

2916 Keypad **Installation Instructions** I-EA00080

INSTALLATION INSTRUCTIONS 2916

The 2916 Indoor/Outdoor Keypad Surface Mount is a digital keyless entry system designed for access control applications. The keypad is integrated in a heavy cast vandal resistant housing, designed to be mounted on a rugged, surface mounting plate and may be mounted in a standard single-gang electrical box. The indoor/outdoor backlit keys have bright, easy-to-read graphics.

Up to 500 entry codes, from 4 to 6 digits in length, can be programmed. They can activate either, or both of the relay outputs. The "anti-passback" feature prevents using the same code again before the programmed time elapses.

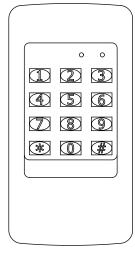
All system indicators are long-lasting, solid state LEDs. Two indicators show the status of the entry system. The left indicator lights red to indicate power, then turns green when access is granted. The right indicator lights yellow when the keypad is in "lockout" condition (from too many incorrect code entries). The yellow LED flashes when the keypad is in programming mode. An internal sounder beeps when each key is pressed. An internal jumper sets the sounder volume high or low

The SENSE input can be used two ways. If programmed for "door sense" the input is wired to a normally closed switch on the door to detect when the door is opened or closed. Forced entry or door ajar situations can then be detected. Using door sense, the "Auto-relock" feature will prevent "tailgating" by turning off the Main Relay output immediately when the door is closed after access has been granted. If the SENSE input is programmed for "inhibit", the input can be wired to a "service" switch or automatic timer that will disable the Main Relay when required.

The REQUEST-TO-EXIT input can be wired to a pushbutton to provide codeless activation of Main Relay, Auxiliary Relay, Output #3 or Output #4 (programmable).

The ALARM SHUNT output activates when access is granted. This output can be wired to shunt alarm contacts on the access door/gate to prevent triggering of an alarm when authorized access occurs.

The 2916 is powered from a 12-24V AC or DC source. The EEPROM memory retains all entry codes and programming, even without power. An internal jumper is provided to reset the master code. The Main Relay has a 5 Amp capacity. The Auxiliary Relay has a 2 Amp capacity. Two solid state outputs, capable of switching 100 mA to common, are programmable to signal forced entry, door ajar, lockout, alarm circuit shunting, request-to-exit, and keypad active conditions.



Features

- Keypad programmable
- 500 user codes
- 4 to 6 digit user codes
- 4 independent outputs
- 4 independent timers
- 2 Form C relay contacts
- 2 solid state open collector outputs
- Program entry codes to activate one or two relays
- **Disable input**
- Door sense input
- Request-to-exit/enter input
- Keypad tamper lockout
- Timed anti-passback
- Anti-tailgate
- Two LED status indicators
- Tactile key feel
- Audible code entry verification
- 12 or 24V, AC or DC operation

SPECIFICATIONS

Mechanical

Dimensions: 3.00" W x 5.75" H x 1.375" D (1.4375" wall projection)

Electrical

Input Voltage: 12-24 Volts AC or DC

Operating Current: 30 mA typical, 150 mA max

Output Ratings

Main Relay: Form "C" 5 Amps @ 28 Volts max Auxiliary Relay: Form "C" 2 Amp @ 28 Volts max Type: Solid state outputs (Outputs #3 & #4) Short-to-common 100 mA @ 24 VDC maximum

Environmental

Temperature: -22°F to 149°F (-30°C to 65°C) Humidity: 5% to 95% non-condensing



FRONT

(2)

BACK

KEYPAD

POWER

AUXILIARY

RELAY

JP2

MAIN

RELAY

(*)

ó

3

6

 (\mathfrak{P})

10

E1

E8

YELLOW

KEYPAD

JP1

WIRE

HARNESS (E1-E8)

ANTI-TAMPER

SWITCH

"PROGRAM"

RED/GREEN POWER/ACCESS

INDICATOR

QuickStart Programming

To enter Programming Mode, enter #9# plus the Master Code. The yellow indicator will blink slowly showing that the 2916 is in programming mode. Use the option codes to program each function. After the new data entry is complete for each function, the yellow indicator will flash quickly while the data is being stored and the green indicator will light briefly if the programming has been accepted. The red indicator will light if any programming data is entered incorrectly or the function is rejected. If a red indicator is seen, the entire function (option code + data) will have to be fully re-entered.

Program the first user code

Step 1. Enter: **#9# 123456#** - Enter the program mode (default master code)

Step 2. Enter: 03# 4# - Set the entry code length to 4 digits

Step 3. Enter: 21# 5# - Set the main relay activation time for 5 sec.

Step 4. Enter: 01# 001# 9876# 9876# 1# - PIN code '9876' is assigned to User #001 to momentarily activate the main relay

Step 5. Enter: **# - Exit programming mode

Once the code length and relay time has been set you do not need to set them again for additional users.

Test your new user code

Enter user code '9876#'. The green indicator should illuminate, the main relay should activate and the door should unlock for 5 seconds.

Adding additional user codes

Step 1. Enter: #9# 123456# - Enter the program mode (default master code)

Step 2. Enter: 01# 002# 2222# 2222# 1# - PIN code '2222' is assigned to User #002 to momentarily activate the main relay Step 3. Enter: 01# 003# 2580# 2580# 10# - PIN code '2580' is assigned to User #003 to

toggle (on/off) the main relay

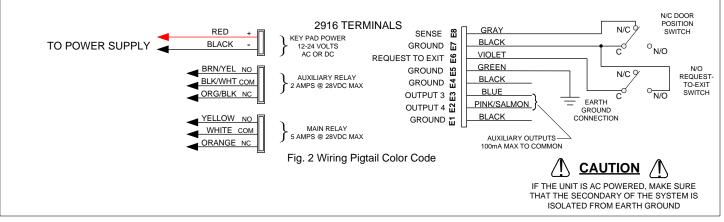
Step 4. Enter: # - Exit programming mode

Deleting a user code

Step 1. Enter: #9# 123456# - Enter the program mode (default master code)

Step 2. Enter: 02# 002# 002# - User 2 has been deleted.

Step 3. Enter: ** # - Exit programming mode





KEYPAD WIRING

See Fig. 3 for an example of a basic door installation. The keypad is mounted adjacent to the door. An electric door strike is mounted in the door jamb to release the door lock. A magnetic switch is mounted on top of the door jamb for detecting when the door is open.

Use the following steps to wire the keypad. Refer to the wiring diagram shown in Fig. 4 to assist in the wiring.

Note: Up to 500 feet of 18 AWG wire can be run for power, use larger wire for longer runs. Use 22 AWG or larger (depending on load) for other connections.

Output

- □ Install a low voltage electric door strike for unlocking the door.
- Route two wires between the door strike and the keypad box.
- Connect a MOV or varistor across the coil wires of the strike.
- Connect the (+) door strike wire to the keypad's MAIN RELAY N.O. blue wire. Connect the other door strike wire to the keypad's PWR black wire (-). Connect a wire between the keypad's PWR red wire (+) and the MAIN RELAY COM white wire.

Power

- Choose a location for the DC power supply or AC transformer.
- Route two wires between the power supply and the keypad box.
 Connect the power supply's output terminals to the keypad's PWR red (+) and black (-) input wires. Observe wiring polarity if using DC.

Caution: If the unit is AC powered, make sure the secondary of the system transformer is isolated from earth ground.

Earth Ground

To avoid damage to the unit from static discharges, connect the EARTH GROUND black wires E1, 4, 5 or 7 to a good earth grounding point. Suggested wiring size is 18 AWG for earth ground.

Sense Input

RE Note: The SENSE input (gray wire) can be programmed for either a door sense or inhibit input. <u>Both features cannot be used at the same time.</u> If you are not using the sense input, program the input for inhibit.

- To use the door sense feature to detect forced entry or door ajar conditions, install a *normally closed* door switch on the door and route two wires from the switch to the keypad box. Connect the door switch to the keypad's SENSE terminal (gray wire E8) and COM terminal (any black wire).
- If an inhibit switch or timer is going to be used for temporarily disabling the keypad, route two wires from the switch or timer to the keypad box. Connect the inhibit switch/timer normally open terminals to the keypad's SENSE (gray wire E8) and COM (black wires) terminal.

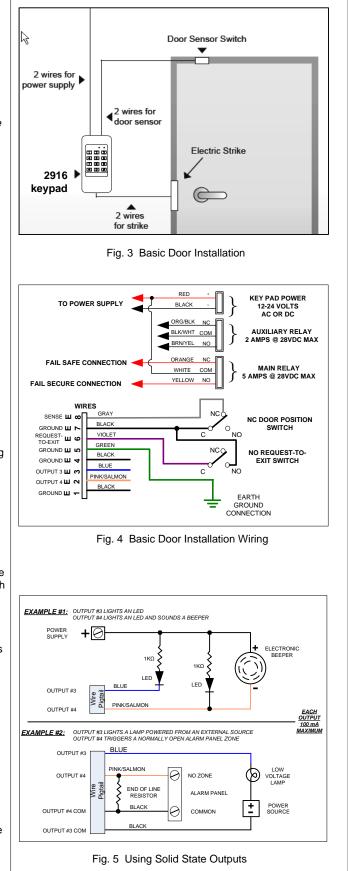
Request-to-Exit Input (wiring shown on page 3, fig. 4)

If a request-to-exit pushbutton is going to be used, route two wires from the keypad box to a normally open pushbutton mounted on the secure side of the door. Connect the wires to the pushbutton and to the keypad's REX (violet wire E6) and COM (black wires) terminals.

Solid State Outputs

The two solid state outputs (Outputs #3 & #4) can be programmed to activate during various conditions. These outputs can be used to activate indicators or sounders. See fig. 5 for wiring examples using the solid state outputs.

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FACTORY DEFAULTS		
Master Programming Code		
Entry Code Length	4 digits	
Request-to-exit Output Relay	Main Relay	
Alarm Shunt Output	Disabled	
Forced Entry Output	No Output	
Door Ajar Output		
Main Relay On Time		
Auxiliary Relay On Time	02 Seconds	
Solid State Output #3 On Time	02 Seconds	
Solid State Output #4 On Time	02 Seconds	
Door Sense/Inhibit Input	Door Sense	
Keypad Lockout Output	Disabled	
Keypad Active Output	Disabled	
Beeper Sounds When Key Pressed	Yes	
Beeper Sounds During Relay #1	No	
Beeper Sounds During Relay #2	No	
Beeper Sounds During Output #3	No	
Beeper Sounds During Output #4	No	
Keypad Lockout Count	3 Tries Before Lockout	
Anti-Passback Time	Passback TimeNo Anti-Passback	
Auto-Relock		

BASIC PROGRAMMING

Entering Programming I

Exiting Programming M

Adding a New Entry Code

Entry Code Length4 digits	Press: 0 1 # User # Code # Code # Relay #
Request-to-exit Output RelayMain Relay	Code=The new entry code: 1-999999, depending on code length
Alarm Shunt OutputDisabled	Relay =Relay output entry code will activate:
Forced Entry OutputNo Output	
Door Ajar OutputNo Output	
Main Relay On Time02 Seconds	12=Relay #1 toggled; Relay #2 timed open
Auxiliary Relay On Time02 Seconds	21=Relay #1 timed open; Relay #2 toggled
Solid State Output #3 On Time02 Seconds	The yellow indicator will flash quickly while the 2916 searches its
Solid State Output #4 On Time02 Seconds	memory for available space and duplicate entries. The green
Door Sense/Inhibit InputDoor Sense	indicator will light when the new code is stored.
Keypad Lockout OutputDisabled	If the new entry code chosen is already being used for another entry
Keypad Active OutputDisabled	code, the red indicator will light. A new unique code needs to be
Beeper Sounds When Key Pressed	entered.
Beeper Sounds During Relay #1No	
Beeper Sounds During Relay #2No	Note: Leading zeros (zeros before the code number, i.e.0001) do not need to
Beeper Sounds During Output #3No	be entered when programming a new code. The 2916 will internally add any zeros to fill digits determined by the entry code length setting. Leading zeros
Beeper Sounds During Output #4No	will have to be entered by the user when entering their code to gain access.
Keypad Lockout Count3 Tries Before Lockout	
Anti-Passback TimeNo Anti-Passback	Output Toggle Mode
Auto-RelockOn	When an output is programmed for Toggle Mode, the output alternates from
	OFF to ON or from ON to OFF each time it accessed. When an output is toggled on, the green LED remains solid until toggled off.
BASIC PROGRAMMING	
When the 2916 is in Programming Mode, both indicators will	The rules for toggle output are:
turn off until programming begins. After a programming option	• If the output is OFF, it will turn ON and stay on until the next activation.
number is entered, the yellow indicator will blink. This shows	• If the output is ON, itt will turn OFF and stay off until the next activation.
that the 2916 is ready to accept the new programming data.	An authorized PIN or REX input programmed to momentarily activate
After the new data entry is complete, the yellow indicator will	that same relay will reset the relay to its normal state.
flash while the data is being stored. The green indicator will	
light if the data is accepted. The red indicator will light if any	Erasing a Single Entry Code
programming data is entered incorrectly, and the command	Press: 02 # User # User #
will have to be fully re-entered.	Code=The entry code to delete
•	
Entering Programming Mode	The yellow indicator will flash quickly while the 2916 searches its
The 6-digit Master Programming Code (default = 123456) is	memory for the code to erase. The green indicator will light when
used to enter Programming Mode.	the code is erased.
Press: #9 # Master Code	
	Erasing Multiple Users (Sequential)
Master Code = the current 6-digit Master Programming Code	Press: 09 # 1 st User # Number of users #
	1^{st} User = Starting user number to delete
Exiting Programming Mode	Number of users = Total number of consecutive users to delete
Press: **#	
The red indicator will light after exiting Programming Mode	The yellow indicator will flash quickly while the 2916 erases the
Note: The 2016 will outematically and Dragromming Made	users from memory. The green indicator will light when the codes
Note: The 2916 will automatically exit Programming Mode	are erased.
after two minutes of inactivity	
Re-entering a Command After a Mistake	Erasing All Entry Codes
If the red indicator lighter signaling an incorrect entry, or an	
If the red indicator lights, signaling an incorrect entry, or an	WARNING: PERFORMING THIS COMMAND WILL REMOVE
incorrect key is pressed during programming, to clear the	ALL ENTRY CODES FROM THE MEMORY
keypad and re-enter the command:	Press: 97#000000 # 000000 #
Press: * 9 #	Note: The green indicator will light while the memory is being area of This
	Note: The green indicator will light while the memory is being erased. This may take up to 15 seconds.
Setting Entry Code Length Default: 4 digits	
Press: 0 3 # Length #	Changing the 6-Digit Master Programming Code
Length = $4-6$ for entry code length	
end in the second production gui	Press: 9.8 # Master Code # Master Code #

Note: If the Entry Code Length is going to be changed from the factory default of 4 digits, make this change first before programming any entry codes.

Press: 9 8 # Master Code # Master Code # Master Code=The new 6-digit Master Programming Code

New master code:

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Configure Sense Input	Default: Door Sense	Select Alarm Shunt Output	Default: No Output
The Sense Input (gray wire) can be programmed for either DOOR SENSE or INHIBIT. Press: 10 # Input # <i>Input=0 for Door Sense; =1 for Inhibit</i> When programmed for DOOR SENSE, if an open condition on the input occurs <u>before</u> access is granted (with an entry code or with the request-to-enter input) a FORCED ENTRY output will occur. If an open condition remains 60 seconds <u>after</u> a relay		Sets which output activates during th (Use this output ot shunt alarm conta door.) This output may be timed or to Press: 1 5 # 0	icts attached to the access oggled.
		Output=Output to A 1=Main Relay; 2=Auxiliary Relay; 0=No Out	Activate(0-4) 3=Output #3; 4=Output #4;
activation for access, a DOOR AJAR output will occur.	Select Request-to-Exit Output	Default: No	
When programmed for INHIBIT, a will prevent Relay #1 from activating with an entry code. This mode is a timer to disable the access device	ng when access is requested ypically used with an external at certain times.	Sets which output activates when the grounded. This output may be timed Press: 1 6 # 0 Output=Output to A 1=Main Relay; 2=Auxiliary Relay; 0=No Out	or toggled. Dutput # Activate(0-4) 3=Output #3; 4=Output #4;
Select Forced Entry Output	Default: Output #3	REX input terminates to	
Sets which output activates if the DOOR SENSE input opens before access is granted. This output is not timed. Press: 1 1 # Output # <i>Output=Output to Activate(0-4)</i> <i>1=Main Relay; 2=Auxiliary Relay; 3=Output #3; 4=Output #4;</i> <i>0=No Output</i>	Anti-Tamper Output	Default: No Output	
	Sets which output activates when t back of the keypac Press: 1 7 # 0	d is activated. Dutput #	
Select Door Ajar Output	Default: Output #4	Output=Output to 0=No Output; 2=Auxiliary Relay;	
Sets which output activates if the DOOR SENSE input stays open 60 seconds after access is granted. This output is not timed. Press: 1 2 # Output # <i>Output=Output to Activate (0-4)</i> 1=Main Relay; 2=Auxiliary Relay; 3=Output #3; 4=Output #4; <i>O=No Output</i>	Main Relay On-time Sets the length of time the Main Re	Default: 02 Seconds	
	Green LED is on when Main Relay is active. Press: 2 1 # Seconds # Seconds=Output time in seconds (0-60)		
Select Keypad Lockout Output	Default: No Output	Auxiliary Relay On-time	Default: 02 Seconds
Sets which output activates when the keypad is "locked out" after too many incorrect entry code attempts. The lockout time is 60 seconds.	Sets the length of time the Auxiliary Relay activates when triggered Press: 2 2 # Seconds # Seconds=Output time in seconds (0-60)		
Press: 1 3 # Output # Output=Output to Activate (0-4) 1=Main Relay; 2 = Auxiliary Relay; 3=Output #3; 4=Output #4; 0=No Output	Solid-state Output #3 On-time	Default: 02 Seconds	
	Sets the length of time Output #3 act Press: 2 3 # S	econds #	
Select Keypad Active Output	<u>Default: No Output</u>	Seconds=Output time in second	
Sets which output activates when		Solid-state Output #4 On-time	Default: 02 Seconds
output is timed. If toggle mode is selected for the output, the timer value defaults to 2 seconds. Press: 1 4 # Output #	Sets the length of time Output #4 act Press: 2 4 # 5 Seconda-Output time in account	Seconds #	
Output=Output to	Activate(0-4)	Seconds=Output time in secon	us (0-00), 39=10ggie Mode
1=Main Relay; 2=Auxiliary Relay 0=No O		Door Ajar Timer	Default: 60 Seconds
	Sets the amount of time the door may be held open after an authorized access. The DOOR AJAR output will activate after the time expires.		
	Press: 2 5 # Se Seconds=Output time		

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Beep Sounds on Keystrokes	Default: Yes	Selects mode for Keypad LED Backlight Default: 30 Second	
Selects whether or not the keypad beeps as each key is pressed. Press: 4 0 # Sound # Sound=1 for Yes, =0 for No		Selects whether or not the keypad back light stays OFF, lights for 30 seconds when activated or stays ON. Press: 52 # Output # 0 = Light always OFF	
Beep Sounds During Main Relay	Default: No	1 = 30 sec light when activated (default) 2 = Light always ON	
Selects whether or not the keypad beeps during Main Relay activation.		Changing the Beeper Sound Level	
Press: 4 1 # Sound # Sound=1 for Yes, =0 for No	•	The Keypad's beeper can be set to high or low level. Remove jumper JP1 to reduce beeper sound level.	
Beep Sounds During Auxiliary Relay	Default: No	RESETTING KEYPAD	
Selects whether or not the keypad beeps during	Auxiliary Relay	Master Reset	
activation. Press: 4 2 # Sound # Sound=1 for Yes, =0 for No		CAUTION: Performing a master reset will clear the entire memory of the 2916 and return all programmable options to the factory default values. <u>ALL ENTRY</u> <u>CODES WILL BE ERASED.</u>	
Beep Sounds During Output #3 Selects whether or not the keypad beeps during activation. Press: 4 3 # Sound # Sound=1 for Yes, =0 for No	Default: No Output #3	 STEP 1 Disconnect power from the keypad. STEP 2 Press and hold down the * and # keys. STEP 3 Apply power to the keypad, continue holding the keys down until the red indicator starts flashing STEP 4 Release the keys. The red and yellow indicators will remain lit until the process is complete, then the yellow indicator will go out. 	
Beep Sounds During Output #4 Selects whether or not the keypad beeps during activation. Press: 4 4 # Sound # Sound=1 for Yes, =0 for No	Default: No Output #4	 Resetting the Master Code STEP 1 Remove the 2916 from the wall STEP 2 Locate jumper at JP2. This jumper is used to reset the master code. STEP 3 With power applied to the keypad, remove the jumper at JP2. The keypad will begin to beep, signaling that the code has been reset. 	
Beep Sounds Anti-Tamper Activation	Default: No	STEP 4 Replace jumper on JP2 THE MASTER PROGRAMMING CODE IS NOW 123456.	
Selects whether or not the keypad beeps during Anti-Tamper Switch activation. Press: 4 5 # Sound # Sound=1 for Yes, =0 for No		Beeper Sound Level The Keypad's beeper can be set to high or low level. Remove jumper JP1 to reduce beeper sound level.	
	Default: 3 Tries		
Sets the number or incorrect entry code attempt before the keypad "locks out".	s allowed		
Press: 5 0 # Attempts # Attempts=Number of attempts before loc	kout (2-7)		
Anti-Pass Back Time Default: No	Anti-Pass Back		
Sets the length of time an entry code will not fur used.	nction after it is		
Press: 5 1 # Minutes # Minutes=Time in minutes (1-4), 0=No Ant	i-passback		

HA

COMPANIES



