Convexs 80
**Nedap Mifare dual technology readers**   *Installation sheet*

GENERAL
The Convexs reader enables smooth migration to Mifare card technology in existing Nedap XS, Nedap AEOS and third party systems. The Convexs MN80 reads both Mifare and Nedap cards, the Convexs M80 Mifare cards only. The Convexs output can be set to either Wiegand, XS RF modulation or (encrypted) RS485 protocol. The Convexs MD80 reads Mifare DESFire cards.

Functionality and output is determined by the configuration of the Convexs 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 the *Convexs_Invexs_InstallGuide_E.*)

Three LED's (red, green, blue) and beeper are included. The Convexs 80**F** can be flush mounted (indoor / outdoor) **in** a electrical mounting box. Light (Gray) and Dark (Charcoal) fronts are available.
Dimensions: Convexs 80: 80 x 80 x 32 mm, Convexs 80**F**: 80 x 80 x 27 mm.

Convexs 80   *Convexs 80F*
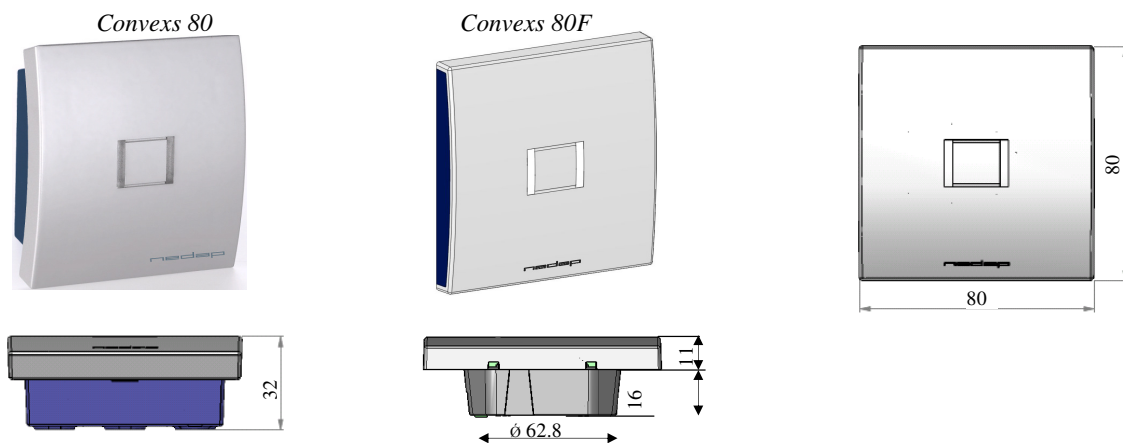
Convexs

## MOUNTING PROCEDURE CONVEXS
For mounting the Convexs the removable backside must be placed on a wall. For removing the backside of the Convexs gently push the two lips at top and bottom towards the middle and remove the backside. After the cable is connected to the front (see 'Connections') the front of the Convexs has to be clicked on the backside.
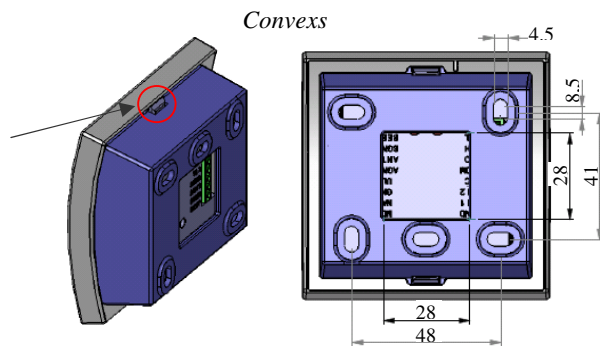
Convexs F

MOUNTING PROCEDURE CONVEXS F
The Convexs F is opened by using the 2 small holes at the bottom and then lifting the bottom side up. It can be mounted in a electrical mounting box.
Take care of the additional foam gasket and mounting direction (drain for releasing eventually collected moisture must be on bottom side).

➔ **Attention**: **Don't mount** the Convexs F in a **metal environment** (Mifare detection and Nedap AM detection can fail). For these applications use the Convexs with the additional Protectors.


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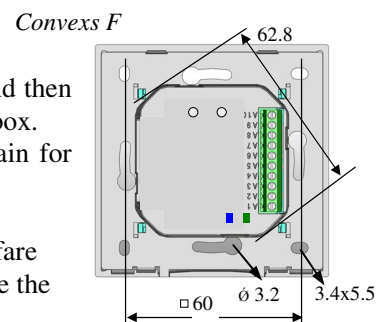
CONNECTIONS

The Convexs is **not** hot-swappable, so when making or changing connections be sure the **power** is switched **Off**.

Convexs Rear view

| Convexs		Function
A1	Power / XSMOD	Power in (10-30VDC) / XS modulator (120kHz)
A2	POWER GND/Shield	Power Ground
A3	A (-)	RS485
A4	B (+)	RS485
A5	D0	Wiegand Data 0
A6	D1	Wiegand Data 1
A7	BEEP	Beep input
A8	UL*	UL led input
A9	GND	Led Common Ground
A10	NA*	NA led input
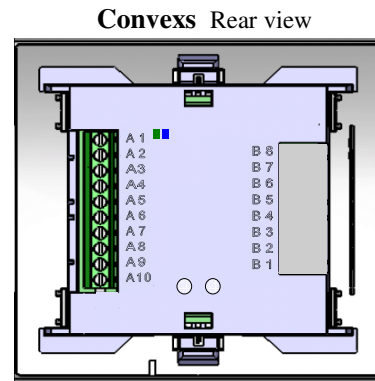
Remark:
- Cable shield **must** be connected to Power GND of Convexs (A2) and GND of external device (or metal case).
- If connected to a 120kHz RF device (AEOS Nedap reader AEpack or XS device) the power is supplied by the Convexs adapters (AX1014 for AEpacks, AB350 for the XS device). Existing antenna 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*.
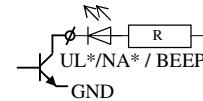
LED INDICATORS REARSIDE

There are two LED's available: Blue for Status (of the application), Green for Identification
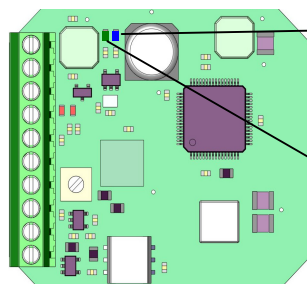
ST: STATUS (blue)	
Slow blinking	Application running (operating)
Fast blinking	Downloading or error during loading
2 short flashes	Application present but not active
3 short flashes	No application present

ID (green)	
Blinking	Card detected

LED INDICATORS FRONTSIDE

At the front a three colour LED is positioned at the middle of the Convexs.
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 availabele at this Convexs (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 Convexs. Green and Red LED can be controlled by hardware signals (A8 and A10) or RS485NR, Blue LED indirectly by UL and NA, if this setting is activated (configuration).
Beeper can be controlled by hardware signal (A7), RS485NR or software (configuration).

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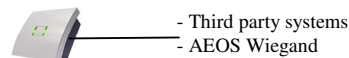- Mifare cards (CSN) as: RS485NR, RF data

**SYSTEM CONFIGURATIONS** (how to connect Convexs readers)

AEOS RS485 interface
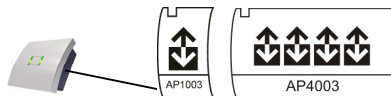
To APx003 readers with RS485 special encrypted protocol. (LED's and beeper are controlled over the RS485 communication)

**Wiegand interface**

- Third party systems
- AEOS Wiegand

Wiegand output can be connected to Third party systems (or to AEOS Wiegand readers). LED's and beeper are controlled by hard wiring.

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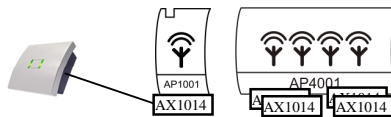
Convexs uses existing antenna cabling (Coax + 3*0,25qmm for LED's).
On each AEpack-RF interface an AX1014 (Convexs adapter) must be added.
Connections: see AX1014

RF interface XS systems

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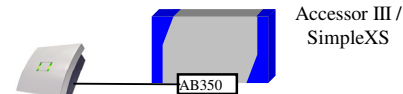
Convexs uses existing antenna cabling (Coax + 3*0,25qmm for LED's).
On each XS reader-RF interface an AB350 (Convexs adapter) must be added.
Connections: see AB350

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

Attention: Check the *Convexs_Invexs_InstallGuide* chapter 10 vailable 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 at this Convexs
- Low sound beep ('unhappy sound'): Configuration is not correct loaded or no configuration available at startup.

FCC and IC CERTIFICATIONS

Convexs MN80(F)*X*, Convexs MND80(F)*X* (*X* is G or C) for USA according to Part 15 with FCC ID: CGDCONVEXS

Convexs MND80G for Canada according to RSS-210 with IC ID: 1444A-CONVEXS

Convexs M80(F)X, Convexs MD(F)X for USA acc. To Part 15 FCC ID: CGDCONVEXSM

Part 15.19(3) Labelling

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.

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

Cet appareil se conforme aux normes RSS 210 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.

Les changements ou modifications n'ayant pas été expressément approuvés par la partie responsable de la conformité peuvent faire perdre à l'utilisateur l'autorisation de faire fonctionner le matériel.

SPECIFICATIONS Product nr: See table below: (e.g. Convexs MN80FG = 9856390)

	Surface mounted		Flush mounted		
	G	**C**	**FG**	**FC**	**Credentials**
Convexs M80xx	9856250	9895400	9856420	9895540	Mifare
Convexs MD80xx	9856900	9895680	9857060	9895710	Mifare - DESFire
Convexs MN80xx	9856110	9895850	9856390	9895990	Mifare - Nedap
Convexs MND80xx	9896210	9896040	9896350	9896180	Mifare - Nedap – DESFire
	Gray	**C**harcoal	**Flush, G**ray	**Flush, C**harcoal	Gray=Light, Charcoal=Dark

Dimensions:	Convexs: 80 x 80 x 32 mm, Convexs F: 80 x 80 x 27 mm
Protection:	Convexs: IP54, Convexs F: IP65 Weight: ± 100 gr
Power Supply:	10VDC – 30VDC Power consumption: 70mA@12VDC, 35mA@24VDC
Environment:	Temperature: Operating: -20 – 55 ℃, Storage: -30 – 65 ℃ Relative humidity: 10 – 93% non condensing
Tamper switch:	Optical
Communication:	RF Modulator (120 kHz for AX1014 or AB350)
	Wiegand Data 0 and Data 1 (protocol depending of configuration)
	RS485 (Encrypted AEOS protocol to APx003, (firmware APx003rs485NR) / RS485 plain
Inputs:	Beeper Open collector to GND, max 20mA (Beep ON / OFF, controlled by application or hardware)
	UL* led Open collector to GND, max 20mA
	NA* 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). Detection distance UniXS card: 8 cm
	Antenna 2: 13,56 MHz, Mifare compatible Detection distance Mifare card: 6 cm
	Mifare EV1 card: 3 cm
R&TTE:	Hereby, Nedap N.V., declares that these type Convexses are in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC

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, 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.