NL LOCK DIA *Pro* Software Instructions

Rev. 2407

DIA *Pro* Board Technical Reference Manual

The DIA *Pro* DOES IT ALL Board features NL Lock's unique software with enhanced capabilities for multiple users, alarm interface, audit trail and Dallas Key (with appropriate keypad). Software and circuit boards are created, designed and produced by Paolo Moretti, our partner in Italy.

Works With:

Universal RotoBolt
UR20•50

UL Type 1

Large RotoBolt
EM20•50

UL Type 1
VdS EN1300 Class B

Straight Bolt
EM35•50

UL Type 1
VdS EN1300 Class B

MotorDrive
EM30•50

VdS EN1300 Class B

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A Miller Family Company

QSecurityProducts.com
1014 S. Main Street • Nicholasville, Kentucky 40356 • **859.241.2063**

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Description

Works with

UR20•55 Universal RotoBolt, **EM20•55** Large RotoBolt, **EM35•55** Straight Bolt and **EM30•55** MotorDrive

Connectors

Standard 4-wire connector to keypad: data, LED/buzzer and battery. Additional 4-wire connector to battery pack and/or I/O interface on RotoBolt, StraightBolt, MotorDrive only

Features

3 second opening window following entry of a valid code

Eight digit code length (2-digit ID + 6-digit code). Codes are always entered User ID first (2 digits) followed by User Code (6 digits), unless otherwise specified to select a particular function.

Code Levels

- **One Master:** (optional, ID=40):
  cannot open, can change own code (F0)
  install/delete Manager (F1/F3) add'l valid code required when deleting Manager
  change input signal configuration (F8)
  change programmable options (F8)
  check user status and download audit (F7)
  can factory reset with Manager (F8)
  program time delay and open window (F9)

- **One Manager:** (ID=00):
  can open, can change own code (F0)
  install/delete users (F1/F3)
  enable/disable users (F2)
  check user status and download audit (F7)
  program time delay and open window (F9)
  Universal lock only: if Master is not enabled, Manager can factory reset by changing Manager code to 5-5-5-5-5-5 (an additional valid code is required if Dual Control is enabled)

- **Up to 39 users:** ID=01-39): can open and change their own codes (F0)
  Users 31-39 become Time Delay Override users (Dual Control) when Time Delay is enabled. This feature may be enabled/disabled either from factory mode or by Master (F8).

Important: new codes are rejected when only a single digit differs from existing codes.
Example: existing code is 1-2-3-4-5-6, 1-3-3-4-5-6 cannot be set as it is one digit off from existing code. 1-2-2-3-5-6 (2 digits off from existing code) would be acceptable.

Dallas i-Button

With an appropriate keypad, a Dallas key may be associated to any user during user installation (function #1) by entering a Dallas key after the code has been entered. User will then be identified by ID number + code + Dallas key.

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Time delay

Delay range: 0 to 99 minutes, open window range: 1 to 19 minutes

During time delay countdown, LED flashes every two seconds.
Open window is indicated by alternating LED flashes and beep sounds every one second.

Battery low warning

Battery low (< 4.8V) during motor activation = multiple beeps

If battery voltage drops lower than 4V during motor activation, higher frequency multiple beeps - board resets

If battery voltage is lower than 4V without activating motor, high frequency multiple beeps until battery is replaced - board continuously resets

Important: all data is securely stored into the lock board CPU memory and will never be lost - even in case of continuous board reset or lack of power

Time penalty

Upon entry of four consecutive invalid codes, the keypad is blocked and will not accept entries for 5 minutes. During this period, the LED flashes every 10 seconds and any key press causes a long beep. Upon expiration, the entry of two more invalid codes restarts the 5 minute blocking period.

Audit features (per EN1300 requirements)

Current user status can be audited through the keypad with function #7

A "basic audit" file (last 100 openings, no time & date) is recorded on the standard lock board when more than one user is installed. Audit file may be downloaded to a Dallas key via the keypad with Function #7

Battery power

Locks with DIA software are designed to work with battery supplied power from 6 to 9 Volts.
We offer an optional power supply regulation board for use with 12-24VDC.

Attention: If voltage higher than 12 VDC is applied, internal circuitry protection will drain extra current to prevent possible board damage/failure.

Set Up Process

Overview

The following steps are necessary to set up a new or factory mode lock:

- Ensure lock is in factory mode: pressing #1 key activates lock opening
- Restore the lock to the locked position with the door OPEN
- Set up I/O signal features (1) and/or additional programmable options (2) if required

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- Select lock configuration (3) from one of the two tables below after which Factory Mode will be exited, lock will be fully operational according to the selected configuration and set to Manager User ID 00+1-2-3-4-5-6 (default code)

(1) I/O signal feature (not available on Universal Lock)

- When optional alarm interface board is connected, it will be automatically detected at the first opening
- Output signal will trigger I/O box output (NC signal) when duress code (+1 on last code digit) is entered
- I/O box input signal is programmable through function 8 (F8). Press and hold 8 until double beep and LED stays ON, enter default code (5-5-5-5-5-5) if in Factory Mode or Master code (ID+code) if lock is operational, enter input signal configuration selection as follows:

  40 - Disable (default)

  41 - Time Delay Override

  42 - Dual Control Override

  43 - Time Delay and Dual Control Override

(2) Options

Additional programmable options (F8 from factory mode or by Master code):

- Enable/Disable Manager access to F9 (manager ability to program Time Delay and Open Window) - enabled by default
- Enable/Disable Time Delay Override feature for user IDs 31-39

Press and hold #8 until double beep and LED stays ON, enter default code (5-5-5-5-5-5) if factory mode or Master code (ID+code) if lock is operational, then enter programmable options selection as follows:

- 60 - Default - F9 active for Manager and user IDs 31-39 Time Delay Override ON
- 61 - F9 NOT active for Manager and user IDs 31-39 Time Delay Override ON
- 62 - F9 active for Manager and user IDs 31-39 Time Delay Override OFF
- 63 - F9 NOT active for Manager and user IDs 31-39 Time Delay Override OFF

(3) Lock configuration

Locks are shipped in Factory Mode. Lock configuration must be – and may only be – performed during set-up while lock is in Factory Mode. See “Factory reset procedure” to reset lock to Factory Mode after set-up.

While lock is in Factory Mode, press and hold #2 until double beep and keypad LED stays ON, enter 5-5-5-5-5-5 (default code), enter the desired configuration number from one of the following **configuration tables:**

Functions

Configuration Table 1

Config. Number	Available Users	Master Code	Dual control
0	39	No	No
1	39	Yes	No
2	39	No	Yes
3	39	Yes	Yes

-OR- See table next page

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One key to close (Motor Drive Only)

While lock is in factory mode, press and hold #2 until double beep and LED stays ON, enter 5-5-5-5-5-5 (default code), enter the desired configuration number from the table below:

Configuration Table 2

Config. Number	Available Users	Master Code	Dual Control	One-key-to-close
4	39	No	No	Yes
5	39	Yes	No	Yes
6	39	No	Yes	Yes
7	39	Yes	Yes	Yes

If one key to close mode is active, lock bolt will stay in open position until a key is pressed (double beep, motor activates to close the lock)

Keypad will signal bolt open position with a single LED/beep every 10 seconds

Following configuration from either table, the lock exits Factory Mode and:

Manager code is set to default 1-2-3-4-5-6

Master code (if activated by selected configuration) is set to default: 5-0-5-0-5-0

Note: Manager or Master code entry is required for Functions 1, 2, 3, 7 & 9

To change codes (Function #0)

Press and hold #0 until double beep and keypad LED stays on, then release

Enter user ID + code to be changed (Master, Manager or User). Double beep = valid entry, long beep = invalid entry.

Enter new 6-digit code (double beep) and repeat new code again to confirm (double beep and LED goes out)

In case of entry errors (long beep), the old code remains valid

- If a Dallas key is associated to the user code, the same or a new key must to be entered when entering the new code and when confirming it
- A Dallas key may be associated to the Manager code during this procedure. Once a key is associated to the Manager, Manager will always require a key together with the code.

To activate User Codes (Function #1)

Press and hold #1 until double beep and keypad LED stays on, then release

Enter Manager user ID + code (double beep)

Enter user ID 01-39. Double beep and LED powers off if user is already active, exits function. Long beep if user is not available, aborting function. Double beep and LED on if user is available (inactive/deleted).

Enter new 6-digit user code. Double beep if valid, long beep if code error, aborting function. Enter new 6-digit code again to confirm. Double beep = accepted, long beep = confirmation error.

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- Function #1 continued

Notes:

- Manager only
- A Dallas key may be associated to the user code during this procedure
- If manager is the only available code or dual control is active and only one user is available in the lock, this function is not available
- Manager can activate Time Delay override users #31-39 only if no time delay or during open window.
- If dual control is enabled, enter a valid user code ***before*** manager code to access Function #1

To disable/enable User Codes (Function #2)

Press and hold #2 until double beep and keypad LED stays on, then release

Single short flash of keypad LED = function unavailable

Enter Manager user ID + code

Double beep = all active user codes are disabled if currently enabled or re-enabled if currently disabled

Notes:

• Manager only

To delete User Codes (Function #3)

Press and hold #3 until double beep and keypad LED stays on, then release

Single short flash of keypad LED = function unavailable

Enter Manager user ID + code (double beep)

Enter user ID 01-39. If user is active, double beep = user code now deleted. Long beep if user is not activated, aborting function.

Notes:

- Manager only
- Manager cannot delete the user code (s)he used to gain entry
- If dual control mode is enabled, enter a user valid code before Manager Code to access Function #3

Lock/Keypad functional test (Function #5)

Press and hold #5 until double beep and keypad LED stays on, then release

Enter all keys in numerical sequence: 1-2-3-4-5-6-7-8-9-0

A double beep at each key press indicates that the lock and keypad are communicating and performing properly

A long signal indicates a fault that can likely be corrected by replacing the keypad

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Lock audit (Function #7)

Press and hold #7 until double beep and keypad LED stays on, then release
Single short flash of keypad LED = function unavailable

Enter Manager or Master ID + code (double beep)

Hold a Dallas audit i-button on the keypad opening to download the basic audit file from the lock board. Double beep + LED power off = download is successfully completed.

If audit file download is not desired, pressing user ID keys will return user status: double beep = active, single beep = deleted, long beep = not activated

Enter 0-0 to exit function.

Notes:
- Manager or Master

Set time delay parameters (Function #9)

Press and hold #9 until double beep and keypad LED stays on, then release

Single short flash of keypad LED = function unavailable

Enter Manager or Master ID + code (double beep)

Enter time delay value (from 00 to 99 minutes, 2 digits, 00 disables time delay), then open window (from 01 to 19 minutes, 2 digits). Double beep.

For Example: to program a 26 minute delay and 12 minute open window, enter: [2612]

Enter values again to confirm. Double beep if correct, long beep = confirmation error.

Notes:
- Manager or Master
- If Manager changes values during time delay, the time delay value may only be increased, decreased values will be ignored

To Install Manager Code (Function #1)

Press and hold #1 until double beep and keypad LED stays on, then release

Enter Master ID + code (double beep)

Enter new Manager 6-digit combination (double beep). Enter new Manager 6-digit combination again to confirm. Double beep if correct (Manager is installed), long beep = confirmation error.

Notes:
- Master only

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To Delete Manager Code (Function #3)

Press and hold #3 until double beep and keypad LED stays on, then release

Enter Master ID + code (double beep)

Enter a valid user ID+ code. Double beep if valid user and LED power-off, Manager is now deleted.
Long beep = user invalid, aborting function

Notes:

- Master only, another valid user code is required
- Important: If Manager is the only valid code left or all users are disabled, Master will be able to delete the Manager without any additional valid code

Available Functions

Factory Mode	Configs. #0, 2, 4 & 6	Configs. #1, 3, 5 & 7
	F0	F0
	F1	F1
F2	F2	F2
	F3	F3
F5	F5	F5
F7	F7	F7
F8		F8
	F9	F9

Factory Reset Procedure

Factory reset

- Via keypad (Universal models only): change Manager code to factory code: (5-5-5-5-5-5)
- Via keypad (RotoBolt, Straight Bolt and MotorDrive models) with Master code (if activated by selected configuration) plus Manager code: press and hold #8 until double beep and LED stays ON, enter Master code (ID+combination), enter #8-8 double beep and LED stays ON, enter Manager code (ID+combination), double beep = factory reset successful.
- Via optional Reset Box (RotoBolt, Straight Bolt and MotorDrive): disconnect keypad battery and/or other power supply from the lock, press and hold “0” (zero key) for 15 seconds to dissipate residual power, disconnect battery from Reset Box, connect Reset Box to BAT receptacle on the lock, reconnect battery to Reset Box, double beep = factory reset successful. Disconnect Reset Box and reconnect keypad battery and/or other power supply.

When Reset is complete, test that lock is in Factory Mode: pressing #1 key activates lock opening. Default code is 5-5-5-5-5-5. Audit file is not cleared. Proceed to Set Up Process>Lock Configuration (Pages 4-5).

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Operation

To enter Manager or User code

Enter user ID + code. Double beep = valid code, long beep = invalid code.

- If a Dallas key is associated to the user (or to the Manager) code, hold the key onto the keypad opening after the code has been entered. Double beep = valid, long beep = error. If no key is entered within 7 seconds after the code, the lock will signal a long beep.

To enter Function

Hold down desired function key until double beep and keypad LED stays on. Enter valid user user ID + code. Double beep = valid code, long beep = invalid code

- If a Dallas key is associated to the user code, hold the key onto the keypad opening after the code has been entered. Double beep = valid, long beep = error. If no key is entered within 7 seconds after the code, the lock will sound a long beep.

To open (Standard mode)

Enter manager or user ID + code (and key if necessary)

If time delay is enabled, LED flashes at two second intervals. Open window is indicated by alternate LED flashing and beep at 2 second intervals. During open window, enter manager or user ID + code again (double beep), motor is activated and lock/container may be opened.

To open (Dual Control mode)

Enter first ID +code (and key if necessary)

Enter second ID + code (and key if necessary)

If time delay feature is activated, first code will start time delay. During open window, enter both codes to open (double beep), motor is activated and lock/container may be opened.

To open (Time Delay Override mode – users 31-39)

Enter first ID + code (and key if necessary), time delay will start counting

Enter override user ID + code (and key if necessary) to open (double beep), motor is activated and lock/container may be opened

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