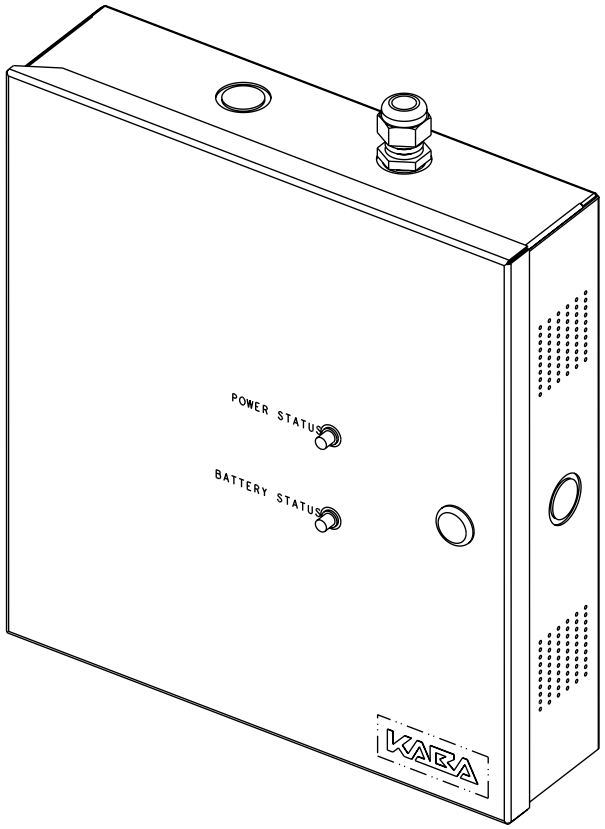
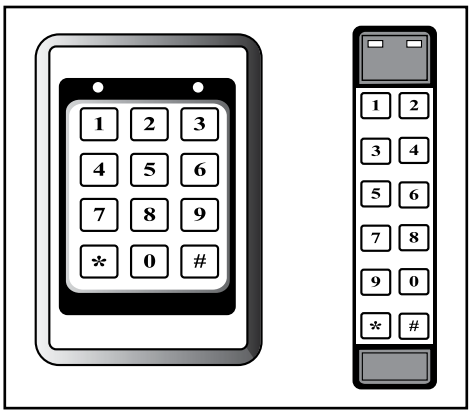




ILCO™
by Kaba

INSTALLATION GUIDE

Remote Access Controller - 660G XT

PK3520

Table of Contents

1.0 Introduction and Disclaimers

Target Audience

Please read and follow all directions carefully. These instructions are designed for use by lock installers or anyone who is familiar with common safety practices and competent to perform the steps described herein.

For a typical installation, no professional electrician is required because the 660G XT is a low voltage installation system.

Kaba Lodging Systems is not responsible for damage or malfunction due to incorrect installation.

Safety Procedures

Installation is to be done following standard safety procedures with adequate equipment prescribed herein and wearing adequate protection for body safety. Power is to be off during the installation process as well as for any maintenance procedures.

Technical Assistance

For technical assistance call 1-800-906-4526

OR

Visit the Kaba Support Website:

http://connect.kabalodging.com

Warnings and Cautions

Please read and follow all directions carefully.

Important: Carefully inspect windows, doorframe, door, etc. to ensure that the recommended procedures will not cause damage. Kaba Ilco's standard warranty does not cover damages caused by installation.

Important: The RAC 660G should always be installed in a secured room or facility with controlled access to prevent access to the system.

Caution: Wear safety glasses when making the holes.

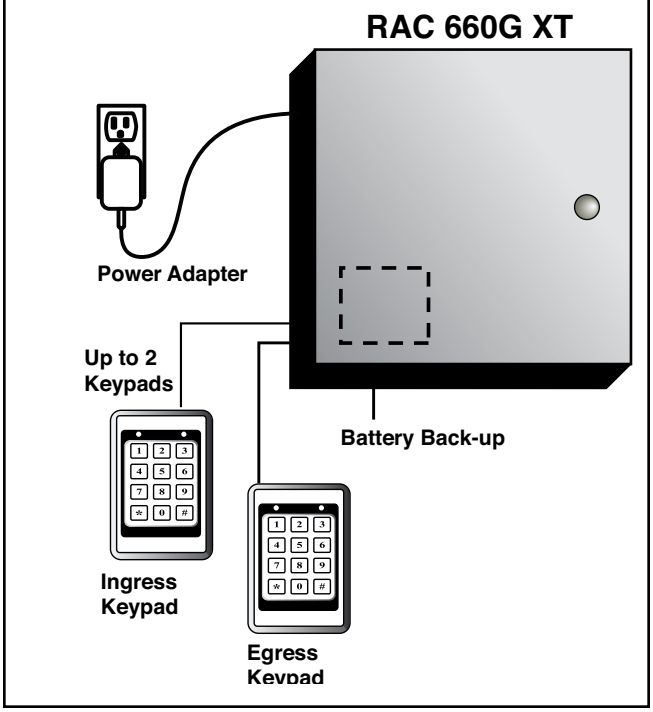
2.0 Product Description

2.1 Features

The 660G XT is designed to operate electrical locking or control devices where a stand-alone electronic lock is not practical. The system **can control any door or access point from up to 100 feet** (30 m) away. The 2x6 Keypad can be mounted directly on door frames, while the 3x4 keypad is wall mounted.

The 660G XT is an access control solution that provides a single relay output, up to 2 keypads, a battery back-up option, and much more as per the feature list on page 3. See figure 1 for a typical configuration.

Figure 1

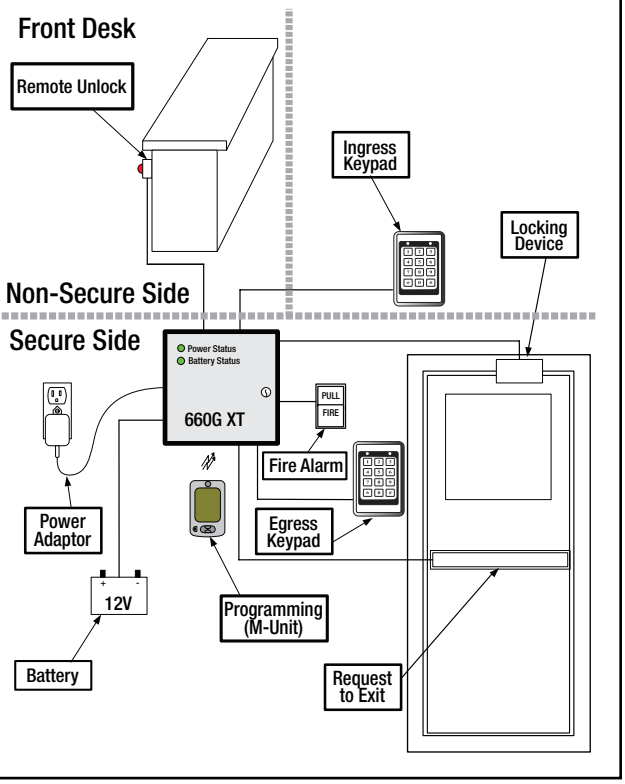


2.0 Product Description (Continued)

Feature List 2.1:	
Feature	**RAC 660G XT**
Single Relay Output	Standard
Variable access delay	Standard
Power failure 3-day auto-recovery; real time clock (RTC)	Standard
Infrared (IR) programming & auditing	Standard
Relay bypassing (passage function)	Standard
Keypad (Ingress)	Standard
Unlock delay programmable by Dip Switches	Standard
Fire Alarm Input	Standard
Tamper Alarm Input	Standard
Power Status LEDs feedback	Standard
Battery Back-up	Optional
Kaypad Egress	Optional
Remote Unlock input (No Audit)	Optional
Request to Exit (REX) input	Optional

2.2 Components

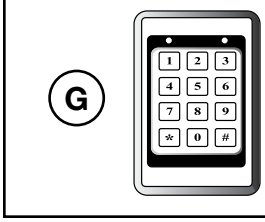
Figure 2



2.2.1 Keypads

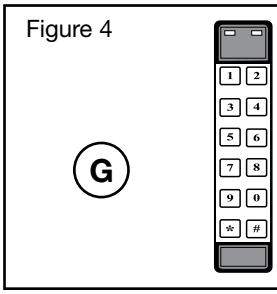
Two types of keypads are available:

Figure 3



3 x 4 Wall mount

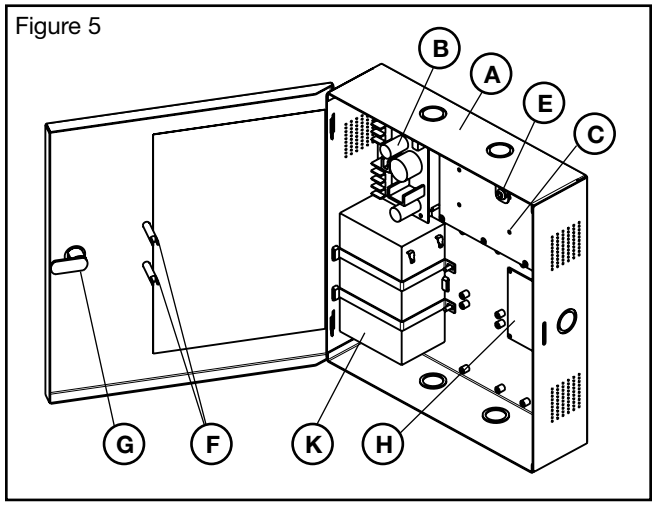
Figure 4



2 x 6 Narrow. style

2.2.2 Controller box

Figure 5



(A) Enclosure with cover; metallic frame which contains the controller board, power supply, optional relay expansion board and optional battery back up. Knockouts are available on 3 sides of the box to give a wide range of possible installation configurations.

(B) Power supply/charger; to provide the DC power to the controller board and peripherals.

(C) Controller board; main board that controls all the features of the 660G XT system.

(E) Tamper switch; attached to the 660G XT controller box to generate an alarm if the box is opened during operation.

(F) Two LEDs are available on the cover; the top LED indicates the status of the power supply and the bottom LED shows the power status of the optional battery back-up.

(G) Cam-lock with key; included to provide controlled access to the enclosure and secure locking for the system.

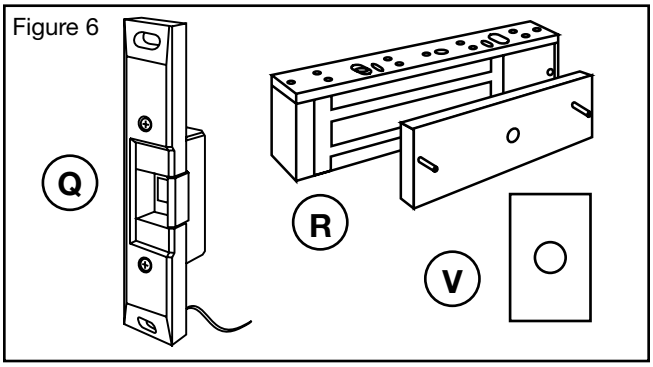
2.2.3 Battery back-up (optional)

(K) When fully charged, the 12 VDC battery back-up offers the possibility of having a high-capacity battery to provide up to 4 hours of operation in the event of a power failure.

2.2.4 Locking devices

The 660G XT provides one relay output that can be used to control one of the following locking devices, either Electric Strikes (Q) or Electromagnetic Locks (R) or Garage Door Opener (V). The relay output can supply 12V, 075A to locking peripherals.

Figure 6



2.2.5 Other optional components

The 660G XT is a flexible Access Control Solution and can be combined with the following:

- Key override
- Exit Devices
- Motion Detectors
- Panic Bars
- Request to Exit (REX) button
- Remote Unlock Button

NOTE: Refer to section 4 for further installation information.

3.0 Checklist and Exploded Views

3.1 Parts and Tools List

For letter designation refer to figure 7 on following page.

Controller Box includes:

(A) 660G XT enclosure complete with access panel
(B) Power supply charger (24 VAC or 24 VDC in / 12 VDC out)
(C) 660G XT controller board
(D) Cables (Power supply, LEDs, PCB- not shown)
(E) Tamper switch assembly
(F) 2x green LEDs (12 VDC)
(G) Cam lock

Note: All items above come factory installed.

Hardware Bag includes:

(W) 4x Philips wood screw #8 x 1-1/4"
(X) 4x Nylon anchor #6 – 10
(Y) 4x Concrete anchor #7 – 9
(Z) 2x Strain relief connector with locking nut
(AA) 2x Diode-rectifier
(AB) 5x #8 steel flat washer
(AC) 3x Crimp terminal B connector
(AD) 2x Crimp fork terminals 18-22 AWG

Power Adaptor includes:

(N) 1x International 24 VDC output adaptor with integrated power cable and interchangeable AC outlet prongs.
or
(O) 1x North American 24 VAC output adaptor with separate power cable assembly and 2x 18 AWG power cables, terminated with fork crimp terminals at one end.

Battery back-up (optional) includes:

(K) Battery with 2x strapping bracket, 2x flat washer #8, 2x split washer #8 and 2x nut #8-32
(L) 1x red wire gauge 18 AWG x 9", terminated with fork crimp terminals at both ends. (not shown)
(M) 1x black wire gauge 18 AWG x 10", terminated with fork crimp terminals at both ends. (not shown)

Single Keypad includes:

(P) 1x keypad

Dual Keypads (optional) includes:

(P) 2x keypads

Locking Device

(Q) 1x Electric strike
(R) 1x Electromagnetic Lock
(V) Garage door opener

Programming Device

(I) M-Unit (purchased separately)

Other Optional Components

(S) REX (Request to Exit) NO
(T) Remote Unlock (Not shown) NO

Mandatory tools required:

- Safety glasses
- Electric Dril
- 9/64" (3.5 mm) drill bit
- 7/32" (5.6mm) drill bit
- 1/4" (6.5 mm) drill bit
- 3/8" (9.5 mm) drill bit
- Philips screwdriver (#2)
- Slotted screwdriver tip width 3/32"
- Adjustable wrenches
- Crimp tool (18-22 AWG)
- Pliers
- Wire cutter / stripper
- Tie wraps

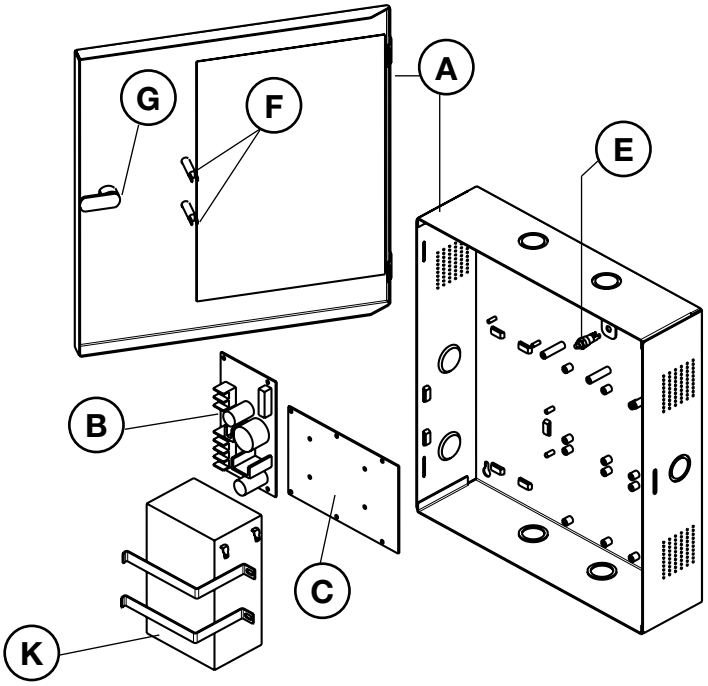
Optional tools:

- Hammer or rubber mallet
- Awl or center punch
- Ink marker
- Tape
- Tape measure
- Fine steel file
- Cleaning supplies (drop cloth, vacuum)

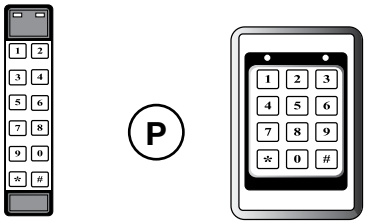
3.2 Exploded View

Figure 7

Controller Box

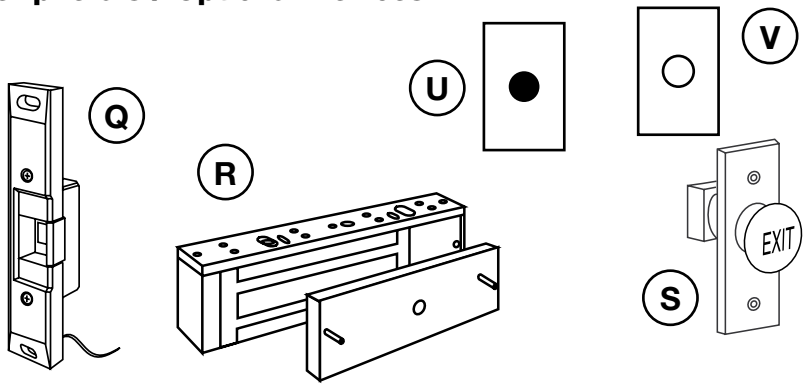


Keypad Ingress

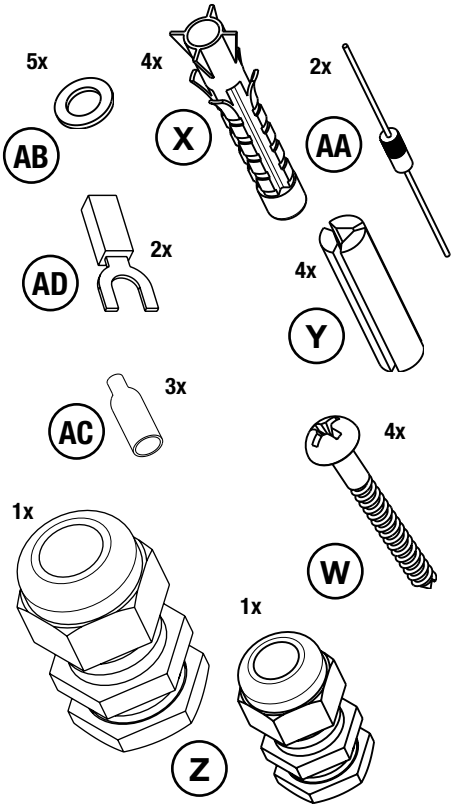


2 x 6 or 3 x 4

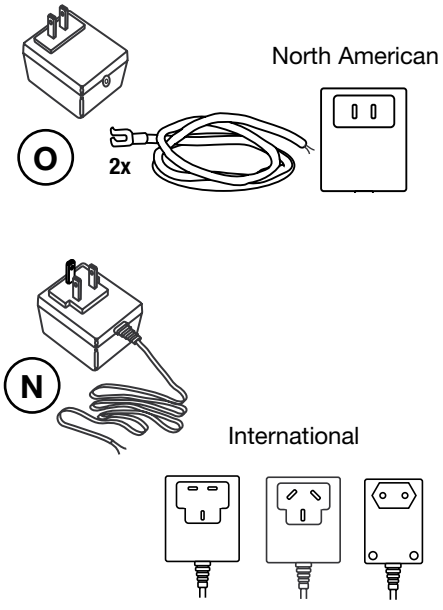
Peripherals / Optional Devices



Hardware Bag



Power Adaptor



4.0 System Installation Overview

NOTES:

- For Installation of the keypads refer to the manufacturer's installation instructions.
- The RAC 660G XT provides egress/ingress (exit/entry) access control to locations where stand-alone locking devices cannot be used.

4.1 Pre-Installation Procedures

Before starting:

- Ensure that all cabling is available for the required wiring of peripherals as indicated in the instructions supplied with each product to be connected and for the power adaptor if needed.
- Be sure to have all tools listed on the tool list in section 3.1.
- Be sure to have every component available as ordered for the 660G XT system being installed. Refer to the parts list in section 3.1.

Step 1: Identify secure location for the controller box

Important: Access to the control panel must be restricted to authorized personnel only. (ex: service)

Important: If no AC power source is available near the desired control box location, a certified electrician must install an electrical outlet within 6 ft max of the 660G XT system.

- If possible, the control panel should be mounted at a workable height with clearance to completely open the access panel near an unswitched AC power source.
- Make sure that the controller box can be secured to the wall or ceiling using the screws and anchors provided in the hardware bag.
- The controller box can be either placed horizontally in the ceiling or vertically on a concrete, wood, or plaster wall.
- The temperature in the chosen location must be between 32°F to 120°F (0°C to 49°C).
- The controller box must be in a location sheltered against exterior elements, weather hazards and dripping water.
- Do not use cord and wall outlets for mounting of the controller box. The unit must be fixed with the hardware supplied.

Step 2: Identify location(s) for the keypad and required peripherals

For ingress and egress functions, keypads must be placed **within 100 feet (30m)** from the controller box. The keypad should be installed near the access door. The location should be obvious and ergonomically efficient to any user.

Important: All peripherals used must be installed as per local building codes and legislation.

Keypads:

The space to use the keypad must be large enough to allow adequate clearance.

Remaining peripherals:

Determine the location required for any other 660G XT system peripherals (REX button, remote unlock, etc) and ensure that all required cabling is available as needed.

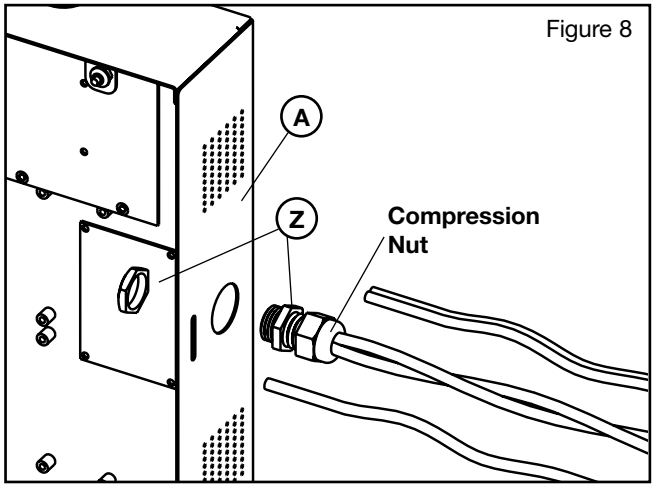
Step 3: Set the desired access delay

The 660G XT system factory default setting for the delay on access devices is 3 seconds. To change the value configure the controller board (C) dip switch SW2 settings as per Annex A, Table 3.

Step 4: Install strain relief

Two strain reliefs (Z) are provided in the hardware bag to secure the wires leading into the controller box and help prevent the possibility of wire tampering.

Figure 8



NOTE: The two strain reliefs (Z) provided in the hardware bag have different opening diameters to allow for a variety of wires to be routed into the controller box. Do not attempt to route an excessive amount of wires. If extra strain reliefs are required please contact Kaba.

Determine the routing needed for the wiring of the 660G XT peripherals (keypads, locking mechanism, etc) and as required select the knock-out(s) on the controller box to remove for installation of the strain relief(s).

To remove the selected knock-out(s), from the inner side of the controller box, use a hammer and screwdriver, and tap out the small metal disk.

Noting the amount of wires to route into the desired location, insert the appropriate strain relief based on the diameter required and secure with the locking nut as shown in figure 8. Route all wires of the peripherals and power cables, into the controller box (A), leaving some extra length for subsequent steps. Tighten the compression nut of the strain relief (Z) and pull on the wires to ensure the desired strain relief effect is obtained.

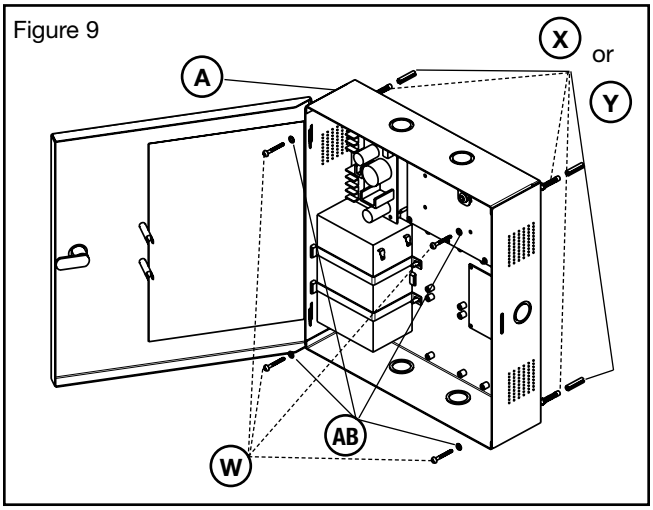
CAUTION: Do not plug the power adaptor into the AC outlet before the end of installation.

4.2 Installation Procedures

Step 5: Mounting the controller box

1. With proper tools, install the control panel in the desired location, using the screws, washers and required anchors in the hardware bag.

Figure 9



NOTE: For easier access it is recommended to remove the access panel before installation. If needed, keep it nearby to refer to the wiring label or refer to Annex A at the end of this manual.

CAUTION: Wire routing must be according to any local building codes or legislations.

2. Two types of power adaptors are available depending on the country where the controller box is to be installed.

- (N) For international applications;
  mainly Europe, UK or Australia using 220 VAC to 240 VAC, 50-60 Hz

  or

- (O) For North American applications using
  120 VAC, 60Hz

CAUTION: The following steps are to be done after the appropriate power adaptor is selected, cables routed through the strain relief and secured by tightening the strain relief's compression nut, as per step 3.

International power adaptor (N)

1. Prior to installing the International power adapter (N), select the appropriate AC outlet prong from the set depending on the standard AC power source inlet in the country where the controller box is being installed.
2. Fix the selected prong outlet on the International power adapter (N).
3. **Out of the controller box**, route the wires to the AC power source and secure the wire (recommended with tie wraps).
4. **In the controller box**, using the crimp fork terminals (AD) from the hardware bag and a crimp tool, crimp the fork terminals to the end of each wire.
5. Connect the fork terminated wires to the power supply (B) inputs as shown in Annex A, Table 4.

North American power adaptor (O)

1. In the controller box, connect one end of the fork-terminated wires to the power supply (B) inputs, as shown in Annex A, Table 4.
2. Out of the controller box, route the wire assembly to the AC power source and secure wire (recommended with tie wraps).
3. Using the crimp fork terminals (AD) from hardware bag, crimp those at the end of the cable assy.
4. Connect the fork-terminated wires to the power adaptor screw terminals.

4.0 System Installation Overview (Continued)

Step 6: Connect wiring

CAUTION: Do not exceed the maximum cable length indicated by the manufacturer of products being connected.

CAUTION: Refer to the wiring diagram in Annex A, or refer to label located inside the enclosure's cover. Follow the applicable steps depending on what peripherals need to be installed.

IMPORTANT: Every wire for the peripherals and power adaptor must pass through a strain relief as connected per Step 4.

IMPORTANT: For peripherals, choose the appropriate wire gauge depending on the distance between the peripheral being installed and the controller board (B) Refer to manufactures wire gauge installation selections. Respect all building codes and local legislation relative to the wiring required.

1. If the controller box is to be interfaced to a fire alarm panel, remove the jumper wire connected between pins 3 and 4 of J18 on the controller board (C) and complete the fire panel installation as desired.

2. If a request to exit (REX) button (S) is being used, mount the button at the desired location and run a 2-conductor, cable from the control panel to the REX button location. Connect as per Annex A, Table 1.

NOTE: Refer to manufacturer's wire gauge installation selections.

NOTE: A motion detector may also be used for request to exit. If this is required, use the same connection instructions as indicated above.

3. If a remote unlock button (U) is being used, mount the button at the desired location and run a 2-conductor cable from the controller board (C) to the remote unlock button location. Connect as per Annex A, Table 1.

NOTE: Refer to manufacturer's wire gauge installation selections.

4. Install a 2-conductor cable from the control panel to the location of the electric strike (Q) or electromagnetic lock (R). Connect as per Annex A, Table 1.

NOTE: Refer to manufacturer's wire gauge installation selections.

5. Install the diode across the terminals of the electromagnetic lock (R) or, using the crimp connectors (AC) provided in the hardware bag, install the diode across the two wires of the electric strike (Q). Do not reverse the diode polarity, as indicated on the wiring diagram in Annex A.

CAUTION: Diode must not be in contact with electromagnetic lock (R) or electric strike (S), or a short could be created. Diode ends might need to be cut shorter.

NOTE: This step is not necessary if installing a Rutherford Controls 83xx series electromagnetic lock.

6. Following local building code requirements, mount the electric strike (Q) or electromagnetic lock (R) or Garage Door Opener (V) in the desired location and connect as per manufacturers' instructions. For connections into the Controller box, connect as per Annex A Table 1.

7. If the Tamper switch needs to be connected to the premise alarm system, disconnect the wires from J7-1 and J7-2 and run a 2-connector cable from the tamper switch to the premise alarm system.

IMPORTANT: The tamper switch's polarity is such that when the door is closed the switch itself is also in a closed state. Ensure that the wiring to the premise alarm system is done accordingly to prevent false alarms.

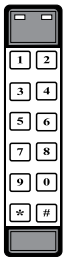
Step 7: Mounting and wiring keypads

NOTE: All keypads must be installed on a flat surface.

Up to two keypads can be installed with the 660G XT; one ingress and one egress.

Figure 10

3 x 4 Wall mount or



2 x 6 Narrow

Mounting Keypad

IMPORTANT: The installation bag supplied with the keypad includes screws for metal panel installation or inserts and wood screws for drywall installation. Use the relevant screws according to which surface the keypad reader will be installed on.

IMPORTANT: Refer to the drilling template in Annex C to select the drill size of the mounting holes for the keypad.

1. To install the keypad reader (P) in the desired location, use the template Annex B to mark the holes for the cable and screws.

NOTE: A dual reader installation has one Ingress (entry) (P1) and one Egress (exit) keypad (P2).

2. Wearing safety glasses, drill the holes in the wall according to the diameters indicated in the drilling template dependent on the type of surface the keypad is installed on.

3. **For single reader installations:** connect the cable from the keypad (P) to the terminal blocks on the controller board (C) as per Annex A, Table 1.

   For dual reader installations: connect the Egress keypad (P2) and the Ingress keypad (P1) to the terminal blocks on the controller board (C) as per Annex A, Table 1.

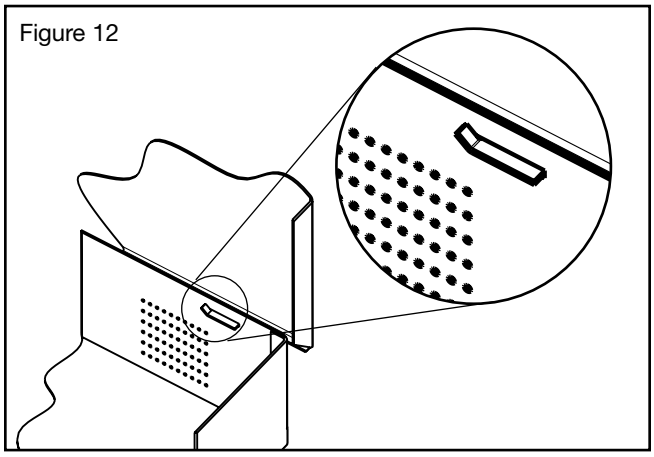
4. Caution with keypad selectable for 5 or 12 volts. A jumper plug is installed on one of the pins. This is the default setting for 12 volt operation. Incorrect voltage selectable may cause damage. Refer to manufacturer's specification document provided with reader.

Step 8: Completing the installation

1. If the panel door was removed, reinstall the door on the 660G XT enclosure.

2. Bend the two tabs of the panel door with pliers to a maxium of 30 degrees as shown in Figure 12.

Figure 12



3. Connect the LED wire harness from the power supply (B) to the panel door's LEDs (F) as indicated below and in Annex A, Table 6. The LEDs (F) have a polarity indicator, '+', on the shaft that is to be used as a reference.

NOTE: The wires must be connected with the proper polarity. Once the terminals are installed they are designed to have a tight fit so removal may damage the LED itself.

LED Description	Location on door	'+' terminal connection	'-' terminal connection
Power status	Top	Red	Orange
Battery status	Bottom	Red	Yellow

4. If a battery (K) is part of the system ordered connect the red (+) and black (-) wires from the power supply to the battery.

IMPORTANT: Ensure that the proper connections are made (ie: red to red, black to black).

5. Plug the power adaptor into the AC power source.

5.0 Setting and Operation

5.1 Testing

1. If not already done, connect the AC power adaptor, and / or turn on the AC current.
2. Verify that the Power Status LED on the panel is On.
3. Verify that the Battery Status LED on the panel is On.

NOTE: The battery status LED may be off if the battery is completely discharged, or if the connections are reversed. If it is Off, verify the polarity of the battery connections. A properly connected battery may take up to 12 hours to fully charge and for the LED to turn on.

4. Verify that the D43 LED on the controller board (C) blinks continuously.
5. Activate the Bypass switch, SW3 on the controller board (C).
6. Verify that the locking device is activated.

NOTE: If the locking device is not activated, verify that the Fire Alarm input is properly connected, or a jumper wire is connected.

7. De-activate the bypass switch, SW3 on the controller board (C).
8. To test the kaypad reader enter a valid code. Verify that the door unlocks. The unlock time will correspond to the delay set by the DIP switches as per Annex A, Table 4.
9. If the 660G XT is equipped with a second keypad, enter a valid code at the second keypad and verify that the door unlocks.
10. If a REX button is connected, press it and verify that the door unlocks.
11. If a Remote Unlock button is connected, press it and verify that the door unlocks.
12. If the 660G XT is connected to a fire panel and the electromagnetic lock powered by the 12 VDC output of the 660G XT, verify that the electromagnetic lock or a fail-safe electric strike is deactivated when the fire alarm is active (open input).
13. When the optional battery backup is charged, remove the main AC power adaptor and verify proper 660G XT operation.
14. The 660G XT is now ready to be Initialized and Programmed.

5.2 Programming using a M-Unit

The controller can be programmed directly on the PCB via a PALM.

Steps to program the RAC with PALM:

1. For step by step programming instructions, refer to www.kaba-ecode.com on line help getting started and maintenance unit.
2. Set the dip switch SW2 bank (OFF,OFF,OFF,OFF) refer to Access Delay Table SW2, Table 3, Annex A.
3. Toggle any one of the Four SW2 switches to ON. LED D45 should blink to indicate that the 660G XT is ready to communicate when complete LED D41 should be on.
4. On the PALM open the Oracode application software, select Door List, choose your door.
5. Hold the PALM in close proximity to D12 located near SW2 and tap “Program” on the PALM. When complete LED D41 should be on.

5.3 Reset to Factory Default

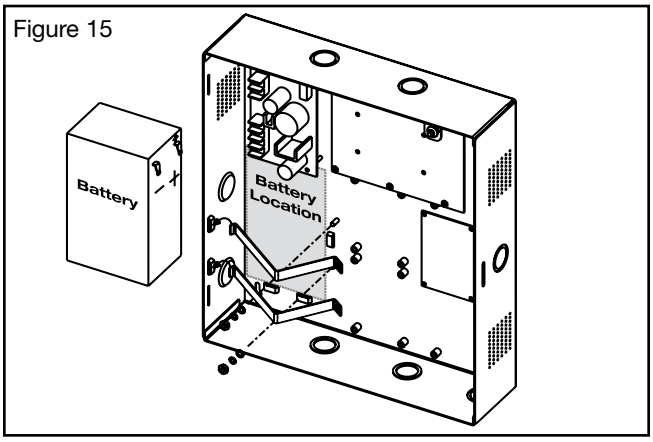
In the event the Door or Site ID of the premise is changed or a problem is suspected with the current configuration, the 660G XT will reset to default.

1. Note down the current DIP switch bank SW2 settings on the controller board (C) as this is the current delay setting for the peripherals used.
2. Set the switches on DIP switch bank SW2 on the controller board (C) to CFG #16 (OFF, OFF, OFF, OFF) as per Annex A, Table 3.
3. Verify that the initialization LED (D41) is OFF.
4. 660G XT is ready to be programmed. Refer to steps How to program the RAC 5.1.
5. Set the DIP switch positions back to the chosen access delay settings as noted above, or reset based on values shown in Annex A, Table 3.

5.4 Battery Back-up Replacement

1. Prior to replacing the battery back-up, write down the color and location of the two wires and the orientation of the battery;
2. Turn off the main AC power to the 660G XT or disconnect the power adaptor from the wall outlet.
3. Disconnect the wires (black and red) on the battery;

Figure 15



4. Remove nuts, split washers, and flat washers holding down the battery brackets;
5. Rotate the battery brackets upward to remove it from the anchoring slots as shown in figure 15.
6. Replace the used battery with the same type gelled lead acid cell 12V, 7.0 Ah (Ampere-hour).

CAUTION: Dispose of used battery according to local regulations

7. Place new battery in the battery location, as shown in figure 15, ensuring that the orientation is as, the "+" terminal shown being the lowest.
8. Install the battery brackets, flat washer, split washers, nuts in this order and reconnect the wires from the power supply (B) to the battery (K) ensuring that the red wire connects to the '+' terminal and the black wire connects to the '-' terminal.
9. Reconnect the power adaptor or turn on the main AC power to the 660G XT.

NOTE: For preventive maintenance, the battery back-up should be replaced every 2 to 3 years, and tested every 6 months by removing the main AC power.

5.5 New Battery Back-up Installation

Post-installation of the system, if it is decided that the system should have a battery back-up, order kit 064-511889-K and follow the steps below.

1. Turn off the main AC power to the 660G XT or disconnect the power adaptor.
2. Connect the end with the fork crimp terminal of the red wire supplied with the battery back-up kit to the '+' terminal on the power supply terminal block BAT. Ensure that the power supply screw is appropriately tightened to secure the wire.
3. Connect the end with the fork crimp terminal of the black wire supplied with the battery back-up kit to the '-' terminal on the power supply terminal block BAT. Ensure that the power supply screw is appropriately tightened to secure the wire.
4. Place the battery back-up in the battery location as shown in figure 15, ensuring that the orientation is as shown, the positive terminal being the lowest.
5. Attach the battery brackets as indicated in figure 15 by hooking one end of the brackets under the anchoring slots on the side of the enclosure and the other end over the threaded posts.
6. Install, in sequence, the flat washers, split washers, and nuts, tightening as needed.
7. Connect the wires from the power supply (B) to the battery (K) ensuring that the red wire connects to the '+' terminal and the black wire connects to the '-' terminal.
8. Reconnect the power adaptor or turn on the main AC power to the 660G XT.

NOTE: For preventative maintenance, the battery back-up should be replaced every 2 to 3 years, and tested every 6 months by removing the main AC power.

5.6 Power Failure

In the event of an electrical failure, the system will revert to battery back-up status for a period of 4 hours. If the electrical power is restored within 3 days the system will recover automatically and should require no additional programming.

When electrical power is restored after a power failure verify the status of the LED D41 on the controller board (C). Refer to Annex A, Table 3 for Status LED definitions. If the LED is OFF reprogram controller board (C).

NOTE: When the voltage of the battery back-up is too low the controller board stops working and the relay on the controller board (C) will return to its normal state. The peripheral connected to the relay will then be either in a normally open (NO) or normally closed (NC) state dependent on the wiring of the device to the controller board (C).

5.7 Loading Recommendations

CAUTION: Do not exceed the load limitations of the control panel.

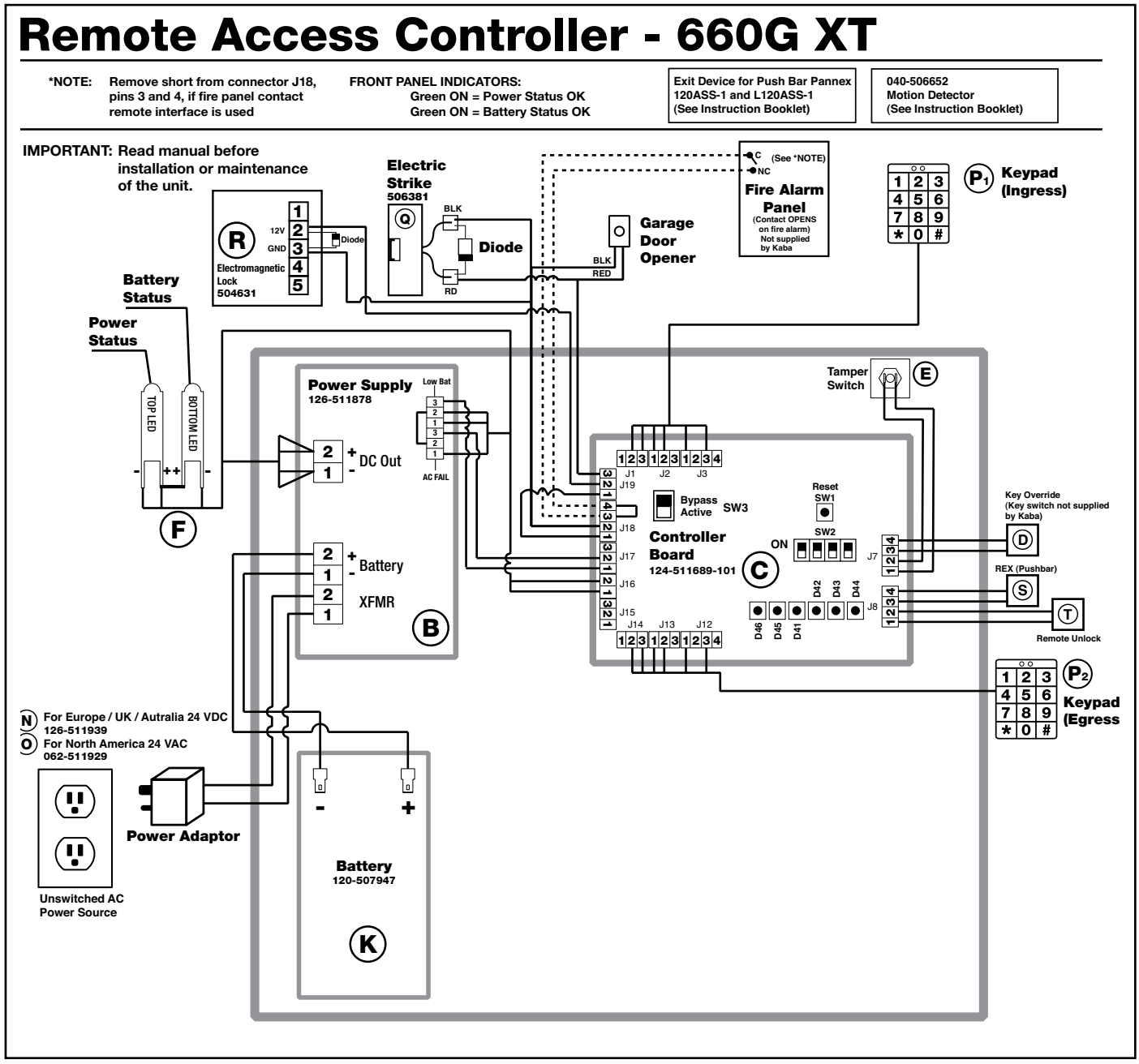
The maximum recommended load for all output relays in the card reader control panel is 1 Amp at 30 VDC. The tamper switch rating is 1 Amp at 30 VDC.

The current supplied by the controller board (C) for the locking device used is 0.75 Amps from connector J18, pin 1. Refer to Annex A, Table 1.

5.8 System Deactivation

In order to deactivate the card reader control panel, disconnect both terminals from the battery back-up, then disconnect the AC power either by removing the power adaptor from the wall outlet, or by shutting off the main breaker switch for the AC line to the wall outlet the control panel is connected to.

6.0 Annex A Wiring Diagram



6.0 Annex A Wiring Tables

Table 1

Controller Board (C) to Peripherals Connections (D), (H), (P1), (P2), (Q), (R), (S), (T), (V), Door Status and Aux. Devices							
Description	**Controller**	**ID**	**Wire Color**	**Description**	**Controller**	**ID**	**Wire Color**
* (P1) Keypad Ingress	J1-1	5V	NO WIRE	* (P2) Keypad Egress	J14-1	5V	NO WIRE
	J1-2	GND	BLACK		J14-2	GND	BLACK
	J1-3	12V	RED		J14-3	12V	RED
	J2-1	1 (Data 0)	GREEN		J13-1	1 (Data 0)	GREEN
	J2-2	2 (Data 1)	WHITE		J13-2	2 (Data 1)	WHITE
	J2-3	3	NO WIRE		J13-3	3	NO WIRE
	J3-1	1 (Green LED)	BROWN		J12-1	1 (Green LED)	BROWN
	J3-2	2	NO WIRE		J3-2	2	NO WIRE
	J3-3	3 (Red LED)	YELLOW		J12-3	3 (Red LED)	YELLOW
	J3-4	4	NO WIRE		J3-4	4	NO WIRE
(T) Remote Unlock	J8-1	REM UNL	-	Fire Alarm (Q) Strike or (R) Maglock	J18-1	12V LCK	-
	J8-2	GND	-		J18-2	GND	-
(S) REX	J8-3	REX	-		J18-3	FIRE ALM	BLACK
	J8-4	GND	-		J18-4	GND	BLACK
(D) Key Override	J7-3	NO	-	(V) Garage Opener, (Q) Strike or (R) Maglock	J19-1	COM	-
	J7-4	GND	-		J19-2	NC	-
					J19-3	NO	-

Note: Connections required are dependant on system options purchased.
Note: Part numbers indicated subject to change. Please refer to ordering guide for current numbering.

Table 2

PCB Status LED's	
LED	**Description**
D46	Keypad RED LED
D45	Keypad GREEN LED
D41	Initialization
D42	Not Used
D43	Normal Operation (Blinking)
D44	Relay 0

Table 3

Access Delay Table - SW2 on Controller Board					
CFG#	**1**	**2**	**3**	**4**	**SEC**
1	ON	ON	ON	ON	8
2	OFF	ON	ON	ON	1
3	ON	OFF	ON	ON	3
4	OFF	OFF	ON	ON	5
5	ON	ON	OFF	ON	10
6	OFF	ON	OFF	ON	15
7	ON	OFF	OFF	ON	20
8	OFF	OFF	OFF	ON	25
9	ON	ON	ON	OFF	30
10	OFF	ON	ON	OFF	35
11	ON	OFF	ON	OFF	40
12	OFF	OFF	ON	OFF	50
13	ON	ON	OFF	OFF	60
14	OFF	ON	OFF	OFF	90
15	ON	OFF	OFF	OFF	120
16	OFF	OFF	OFF	OFF	RE-INIT

6.0 Annex A Tables

Table 4

Power Supply (B) to Power Adaptor (N) or (O)			
Power Adaptor	**Power Supply**	**ID**	**Wire Color**
(N) International	XFMR-1 XFMR-2	1 2	BLACK BLACK / WHITE
(O) North American	XFMR-1 XFMR-2	1 2	- -

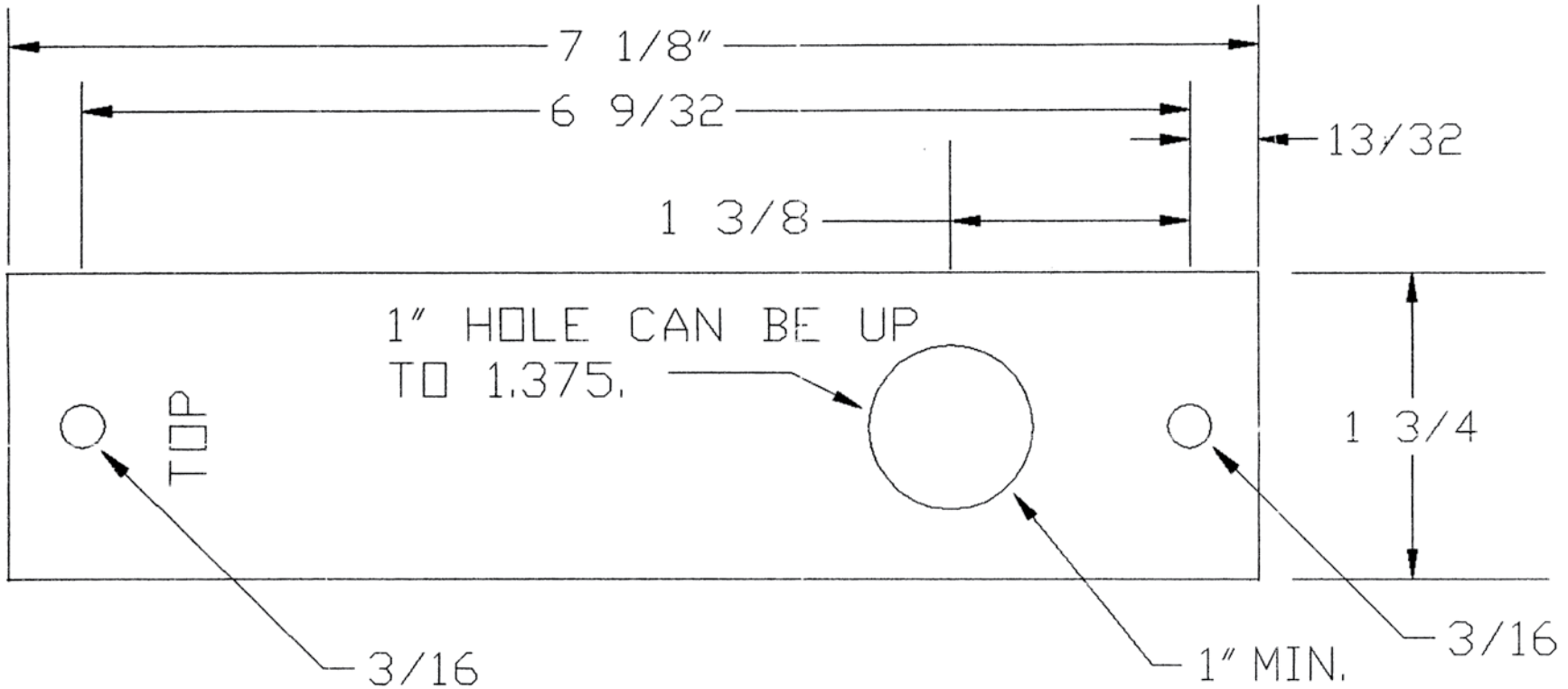
Table 5

Power Supply (B) to LEDs (F)				
Description	**Power Supply**	**ID**	**Wire Color**	**LED**
LED Power Status	AC Fall-1 N/A	NC N/A	ORANGE RED*	(-) (+)
LED Battery Status	LOW BAT-1 DC OU-2 N/A	NC + N/A	YELLOW RED RED*	(-) (+) (+)
*CAUTION: Red wire jack between both positive (+) terminals of each LED also included				

Table 6

Controller Board (C) to Power Supply (B)					
Description	**Wire Color**	**Controller**	**ID**	**Power Supply**	**ID**
DC Power	RED BLACK	J16-1 J16-2	12V GND	DC OUT-2 DC OUT-1	+ -
AC Fail	BROWN WHITE NO WIRE	J17-1 J17-2 J17-3	Low Batt AC Fail GND	Low BAT-3 AC Fail-3 -	NO NO -

DWG. NO.		RTL01	
REV	DATE	REVISION RECORD	APPD
	12/94	NEW RELEASE	J.C.E.
	9/98	CHANGE HOLE SIZE	

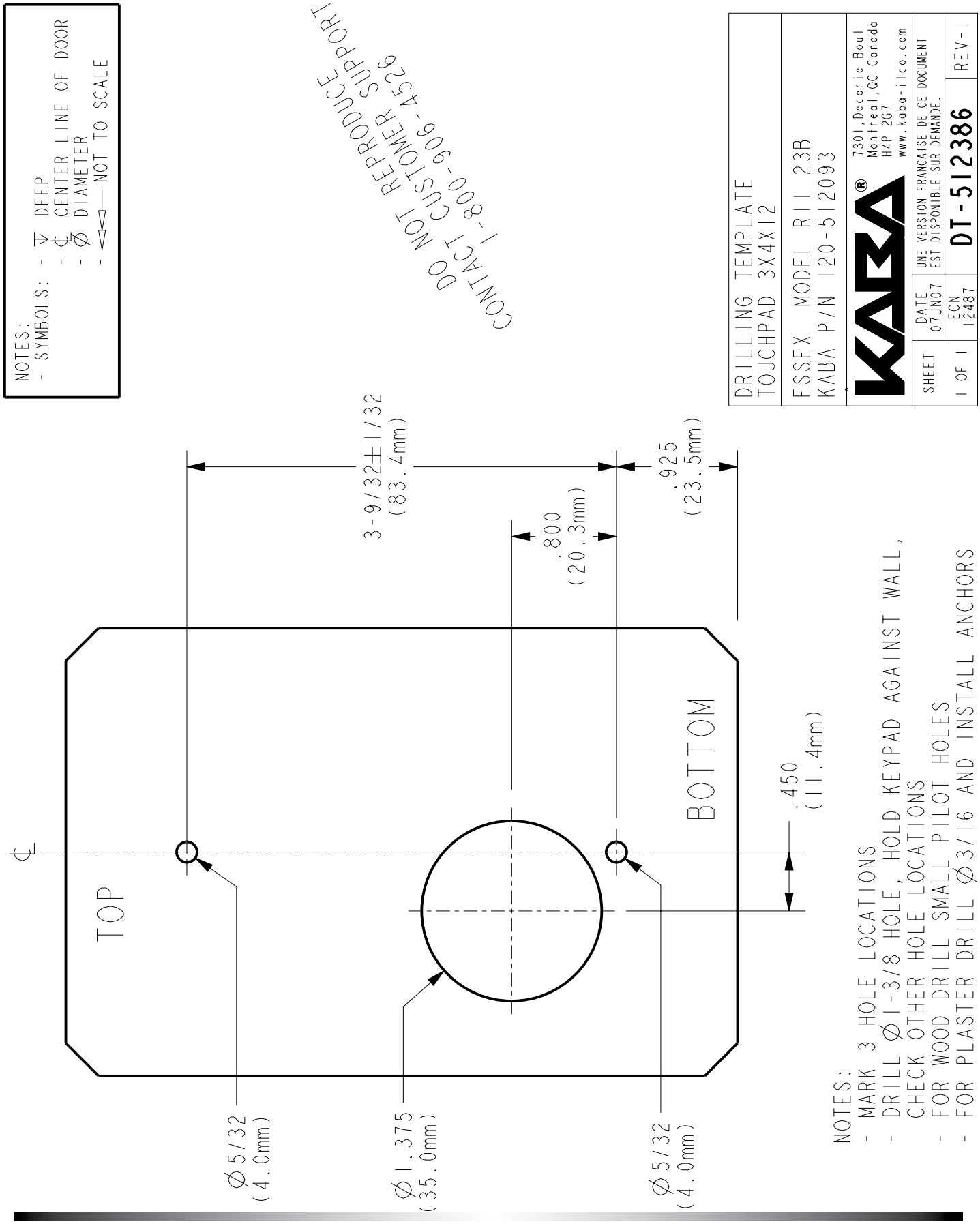


MARK 3 HOLE LOCATIONS
DRILL 1" HOLE. HOLD KEYPAD AGAINST WALL, CHECK OTHER HOLE LOCATIONS.
IF MOUNTING TO WOOD, DRILL SMALL PILOT HOLES.
IF MOUNTING TO PLASTER DRILL 3/16, INSTLL ANCHORS.

NOTES: UNLESS OTHERWISE SPECIFIED

TOLERANCES UNLESS OTHERWISE SPECIFIED DIM'S IN INCHES		ESSEX ELECTRONICS INCORPORATED	
.X	±.030	TITLE	TEMPLATE, 2X6 TOUCHPAD
.XX	±.010	DR: J. ECHOLS	DWG NO: RTL01
.XXX	±.005	ENG: C E 9/24/98	
<	± .5°	APPD:	SCALE: FULL — SHEET 1 OF 1

6.0 Annex B Drilling Template



6.0 Annex C Quick Troubleshooting Guide

The following sections show basic troubleshooting for some common problems that may occur during installation. Each section relates to a specific type of problem, namely:

- Power Troubleshooting
- Troubleshooting
- External Inputs Troubleshooting
- Locking Device Troubleshooting
- Programming and Auditing Troubleshooting

For detailed assistance, please contact Technical Support as indicated at the start of this manual.

1. Power Troubleshooting

Symptom	Action
Power adaptor LED is OFF	- Verify that the AC supply is not turned off. - Verify that the adaptor output is not shorted.
Power supply AC ON green LED is OFF	- Verify that the wiring to the power wall-mount adaptor is correct. - If using the 24 VDC international adaptor, verify that the polarity is correct.
Power supply DC ON red LED is OFF	- Verify the wiring between the power supply and the RAC 4XT controller. - Verify that the power supply output is not shorted.
RAC 4XT enclosure's panel door "Power Status" LED is OFF	- Verify that the power supply is powered (both AC ON and DC ON LEDs are on). - Verify the LED wiring to the power supply.
RAC 4XT enclosure's panel door "Battery Status" LED is OFF	- Verify the wiring polarity to the battery. If correct, the battery may be discharged. After charging for a few hour, the Battery Status LED should turn green. Full charge may take up to 12 hours. - If the Battery Status LED is still OFF after 12 hours, the battery may need to be replaced.
All RAC 4XT LEDs are OFF	- Verify that the DC ON LED on the power supply is on. - Verify that the AC power is active for the wall mount power adaptor. - Verify that the RAC 4XT controller is connected properly to the power supply as per Annex A, Table 5. - If qualified, with a multi-meter verify that 24 VAC (North American power adaptor) or 24 VDC (international power adaptor) is present across power supply terminal block XFMR_1 and XFMR_2 as per Annex A, Table 4.

1. Keypad Troubleshooting

Symptom	Action
No LED, No sound when key is pressed	- Verify that the RAC 660G XT is powered. - Verify the wiring to the keypad
Test sequence (#, 0, *, 9, 8, 7, 6, 5, 4, 3, 2, 1,) not accepted	- Verify the wiring to the keypad
Code not accepted.	- Verify that the RAC 660G XT controller is active: the Access (D43) LED should blink. If not, reset the RAC 660G XT Controller: press the Reset switch (SW1) or disconnect and reconnect the power. - Verify the wiring to the reader. - Verify that the 660G XT is programmed (LED D41 should be on), If not, program it. - Re-program the RAC 660G XT.

6.0 Annex C Quick Troubleshooting Guide

3. External Inputs Troubleshooting

Symptom	Action
Request to Exit does not work	- Verify that the REX LED (D33) on the RAC 660G XT controller turns on when the button is pressed. If not, verify the wiring to the Request to Exit button. - Verify that the wires are connected to the Normally Open and Common contacts of the Request to Exit button.
Remote Unlock does not work	- Verify that the Remote Unlock LED (D36) on the RAC 660G XT controller turns on when the button is pressed. If not, verify the wiring to the Remote Unlock button. - Verify that the wires are connected to the Normally Open and Common contacts of the Remote Unlock button.
Key Override does not work	- Verify that the key override LED (D40) on the 660G XT controller turns on when the key override is activated. If not, verify the wiring to the key override. - Verify that the wires are connected to the Normally Open and Common contacts of the Key Override.

4. Locking Device Troubleshooting

Symptom	Action
Locking Device always unlocked	- If the Locking Device Relay LED (D31) on the RAC 660G XT controller is ON: • Verify that the delay setting of the DIP switch (SW2) is correct. • Verify that the lock is in not Passage Mode. - If the Locking Device Relay LED (D31) on the RAC 660G controller is OFF: • Verify that the Bypass switch is not active (Bypass LED, D21, is OFF). • Verify that the Fire Alarm input not active (Input contact closed, Fire Alarm LED, D47, is ON). • Verify the wiring to the locking device.
Locking device does not unlock	- If the Locking Device Relay LED (D31) turns on: • Verify that the Fire Alarm input is not active (Input contact closed, Fire Alarm LED, D47, is on). • Verify the wiring to the locking device. - If a diode is installed on the locking device, verify the polarity. - If the locking device Relay LED (D31) does not turn on: • Verify that the Request to Exit or Remote Unlock activation unlocks the door. • Verify that the card is encoded properly. • Verify that the RAC 660G XT is not in Lockout mode. • Verify that the RAC 660G XT is programmed properly.
Fire Alarm does not Unlock door	- Verify that the Fire Alarm input is connected to a Normally Closed contact. - Verify that the Fire Alarm LED (D47) is normally on and turns off when the Fire Alarm is present. - Verify that the 12V_Lock output of the RAC 660G XT controller is connected to the COMMON of the locking device relay.
Unit Resets when the relay activates to unlock the door.	- If the diode is installed on the Electric strike as per Annex A, verify the polarity of the diode. - Verify the wiring to the locking device.

5. Programming and Auditing Troubleshooting

Symptom	Action
Cannot program or audit the RAC 660G XT	- Verify that the RAC 660G XT controller is active: the D43 LED should blink. If not, reset the RAC 660G XT Controller (press the Reset switch (SW1) or disconnect and reconnect the power). - Verify that the 660G XT enters programming mode when *,#,*,#, is pressed, or when a DIP switch (SW2) is toggled. The D45 LED blinks when the 660G is in programming mode. - The 660G controller must still be in programming mode with LED (D45) blinking when the Program or Audit command is selected on the M-Unit. - Verify that the M-Unit is pointing toward the infrared Transceiver (D12) located beside the DIP switch (SW2) during programming and auditing. The distance between the M-Unit and the 660G controller should be a few inches (3 to 6 inches). - If the RAC 660G XT is not initialized (Initialization LED, D41, is OFF) it needs to be programmed: • Follow the instructions in Section 5.2 “Programming using a PALM” - If the RAC 660G XT was already initialized, it may need to be re-initialized: • Follow the instructions in section 5.3 “Reset to factory default”.

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