



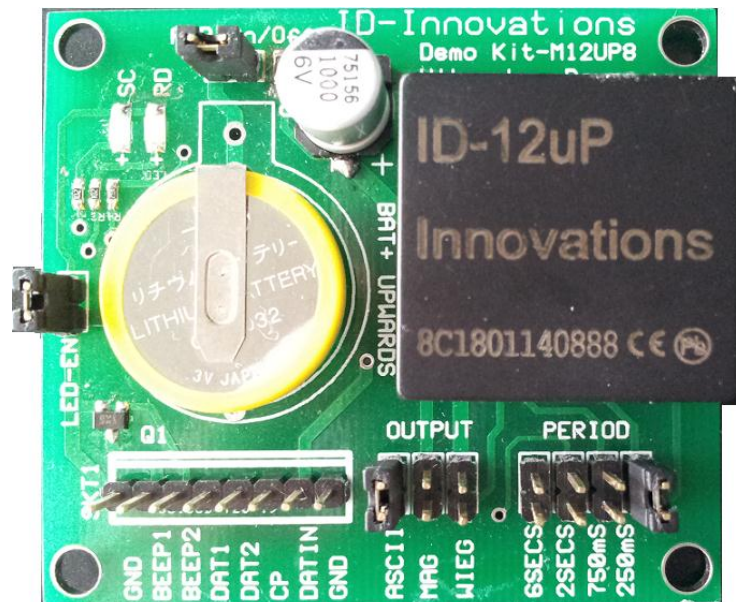
M12UP2

ID-2-uP, ID-12-uP Kick Start Demo Board

For

Ultra-Low Power Series Modules

Advanced RFID Reader Technology



Rev1.1—18/02/2016

Table of Contents

Section	Title	Page
1.	M12uP8 Kick Start Demo Board Features-----	3
2.	Overview-----	3
3.	Demo Board View and Circuit Diagram-----	3
3.1	Output Connections-----	4
3.2	Output Connections Detail-----	5
4.	Link selections-----	5
5.	Setting the Output Format-----	5
6.	Setting the Response Time-----	6
7.	Device Specifications-----	6
8.	Start Up Check List-----	6
9.	Using the Kick Start Demo Board-----	7
10.	Absolute Maximum and Minimum Ratings-----	7
11.	Useful information-----	8
12.	Contact Information-----	8
13.	Important Safety Notice-----	9
14.	Disclaimer-----	9

1. M12uP8 Kick Start Demo Board Features

- **Rapid Evaluation of ID-2uP and ID-12uP modules**
- **On- board 3volt lithium cell**
- **Selectable Output Format and Response Time**
- **Low cost**

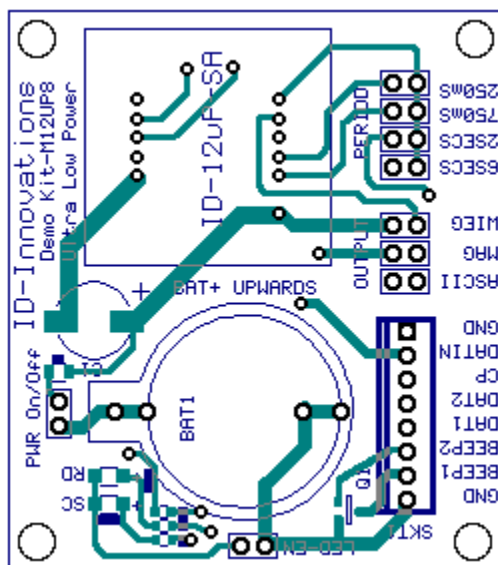
2. Overview

The ID-12UP demo board is a cost effective tool for rapidly evaluate of ID-xxuP series micro-power reader module. It is supplied with an ID-12uP module and a CR3023 type lithium primary cell, and can be used immediately. Developers are free to copy all or part of the PCB for use with Innovations modules. With infrequent use the battery can be expected to last over 5years with an activation setting of 2seconds and up to the shelf life of 10years with an activation setting of 6seconds. Set to an activation of 250ms a battery life of 9months may be expected.

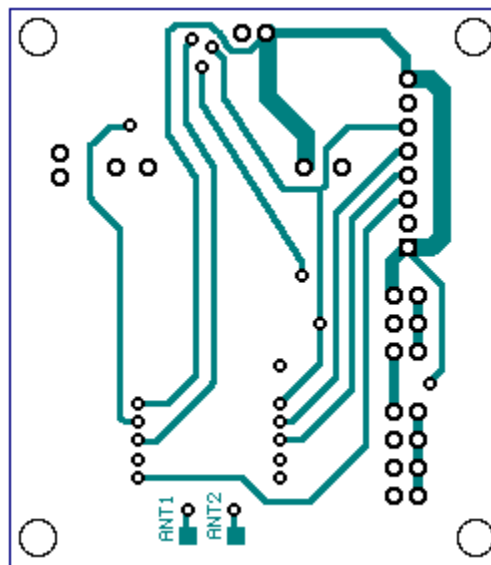
3. Demo Board View and Circuit Diagram

Details of the demo board for ID-12uP are given below. Users are free to copy, use or modify all or part of the board for their own purposes. No guarantees are given as to the suitability of the board for any purpose. The board is provided only to allow customers to evaluate the ID-12uP and ID-20-uP.

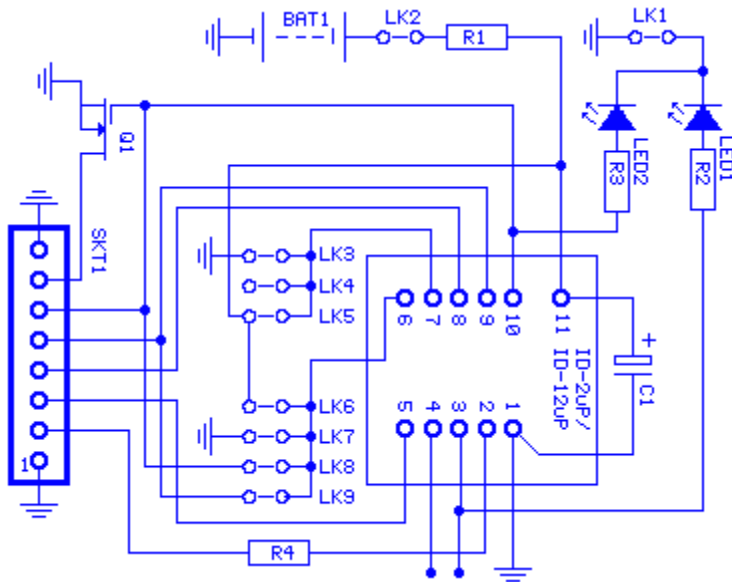
Demo Board PCB Top Layer



Demo Board Bottom Layer



Demo Board Schematic



Part	Description
Module	ID-12uP
Bat1	C2023 Lithium 3v
Led1	1206 SMD LED
Led2	1206 SMD LED
R1	0805 10R
R2,R3,R4	0603 5k6
LK1-LK8	0.1" Pitch Links
C1	RUBYCON TZV 1000/6.3
Q1,Q2	ZXMS6004 FCCT-ND

Table1

Q1 is a 'Smart' FET and is resistant to current overload and dissipate damage. Other 3v logic-level CMOS FETs may be used. Beeper load currents can easily exceed the capacity of the CR3023 cell, so an external supply may be if a beeper is required. R1 is a protection resistor for experimental purposes only. C1 may be any-value from 1uF-100uF, although slightly better performance will be obtained with higher values.

3.1 Output Connections

Pin	Description
1	Ground 0V
2	Leave – for future modules data-in connection.
3	CP – Used as 'Card Present Output for Magnetic Emulation
4	Wiegand Odd Output and Complementary ASCII Data Output
5	Wiegand Even Output and ASCII Data Output
6	Power Beeper Output
7	Logic Level Beeper Output.
8	Ground 0V

Table2

3.2 Output Connections Detail

- Pin1 System and data ground, 0v corresponding to pin 1 of ID-12uP module.
- Pin2 Not used in the current ID-2uP/12uP. Leave clear. In future versions this pin may be used for host to reader communications.
- Pin3 This pin is logic level and used only in Magnetic ABA Track2 emulation as the 'Card, Present' output. It is connected to pin5 of the ID-12uP module. It is normally high and goes active-low during a read output. See ID-12uP data sheet.
- Pin 4 This pin is logic level and is used for both Wiegand Odd output and for the ASCII complementary output corresponding to pin 8 of ID-12uP module. See ID-12uP data sheet.
- Pin5 This pin is logic level and is used for both Wiegand Even output and for the ASCII the normal output corresponding to pin 9 of ID-12uP module. See ID-12uP data sheet.
- Pin6 This is a common drain buffered Beeper driver. The FET Q1 is a protected smart FET. The Beeper positive should be taken to an external supply of 5 thru 24v.
- Pin7 This pin is the logic level beeper output, corresponding to pin 10 of ID-12uP module. See ID-12uP data sheet.
- Pin9 System and data ground, 0v corresponding to pin 1 of ID-12uP module.

4. Link selections

Link#	Description
1	Enable LEDs
2	Power On/Off
3	Select ASCII Output Format
4	Select Magnetic Output Format
5	Select Wiegand Output Format
6	Select 6second Activation Time
7	Select 2second Activation Time
8	Select 750mS Activation Time
9	Select 250mS Activation Time

Table 3

5. Setting the Output Format

The output format is selected by connecting Links as shown in table3. Note that the ID-xxuP firmware only checks the output format upon switch-on. Subsequently changing the links to select another format will only take effect after an off-on cycle. To switch off the module, link2 must be removed at least 1minute.

6. Setting the Response Time

The response time is selected by strapping the links as shown in table3. Note that the ID-xxuP firmware only checks the response time upon switch-on. Subsequently changing the links to select another activation period will only take effect after an off-on cycle. The average read time will be half the activation time + 35mS. So with an activation time of 750mS the average read time will be about 410mS.

7. Device Specifications

Parameter	ID-2uP, ID-12uP & ID-20uP
Frequency	125 kHz
Card Format	EM 4001 or compatible
Encoding	Manchester 64-bit, modulus 64
Battery	Lithium 3volt 550mA/H Cell CR3023
ID-12uP Current @ 3volt 2sec sampling	13uA nominal
Communications RX/TX	9600 Baud, 8Bit, No Parity
Read Range using ISO Card	ID-12uP = 4cm, ID-20uP = 5cm
Read Range using Clamshell Card	ID-12uP = 5cm, ID-20uP = 6cm
Certification	EC, C-TIK, ROHS

8. Start Up Check List

- 1) First remove all the links to ensure the power is off.
- 2) Place the ID-12uP module firmly in the socket. Make sure the orientation is correct and the pins are seated firmly.
- 3) Decide on the required Output Format and Activation Time and set the links accordingly. The average read time will be a little longer than half the activation setting.
- 4) Make link1 to enable the activity LED1.
- 5) Turn on the power by making link2. Make the link firmly and avoid making a temporary bad contact. Note that the ID-12uP is an ultra-low power module and brownout detection has not been activated to reduce current.
- 6) Ensure the module is operating correctly. Reading a card is one way of testing the module. Alternatively the activity indicator LED1 is a good indication the module is working. LED1 will flash regularly.
- 7) After it has been confirmed that the module is working normally, link1 may be removed to disable the LEDs, this will save an additional 1uA. Link1 may be made at any time to check the activity LED and subsequently disconnected as desired.

9. Using the Kick Start Demo Board

The kick start kit is intended to speed up the time the ID-2uP/ID-12uP learning curve and enable engineers and constructors to rapidly design and build their own systems. The kit comes with an on-board lithium cell. At the highest activation level and assuming cards are infrequently presented to the reader, the D-12uP draws a nominal 85uA. This equates to a battery life in excess of 9 months. At the other end of the scale, if an activation rate of 6 seconds is selected, the battery life could be up to 5 years. The reader is smart; even set to the highest level of activation and with a card left permanently in read range the battery life will be in excess of 9 months. This is achieved by modifying the activation period until the card is removed. In the unlikely event that the battery becomes exhausted during the evaluation period, the cell is commonly available.

The kick start demo board is intended to get users up and running as fast as possible. Users are encouraged to copy all or part of the demo PCB for use with ID-12uP modules.

For further information on ID-12uP modules, including applications, graphs and characteristics see the latest ID-12uP data sheet.

10. Absolute Maximum and Minimum Ratings

Maximum voltage applied to any pin	+3.6v
Minimum voltage applied to any pin	-0.5v
Maximum current drawn from any pin	± 5mA Peak
Maximum current drawn from antenna pads	± 20mA
Minimum Temperature	-20 Deg C
Maximum Temperature	+55 Deg C
Supply voltage	+3.6v, -0.5v

These ratings are absolute maximums. Operation at or near the maximums may cause stress and eventual damage or unpredictable behaviour.

11. Useful information

The Bray++ Terminal

For general testing we suggest the user downloads a terminal program free from the internet. Here is one particularly good one to consider: <http://sites.google.com/site/terminalbpp/> Truly an excellent piece of software. If this is hard to get try a search for Bray 1.9b 20100630. This version is good but any version will be also acceptable.

Technical Queries

If you have any technical queries please contact your local distributor, they have all the technical resources to help you and support you. Where no local distributor exists, our technical helpline may be contacted by writing to help@ID-Innovations.com

Please state your geographic region, the module serial number and where you obtained it.

Q & A

Questions and answers to technical problems are available on line at ID-Innovations.Com. Customer feedback is *always* appreciated.

12. Contact Information

Head Office—Australia

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13. Important Safety Notice

Never use this reader in applications of sustaining life, or any application where power failure or reader failure can cause bodily harm, damage, injury or loss.

14 Disclaimer

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