# Invexs 190 Readers Mifare Nedap dual technology mullion readers

1. General

The Invexs 190 reader series is capable of reading (simultaneously) Nedap, Mifare and DESFire credentials due to its dual reader technology. The Invexs 190 is designed to be used on door pillars (mullion) and suitable for outside and inside use. A model with keypad is also available. The Invexs output can be set to either Wiegand, XS RF modulation or RS485 protocol (plain or encrypted). Functionality and output are determined by the configuration of the Invexs reader. The configuration is defined using the programm AEreco, and deployed by the configuration card or via AEmon. (More information about configurations can be found in Convexs Invexs Installation Manual). Three LEDs (red, green, blue) and beeper are included. LEDs around the keypad ciphers light up only in case a PIN code is requested. The pigtail cable can be lead directly backwards or when using the additional spacer (art. nr . 9949887) to the top or bottom.
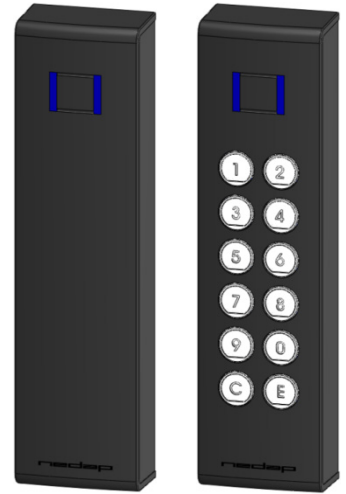
2. Dimensions
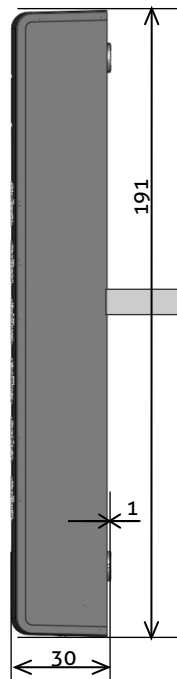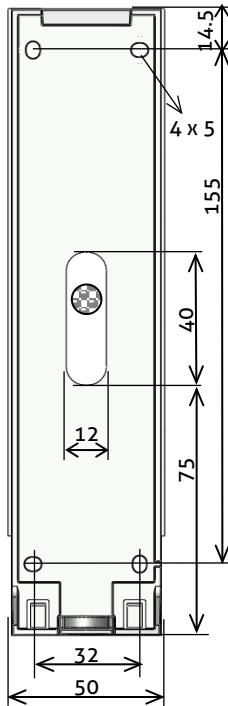
Dimensions: 191 x 50 x 30 mm.
4 mounting holes available at 32 x 155 mm

Cable pigtail: 10 x 0,14 mm shielded, 3m
Optional spacer (max thickness 10 mm) is available for other cable outlet (top or bottom)

10 x 0.14
Shield

3. Mounting Procedure Invexs

For mounting the Invexs 190, the mounting plate must be placed on the wall first. For removing the mounting plate from the Invexs 190, unscrew the screw 01 (Torx, M5) at the bottom of the Invexs and push the Invexs 190 slightly up 02 . The plate can be mounted using the 4 holes. Place the cable to the correct position and replace the Invexs 190.
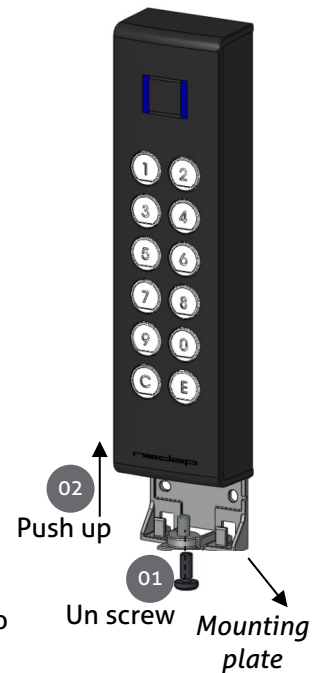
02 Push up

01 Un screw

Mounting plate

4.   Connections

Invexs is <u>not</u> hot-swappable, so when making/changing connections power must be switched **Off**.

Wire	Colour	Function
1	Red	Power in (12-30VDC) / XS modulator (120kHz)
2	Black	Power Ground / RF Ground
3	Grey	RS485 A (-)
4	Violet	RS485 B (+)
5	Green	Wiegand Data 0 (D0)
6	White	Wiegand Data 1 (D1)
7	Yellow	Beep input (BEEP)
8	Pink	UL LED input (UL*)
9	Blue	MD LED input (MD*)
10	Brown	NA LED input (NA*)
11	Shield / Metal	EM shield (connected to power ground)

- Cable shield (wire 11) must be connected to the metal case of the external device
- If connected to a 120kHz RF device (AEOS Nedap reader AEpack or XS device) the power is supplied via the Convexs adapters (AX1014 for AEpacks, AB350 for XS devices). Existing antenna cabling can then be reused for connecting the Invexs. On the AX1014 an additional connection between GND (for UL and NA) and Antenna GND must be made on the AX1014 (Invexs 190 has no separate cable for this connection).
- UL*,NA*, MD* and BEEP are inputs for *Open Collector to GND*. If the Convexs adapters are used, the original UL and NA signals are converted to the UL* and NA*.
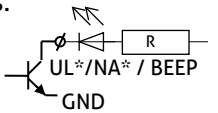
5.   LED Indicators Inside / Backside

There are two LEDs available: Blue for Status (of application), Green for Identification (both visible behind the SAM cover at the back side)

SAM cover

ST: STATUS (blue)	
Slow blinking	Application running (operating)
Fast blinking	Downloading or error during loading
2 short flashes	Application present but not active
3 short flashes	No application present

ID (green)	
Blinking	Card detected

6.   LED Indicators Front

At the front a three colour LED is positioned at the middle of the Invexs
Depending on the used configuration the function of these LEDs can differ:
- Green LED: Card is been authorised (UL LED)
- Red LED: Card is not authorised (NA LED), controller is stand-by
- Blue LED:
  Blinks fast: No configuration is available at this Invexs (present *Configuration card* or load *Configuration* first).
  Continuously ON: Determined by configuration: E.g. Reader stand-by.
                (Blue LED is activated if UL is OFF and NA is more than 1 sec OFF)

> **!** Function of LEDs and Beeper is controlled by used application settings of Invexs. Green and Red LED can be controlled by hardware signals (wire 8 and 10) or RS485NR, Blue LED indirectly by UL and NA, if this setting is activated (configuration) or by wire 9. Beeper can be controlled by hardware signal (wire 7), RS485NR or software (configuration).

7.   Firmware

Pay attention that the firmware loaded in the Invexs together with the Invexs type and configuration determines functionality and protocols. Default (from factory) the Invexs handles the credentials on several ways simultaneously:
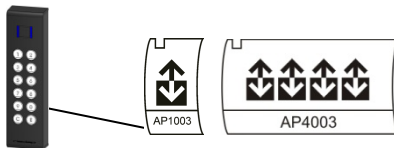
- XS cards as: RS485NR, RF badge
- Mifare cards (CSN) as: RS485NR, RF data

> **!** The Invexs 190 requires dedicated firmware (not identical to the Invexs 170 firmware)
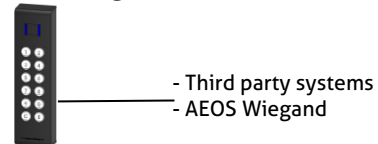
8.   System Configurations (how to connect Invexs readers)

AEOS RS485 interface

To APx003 readers with RS485 special encrypted protocol. (LEDs, Beeper, Keys and Display are controlled over the RS485 communication)

### Wiegand interface

- Third party systems
- AEOS Wiegand

Wiegand output connected to Third party systems (or to AEOS Wiegand interfaces). LEDs andBeeper are controlled by hard wiring. (PINcode possible)

RF interface AEpacks
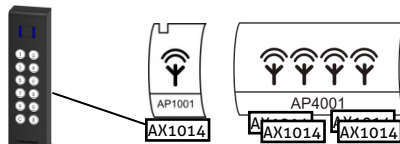
Invexs uses existing antenna cabling (Coax + 3*0,25qmm for LEDs).
On each AEpack-RF interface an AX1014 must be added. Connections: see AX1014

RF interface XS systems

Accessor III / SimpleXS
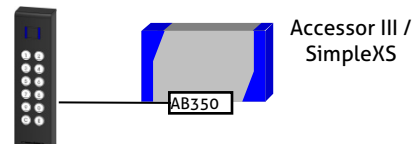
Invexs uses existing antenna cabling (Coax + 3*0,25qmm for LEDs).
On each XS reader-RF interface an AB350 must be added. Connections: see AB350

> **!** Configurations can be determined by the AEreco (loaded by AEmon or configuration card)

> **⚠** Check the *Convexs Invexs Installation Manual* chapter 8 (Available reader Firmware) for the compatibility for the used readers

9.   Tamper Switch

The Invexs 190 is equipped with a tamper switch which can be monitored over the RS485NR protocol.

10.   Beeper Indications

Beeper is also used for indication of loading the configuration:
- High sound beep ('happy sound'): Configuration is loaded correct, second high sound beep indicates that this configuration can be used with this Invexs
- Low sound beep ('unhappy sound'): Configuration is not correct loaded or no configuration available at start-up

SPECIFICATIONS Invexs 190: MD190 (article no.9948406), MND190 (article no.9948414), MDK190 (article no.9948457), MNK190 (article no.9948449), MNDK190 (article no.9948465)

Discontinued products: M190 (article no. 9945512), MN190 (article no. 9948392), MK190 (article no. 9948422)				
Dimensions:	191 x 50 x 30 mm		Weight:	± 350 gr
Protection:	IP65			
Power Supply:	M(N)(D)190 12 – 30VDC, 60 - 24mA SELV	Power Consumption:	60mA@12VDC, 35mA@24VDC	
	M(N)(D)K190 12 – 30VDC, 90 - 36mA SELV		90mA@12VDC, 45mA@24VDC	
Environment:	Temperature: Operating:-30 – 65°C, Storage:-30 – 65°C	Relative humidity:	10 – 93% non-condensing	
Tamper switch:	Yes			
Communication	RS485 (Encrypted AEOS protocol to APx003, (firmware APx003rs485NR). RS485 plain Wiegand Data 0 and Data 1 (protocol depending on configuration) RF Modulator (120 kHz for AX1014 or AB350)			
Inputs:	Beeper (Beep ON / OFF, controlled by application) and Open collector to GND, max 20mA UL*, NA*, MD* LED Open collector to GND, max 20mA			
Indicators:	UL (green) NA (red) ,MD (blue)			
Antennas (internal):	Antenna 1: 120 kHz, Nedap XS compatible (PM and AM cards). Antenna 2: 13,56 MHz, Mifare compatible	Detection distance UniXS card: 8 cm Detection distance Mifare card: 4 cm Mifare EV1 card: 2 cm		

CABLE SPECIFICATIONS

10 wire shielded cable of approx. 3 meters length included (pig tail). Extensions can be made:	
RS485:	2 x 2 x 0,25mm² shielded, max cable length: 1000 meter, cable capacity <= 100pF/meter
UL/GND/NA:	3 x 0,25mm², max cable length: 50 meter
XS MOD / GND:	Coax RG58U, max cable length: 50 meter Or 5 x 0,25mm² shielded, max cable length: 50 meter, cable capacity <= 100pF/meter
Wiegand:	4 x 0,25mm² shielded (excl. LEDs), max cable length: 150 meter, depending on receiving device

MORE INFORMATION: Contact your local Nedap supplier or check our website www.nedapsecurity.com