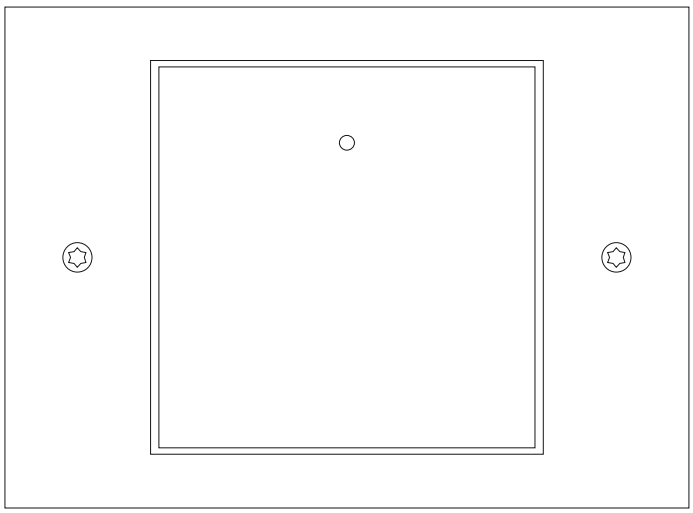
TDE-lighttech
illuminating creativity

MODBUS RFID READER TYPE RFIDREADERCM1

Manual version 1.4.1
HW version: 17020802
Software Version: hotelkey_versie_2.3



TDE-lighttech
illuminating creativity

Index

TDE-lighttech
illuminating creativity

1 Document History

Version	Date published	Comments
Version 1_0_0	9-1-2014	New document
Version 1_1_0	4-2-2014	Minor changes
Version 1_2_0	11-8-2014	Minor changes
Version 1_3_1	11-5-2016	Updated connector design
Version 1_3_3	11-4-2017	Updated board design HW version 17020802 Added assembly instructions
Version 1_4_0	22-5-2017	Added Certification list and new layout
Version 1_4_1	17-7-2017	Added FCC Regulatory notices

TDE-lighttech
illuminating creativity

2 Introduction

The RFIDreaderCM1 is a RFID reader special designed for hospitality applications such as hotels.
Typical application is for Guestroom and public spaces access control.
The RFID reader features a ModBus communication port and up to 8 RFID readers can be daisy chain connected to one ModBus communication bus. Each RFID-reader can be individual addressed with the two rotary DIP-switches and the ModBus can be terminated with the onboard DIP-switches.
Only a low-power 24VDC power supply and ModBus connection is needed to operate the RFID reader.

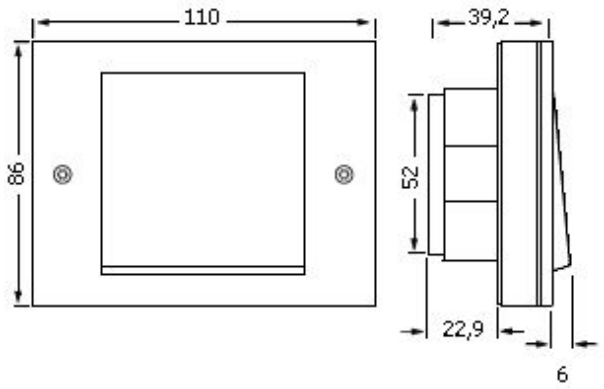
The RFIDreaderCM1 is certified for use in Europe and USA (EMC/CE/cMETus/FCC)

Standard will the RFID reader be delivered in a water-protected and rugged housing from the German manufacturer GIRA, a high end manufacturer of well-designed modern building technology.
The housing is IP44 rated and can be delivered in pure white (RAL 9010), anthracite (lacquered) and aluminium (lacquered). On request the topside can be printed on request with any text and logo.

Alternatively other types of wall mounted plastic enclosures are available on request if higher IP ratings are requested.

3 Specification

Voltage input:	24VDC
Power:	max. 1.2W
Current:	max. 50mA
Communication:	Modbus RTU , 9600, 8N1
Power connector conductor :	max 1,5mm²
Power wire size AWG:	20 - 16AWG
Data connector conductor: :	max 0,75mm²
Data wire size AWG :	24-18AWG
Dimensions RFID reader:	67.1 x 67.1 x 10mm
Dimensions GIRA TX44 housing:	110 x 86 x 39,2mm
GIRA TX44 colours available:	Pure white (RAL 9010) Anthracite (lacquered) Aluminium (lacquered)



4 Order information

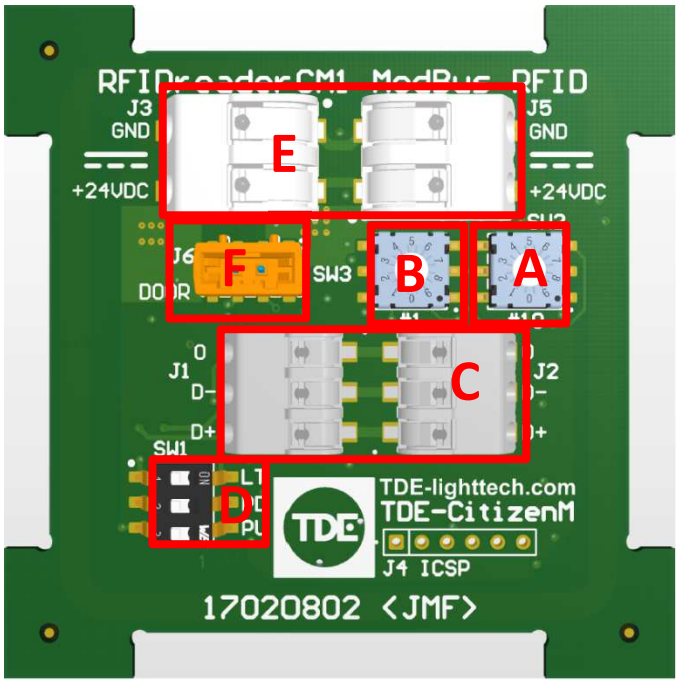
- CMBGRFIDII RFID-reader in GIRA TX-44 enclosure, white, with CitizenM text in red
- CMBGRFIDIIAL RFID-reader in GIRA TX-44 enclosure, Aluminium, without text
- CMBGRFIDIIBL RFID-reader in GIRA TX-44 enclosure, Black, without text

5 Safety instructions

This appliance must be connected to a power supply with an output that meets the requirements of SELV (Safety Extra Low Voltage) and LPS (Limited Power Source)

Do not connect more than 8 RFID readers in series on the power output connector of the first RFID reader.

6 Connections



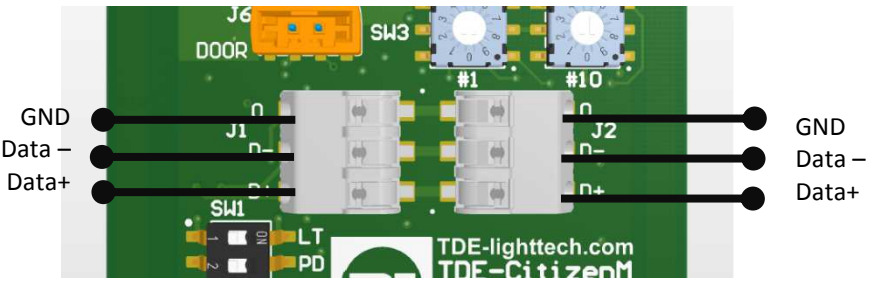
A. Address selector (decades)
B. Address selector (0 up to 9)

   For example to select address 1, set the arrow point of rotary switch A to zero and B to one. To select address 15, set the arrow point of rotary switch A to one and B to five

C. Connection to the room controller box. Use an T568B (straight through) Ethernet cable and connect it with port number 404 on the room controller box. The connections on the Ethernet cable are as followed:

Pin	Signal description	T568B wiring standard
1.	RS485 Data-	Orange white
2.	RS485 Data+	Orange
3.	GND	Green white
4.	+24VDC	Blue
5.	GND	Blue white
6.	+24VDC	Green
7.	GND	Brown white

8.	+24VDC	Brown



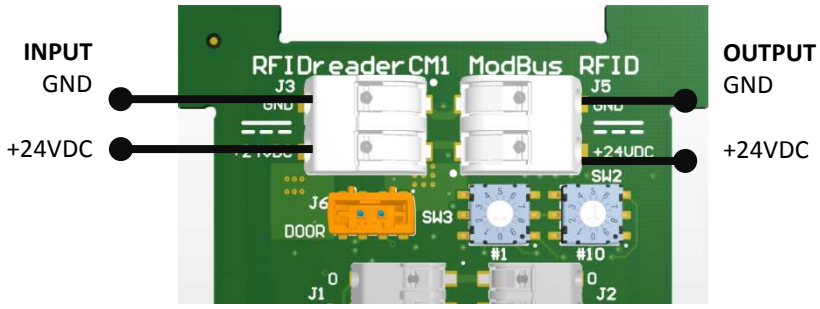
When connecting the Ethernet cable make sure that wires 3, 5 and 7 are connected together to reduce impedance. The same applies for wires 4, 6 and 8. In order to prevent voltage drop of the power supply voltage. Both connectors are parallel connected, in order to connect another module on the same bus.

For connections on the room controller box see the appropriate manual.

Only use a straight T568B cable. **Never** use a crossed cable or Straight T568A cable. Wire pair 1, 2 will be crossed with 3,6 could cause damage on the module.

D. 3 pole switch used for adjusting the RS485 communication bus
   1. LT – line termination, switch on if module is last unit in the line
   2. PD – pull-down on data-, use only when RS485 idle level is undefined
   3. PU – pull-up on data+, use only when RS485 idle level is undefined

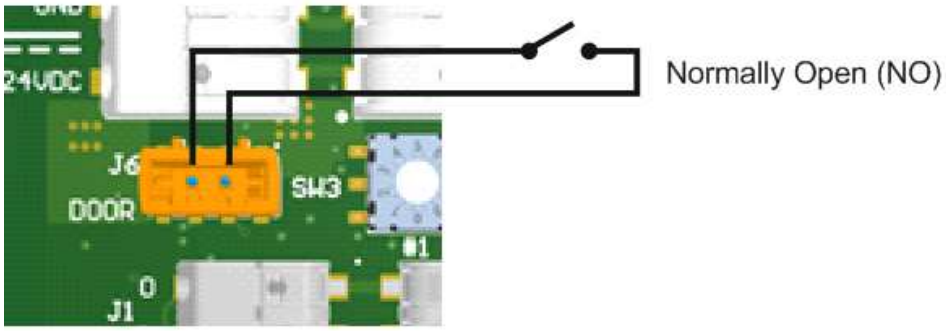
E. Power input/output 24VDC
   Only use power supplies which can deliver a constant dc-voltage of 24VDC. The RFID reader is polarity sensitive. The polarity is specified as followed:



NOTE:
Do not connect more than 40 RFID readers in series on the power output connector of the first RFID reader.

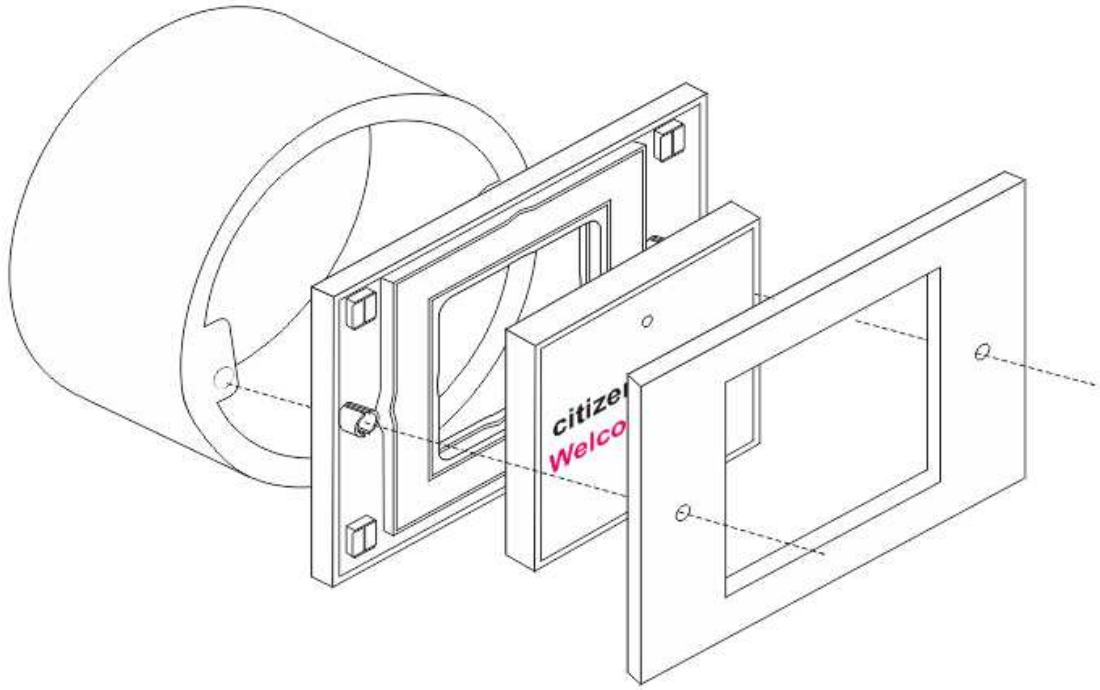
F. Door contact input

The door contact input needs to be a dry contact normally open.



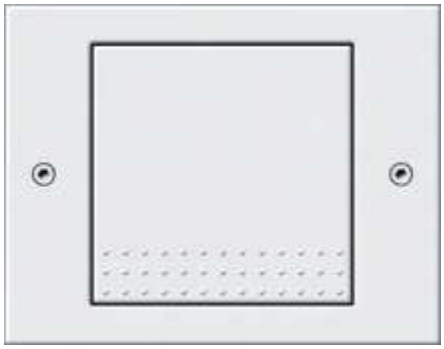
7 Assembly

The RFID reader needs to be placed into a Gira TX44 frame, that shall be screwed onto a flush mounting box with two Torx screws.



8 RFID Enclosures

8.1 GIRA TX-44 Enclosure, IP44 rated, standard



Standard will the RFID-reader be delivered in the Water-protected and rugged Gira TX_44 series enclosure, deliverable in the colour pure white (RAL 9010), anthracite (lacquered) and aluminium (lacquered) with 2-gang combination Push switch/socket outlet mounting.

Gira TX_44 is the perfect switch range for use outdoors or in humid rooms, but it can be installed just as well in interior design. It can be installed water-protected IP 44 and with its reinforced frame, robust material and the option of water and theft-protected mounting, it provides the best conditions for use in gardens, on balconies or on terraces.
The Gira TX_44 can be mounted in the empty units of the Gira energy profile for this purpose. The switch range is available in the colours aluminium, anthracite and pure white.

Features:

- Protected against sprayed water IP 44
- Theft-protected
- Material: thermoplastic (ASA)
- Shock-resistant, shatter-proof, UV-resistant, weather-resistant,
- microbiologically safe
- Behaviour under chemical loading according to German standard DIN 68861, load group 1b (for the variants anthracite, aluminium)
- Colours: pure white (RAL 9010), anthracite (lacquered), aluminium (lacquered)
- On request the topside can be printed on request with any text and logo

Because it is water-protected, rugged, and theft-protected, Gira TX_44 is suitable for:

- Damp and dry rooms
- Indoors and outdoors
- Terraces and balconies
- Kitchens and bathrooms
- Staircases and public facilities
- Gymnasiums, schools, and kindergartens

8.2 Retex enclosure, IP65, optional enclosure

Optional the RFID reader can be delivered in a IP67 rated enclosure from Retex.
Retex has a complete range of enclosures in high impact ABS to meet various applications within the industrial, electronics and office automation industries.
Made in high quality ABS, allows excellent mechanization and resistant to temperatures up to 85 ºC.
With EPDM 'O' ring gasket, will comply to IP 65 protection in respect of dust and moisture.

Features:

- Standard colour: light grey similar to RAL 7035, black similar to RAL 9004
- Self-extinguish ABS material, UL 94 V0 rate
- Multiposition wall mounting enclosure
- On request the topside can be printed on request with any text and logo.

8.3 BUD-industries enclosure, IP66, optional enclosure

Optional the RFID reader can be delivered in a IP66 rated enclosure from BUD-industries.
BUD-industries has a complete range of enclosures in high impact ABS to meet various applications within the industrial, electronics and office automation industries.
Made in high quality Polycarbonate material, allows excellent mechanization and resistant to temperatures of -40°C to +120°C and is UV stabilized.
With EPDM 'O' ring gasket, will comply to IP 66 protection in respect of dust and moisture.

Features:

- Heavy duty, impact resistant, NEMA plastic box designed for harsh environments
- Designed to IP 66 of IEC 529 and NEMA 4, 4X, 12, 13.
- Cover attaching screws are outside the Silicon Rubber gasket sealing area, thus preventing ingress of moisture and dust.
- Mounting flanges for easy wall installation.
- Cover screws are #4-40 stainless steel, non-magnetic and fasten into threaded brass inserts.
- UL 94V-0 flame rating.
- Polycarbonate material has an operating temperature of -40°C to +120°C and is UV stabilized.
- On request the topside can be printed on request with any text and logo.

9 Certifications and directives

cMETus:	E114112
FCC:	2AK670026268268
RF:	EN 302 291-2 (1.1.1)
	47 CFR Part 15.225 (10-1-15 Edition Edition) and 47 CFR Part 15.207 (10-1-15 Edition)
EMC:	47 CFR Part 15B
	EN 301 489-1(1.9.2) & -3 (1.6.1)

9.1 FCC Regulatory notices

Modification statement
TDE-lighttech B.V. has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

Interference statement
This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Wireless notice
This device complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Class B digital device notice
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

10 Contact details

Company: TDE-lighttech B.V.
Address: Verrijn Stuartweg 11A
Postal code: 1112 AW
Town: Diemen
Telephone: +31(0)20-6973849
Website:: www.tde-lighttech.nl
E-mail: info@tde-lighttech.nl