

Invexs 170 readers

Mifare Nedap dual technology readers

Installation sheet

GENERAL

The Invexs 170 reader series is capable of reading (simultaneously) Nedap, Mifare and DESFire credentials due to its dual reader technology. The Invexs can read Mifare, DESFire and Nedap cards, and is equipped with keypad and / or a display.

The Invexs output can be set to either Wiegand, XS RF modulation or RS485 protocol (plain or encrypted)

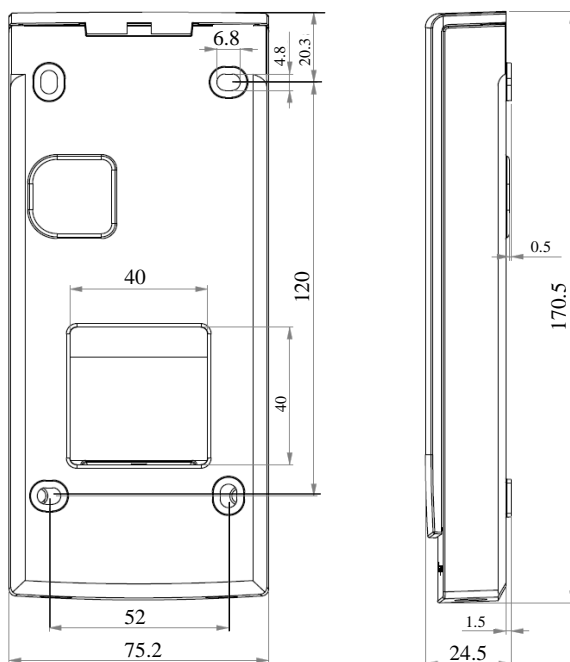
Functionality and output are determined by the configuration of the Invexs reader. The configuration is defined using the programm *AEreco*, and deployed by the *configuration* card or via *AEMON*. (More information about configurations can be found in *ConvexsInvexs_InstallGuide_E*.)

Three LED's (red, green, blue) and beeper are included (display version has no LED). Ciphers of the keypad versions light up after activation, so when not active the ciphers are not visible.

Back panel is available in two colours, black and white (e.g. MNK170B, MNK170W)



DIMENSIONS



Dimensions: 171 x 75 x 25 mm.

4 mounting holes available at 52 x 120 mm

Cable outlet: 40 x 40 mm

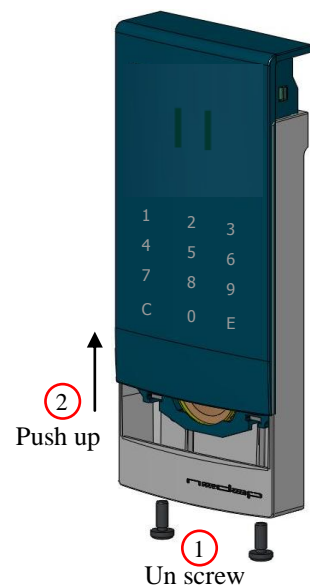
MOUNTING PROCEDURE INVEXS

For mounting the Invexs, the back plane must be placed on the wall first.

For removing the back plane from the Invexs, unscrew the two screws (1) at the bottom of the Invexs and push the front cover up (2). Mount the back plane using the 4 holes.

Connections must be made on the connector on the backside of the front.

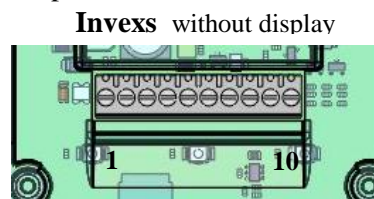
After making the connections, replace the front and tighten up the two screws at the bottom of the Invexs.



CONNECTIONS

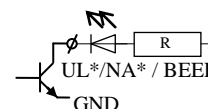
Invexs is **not** hot-swappable, so when making or changing connections power must be switched **Off**.

Invexs	Function
1	Power / XSMOD
2	POWER GND/Shield
3	A (-)
4	B (+)
5	D0
6	D1
7	BEEP
8	UL*
9	GND
10	NA*



Remark:

- Cable shield **must** be connected to Power GND of Convexs (A2) and GND of external device (or metal case).
- 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 ConveXS.
- UL*,NA* and BEEP are *Open Collector to GND*.
If the Convexs adapters are used, the original UL and NA signals are converted to the UL* and NA*.



LED INDICATORS INSIDE

There are two LED's available: **Blue** for Status (of application), **Green** for Identification (both visible through two small holes at the back side)

ID (green)	
Blinking	Card detected

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

LED INDICATORS FRONT

At the front a three colour LED is positioned at the middle of the Invexs
Depending of the used configuration the function of these LED's 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)

Remark:

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

FIRMWARE

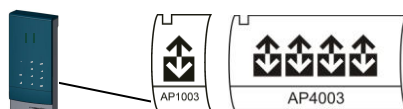
Pay attention that the firmware loaded in the Invexs together with the Invexs type and configuration determines functionality and protocols. For the Invexs with screen contact Nedap.

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

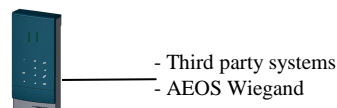
SYSTEM CONFIGURATIONS (how to connect Invexs readers)

AEOS RS485 interface



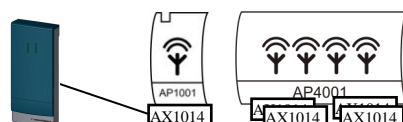
To APx003 readers with RS485 special encrypted protocol. (LED's, Beeper, Keys and Display are controlled over the RS485 communication)

Wiegand interface



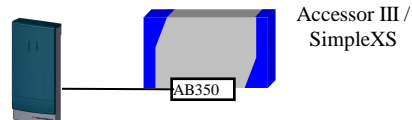
Wiegand output connected to Third party systems (or to AEOS Wiegand interfaces). LED's and Beeper are controlled by hard wiring. (PINcode possible)

RF interface AEpacks



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

RF interface XS systems



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

Remark: Configurations can be determined by using the configuration card.

Attention: Check the *ConvexsInvexs_InstallationGuide* chapter 8 (Available reader Firmware) for the compatibility for the used readers.

TAMPER SWITCH

This tamper switch is an optical device, which is triggered by the amount of light. Depending on the applied configuration the result of activating the tamper switch can differ.

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 startup

FCC ID: CGDINVEXS170 and IC: 1444A-INVEXS170

Compliance statements (part15.19)

This device complies with part 15 of the FCC Rules and to RSS210 of Industry Canada.

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
 - (2) this device must accept any interference received, including interference that may cause undesired operation.
- Cet appareil se conforme aux normes RSS210 exemptés de license du Industry Canada. L'opération est soumis aux deux conditions suivantes:

- (1) cet appareil ne doit causer aucune interférence, et
- (2) cet appareil doit accepter n'importe quelle interférence, y inclus interférence qui peut causer une opération non pas voulu de cet appareil.

Warning (part15.21)

Changes or modifications not expressly approved by party responsible for compliance could void the user's authority to operate the equipment.

SPECIFICATIONS Invexs 170 Product numbers see table below: For Screen / display contact Nedap

	Colour	Reader		Keypad		Screen / Display	
M170 Mifare	Black	M170B	9833900	MK170B	9834230	MKS170B	9939822
	White	M170W	9832750	MK170W	9832920	MKS170W	9833390
MD170 Mifare DESFire	Black	MD170B	9834400	MDK170B	9834680	MDKS170B	9939849
	White	MD170W	9834370	MDK170W	9834540	MDKS170W	9891820
MN170 Mifare Nedap	Black	MN170B	9834060	MNK170B	9833730	MNKS170B	9833870
	White	MN170W	9832890	MNK170W	9833080	MNKS170W	9833420
MND170 Mifare DESFire Nedap	Black	MND170B	9899570	MNDK170B	9938761	MNDKS170B	9938796
	White	MND170W	9899430	MNDK170W	9938753	MNDKS170W	9938788

Dimensions: 171 x 75 x 25 mm

Power Supply: 10VDC – 30VDC

Weight: ± 200 gr

Power consumption: 70mA@12VDC, 35mA@24VDC

M.NKS: 140mA@12VDC, 70mA@24VDC

Environment: Temperature: Operating: 0 – 55 °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 of configuration)

RF Modulator (120 kHz for AX1014 or AB350)

Inputs: Beeper (Beep ON / OFF, controlled by application) Open collector to GND, max 20mA

UL* led Open collector to GND, max 20mA

NA* led Open collector to GND, max 20mA

Indicators: UL (green) NA (red) ,MD (blue) (if available)

Antennas (internal): Antenna 1: 120 kHz, Nedap XS compatible (PM and AM cards).

Detection distance UniXS card: 15 cm

Antenna 2: 13,56 MHz, Mifare compatible

Detection distance Mifare card: 5 cm

Mifare EV1 card: 1 cm

CABLE SPECIFICATIONS

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. LED's), max cable length: 150 meter, depending on receiving device.

MORE INFORMATION: For more detailed information contact your local Nedap supplier or check the internet site.