

URBACO



**STARTUP AND USE OF THE
8633B PLC
AND THE EXTENSION
8633 AS
Second access**

**The automaton described hereafter is in conformance with the
CE standard.**

It fulfills the requirements of the following standards and regulations
as a whole and at the level of each component:

- EN 50081-1 (1992 edition)
- EN 50082-1 (1997 edition)
- EN 50 022
- UL 94 V-0
- DIN 43 880
- CEM U98/001 (regulations CEM 89/336/CEE)

SUMMARY

I GENERALITIES	3
II TECHNICAL SPECIFICATIONS, MATERIAL OVERVIEW	4
2.1 – One access configuration	4
2.2 – Two accesses configuration	6
III FUNCTIONS	7
3.1 - System operation parameters	7
3.2 - Security functions	8
3.3 - Technical supervision	9
3.4 - Information on the state of the system, detection of the anomalies, alarms	10
3.5 – Visualization status of entries and exits.....	11
IV STARTUP	12
4.1 - Tools necessary for installation	12
4.2 - Integration in the whole system	12
4.3 - Assembly/disassembly and connections	12
4.4 - Methods of operation and control	15
4.5 - Implementation of the parameter setting	16
4.6 - Initialization of detectors and safety loops	17
V USE	18
5.1 - Various access configuration types	18
5.2 – Visual display and controls of operating conditions	19
5.3 - Stop equipment and standby mode operation.....	20
VI MAINTENANCE	21
6.1 - Preventive maintenance	21
6.2 - General maintenance	21
APPENDIX I Test Documents and certifications	23
APPENDIX II Functional Diagrams	25

1 GENERAL INFORMATION

A PLC is a small computer specialized in the treatment of processing accesses and control of electrical signals.

In its standard version, the 8633B PLC can ensure the management of operation of a protected access with:

- One or two automatic retractable bollards functioning simultaneously, equipped or not with one or two upper and lower limit switches
- Two electromagnetic safety loops connected to integrated detectors,
- A light signal with double disc Ø 70 mm red and orange (or red and green),
- An emergency stop key
- And any other control unit generating a dry contact

The 8633B PLC also supervises the operation of the power group of the pneumatic compressor.

It is possible to operate a second independent access meeting the same characteristics by adding an extension 8633 AS PLC.

Any other desired configuration (access equipped with more than two bollards for example) must be the subject of a feasibility study by the engineering and design department of URBACO Company.

When an access is equipped with two bollards, the installer must add a branch package (sold separately) in the manhole of the ground or cabinet of the technical power station in order to connect both bollards to the terminal block concerned. Please consult the specific installation documents.

To simplify, in the continuation of this document, the word "bollard" indicates that there could be one or more.

URBACO 8633B PLC is the "brain" of the automatic installation of the access control. It centralizes the information, analyses, and reacts according to its parameters.

Thus, it orders **the movements of the bollard and the operation of the sidelights**, according to:

- The position of the bollard (up or down)
- Orders, which it receives from users (by beep radio operator, key, card reader, contactless badge, emergency stop, etc)
- The information transmitted to it by the electromagnetic safety loops hidden in the ground on both sides of the bollard, which detect the presence of a metal mass above them and inhibit the rising of the bollard if a vehicle is positioned above

It triggers an alarm in case of anomaly, for example loss of air or blocked bollard.

Finally, the PLC monitors the correct operation of the safety loops, and counts the number of working cycles for statistical or maintenance needs.

It is programmed in the factory and configured on-site.

Each access can function in controlled access only, controlled access and controlled exit, automatic access or automatic exit or controlled access and automatic exit (if another detector is added).

Storage and operation conditions:

Keep the PLC in a dry a well-ventilated environment, at a temperature ranging between -20°C and +80°C

(-4°F and +176°F). Do not expose it to sun.

The optimal operation is ensured in temperature ranging between -10° C and +70° C (+14° F and +158° F).

Do not open or dismantle the case. This will void the guarantee.

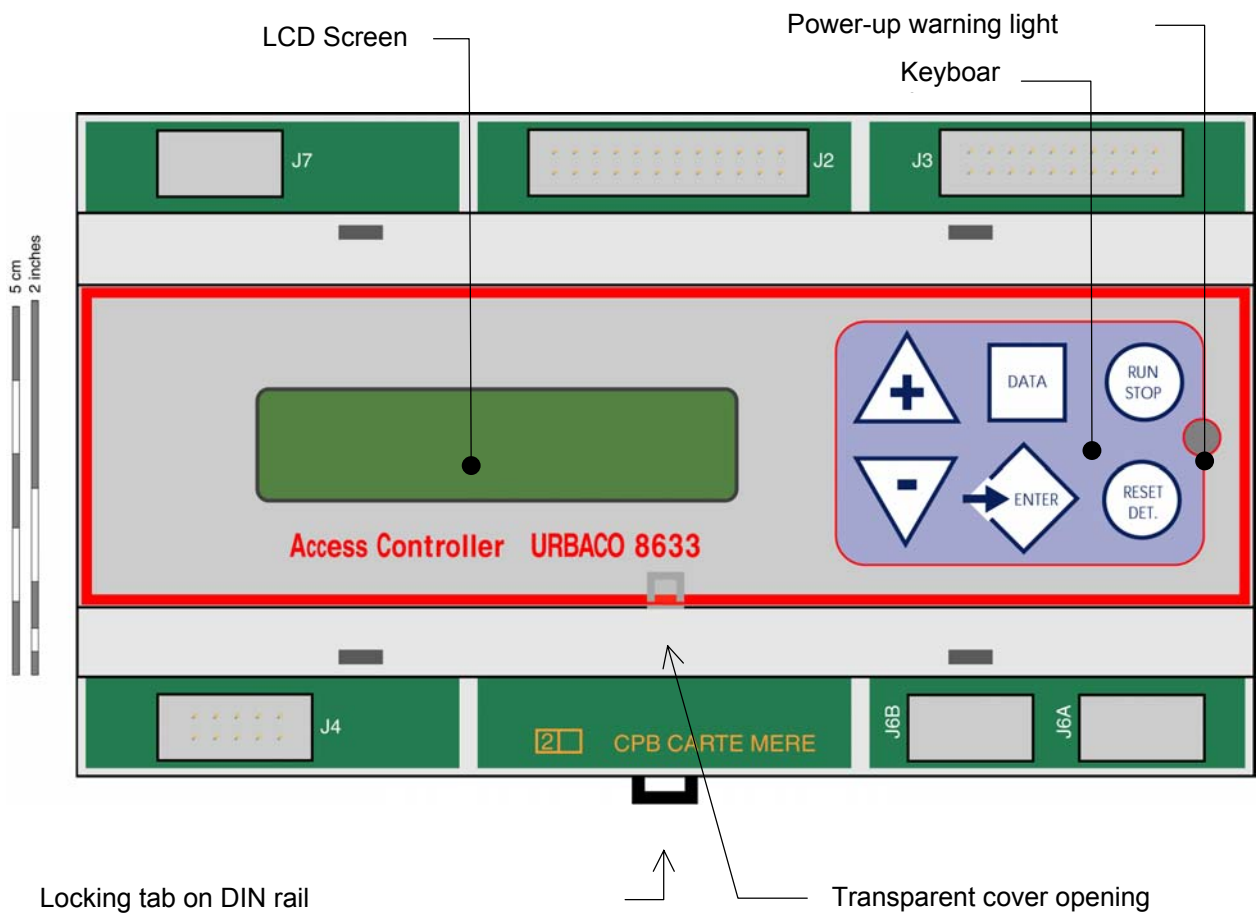
2 TECHNICAL SPECIFICATIONS, MATERIAL OVERVIEW

In "one access" configuration the 8633B PLC is composed of two parts.

The **8633B console** (160 X 90 X 73 mm), which contains three electronic cards in a NORYL extinguishable gray case (standard UL 94 V-0).

The "main" controller has a 6 key keypad for setting parameters, and an LCD screen of 16 characters protected by a small transparent cover. It is powered by 12 VAC and is connected to ground (J7 connector).

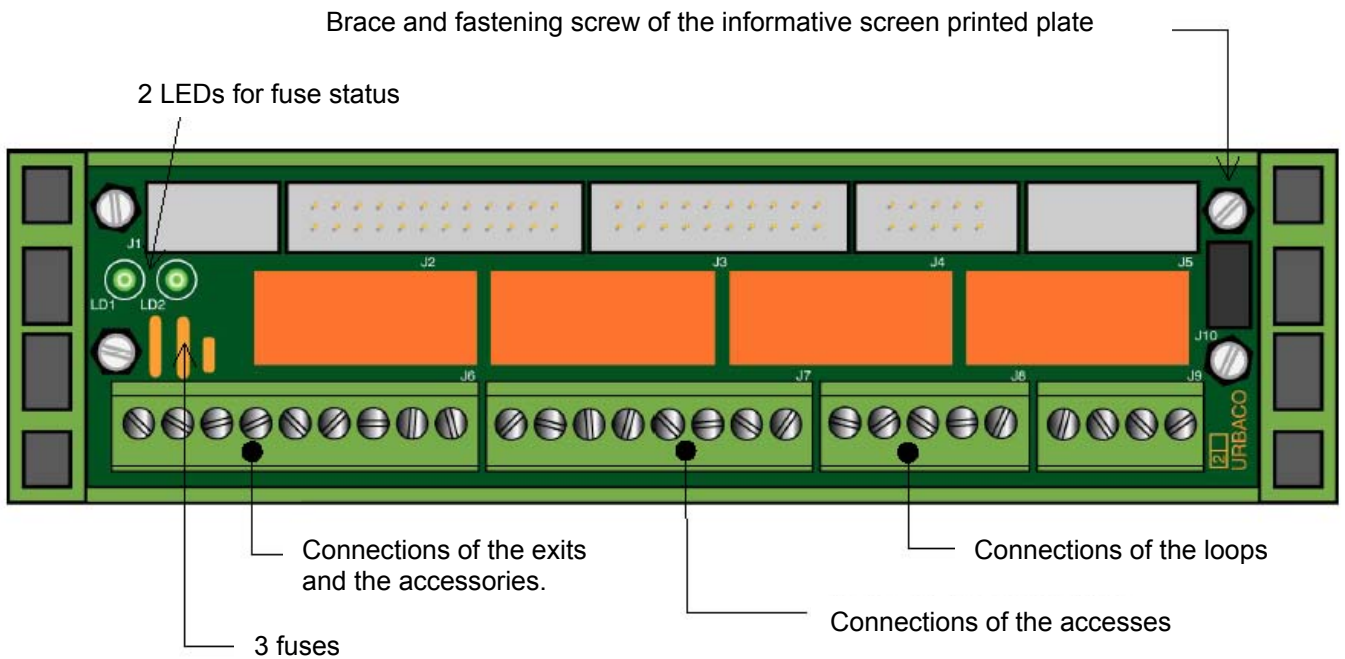
Three 0.5 A fuse protects the power supplies from the electronic cards which it contains.



The terminal block (170 X 58 X 45 mm) in extruded PVC section and green coloured nylon.

The connector block is supplied with 24 VAC (J1 connector). It contains three thermal fuses automatically resetting once they are re-engaged once their temperature becomes normal:

- A 1.6 A fuse with a blown fuse protects the 24 VAC power supply accessories: radio operator receiver, card reader.
- A 1.6 A fuse with a detection LED monitor protects the power from the 24 VAC exits, solenoid, sidelights.
- A 0.5 A fuse protects the accesses: up and down orders, upper and lower limit switches, emergency stop.



Console and terminal block are connected by two flat cables (24 and 20 conductor ribbons) and a twisted braided cable adjusted in the factory (connectors J2, J3 and J4). They can be put on DIN EN 50 022 rail according to the standard DIN 43 880.

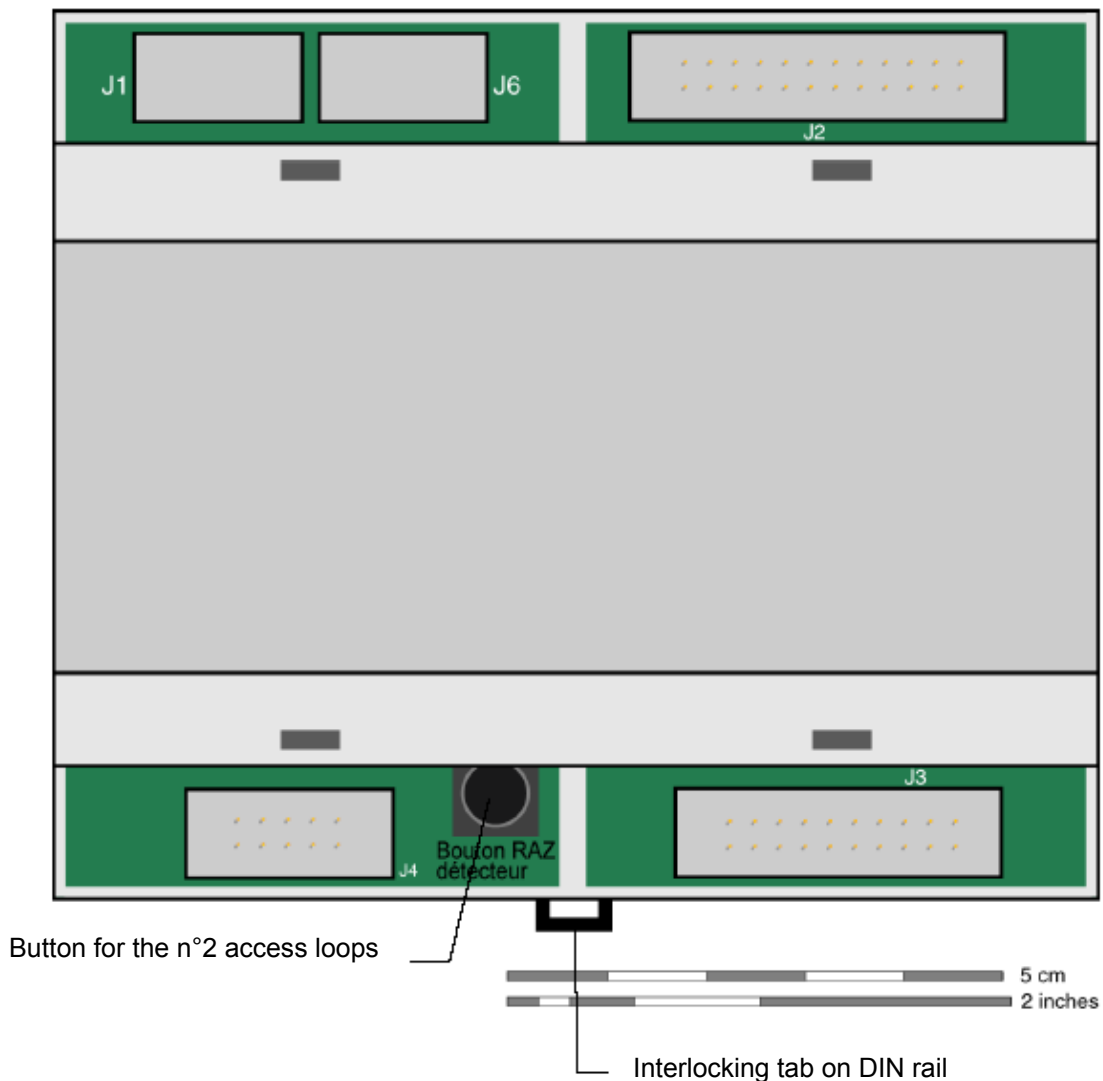
The 8633B PLC contains an electronic detector with two integrated channels (not visible from the outside) which allows the direct connection of both of the safety loops on the terminal block without using the relay. The memory of this detector is safeguarded in case of the presence of a vehicle on a safety loop during the current loss of power; it preserves the memory of the presence until power has been restored.

Note that the integrated detector allows the separate identification of both the activated and non-activated loops but does not identify the traffic direction. Both of the safety loops, placed on both sides of the bollard, have an identical role. If only one of them is activated before the PLC considers that a vehicle is present. It is necessary that both are free before the PLC determines that the access is free. This ensures the security for a crossing user to change directions while on the safety loops.

2.2 In a two access configuration, the 8633B PLC presented above is supplemented by a 8633 AS slave extension made up of two parts

The **8633 AS console** (110 X 90 X 58 mm) contains two electronic cards in a gray NORYL casing (standard UL 94 V-0).

The PLC is powered with 12 VAC and is connected to ground (J1 connector). Three 0.5 A fuses protect the power supplies from the electronic cards they serve.



The 8633 AS PLC "slave" is connected to the "master" PLC by a flat cable (connection RS 232, J6 connectors or J6A). It configures itself from the keypad of the "master" 8633B PLC, which also uses the screen to post information messages or assist in the configuration. Once configured, the PLC 8633 AS functions independently.

The **terminal block splice** (170 X 58 X 45 mm) in extruded PVC and green coloured nylon. It is **the same as the 8633B PLC** and has the same attributes see previous description.

The **8633 AS PLC has the same functional attributes** as 8633B PLC. The difference is in the absence of the keypad and the LCD screen, since these are provided on the 8633 B PLC. Apart from these details, all the descriptions of the previous page concerning the 8633B are also applicable to the 8633 AS.

3 FUNCTIONS

Five families of functions are ensured by the configuration of the 8633B PLC:

- The operation of the access
- Safety measures
- The technical supervision of the system by the self-diagnosis and the anomalies detection
- Information in real time on the state of the system
- The visualization of the status of the entries and the exits

This chapter describes the possibilities offered by the 8633B PLC presented here by "topics" and not in the order they appear on the screen during configuration. The implementation of the configuration will be described later in Chapter 4 STARTUP.

The consequences of the configuration choices described below are also illustrated in the operation flow charts in Appendix 2 FUNCTIONAL DIAGRAMS.

3.1 System Operation Parameters

The Configuration of the access operation concerns:

- The operating mode of the rising of the bollard (automatic, manual or without electromagnetic safety loops)
- The descent command with or without detection
- The communication by LCD display (French, English, Spanish, Swedish, German)

3.1.1 Rising of the bollard

In automatic mode (display message: "STAND ALONE"), the PLC orders the rising of the bollard once the safety loops are clear and after the end of the advance notice time delay (see **3.2**).

This mode is advised in all the cases where the access is equipped with loops.

In manual mode (display message: "MANUAL WORKING"), the PLC waits to receive the rising order, which will carry out if the safety loops are free and after the advance notice time delay (see **3.2**).

The MANUAL Operation mode makes visual monitoring of the bollard necessary and an operator should monitor the access. The system will raise the bollard even if a user is very close. The user's arrival on the safety loop, even at a low speed, does not give to the system time to stop the rising movement and reverse the motion to lower the bollard for mechanical reasons of inertia.

In operating mode without loops (display message: " NO LOOPS."), the PLC executes on order to rise after the end of the advance notice time delay even in case of the presence of a vehicle if an order is received to raise the bollard.

Operation in mode "without loops" makes visual monitoring of the bollard necessary and the operator must monitor the access. The system will raise the bollard even if a user is very close or even on top of bollard. This operating mode is not advised.

Caution: "Without loops" mode has priority over the configuration of "order with or without detection" in the following paragraph (descent of the bollard) and uses the information transmitted by the loops. For example, if the user chooses "NO LOOPS" then the opposite option "Cd WITH SAFETY", the last choice will not be registered. The registered command will be "Cd W/O SAFETY" and the corresponding operations will apply.

3.1.2 Descent of the bollard

In orders with safety mode (display message: " Cd WITH SAFETY"), the order to lower the bollard transmitted by the operator (by radio beep operator, key, contactless badge without contact, etc.) is taken into account only if at least one safety loop is activated by the presence of a vehicle. This choice involves stopping on the loop, in front of the bollard to order its descent.

Caution: this "WITH SAFETY" mode is inhibited by the configuration of "NO LOOPS" described in the previous paragraph. If the user chooses " NO LOOPS" then the opposite option "Cd WITH SAFETY",

the last choice will not register leaving the priority to "Cd W/O SAFETY", and the corresponding operations will apply.

In orders mode without detection (display message: "Cd W/O SAFETY "), the descent order to the bollard is carried out as a reception by the PLC.

This choice makes it possible to order the descent of the remote bollard, without being present on a loop.

This choice is reasonable if it is difficult to park. There is the risk of the bollard rising using this function is an undesirable vehicle (or even a bicycle or a stroller) is in front of the authorized user, and the bollard rises.

3.1.3 Communication language

The LANGUAGE configuration allows a choice of five languages for screen displays: French, English, Spanish, Swedish, and German. **English is the default language** (display message: "LANGUAGE: ENGLISH")

3.2 Security functions

The safety parameters relate to:

- The detection of vehicles
- The operation of light signals
- The advance notice time delay (before the rising of the bollard).

3.2.1 Detection loops of the vehicles

Sensitivity of safety loop N°1 (display message:"SENS. SAFE1") can take three values: minimum, medium, and maximum (MED - medium by default). A higher sensitivity allows the detection of a lower metallic mass (bicycle, stroller) or elevated (truck, SUV).

Increasing of this sensitivity to value MAX should be made only if certain vehicles are not detected, or to decrease this sensitivity to value MIN if low mass metallic objects (bicycles, stroller, etc.) activate the detector in an undesirable way.

Sensitivity of safety loop N°2 (display message: "SENS. SAFE2") operates similarly to loop N°1.

3.2.2 Signals/Side Lights (fixed or blinker)

The choice of blinker **signals** (display message: "BLINK LIGHTS") is appropriate for a standard installation equipped with a red/orange light signal. This option corresponds to the illumination of the orange blinker when the bollard is down, red blinker just before it rises during the advance notice time and while rising, and fixed red light signal when it is in the upper position or while it descends.

Note: the light signals can be ordered by the PLC only if the bollard is equipped with a lower limit switch and it is configured by the option "LIMIT SW. ALL" or the option "LIMIT SW. LOW" of the upper and lower limit switch configuration setting.

In case of optional ordering of a red/green light signal, it is necessary to choose the configuration **fixed sidelights** (display message: "STEADY LIGHTS"). It corresponds to the illuminating of the fixed green light signal only when the bollard is in the down position and with the lighting of the fixed red light signal when the bollard is in the up position or moving.

Caution: In order to respect the conventional use and the possible standards or directives in effect, it is advised that only the red/green light signal for an operation in "STEADY LIGHTS" be used (not green blinker) and that only the red/orange light signal for an operation in "blinker" (not fixed orange light signal) is used.

3.2.3 Advance notice time delay

The advance notice time delay (display message: "PREWARN") corresponds to the time during which the PLC, having already lit the red light signal after the release of the loops, waits before ordering the

effective rising of the bollard. This waiting is used to inform the user that the bollard will rise. The advance notice time delay is configured for 0 to 15 seconds and is at 3 seconds by default.

The calculation starts as soon as the safety loops are clear. During this advance notice phase, each arrival or passing of a vehicle on a loop stops the process and makes the light signal become orange (or green). The count resets to zero upon clearing of the loops.

A time too short is likely to surprise a user who pulled out when seeing the orange light signal (or green) and the lowered bollard beginning its ascent.

A time too long time supports the passage of several successive vehicles without the control possibility.

3.3 Technical supervision

These parameters relate to:

- the operation of the compressor
- the presence or not of upper and lower limit switch supervising the movements of the bollard
- the normal rising and descent movement

3.3.1 Compressing time

Compressing time (display message: "COMP TIME") corresponds to the maximum duration of the compressor operation beyond which the system will not be in alarm with the deactivation of the compressor. "Compressing time" is configured from 3 to 10 minutes (3 minutes by default).

Once the pressure switch orders the start-up of the compressor, the PLC begins its calculation by checking that the duration "COMP TIME" is not reached.

When the pressure reaches the desired value of 5,5 bars, the pressure switch stops the compressor, and the PLC stops its calculation.

If the pressure does not reach the desired value in the configured time "COMP. TIME" The PLC stops the compressor and puts the system in alarm, with the display "DEFAULT COMPR." The system may have an air leak.

The start-up procedure after alarm is described in paragraph 6.2.

3.3.2 Upper and lower limit switch

They are two normally open switches. One is closed when the bollard is in the upper position (upper limit switch), and remains open otherwise. The other switch is closed when the bollard is in the lower position (lower limit switch), and remains open otherwise.

In upper and lower limit switch (display message: "LIMIT SW. ALL"), the PLC is informed of the good execution by the bollard in rising or bollard descending based on the command sent to it. In the case of anomaly, the PLC sets off the suitable alarm and displays one of the following messages:

Waiting of the lower limit switch (display message: "WAIT L L.SW.") if the lower limit switch has not been activated after a descent order and surpassing the configured time ("WORK TIME.", see hereafter).

Waiting of the upper limit switch (display message: "WAIT U L.SW.") if the upper limit switch has not been activated after a rising order and surpassing the configured time ("WORK TIME", see hereafter).

It is interesting to note that the system tries to rise three times before failing then defaults to lower the bollard and display the alarm message.

The start-up procedure after alarm is described in paragraph 6.2.

All the time when the bollard is in the down position or in rising motion, until the activation of the upper limit switch, the safety loops are active. They maintain the bollard in the lower position with a loop presence or make the bollard reverse down if it had started to rise.

In lower limit switch mode (display message: "LIMIT SW. ALL"), the PLC is aware of the proper execution of the descent of the bollard based on the order sent to it. In case of anomaly, the PLC sets off the suitable alarm and displays the following message:

Waiting of the lower limit switch (display message: "WAIT L L.SW.") if the lower limit switch has not been activated after a descent order and surpassing the configured time ("WORK TIME", see hereafter). The start up procedure after alarm is described in the paragraph 6.2.

All the time when the bollard is in the down position or in rising motion, until the activation of the upper limit switch, the safety loops are active. They maintain the bollard in the lower position with a loop presence or make the bollard reverse down if it had started to rise.

In no upper and lower limit switch mode (display message: "LIMIT SW. NO"), the PLC is not informed of the upper or the lower position of the bollard. It uses value configured "WORK TIME" (see hereafter) to estimate that the order was carried out and display **the supposed state** of the bollard is. *In this mode, the two-tone sidelight does not function.*

All the time when the bollard is in the down position or in rising motion, until the activation of the upper limit switch, the safety loops are active. They maintain the bollard in the lower position with a loop presence or make the bollard reverse down if it had started to rise.

3.3.3 Operating time

Operating time (display message: "WORK TIME") corresponds to a large evaluation of the movement duration of the bollard (rising or lowering, plus one or two seconds). The operating time does not control the speed of this movement, but is the pneumatic circuit. It is configurable from 1 to 15 seconds and is defaulted at 7 seconds.

During the movement of a bollard for which there is an active upper/lower limit switch (descent and rising in configured mode "LIMIT SW. ALL" or descent only in configured mode "LIMIT SW. LOW"), the operating time is used to check that the movement was properly completed within the configured time by "WORK TIME.". The PLC activates an alarm when the operating time is exceeded and the upper/ lower limit switch corresponding to the movement has not been activated. The bollard may be blocked.

During the movement of the bollard for which there is no active upper/lower limit switch (descent and rising in configured mode: "LIMIT SW. NO" or gone up only in configured mode "LIMIT SW. LOW"), the operating time is the time during which the safety loops are active: they maintain the bollard in the lower position in the presence of a detection or make the bollard go down if it has started to go up. When the operating time is elapsed, the PLC estimates that the order was carried out, and displays **the supposed state** of the bollard.

3.4 Information on the state of the system in operation, detection of anomalies and alarms

During the normal operation of the system, the controller receives, performs and transmits two way communications with the access and its peripherals.

In standby mode, the bollard is in the up position, the light signal is fixed red and the screen displays in alternation the messages "LIMIT SW. UP" and "SETTING = STOP" directing the user to pass in parameter setting mode (see 4.5).

With the receipt of a descend command, an access cycle starts descending then rising the bollard whose stages are registered in real time on the screen: "LIMIT SW. LOW", and "LIMIT SW. UP" before returning back to the initial situation of the standby mode. The sidelight has progressively changed state.

At the activation of the emergency stop key, the bollard descends and the screen displays "EM.ST". When the button is deactivated, the system returns to the standby mode situation after release of the safety loops.

Particular case: the operator orders the descent of the bollard, but does not cross the access. After 3 minutes, the display indicates "WAIT PASSAGE". The bollard will rise only after the passage of a vehicle on the safety loops or the restart of the loops by the "RESET DET." key (See 4.6). Caution: if the detection is sensitive, the passage of a bicycle can initiate the rising of the bollard.

The detection of an anomaly causes the safety setting of the system by lowering the bollard and red light blinking and activates an alarm by displaying of the noticed anomaly:

"WAIT L L.SW." for a lower limit switch not detected

"WAIT U L.SW." for an upper limit switch not detected

"DEFAULT COMPR." for an exceeded run time of the compressor

It is necessary to contact a technician (**see 6.2**).

A defect on a loop does not cause a safety setting, but activates the display:

"SAF1 = D" or "SAF2 = D" for a cut in short-circuit loop. This message is visible only in the "visualization of the entries and exits" mode (**see 5.2**). Consequently, if a descent command is initiated, the bollard will remain in the downward position with the illuminated amber or green signal because one of the loops is treated as activated. The defect on the loop is interpreted by the PLC as a presence of a vehicle).

The safety of the bollard is ensured by the monitoring of the electromagnetic loops before and during the rising movement, in order to reduce the shock risk of a vehicle. When a metal presence is detected on one of the loops:

- if the terminal is in the down position, it remains there.
- if the terminal is rising, it goes down again.

However, keep in mind the inertia of the system that does not allow the reverse motion in a sufficient short time to avoid a "contact" of the vehicle with the bollard if the vehicle does not stop.

3.5 Visualization of the state of the entries and the exits

In "RUN" mode this allows visualization of the status of entries and exits in order to compare with what is visible on the site or to seek the origin of a system malfunction (see 5.2)

Available information:

The upper/lower limit switch is activated:

Display message "1: L L.SW.=x U L.SW.=x "

1 indicates the number of the access and X is 0 or 1 for not activated or activated respectively.

The loops are activated:

Display message "1: SAF1=x SAF2=x "

1 indicates the number of the access and X is 0 or 1 or D, for not activated or activated or in default respectively.

The emergency stop key or the compressor is activated:

Display message "1: EMERGENCY STOP=x COMP=x "

A rising or a descending ordering is given:

Display message "1: A Cd=x D Cd=x "

The red or orange (or green) light signals are activated:

Display message "1: RLIG=x O.LIG=x "Here the O.LIG=x message relates to the amber or the green light according to the option chosen with the purchase.

The electromagnetic gates are activated or the compressor is at fault:

Display message "1: SV=x DEF.COM=x "

For the preceding messages, 1 indicates the number of the access and X is 0 or 1, for not activated or activated respectively.

The number of carried out cycles:

Display message "1: nnnnnn CYCLES "1 indicating the number of the access

4 STARTUP

4.1 Tools necessary for installation

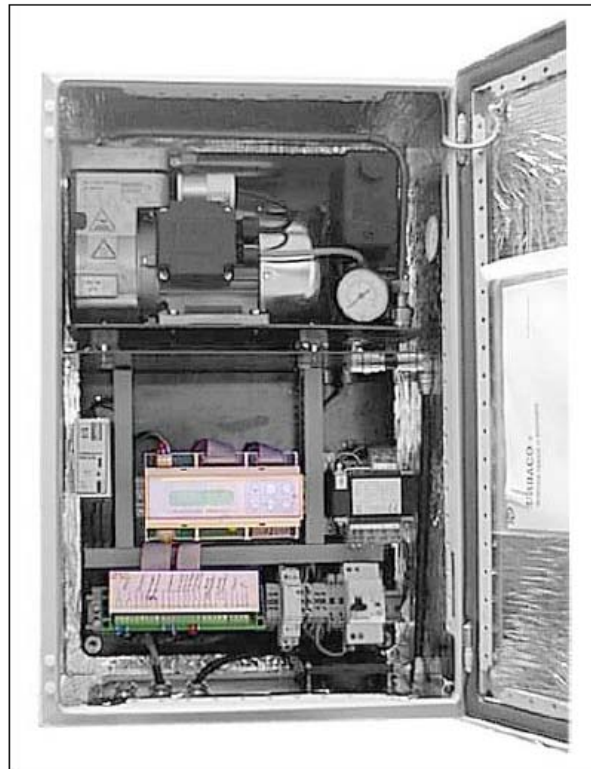
The PLC is delivered mounted and cabled to its terminal block. Some of the following information concerns only its removal for maintenance.

Use a small flat screwdriver (blade of 3.5 mm maximum), to tighten the terminal block screws. The terminal block connects the entries, the exits and the loops.

4.2 Entire Integration

This illustration shows the Micro Technical Power station Electro pneumatic equipment CC1R110P for the management of an access. The 8633B PLC is mounted on a DIN rail and its terminal block is on the lower rail. The unit is delivered to be installed. Only connections on the terminal blocks of entries has to be made on site (loops, light signals, race ends, accessories optional).

The cables present in the cabinet are used for power, accessories, entries and exits.



4.3 Assembly - disassembly (replacement) and connections

Assembly

The terminal block fits by pressure on lower DIN rail of the micro Technical Power station. Remove it by opening the clamp grip, using a screwdriver.

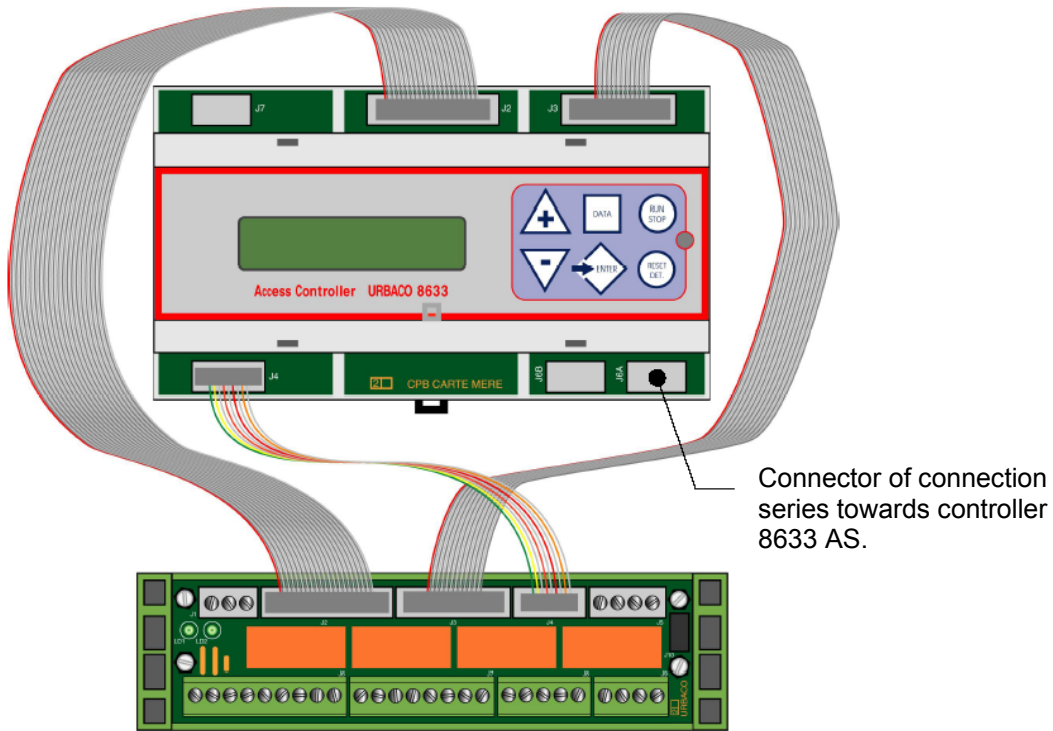
The console is placed on middle DIN rail by initially positioning it on the upper lip of the rail, then pushing to the bottom, with a screwdriver, the black strip in order to engage the clamp on the lower lip. It can be withdrawn by the same operations in the opposite order.

Connections

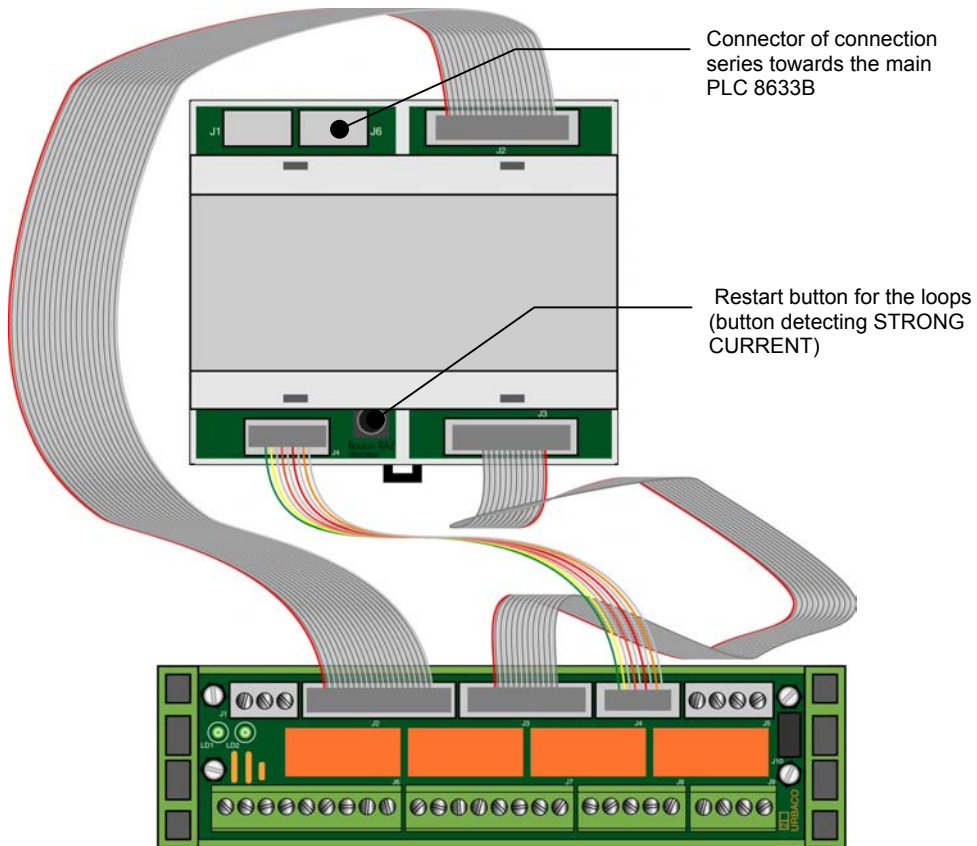
ALL CONNECTIONS MUST BE DEENERGIZED

Once connected, the ribbon cables pass behind the console, as in the photograph above.

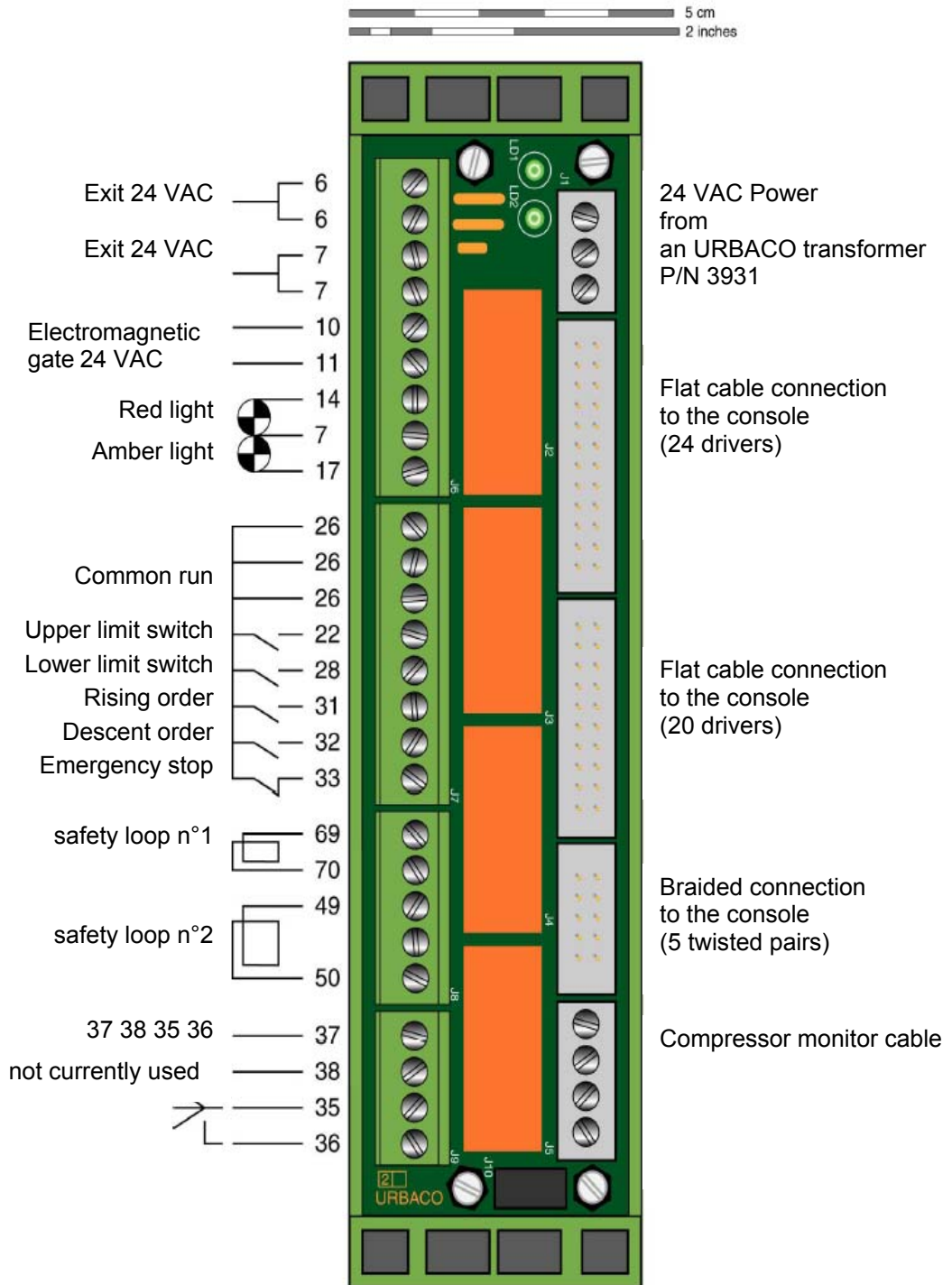
8633B PLC: diagram of console connections to the terminal block



8633 AS Slave PLC diagram of console connections to the terminal block



8633B PLC (and 8633 AS): diagram of terminal block connections

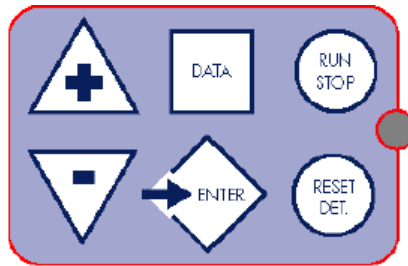


Note:
ALL CONNECTIONS MUST BE CARRIED WHILE POWERED

Check before energizing

Check that the driver ribbons are secured in place. On the connector block verify that all the terminal block screws are tight.

4.4 Operation and control methods



The console seizure keys to the 8633B PLC make it possible to visualize the status of the entries and exits on the LCD screen and the progression of the PLC configurations.

The keys also make it possible to modify this configuration.

Certain keys are "contextual" meaning that their effect depends on the status of the system at the time of use.

The use of each key will be progressively detailed as follows:

Key RUN/STOP makes it possible to run or stop (*when the screen displays in alternation "SETTING=STOP" and "LIMIT SW. HIGH"*)

- **With the mode "RUN"**: the protected access is under operation and the PLC controls the movements of the bollard. **The observation** of the operation of the bollard only is possible by the visualization status of the entries and exits of the PLC.

- **With the mode "STOP"**: the access is in "free passage" (the bollard is in the downward position and the light signal is amber or green and the movements of the bollard are inhibited. You can then carry out the configuration.

The keys + and - are used to pass, according to the "run" principle from one parameter to another or from access 1 to access 2. Once a parameter is selected, the keys are also useful to increase or decrease the corresponding value or to pass from one option to the other.

The key DATED activates the visualization mode (in mode "RUN") or modification mode (in mode "STOP") of the values of the skeletal functions.

Key ENTER validates the modification of a skeletal value.

The key RESET DET. restarts the detectors and their detection loops for access 1 and this access only. The restart of the detectors and their detection loops for access 2 is done by pressing on a button located on the 8633 AS PLC slave. (see 4.6).

4.5 Implementation of the configuration

To carry out the configuration, the system must be powered and the bollard must be in the up position. It is not possible during a working cycle.

The LCD displays in alternation the following messages: "BOLLARD UP" and "SETTING = STOP".

Ensure that all the precautions necessary are taken for protection of the operator on site (fluorescent jacket of building site, traffic signs).

Ensure that no accounted for vehicle arrives on the site. No vehicle will have to be placed above the loops during the operation, the electromagnetic value at the time of the RESET is considered as the "0" value with no vehicle on the loops.

- 1 Activate the **STOP mode** by a pressing the **RUN/STOP** key. The screen briefly displays " SETTING MODE", then "ACCESS SETTINGS X" with X = 1 or 2 if the system is equipped to manage two accesses. At the same time the terminal is put in low position; the red light signal blinks.
- 2 To change the access on which you want to act (1 or 2), press on the **DATED** key. Then modify the access with the other keys. Validate your choice, when it appears on the display, by pressuring on the **ENTER** key.
- 3 Select successively the parameters to modify using the keys **+** and **-**. The path is done in the order indicated in the opposite table in the **FUNCTIONS** column. The selected function appears on the display, and with it, the corresponding value by default previously configured.
- 4 Press on the **DATED** key to modify the value. When the value of the parameter blinks it can be modified while pressing on the keys **+** or **-**. If desired, see all possible value options until the appropriate value is found.
- 5 To accept the blinking value chosen, press on key **ENTER**. To cancel a change to value by passing the **DATED** key to leave the modification mode.
- 6 The display does not blink anymore and selection of a new function by the **+** or **-** keys as indicated in "3". Proceed successively for all the functions that need modification.
- 7 Finally, leave parameter setting mode by pressing the **RUN/STOP** key. The screen then briefly displays "END SETTING". Then the system restarts posting the messages "8633B v2.0", and "INITIALIZATION".

Warning: if the loops are regarded as free, taking into account the value of the magnetic environment preserved in the memory of the detector, the bollard goes up.

Note: during the first use after start-up under voltage, you have to restart the safety loops while pressing on the **RESET DET** key. The following paragraph (4.6) indicates the procedure to follow.

This restart must also be carried out during each modification of the loops' sensitivity parameter ("SAF1" or "SENS. SAF1 MAX").

FUNCTION (fixed)	VALUE (blinking)	Comment
ACCESS1 SETTINGS	1	Choice of access 1 or 2 (is proposed only if a 8633 AS is connected to the 8633B).
	2	
1 :STYAND.	ALONE.	Operating mode: increase of Limit: automatic, manual or Manual without loops. Cf. § 3.1.1
	MANUAL WORKING	
	NO LOOPS	
1 :Cd	WITH SAFETY.	Request validation of the descent when a loop is activated Cf. § 3.1.2
	W/O SAFETY	
1 :LIMIT SW.	ALL	Use of 2 upper/lower limit switch, no (without management of light signals), or of only lower limit switch. Cf. § 3.3.2
	NO	
	LOW	
1 :PREWARN.	nn s	Advance notice time from 00 to 15 s. Cf. § 3.2.3
1 :WORK. TIME	nn s	Operating time from 01 to 15 seconds Cf. § 3.3.3
1 :SENS. SAFE1	MIN	Adjustment of the sensitivity of the detector safety loop n°1 (minimum, Medium, maximum). Cf. § 3.2.1
	MED	
	MAX	
1 :SENS. SAFE2	MIN	Adjustment of the sensitivity of the detector safety loop n°2 (minimum, Medium, maximum). Cf. § 3.2.1
	MED	
	MAX	
1 : LIGHTS	BLINK.	Lights use in blinking mode Or fixed. Cf. § 3.2.2
	STEADY	
1 :COMP TIME	nn mn	Compressor alarms delay 03 à 10 mn. Cf. § 3.3.1
LANGUAGE :	ENGLISH	Choice of the communication language Cf. § 3.1.3

In this table, all the messages start with "1: "because the access n°1 was selected for the configuration. The languages are displayed in "original version": French, English, Spanish, Swedish, and German.

4.6 Initialisation of the detectors and the safety loops

During start-up, the PLC must acquire the value of the electromagnetic signal transmitted by each safety loop when no vehicle is present above or in the vicinity. These signals sent by the loops to the electronic internal detectors are memorized by the controller as being the "free " state (absence of vehicle). They will be used then as references for the "free " state.

When there is no vehicle present on a loop, press once on the **RESET DET** key of the 8633B PLC to initialize the memory associated with the loops with the access security 1. For the second access, proceed in the same way and press on the small switch of the 8633 AS console then release.

THE "RESET DET." KEY MUST BE USED ONLY IN THE ABSENCE OF VEHICLE ON THE LOOPS!

The restart of the loops by the RESET DET. key should be carried out in case of doubt about their operation, by always respecting the preceding instructions.

Note: the bollard is a metallic mass that can act on the magnetic environment of the loops. In order to avoid possible problems of detection, take care to carry out the positioning and the installation of the loops in accordance with the regulations. Refer to the user's guide for Urbaco safety loops).

5 USE

5.1 Various types of configurations of the access

In standby mode state, the system prohibits passage (high limits and fixed red light signal).

The crossing authorization, descent of the bollard and amber or fixed green light signal, is validated by the PLC either after control, or in an automatic way:

- **controlled passage:** the user must send a descent command by beep radio operator, key, card reader, contactless badge, etc.
- **automatic passage:** it is enough for the user to be present on the loop in front of the bollard to cause its descent. This operation in automatic descent of the bollard requires a third loop and an optional associated 8613S detector.

5.1.1 Access used in single direction of passage of vehicles

The possibilities of configuration of an access in single direction are as follows:

- controlled access
- controlled exit
- Automatic access with a third loop and a 8613S detector as an option. Such a situation will not be appropriate for very particular needs
- Automatic exit with a third loop and a 8613S detector as an option

Note: the user has to take care that the single direction access is not used in the opposite direction by an indication and an adapted way of passage. The PLC cannot prevent the exit of a user who would borrow a "controlled access" in the opposite direction if it has the suitable descent command of the bollard (beep radio operator, key, chart or badge).

In case it is necessary to prevent the descent of the bollard by a user, who circulates in the opposite direction, URBACO is able to install additional PLCs.

5.1.2 Used access in a dual passage direction of the vehicles

The possibilities of configuration of an access in two directions are:

- controlled access and controlled exit
- controlled access and automatic exits (with a third loop and an optional 8613S detector)

5.1.3 Configuration recommended for the 8633B PLC

The configuration by default of the PLC was conceived to adapt immediately to all the possible configurations, including those where the bollard are not equipped with upper and lower limit switches, and for which the access does not have a two-tone side-light.

In the case of an access with side-lights and whose bollards are equipped with upper and lower limit switches, the following configuration is recommended for all the preceding configurations:

1 :STAND.	ALONE.
1 :Cd	WITH SAFETY.
1 :LIMIT. SW.	DOWN
1 :PREWARN.	01 s
1 :WORK TIME	08 s
1 :SENS. SAFE1	MAX (or MED)
1 :SENS. SAFE2	MAX (or MED)
1 :LIGHTS	BLINK.
1 :COMP. TIME	05 mn
LANGUAGE :	ENGLISH

5.2 Visualization and control of the operating conditions

5.2.1 Equipped site with only one access:

The controller is in RUN mode, working system

The screen permanently displays the various states of the bollard (see 3.4)

To enter the visualization mode of entries and exits of the PLC managing the selected access, press on the DATED key. Move from one function to another using the keys + or -.

Screen display	Commentary
1 :L L.SW.=x U L.SW.=x	Upper and lower limit switch. x is 0 to 1
1 :SEC1= SEC2=x	Safety Loops 1 and 2. x is 0 or 1 or D
1 :EMERGENCY STOP=x COMP=x	Emergency, compressor stop. x is 0 or 1
1 :A Cd=x D Cd=x	Rising and descent order, X is 0 or 1
1 :RLIG=x O.LIG=x	Lighting of the red or orange light signals. x is 0 or 1
1 :SV=x DEF.COM=x	Solenoid under operation, compressor in default.
1 : nnnnnn CYCLES	A number of carried out cycles (from 000000 to 999999)

x=0 means not activated (stand by mode state), x=1 means activated (working state) and x=D for defect (on the loops).

In this table, all the messages start with 1: to indicate that the first and single access are selected. You read the information of the main 8633B PLC.

The values (symbolized in this table by X or nnnnnn) are updated and controlled several times a second. They are displayed in real time.

You leave this visualization mode of entries and exits automatically after 10 seconds.

It is possible to freeze the display in progress for 2 minutes by pressing on the **ENTER key**. In this case, the + and - keys remain active and cancel this 2 minute waiting as soon as they are used.

Be careful, in this visualization mode, the **RESET DET.** key remains active and functions as previously seen in **the paragraph 4.6**.

The **ENTER** key, is inactive in RUN mode.

Note: this visualization of entries and exits functions in the same way when the system is under operation or in alarm status.

5.2.2 Site equipped with two accesses:

During the working of the system in (mode RUN) and before pressing on the **DATED** key, the **+** and **-** keys allow the user to select the access before being visualized.

By choosing access 1, proceed as described previously.

By choosing access 2, one visualizes on the screen of the "main" 8633B PLC information concerning the access managed by the 8633 ACES slave PLC. The preceding indications remain true, the only difference relates to the number of the access, posted at the beginning of each line on the screen

Screen display	Commentary
2 :L L.SW.=x U L.SW.=x	Upper and lower limit switch . x is 0 or 1
2 :SAF1=x SAF2=x	Security loops 1 and 2. x is 0 or 1 or D
2 :EM.ST=x COMP=x	Emergency stop, compressor. x is 0 or 1
2 :A Cd=x D Cd=x	Rising and descent order x is 0 or 1
2 :RLIG=x O.LIG=x	Lighting of amber or red light signal x is 0 or 1
2 :SV=x DEFAULT COMPR.=x	Working solenoid, compressor in default.
2 : nnnnnn CYCLES	Number of operated cycles (from 000000 to 999999)

x=0 means not activated (rest state), x=1 means activated (working state) and x=D for defect (on the loops).

In this table, all the messages start with 2: to indicate that the second access is selected. One reads information of the 8633 ACES slave PLC.

Stop equipment and deactivation

The voluntary stop of the operation of the PLC can be carried out by the power removal in the Technical Power station. (Circuit breaker or removal of fuses will remove power.

Light signals are then deenergized and the bollard descends after the electromagnetic gate starts to let the air escape.

All information (configuration setting, a number of cycles) is stored.

When the power supply is restored, the PLC automatically starts an initialisation phase of the system, with all the last time-recorded parameters. If the loops are free, the bollard goes up after the advance notice time delay.

In the same way, following **an involuntary stop** (storm, network breakdown), light signals switch off and the bollard descends. The restarting is automatic with the return of the power supply: if the loops are free, the bollard rises after the advance notice time and delay the system goes back to the standby mode in which the bollard is in the upward position.

In case of prolonged stop, it is recommended to carry out a check of all the parameters before start-up, to make sure that those always correspond to the desired values.

6 MAINTENANCE

6.1 Preventive maintenance

Black boxes of the 8633B PLC do not require any particular maintenance.

6.2 Corrective maintenance

Three frequent causes of failure of the access are independent from the 8633B PLC.

- the compressor power switch of powering of the compressor is in off position
- the emergency stop key is activated (engaged)
- the power supply of the PLC (12 VAC on the J7 connector) or the power supply of connector block (24 VAC on the J1 connector) is not energized.

It is advised to check in priority these switches and the power.

The alarm outprint of the system by the PLC produces 4 effects:

- 1 the bollard goes down and remains there
- 2 the red light signal blinks
- 3 a message of alarm is registered on the display
- 4 the system is frozen

The intervention of a technician is necessary to restore the normal operation of the access.

RUN/STOP key makes it possible to leave an alarm status, by restarting the system. It is necessary to have eliminated the cause of error or the alarm will not clear.

Three setting cases of the alarm are possible: make an attempt of upper limit switch, makes an attempt lower limit switch and defect of the pneumatic circuit.

6.2.1 Message of alarm: " WAIT U L.SW."

The possible causes are:

- a) the operating time is too short
- b) somebody or something prevented the rise
- c) the upper limit switch is out of order or it is improperly connected to the terminal block

You can try to leave the alarm status while restarting by using the **RUN STOP** key.

If alarm reproduces, the b) cause is improbable. Increase the operating time by two or three seconds and restart.

If the alarm persists, check the upper and lower limit switches and their connection, as well as the proper sliding motion of the bollard.

6.2.2 Message of alarm: "WAIT L L.SW. "

The possible causes are the same ones as for the "U L.SW. ", take the same steps.

6.2.3 Alarm Message: "DEFAULT COMPRESS "

The possible causes are:

- a) there is a leak in the pneumatic circuit (bad connection of the pipe, escape on the level of the electromagnetic gate or the jack, conduit has been chewed by a rodent),
- b) the pressure controller is out of order. In situation of closed contact the PLC knows of fault of the operation of the compressor, even if it is not the case.
A technician should examine these materials.

Without causing an alarm, the light signals and the loops can fail.

6.2.4 Faulty operation of the light signals

During the three seconds of initialization (when one passes from the STOP mode to RUN mode), two light signals must be lit at the same time. If it is not the case, either the fuse is blown and must be replaced, or the relay has failed on the terminal block and the terminal block must be replaced.

If the amber (or green) light signal is the only one that does not light during the operation of the access, the cause is probably a malfunction of the upper and lower limit switch. Check its state when the bollard is low (see **5.2**).

6.2.5 Faulty operation of the loops detectors

Message SAF1=D or SAF2=D appears on display (see **5.2**). If it is the case on the first startup, it is normal and a restart by "RESET DET." solves the problem.

If not, the loops are open or in short-circuit. It is necessary to correct the problem.

In a general way, the visualization of entries and exits of the PLC (see **5.2**). is a help for diagnosis of problems.

The results of these tests are consigned in a test report of 44 pages and two appendices, which enable the establishment of compliance certificate according to:

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**CERTIFICAT DE CONFORMITE
CERTIFICATE OF CONFORMITY**

N° CEM U98/001

Directive CEM 89/336/CEE – EMC directive 89/336/EEC

<u>Produit / Product :</u>	CONTROLEUR POUR BORNE
<u>Type / Model :</u>	CITY 5
<u>N° de série / Serial number :</u>	Prototype 1
<u>Constructeur / Intégrateur :</u>	URBACO
<u>Manufacturer / Assembler :</u>	

La société URBACO atteste que le produit mentionné ci-dessus est conforme aux normes suivantes :

URBACO certifies that the above mentioned product meets the requirements of the following standards :

EN 50081-1 (édition 1992), EN 50082-1 (édition 1997)

Les conditions de tests, les résultats d'essais, les modifications apportées au produit pour le rendre conforme et le critère de susceptibilité sont consignés dans le rapport d'essais du laboratoire AEMC Mesures numéro L98274.1

Tests conditions and results, the modifications brought to the product allowing its conformity together with the susceptibility criterion are given in the AEMC Mesures report number L98274.1

Ce certificat ne fait référence qu'aux exigences essentielles de la directive 89/336/CEE (décret français n°92/587 du 26/06/92). Il n'est pas utilisable pour d'autres directives applicables au produit mentionné. Ce certificat ne concerne que l'exemplaire référencé dans le rapport technique et n'implique pas une dérive éventuelle de la fabrication.

This certificate only refers to the essentials requirements of the EMC directive 89/336/EEC. It is not valid for other directives that could apply to the above mentioned product. In addition, it only refers to the unit specified in the technical report and do not take into account a possible electromagnetic characteristic drift of the production. URBACO can not be held responsible for the possible mistakes made in the English translation of the English translation of this document. The French certificate remains the only authentic text.

Fait à Vedéne le 05/08/98
Issue date

Responsable Recherche et Développement
Research and development manager



M THOMAZEAU

Appendix II: Functional diagrams

The 15 flow charts describing the operation of the 8633B PLC (or the 8633 AS PLC) according to the parameter setting chosen by the user are the subject of a separate note, available on request or in the form of files with transmittable "PDF" format by e-mail).

Their list is described below, and two of them appear in the two following pages. They are the configurations n°4 and n°9, corresponding to the configuration settings by default of the 8633B PLC under automatic operation and manual operation.

A2.1 Automatic operation (display message: "STAND ALONE")

Configuration n°1: with an upper and lower limit switch (display message: "LIMIT SW. ALL") with fixed light signals (display message: "STEADY LIGHTS").

Configuration n°2: with an upper and lower limit switch (display message: "LIMIT SW. ALL") with flashing light signals (display message: "BLINK LIGHTS.").

Configuration n°3: with lower limit switch (display message: "Ends of LOW C") with fixed signals (display message: "FIXED LIGHTS").

Configuration n°4: with a lower limit switch (display message: "LIMIT SW. LOW") with flashing light signals (display message: "BLINK LIGHTS.").

Configuration n°5: without upper and lower limit switch (display message: "LIMIT SW. NO")

A2.2 Manual operation (display message: "MANUAL WORKING")

Configuration n°6: with an upper and lower limit switch (display message: "LIMIT SW. ALL") with fixed light signals (display message: "STEADY LIGHT").

Configuration n°7: with upper and lower limit switch (display message: "LIMIT SW. ALL") with flashing light signals (display message: "BLINK LIGHTS.").

Configuration n°8: with an upper and lower limit switch (display message: "LIMIT SW. ALL") with fixed light signals (display message: "STEADY LIGHTS").

Configuration n°9: with a lower limit switch (display message: "LIMIT SW. LOW") with flashing light signals (display message: "BLINK LIGHTS.").

Configuration n°10: without lower limit switch (display message: "LIMIT SW. NO")

A2.3 Operation without loop (display message: "NO LOOPS")

Configuration n°11: with an upper and lower limit switch (display message: "LIMIT SW. YES") with fixed lights (display message: "STEADY LIGHTS").

Configuration n°12: with an upper and lower limit switch (display message: "LIMIT SW. YES") with flashing lights (display message: "BLINK LIGHTS").

Configuration n°13: with a lower limit switch (display message "LIMIT SW. LOW") with fixed light signals (display message: "STEADY LIGHTS").

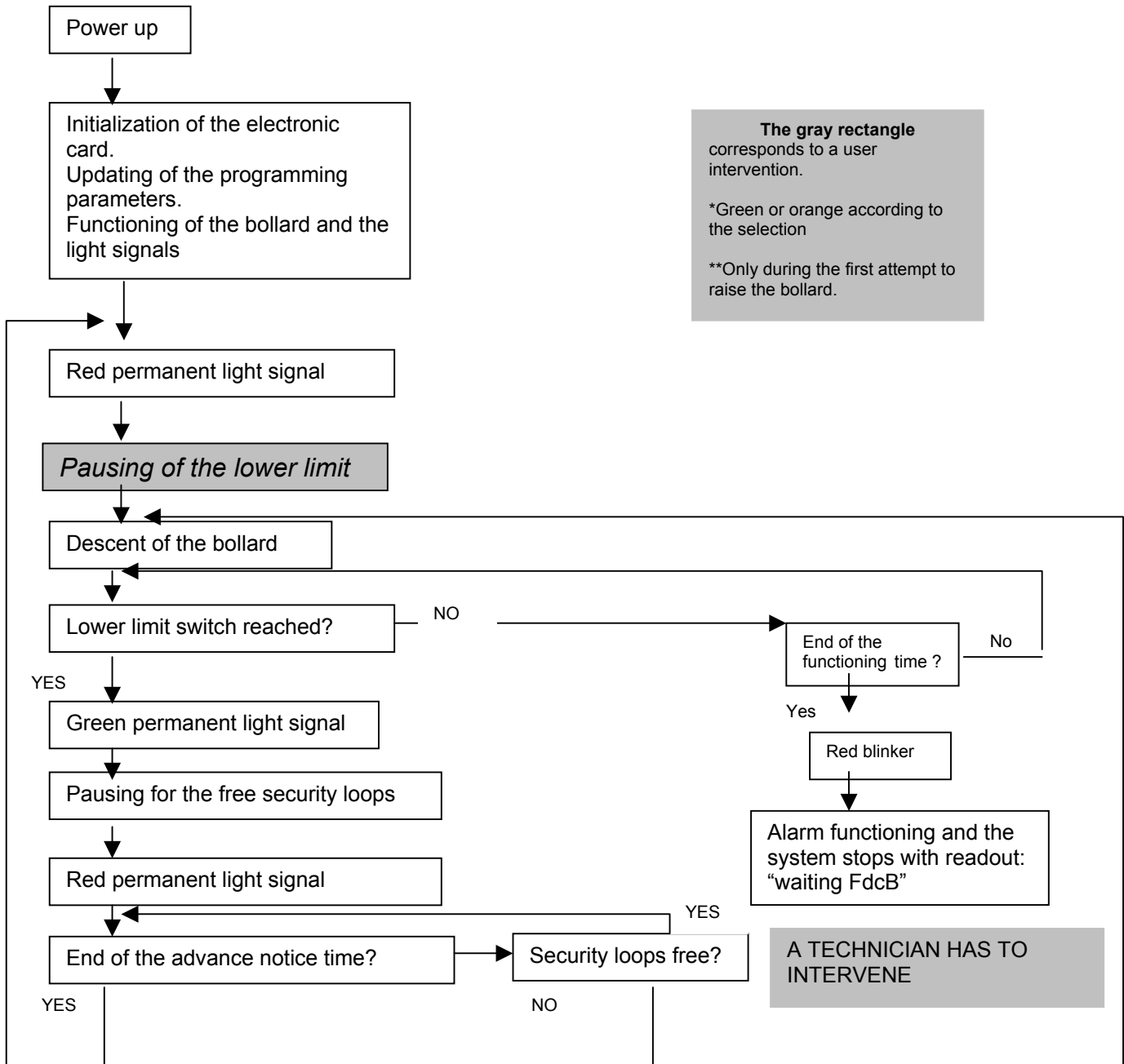
Configuration n°14: with a lower limit switch (display message: "LIMIT SW. LOW") with flashing lights (display message: "BLINK LIGHTS").

Configuration n°15: without upper and lower limit switch (display message: "LIMIT SW. NO")

Controllers Ref. 8633B and 8633AS

Flow chart that describes a cycle.

Configuration n°4: automatic, with upper and lower limit switch, blinkers.



The gray rectangle corresponds to a user intervention.

*Green or orange according to the selection

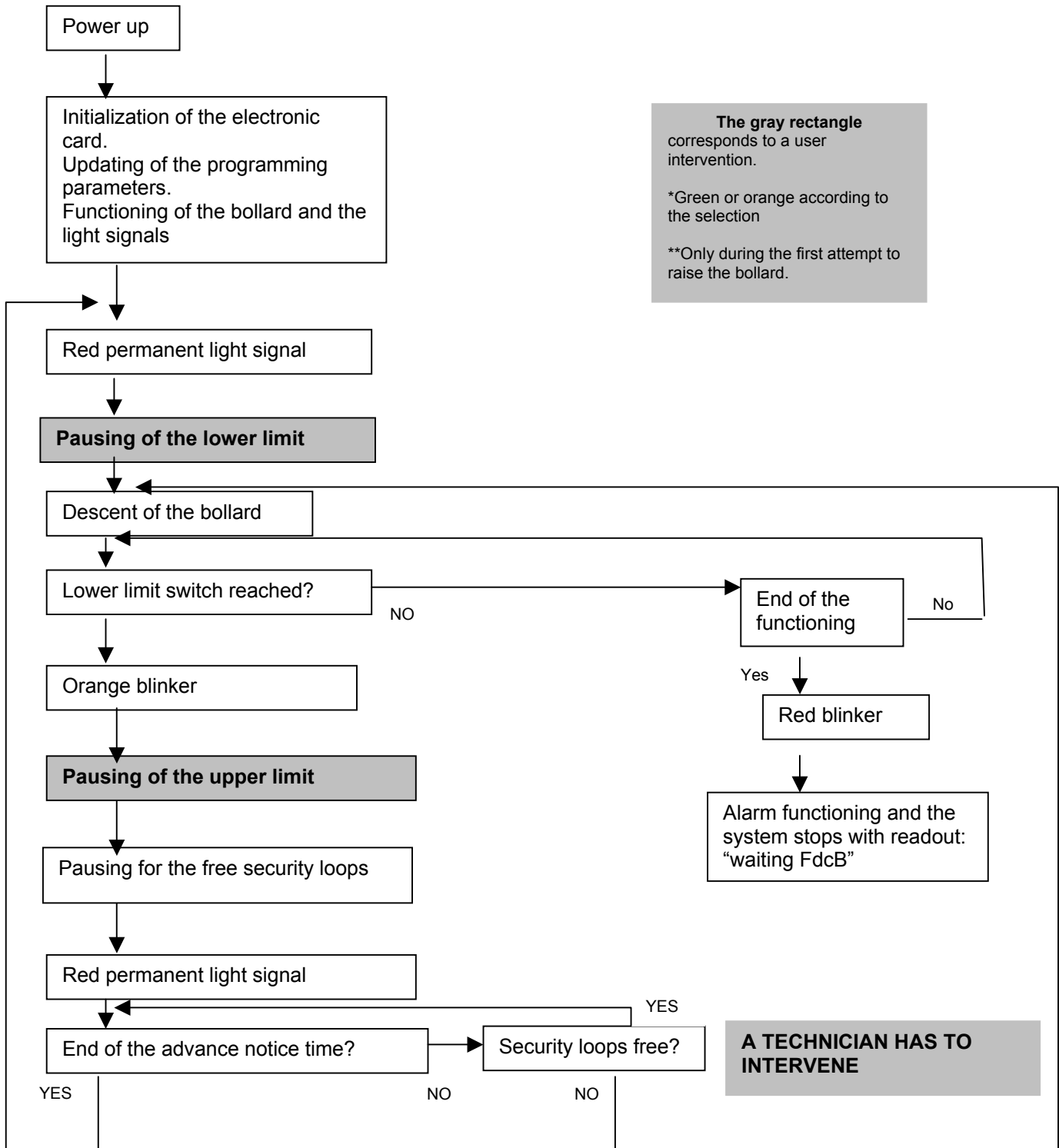
**Only during the first attempt to raise the bollard.

A TECHNICIAN HAS TO INTERVENE

Controllers Ref. 8633B and 8633AS

Flow chart that describes a cycle.

Configuration n°9: manual, with upper and lower limit switch, blinkers.



The gray rectangle corresponds to a user intervention.

*Green or orange according to the selection

**Only during the first attempt to raise the bollard.



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