

R A D I O N I C S

Readykey® K2050 and K2051 Alarm Access Integration Module Installation Instructions

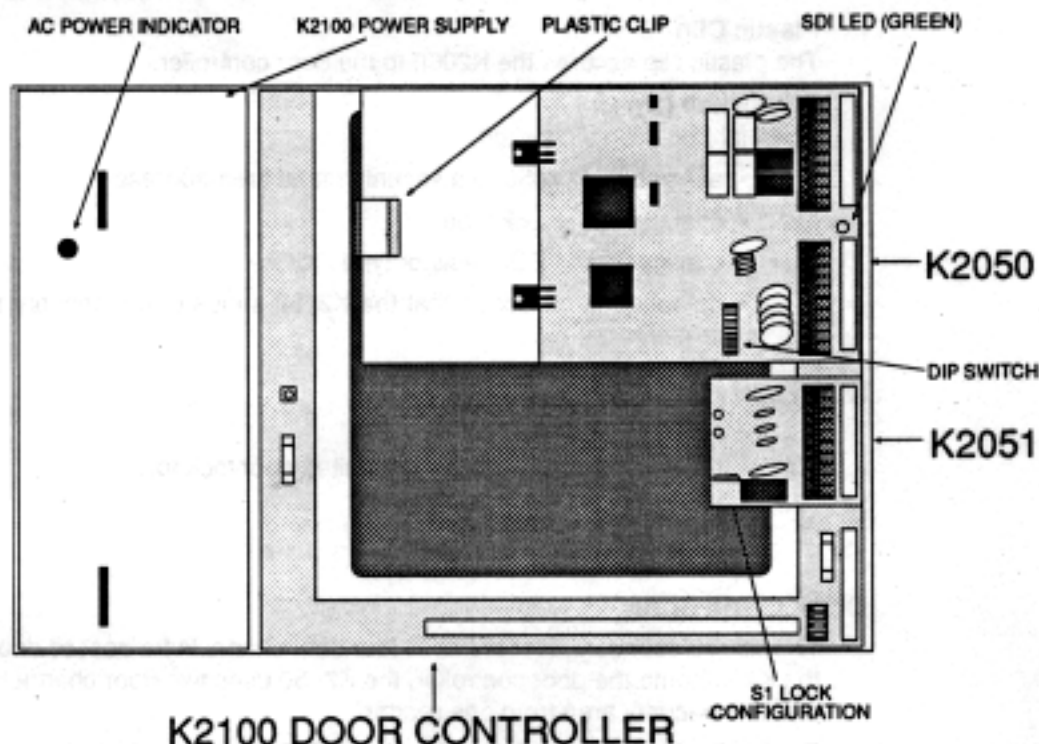


Figure 1: Switches and Indicators

Description

The K2050 is an accessory module used with Readykey Door Controllers (date code of X0006 or later), and Radionics D7212B and D9112B Control/Communicator security panels. Combining the Radionics Security Panel, the Readykey Door Controller, and K2050s allows users to enter the building and automatically disarm the area by simply presenting an electronic key to a Readykey reader.

The K2050 grants access only to electronic keys with the appropriate authority level. The system administrator assigns one of three different authority levels to each electronic key. The administrator can use Time Profiles to change the user's authority level at different times or on different days of the week. The user's ability to enter the area also changes with the arming and disarming of the security system.

The K2050 plugs into two door channels on the K2100 or K1100 Door Controller. The two door channels allow you to connect one reader and one door, and associate that reader with one area on the security panel. It connects to the security panel on the SDI bus. You can connect up to two K2050 Alarm Access Integration Modules to the K2100 Door Controller. You can connect one K2050 to the K1100 Door controller.

The K2050 can also interface with the optional K2051 Access Prohibiter. The K2051 uses one door channel. Readers connected to the K2051 will not allow access to the area or disarm the area when the area is armed.

These installation instructions assume prior knowledge of installing Radionics Control/Communicators and Readykey Door Controllers.

Control Switches and Indicators

Figure 1 shows the location of the switches and indicators on the K2050 and K2051 modules.

K2050

SDI LED (Green)

The SDI LED lights when the K2050 is communicating with the security panel. This LED should be ON during normal operation.

Plastic Clip

The plastic clip secures the K2050 to the door controller.

DIP Switch (SW1)

This eight position dip switch:

- assigns the K2050 to a security panel area address
- configures the lock type
- configures the EOL resistor type
- defaults the passcode that the K2050 sends to the security panel when the user presents a key.

K2051

S1 Lock Configuration

This switch configures the K2051 prohibited door lock for:

- power-to-lock (latched closed)
- power-to-unlock (open).

Door Controller

The K2100 door controller provides four door channels for access doors. When you install the K2050 onto the door controller, the K2050 uses two door channels to control one door and one security area from one reader.

If using the K1100 Door Controller, the K2050 uses both door channels

Module Interaction

Figure 2 shows a basic overview of the components in the system. Install the K2050 onto the Readykey door controller and connect it to the Radionics alarm control panel on the SDI Bus.

As shown, attach the K2050 to all major components in the system. The module interacts with the door, the reader, request to exit, the door controller, the door held open buzzer, the Radionics panel and K2051 Access Prohibiter.

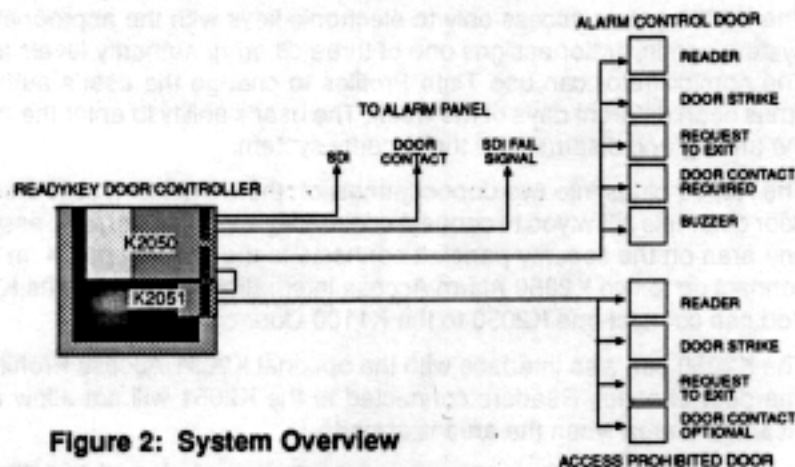


Figure 2: System Overview

Door Type Options

Choose the mode of operation by connecting the door to the access system. Figure 3 shows an application including Alarm Control and Access Prohibited door types. The system offers three options:

- K2050 Alarm Control
- K2051 Access Prohibiter
- K2100 or K1100 Access Only

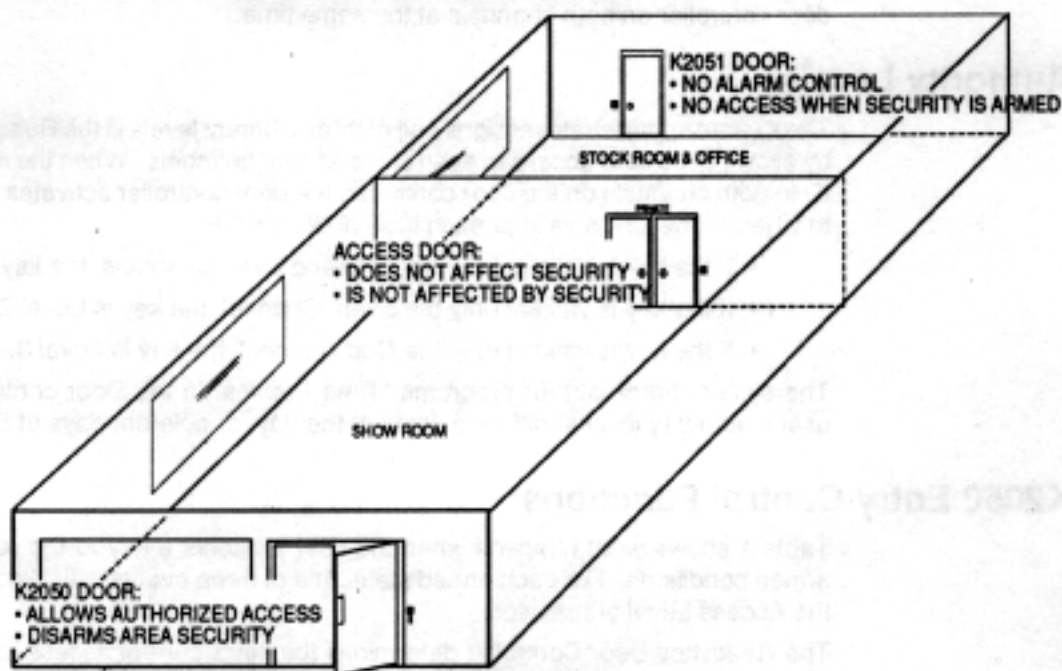


Figure 3: Basic Application in One Alarm Area

K2050 Alarm Control

The Alarm Control mode disarms the area security system when the user presents a valid key and opens the door. When using this mode, connect the access reader and alarm contact to the K2050. When the user opens the door, the K2050 switches the area from fully armed to disarmed or from fully armed to perimeter armed as the level designates.

K2051 Access Prohibiter Operation

Use this mode for doors where access is not allowed when the area is armed. When the area security is armed, a valid key, exit request, or Emergency Override will not disarm the area or unlock the door. When using this mode, attach the reader and door to a K2051 Access Prohibiter.

K2100 or K1100 Access Only

Use this mode for doors that should not affect the area security. Access doors connected directly to the door controller do not disarm the security system when wired directly to the K2100 or K1100 door controller. If the security system monitors access doors that are not connected to the K2050 or K2051, the user must disarm the area security system before passing through monitored doors.

How the K2050 Operates

Each K2050 controls a group of 2 channels:

- If you install only one K2050, it can interface with channels 1 and 2, or with channels 3 and 4 (on the K2100 only).
- If you install two K2050 modules, one interfaces with channels 1 and 2, and the second interfaces with channels 3 and 4 (on the K2100 only).
- When installed onto the K1100, the K2050 uses door channels 1 and 2.

When the user presents a key at the Readykey reader, the K2050 sends the key's ID to the door controller on both channels at the same time.

Authority Levels

The system administrator assigns one of three different levels in the Readykey door controller by allowing the user access to even and odd door channels. When the K2050 sends a key's ID to both channels on the door controller, the door controller activates channels according to whether the key is valid at each individual channel.

- If the key is valid at both the Odd and Even Channels, the key is Level 1.
- If the key is valid at only the Even Channel, the key is Level 2.
- If the key is valid at only the Odd Channel, the key is Level 3.

The system administrator programs "Time Profiles" in the Door controller to change the user's authority level at different times of the day, or different days of the week.

K2050 Entry Control Functions

Table 1 shows what happens when the user presents a key to the reader under various armed conditions. For each armed state, one of three events will take place depending on the Access Level of the user.

The Readykey Door Controller determines the key's current access level by checking the key's programmed Access Code for any Time Profiles. Time profiles change the level of a user at scheduled times. For more information about Access Codes and Time Profiles, see the *K2100/K1100 Door Controller User Guide* (74-07069-000).

The K2050 grants access to all levels only when the control panel is disarmed. The K2050 grants Level 1 users access to the area at all times, regardless of the armed state of the panel. Only Level 2 causes the control to change from fully armed to perimeter armed.

If the access system keeps doors unlocked, arming or perimeter arming the system causes K2050 and K2051 doors to automatically lock. Disarming the area returns control of door locks to the access system.

Area Fully Armed

Level 1 Access

No one should be in the area when it is fully armed. Presenting the "Level 1" key causes the area to completely disarm when the user opens the door. Then all persons with valid keys may enter.

Level 2 Access

Presenting a "Level 2" key and opening the door causes the area to change from fully armed to perimeter armed, omitting interior protection. Users in the area may move about freely within the area, but should not pass through doors leading out of the area without using a key or the exit request device.

Level 3 Access

The K2050 will not grant access to "Level 3" key users until the area is disarmed. The door remains locked when a user presents a "Level 3" key.

Area Perimeter Armed

Level 1 and Level 2 Access

Users in the area may move about freely within the area, but must not pass through doors leading out of the area without using a key or using the exit request device. Presenting a "Level 1" or "Level 2" key causes the area to remain Perimeter Armed so that all persons with valid keys may access the area freely. To completely disarm the area, enter a valid passcode at the area command center.

Level 3 Access

The K2050 will not grant access to "Level 3" key users until the area is disarmed. The system remains perimeter armed and the door remains locked when the user presents a "Level 3" key.

Area Disarmed

All Levels

Users in the area may move about freely inside and through doors leading out of the area. Presenting any valid key unlocks the door and leaves the area disarmed.

Key Access: Key Always Required				
Alarm Panel Arm Status ▼	Key Level 1 Full Authority (Odd & Even)	Key Level 2 Limited Authority (Even)	Key Level 3 Minimum Authority (Odd)	Action
Fully Armed	Disarm	Convert to Perimeter	No Access, Event Logged	Doors Secured
Perimeter Armed	Access & stay perimeter	Access & stay perimeter	No Access Event Logged	Doors Secured
Disarmed	Access & stay disarmed	Access & stay disarmed	Access & stay disarmed	Doors Secured
Exit Delay	Disarm & allow access	Disarm & allow access	No Access Event Logged	Doors Secured, Area Arms

Automatically Unlock Door When Security Is Disarmed: Key Not Required When Area Disarmed				
Alarm Panel Arm Status ▼	Key Level 1 Full Authority (Odd & Even)	Key Level 2 Limited Authority (Even)	Key Level 3 Minimum Authority (Odd)	Action
Fully Armed	Disarm & allow access	Disarm & allow access	No Access *	Doors Secured unless key is presented
Perimeter Armed	Access & stay perimeter	Access & stay perimeter	No Access *	Doors Secured unless key is presented
Disarmed	Key Not Required	Key Not Required	Key Not Required	Doors Open
Exit Delay	Disarm & allow access	Disarm & allow access	No Access *	Doors Open

Table 1: Levels and Armed States

* The door controller does not log Level 3 events when the odd channel is automatically unlocked by a Time Profile.

Automatically Unlock the Door When Disarmed

You can use Time Profiles to configure the Door Controller to cause the door to automatically unlock when the user disarms the area security system. Assign Time Profiles only to the ODD channel. See the *K2100/K1100 User Guide* (74-07069-000) for more information about assigning Time Profiles to door channels.

Arming the area with a command center: Arming the area with the command center causes all doors associated with the area's K2050 or K2051 to lock.

The door controller does not log Level 3 activity when the doors are automatically unlocked by a Time Profile: The door controller does log Level 3 activity when the door is not automatically unlocked by a Time Profile.

Prepare for the Installation

Before You Begin

Be familiar with the installation and programming manuals for the Radionics Control/Communicator and the Readykey Door Controller. Follow these important steps prior to installing the K2050 Alarm Access Integration Module:

- Install the Radionics Control/Communicator
- Install an **unsupervised** Area Wide Command Center
- Install the Readykey Door Controller
- Route a five-wire cable (for the SDI data) between the Radionics Control/Communicator and the Readykey Door Controller for keypad data and SDI fail. (Use a four-wire cable if you are not monitoring SDI failure conditions with the K2050).
- Install and connect security devices to the Radionics Control/Communicator in order to test the system.

Preparing the Security Panel

The K2050 is similar to a single area command center installed on the security panel. You must prepare the security panel for use with the K2050. This section describes the areas where security panel programming affects the K2050.

The security system includes the security panel, command centers, and detection devices. Prepare the security panel by installing and programming it in advance. For more information about security panel programming, see *Compatible Products* in the *Specifications* section of this manual for a listing of the appropriate program entry guide and installation manuals.

Choose the Area/Address Assignment

First, determine the area and the command center address assignment that will be used as an access and security combination area. Program the area and command center address assignment the same.

Install the Security System

Install the Radionics Control/Communicator and detection devices as described in the control/communicator installation manual.

Route a Data Wire

Route a five-wire data cable (four-wire if not using SDI supervision on K2050) from the Radionics Control/Communicator to the K2050. If interference from high voltage, radio communications or other sources is possible, use shielded cable.

Install the Unsupervised Area Command Center

Install the unsupervised area command center. Set the address switches (shown in Table 2) to assign the K2050 to the command center's area/address. Refer to the Control/Communicator Operation and Installation manual for more information about setting the command center's address..

The Area and Command Center Assignment must be the same: If the command center is assigned to Area 1, program the command center for Address 1. The system will not operate properly if the area number and address number are not programmed with the same number.

Program the Security System

Program the Security System enabling the chosen area, and an unsupervised command center for that area.

Program the Passcodes

Program default passcodes according to Table 2.

Program the Authority Levels

Program the authority level for the K2050's security passcode for:

- Area Wide arming of only the area where you install the K2050
- passcode change
- arming and disarming the selected area
- enabled passcode for the area
- enable COMMAND 2 with no passcode required

Programming the Readykey Door Controller

The K2050 interacts with door channel pairs. Channels 1 and 2 are one pair, Channels 3 and 4 are another. This section makes reference to even and odd channels. Odd channels refer to channels 1 and 3, even channels refer to 2 and 4. Program an even and odd channel for each installed K2050. The Readykey door controller program options follow. For more information about Programming the K2100 or K1100 Door Controller, see the *K2100/K1100 User Guide* (74-07069-000).

Even and Odd Door Held Open Relays (CMD RE)

The K2100 and K1100 use programmable relays to trigger buzzer outputs when a door is held open (blocked).

Program relays using the **CMD RE**. Configure the relays on the Door Controller to activate when either the odd or even channel is in a door held open (blocked open) condition. See the *K2100/K1100 User Guide* (74-07069-000) for instructions about programming these relays.

Even and Odd Door Data Programming (CMD D)

Lock Release Time (LRT)

Program both even and odd channels with an entry of 5 seconds.

Door Open Time (DOT)

Program both even and odd channels the same. A range of seconds from 1 to 255 is available.

Time Profile (TP) For Even Channel (2 or 4)

Program the even channel to 0. Do not assign time profiles to the even channel.

Time Profile (TP) For Odd Channel (1 or 3)

Use time profiles to automatically unlock a door when the user disarms the security area. When the area is armed, the K2050 overrides the Time Profile and the door locks.

Lock Mode Functions (M)

Use only options 1, 3 and 7. Disable all other options when using the K2050.

Do not install or enable K2015 or K2015A Alarm Modules on the same door channel:
K2015 and K2015A Alarm Modules are not compatible with the K2050 or K2051.

User Key Access Codes

Access Codes allow keys to be valid at programmed doors during programmed time periods. Access Codes contain time profiles and Access Levels. Access Levels are a list of doors where the key is allowed entry.

Channels are Grouped into Pairs

When using the K2050, pair the door channels into even and odd channels. Channel 1 and 2 are a pair. Channel 3 and 4 are another pair.

Create Levels by Manipulating Even and Odd Channels

Create K2050 levels by manipulating even and odd doors in Access Levels. Figure 4 shows programming in Access Levels for a single door. Create Level 1 keys by allowing access to even and odd door channels. Create Level 2 keys by allowing access only to the even door channels. Create Level 3 keys by allowing access only to odd door channels.

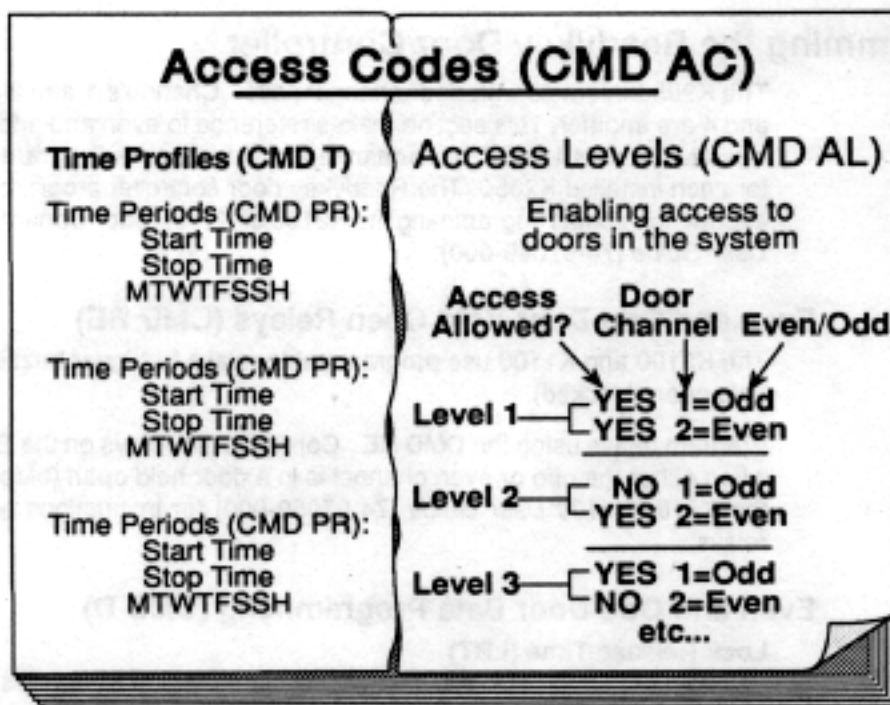


Figure 4: Creating Levels 1, 2, and 3

Installing the K2050

Mount the K2050

As shown in Figure 5, the K2050 plugs into either channels 1 and 2 or channels 3 and 4. Channels 1 and 3 are the "Odd" channels and Channels 2 and 4 are the "Even" channels. Follow these steps to install the K2050 onto the door controller:

1. Remove the door controller keypad and display plate.
2. Plug the K2050 into the door channel terminal socket on the K2100 or K1100 door controller. We supply all needed mounting hardware with the K2050.
3. Peel the tape from the back of the plastic clip.
4. Slide the clip onto the K2050 and position the clip in the center of the heat sink on the left side of the K2050.
5. Press the K2050 onto the motherboard cover so that the plastic clip sticks.

Follow these steps to wire the Door Blocked input on the K2050 (see Figure 5):

1. Connect Terminal 18 of the K2050 to the even and odd AUX Relay N.O. (selected for "Door Held Open" activation) on the K2100 door controller.
2. Connect a jumper between terminal 10 on the K2050 and the Door Held Open Relay Commons (selected for "Door Held Open" activation) on the door controller.

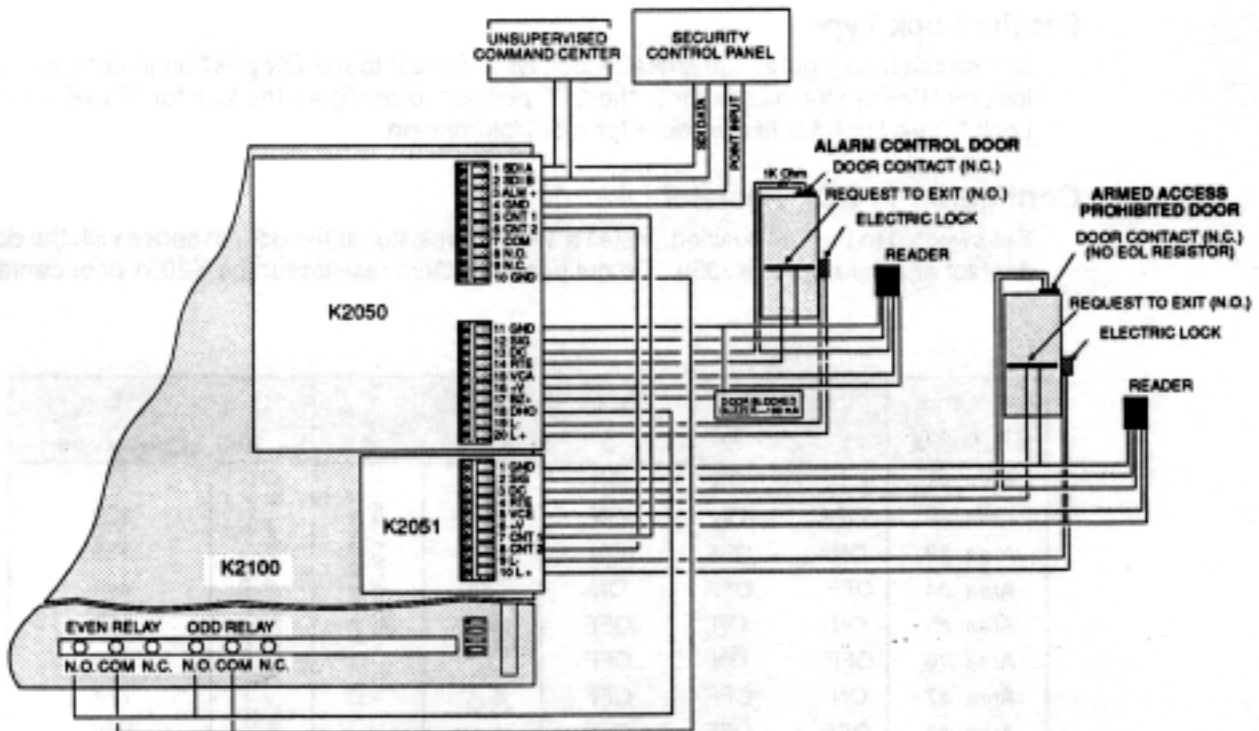


Figure 5: Installing the K2050 and K2051

Wire the K2050

The maximum recommended wire run between the security control and each K2050 is 2000 feet with 22 gauge wire. Connect the terminals, as shown in Figure 5. See the device instructions for specific wiring connections.

Set the DIP Switches on the K2050

Table 2 shows a eight-position DIP Switch which allows selection of the address for each module and other options.

K2050 switches 1,2, and 3: The settings for K2050 switches 1, 2, and 3 must match the settings on the unsupervised command center's switches 1, 2, and 3.

Switches 7 and 8 not used: Leave switches 7 and 8 in the OFF position.

Select the Area

Dip switches 1, 2, and 3 set the alarm panel area/address that the K2050 controls. As shown below, slide the switches to the ON or OFF position to set the appropriate area/address.

Default the combination

Mandatory step for all new installations: After selecting the area, momentarily set switch 4 to the ON position to set the K2050's combination to the default selection shown in the chart. Slide switch 4 to the OFF position for normal operation. See *Programming the K2050 Passcode* for more information.

Set the Lock Type

DIP switch 5 configures the strike or lock type. Slide it to the ON position to configure the lock for "Power ON to Lock" or to the OFF position to configure the lock for "Power OFF to Lock." See *Lock Mode Functions* for more information.

Configure the EOL Resistor

Set switch 6 to the ON position. Install a 1K Ohm resistor at the door in series with the door contact attached to the K2050. Do not use a 1K Ohm resistor for the K2051 door contact.

Area and Address #	Area/Address Switches			4	5	6	Default Passcode
	1	2	3				
Area #1	ON	ON	ON	ON = Default Passcode OFF = Normal Position	ON = Power to Lock OFF = Power to Unlock	ON = US EOL Resistor-1K Ω OFF = Euro. Resistor -2.2K Ω	111
Area #2	OFF	ON	ON				222
Area #3	ON	OFF	ON				333
Area #4	OFF	OFF	ON				444
Area #5	ON	ON	OFF				555
Area #6	OFF	ON	OFF				666
Area #7	ON	OFF	OFF				777
Area #8	OFF	OFF	OFF				888

Table 2: DIP Switch Settings and Functions

Program the K2050 Passcode

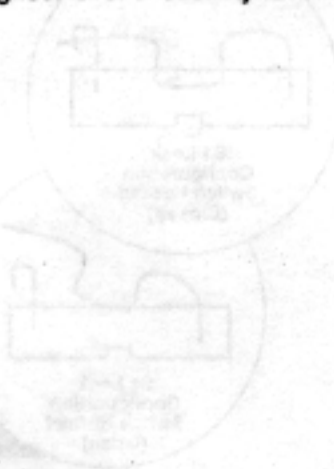
Before attempting to program the passcode into the K2050, these actions must be complete:

- The Radionics Control/Communicator must be operational
- Program the default passcode into the Radionics control/communicator as shown in Table 2.
- The Readykey Door Controller must be operational
- Program a level 1 key into the Readykey Door Controller
- Completely mount and wire the K2050
- Install the command center on the SDI bus between the K2050 and the Radionics Control/Communicator

1. Check the green "SDI-OK" LED. Do not proceed if it is not illuminated. If the LED is not lit, check the wiring and the Radionics control/communicator programming.
2. Slide DIP switch 4 on the K2050 momentarily (on, then back off again). This loads the default passcode into the K2050.
3. Fully arm the area by entering the default passcode into the command center.
4. Present the Level 1 key at the controlled door. The door should unlock (green indication on Readykey reader).
5. Open the door. After opening the door, the command center should show that the area is disarmed.
6. To change the passcode from the default, use the command center to change the combination with COMMAND 55.

Do not use D5200 or RAM II to change this combination: The K2050 passcode is programmed only with the area's command center. Changing the passcode with the D5200 or RAM II will allow access to the area, but the area will remain armed.

Be sure to change from the default passcode: The default passcode is widely known. Change the passcode to ensure the highest level of security for the user.



Install the K2051

The K2051 Access Prohibiter blocks access to a selected door when the security area is armed.

The K2051 plugs onto a door controller channel that is not being used for the K2050 (see Figure 5). When using the K2100 Door Controller with one K2050, you can install one or two K2051 Access Prohibitors on the two available door channels.

When using the K2100 Door Controller with two K2050 modules, you can not install the K2051 on the same K2100. You can install the K2051 on a separate K2100 or K1100 door controller to prohibit access to other doors when the area is armed.

When using the K1100 Door Controller with one K2050 module, you can not install the K2051 on the same K1100. You can install the K2051 on a separate K2100 or K1100 door controller to prohibit access to other doors when the area is armed.

Wire the K2051

Route a two-wire cable between K2051 and K2050. One of the wires connects K2051 terminal 7 (CNT1) to K2050 terminal 5 (CNT1). The second wire connects K2051 terminal 8 (CNT2) to K2050 terminal 6 (CNT2).

Configure the K2051 Door Lock

Switch S1 on the K2051 selects the type of lock (see Figure 6). Unlatch S1 for power-to-unlock. Latch S1 for power-to-lock.

Check your door controller programming: The Lock Mode setting in CMD D must match the switch setting on the K2051 to work properly. See *Programming the Readykey Door Controller* for more information.

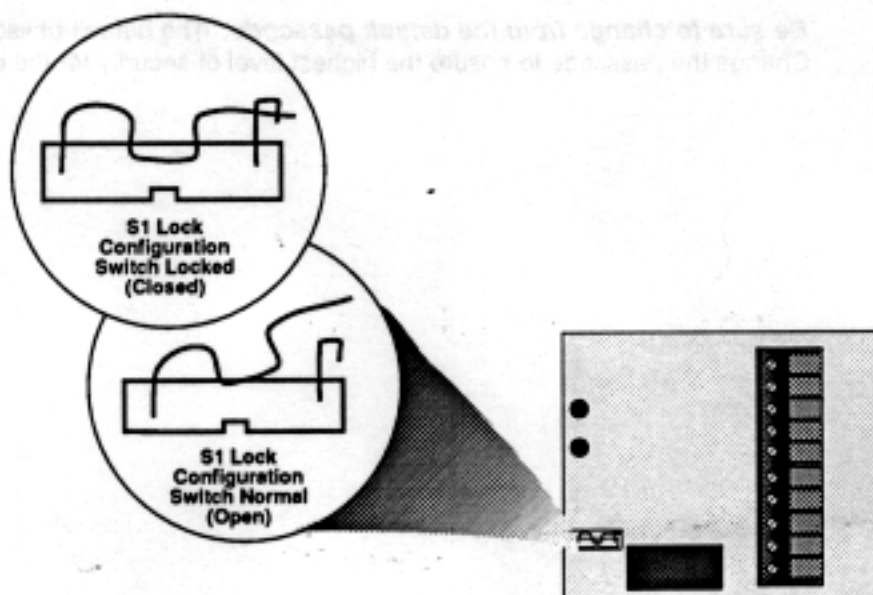


Figure 6: S1 Lock Configuration Switch

Specifications

Power

Supplied by the Readykey Door Controller

Current Required

Idle: 100 mA, armed or disarmed.

Maximum: 150 mA

Door Held Open Buzzer Output

100 mA @ 12 VDC

Wiring

Maximum resistance on the conductors connected to SDI BUS A and SDI BUS B is 25Ω.

Operating Temperature

32° to 122° F (0° to 50°C)

Relative Humidity

5 to 85% @ 86°F (30°C) Non-condensing

Listings and Approvals

UL 294: Access Control

UL 1076: Proprietary Burglar Units and Systems

Compatible Products

Product	Program Entry Guide	Operation & Installation Manual
K2100 (Date code of X0006 or later)	74-07069-000 (User Guide)	74-06964-000
K1100 (Date code of X0006 or later)	74-07069-000 (User Guide)	74-06964-000
D9112B	74-06144-000	74-06145-000
D7212B	74-06913-000	74-06915-000

FCC Notices

Part 15

This equipment generates and uses radio frequency energy. If not installed and used in accordance with the manufacturer's instructions, it may cause interference to radio and television reception. It has been tested and found to comply with the specifications in Part 15 of FCC rules for Class A Computing Devices.

If this equipment causes interference to radio or television reception - which can be determined by turning the equipment on and off - the installer is encouraged to correct the interference by one or more of the following measures: 1) Reorient the antenna of the radio/television. 2) Connect the AC transformer to a different outlet so the control panel and radio/television are on different branch circuits. 3) Relocate the control panel with respect to the radio/television.

If necessary, the installer should consult an experienced radio/television technician for additional suggestions, or send for the "Interference Handbook" prepared by the Federal Communications Commission. This booklet is available from the U.S. Government Printing Office, Washington D 20402, stock number 004-000-00450-7.

K2050 Terminal Quick Reference

Pin	Label	Terminal Description	Connect To:
1	SDI A	Serial Device Interface A	Security Control Panel SDI A
2	SDI B	Serial Device Interface B	Security Control Panel SDI B
3	ALM +	Alarm Zone Output	Security Control Panel Point Input
4	GND	Ground	Security Control Panel Point Common
5	CNT 1	Control 1	K2051 Terminal 7 CNT 1
6	CNT 2	Control 2	K2051 Terminal 8 CNT 2
7	COM	SDI Supervision Relay Common	SDI Fail Indicator (Common)
8	N.O.	SDI Supervision Relay Normally Open	SDI Fail Indicator (N.O.)
9	N.C.	SDI Supervision Relay Normally Closed	SDI Fail Indicator (N.C.)
10	GND	Ground	•K2100 Door Held Open (Blocked) Relay N.O. •Door Held Open (Blocked) Indicator Negative
11	GND	Ground	•Access Reader GND •Request to Exit Negative
12	SIG	Reader Data Input	Access Reader SIG
13	DC	Access Door Contact Input	Access Door Contact (N.C.w/1K Ohm Resistor)
14	RTE	Access Door Request to Exit	Access Door Request to Exit (N.O.)
15	VCA	Reader LED	Access Reader VCA
16	+V	Reader Voltage Output +18 VDC	Access Reader +V
17	BZ+	Door Block Indicator +12VDC (100 mA Max)	K2100 Door Held Open (Blocked) Relay Common
18	DHO	Door Held Open (Blocked) Input	K2100 Door Held Open (Blocked) Relay N.O.
19	L-	Electric Lock Negative	Electric Lock Negative
20	L+	Electric Lock +12 or +24 VDC	Electric Lock Positive

K2051 Terminal Quick Reference

Pin	Label	Terminal Description	Connect To:
1	GND	Ground	•Access Reader GND •Request to Exit Negative
2	SIG	Reader Data Input	Access Reader SIG
3	DC	Access Door Contact Input	Access Door Contact (N.C.)
4	RTE	Access Door Request to Exit	Access Door Request to Exit (N.O.)
5	VCA	Reader LED	Access Reader VCA
6	+V	Reader Voltage Output +18 VDC	Access Reader +V
5	CNT 1	Control 1	K2050 Terminal 5 CNT 1
6	CNT 2	Control 2	K2050 Terminal 6 CNT 2
9	L-	Electric Lock Negative	Electric Lock Negative
10	L+	Electric Lock +12 or +24 VDC	Electric Lock Positive

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