

### **iCall 382-2 LB-RFID-A**

This unit is a nurse presence/call cancellation device, including RFID reader for nurse identification. This RFID reader is connected to the local bus using the flexible 4 wire connection. The RFID reader is programmed as one address on the bus, which can contain up to a maximum of 50 addresses. Reassurance LED and buzzer included.



### **General system description**

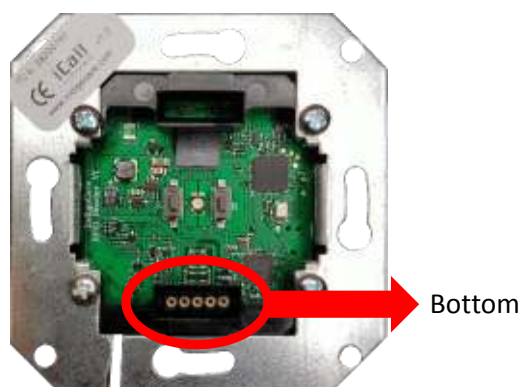
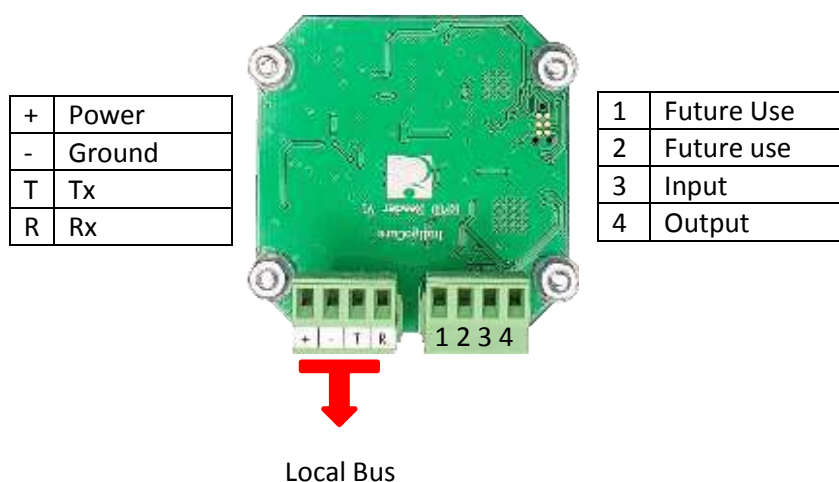
The local bus is a four wire bus that can be connected to any cable structure. Bus topology, star topology or a combination of both can be used. The maximum total cable length between the IP-units and the furthest LB-units on the bus is 1000m or the lowest voltage at the LB-units Tx or Rx wire is 18V DC. The four wire bus is composed of one wire conducting 24V DC, one wire serving as GND, one wire serving as Rx and one wire serving as Tx. The IP-unit can support up to 50 LB-units per bus. If there are more than 50 LB-units an additional IP unit is needed and another bus needs to be created.

The RFID radio operates at a frequency of 13.56MHz and is compatible with Mifare and NFC protocol. The local bus is a monitored bus which, when unable to find a registered button, displays an error message on the central Nurse station and Netrix server.

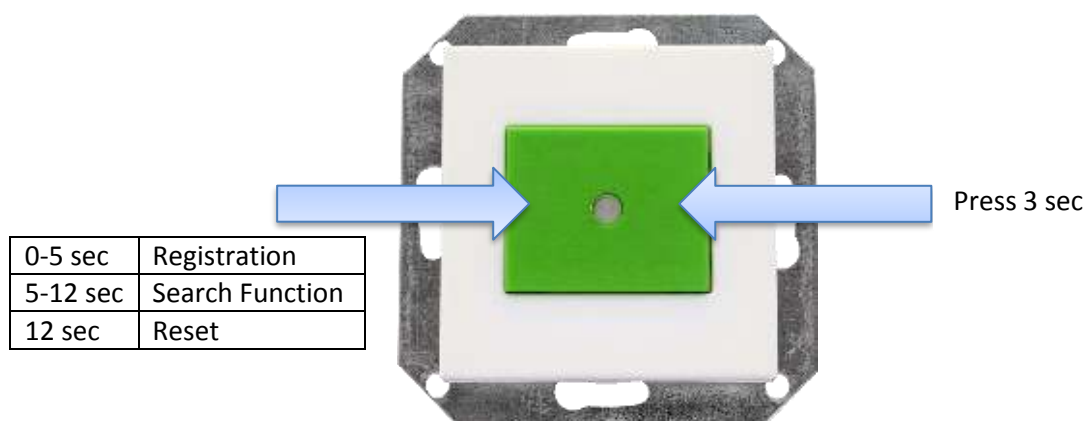
### **Features**

- One input for message to the Netrix
- Call reassurance LED (Red), if room is in Call status
- 1 address on the iCall Local Bus.
- Presence confirmation LED (Green)
- Identified presence/call/assistance cancellation by using a (standard) RFID card
- Card reader confirmation audio (beep)
- RFID radio frequency 13,56MHz
- Supported protocols:
  - ISO/IEC 14443A (MIFARE)
  - ISO/IEC 14443B
  - ISO/IEC 18092, JIS: X6319-4 (FeliCa RC-S860)
  - ISO/IEC 21481 (NFCIP-2)
  - ECMA-340 (NFCIP-1)

## Connections



## Registration



1. Press the right side of the red call button for 3 seconds. Bottom is the antenna connector
2. The red LED lights up
3. You now have 2 seconds to press left on the red call button for the following functions:
  - 0-5s: register the button on the bus
  - 5-12s: search function for recovering an unknown registration
  - 12s: reset button software (local bus registration is retained)
4. If the left button is not pressed within 2 seconds, the unit will go back to idle mode

## Order information

NWBAES2901

iCall 382-2 LB-RFID-A (GREEN)

## Specifications

Indigo Care

Version

HW: iCall\_LB-reader V1.0

SW: TC-b V1.0



iCall\_382\_x RFID xx

| General Absolute Maximum Ratings ! |                                   |                  |  | min | typ | max | unit |
|------------------------------------|-----------------------------------|------------------|--|-----|-----|-----|------|
|                                    | Supply Voltage                    | Vcc              |  | 18  | 24  | 30  | V    |
|                                    | Supply Current forward            | I <sub>f</sub>   |  | -   | -   |     | mA   |
|                                    | Operating Temperature (ambient)   | T <sub>amb</sub> |  | 0   | -   | 65  | °C   |
|                                    | Maximum reverse voltage           | V <sub>r</sub>   |  | -   | 40  | -   | V    |
|                                    | Leakage current (reverse @ 30Vdc) | I <sub>r</sub>   |  | -   | 30  | -   | µA   |

Mechanical properties

| Group    | Symbol                         | Parameter               |                                                                   | min                 | typ                      | max | unit     |
|----------|--------------------------------|-------------------------|-------------------------------------------------------------------|---------------------|--------------------------|-----|----------|
| Physical | Dimensions<br>(Total Assembly) | L x W x H               | metric                                                            | -                   | 71 x 71 x 31             | -   | mm       |
|          |                                | L x W x H               | non-metric                                                        | -                   | 27,95" x 27,95" x 12,20" | -   | " (inch) |
|          |                                | L x W x H               | non-metric                                                        | -                   | 2795 x 2795 x 1220       | -   | mils     |
|          | Weight                         | Base PCB                | pounds                                                            | -                   | 0,0265                   | -   | lbs      |
|          |                                |                         | metric                                                            | -                   | 0,0120                   | -   | kg       |
|          |                                | Antenna + front plastic | pounds                                                            | -                   | 0,0375                   | -   | lbs      |
|          |                                |                         | metric                                                            | -                   | 0,0170                   | -   | kg       |
|          |                                | Total Assembly          | pounds                                                            | -                   | 0,1356                   | -   | lbs      |
|          |                                |                         | metric                                                            | -                   | 0,0615                   | -   | kg       |
| Material | plastics                       | lens                    | Type of material                                                  | TARFLON AZ1900T.pdf |                          |     |          |
|          |                                | cover                   | Type of material                                                  | Polylac 765 A.pdf   |                          |     |          |
|          |                                | center (button)         |                                                                   |                     |                          |     |          |
|          | PCB                            | Type of material        | FR-4,<br>Td>=325°C, T260>=60',<br>T288>=5', CTEz<=3.7%, Tg>=135°C |                     |                          | -   |          |
|          |                                |                         |                                                                   |                     |                          |     |          |

Thermal properties

| Group   | Symbol           | Parameter             | refers to | min | typ | max | unit |
|---------|------------------|-----------------------|-----------|-----|-----|-----|------|
| Thermal | T <sub>amb</sub> | Operating temperature | ambient   | 0   | 25  | 65  | °C   |
|         |                  | flamability rating    | plastic   | 32  | 77  | 149 | °F   |

Functional properties

| Group                                                         | Type               | condition                  | function                                      | configure |
|---------------------------------------------------------------|--------------------|----------------------------|-----------------------------------------------|-----------|
| iCall 382_1 RFID OA (red)<br>&<br>iCall 382_2 RFID A (green)  | RFID Present       | Push button (center front) | Off / Doorbel / Call                          | website   |
|                                                               |                    | Input (rear)               | Off / Doorbel / General purpose               | website   |
|                                                               |                    | Output (rear)              | Doorcontact driver                            | not       |
|                                                               |                    | Buzzer                     | RFID feedback (On / Off)                      | website   |
|                                                               |                    | LED (center front)         | Finders LED (Red) & RFID feedback (Red/Green) | not       |
| iCall 382_2 RFID A (green)<br>&<br>iCall 382_4 RFID B (white) | RFID AccessControl | Push button (center front) | Off / Doorbel / Call                          | website   |
|                                                               |                    | Input (rear)               | Off / Doorbel / General purpose               | website   |
|                                                               |                    | Output (rear)              | Doorcontact driver                            | not       |
|                                                               |                    | Buzzer                     | RFID feedback (On / Off)                      | website   |
|                                                               |                    | LED (center front)         | Lifecheck (Blue) & RFID feedback (Red/Green)  | not       |

Radio properties

| Group                   | Tag Type                   | Tag Dimensions     | min | typ    | max | unit |
|-------------------------|----------------------------|--------------------|-----|--------|-----|------|
| Reading distance        | ID-1                       | 86 x 54 [mm x mm]  | 10  | -      | 33  | mm   |
|                         | ID-000                     | 25 x 15 [mm x mm]  | 10  | -      | 26  | mm   |
|                         | ID-2                       | 105 x 74 [mm x mm] | 10  | -      | 33  | mm   |
|                         | ID-XXX                     | 42 x 18 [mm x mm]  | 10  | -      | 26  | mm   |
| Magnetic field strength | @3cm distance from antenna |                    | 1,5 | -      | 2,5 | A/m  |
| Radio frequency         |                            |                    | -   | 13,56  | -   | MHz  |
| Antenna inductance      | @13,56MHz                  |                    | -   | 350,14 | -   | nH   |

RFID Standards

| supported NFC Protocols       | Brand name            | possible types                                                                                                                                                                                      |
|-------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO/IEC 14443A                | MIFARE                | <ul style="list-style-type: none"> <li>MIFARE Classic 1K • MIFARE Classic 4K</li> <li>MIFARE Classic EV1 1K • MIFARE Classic EV1 4k</li> <li>MIFARE DESFire</li> <li>MIFARE Ultralight C</li> </ul> |
| ISO/IEC 14443B                | -                     | TBD                                                                                                                                                                                                 |
| ISO/IEC 18092, JIS: X6319-4   | FeliCa (RC-S860)      | FeliCa Lite-S ;                                                                                                                                                                                     |
| ISO/IEC 21481                 | (NFCIP-2)             | TBD                                                                                                                                                                                                 |
| ECMA-340                      | (NFCIP-1)             | TBD                                                                                                                                                                                                 |
| Compatible active NFC devices | Supported NFC chipset | possible types                                                                                                                                                                                      |
| Smartphone                    | NXP                   | e.g. Samsung: • J510FN • SM-G388F • ...                                                                                                                                                             |
|                               | S.LSI                 | e.g. Samsung: • A310F • A510F • A710F • J710FN • G920F/G925F • G930F/G935F • ...                                                                                                                    |

| Electrical properties |                                                |                                                                   |                                                                |                                    |                                    |                                    |      |
|-----------------------|------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------|------------------------------------|------------------------------------|------------------------------------|------|
| Symbol                | Parameter                                      | Type                                                              | State                                                          | typ @18V                           | typ @24V                           | typ @30V                           | unit |
| I <sub>f</sub>        | Forward Supply Current<br>(RFID Present)       | iCall 382 _ 1 RFID OA (red)<br>&<br>iCall 382 _ 2 RFID A (green)  | Without Antenna                                                | 13,7                               | 10,8                               | 9,2                                | mA   |
|                       |                                                |                                                                   | Standby / Idle                                                 | 28,5                               | 22,2                               | 18,5                               | mA   |
|                       |                                                |                                                                   | Call                                                           | 29,3                               | 22,8                               | 19,0                               | mA   |
|                       |                                                |                                                                   | Present                                                        | 31,5                               | 24,4                               | 20,3                               | mA   |
| I <sub>f</sub>        | Forward Supply Current<br>(RFID AccessControl) | iCall 382 _ 2 RFID A (green)<br>&<br>iCall 382 _ 4 RFID B (white) | Without antenna                                                | 13,7                               | 10,8                               | 9,2                                | mA   |
|                       |                                                |                                                                   | Standby / Idle                                                 | 24,4                               | 21,9                               | 18,4                               | mA   |
|                       |                                                |                                                                   | Continuous batching                                            | 30,1                               | 24,3                               | 20,3                               | mA   |
|                       |                                                |                                                                   |                                                                |                                    |                                    |                                    |      |
| P <sub>t</sub>        | Power Consumption<br>(RFID Present)            | iCall 382 _ 1 RFID OA (red)<br>&<br>iCall 382 _ 2 RFID A (green)  | Without Antenna                                                | 246                                | 260                                | 276                                | mW   |
|                       |                                                |                                                                   | Standby / Idle                                                 | 513                                | 532                                | 554                                | mW   |
|                       |                                                |                                                                   | Call                                                           | 528                                | 546                                | 569                                | mW   |
|                       |                                                |                                                                   | Present                                                        | 568                                | 585                                | 608                                | mW   |
| P <sub>t</sub>        | Power Consumption<br>(RFID AccessControl)      | iCall 382 _ 2 RFID A (green)<br>&<br>iCall 382 _ 4 RFID B (white) | Without antenna                                                | 246                                | 260                                | 276                                | mW   |
|                       |                                                |                                                                   | Standby / Idle                                                 | 440                                | 526                                | 553                                | mW   |
|                       |                                                |                                                                   | Continuous batching                                            | 542                                | 582                                | 608                                | mW   |
|                       |                                                |                                                                   |                                                                |                                    |                                    |                                    |      |
| Dynamical behaviour   |                                                |                                                                   | State                                                          | typ @18V                           | typ @24V                           | typ @30V                           | unit |
| I <sub>f pk</sub>     | Forward Peak Supply Current<br>(RFID Present)  | iCall 382 _ 1 RFID OA (red)<br>&<br>iCall 382 _ 2 RFID A (green)  | worse case:<br>Buzzer on, LED on,<br><u>During Card Batch!</u> | peaks to 65mA<br>over period of 2s | peaks to 55mA<br>over period of 2s | peaks to 50mA<br>over period of 2s | -    |
| Regulations           |                                                |                                                                   |                                                                |                                    |                                    |                                    |      |
| Parameter             |                                                |                                                                   | condition                                                      | Compliance                         |                                    |                                    |      |
| EMC                   |                                                |                                                                   |                                                                | not yet                            |                                    |                                    |      |
| ESD                   |                                                |                                                                   |                                                                | not yet                            |                                    |                                    |      |
| FCC                   |                                                |                                                                   |                                                                | not yet                            |                                    |                                    |      |
| ISO 14443 Compliant   |                                                |                                                                   |                                                                | not yet                            |                                    |                                    |      |