

NOX SYSTEMS



NOXSYSTEMS®

Installation Manual

Hardware, Installation and setup

01.02.2017

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Introduction

This manual describes how the hardware of the integrated security system NOX is wired, installed and configured.

Be aware that the NOX system is continuously developed and updated. Therefore, we recommend that you seek out the latest updated technical information (eg. the function of the different fuses in the power supply) on NOX system's own wiki page:

<http://www.noxsystems.com/noxwiki>

You can access the NOX wiki using this login:

Username: **noxwiki**

Password: **go4nox!**

Furthermore you can find data sheets openly available on our website: www.aras.dk.

Specific connection guides and mounting diagrams (eg. connecting card readers to the NOX CMU) are also available on our website: www.aras.dk in the downloads section (user login required), or in the NOX Config programme under the menu "Help".

As the NOX system is developed dynamically, we take reservations for all technical specifications in this manual, as changes and improvements are continuously taking place.

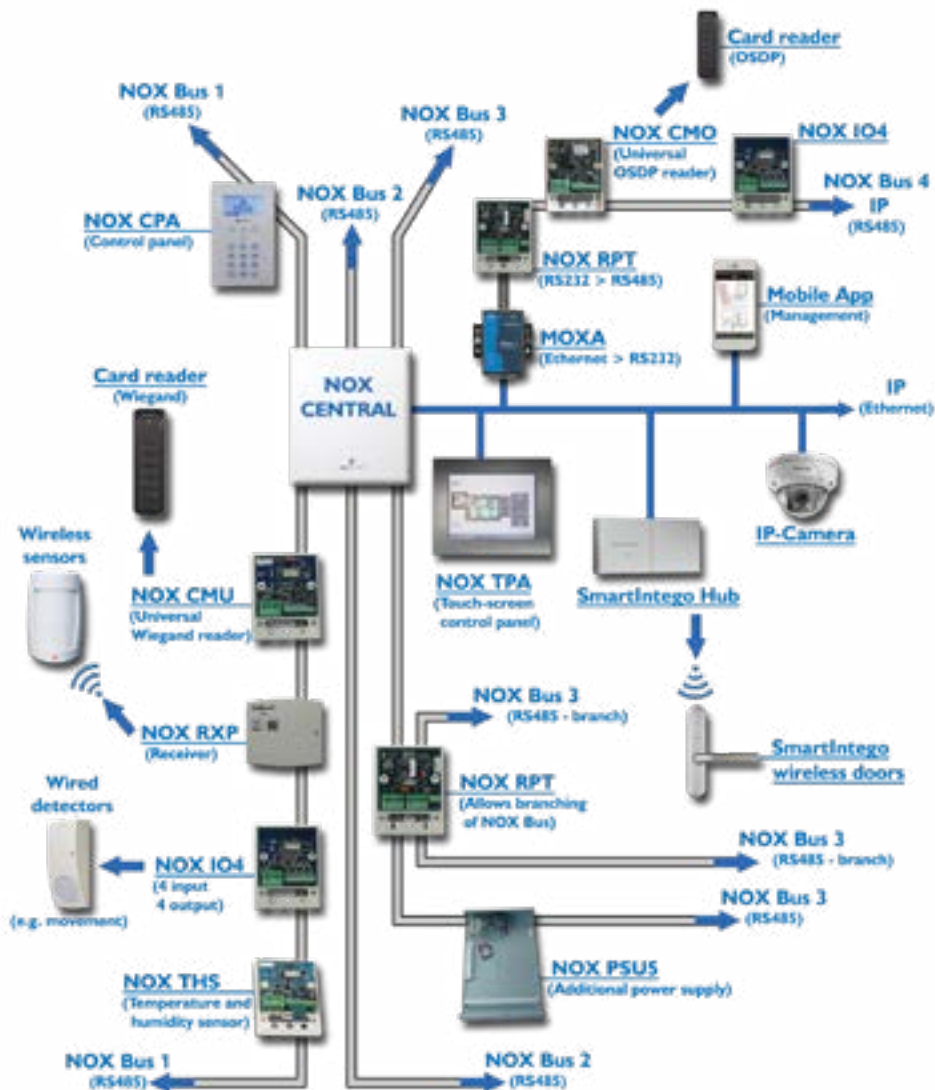
NOX SYSTEMS

NOX - In short

NOX is a class 3 approved integrated security system.

NOX is a bus-based system, with the possibility of wireless solutions.

A NOX system must be installed by a security technician that has completed all relevant security courses, including ARAS Security's own basic NOX course.



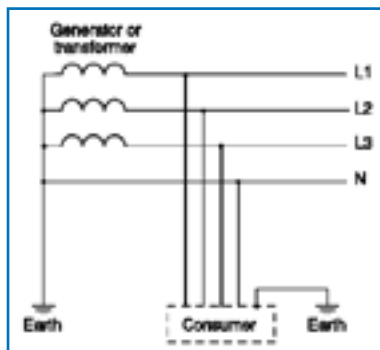
Installation Procedure

Connection to the grid

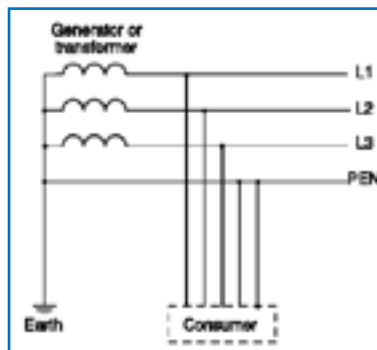
The NOX system must be connected to the grid by an authorized electrician.

Grounding:

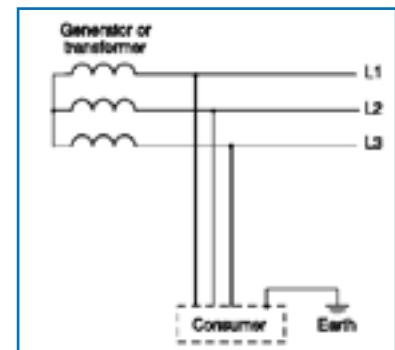
Grounding must be carried out according to the common electricity supply standards.



TT system



TN-C system



IT system

The NOX system must be relieved/unloaded in accordance with normal practice.

The cable is secured with strong strips at one of the two anchors placed on the central cabinet, immediately inside the hole for cable entry.

The cable connects to an approved key switch and is grounded properly in accordance with heavy current regulations.

NOX SYSTEMS

Mounting guidelines

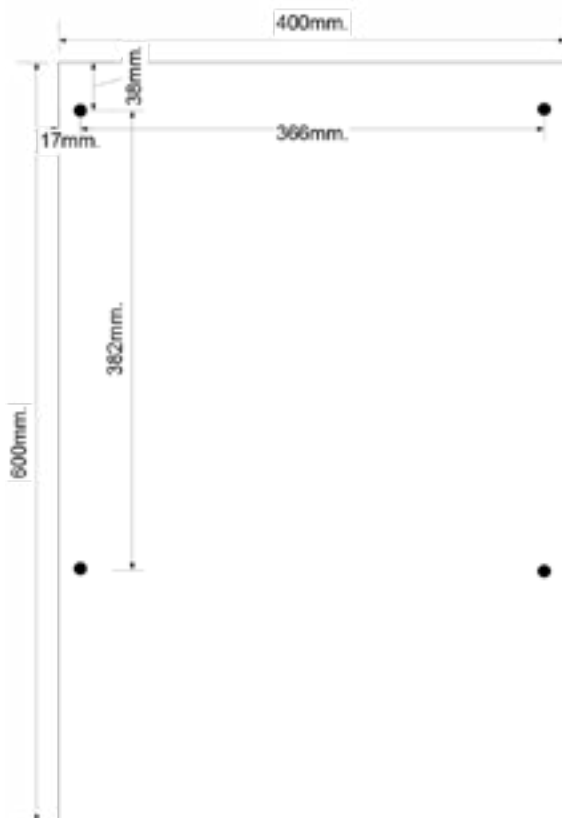
All modules must be mounted on a suitable surface.

The modules must be protected from water and the surrounding environment must always meet these requirements:

- Humidity <93% rel. H, at + 40 °C (no condensation)
- Operating temperature 0 to 40 °C

When a module is mounted, note the address of the power supply on an installation schedule.

Mounting of a NOX Corp central cabinet



Example of a NOX Corp drill diagram
(In total there are 4 cabinet sizes).

Drill diagram for a NOX Corp cabinet

- Hole diameter: 10 mm
- The cabinet could be mounted on a solid wall of bricks or concrete.
- Ensure a strong attachment to the wall by using at least 4 screws of the type M8 x 65 and 10mm plugs.

NOX SYSTEMS

Bus Installation

The NOX bus

The only connection required between the central unit and each of the surrounding units is a 4-wire bus cable. Be sure to use at least 2x2x0.6 PT cable. In order to minimize the voltage drop occurring because of the significant electrical resistance happening when using very long cables, several conductors are used for voltage.

ARAS recommends the use of a NOX bus cable, since it has a high dimension (0,85²) on the voltage conductors and a twisted pair for data.

Below is a description of how to calculate the electrical resistance in regards of the length, type and thickness of the conductor:

Keep in mind that to calculate the total resistance of the bus line, the length of both ways (l_{wire}) must be considered:

$$l_{wire} = 2 \times l_{bus} \quad R_{wire} = \frac{l_{wire} \times \rho_{wire}}{A_{wire}} [\Omega] \quad \rho = \frac{\Omega \times mm^2}{m}$$

ρ_{wire} corresponds to the Ohm constant for conductive materials.

For copper wires use $\rho_{Cu} = 0.0178$

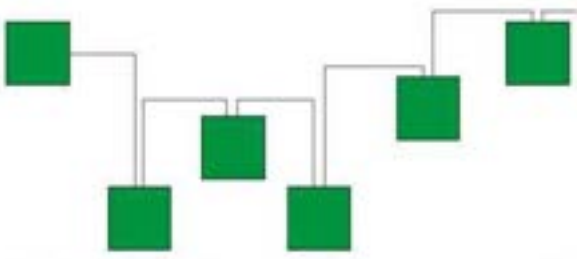
Note that the resistance of a conductor, also depends on the temperature!

As a help, to calculate the voltage drop on a bus line the configuration software includes a simple program to calculate this. The program is available under "Voltage drop" in the Help menu.



NOX SYSTEMS

RS485 network



Daisy chain network.



Termination of NOX bus with a 120–180Ω ¼ W resistor between bus legs A og B.

The NOX bus **MUST** be connected as a normal “Daisy chain” with terminated ends. A termination is made by placing a 120 –180Ω ¼ W resistor between A and B on the bus. The NOX central unit can be freely placed on the bus and does not necessarily need to be at the end of the bus.

The RS485 transceiver used in the NOX system allows for 127 modules per bus segment. Each unit can be a NOX unit or a repeater. If more than 127 modules are required per bus, it must be combined with a repeater (NOX RPT). A bus can handle a maximum of 200 modules.

Bus Configurations

If a “star” or “stump” connection is desired, you **must** use a repeater.

Linking a bus with a repeater (NOX RPT) gives you a bus independence between the two segments.

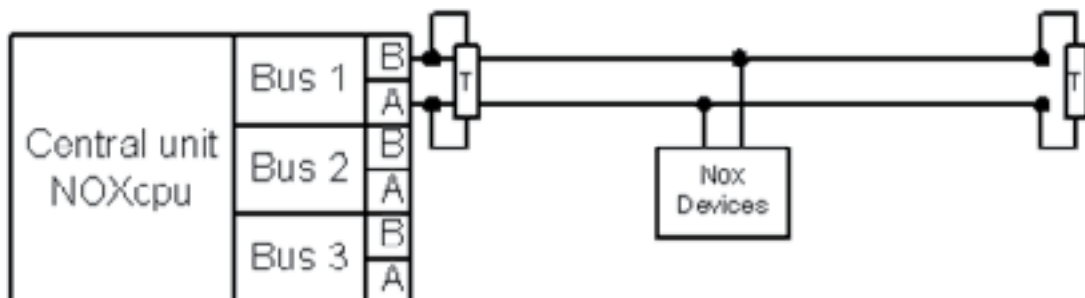
Each segment demands its own termination on the ends of the cable.

NOX SYSTEMS

Basic bus installation without repeaters

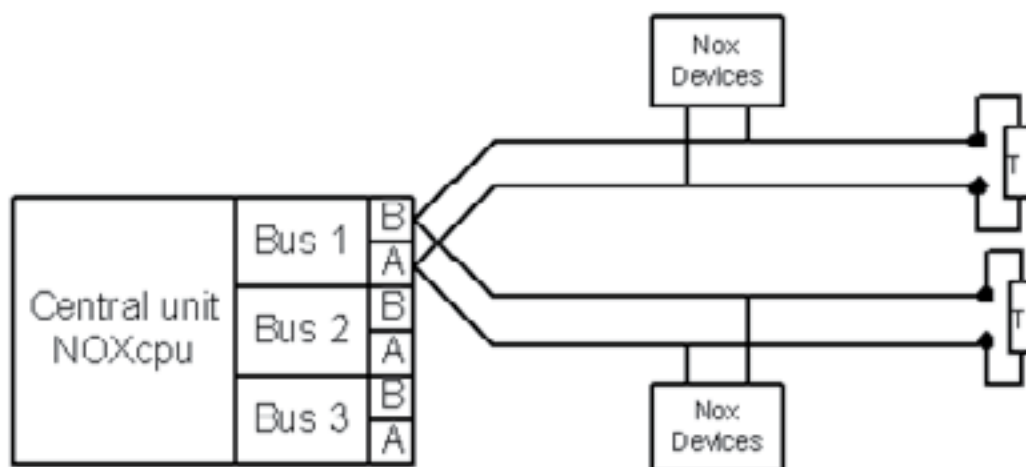
NOX Corporate and NOX Professional central units comes with 3 buses with independent fuses. Each bus can have up to 127 units connected.

Bus 3 is used for connecting internal devices (NOXMIO and NOXPSU). High security installations require a repeater between the bus 3 and the external bus installation to ensure that sabotage on the external bus will not affect the internal communication. If the central unit is placed at one end of the bus, you must place a resistor on the bus terminal in the central unit. The other termination is placed on the far end of the bus. (See Fig.).



One bus, with only one direction going from the central unit.

If the central unit is located in the middle of the bus, you can go in two directions from there. A bus termination is placed at each end of the bus (see Fig.).



One bus with two directions going from the central unit.

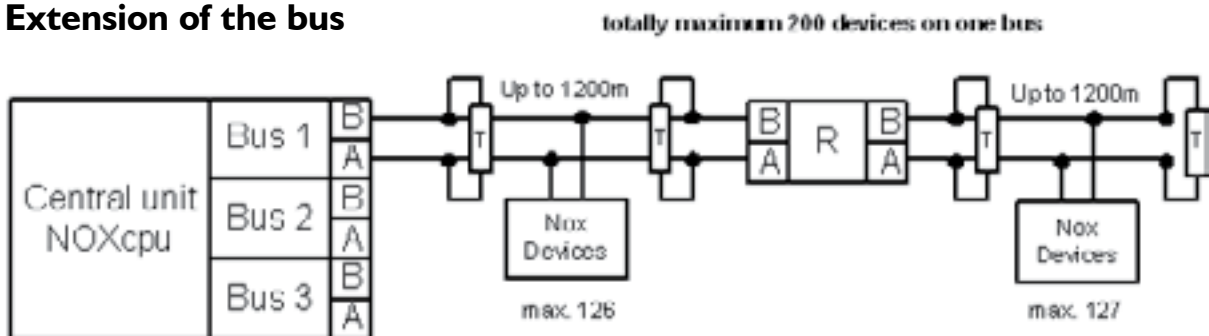
NOX SYSTEMS

Advanced bus installation with one repeater

The bus can be connected to a repeater, in order to connect more than 127 units. The repeater itself counts as a unit on each segment of the bus, which means that 127 units (126 + repeater = 127) can be connected to the first segment of the bus.

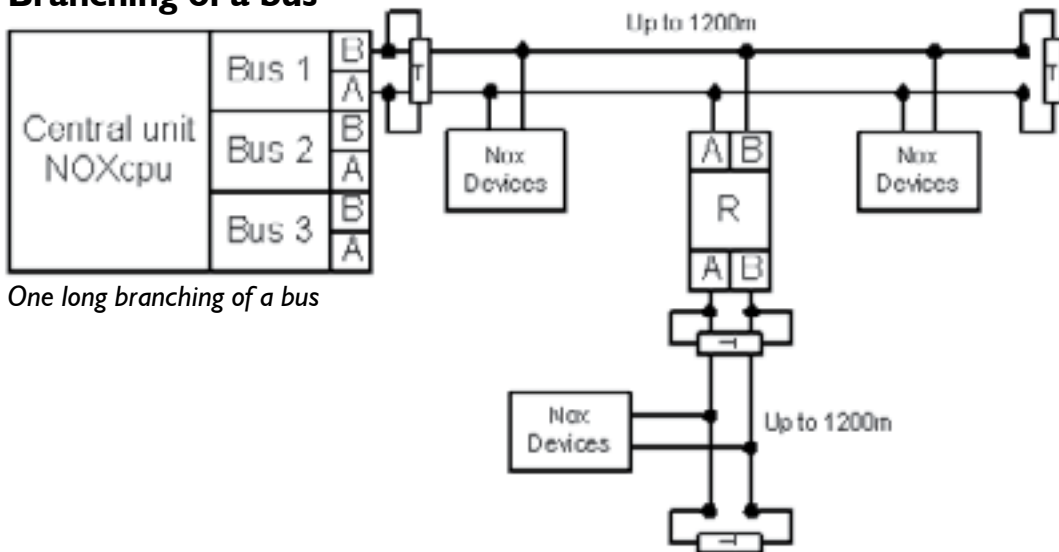
After the repeater you can also connect 127 units. In total the number of units connected cannot surpass 200 on each bus.

Extension of the bus



Extension of the bus with a single repeater.

Branching of a bus



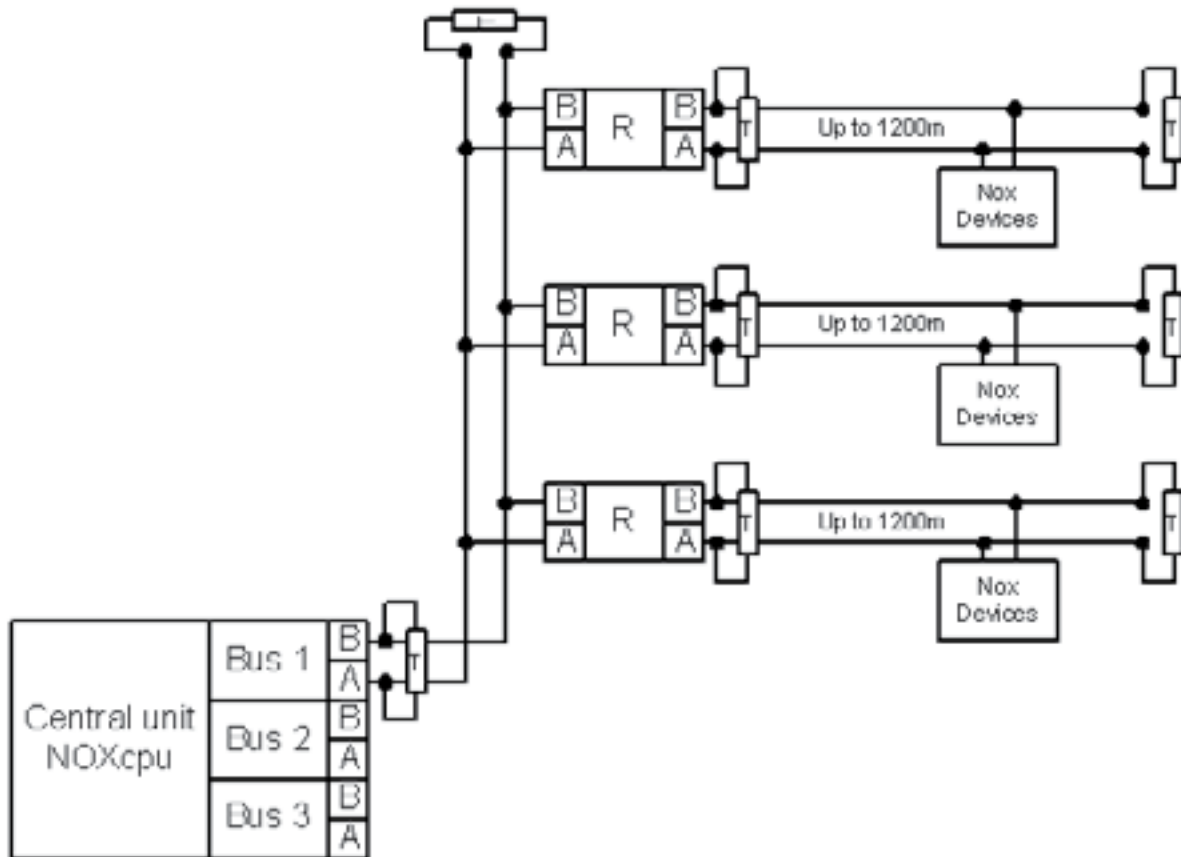
One long branching of a bus

NOX SYSTEMS

Advanced bus installation with several repeaters

In large buildings, it is possible to make a bus from the basement of the building to the top floor. On each floor you install a repeater to branch the bus to this floor. If necessary you might install an additional power supply close to the repeater, to provide power to the bus units. A power failure on one floor will thus have no effect on other floors.

Bus with several branches



How to make several long branches (eg. In a large building: one branch per floor).

NOX SYSTEMS

NOX PS5 - Power supply with battery backup

NOX PS5 is a power supply with a maximum output current of 5A, and 2.5A for battery charging.



The power supply is mounted in the central cabinet with NOX CPU and the batteries (not included).

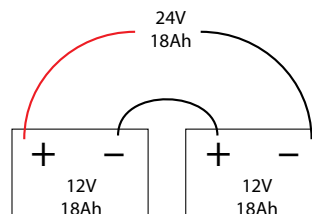
During a power outage the unit will deliver 15V. At a battery voltage of 21.6V the PSU will disable and only start again when power is restored.

The power supply continuously monitors the charging status of batteries, output current, AC voltage and operation temperature. A deviation from the established tolerances may give warnings and alarms in the system. All terminals are protected with individual fuses.

The emergency batteries, which are mounted at the bottom of the casing must be 2 pieces of 12 V (typically 17-20Ah).

The batteries ensure that the system remains in operation in case of an interruption of the electricity grid.

The batteries must be connected in a series circuit, so they provide 24V.



Use only approved batteries in accordance with applicable law.

NOX SYSTEMS

All power supply units will log the following parameters which can be retrieved in the configuration software:

Total power	Consumed power output
Battery voltage	Measured battery voltage
Temperature	Measured on the PSU PCB
Input voltage	DC input voltage after rectifier on the PS5 print

These parameters are logged for one year. Then this data will eventually be overwritten.

The current parameters can also be displayed on the control panel:

(Service > Service Mode > Input test > Per unit > select power supply).



Possible error messages from the power supply unit

Error message	Meaning	What to do
Grid failure (immediately)	The system is no longer given power from the outside	<ul style="list-style-type: none"> • Check the power cord • Check input fuses at cord • Check fuses
Grid failure > 30 min (Time adjustable)	The system has not been given power for over 30 minutes	<p>Urgent:</p> <ul style="list-style-type: none"> • Check the power cord • Check input fuses at cord • Check fuses
Battery error	The battery voltage is below 22V. If not given power soon, the PS5 will switch off.	<ul style="list-style-type: none"> • Check the connections of batteries • Check the battery condition
Temperature too high	The temperature inside the cabinet is too high (> 80°C)	<ul style="list-style-type: none"> • Check the ambient temperature • Check the batteries
Output current too high	The total output current from the PS5 is too high (> 5.0 A)	<ul style="list-style-type: none"> • Check consuming devices
Fuse (I-3)	A fuse in the PS5 is blown.	<ul style="list-style-type: none"> • Check for short circuit • Replace fuse

NOX SYSTEMS

The system's maximum power consumption:

The power supply delivers a maximum output current of 5A.

If this value is exceeded, the system will come with a warning on the control panel. If exceeded by 10% the built-in overcurrent protection circuits switches off the voltage.

The "Total current calculation" program:

In the NOX configuration software, inside the "Help" menu, you will find a program that helps you calculate the total current.



Insert here the number of units, and the consumption of detectors and other devices.

NOTE:

The maximum output current of one bus is 2.0A. It is permitted to replace the standard fuse of 1A to 2A. However this can be done on a maximum of two buses!

Calculation of battery duration:

Battery voltage	24 V
Battery capacity	17 Ah
Output voltage	15 V
Output current	5.0 A
Efficiency factor PSS	87%

Calculation in Watt	
Output power	$15V \times 5.0A = 75W$
Accumulator power without loss	$24V \times 17Ah = 408Wh$
Effective power	$408Wh \times 87\% = 355Wh$
Effective duration	$355Wh / 75W = 4,73h$

We refer to the national standards for systems operating on battery supply. (F&P, FG, SSF etc.)

If you require a higher output current, install more power supplies. Each of them must not draw more power than indicated above.

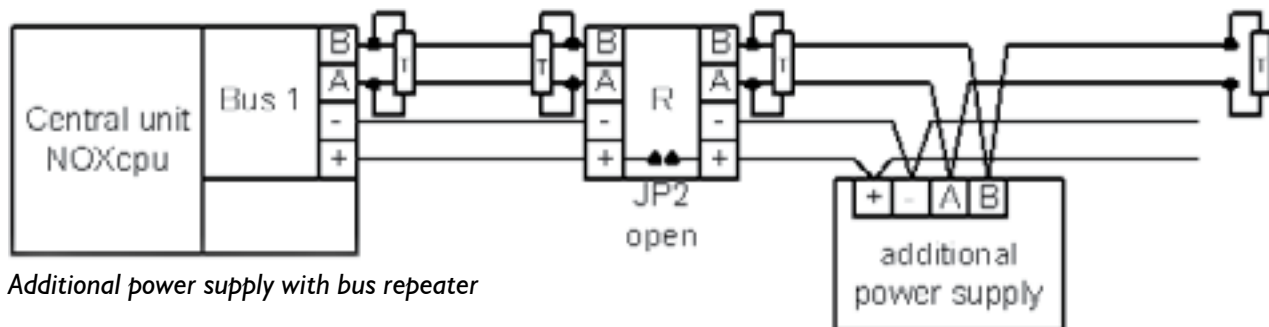
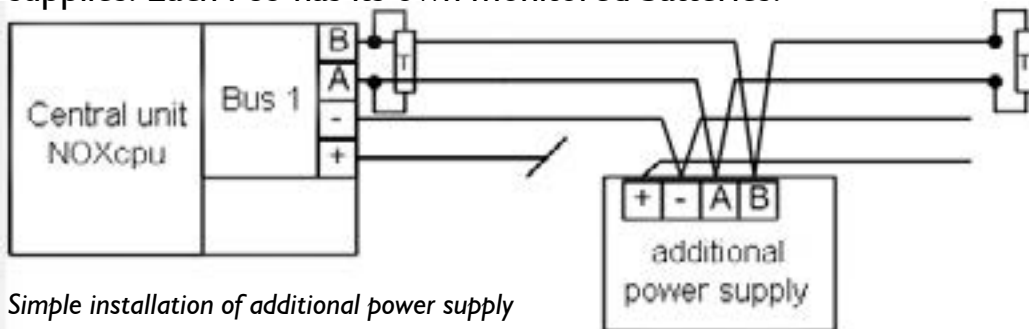
NOX SYSTEMS

Battery test

During normal operation, a short test is carried out every 30 seconds, to confirm that the batteries are mounted and ready. Monday to Friday at 09 am a 50W load test is performed to check if the batteries are working properly. This is done by measuring the voltage drop across 10 seconds. If the voltage is too low this is reported to the system.

Additional power supply

In large systems that require more than 4.5A bus power, connect additional power supplies. Each PS5 has its own monitored batteries.



The mounting of a bus repeater (NOX RPT) with jumper JP2 open, divides the bus in two segments. Errors, such as short circuits, on a bus segment has no effect on the rest of the bus.

NOTE, that when installing external power supplies that are grounded, it is important that this grounding is compensated. Forskellig jord potentiale kan påvirke systemet i væsentlig grad da jord og minus har samme potentiale.

NOX SYSTEMS

Inputs

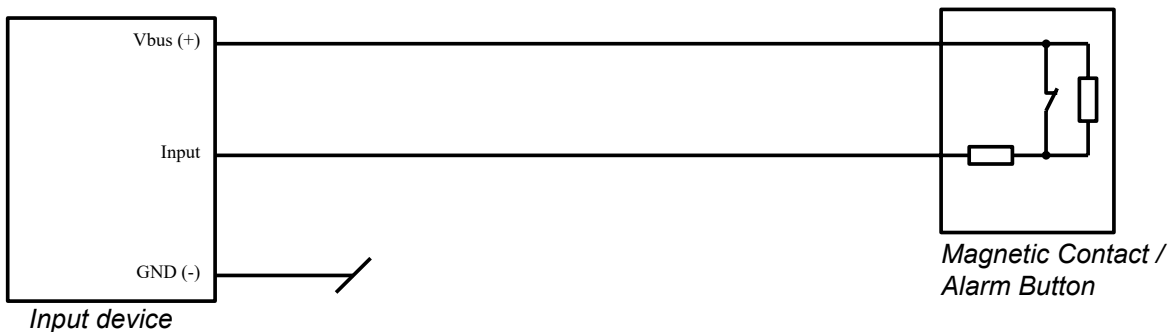
General information about inputs in the NOX system

- Entries are generally plus (+) controlled, with a few exceptions
- Inputs supports: No balancing, Double balancing and Triple balancing
- Default balancing is 12 k Ω
- Ability to define other balancing values through input profiles
- Recommended range is 3.5 to 50 k Ω
- Absolute minimum / maximum is 2 k Ω / 300 k Ω

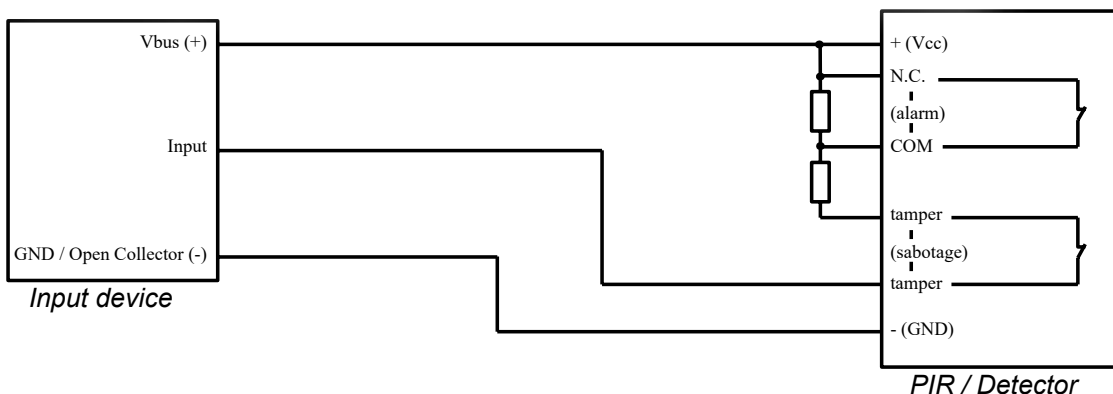
NOTE!

Some inputs in the system can not be balanced and refers to 0V.
For example pin 6 and pin 7 on NOX CMU and NOX CMO.

Connecting a magnetic contact:



Connecting a PIR motion sensor with tamper-proof casing:



NOX SYSTEMS

NOX - Scalability and limitations

Limitations

The NOX system has some limitations, which changes depending on the version used.

	NOXONE	NOX Professional	NOX Corporate
Number of NOX buses	1	3	3
Number of users, max.	1000	100	100.000*
Number of areas, max.	100	40	4000
Number of time profiles, max.	50	6	400
NOX TIO (-/+) comm.	✓	✓	✓
Smartphone (Android / iOS)	✓	✓	✓
iPhone/iPad graphical app	✓	✗**	✓
Possibility of IP bus	✗	✓	✓
Alerting via email	✓	✓	✓
Stand-alone	✓	✓	✓
Master/Slave	Slave***	Slave	Master Slave
IP Modbus functionality	✗	✗	✓
Can connect to SIMS	✓	✓	✓
SmartIntego integration	✓	✓	✓
Paradox integration	✓	✓	✓
Possibility of SDK	✓	✓	✓
Power supply	1,5A	5A	5A

* Standard is 10.000 users.

** A NOX Professional central is upgradable to a NOX Corporate central, which then allows for the purchase of an iOS licence.

*** When a NOXONE is used in a master/slave system, it sets the limitations of the size of the entire system (number of users, user profiles, areas and time profiles).

NOXONE	NOX Professional / Corporate
127 modules	200 modules (x3)
25 card readers	25 card readers (x3)
20 user profiles	999 user profiles
8 built-in inputs and outputs	0 built-in inputs and outputs
Total: 516 inputs and outputs	Total: 4000 inputs and outputs
999 alarm types	
999 area states	
999 entrance profiles	
Built-in SIA IP transmitter	
Full tamper monitoring	
Realtime logic programming	
Independent choice of resistance value for balancing	
Possibility of climate sensors	
Possibility of 2-factor verification to the central	
Possibility of Touchpanel PC	
Possibility of wireless object monitoring	

Scalability

If the customer needs more doors, or have multiple buildings on the same land, we recommend to extend the system by creating a **Master / Slave** network.

If the customer on the other hand needs a connection of multiple geographically separated systems, we recommend linking via the overall management system **SIMS**.

NOX SYSTEMS

NOX Wiring

Below is a list of specifications which apply to the various cables that can be used in a NOX network.

Wire Specifications

Signal	From	To	Product number	Gauge AWG/mm2	Cable type	Shielded	Max. Length
Ethernet	NOX CPU	LAN		Cat. 5 or better	Twisted pair	Optional	90 m
RS-232	NOX ESP	Chiron Iris 4xx/8xx	NI47*	22/0.3255	Not twisted pair	Yes	15 m
RS-232	NOX ESP	Chiron Iris NG4xxx	NI47*	22/0.3255	Not twisted pair	No	15 m
RS-232	NOX ESP	NOX SMS	NI47*	22/0.3255	Not twisted pair	Yes	15 m
RS-485	NOX CPU	NOX unit	NOXBUS X00LSZH**	24/0.2047	Twisted pair	Optional	1200 m
RS-485	NOX unit	NOX unit	NOXBUS X00LSZH**	24/0.2047	Twisted pair	Optional	1200 m
Wiegand	NOX CMU	Card reader	ARASLS0H***	22/0.3255	Not twisted pair	Yes	60 m EN Compliance max 30 m
Clock/Data	NOX CMI	Card reader	ARASLS0H***	22/0.3255	Not twisted pair	No	3 m
OSDP	NOX CMO	Card reader	NOXBUS X00LSZH**	24/0.2047	Twisted pair	Optional	1200 m EN Compliance max 30 m
I/O	NOX Unit IO4/CMx/RE4/MIO & others	3- part detector or magnetic contact, etc.		24/0.2047	Twisted pair or not	No	30 m

*) You have to specify the transmission unit to be connected (Iris 4xx / 8xx, NG or SMS).

**) NOXBUS cable is "Low Smoke" or "Halogen free" and is available in rolls of 100m or 500m.

***) Recommended reading cable is "Low Smoke" or "Halogen free" and is available in rolls of 100m or 500m.

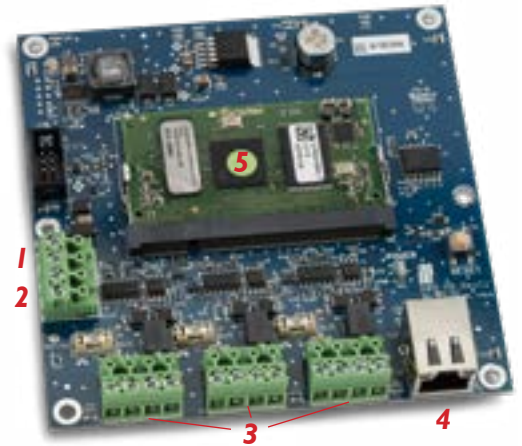
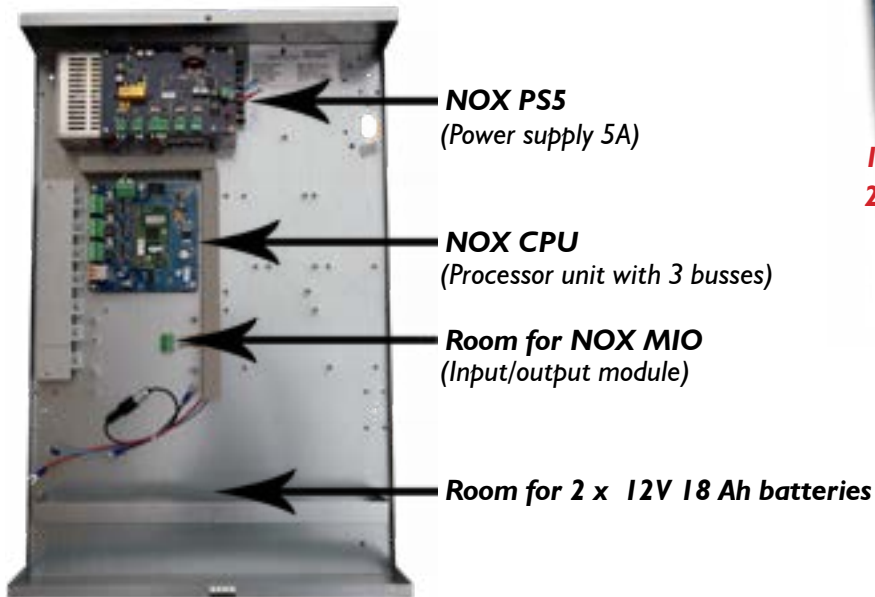
All the above cables are defined in terms of the "best practice" principle, and are recommended by ARAS Security.

You are free to use other cables, as long as they meet the above specifications.

NOX SYSTEMS

NOX units

NOX Corporate Central



NOX CPU motherboard

1. Connection to power supply
2. Internal NOX bus
3. 3 NOX bus connections
4. RJ45 Ethernet connection
5. CPU module (Toradex DIMM)
(Incl. Real-time clock with backup)

The central unit consists of a tamper monitored cabinetry with NOX CPU (processor unit) and NOX PS5 (power supply) mounted. The cabinet has also space for installation of 2 x 18 Ah batteries, and other optional components (eg. NOX MIO input / output module, alarm transmitter equipment, etc.).

Three bus connections and a network connection with RJ-45 connectors are available. The network connection is used for connection to a standard PC with configuration and / or alarm management software. All communications in the NOX system is encrypted.

NOX SYSTEMS

NOX CMU - Card reader module (Wiegand interface)

NOX CMU connects a card reader to the NOX bus. It supports Wiegand codes up to 80 bit, og has offline non-volatile memory for up to 204 cards.



Terminal Assignment						
Terminal P2	+	-	A	B		
Pin	8 - 16 VDC	GND	Bus A	Bus B		
Description	Supply Voltage (VBUS)		NOX Bus Connection			
Terminal P3	1	2	3	4	5	6
Pin	8 - 16 VDC	Input	O.C. Output	5 VDC	GND	TTL 1 I/O
Description	VBUS			Power		TTL I/O's
	7	8	9	10	11	12
Pin	TTL 2 I/O	Data 0	Data 1	Normally open	Common	Normally closed
Description	TTL I/O's	Wiegand		Relay		

Technical Data				
	Unit	Min.	Nominal	Max.
Supply Voltage (VBUS)	VDC	8	15.0	16
Current Consumption @ 15 VDC	mA	12		18
Operating Temperature Range	°C	0	25	40
Air Humidity @ 40°C (Non Condensing)	% RH			93
Input Resistance, Absolute Max Rating	kΩ	2		300
Input Resistance, Recommended Range	kΩ	3.5	12	50
VBUS Output (Pin 1) at 20°C	mA			200
5 VDC Output (Pin 4) 5 sec. pulse	mA			150
5 VDC Output (Pin 4) at 15VDC	mA			30
5 VDC Output (Pin 4) at 10VDC	mA			70
Contact rating relays		max. 30VDC / 1A		
Open collector output (Pin 3)		max. 25 VDC / 500 mA		
TTL Outputs (Pin 6 and 7)		5 VDC / 20mA each		
Dimensions housing (L x W x H)	mm	85 x 66 x 27		
Grad af beskyttelse (IEC 60529:2001)		IP30		
Offline mode relays response time	ms	2		400
Memory for card		up to 204 card codes (80 bits)		
Wiegand bit length	μs	20		300
Degree of Protection according to IEC 60529		IP20		
Cable length for inputs/outputs on terminal P3	m			30*
Cable length for card readers Data 0 / Data 1	m			30*

*NOX systems guarantees up to 30m

NOX SYSTEMS

NOX CMO (rev. F) - Card reader module (OSDP interface)

NOX CMO connects OSDP protocol readers with the NOX bus. A CMO module can support both in and out reader (both with keyboard). For each card reader up to 3 LEDs with up to four different colors are supported.



Terminal Assignment

Terminal P2	+	-	A	B
Pin	8 - 16 VDC	GND	Bus A	Bus B
Description	Supply Voltage (VBUS)		NOX Bus Connection	

Terminal P3	1	2	3	4	5	6
Pin	8 - 16 VDC	Input	O.C. Output	5 VDC	GND	TTL 1 input
Description	VBUS			Power	TTL inputs	
	7	8	9	10	11	12
Pin	TTL 2 inputs	RS485-A	RS485-B	Normally open	Common	Normally closed
Description	TTL inputs	OSDP		Relay		

Technical Data

	Unit	Min.	Nominal	Max.
Supply Voltage (VBUS)	VDC	8.0	15.0	16.0
Current Consumption @ 15 VDC	mA	15	16	27
Operating Temperature Range	°C	0	25	40
Air Humidity @ 40°C (Non Condensing)	% RH			93
Input Resistance, Absolute Max Rating	kΩ	2		300
Input Resistance, Recommended Range	kΩ	3.5	12	50
VBUS Output (Pin 1) at 20°C	mA			200
5 VDC Output (Pin 4) continuously	mA			45
5 VDC Output (Pin 4) 5 s	mA			200
5 VDC Output (Pin 4) 10 ms	mA			500
Contact rating relay		max. 30VDC / 0,8A		
Contact rating relay @ 40°C, peak (up to 10 ms)		max. 30VDC / 3A		
Open collector output (Pin 3)		max. 25 VDC / 350 mA		
TTL Inputs (Pin 6 and 7)	V		5.0	5.5
Open collector peak current (up to 1 second)	mA			500
Open collector leakage current in "Off" state	μA			2
Cable length for any connection to terminal P3	m			30*
Back tamper sensor distance to mounting surface	mm	3	10	40

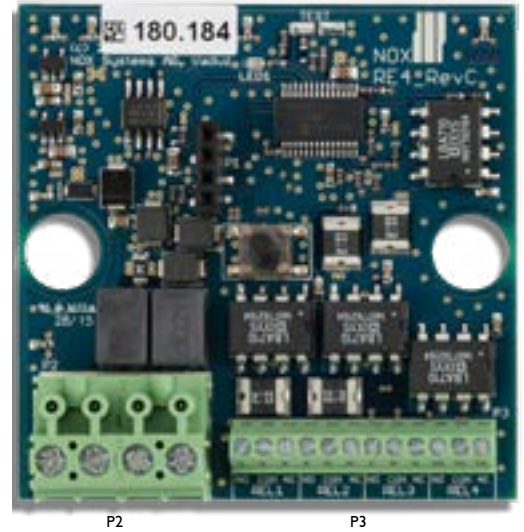
*NOX systems guarantees up to 30m

NOX SYSTEMS

NOX RE4 (rev. c) - I/O modul

The NOX RE4 can for example transmit alarms and other information to a management system.

RE4 contains 4 programmable electronic relay outputs.



Terminal Assignment						
Terminal P2	+	-	A	B		
Pin	8 - 16 VDC	GND	Bus A	Bus B		
Description	Supply voltage (VBUS)		NOX Bus connection			
Terminal P3	1	2	3	4	5	6
Pin	Normally open	Common	Normally closed	Normally open	Common	Normally closed
Description	Relay 1			Relay 2		
Pin	7	8	9	10	11	12
Pin	Normally open	Common	Normally closed	Normally open	Common	Normally closed
Description	Relay 3			Relay 4		

Technical Data				
	Unit	Min.	Nominal	Max.
Supply voltage (VBUS)	VDC	8	15	16
Current consumption	mA			15
Operating temperature	°C	0	25	40
Air humidity @ 40°C (non condensing)	% RH			93
Contact rating per relay @ 40°C, pulsing (all relays active)			max. 30VDC / 1A*	
Contact rating per relay @ 40°C, permanent (all relays active)			max. 30VDC / 0.6A	
Contact rating per relay @ 40°C, peak (up to 10 ms)			max. 30VDC / 3A	
Contact rating per relay @ 40°C, peak (up to 5 min)			max. 30VDC / 1A	
Contact on resistance	Ω			1
Back tamper sensor distance to mounting surface	mm	3	10	40**
Cable length for any connection to terminal P3	m			30
Housing outline dimensions (L x W x H)	mm	85 x 66 x 27		
Degree of protection according to IEC 60529		IP 20		

NOX SYSTEMS

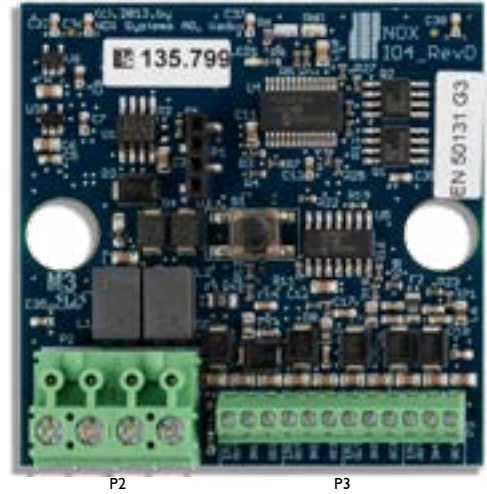
NOX IO4 (rev. d) - I/O module

Universal Input/output module with 4 supervised inputs and 4 open collector outputs.

Use for example for connecting detectors.

Note!

Default mode of outputs is “on”!



Terminal Assignment						
Terminal P2	+	-	A	B		
Pin	8 - 16 VDC	GND	Bus A	Bus B		
Description	Supply Voltage (VBUS)		NOX Bus connection			
Terminal P3	1	2	3	4	5	6
Pin	VBUS 1	Input 1	Output 1	VBUS 2	Input 2	Output 2
Description	IO Block 1			IO Block 2		
	7	8	9	10	11	12
Pin	VBUS 3	Input 3	Output 3	VBUS 4	Input 4	Output 4
Description	IO Block 3			IO Block 4		

Technical Data				
	Unit	Min.	Nominal	Max.
Supply voltage (VBUS)	VDC	8.0	15.0	16.0
Current consumption	mA			7
Operating temperature	°C	0	25	40
Air humidity @ 40°C (non condensing)	% RH			93
Input resistance, absolute max. rating, input 1 to 4	kΩ	2		300
Input resistance, recommended range, input 1 to 4	kΩ	3.5	12	50
Self-resetting fuse VBUS 1 + VBUS 2 together	mA			200
Self-resetting fuse VBUS 3 + VBUS 4 together	mA			200
Open collector current, output 1 to 4	mA			350 each
Open collector peak current, output 1 to 4 (up to 1 sec.)	mA			500
Open collector leakage current in “Off” state	μA			2
Back tamper sensor (only N119-G3) distance to mounting surface	mm	3	10	40*
Cable length for any connection to terminal P3	m			30

NOX SYSTEMS

NOX ESP - Serial alarmtransmission

The NOX ESP module supports ESPA, IRIS, Addsecure and DALM protocols and works as a serial interface (RS-232) to different alarm transmission systems.



Terminal Assignment

Terminal P2	+	-	A	B		
Pin	9 - 15.5 VDC	GND	Bus A	Bus B		
Description	Supply Voltage (VBUS)		NOX Bus Connection			
Klemme P3	1	2	3	4	5	6
Pin	NOXok	ATUok	DTR	RTS	CTS	RXD
Description	TLL output	TLL input	TTL output	RS232 output	RS232 input	RS232 input
	7	8	9	10	11	12
Pin	TXD	GND	GND	GND	VBUS	GND
Description	RS232 output					

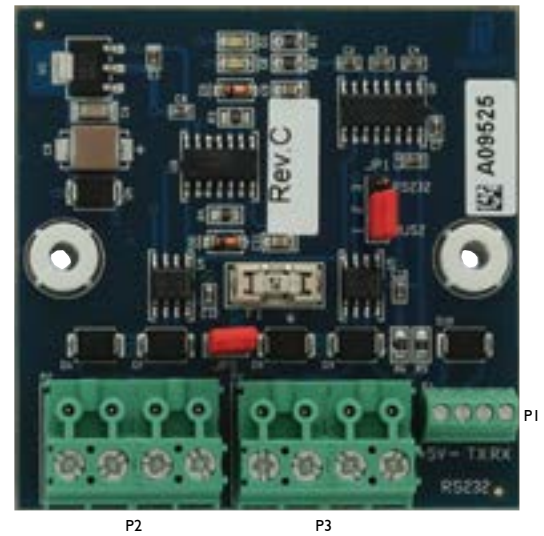
Technical Data

	Unit	Min.	Nominal	Max.
Supply voltage (VBUS)	VDC	9.0	15.0	15.5
Current consumption at 15VDC	mA		16	18
Operating temperature	°C	0	25	40
Air humidity @ 40°C (non condensing)	% RH			93
RS232 data rate	Baud	300	9600	115200
Delay time for ATUok signal	s		1	
Delay time for NOXok signal	s		30	
Overall Dimensions Box (L x W x H)	mm	85 x 66 x 27		
Degree of protection according to IEC 60529:2001		IP30		

NOX SYSTEMS

NOX RPT (rev. C) - repeater module

A universal module configurable as a repeater (RS485) for the extension of the NOX bus (1200 m.), or as a serial gateway (RS232) eg. for connecting IP-bus.



Terminal Assignment

Terminal P1	1	2	3	4
Pin	5 VDC	GND	TX	RX
Description	Reserve	Serial interface (RS232)		
Terminal P2	+	-	A	B
Pin	9.5-15.5 VDC	GND	Bus 1A	Bus 1B
Description	supply voltage 1 (VBUS1)		Bus 1 - input	
Terminal P3	+	-	A	B
Pin	9.5-15.5 VDC	GND	Bus 2A	Bus 2B
Description	supply voltage 2 (VBUS2)		Bus 2 - output	

P2

P3

Jumper Assignment

JP1	1-2	2-3
Function	Repeater	Serial interface
Output	Bus 2 output	RS232
JP2	ON	OFF
Function	VBUS1=VBUS2	Ekstern VBUS2

Technical Data

	Unit	Min.	Nominal	Max.
supply voltage (VBUS)	VDC	9.0	15.0	15.5
power consumption at 15 VDC	mA	13		14
operating temperature range	°C	0	25	40
air humidity at +40°C (non condensing)	% RH			93
fuse	A		1	3
dimensions (L x W x H):	mm	85 x 66 x 27		
Degree of protection according to IEC 60529:2001		IP30		

NOX SYSTEMS

NOX modules

Input/Output modules

NOX IO4	(4 input, 4 OC output)
NOX IO1	(1 input, 1 relay)
NOX RE4	(4 relays)
NOX O32	(32 OC output)
NOX MIO	(4 input, 4 output, 8 relays)
NOX M3I	(3 input, 1 OC output)

Card reader interface modules

NOX CMO	(OSDP)
NOX CMU	(Wiegand)
NOX CMI	(Clock/Data)

Repeater module

NOX RPT	(Extend, Divide, expand)
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Bus converter modules

NOX IFT	(Thor - S-Art)
NOX IS9	(Seculon - SAEL S9)
NOX S8P	(Prisma - SAEL S8)

Alarm transmission modules

NOX ESP	(RS232 to ESPA, IRIS, Addsecure, DALM)
NOX ATU	(RS232 to...)

TCP/IP module

MOXA Nport	(RS232 > < TCP/IP)
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Temperature and humidity modules

NOX ANI	(1 analog 0-10Vdc input, 1 relay)
NOX FLD	(Water Level Detector)
NOX THS	(Moisture and temperature sensor)
NOX THT	(wireless Moisture & temperature sensor)

Museum equipment modules

NOX TXO	(Wireless optical distance sensor)
NOX TXM	(Wireless vibration sensor)
NOX RXM	(Receiver for wireless modules)

Power supply

NOX PS5	(5A power supply)
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NOX SYSTEMS

Glossary

CPA:	<u>C</u> ontrol <u>P</u> anel
CPU:	<u>C</u> entral <u>P</u> rocessing <u>U</u> nit
Units:	All units connected to the system (e.g. NOXIO4, NOXCPU, etc.)
Input:	Each detector is connected to the system through an input.
PSU:	<u>P</u> ower <u>S</u> upply <u>U</u> nit
Output:	A relay or an Open Collector output
UPS:	<u>U</u> ninterruptible <u>P</u> ower <u>S</u> upply