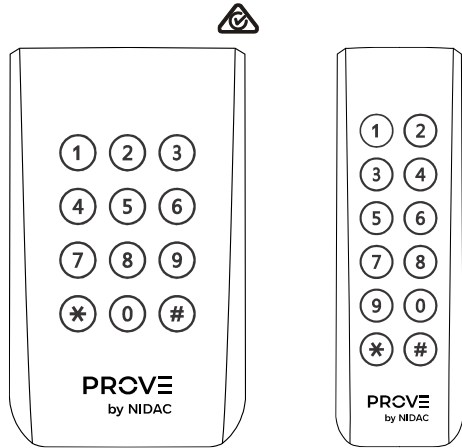


# PROVE<sup>®</sup> BDF43C & BDF62C

## Dual Frequency Card Reader & Keypad



### FEATURES

- Compatible with all NIDAC Presco and Prescient controllers
- Outputs Presco and Wiegand data
- Site code read from EM cards in Wiegand mode is compatible with generic EM Wiegand prox readers
- Reads HID 125kHz cards
- Fully configurable for custom Wiegand keypad modes
- Reads Mifare S50 CSNs
- Suitable for indoor or outdoor use
- Audible and visual (buzzer & LED) feedback of each key pressed and card read
- 12-24V DC operation
- Operating temperature range of -20°C to 70°C
- 5 year manufacturer's warranty
- Tested to IP65

### IMPORTANT NOTICES FOR PRODUCT

- Note that the default reading behaviour will preferentially read LF credentials over HF when both are presented
- Standard 26 & 37 bit HID cards can be read, other HID formats will read but the output of some cards may not match that of an HID reader.

### INSTALLATION

1. Use the mounting plate to mark the installation location
2. Install the mounting plate using at least two screws in either the top and bottom or left and right (BDF43C only) slots on the mounting plate
3. Attach cable plug and then slide the BDF-C into place
4. Insert one of the supplied counter-sunk M3 Phillips head or allen key screws to secure the keypad to the mounting plate

### SPECIFICATIONS

Voltage: 9V to 28V D.C.  
 Current: 200mA max.  
 Operating Temp: -20°C to 70°C.  
 Weight: BDF-43C: 185g, BDF-62C: 130g  
 Dimensions: BDF-43C: 80mm (W) x 130mm (H) x 25mm (D)  
 BDF-62C: 45mm (W) x 136mm (H) x 25mm (D)  
 Read Range: LF: Up to 20cm (8"). HF: Up to 2cm.  
 Keypad Output: Presco DTA, Wiegand (up to 64 bit) or burst mode.  
 Prox Output: Presco DTA or Wiegand.  
 Wiegand Output: Pulse width = 50µs, pulse separation = 2ms.  
 Wiring Distance: BDF-C to Presco PAC controller = 1Km using unshielded cable, 100Ω max. return resistance on DTA line. To achieve distances greater than 100m the BDF-C may require a separate local power supply depending upon the thickness of the cable used.

BDF-C to Wiegand controller, shielded cable must be used.

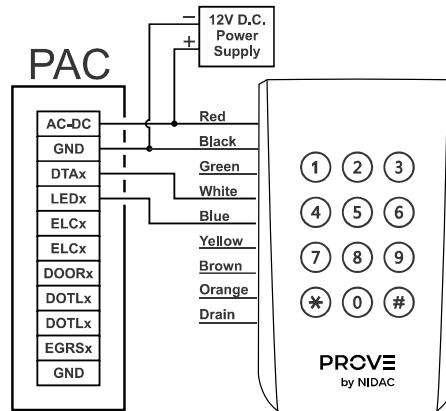
Wire Gauge	Distance	Wire Gauge	Distance
22 AWG	150m (490 ft)	26 AWG	60m (195 ft)
24 AWG	100m (330 ft)	28 AWG	40m (130 ft)

### WIRES

There are 8 wires for the BDF-C, not all will be needed for each installation. The unused wires should always be terminated and left unconnected.

Black	0V (Ground).
Red	+12V D.C.
White	DTA (Presco data line) or D1 (Wiegand Data 1).
Green	D0 (Wiegand Data 0).
Blue	Blue LED control wire, +3V to +14V active.
Yellow	Blue LED control wire, 0V active.
Brown	Buzzer control wire, 0V active.
Orange	Tamper / open collector output

### BDF-C TO PAC1 / PAC2



### Programming Prox cards & tags into a PAC controller

To program a proximity card or tag into a PAC controller follow the same steps as shown in the controller manual for programming a new user code. When it comes to the stage to enter the user code simply present the card or tag to the BDF-C, or alternatively enter the 9 digit code for the proximity card, note that this code may contain star (\*) and hash (#) symbols and leading zeroes (0) do need to be entered.

### PAC1 Programming Example

This example uses a PAC1 controller, programming a momentary operation proximity card or tag into memory location 001.

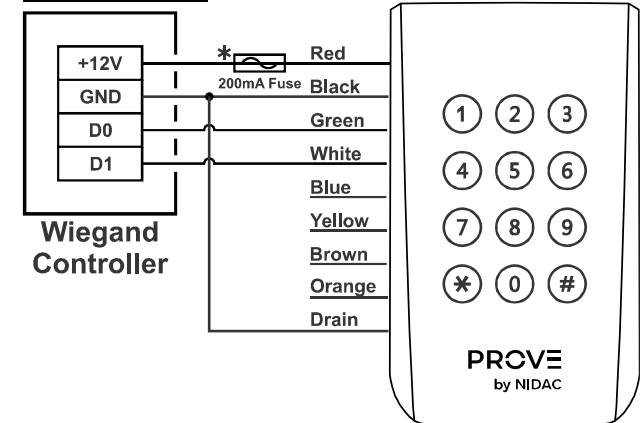
1. Put the PAC1 into program mode using the management code or button on the PAC1
2. Use the keypad on the BDF-C to open the memory location to store the Prox card in
3. Present the proximity card or tag to the BDF-C
4. Take the PAC1 controller out of program mode

### USING THE BDF-C WITH WIEGAND

The BDF-C can be used with any standard Wiegand and most non-standard Wiegand controllers. The site (facility) code for the keypad can be set from the keypad itself (refer to the Wiegand Keypad Options section) and the Wiegand data is fully configurable with up to 64 bits of data. The BDF-C also supports controllers that require burst mode format Wiegand.

To use the BDF-C in non burst Wiegand mode, press the code then  key. The BDF-C can be set up to automatically send the code after a given number of key presses by setting memory 007 (refer to the General Options section).

### BDF-C TO WIEGAND



To change the status LED colour from violet to green apply a negative signal (0 to 2V) to the Yellow wire or a positive signal (2.5 to 28V) to the Blue wire.

To sound the buzzer, apply a negative signal (0 to 2V) to the Brown wire.

\* If a fused output for readers is not provided use a 200mA inline fuse to protect the power supply from short circuiting if BDF-C wires are tampered with.

### BDF-C OPTIONS

There are several options that can be set to alter the way in which the BDF-C behaves. These options fall into the 4 categories of General, Presco, Wiegand Keypad and Wiegand EM Card Proximity Reader, all of these are explained below.

#### General Options

These options set the functionality of the BDF-C independent of whether it is in Wiegand or Presco mode and the HF & LF global reader options.

Memory	Function	Default
005	Force Presco or Wiegand mode <sup>(1)</sup>	255
006	Key press timeout in seconds	10
007	Auto send key count <sup>(2)</sup>	0
080	LF & HF Read Options <sup>(3)</sup>	10
081	HF Mifare CSN Wiegand read option <sup>(4)</sup>	10

**(1) - Force Presco or Wiegand mode**

101 = Always in Presco mode.

202 = Always in Wiegand mode.

All other values = Mode auto detected using white wire.

**[Memory 005]**

**(2) - Auto send key count [Memory 007]**

When this memory is set to a non-zero value the BDF-C will automatically send the data after x keys have been pressed, where x=value set for this memory.

**Note:** In Presco mode auto send is disabled if the first key pressed is a **[\*]** or **[#]**.

**(3) – LF & HF Read Options [Memory 080]**

Allows manual control over LF and HF read functionality.

101 = Read LF credentials only.

121 = Read HF credentials only.

All other values = Transmit code for first detected credential and do not send code for other credential until the first detected credential has been removed.

**(4) – HF Mifare CSN Wiegand read option [Memory 081]**

Allows designation of total size of CSN to be read and transmitted as Wiegand.

131 = Transmit lowest 3 bytes as Wiegand 26-bit

232 = Transmit all bytes as raw data with no parity bits.

All other values = Transmit lowest 4 bytes as raw 32-bit data (no parity bits)

**Presco Options**

These options set how the BDF-C operates when in Presco mode. It is unlikely that these options will need to be changed.

Memory	Function	Default
010	Internal/External mode Presco keypad <sup>(5)</sup>	255
011	Process received DTA characters <sup>(6)</sup>	255
012	Presco proximity reader output format (standard or KC compatible) <sup>(7)</sup>	255

**(5) - Internal/External mode Presco keypad [Memory 010]**

101 = Internal mode keypad.

All other values = External mode keypad.

**Note:** When set to internal mode the two button Emergency (**[\*]** **[#]**) and One Way Arm (**[#]** **[#]**) features are enabled when used with a KC2 or KC6. This setting has no effect when BDF-C is being used with a Presco PAC controller.

**(6) - Process received DTA characters [Memory 011]**

101 = Ignore all received DTA characters (BDF-C will not give beeps, warble, etc. after final **[#]** is pressed).

All other values = BDF-C will make beeps, warble, etc. for DTA characters received after pressing the final **[#]** key.

**(7) - Presco proximity reader output format (standard PAC format or KC compatible) [Memory 012]**

101 = Presco output from the prox reader is 7 digit KC compatible as per a PIM Wiegand to Presco conversion (only works for 26 bit Wiegand cards).

202 = Presco output from the prox reader is 7 digit KC compatible using the lowest 7 digits of the 9 digit Presco PAC code.

All other values = Presco output from RFID is standard 9 digit PAC format.

**Wiegand Keypad Options**

These options set the format of the Wiegand bit mode data sent by the keypad. Up to 64 bits of data including a site code up to 32 bits can be configured.

Memory	Function	Default
020	Site code byte 3	0
021	Site code byte 2	0
022	Site code byte 1	0
023	Site code byte 0 (used for standard 8 bit site code)	1
024	Number of bits in site code (0 to 32)	8
025	Number of bits in user code (8 to 64)	16
026	Number of bits for start parity calculation <sup>(8)</sup>	12
027	Number of bits for end parity calculation <sup>(8)</sup>	12
028	Parity polarity <sup>(9)</sup>	2
029	Error handling <sup>(10)</sup>	255
032	Wiegand burst mode or bit mode <sup>(11)</sup>	255
033	Custom Wiegand total number of bits <sup>(12)</sup>	255
034	Send LSB first <sup>(13)</sup>	255
035	Site code start bit number	255
036	User code start bit number	255
040	Default custom Wiegand pattern byte 7 <sup>(14)</sup>	255
041	Default custom Wiegand pattern byte 6 <sup>(14)</sup>	255
042	Default custom Wiegand pattern byte 5 <sup>(14)</sup>	255

Memory	Function	Default
043	Default custom Wiegand pattern byte 4 <sup>(14)</sup>	255
044	Default custom Wiegand pattern byte 3 <sup>(14)</sup>	255
045	Default custom Wiegand pattern byte 2 <sup>(14)</sup>	255
046	Default custom Wiegand pattern byte 1 <sup>(14)</sup>	255
047	Default custom Wiegand pattern byte 0 <sup>(14)</sup>	255

**(8) - Number of bits for parity calculation [Memories 026, 027, 064 & 065]**

Number of bits for parity calculation (0 = no parity bit, if the value is greater than the total number of data bits (site code + user code bits) then it will use half the total number of bits, for an odd number of bits the end parity will use 1 more bit).

**(9) - Parity polarity [Memories 028 & 066]**

0 = Start parity is Even, End parity is Even.

1 = Start parity is Odd, End parity is Even.

2 = Start parity is Even, End parity is Odd (default value).

3 = Start parity is Odd, End parity is Odd.

**(10) - Error handling [Memory 029]**

This memory specifies what information is sent via the Wiegand interface when a code entered is too large to be represented by the current Wiegand format.

26 bit Wiegand has a 16 bit user code which allows a max code number of 65535. This memory determines what is sent when a number larger than this is entered.

101 = A code of 0 is sent.

202 = No information is sent, the keypad ignores the input.

All other values = The maximum allowable user code for the current format is sent.

**(11) - Wiegand burst mode or bit mode [Memory 032]**

121 = 4 bit burst mode, **[\*]** & **[#]** keys data disabled.

202 = 8 bit burst mode, **[\*]** & **[#]** keys data enabled.

212 = 8 bit burst mode, **[\*]** & **[#]** keys data disabled.

232 = bit mode (non burst) Wiegand, default settings are for 26 bit.

All other values = 4 bit burst mode, **[\*]** & **[#]** keys data enabled.

**(12) - Custom Wiegand total number of bits [Memory 033]**

When this memory is set to a value from 8 to 64 it overrides the standard Wiegand format of *start parity* followed by *site code* then *user code* then *end parity* and replaces it with a fully customisable format with a total number of bits (including any parity bits) as specified in this memory.

**Note** that using this option requires a high understanding of Wiegand data. NIDAC will only offer limited support for this feature.

**(13) - Send LSB first [Memory 034]**

101 = LSB of data is sent first for both site and user code.

All other values = MSB of site and user code data sent first.

**(14) - Default pattern bytes [Memories 040 to 047]**

When the custom Wiegand format is used by setting memory 033 then the data in these memories is used to define the value for those bits not in use by the site code, user code and parity bits. The data used starts from Bit 0 (LSB) in Default Pattern byte 0 (memory 047), e.g. if the total number of bits is set to 24 then Default Pattern bytes 2, 1 & 0 are used.

**Wiegand EM Card Proximity Reader Options**

These options set the format of the Wiegand data sent by the BDF-C when it is in Wiegand mode and an EM RFID card or tag is being read.

Memory	Function	Default
060	26 bit Wiegand EM card site code byte to use <sup>(15)</sup>	255
061	EM card custom Wiegand format <sup>(16)</sup>	255
062	Number of bits in EM card site code <sup>(17)</sup>	8
063	Number of bits in EM card user code <sup>(17)</sup>	16
064	Number of bits for EM card start parity calculation <sup>(8)</sup>	255
065	Number of bits for EM card end parity calculation <sup>(8)</sup>	255
066	EM card parity polarity <sup>(9)</sup>	2
067	Data start bit from EM card for site code <sup>(18)</sup>	1
068	Data start bit from EM card for user code <sup>(18)</sup>	25

**(15) - 26 bit Wiegand EM card site code byte to use [Memory 060]**

121 = Presco reader site code byte used.

202 = Alternate site code byte 2 used.

All other values = Generic EM reader compatible site code byte used.

**(16) - EM card custom Wiegand format [Memory 061]**

101 = 34 bit Wiegand (16 bit site code, 16 bit user code, even start & odd end parity bits for 16 data bits each) using Presco data.

121 = 34 bit Wiegand as above using alternate site code data bytes.

202 = Custom Wiegand format as defined by memories 62 to 68.

All other values = Standard 26 bit Wiegand.

**(17) - Number of bits in EM card site/ user code [Memories 062 & 063]**

A maximum of 40 data bits can be set as a sum of these 2 memories. If the sum exceeds 40 then the number of site code bits will be automatically reduced.

**(18) - Data start bit from EM card [Memories 067 & 068]**

There are 40 bits of data in an EM card organised as D00-D03, D10-D13, D20-D23, D30-D33, D40-D43, D50-D53, D60-D63, D70-D73, D80-D83 and D90-D93. Bit D00 is referred to as bit 1 for this memory and bit D93 as bit 40.

Ensure that when setting the start bit that there are enough bits after the start bit for the number of bits set for the site or user code data.

**SETTING OPTIONS VIA THE BDF-C KEYPAD**

To set any of the above options the BDF-C first needs to be placed into option setting mode, this is done by following the steps below:

1. Remove power from the BDF-C
2. Connect the white wire to the green wire or hold down the **[#]** key.
3. Reapply power
4. Once the LED starts to double flash blue you are in option setting mode.
5. Disconnect the white wire from the green or release the **[#]** key
6. The BDF-C will remain in option setting mode for 5 minutes from the last option setting sequence attempted

**Setting an option memory value**

**[\*]** <3 digit memory number> <1 to 3 digit value> **[#]**.

**Reset all option memories to factory defaults**

**[\*]** **[9]** **[8]** **[7]** **[6]** **[5]** **[4]** **[#]** whilst in option setting mode.

**Exit Option Setting Mode**

**[\*]** **[9]** **[9]** **[9]** **[#]** or wait 5 minutes after last option setting attempt.

**NOTE:** Remember to disconnect the white wire from the green so that the unit will not start up in option setting mode after a power cycle.

**Set BDF-C keypad output to 26bit Wiegand**

**[\*]** **[0]** **[3]** **[2]** **[2]** **[3]** **[2]** **[#]**

**[\*]** **[0]** **[2]** **[3]** <1 to 3 digit site code value> **[#]**

**Set BDF-C to read same EM card site code as PSC16**

**[\*]** **[0]** **[6]** **[0]** **[1]** **[2]** **[1]** **[#]**

**WARRANTY**

NIDAC Pty Ltd will repair or replace this product if proven to be faulty (excluding accidental or malicious damage) under the 5 year warranty offered from the date of purchase.

As NIDAC Pty Ltd or its agents do not perform the final installation, inspection or training in the use of this product, they cannot be held liable for injury, loss or damage directly or consequentially arising from the use or misuse of this product.

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