



INSTALLATION MANUAL

iX30



Date: 12/3/2020

Publication

March 2020,
 TKH Security
 Paasheuvelweg 20
 1105BJ Amsterdam
 The Netherlands
<https://tkhsecurity.com/>
 Tel.: +31-20-4620700

This manual represents the knowledge at the above-mentioned time. TKH security works non-stop to improve her products. For the most recent technical information please contact your consultant or dealer.

Table of content

Publication 1	
1	This document.....2
2	General.....3
2.1	Wiring3
2.2	Tools and equipment.....3
2.3	accessory4
2.3.1	Spacers4
2.3.2	Celrubber4
3	Installation5
3.1	Measurements5
3.2	Location.....6
3.3	Mounting steps.....6
4	Sirius iX307
4.1	Configurations7
4.1.1	801-5301 TKH coded.....7
4.1.2	801-5302 CSN8
4.1.3	801-5303 Programmable8
4.2	Sticker9
4.3	Interfaces10
4.4	Connections11
4.4.1	RS485 Directly12
4.4.2	RS485 via Adapterboard.....12
4.4.3	Clock/data- Wiegand.....14
4.4.4	Cable lengths if connected directly to Orion14
4.4.5	Cable lengths generic14
4.4.6	Data signals15
4.5	reader.....15
5	Technical specifications16

1 This document

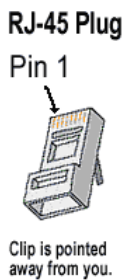
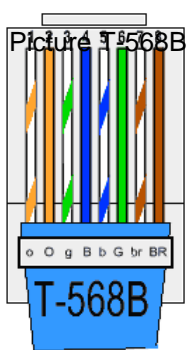
This document contains all the information which is needed when installing the Sirius iX30. The details and recommendations will be described in the chapters below.









2 General

The Sirius iX30 card reader is a versatile card reader which support multiple card technologies and communication protocols used in access control solutions. In addition, the Sirius iX30 is able to support different technologies simultaneously.

2.1 Wiring

This document assumes standard T-568-B color coding of the cables.



Pin number RJ-45 Plug	TIA/EIA-568-B Cable color	Signal ID	T568B Pair
1	White/orange 	DA+	2
2	Orange 	DA-	2
3	White/green 	DB+	3
4	Blue 	DC+	1
5	White/blue 	DC-	1
6	Green 	DB+	3
7	White/brown 	DD+	4
8	Brown 	DD-	4

2.2 Tools and equipment

When installing the Sirius iX30, the following tools or materials may be needed.

- T-568B, or another cable which meets the requirements as specified in chapter 4.4:
- Wire side cutter
- Electric wire ferrule
- Crimping tool
- Flathead screwdriver
- Drilling machine (if mounted on a surface)
- 2x 6MM plug
- 2x with the plug corresponding screw (screwhead must be 6mm at least).

2.3 accessory

The following accessories are available for the Sirius iX30

2.3.1 Spacers

Spacer name	Part number
Spacer normal	801-6301
Spacer protector	801-6109
Spacer cardholder	801-6110

2.3.2 Celrubber

Celrubber is strongly recommended if the Sirius iX30 (with or without spacer) is mounted directly to an outside surface. It offers both more protection and a smoother mounting in the event of an uneven surface.

Celrubber	Part number
Celrubber for the purpose of Sirius iX30	801-6311

3 Installation

To ensure proper functioning of the equipment, the environment of the Sirius iX30 must be compliant with certain conditions.

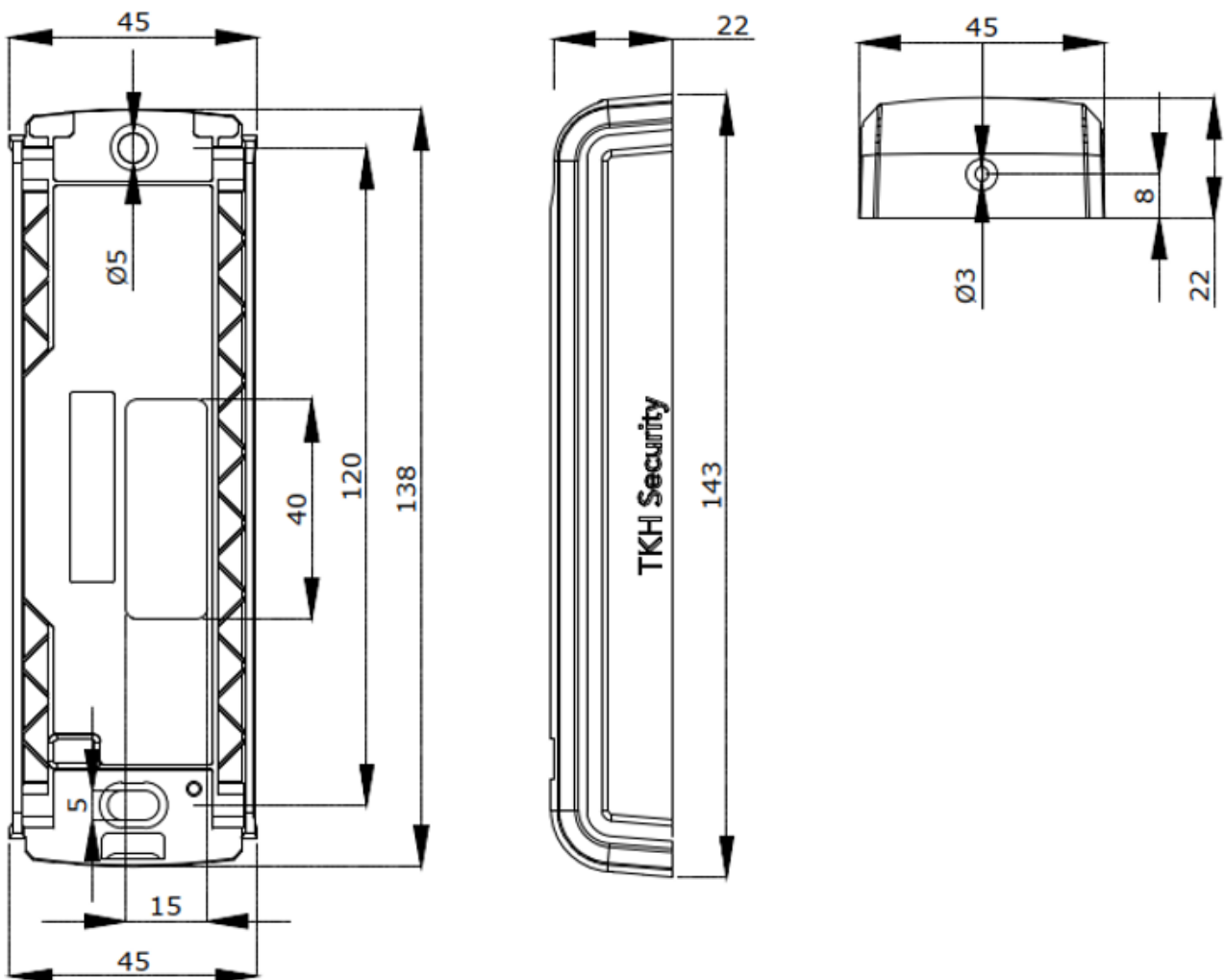


Caution: The Sirius iX30 operates between a temperature and humidity of -30°C and + 65°C and 20 ~ 90% RH non-condensing.



Caution: the connection of the Sirius iX30 depends on the chosen output.

3.1 Measurements



3.2 Location

The Sirius iX30 card reader is suitable for indoor outdoor (with gasket) usage.

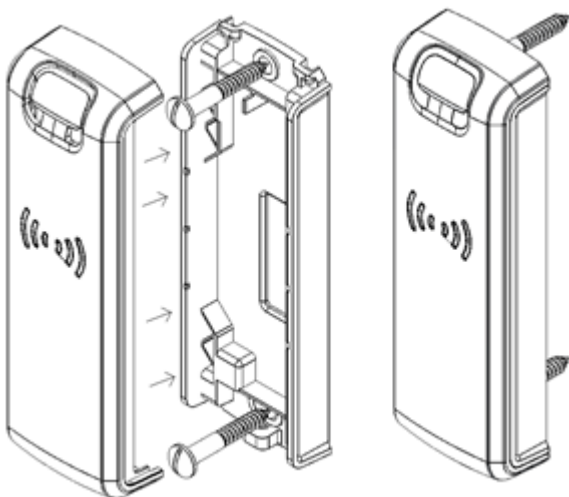
- Determine the location where the Sirius iX30 card reader should be installed. Please notice that there is a maximum cable length, depending on the output, between the card reader and the door controller chapter 4.4.4. Exception: by using an external power supply, the achievable distance can be increased.
- Keep a minimum distance of 20cm between Sirius iX30 card readers.
- The Sirius iX30 should preferably not be installed directly on metal. In the event that this is necessary, please use a spacer (see chapter 3.3.1) to achieve better performance.
- The Sirius iX30 should not be mounted higher than two meters.

3.3 Mounting steps

Mount the card reader preferably on a flat surface.



- Drill two holes for mounting the backplate on the preferred location. 2x6mm holes intended for plugs in case of a stone surface. 2x3mm in case of a wooden surface.
- Pull the cable through the backplate (and spacer, if applicable).
- Fasten the backplate on the surface with adequate screws. The head of the screws must be at least 6mm wide. Please notice that the screw hole of the card reader must be placed on the underside.
- Remove the 9-pins connector from the front plate
- Connect the cable to the connector. See chapter 5.4.
- Click the connector back on the front plate
- Put the front plate of the Sirius card reader on top of the backplate and smoothly close the front plate. A click should be heard when both plates are attached.



4 Sirius iX30

The Sirius iX30 is an versatile and multifunctional card reader with measurements which fits perfectly on doorposts. Depending on the application, the configuration, and there with the output, can vary.

4.1 Configurations

The configuration defines which card type is read by default by the Sirius iX30.

Functionality	801-5301 TKH coded	801-5302 CSN	801-5303 Programmable
Standard communication	RS485 & Clock/Data	RS485 & Clock/Data	-
Read CSN	No	Yes	-
Read coded TKH cards	Yes	No	-
Output length	8 or 12 digits	10 or 17 digits	-
Reads programable cards	No	No	Yes
Tamper output	Yes	Yes	-
Buzzer input	Yes	Yes	-
LED input	Yes	Yes	-
Default LED settings	Red/Green	Red/Green	Blue

4.1.1 801-5301 TKH coded

The Sirius iX30 TKH coded can both read TKH coded Mifare classic cards and TKH coded Mifare DESFire cards simultaneously and works by default at the following devices.

Protocol	Hardware device (door controller)
RS485	Orion (stacked)
RS485	Polyx
Clock/Data	Orion (KpBus)
Clock/Data	Orbit
Clock/Data	Third party devices*

*since clock/data is an standard, the Sirius iX30 should work by default on third party controllers which supports the clock/data communication protocol. We strongly recommend to test it on forehand.

The output differs per card type:

TKH Security Mifare Classic:

- 4 digits system code e.g.: 1234
- 4 digits card number e.g.: 6789

Result as output: 12346789

TKH Security Mifare DESFire:

- 6 digits system code e.g.: 123456
- 6 digits card number e.g.: 789012

Result as output: 123456789012

4.1.2 801-5302 CSN

The Sirius iX30 reads both 4 byte and 7 byte CSN simultaneously and works by default at the following devices:

Protocol	Hardware device (door controller)
RS485	Orion (stacked)
RS485	Polyx
Clock/Data	Orion (KpBus)
Clock/Data	Orbit*
Clock/Data	Third party devices**

*7byte CSN **cannot** be processed by the Orbit!

**since clock/data is an standard, the Sirius iX30 should work by default on third party controllers which supports the clock/data communication protocol. We strongly recommend to test it on beforehand.

The output differs per card type:

4Byte CSN:

- 10 digits CSN

Result as output: 1234567890

7Byte CSN:

- 17 digits CSN

Result as output: 12345678901234567

4.1.3 801-5303 Programmable

The Sirius iX30 801-5303 programmable does not contain any configuration by default. Programming the Sirius iX30 depends on the connection/protocol.

Protocol	Hardware device (door controller)	How to program
RS485	Orion (stacked)	Reader configuration file
RS485	Polyx	Reader configuration file
Clock/Data	Orion (KpBus)	Configuration card
Clock/Data	Orbit*	Configuration card
Clock/Data	Third party devices**	Configuration card

Reader configuration file:

A by the Hardware Control Applet generated reader file which determines the exactly configuration. This can be distributed central through iProtect.

- Create reader configuration file
- Upload the file per line

Detailed information can be found in the manual: TKH_Security_HardwareControlApplet.

Configuration card:

A customer specific card which can be ordered by TKH Security which writes down the configuration into the card reader.

- Connect the card reader
- Switch on the power. The card readers LED turns into BLUE
- Present the configuration card and wait until the card reader restarts.
- The card readers LED turns into RED. The configuration is complete

4.2 Sticker

The Sirius iX30 is provided with two stickers:

at the carton:



at the reader:

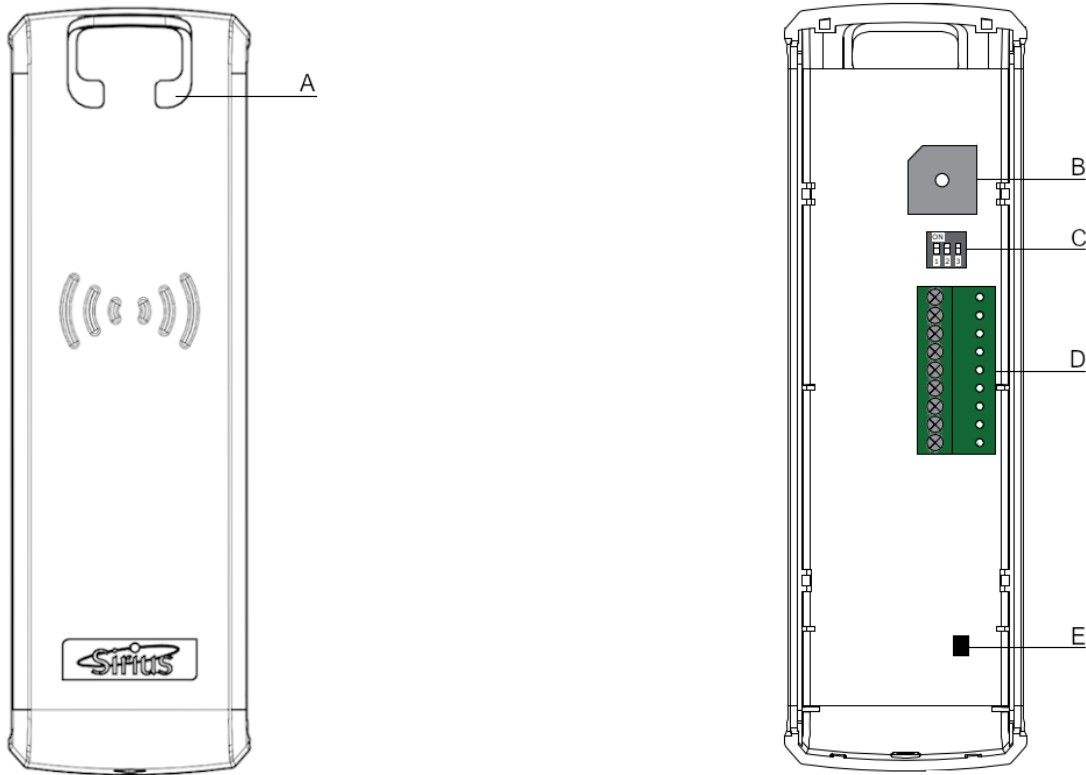


Disposing of the Sirius iX30 card reader must be done in an environment friendly surrounding



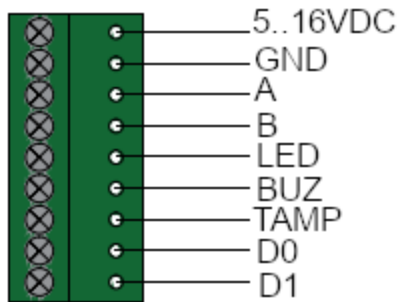
4.3 Interfaces

The following interfaces are by default available on the Sirius iX30.



Label	Interface	Description
A	Light guide	Multicolor RGB LED to display current status
B	Buzzer	Multitone buzzer for audio feedback
C	DIP switch	3pin DIP switch for RS485 purpose
D	9 Pin connector	Connector to connect card reader to door controller
E	Tamper	Tamper to monitor sabotage

4.4 Connections




Pin	description
5-16VDC	Power connection (5-16 VDC)*
GND	Ground
A	RS485 A
B	RS485 B
LED	Activate LED input
BUZ	Activate Buzzer input
TAMP	Tamper contact
D0	Clock/data- Wiegand, open collector
D1	Clock/data- Wiegand, open collector

*The Sirius iX30 accepts a power between 5.0 and 16.0 VDC. A higher input voltage results in lower power consumption and ensuring cost-efficient wiring with a smaller conductor diameter. When using an external power supply, it must comply with SELV guidelines.

Advised to power the reader with a power supply that can supply a minimum of 5W to a maximum of 15W. If the reader is powered by a power supply with a power higher than 15W, a fuse of 500mA must be placed by the installer.

DIP Switch-1 is used to determine the RS485 resistance.

Function	1	2	3
DEFAULT	Off	Off	On
Polyx	On	On	Off
Ext.	Off	Off	Off



4.4.1 RS485 Directly

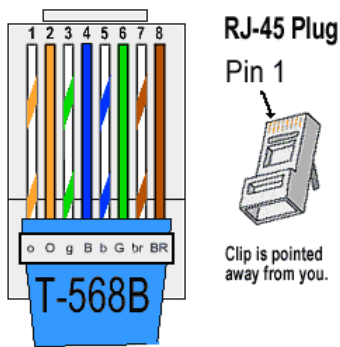
Recommended cable type between the a Orion or Polyx and the Sirius iX30 card reader is:









- CAT 5 UTP four twisted pairs of 24AWG copper conductors
- CAT 6 UTP four twisted pairs of 24AWG copper conductor

A direct connection (without using an Adapterboard) between the Sirius card reader and a door controller based on RS485™ is **NOT** possible when:

- Sirius and door controller™ are installed in different buildings and thus the connection leaves the building **or**
- the wiring is no UTP cable (CAT5 or CAT6) **or**
- an existing (non UTP) cable is reused **or**
- overvoltage protection for the card reader is required **or**
- An external power supply is required for the card reader.

If any of the above conditions applies, see chapter 5.4.2.



Pin number RJ-45 Plug	TIA/EIA-568-B Cable color	Signal	Sirius iX30 pin
1	White/orange 	B	B
2	Orange 	A	A
3	White/green 	B	B
4	Blue 	VCC	5-16VDC
5	White/blue 	-	-
6	Green 	A	A
7	White/brown 	-	
8	Brown 	GND	GND









4.4.2 RS485 via Adapterboard

Recommended cable type between a Polyx and the Sirius card reader, using an Adapterboard is:

- Shielded cable with twisted pairs

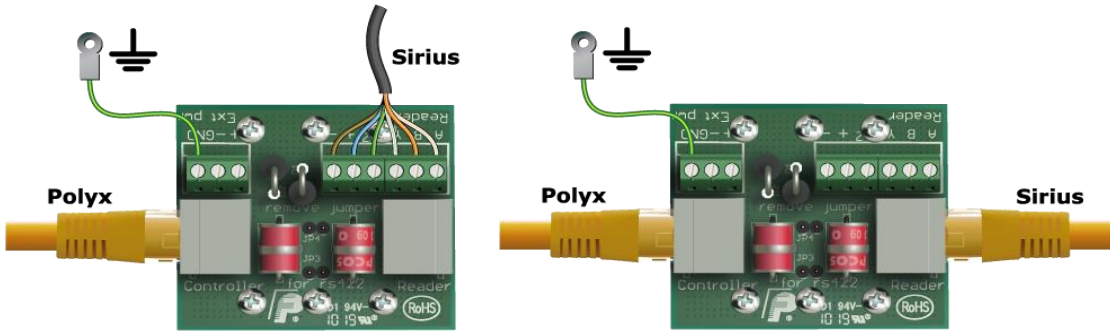
If a direct connection is not possible, an Adapterboard must be placed between Orion or Polyx and the Sirius iX30 card reader.

Adapterboard is connected with the door controller with a default UTP cat5 cable (or higher) (plug connection).

Or screw connection on adapterboard	Or connection adapterboard	RJ45 on	TIA/EIA-568-B Cable color	Signal	Sirius iX30 pin
A (or 1)	1		White/orange 	B	B
B (or 2)	2		Orange 	A	A
Y (or 3)	3		White/green 	B	B
+	4		Blue 	VCC	5-16VDC
	5		White/blue 		
Z (or 6)	6		Green 	A	A
	7		White/brown 		
-	8		Brown 	GND	GND

- Connect GND of the Adapterboard to the local earth.
- Connect the shield of the ground cable to the GND connection of the Adapterboard

possible connection of the Sirius iX30 on the Adapterboard.

















Do **not** place any **jumpers!** For more information. See the Adapterboard-IM manual.

4.4.3 Clock/data- Wiegand

Recommended cable type between the Orion or Orbit and Sirius iX30 card reader:

- CKY 3x2x0,14mm²
- CKY 4x2x0,14mm²
- CAT5 UTP four twisted pairs of 24AWG copper conductors
- CAT6 UTP four twisted pairs of 24AWG copper conductors

<u>TIA/EIA-568-B</u> Cable color	Connection door controller	Sirius iX30 pin
White/orange 	Data/D0	D0
Orange 	TAMP	TAMP
White/green 	Clock/D1	D1
Blue 	VCC (+)	5-16VDC
White/blue 	LED	LED
Green 	BUZZ	BUZZ
White/brown 	GND	GND
Brown 	GND	GND

Cable color	Connection door controller	Sirius iX30 pin
Green 	Data/D0	D0
Yellow 	Clock/D1	D1
Pink 	VCC (+)	5-16VDC
Grey 	LED	LED
White 	GND	GND
Brown 	GND	GND

4.4.4 Cable lengths if connected directly to Orion

Cable	Communication protocol	Cable length(m)	Communication between
UTP ≥Cat5e	RS485 Powered from Orion	120	Orion and Sirius iX30 card reader
	RS485 External powered	600	
	Wiegand	120	
	Clock/Data	50	

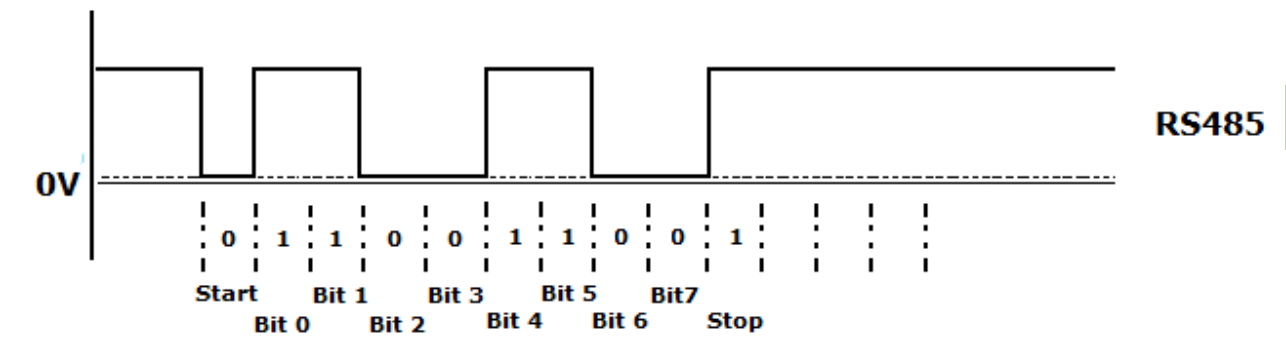
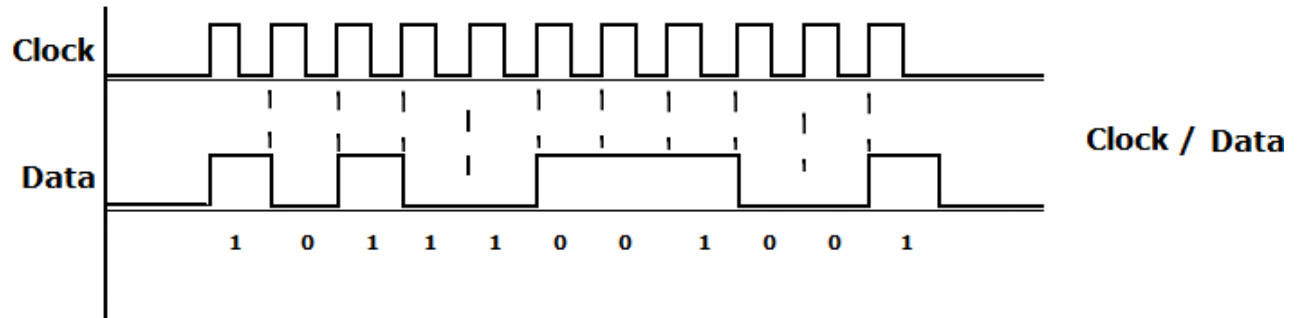
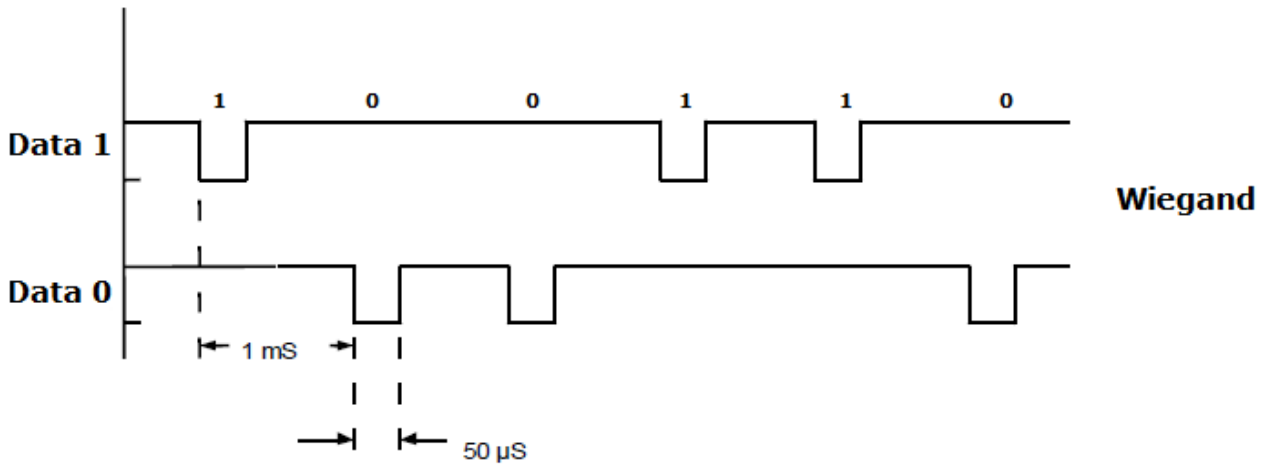
4.4.5 Cable lengths generic

Cable	Communication protocol	Cable length (m)	Communication between
	RS485*	600	Controller and Sirius iX30 card reader
	Wiegand	120	
	Clock/Data	50	

*Please be sure that the cable used for RS485, is suitable for the RS485 protocol.

Please take into account that the power supply at the reader must be between 5-16 VDC.

4.4.6 Data signals



5 Technical specifications

Power	supply voltage	5- 16VDC (max: 1,4W)
Measure	housing	142 x 45 x 22 mm
	PCB	98+ (...) x 38 mm
Environment	IP rating	
	IK rating	
	operating temp.	-35 ... 65°C
	operating humid.	5 ... 95% relative humidity, non-condensing
	storage temp.	-40 ... 85°C
interface	header	9 pin plug connector, small pitch (3.5 / 3.81 mm)
	simplex (read only)	Wiegand, open collector Clock data, open collector
	RS485	<ul style="list-style-type: none"> • Half duplex, support speeds up to 250Kbps • ±2/4/8kV protection airgap discharge • ±6 kV contact discharge, • ±8 kV using the Human Body Model. • Compatible with RS485 standard, Polyx, Orion and Apollo. (Configuration with DIP switches).
Frequencies	13,56MHz	Card detection
	2,4GHz band	Wireless connection
Cards	Standard	ISO 14443-A
	type	Mifare Classic, Mifare DESFire 0.6, EV1 and EV2
	Distance	20-70mm (normal operation)
Main header inputs	LED	With internal pull-up (switch to GND)
	Buzzer	(3.3V, <1mA, over voltage protected)
Main header output	Tamper	Open collector without pull-up
	Clock/data-Wiegand	(max 500 mA, over voltage protected (vcc))
User interface	Optic	RGB led / Light guide
	sound	Multi tone buzzer, 85dB at 1 meter
Certification	Electric	EMC / CE / (LVD waiting for last feedback)
	Radio	R&TTE