APPLICATION NOTE

BADGE READER CONNECTIONS

V3.03 - 29/05/2024

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SYNGUARD

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1. INTRODUCTION

This document contains connection diagrams for various types of badge readers to the Synguard door controllers (SynCon, SynConSC, SynEntry or SynApp).

The diagrams always show the connection to a SynBox (for use with a SynCon). For use of readers equipped with a Wiegand (or Clock/Data) interface, the numbering of the SynBox connector fully corresponds to the plug connectors of SynConSC or SynApp.

Also the SynEntry reader interface plug almost fully corresponds for use of readers equipped with a Wiegand (or Clock/Data) interface, but it only has 3 instead of 4 OC connections. This normally means that pin 8 in this diagram corresponds to pin 7 of the SynEntry.

The UTP color code in the tables indicates Synguard's recommendation in case you want to connect the reader directly with a UTP cable. This is, of course, non-binding.

For more information, please consult the QuickGuide and user manual of the used controller.

2. IMPORTANT REMARKS

A reader featuring a Wiegand interface sends all '1' bits over wire D1, and all '0' bits over wire D0. This means that if the wires D1 and D0 are reversed, the door controller will receive an inverted badge number. Example: badge 280773993 (binary 0001 0000 1011 1100 0100 0101 0110 1001) will be received by the controller as 4014193302 (binary 1110 1111 0100 0011 1011 1010 1001 0110). **So, always test the reader using a badge with a known number and check, on the real-time monitor, that the door controller receives the number correctly.**

If, in a reader with Wiegand interface, the D1 (or D0) wire has not been connected, the door controller will only receive '1' bits (or '0' bits). The real-time monitor will display a wrong number or the message '**badge decoding failed**'.

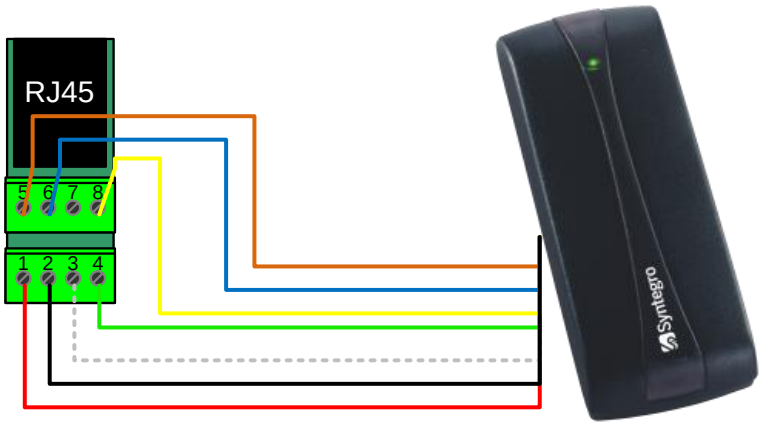
Some readers have a limited voltage range. A SynCon has a built-in 12V converter to operate the reader (adjustable via jumpers).
SynConSC/SynEntry/SynApp, however, are not equipped with such a converter, they always discharge their power supply on the reader's interface. This means that you may never use of a 24V power supply for readers having a voltage range of 8.16V.

If too much current has flown through an open collector output (e.g. directly connected to Vdc), it will break. Such an open collector will often always have its LED softly glow, if it is not being controlled. In that case, you need to replace the controller or use a different free open collector output (and adjust the connection settings).

3. IDESCO

3.1. Idesco pigtail (Wiegand)

Connection is identical for all Idesco Wiegand pigtail readers. Pigtail readers have a potted cable. Available in various housings (Basic/Quattro/Slim/...), with optional keypad.



SynBox connector or SynConSC R1/R2	Badge reader cable	UTP TIA568B
Pin 1 (Vdc)	Red	orange/white
Pin 2 (GND)	Black	orange
Pin 3 (Clock/D1)	White	green/white
Pin 4 (Data/D0)	Green	blue
Pin 5 (Red LED)	Brown	blue/white
Pin 6 (Green LED)	Blue	green
Pin 7	-	brown/white
Pin 8 (Beeper)	Yellow	brown

Default setting connections:

Reader on index 1 (R1)	Reader on index 2 (R2)
OC out 1: Red LED	OC out 5: Red LED
OC out 2: Green LED	OC out 6: Green LED
OC out 4: Beeper	OC out 8: Beeper

Other important settings:

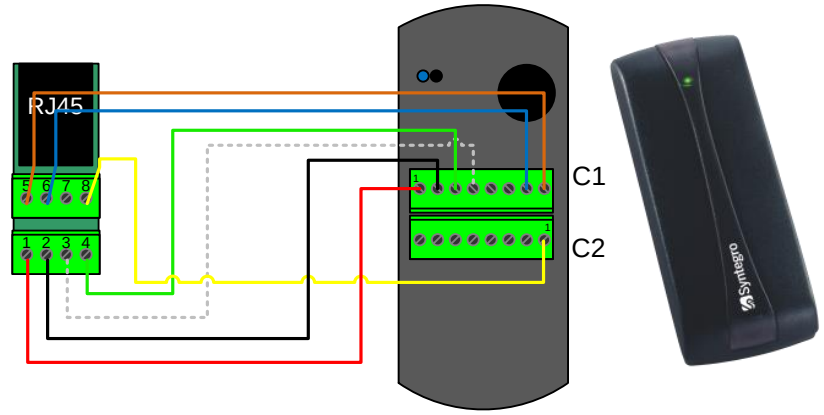
- Interface type: Wiegand
- LEDs/beeper mode: three-colored LED. If 7A: No beep at entrance (three-colored LED), since 7A readers automatically beep when reading a badge.

If Keypad:

- Keypad format: 8-bit burst
- Keypad illumination can be switched on constantly by connecting the purple wire to GND

3.2. Idesco connector (Wiegand)

Connection is identical for all Wiegand connector readers of the Idesco range. Connector readers are equipped with 2 eight-pole connectors at the back. Available in various housings (Basic/Quattro/Slim/…), with optional keypad.



SynBox connector or SynConSC R1/R2	Idesco Pin	UTP TIA568B
Pin 1 (Vdc)	C1-1 (+VDC)	orange/white
Pin 2 (GND)	C1-2 (GND)	orange
Pin 3 (Clock/D1)	C1-4 (WIE1)	green/white
Pin 4 (Data/D0)	C1-3 (WIE0)	blue
Pin 5 (Red LED)	C1-8 (Red LED)	blue/white
Pin 6 (Green LED)	C1-7 (Green LED)	green
Pin 7	-	brown/white
Pin 8 (Beeper)	C2-1 (Buzzer)	Brown

Default setting connections:

Reader on index 1 (R1)	Reader on index 2 (R2)
OC out 1: Red LED	OC out 5: Red LED
OC out 2: Green LED	OC out 6: Green LED
OC out 4: Beeper	OC out 8: Beeper

Other important settings:

- Interface type: Wiegand
- LEDs/beeper mode: three-colored LED

If Keypad:

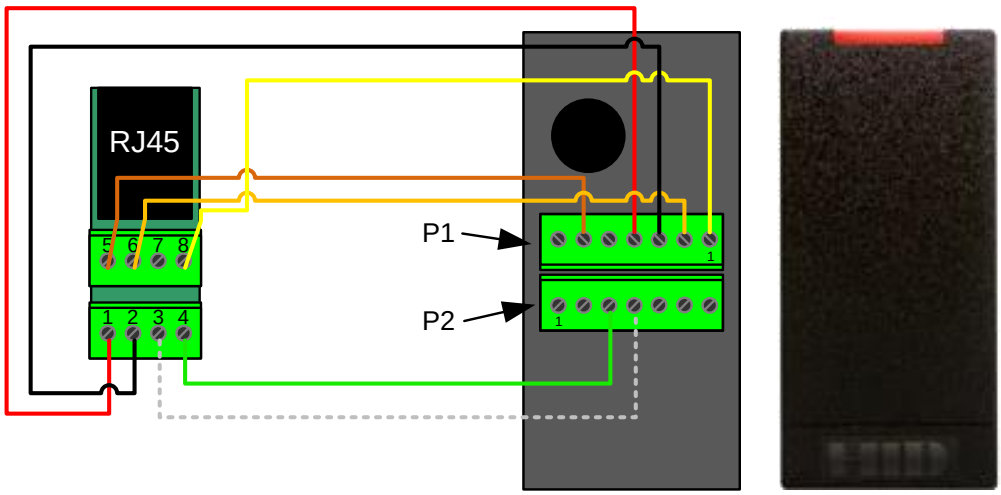
- Keypad format: 8-bit burst
- Keypad illumination can be switched on constantly by connecting C2-4 to GND

3.3. Idesco AES (RS485)

See “AN RS485 Idesco AES badge reader”.

4. HID

4.1. R10 / R15 / R30 / R40 / RP15 / ProxPro II (Wiegand)



SynBox connector or SynConSC R1/R2	HID Pin	Pigtail cable	UTP TIA568B
Pin 1 (Vdc)	P1-4 (+VDC)	Red	orange/white
Pin 2 (GND)	P1-3 (RTN)	Black	orange
Pin 3 (Clock/D1)	P2-4 (DATA 1)	White	green/white
Pin 4 (Data/D0)	P2-3 (DATA 0)	Green	blue
Pin 5 (Red LED)	P1-6 (RED)	(Dark)brown	blue/white
Pin 6 (Green LED)	P1-2 (GRN)	Orange	green
Pin 7	-	-	brown/white
Pin 8 (Beeper)	P1-1 (BEEP)	Yellow	Brown

Default setting connectors:

Reader on index 1 (R1)	Reader on index 2 (R2)
OC out 1: Red LED	OC out 5: Red LED
OC out 2: Green LED	OC out 6: Green LED
OC out 4: Beeper	OC out 8: Beeper

Other important settings:

- Interface type: Wiegand
- LEDs/beeper mode: three-colored LED
- Caution: voltage range 5...16VDC

4.2. HID OSDP (RS485)

See “AN RS485 OSDP HID badge reader”.

4.3. Indala Flexpass (Wiegand)

SynBox connector or SynConSC R1/R2	Pigtail cable	UTP TIA568B
Pin 1 (Vdc)	Red	orange/white
Pin 2 (GND)	Black	orange
Pin 3 (Clock/D1)	White	green/white
Pin 4 (Data/D0)	Green	blue
Pin 5 (Red LED)	Brown	blue/white
Pin 6 (Green LED)	Orange	green
Pin 7	-	brown/white
Pin 8 (Beeper)	Blue	Brown

Connect the reader's ground wire to the controller's ground.

Default setting connectors:

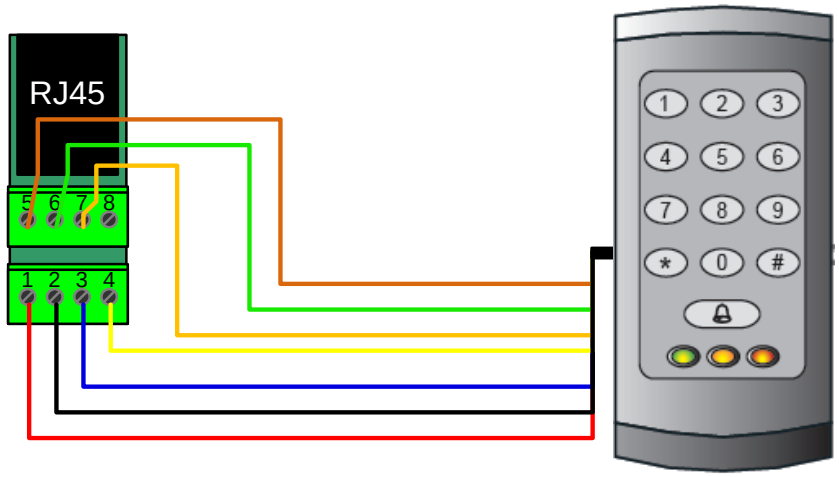
Reader on index 1 (R1)	Reader on index 2 (R2)
OC out 1: Red LED	OC out 5: Red LED
OC out 2: Green LED	OC out 6: Green LED
OC out 4: Beeper	OC out 8: Beeper

Other important settings:

- Interface type: Wiegand
- LEDs/beeper mode: three-colored LED. If Quickflash™ has been activated: No beep at entrance (Three-colored LED), since the reader will automatically beep when reading a badge
- Badge format: depending on what the customer requests

5. PAXTON

5.1. EM1400/KP75/... (Clock/Data)



SynBox connector or SynConSC R1/R2	Badge reader cable	UTP TIA568B
Pin 1 (Vdc)	Red (12 Vdc)	orange/white
Pin 2 (GND)	Black (0V)	orange
Pin 3 (Clock/D1)	Blue (Clock/D1)	green/white
Pin 4 (Data/D0)	Yellow (Data/D0)	blue
Pin 5 (Red LED)	Brown (Red LED)	blue/white
Pin 6 (Green LED)	Green (Green LED)	green
Pin 7 (Yellow LED)	Orange (Amber LED)	brown/white
Pin 8	-	Brown

Default setting connectors:

Reader on index 1 (R1)	Reader on index 2 (R2)
OC out 1: Red LED	OC out 5: Red LED
OC out 2: Green LED	OC out 6: Green LED
OC out 3: Yellow LED	OC out 7: Yellow LED

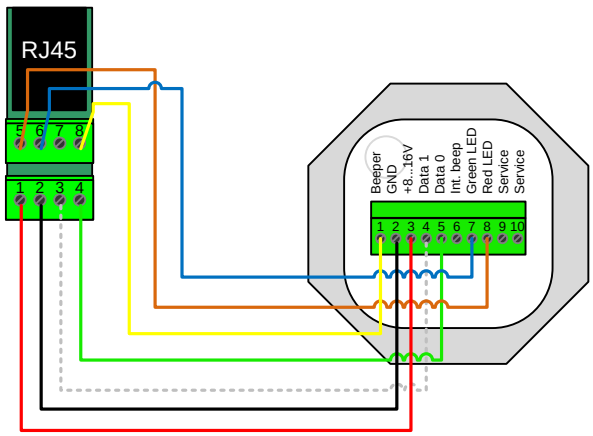
Other important settings:

- Interface type: Clock/Data
- Badge format: Magstripe 64-bit badge
- Keypad format (if keypad): Paxton
- LEDs/beeper mode: Default

Note: If the 'bell' button is pressed, a 'bell button' event will be logged. The IO function 'Bell button pressed (O)' will make it possible to directly control of an output.

6. DEISTER

6.1. PRD4/2 (Wiegand)



SynBox connector or SynConSC R1/R2	Deister PIN	UTP TIA568B
Pin 1 (Vdc)	Pin 3 (Red)	orange/white
Pin 2 (GND)	Pin 2 (Black)	orange
Pin 3 (Clock/D1)	Pin 4 (White)	green/white
Pin 4 (Data/D0)	Pin 5 (Green)	blue
Pin 5 (Red LED)	Pin 8 (Brown)	blue/white
Pin 6 (Green LED)	Pin 7 (Blue)	green
Pin 7	-	brown/white
Pin 8 (Beeper)	Pin 1 (Yellow)	Brown

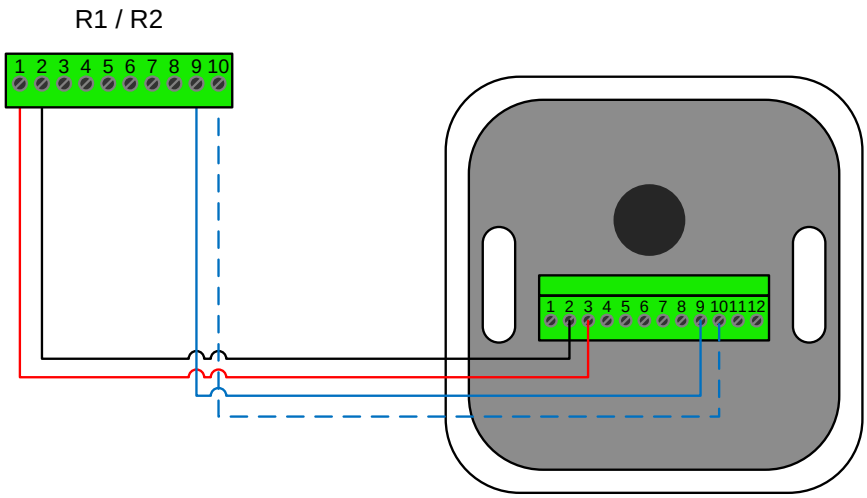
Default setting connectors:

Reader on index 1 (R1)	Reader on index 2 (R2)
OC out 1: Red LED	OC out 5: Red LED
OC out 2: Green LED	OC out 6: Green LED
OC out 4: Beeper	OC out 8: Beeper

Other important settings:

- Interface type: Wiegand
- LEDs/beeper mode: Default (Three-colored LED).
- Caution: voltage range 8...16VDC (< 125mA)

6.2. PRX5/PRM5 (RS485)



SynConSC R1/R2	Deister PIN	UTP
Pin 1 (Bus power)	Pin 3 (Red)	orange/white
Pin 2 (GND)	Pin 2 (Black)	orange
Pin 9 (Tx/Rx+)	Pin 9 (Blue)	blue
Pin 10 (Tx/Rx-)	Pin 10 (Blue/White)	blue/white

Remarks:

- Since it concerns a RS485 connection, a twisted cable should be used (especially over longer distances).
- The reader address is set as “reader index 1” by default. For additional readers, you will have to adapt the set RS485 address of the reader.

6.3. PRX15/2 (Wiegand)

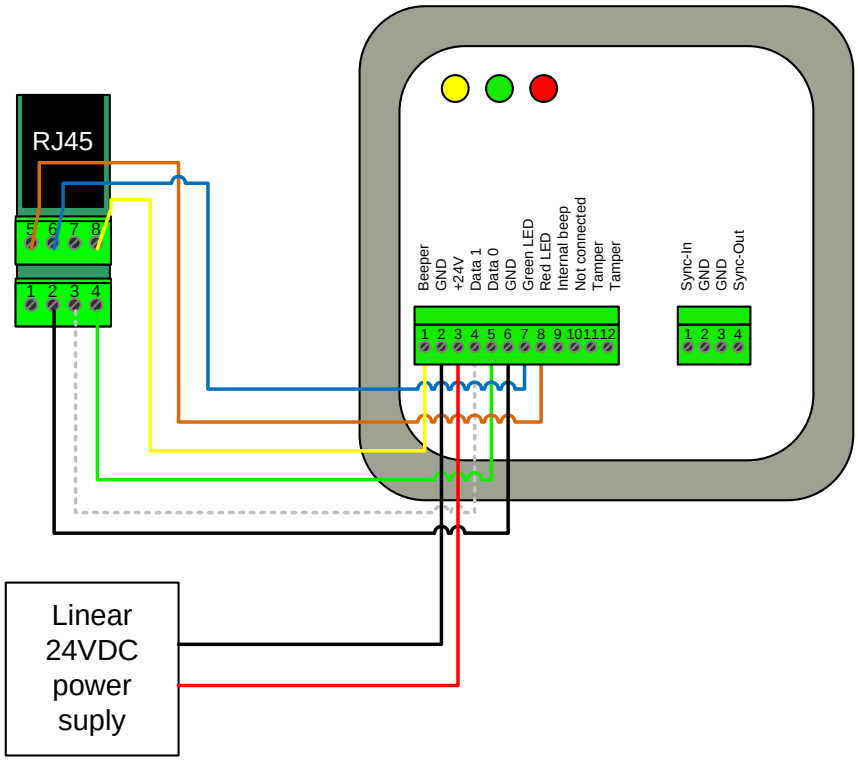
The PRX15 is a long-distance reader (±40cm at 24VDC, ±20 cm at 12VDC).

Due to its reading sensitivity, a separate stabilized power supply must be used.

As soon as the reader is powered, an automatic antenna tuning will occur for a few seconds. While tuning, the red LED will light up. It is important that no badges are located within the reading field at that moment.

If you want to put multiple readers close together, the readers have to be interconnected over the ‘sync’ connections so that they do not interfere with each other.

Prog code “1230”: 44 bits EM4102



DC linear regulated power supply (24V/500 mA)	Deister PIN
+24VDC	Pin 3 (Red)
GND	Pin 2 (Black)

SynBox connector or SynConSC R1/R2	Deister PIN	UTP TIA568B
Pin 1 (Vdc)	-	orange/white
Pin 2 (GND)	Pin 6 (Black)	orange
Pin 3 (Clock/D1)	Pin 4 (White)	green/white
Pin 4 (Data/D0)	Pin 5 (Green)	blue
Pin 5 (Red LED)	Pin 8 (Brown)	blue/white
Pin 6 (Green LED)	Pin 7 (Blue)	green
Pin 7	-	brown/white
Pin 8 (Beeper)	Pin 1 (Yellow)	brown

Default setting connectors:

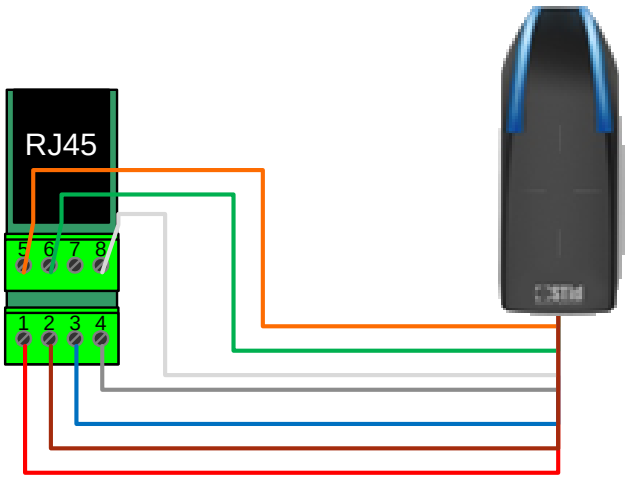
Reader on index 1 (R1)	Reader on index 2 (R2)
OC out 1: Red LED	OC out 5: Red LED
OC out 2: Green LED	OC out 6: Green LED
OC out 4: Beeper	OC out 8: Beeper

Other important settings:

- Interface type: Wiegand
- LEDs/beeper mode: Default. The yellow LED lights up continuously and will switch off when detecting a badge.

7. STID

7.1. ARC1-1x / ARC1S-1x-PH5 / ARC1S-1x-BT1 (Wiegand)



SynBox connector or SynConSC R1/R2	Badge reader cable	UTP TIA568B
Pin 1 (Vdc)	Red	orange/white
Pin 2 (GND)	Brown	orange
Pin 3 (Clock/D1)	Blue	green/white
Pin 4 (Data/D0)	Grey	blue
Pin 5 (Red LED)	Orange	blue/white
Pin 6 (Green LED)	Green	green
Pin 7	-	brown/white
Pin 8 (Beeper)	White	Brown

Default setting connectors:

Reader on index 1 (R1)	Reader on index 2 (R2)
OC out 1: Red LED	OC out 5: Red LED
OC out 2: Green LED	OC out 6: Green LED
OC out 4: Beeper	OC out 8: Beeper

Other important settings:

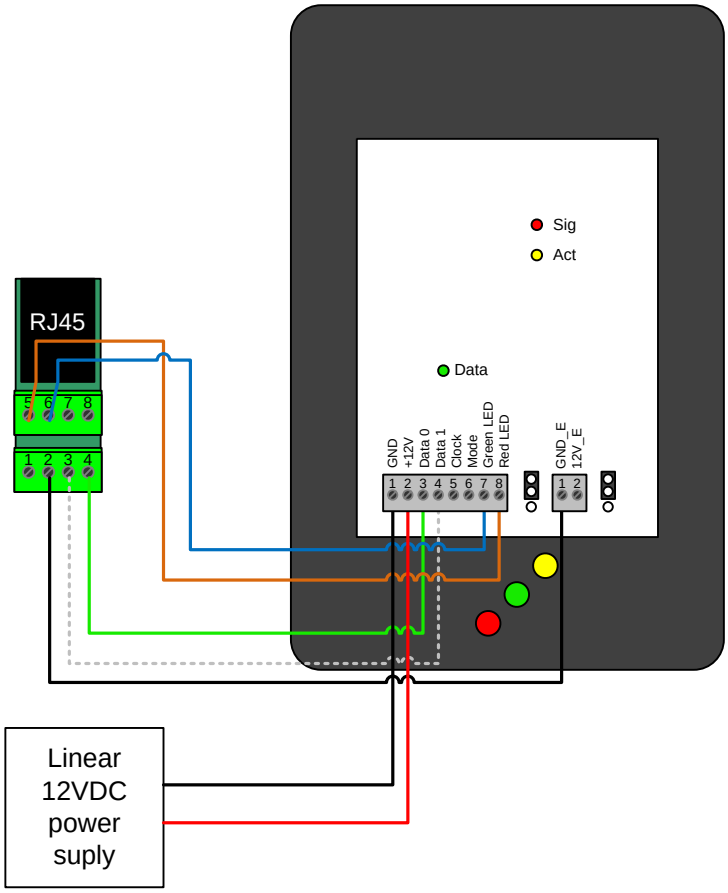
- Interface type: Wiegand
- LEDs/beeper mode: three-colored LED
- Caution: voltage range 9…15VDC

7.2. L51 R11A (Wiegand)

The L51 R1x is a long-distance reader (±50 cm).

Due to its reading sensitivity, a separate stabilized power supply must be used (12VDC, 1100mA).

As soon as the reader is powered, an automatic antenna tuning will occur for a few seconds. While tuning, the yellow LED will light up. It is important that no badges are located within the reading field at that moment.



DC linear regulated power supply (12V/1100mA)	Pin
+12VDC	J1: Pin 2 (Red)
GND	J1: Pin 1 (Black)

SynBox connector or SynConSC R1/R2	Pin	UTP TIA568B
Pin 1 (Vdc)	-	orange/white
Pin 2 (GND)	J18: Pin 1 (Black)	orange
Pin 3 (Clock/D1)	J1: Pin 4 (White)	green/white
Pin 4 (Data/D0)	J1: Pin 3 (Green)	blue
Pin 5 (Red LED)	J1: Pin 8 (Brown)	blue/white
Pin 6 (Green LED)	J1: Pin 7 (Blue)	green
Pin 7	-	brown/white
Pin 8 (Beeper)	-	brown

Default setting connectors:

Reader on index 1 (R1)	Reader on index 2 (R2)
OC out 1: Red LED	OC out 5: Red LED
OC out 2: Green LED	OC out 6: Green LED

Other important settings:

- Interface type: Wiegand
- LEDs/beeper mode: Default. The yellow LED continuously flashes very quickly, and when detecting a badge, you will hear a short beep.

VERSION HISTORY

Version	Date	Responsible	Adaptation
3.01	03/08/2021	LH	Document creation
3.03	29/05/2024	HAVRO	Customising layout