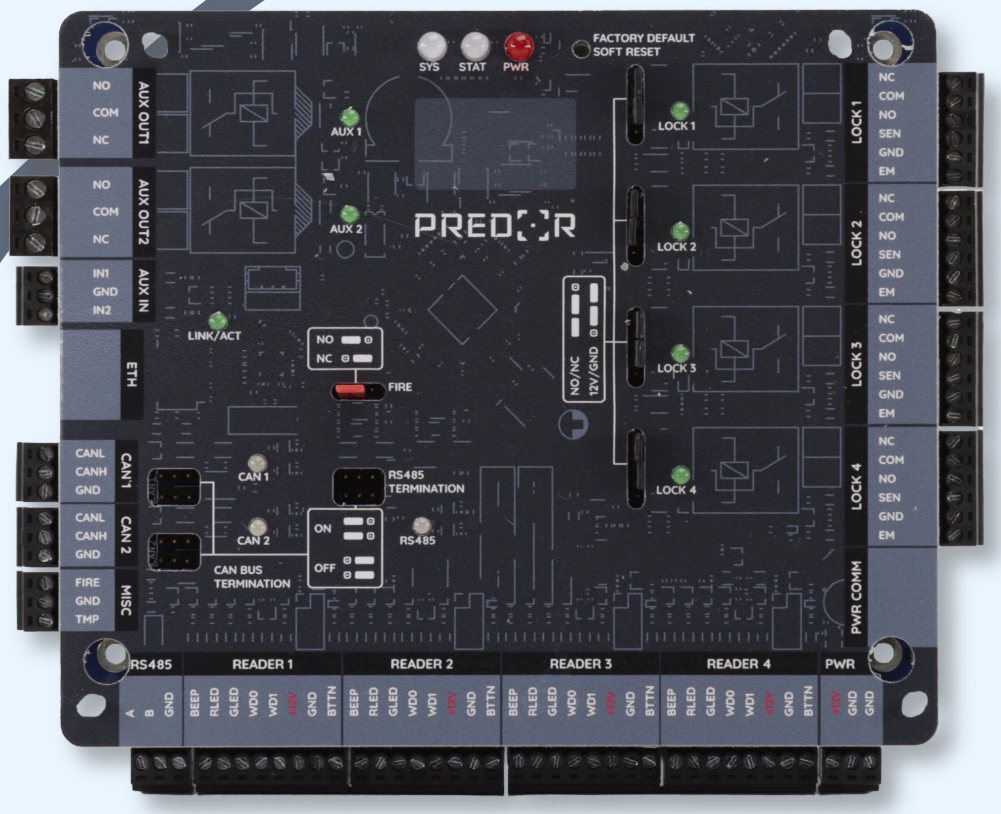
PREDOR

# Predor Phantom

## High security four door access controller




*„Highest level of security classification"*

GRADE 4 CERTIFIED

## MAIN FEATURES

- Standalone or online operating mode
- Stores up to 250,000 events and 200,000 IDs
- Manages up to 100,000 users
- Controls up to 4 doors in one direction or 2 doors in two directions
- Automatic network discovery
- Supports Wiegand and high-security SSCP reader protocols
- 2 programmable inputs
- 2 programmable relay outputs
- 2 programmable open collector outputs
- Fire alarm and tamper inputs with advanced security level

### SECURITY, NIS2 COMPATIBILITY

The highest level of security can be achieved by using Stid SSCPv2 readers. This requires a Predor SSCP add-on panel, which must be connected to the dedicated pin row above the reader connections on the (SSCP ready) Predor Phantom controller.

### PROGRAMMABLE INPUTS, OUTPUTS

You can use 2 inputs and 2 relay outputs for integration with other systems and devices, or for multi-stage verification, for example, breathalyzers, pre-entry disinfection, bag or vehicle inspection.

### FLEXIBILITY, COMPATIBILITY

Provides a flexible and easy transition from the old, unencrypted Wiegand system. Automatically recognizes SSCP readers, no addressing is required. If different security regulations apply to certain sites or zones, it is possible to use Wiegand and SSCP readers mixed within the same system.

### SIMPLE AND QUICK CONFIGURATION

Thanks to the automatic network discovery, the client automatically finds the controllers connected to the network. The full setup of the system to be installed can be pre-configured even at home, only a quick upload of the settings is required on site.

### STANDALONE OPERATION

The controller can store 100,000 users, 200,000 identifiers and 250,000 events, and is capable of performing access control tasks in stand-alone operation mode, without a server connection.

### SIMPLE INSTALLATION

The system creates a wiring diagram for each controller according to the current settings, which can be printed.



PREDOR

## TECHNICAL SPECIFICATIONS

| Technical Specifications | Value |
|---|---|
| **MEMORY CAPACITY** | |
| Event storage: | 250 000 |
| ID (card) storage: | 200 000 |
| Maximum number of users | 100 000 |
| **PHYSICAL PROPERTIES** | |
| Dimensions: | 163 x 137 mm |
| **ENVIRONMENTAL CONDITIONS** | |
| Operating Temperature: | –20 to +50 °C |
| Operating Humidity: | 10–90 % RH (non-condensing) |
| Storage Temperature: | –20 to +60 °C |
| Storage Humidity: | 10–90 % RH (non-condensing) |
| **ACCESSORIES** | |
| Recommended Battery: | 12 V, 7 Ah, SLA |
| **WIRING DISTANCES AND CABLE PARAMETERS** | |
| Wiegand Readers: | max. 60 m, 2×0.5 + 6×0.22 $mm^2$ alarm cable |
| SSCP Readers: | max. 300 m, Cat5/Cat5e UTP or 100–120 Ω twisted pair RS485/CAN bus cable |
| Ethernet: | max. 100 m, UTP (Cat5/Cat5e, 10/100 Mbps) |
| Default Network Settings: | IP: 192.168.0.200, Default Subnet Mask: 255.255.0.0 |
| **ELECTRICAL PARAMETERS** | |
| Supply Voltage: | $U_{IN}$ = 12 VDC |
| Quiescent Current: | $I_{NOM}$ = 75 mA |
| Reader Power Supply: | $U_{READER}$ = 12 VDC, 4 x 200 mA max. |
| Lock Power Supply: | 12 VDC, 4 x 1 A max. |
| AUX Relay Output Rating: | 24 VDC, 5 A; 240 VAC, 5 A |
| Compatible Readers (Wiegand): | 4, 8, 26, 32, 34, 36, 37, 39, 40 or 66 -bit readers |
| Compatible Readers (SSCPv2): | STid ARC1(S), ARC(S)-A and ARC(S)-B SSCPv2 readers |

A Predor SSCP add-on panel and an SSCP-ready controller updated to the new generation firmware (FW 1.x) are required to use SSCP readers. SSCP compatibility is indicated by a yellow or white dot in the lower-right corner of the panel, or by a "+" character at the end of the hardware version.

www.predorsystems.com sales@predorsystems.com

## THE PREDOR SYSTEM HAS ACHIEVED GRADE 4 CERTIFICATION


The PREDOR access control system has obtained Security Grade 4 compliance certification in accordance with the EN 60839-11-1 standard. The certification was issued by TREZOR TEST s.r.o., an independent certification body accredited by the Czech Accreditation Institute.

This certification ensures that PREDOR can be confidently deployed even in the highest risk projects and fully complies with European security standards.

### WHAT DOES GRADE 4 MEAN IN PRACTICE?

The Grade classification system precisely defines the level of protection required for a given facility. The highest category, Grade 4, is specifically designed for strategically critical and highly secured environments, such as military facilities, government institutions, and research laboratories.

The EN 60839-11-1 standard defines four security grades, of which Grade 4 represents the highest threat level. It requires a system capable of supervising all components from credentials through software, while ensuring that every element of the data communication path is resistant to external intrusion attempts.

We are among the first in Europe to achieve deep integration with STid, a pioneer in encryption technologies. Using the SSCP Smart and Secure Communication Protocol developed by STid, the system is protected by AES 128 encryption across the entire data communication path.





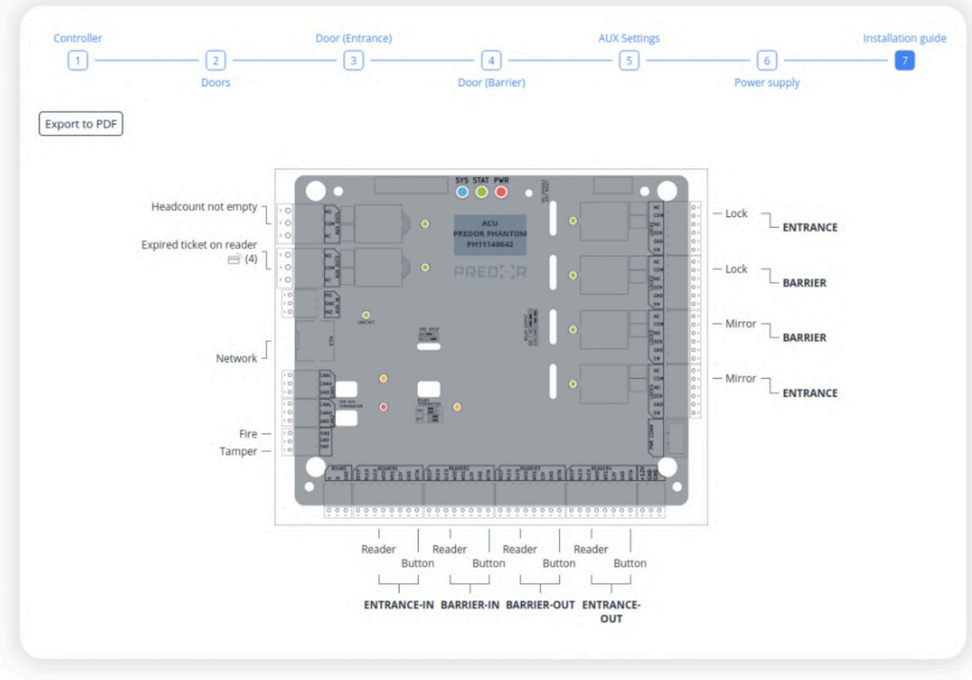
## BUILT IN AUX RELAY FUNCTIONS (TRIGGERS AND ACTIONS)

Preconfigured AUX functions can be set up via the software interface. These allow the controller AUX relays to be activated based on specific events or according to defined schedules. Below are some examples of possible applications:

- During random inspections, the AUX relay can be used to trigger an audible or visual alert
- If a door is held open, a signal is activated after a defined delay
- Relay activation can be configured on door open or close events, including timed or delayed operation
- It can be automatically triggered by any alarm event
- Can be used to monitor interlock functionality
- Can serve as an additional signal in case of brute force protection alarms

## WIRING DIAGRAM

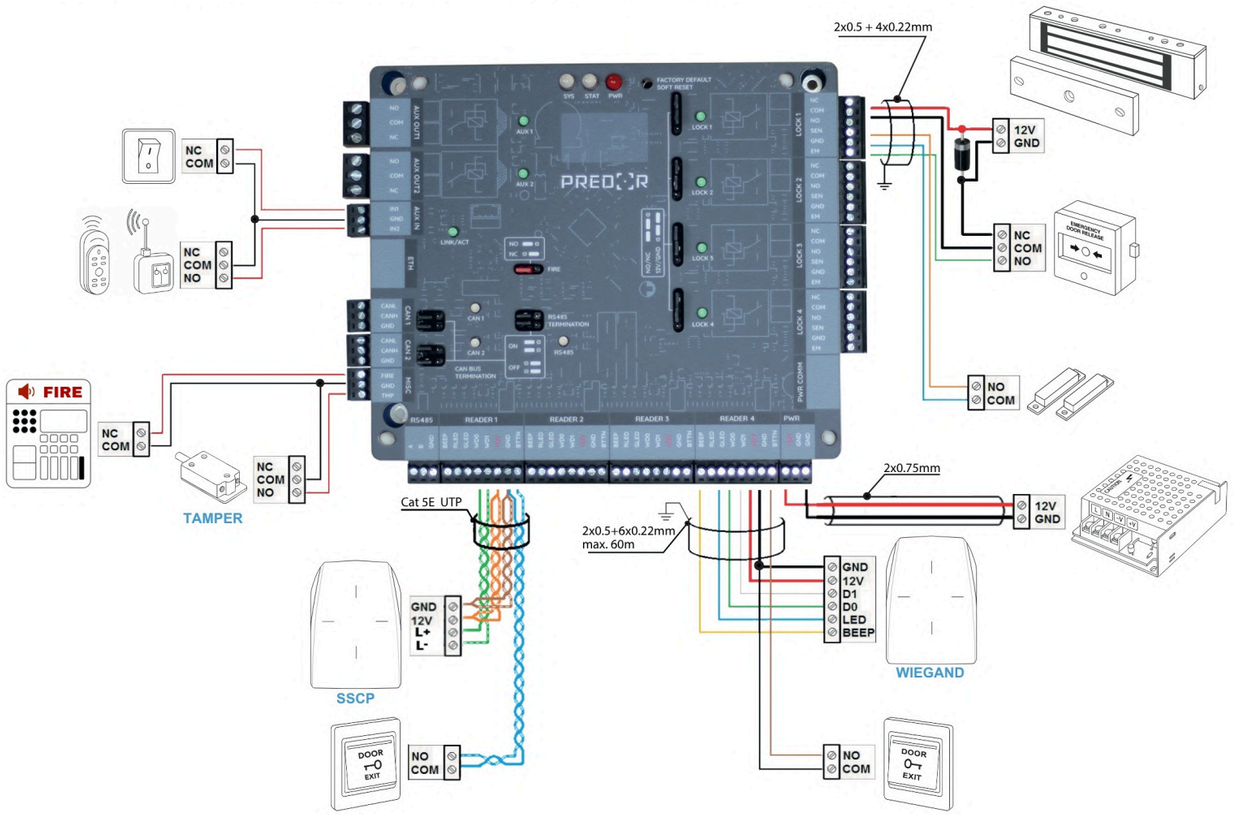
After configuring the Phantom controller, the system automatically generates a wiring diagram for each controller based on the defined settings and naming conventions.




### LOCK MONITORING

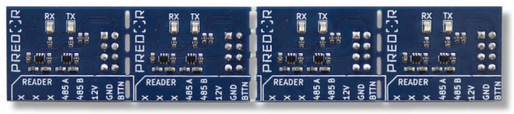
The controller performs current based lock monitoring on each output, enabling automatic detection and calibration of the connected lock operating characteristics. During normal operation, measured values are continuously compared with learned parameters, allowing reliable detection of anomalies such as open circuit, short circuit, or tampering. The system supervises not only the control state but the actual operation of the lock, significantly increasing the level of physical security.

## GENERAL WIRING DIAGRAM AND WIRING RECOMMENDATION



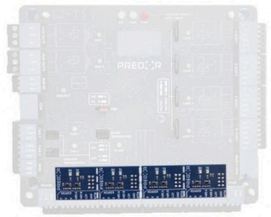

## CONNECTING THE SSCP BOARD

To use Stid SSCPv2 readers, a Predor SSCP add-on panel is required, which must be connected to the pin row designed for this purpose above the reader connections on the Predor Phantom panel.



It is possible to mix Wiegand and SSCP readers on the same Phantom controller.

To do this, the additional panel can be cut along the perforation and only the required reader inputs can be converted to SSCP. Readers with Wiegand communication can still be used on the reader inputs left without the additional module.



**⚠ Caution!**

When connecting the add-on panel, the Predor Phantom controller must be de-energized! The add-on panel is only compatible with Predor Phantom SSCP-ready controllers and only with new generation firmware (FW 1.x)!





## CONNECTING SSCP READERS

The connection points indicated on the Phantom controller are changed according to the inscriptions visible on the add-on panel:

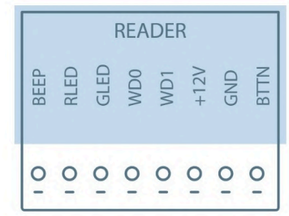
| WIEGAND FUNCTION | SSCP FUNCTION | EXPLANATION |
|---|---|---|
| BEEP | - | Not used |
| RLED | - | Not used |
| GLED | - | Not used |
| WD0 | L+/TX, 485A | RS485 A / RS485 + communication line |
| WD1 | L-/RX, 485B | RS485 B / RS485 – communication line |
| +12V | +12V | +12V DC reader power supply |
| GND | GND | Reader common ground point |
| BTTN | BTTN | Door opener button input |

SSCP readers can be connected similarly to Wiegand readers, using point-to-point topology from the controller in a star configuration. Only a single reader can be connected to one reader port. On the Predor SSCP add-on panel, the RX and TX LEDs blink approximately every 3 seconds if no reader communication is present, and they remain continuously lit when a secure connection is successfully established.

If the RX/TX LEDs do not light at all, it is possible that the reader has successfully established a connection with the controller but has been replaced, a new reader installed, or a tamper alert was received from the reader. In such cases, the controller will wait for software approval and will not initiate further communication to the reader on purpose and the reader LED will emit a red color.

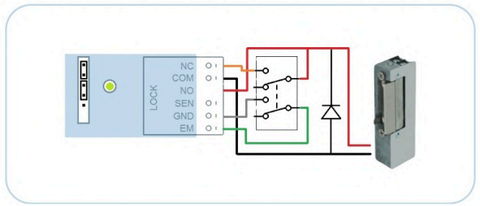
## WIEGAND READER CONNECTION

| WIEGAND FUNCTION | EXPLANATION |
|---|---|
| BEEP | Buzzer control output |
| RLED | Red LED control output |
| GLED | Green LED control output (connect this in case of single LED feedback) |
| WD0 | Wiegand Data_0 / D0 |
| WD1 | Wiegand Data_1 / D1 |
| +12V | +12V DC reader power supply |
| GND | Reader common ground point |
| BTTN | Door opener button input |



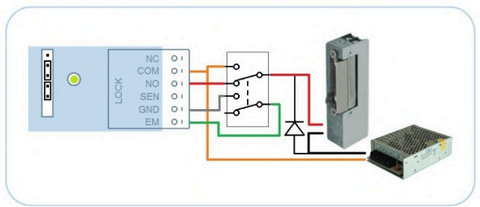
## CONNECTING ELECTRIC LOCKS AND EMERGENCY OPENER

12VDC internal power supply with fail secure lock:

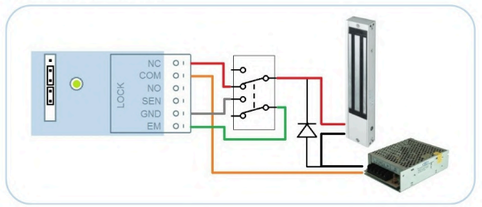



12VDC internal power supply with fail safe lock:

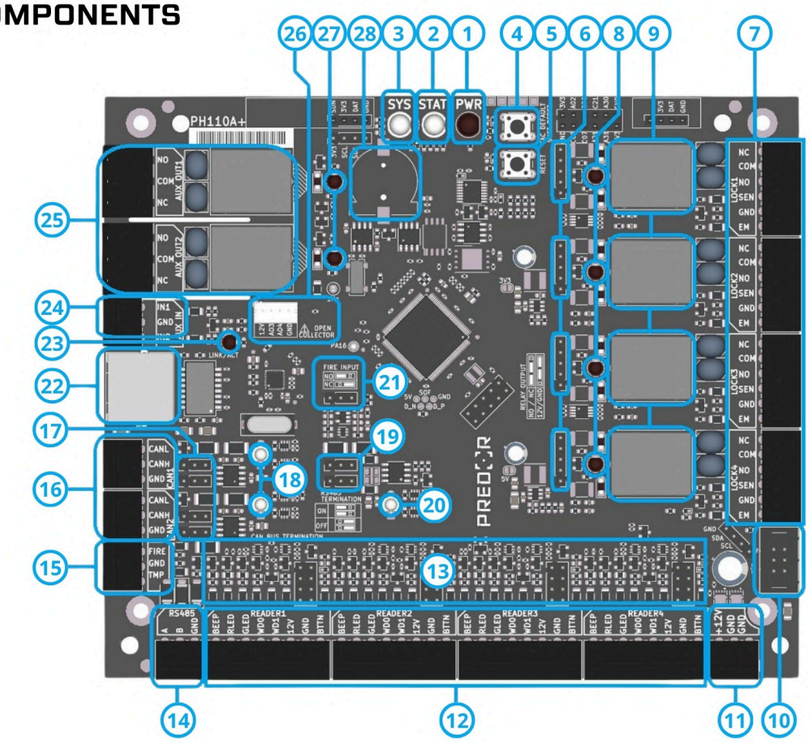

Dry contact, i.e. external power supply with fail secure lock:




Dry contact, i.e. external power supply with fail safe lock:




## MAIN COMPONENTS








### 1 POWER LED

Lights red when power is adequate

**Power supply status feedback**

### 2 STAT LED

Is not lit by default, indicates feedback

**I. Card read feedback:**
a) yellow 1s: valid data received (card/keypad)
b) yellow 4x short: invalid data received (Wiegand D0/D1 lines swapped)
c) green 4x short: Wiegand D0 line not connected
d) white 4x short: Wiegand D1 line not connected

**II. Firmware update feedback:**
a) cyan flash: firmware upgrade in progress
b) yellow long: external storage initialization (0.x FW)
c) white flash long: external storage initialization (1.x FW)

**III. Initialization feedback:**
a) magenta flash long: initialization in progress (0.x FW)

**IV. Soft reset feedback:**
a) yellow flash: soft reset time intervals feedback

### 3 SYS LED

Flashes every second by default

**I. Green flash:**
standalone, normal operation

**II. Blue flash:**
server connected, normal operation (1.x FW)

**III. Red flash:**
error/malfunction (system time invalid) (1.x FW)

**IV. Yellow flash - bootloader mode:**
This is a fallback mode which activates automatically after an incorrect firmware upgrade or other major error and provides a way to upgrade the firmware again.

### 4 SOFT RESET BUTTON

Controller restart and communication parameter reset to default

**I. Restore communication parameters to factory default:**
Press and hold the button. The STAT LED starts flashing yellow. Keep the button pressed until the yellow flashing ceases and then release the button. The yellow flashing now starts again. Press the soft reset button briefly, after which the network parameters (signal, IP, etc.) return to factory defaults.

**II. Restart**
The controller restarts if the button is pressed in any other way described above.

### 5 RESET BUTTON

Hard reset

Use only as a last resort, if the system hangs completely.

### 6 LOCK CONNECTOR MODE SELECTOR JUMPERS

Both jumpers should be moved together as they work as a pair.

**I. Upper position - 12V/GND mode:**
In this case, the controller panel connects it's input power supply to the output terminal in the following manner: NC: 12VDC default, COM: common (negative/ground) point, NO: disconnected by default. When the relay is activated the NC-NO connections are switched.


**II. Lower position - NO/NC (dry contact) mode:**
In this case, the relay contact are directly connected to the output terminal. That is, the NC-COM pair is connected by default and the NO is disconnected. Upon activation the NO-COM is connected and the NC is disconnected.


### 7 LOCK CONNECTORS

Door lock control and feedback connections

**I. NC-COM-NO:**
Connections for electric locks, output mode is corresponding to the mode selector jumpers.

**II. SEN-GND:**
door physical opening state feedback (door contacts), depending on the set door mode:
a) normal door: SEN-GND is connected when the door is closed, open when the door is physically open
b) revolving door: SEN-GND brief connection when revolving door turns, not connected when revolving door is in resting state

**III. EM-GND:**
serves for emergency button state feedback belonging to the door:
a) EM-GND is connected when emergency button is pressed, disconnected when emergency button is inactive, in resting state

### 8 LOCK RELAY ACTIVE INDICATOR LEDS

### 9 LOCK RELAYS

### 10 SUPERVISED POWER SUPPLY COMMUNICATION PORT

### 11 POWER INPUT CONNECTOR

### 12 CARD READER CONNECTORS

**I. BEEP, RLED, GLED:**
Wiegand card reader feedback lines. Open collector, default floating.

**II. WD0, WD1:**
Wiegand card reader data input..

**III. 12V, GND:**
Card reader power supply output. The control panel's own power supply, with 200mA automatic fuse protection.

**IV. BTTN-GND:**
Push button input. Connected when push button is pressed, disconnected when push button is inactive, in resting state.

### 13 CARD READER INTERFACE CONVERTER MODULE CONNECTOR

SSCP module can be connected, through which Wiegand reader ports are converted to SSCP ports.

### 14 RS485 COMMUNICATION PORT

### 15 ENHANCED SECURITY FIRE ALARM AND TAMPER INPUT

**I. FIRE-GND: fire alarm input**
The fire alarm input can be selected to operate in NO or NC mode with a mode selector jumper. The fire input directly controls the lock outputs, bypassing the control panel processor, so only the presence of power is required for its operation.

**II. TMP-GND: tamper input**
It is used to connect the tamper switch of the mounting box, so that the controller can report if someone has physically accessed it. Closed by default, activated by a break (high signal level).

### 16 CAN PORTS

### 17 CAN PORT TERMINAL RESISTOR SWITCH JUMPERS

### 18 CAN PORT ACTIVITY LEDS

### 19 RS485 PORT TERMINAL RESISTOR SWITCH JUMPERS

### 20 RS485 PORT ACTIVITY LEDS

### 21 FIRE ALARM INPUT MODE SELECTOR JUMPER

**I. Left position: NO mode:**
The fire alarm input is normally open, activated by closing the circuit (less safe)


**II. Right position: NC mode:**
The fire alarm input is normally closed, activated by breaking open the circuit




### 22 ETHERNET PORT

10/100Mbit/s Ethernet port

The controller can communicate with the software through this.

### 23 ETHERNET LINK AND ACTIVITY LED

Lights up when there is an active link with the remote device, flashes when data is being sent/received

### 24 AUX IN 1-2 PORT

Input ports for integration for external devices. Software configurable function and mode (default open or short)

### 25 AUX OUT 1-2 PORTS

Output relay ports to facilitate integration of external devices. Software configurable functions.




### 26 AUX OUT 3-4 PORTS

Output open collector ports for integration of external devices, with auxiliary power output. Software configurable functions. nJST-PH 2.0mm connector.

### 27 AUX OUT RELAY ACTIVITY INDICATOR LEDS

### 28 REAL TIME CLOCK BATTERY (CR1220)





# DETAILED ELECTRICAL PARAMETERS

## SUPPLY VOLTAGE: POLARITY PROTECTED

| OUTPUT | VOLTAGE | | | NOTES | CURRENT CONSUMPTION |
|---|---|---|---|---|---|
| | Min | Tip | Max | | Max |
| Power Supply | 8VDC | 12VDC | 14VDC | Standby | 50mA |
| | | | | Standby + Ethernet switch | 75mA |
| | | | | All relays activated + Ethernet | 300mA |
| | | | | With all peripherals (reader, lock) combined max. | 5A |

## OUTPUT RATINGS:

| OUTPUT | VOLTAGE | | | NOTES | CURRENT CONSUMPTION |
|---|---|---|---|---|---|
| | Min | Tip | Max | | Max |
| AUX Out 1 / 2 (relay) | | | 240VAC / 24VDC | Resistive (cos φ = 1) | 5A |
| | | | 240VAC | Inductive (cos φ = 0.4) | 2A |
| AUX Out 3 / 4 auxiliary power | | 12VDC | | PTC fuse | 200mA |
| AUX Out 3 / 4 | 0,5V | | 40V | Open collector | 100mA |
| LOCK (relay) | | 12VDC | | Jumper in 12V position (PTC fuse) | 1A |
| | | | 48VAC / 24VDC | Jumper in NO/NC position | 1A |
| Reader Supply | | 12VDC | | PTC fuse | 200mA |
| Reader BEEP, RLED, GLED | 0,5V | | 40V | Open collector | 100mA |

## INPUT RATINGS:

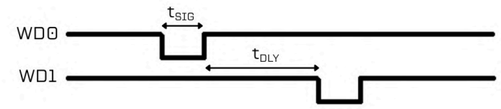
| INPUT | HIGH SIGNAL LEVEL | LOW SIGNAL LEVEL | DEFAULT | ABSOLUTE MAX. | INPUT IMPEDANCE | MINIMUM ACTIVE TIME |
|---|---|---|---|---|---|---|
| | Min | Max | | | | |
| AUX In 1 / 2 | 2V | 1V | 3,3V | +/-14V | ~40kΩ | 20 ms |
| WD0 / WD1 | 2V | 1V | 3,3V | +/-14V | ~40kΩ | 20 us |
| Push button, Opening sensor, Emergency opening sensor, Tamper | 2V | 1V | 3,3V | +/-14V | ~40kΩ | 20 ms |
| Fire alarm Input | 2V | 1V | 3,3V | +/-14V | ~2kΩ | 1 ms |

## WIEGAND TIMING PARAMETERS:

20 us < $t_{SIG}$ < 8 ms

20 us < $t_{DLY}$ < 8 ms

$t_{SIG}$ + $t_{DLY}$ < 10ms



# PREDOR SYSTEMS LTD.

Ábel Jenő utca 23, 1113
Budapest, Hungary

sales@predorsystems.com

predorsystems.com