Satel®

UNIVERSAL EXPANDER FOR CARD / CHIP READERS

INT-R

CE

int-r_en 09/11

The INT-R expander interfaces with the INTEGRA and CA-64 alarm control panels, replacing the previously offered CA-64 SR and CA-64 DR expanders. This manual applies to the expander with electronics version 2.0 and firmware version 3.00 (or later).

1. Features

- Support for two proximity card / DALLAS chip readers.
- Support for WIEGAND 26 interface readers.
- Capability to arm / disarm and clear alarm by using the readers.
- Capability to implement access control function – control of a single door.
- Relay to control the electromagnetic door lock.
- Input for door status control.
- Input for door unlocking with a button.
- Capability to automatically unlock the door in case of fire alarm.
- Additional NC type tamper input.

2. Installation and start-up

⚠ **Disconnect power before making any electrical connections.**

The expander is designed for indoor installation, in spaces with normal air humidity.

1. Secure the expander board in its enclosure.
2. Determine the expander operating mode (see: SELECTING THE EXPANDER OPERATING MODE).
3. With the DIP-switches, set the appropriate expander address. To set an address, use the switches 1-5. The address must be different from that in the other modules connected to the expander bus. The address is the sum of numerical values set on the switches 1-5 (see Table 1).

Switch number	1	2	3	4	5
Numerical value	**1**	**2**	**4**	**8**	**16**

Table 1. Numerical values corresponding to the switches set to ON position (in the OFF position, the value 0 is assigned to each switch)

4. Connect the CLK, DTA and COM terminals with wires to the appropriate terminals of the control panel expander bus. To make a connection, it is recommended to use an unscreened straight-through cable. When using the twisted-pair type of cable, the CLK (clock) and DTA (data) signals must not be sent through one twisted pair. The wires must be run in one cable. The cable length should not exceed 1000 m. If it exceeds 300 meters, it may be necessary to use several wires connected in parallel for each signal.
5. Connect readers to the respective terminals (see: CONNECTING THE READERS).
6. Connect the door status control detector to the IN and COM terminals.

7. Connect the electromagnetic door lock to the relay terminals.
8. If the door is to be unlocked by means of a monostable switch, connect the switch button to the ON and COM terminals.
9. Connect the enclosure tamper switch wires to the TMP and COM terminals (or short-circuit the TMP terminal to the COM terminal).
10. Connect the power leads to the +12V and COM terminals. If the distance to the control panel is less than 300 meters, the expander can be supplied directly from the control panel. If the distance to the control panel is higher, the expander must be supplied from another power source, which is located at a closer distance (a power supply unit or an expander with power supply).
11. Turn on the power.
12. Start the identification function in the control panel. Depending on the selected operating mode, the expander will be identified as CA-64 SR (expander for proximity card readers) or CA-64 DR (expander for DALLAS chip readers).

2.1 Electronics board

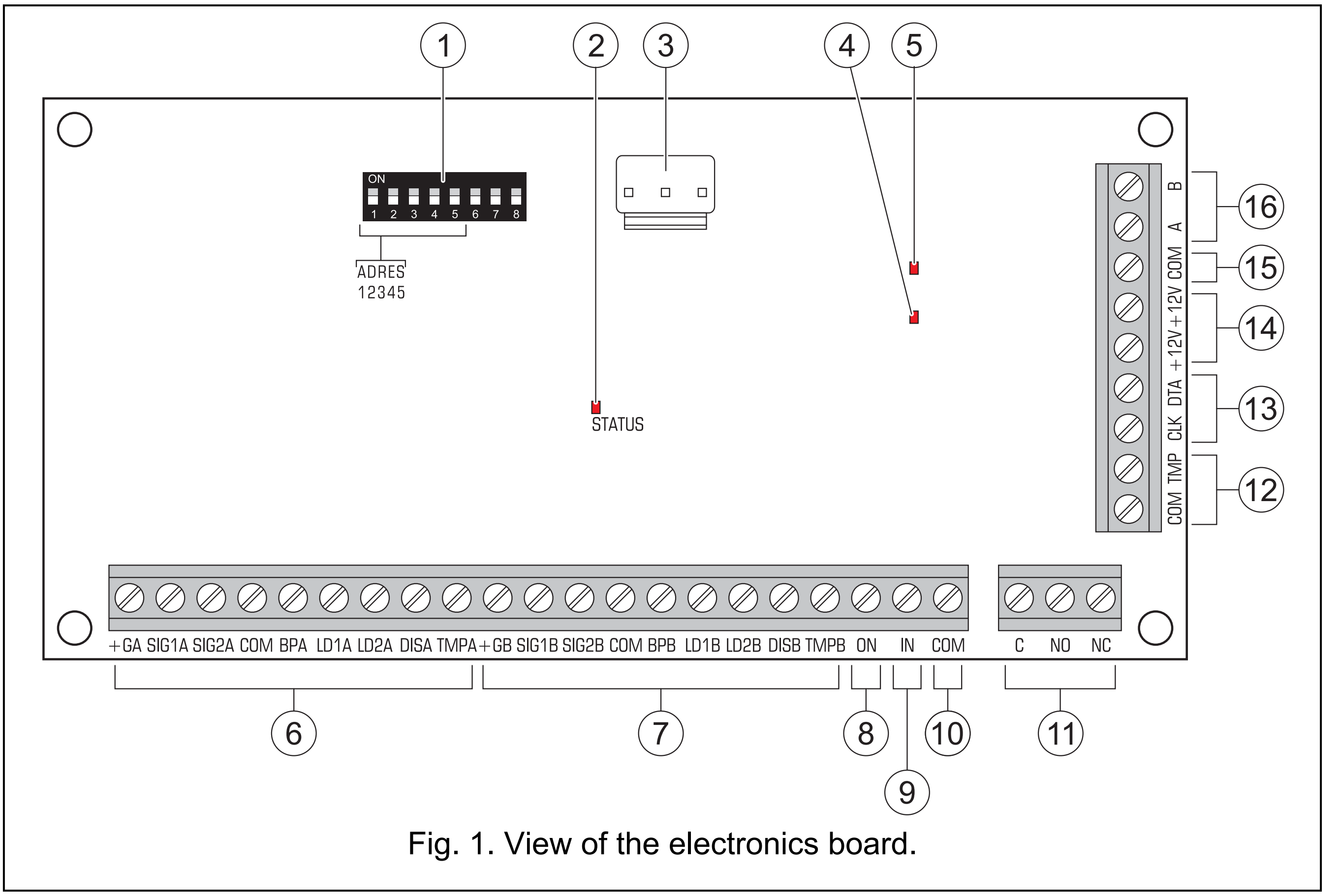

1
2
3
4
5
ON
1 2 3 4 5 6 7 8
ADRES
12345
STATUS
B
A
COM
+12V
+12V
DTA
CLK
TMP
COM
16
15
14
13
12
+GA SIG1A SIG2A COM BPA LD1A LD2A DISA TMPA +GB SIG1B SIG2B COM BPB LD1B LD2B DISB TMPB ON IN COM
C NO NC
6
7
8
9
10
11

Fig. 1. View of the electronics board.

Explanations for Fig. 1:

1 - DIP-switch package for setting an individual module address.

2 - LED indicator of communication with the control panel:
   – blinking – data exchange with the control panel;
   – steady light – no communication with the control panel.

3 - connector for future applications.

4 - LED indicator of the relay status (lit when the relay is active).

5 - LED indicator of power supply presence.

6 - terminals to connect the reader A (see: CONNECTING THE READERS).

7 - terminals to connect the reader B (see: CONNECTING THE READERS).

8 - NO type input for relay control (enables the door to be unlocked without using a reader).

9 - NC type input for door status control (if not used, it should be shorted to the common ground).

10 - common ground..

11 - relay terminals:

C - common terminal;

NO - normally open terminal;

NC - normally closed terminal.

12 - tamper circuit terminals. The terminals should be short-circuited, if no tamper circuit is connected to them.

13 - communication bus terminals.

14 - +12 V DC inputs / outputs.

15 - common ground..

16 - RS-485 bus terminals.

2.2 Selecting the expander operating mode

The device can operate as:

I - CA-64 SR expander, supporting the CZ-EMM readers (CZ-EMM, CZ-EMM2, CZ-EMM3 and CZ-EMM4) manufactured from May 2005 **factory default setting**;

II - CA-64 SR expander, supporting the CZ-EMM readers manufactured until May 2005;

III - CA-64 SR expander, supporting the WIEGAND 26 interface readers;

IV - CA-64 DR expander, supporting the DALLAS chip readers.

In order to change the expander operating mode, do as follows:

1. Turn the expander power off, if it is turned on.
2. Set the DIP-switches as required for the selected operating mode (see: Fig. 2).

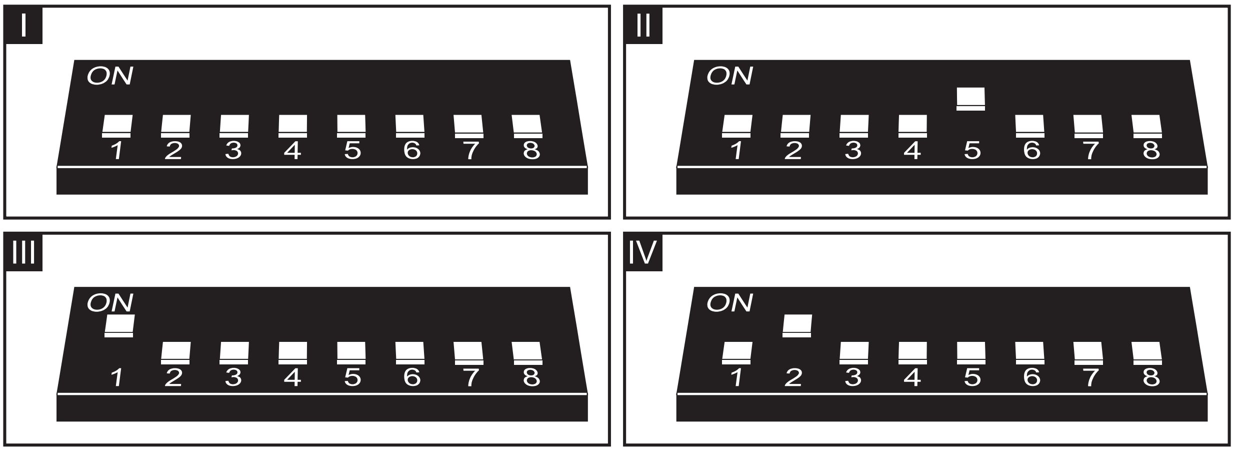


Fig. 2. The way of setting DIP-switches for the operating modes described above.

3. Short-circuit the CLK and DTA terminals.
4. Turn on the module power (connect the power supply wires to +12V and COM terminals). Saving the settings will be confirmed by slow blinking of the STATUS LED.
5. Turn off the module power.

6. Open the CLK and DTA terminals. Install the expander in the alarm system in accordance with the recommendations set out above.

Note: *WIEGAND 26 interface readers, CZ-EMM series readers and keypads with readers can be used in the alarm system. Note, however, that the proximity card assigned to the user by means of a WIEGAND 26 interface reader will not be supported by readers which cannot work in this format. On the other hand, the WIEGAND 26 interface readers will not support cards assigned to the users by means of readers which cannot work in this format.*

2.3 Connecting the readers

The length of the cable connecting the reader and the expander should not exceed 30 m.

Connecting the proximity card readers

Connect the proximity card reader manufactured by SATEL to the expander terminals as displayed in Table 2.

Expander terminal		Terminal description	Color of reader wire
Reader A	Reader B		
+GA	**+GB**	+12 V DC power supply	🟥 red
SIG1A	**SIG1B**	data (0)	🟩 green
SIG2A	**SIG2B**	data (1)	⬛ black
COM	**COM**	common ground	🟦 blue
BPA	**BPB**	sound control (BEEPER)	🟨 yellow
LD1A	**LD1B**	green LED control	■ pink
LD2A	**LD2B**	red LED control	▨ gray
DISA	**DISB**	disabling reader operation (HOLD)	🟫 brown
TMPA	**TMPB**	reader availability control	□ white

Table 2. The way of connecting wires of proximity card reader to terminals.

Notes:

- *In case of CZ-EMM3 and CZ-EMM4 readers the brown wire must be connected to the module.*
- *The black wire, which is available in the CZ-EMM3 and CZ-EMM4 readers, must be connected only when the expander and readers are to work in the WIEGAND 26 mode.*

Connecting the DALLAS chip readers

Connect the DALLAS chip reader to the expander terminals as displayed in Table 3.

Expander terminal		Terminal description	Color of reader wire
Reader A	Reader B		
SIG1A	**SIG1B**	data (0)	□ white
COM	**COM**	common ground	▨ gray
			🟨 yellow
LD1A	**LD1B**	green LED control	🟩 green
LD2A	**LD2B**	red LED control	🟫 brown

Table 3. The way of connecting wires of DALLAS chip reader to terminals.

3. Programming the expander

The expander can be programmed using:

- LCD keypad: ▶SERVICE MODE ▶STRUCTURE ▶HARDWARE ▶EXPANDERS ▶SETTINGS ▶*[module name]*;
- computer running DLOADX or DLOAD64 program: "Structure" window →"Hardware" tab →"Expansion modules" branch →*module name*.

3.1 Parameters and options

Given in square brackets are the names shown on the LCD keypad display.

Note: *Some parameters and options are not available in case of the expander operation with the CA-64 control panel.*

Name – individual name of the expander (up to 16 characters). In the LCD keypad, the name is programmed in the NAMES submenu (▶SERVICE MODE ▶STRUCTURE ▶HARDWARE ▶EXPANDERS ▶NAMES ▶*[module selection from list]*).

Partition – selection of the partition to which the expander is to belong (alarms from expander will be reported in this partition).

Lock [Lock feature] – the module can perform access control functions. After activating the option, define how the door lock control relay is to operate:

ON if partition armed [On if part. armed] – the relay will be turned on when the partition to which the expander belongs is armed. The relay will be turned off after:

- the partition is disarmed by means of the reader;
- the partition is disarmed by other means and the reader reads out the code of proximity card / DALLAS chip of an authorized user (see: ADMINISTRATORS / USERS).

Fixed ON time [ON time] – after reading the code of proximity card / DALLAS chip, the relay is active for the RELAY ON TIME.

Fixed ON time – OFF if door open [ON, open->off] – after reading the code of proximity card / DALLAS chip, the relay is active until the door is opened (the IN input is disconnected from the common ground), but not longer than for the RELAY ON TIME.

Fixed ON time – OFF if door closed [ON, close->off] – after reading the code of proximity card / DALLAS chip, the relay is active until the door is closed (the IN input is reconnected to the common ground), but not longer than for the RELAY ON TIME.

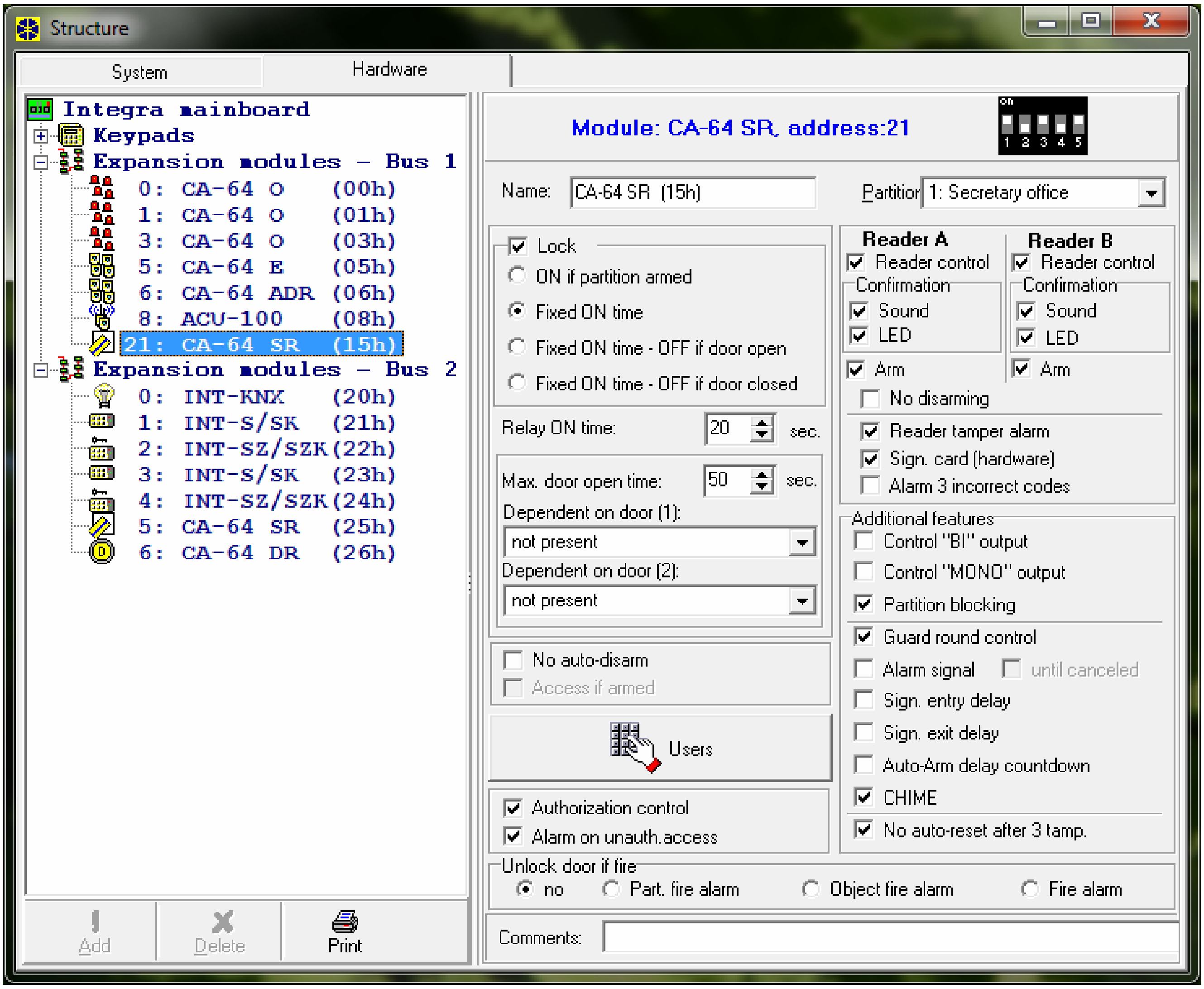
Relay ON time – the time period during which the relay is active.

Max. door open time [Max. door open] – the maximum time period during which the door can remain open. If the door is open for a longer time, appropriate information will be written into the event log of the control panel (the proximity card readers will audibly signal the long opened door). Setting the value 0 means that the door opening time control is disabled.

Dependent on door 1 [Dependent door1] / **Dependent on door 2** [Dependent door2] – you can indicate which door must be closed so that the door supervised by the expander can be opened (activation of the relay). The function allows a "sluice" type door to be created. You can indicate a door supervised by another expander or an alarm system zone programmed as the 57. TECHNICAL – DOOR OPEN type.

No auto-disarm [Code* not dis.] – when this option is enabled, presenting the card to / touching the reader with DALLAS chip will neither disarm the partition, nor activate the relay (the door will not open). In order to disarm the partition, hold the card / chip at the reader.

Access if armed [Code* in arm] – this option is available when the NO AUTO-DISARM option is enabled. If both options are enabled, presenting the card to / touching the reader with DALLAS chip will make it possible to activate the relay (open the door) even when the partition is armed (partition will not been disarmed).



Integra mainboard
Keypads
Expansion modules – Bus 1
0: CA-64 O (00h)
1: CA-64 O (01h)
3: CA-64 O (03h)
5: CA-64 E (05h)
6: CA-64 ADR (06h)
8: ACU-100 (08h)
21: CA-64 SR (15h)
Expansion modules – Bus 2
0: INT-KNX (20h)
1: INT-S/SK (21h)
2: INT-SZ/SZK (22h)
3: INT-S/SK (23h)
4: INT-SZ/SZK (24h)
5: CA-64 SR (25h)
6: CA-64 DR (26h)

Module: CA-64 SR, address:21

Name: CA-64 SR (15h)
Partition: 1: Secretary office

☑ Lock
○ ON if partition armed
● Fixed ON time
○ Fixed ON time - OFF if door open
○ Fixed ON time - OFF if door closed

Relay ON time: 20 sec.
Max. door open time: 50 sec.
Dependent on door (1): not present
Dependent on door (2): not present

☐ No auto-disarm
☐ Access if armed

☑ Authorization control
☑ Alarm on unauth.access

Reader A
☑ Reader control
Confirmation
☑ Sound
☑ LED
☑ Arm

Reader B
☑ Reader control
Confirmation
☑ Sound
☑ LED
☑ Arm

☐ No disarming
☑ Reader tamper alarm
☑ Sign. card (hardware)
☐ Alarm 3 incorrect codes

Additional features
☐ Control "BI" output
☐ Control "MONO" output
☑ Partition blocking
☑ Guard round control
☐ Alarm signal ☐ until canceled
☐ Sign. entry delay
☐ Sign. exit delay
☐ Auto-Arm delay countdown
☑ CHIME
☑ No auto-reset after 3 tamp.

Unlock door if fire
● no ○ Part. fire alarm ○ Object fire alarm ○ Fire alarm

Comments:

Fig. 3. Setting parameters and options for the expander identified as CA-64 SR in the DLOADX program.

Authorization control [Unauth. event] – if this option is enabled, opening the door without reading in the card / chip will result in appropriate information being written into the control panel event log. This event can also be signaled on the 93. UNAUTHORIZED ACCESS type output.

Alarm on unauth. access [Unauth. alarm] – this option is available when the AUTHORIZATION CONTROL is enabled. If both options are enabled and the partition to which the expander belongs is armed, opening the door without reading in the card / chip will trigger alarm.

Master users / Users – indicate the administrators (master users) and users who will be authorized to use the readers connected to the expander.

Reader control (Reader A) [Reader A] / **Reader control (Reader B)** [Reader B] – options available in the expander identified as CA-64 SR. The expander can control the reader presence. Lack of the reader will generate a trouble (see also the READER TAMPER ALARM option). The reader presence control can be effected if the reader is provided with a presence control circuit (the white wire in proximity card readers manufactured by SATEL).

Confirmation: Sound (Reader A) [Reader A sound] / **Confirmation: Sound (Reader B)** [Reader B sound] – after reading the card code and its verification by the panel, the reader can inform the user by means of sounds whether the requested function will be executed or not (see: ACOUSTIC SIGNALING).

Confirmation: LED (Reader A) [Reader A LED] / **Confirmation: LED (Reader B)** [Reader B LED] – after reading the card / chip code and its verification by the panel, the reader can inform the user by means of LEDs whether the requested function will be executed or not (see: OPTICAL SIGNALING).

Arm (Reader A) [Reader A arms] / **Arm (Reader B)** [Reader B arms] – if this option is enabled, the reader can be used for arming the partition to which the expander belongs.

No disarming [C.long not dis] – if this option is enabled, disarming by means of readers is impossible.

Reader tamper alarm [Al.rdrs tamper] – option available in the expander identified as CA-64 SR when the READER CONTROL option is enabled for reader A or B. If the option is enabled, lack of the reader will trigger tamper alarm.

Sign. card (hardware) [Hardw.signal.] – when this option is enabled, the reader will signal audibly the card code readout. This kind of signaling is useful, if there is a time lag between reading the card code and generating sound information after verification of the card code by the control panel.

Alarm 3 incorrect codes [3 wrong codes] – if the option is enabled, three times reading the code of an unknown card / chip will trigger the alarm.

Control BI output [BI outs ctrl.] – using the card / chip assigned to a code of the BI OUTPUTS type you can control the outputs of 25. BI SWITCH type.

Control MONO output [MONO outs ctr.] – using the card / chip assigned to a code of the MONO OUTPUTS type you can activate the 24. MONO SWITCH type outputs.

Partition blocking [Part.blocking] – enabling the option allow to block the partition to which the expander belongs, by means of readers. You can only block the partition which is armed. When the partition is blocked, its zones will not trigger the intruder alarm. The blocking time is defined individually for each user with the TEMPORARY PARTITION BLOCKING type of code and for the partition (BLOCKED FOR GUARD ROUND). The blocking will be activated after reading the code of card / chip of the user who uses the code type:

– TEMPORARY PARTITION BLOCKING;

– GUARD (if not authorized to disarm the partition).

Guard round control [Guard control] – reading the code of card / chip of the user who uses a code of the GUARD type can be interpreted as completion of the round.

Alarm signal [Alarm (time)] – the reader can audibly signal alarms throughout the GLOBAL ALARM TIME.

Alarm signal until canceled [Alarm (latch)] – the reader can audibly signal the alarm memory.

Sign. entry delay [Entry time] – the reader can audibly signal the entry delay countdown in the partition to which the expander belongs.

Sign. exit delay [Exit time] – the reader can audibly signal the exit delay countdown in the partition to which the expander belongs.

Auto-Arm delay countdown [Auto-arm delay] – the reader can audibly signal the auto-arming delay countdown in the partition to which the expander belongs.

CHIME [Chime zones] – the reader can audibly signal the violation of zones with enabled CHIME IN MODULE option. This applies to the zones belonging to the same partition as the module.

No auto-reset after 3 tamp. [No autorst.3t.] – it is possible to disable the feature limiting the number of tamper alarms from the expander to three (this feature prevents the same events from being repeatedly recorded and applies to consecutive, non-cleared alarms).

Unlock door if fire [Doors on fire] – define whether the fire alarm is to have an effect on the relay status:

no – the fire alarm has no effect on the relay status – the door will remain locked;

part. fire alarm – fire alarm in the partition to which the expander belongs will activate the relay – the door will unlock;

object fire alarm – fire alarm in the object to which the expander belongs will activate the relay – the door will unlock;

fire alarm – fire alarm in the system will activate the relay – the door will unlock.

4. Using the readers

Description of adding proximity cards and DALLAS chips to the users can be found in the control panel user manual.

Functions that can be realized by the reader depend on the expander settings, alarm system status and user rights. It also depends on the expander settings whether the function will be performed after presenting the card to / touching the reader with the chip, or after holding the card / chip (the WIEGAND 26 interface readers do not support the card holding function). When read out, the card / chip code is transmitted through the expander to the control panel. It is the control panel that decides whether and which function is to be performed. After receiving feedback from the panel, the reader can signal by means of LEDs or sounds whether the desired function will be executed or not.

By presenting the card to / touching the reader with the chip you can:

- activate the relay (unlock the door);
- disarm the partition to which the expander belongs
- clear alarm in the partition to which the expander belongs;
- activate the output type 24. MONO SWITCH;
- control the output type 25. BI SWITCH;
- confirm the guard round;
- temporarily block the partition to which the expander belongs, if the given partition is armed.

By holding the card / chip at the reader you can:

- activate the relay (unlock the door);
- arm the partition to which the expander belongs;
- disarm the partition to which the expander belongs
- clear alarm in the partition to which the expander belongs;
- confirm the guard round;
- temporarily block the partition to which the expander belongs, if the given partition is armed.

Note: *When you activate the relay with the reader A, the "User access" event will be saved to the control panel memory. If the reader B is used to activate the relay, the "User exit" event will be saved.*

4.1 Optical signaling

The readers offered by SATEL come with one bicolor LED (emitting red and green light) or two LEDs (red and green).

Information on partition and expander status

The LEDs indicate status of the partition to which expander belongs, as well as lack of communication between the expander and the control panel.

Green LED lit – partition disarmed.

Green and red LED blinking alternately – alarm.

Red LED lit – partition armed.

Red LED blinking with increasing frequency – exit delay countdown.

Red LED blinking steadily – no communication between the expander and the control panel.

Signaling after readout of the card / chip code

The signaling is provided by the LED which at the particular moment does not present information on the partition status, i.e. it can be either the green LED or the red one, depending on the circumstances.

2 short blinks repeated three times – the user of the given card / chip should change the code.

3 short blinks – depending on the current partition status:

- starting the arming procedure (which is equivalent to arming if no exit delay has been programmed for the partition),
- disarming and/or alarm clearing.

4 short blinks and 1 long blink – confirmation of:

- turning on the relay (which can be accompanied by disarming / alarm clearing);
- turning off the relay;
- activating the 24. MONO SWITCH type output;
- switching over the 25. BI SWITCH type output;
- guard round;
- temporarily blocking the armed partition.

1 long blink – refusal of arming (the installer can configure the alarm system so that the arming is impossible when e.g. a zone is violated in the partition, or a failure has occurred).

2 long blinks – unknown card / chip.

3 long blinks – refusal to execute the function.

4.2 Acoustic signaling

The proximity card readers offered by SATEL are equipped with a sounder. When using readers which have no sound signaling capability, you can connect an external piezoelectric transducer (5 V) to the expander for each reader (BPA and COM terminals for reader A, BPB and COM terminals for reader B).

Information on events

Sounds can be used to transmit information on events in the partition to which the expander belongs, as well as on a long open door.

5 short beeps – zone violation (CHIME).

1 long beep every 3 seconds, followed by a series of short beeps for 10 seconds and 1 long beep – exit delay countdown (if the delay time is shorter than 10 seconds, only the final sequence of short beeps will be generated).

A sequence of 7 beeps of diminishing duration, repeated every few seconds – auto-arming delay countdown.

1 short beep every 150 ms – long open door.

2 short beeps every second – entry delay countdown.

Continuous beep – alarm.

1 long beep every second – fire alarm.

Note: *If the device is working as the CA-64 SR expander, which supports the CZ-EMM readers manufactured until May 2005, the alarm will be signaled in the same way as the fire alarm, i.e. by a long beep every second.*

Beeps generated after reading the card / chip code

1 short beep – confirmation of the card / chip code readout.

2 short beeps repeated three times – the user of the given card / chip should change the code.

3 short beeps – depending on the current partition status:

- starting the arming procedure (which is equivalent to arming if no exit delay has been programmed for the partition),
- disarming and/or alarm clearing.

4 short beeps and 1 long beep – confirmation of:

- turning on the relay (which can be accompanied by disarming / alarm clearing);
- turning off the relay;
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- switching over the 25. BI SWITCH type output;
- guard round;
- temporarily blocking the armed partition.

1 long beep – refusal of arming (the installer can configure the alarm system so that the arming is impossible when e.g. a zone is violated in the partition, or a failure has occurred).

2 long beeps – unknown card / chip.

3 long beeps – refusal to execute the function.

5. Specifications

Supply voltage	12 V DC ±15%
Standby current consumption	110 mA
Maximum current consumption	150 mA
Relay contacts rating (resistive load)	5 A / 30 V DC
Environmental class	II
Operating temperature range	-10 °C...+55 °C
Maximum humidity	93±3%
Dimensions	140 x 68 mm
Weight	80 g

The declaration of conformity may be consulted at www.satel.eu/ce

SATEL sp. z o.o.
ul. Schuberta 79
80-172 Gdańsk
POLAND
tel. + 48 58 320 94 00
info@satel.pl
www.satel.pl