUP............................................................................................................... 9
   4.2 SOFTWARE SETUP.............................................................................................................. 10
      4.2.1 SETUP THE LANTRONIX ETHERNET MODULE....................................................... 10
      4.2.2 SETUP AND TEST THE READER WITH ETHER................................................... 15
   4.3 CONFIGURATION COMMAND LIST .................................................................................. 16
5 MECHANICAL SPECIFICATIONS............................................................................................ 17
   5.1 2D DRAWINGS.................................................................................................................... 17
6 REFERENCES AND VERSIONS ................................................................................................ 18
7 STANDARDS............................................................................................................................. 18
## TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>External power supply</td>
<td>9-48 VDC</td>
</tr>
<tr>
<td>Average current</td>
<td>@9V 120mA, @12V 90mA, @24V 55mA, @48V 40mA</td>
</tr>
<tr>
<td>Frequency</td>
<td>433.92 MHz (868MHz version: SCIEL READER IP2H)</td>
</tr>
<tr>
<td>Receiving range</td>
<td>Customizable with a software command</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20°C to +60°C</td>
</tr>
<tr>
<td>Supported IP protocols</td>
<td>Data Transfer: TCP/IP, UDP/IP, Telnet</td>
</tr>
<tr>
<td>Communication and network management</td>
<td>ARP, ICMP, SNMP, DHCP, BOOTP, TFTP, AutoIP, HTTP</td>
</tr>
<tr>
<td>Settings</td>
<td>Device Installer software (IP network settings) &amp; ETER configuration software (Active RFID settings) running under Windows XP, W7, W8</td>
</tr>
<tr>
<td>RFID Antenna connector</td>
<td>SMA-F</td>
</tr>
<tr>
<td>Supply connector</td>
<td>DC supply jack: 2.1 mm Pluggable terminal block, with a 3.81 mm pitch</td>
</tr>
<tr>
<td>LED indicators</td>
<td>Power (yellow), frame receipt (blinking yellow)</td>
</tr>
<tr>
<td></td>
<td>Ethernet network presence (blue)</td>
</tr>
<tr>
<td></td>
<td>On the Ethernet module: network speed (green), network communication (yellow)</td>
</tr>
<tr>
<td>Housing</td>
<td>Aluminum with anti-oxydation paint – 98 x 64 x 36 mm</td>
</tr>
<tr>
<td>Waterproof IP Level</td>
<td>IP52</td>
</tr>
<tr>
<td>Standards</td>
<td>EN 301 489 – 3 : 2002 V1.4.1; EN 300 220 – 2007 : V2.1.2; CE; RoHS certified</td>
</tr>
<tr>
<td>Output interface</td>
<td>Ethernet 10Base-T or 100Base-TX (auto-sensing)</td>
</tr>
<tr>
<td></td>
<td>Open Collector output (0.1A, 30V)</td>
</tr>
<tr>
<td>PoE function</td>
<td>Fully Compliant IEEE 802.3af PD Interface</td>
</tr>
<tr>
<td>Ethernet connector</td>
<td>RJ45 Ethernet</td>
</tr>
<tr>
<td>Accessories</td>
<td>1.5m RJ45 cable included, SMA-M BNC antenna converter included</td>
</tr>
<tr>
<td></td>
<td>Mini straight RFID 433MHz antenna included</td>
</tr>
<tr>
<td></td>
<td>Male Power Supply removable connector included</td>
</tr>
<tr>
<td></td>
<td>DIN RAIL mounting clip – DIN CLIP01 (not included)</td>
</tr>
</tbody>
</table>
2 PACKING INFORMATION

The packaging of the **SCIEL READER IP2**, reference SCIBT68, contains:

- The SCIEL READER IP2 itself, packed in a ESD plastic bag
- Its 1.5m RJ45 Ethernet cable
- A 433MHz RFID mini antenna
- A SMA-male to BNC-female adapter

**Figure 1:** The SCIEL READER IP2’s packaging

**Figure 2:** The SCIEL READER IP2 and its RJ45 Ethernet cable

**Figure 3:** 433MHz RFID mini antenna and SMA-M to BNC-F adapter
3 PHYSICAL INFORMATION

3.1 Antenna connector

The external antenna connector is a Female SMA connector with a 50Ω impedance. This connector is factory mounted on the front side on the housing, but can also be mounted on the back side.

To change the antenna connector’s side:
1. Open the housing by unscrewing the 4 top screws, and remove the main board and its two screws. For more details on these operations, see 3.5 and 3.6, figures 7 and 8.

2. Remove the plastic plug that hides the rear mounting hole (surrounded with red)

3. Remove the SMA plug (unscrew the nut)

4. Place the plastic plug in the front hole.

5. Mount the SMA plug in the rear hole.

6. Ensure the UFL connector (surrounded with yellow) is plugged correctly.

7. Mount the main board back and close the housing. Be careful not to tighten the screws too hard, it could make damages.
3.2 3 pins terminal block wiring

![Image of 3 pin terminal block]

**Figure 5:** 3 pin terminal block

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out</td>
<td>Relay out (open collector)</td>
</tr>
<tr>
<td>G</td>
<td>Ground – Supply negative</td>
</tr>
<tr>
<td>+</td>
<td>Supply positive</td>
</tr>
</tbody>
</table>

The Out pin can be controlled:
- By sending the instruction [OK0000LL], the relay is turned on for 4 seconds.
- By contextual stack length (number of tags in the detection field): the relay is turned on until the number of tags in the detection field is higher or equal to the number of expected tags (see commands 26/27 in the MCHD "Reader Communication & setup protocol" file on our website).

3.3 Power supply and Power Over Ethernet (POE)

The reader is compatible with a POE supply. There are some securities to allow connecting power supplies to the DC jack, 3 pins connector and POE simultaneously.

If a correct voltage ($9V < V+ < 48V$) is present on DC jack or 3 pins block, the reader will use it and disable POE.

In this case, if DC power is removed, the reader will NOT be supplied until POE restarts.

![Image of POE supply diagram]

**Figure 6:** Reader mounted on a DIN rail with POE supply

**Figure 7:** POE wiring
3.4 **LED Indicators**

![LED Indicators Diagram](image)

**Figure 8: LED indicators**

<table>
<thead>
<tr>
<th>LED number</th>
<th>Color</th>
<th>Description</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yellow</td>
<td>Power Supply present</td>
<td>Permanently lighting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data transmission</td>
<td>Blinking</td>
</tr>
<tr>
<td>2</td>
<td>Blue</td>
<td>Reader is connected to an active network</td>
<td>Permanently lighting</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
<td>Network speed = 10Mpbs</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Network speed = 100Mbps</td>
<td>Permanently lighting</td>
</tr>
<tr>
<td>4</td>
<td>Yellow</td>
<td>Network communication</td>
<td>Permanent/Blinking</td>
</tr>
</tbody>
</table>
3.5 Reset button

Figure 9: Reset button surrounded by the red rectangle

To access the Reset button, you have to unscrew the 4 screws on the top of the housing, as shown on the image alongside.

3.6 DIN rail mounting

The SCIEL Reader IP2 can be mounted on a standard DIN rail. To do this, you need our DIN CLIP 01 accessory, a screwdriver and a 3mm hex key. Open the reader’s housing by unscrewing the 4 screws on the top (see image above).

Figure 10: 4 screws to be unscrewed

First, unplug all the power supplies and other cables from the reader. Unscrew the 2 screws that block the main board.

Figure 11: Main board’s screws

Figure 12: DIN rail screws

Remove carefully the main board and pick the 2 screws up. Keep them for the following operations.

To reset the Ethernet module to factory settings, plug a power supply into the reader, and press the Reset button for 10 seconds. It does NOT reset the reader itself!
Remove the washer on the 2 screws of the previous step. Keep them for later use. Reassemble the whole unit. Don’t tighten the main board’s screws too hard, otherwise you could make damages!
Place the DIN CLIP 01 accessory as shown on the image alongside, and screw it. Now the reader can be mounted on a standard DIN rail.

Image 13: DIN rail mount

4 READER’S OPERATING MODE

4.1 Physical setup

1. Plug an antenna on the female SMA. You can use the included SMA-Male -> BNC-Female adapter. If your antenna has a BNC plug.

2. If you want to use an external DC power supply, plug it in the DC jack or wire it to the pins ‘G’ (ground) and ‘+’ (positive) of the 3 pins block.

3. Plug the RJ45 cable to your local network and to the Ethernet plug of the reader.

For the following, refer to 3.4 LED Indicators. The reader’s yellow LED must be on (blinking or permanent): that means the reader is correctly supplied. The reader’s blue LED must be on too: that means the network is working. These two LEDs are surrounded by a red rectangle in the image above.
4.2 Software setup

You will need two software:

5. ETER: [https://ela.innovation.com/eter.html](https://ela.innovation.com/eter.html)

For this document, we used Device Installer v4.4.0.0 and ETER v3.0.1. Some things might change if you use different versions. Install them on your computer, then you can follow the procedure below.

4.2.1 Setup the Lantronix Ethernet module

![Device Installer](image)

**Figure 15:** Main page – Device Installer

Open Device Installer, then click the Search button.

It will search for every Lantronix device on your network: the SCIEL READER IP2 is interfaced with a Lantronix module.
In the right part of the window, you can find the reader’s IP address and MAC address. From this step, if you know what you do and want to keep the Ethernet module with factory settings (auto IP, 9600 bauds RS232, no security ...), you can go to 4.2.2 Setup and test the reader with ETER. Double-click on the name of the Lantronix module. It’s the one surrounded by a red rectangle in the image above.

You should see a page with many details about the Lantronix Ethernet module. Select the Web Configuration tab (surrounded with red).

Click the Navigate to button (surrounded with red).
You should be asked for authenticating.
If your reader is set to factory settings, just click OK or press Enter on your keyboard.
Else, if you have already set a password that you don't remember, you can reset the Lantronix module by pressing the Reset button for more than 10 seconds (refer to 3.5 Reset button) and restart the procedure from 4.2.1 Setup the Lantronix Ethernet module.

This is the main configuration page for the Ethernet module.
Unless you have very specific needs, you will only use two tabs: Network and Serial Settings, both surrounded with red.
4.2.1.1 **Network tab**

With the SCIEL READER IP2, the only mode available is **Wired Only**, so you can’t change it. The main feature of this page is the choice between automatic and fixed IP address. If you want to use a fixed IP, just tick the **Use the following IP configuration** box (surrounded with red) and fill the fields below it. For example, you can set them as in the image above. Once you filled all the useful fields, click **OK**. It should say “**Done!**”. Then click on **Apply Settings**, surrounded with yellow.

![Figure 21: Network page](image)

You should see the loading screen above. Wait for it to finish. The browser goes back to the main configuration page.

![Figure 22: Loading message](image)
4.2.1.2 Serial Setting tab

![Serial Settings Page](image)

**Figure 23**: Serial Settings page

The main parameter on this page is the *Baud Rate*, surrounded with red.

To change it, **you must follow the two steps below in the order!**

1. **Change the SCIEL CARD’s serial speed** with *ETER* software by sending the command: \[13xxRR\]. Replace \( xx \) by the value you need and \( RR \) by your reader’s ID. For more details, refer to 4.2.2 Setup and test the reader with *ETER* and 4.3 Configuration commands list.

2. **Change the Lantronix module’s speed** after changing the SCIEL CARDS’s one.

   If you modify the module’s speed before, it won’t be able to communicate with the SCIEL CARD nor tell it to use the new speed.

   In this case, the backup action is to reset the Ethernet module. To do it, please refer to the chapter 3.5.

To apply the new settings, click **OK**, then **Apply Settings** and wait for it to finish.
4.2.2 Setup and test the reader with ETER

ETER is an abbreviation for ELA Terminal. It’s designed to communicate with ELA’s readers using serial protocols.

![ETER v3.0.1](image)

**Figure 24: ETER v3.0.1**

In the black rectangle, you can enter the commands to send to the reader. They will only be sent if the communication port is open.

To configure the serial or IP port, click **Config**. See the image below for more details. Click **Connect** to open the serial ports and start communicating with the reader.

![Connection Configuration](image)

**Figure 25: ETER -> Config**

When you click on **Config** (Figure 24), a setting window shows up (figure above).

Tick the **IP** box and enter the reader’s IP address (see red rectangle).

Click **OK**, then **Connect** (Figure 24) to start the communication.

If you reader receives some tags and is set to online mode (factory set), you will see the tags’ frames printed on the screen.
4.3 Configuration Command List

For a complete list of the ELA’s commands, refer to our Software Datasheet MCHD: Reader Communication & setup protocol, available on our website: Reader communication protocol - Software Datasheet

All commands have the same syntax:

\[ [AABBCC] \]

- A command starts by '[' and finishes by ']'
- "AA": Command number
- "BB": Command parameter
  - hex characters for commands A1 and A3
  - 2 hex characters for all other commands
- "CC": Reader ID
  - Broadcast to all readers: 00

If the reader understands the command, it will answer [OKAABBCC].

If you want to get some help about a command, replace the closing bracket ']' by '?'.

The more important command is: [990101].
It shows the list of all the commands available for the reader, and the actual value for the corresponding parameters.
You can see below a sample line from the [990101] command:

For example, if you want some help about the speed command, send \[130000?\], you will get the answer alongside.
To get the actual speed of the SCIEL CARD, you must send [120001]. It will answer [120001] because we are at 9600 bauds.
To set the SCIEL CARD’s speed to 115200 bauds, you must send [130401]. The reader will answer [OK130401], but you won’t see it because the Lantronix module is still at 9600 bauds, so it won’t understand the SCIEL CARD’s message (this is a particular case; usually you will get the answer message because the speed stays the same)
5  MECHANICAL SPECIFICATIONS

5.1  2D drawings

Front View

Top View
6 REFERENCES AND VERSIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>REFERENCE P/N</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIEL READER IP2</td>
<td>SCIBT68</td>
<td>9-48VDC - 433.92 Mhz</td>
</tr>
<tr>
<td>SCIEL READER IP2H</td>
<td>SCIBT84</td>
<td>9-48VDC - 868 Mhz</td>
</tr>
<tr>
<td>DIN CLIP 01</td>
<td>ACIOM70</td>
<td>DIN RAIL Kit</td>
</tr>
</tbody>
</table>

7 STANDARDS

- EN 301 489 – 3 : 2002 V1.4.1; EN 300 220 – 2007 : V2.1.2
- CE Mark
- RoHS Certified
## 8 DOCUMENT VERSION

<table>
<thead>
<tr>
<th>VERSION</th>
<th>DATE</th>
<th>AUTHOR</th>
<th>CHANGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>01A</td>
<td>09/12/14</td>
<td>CZ</td>
<td>First UK document version</td>
</tr>
<tr>
<td>03A</td>
<td>11/22/16</td>
<td>LA</td>
<td>Reference updated: SCIBT68B</td>
</tr>
<tr>
<td>04A</td>
<td>10/09/18</td>
<td>LA</td>
<td>Change on table page 3: Supported IP protocols (network admin)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STATUS</th>
<th>DRAFT</th>
<th>CORRECTION</th>
<th>FINAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTRIBUTION LEVEL</td>
<td>CONFIDENTIAL</td>
<td>LIMITED</td>
<td>GENERAL</td>
</tr>
</tbody>
</table>