LE70-868 Demokit User Guide

1vv0301102 Rev.0 – 2012-05-22

Making machines talk.

APPLICABILITY TABLE

PRODUCT
LE70-868

SW Version
GJ.S00.02.03

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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Contents

1. Introduction

1.1. Scope

The aim of this document is to present the functional aspects of the Demokit dedicated to Telit Star Network Protocol Stack.

Demokit is based on the LE70-868 module, embedding Telit in house stack. After a short description of the Demokit and its installation principles, its functioning will be detailed in more advanced operation modes.

1.2. Audience

This document is intended for developers using Telit LE70-868 Module..

1.3. Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit Technical Support Center (TTSC) at:

TS-SRD@telit.com
TS-NORTHAMERICA@telit.com
TS-LATINAMERICA@telit.com
TS-APAC@telit.com

Alternatively, use:

http://www.telit.com/en/products/technical-support-center/contact.php

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

http://www.telit.com

To register for product news and announcements or for product questions contact Telit Technical Support Center (TTSC).

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.

1.4. Document Organization

This document contains the following chapters

"Chapter 1: "Introduction" provides a scope for this document, target audience, contact and support information, and text conventions.

"Chapter 2: "Material description" gives an overview of the Demokit parts.

"Chapter 3: "Installation" describes how to connect different parts of Demokit.

"Chapter 4: "Advanced Operation" gives the reference for the complete use of the Demokit.

"Chapter 5: "Safety Recommendations" describes recommendation for proper usage.

"Chapter 6: "Glossary" shows acronyms used in the document.

"Chapter 7: "Document history" describes the revision history of the document.

1.5. Text Conventions

Danger – This information MUST be followed or catastrophic equipment failure or bodily injury may occur.

Caution or Warning – Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.

Tip or Information – Provides advice and suggestions that may be useful when integrating the module.

All dates are in ISO 8601 format, i.e. YYYY-MM-DD.

1.6. Related Documents

- [1] xE70-868 User Guide, 1vv0301037
- [2] SR Tool User Guide, 1vv0300899
- [3] Wireless Star Network Protocol Stack User Guide, 1vv0300873

2. General Description

2.1. DemoKit philosophy

The goal of the DemoKit is to show to customers the possibilities offered by the Telit Star Network firmware and the performances of the Telit modules.

2.2. Hardware Considerations

The DemoCase contains devices based on LE70-868 module, which is a up-to-500mW radio module, allowing range up to 10 km.

For more HW information on LE70, please refer to the dedicated documentation [1] available on the Telit web site.

2.3. Star Network Considerations

DemoKit LE70 modules are configured with “Wireless Star Network Protocol Stack” Telit embedded SW. Please refer to the dedicated documentation [3] available on the Telit web site.

2.4. SR Manager Tool Considerations

SRManagerTool is the PC software to configure and monitor a Star Network.

For installation and detailed use, refer to the dedicated documentation [2] available on the Telit web site.

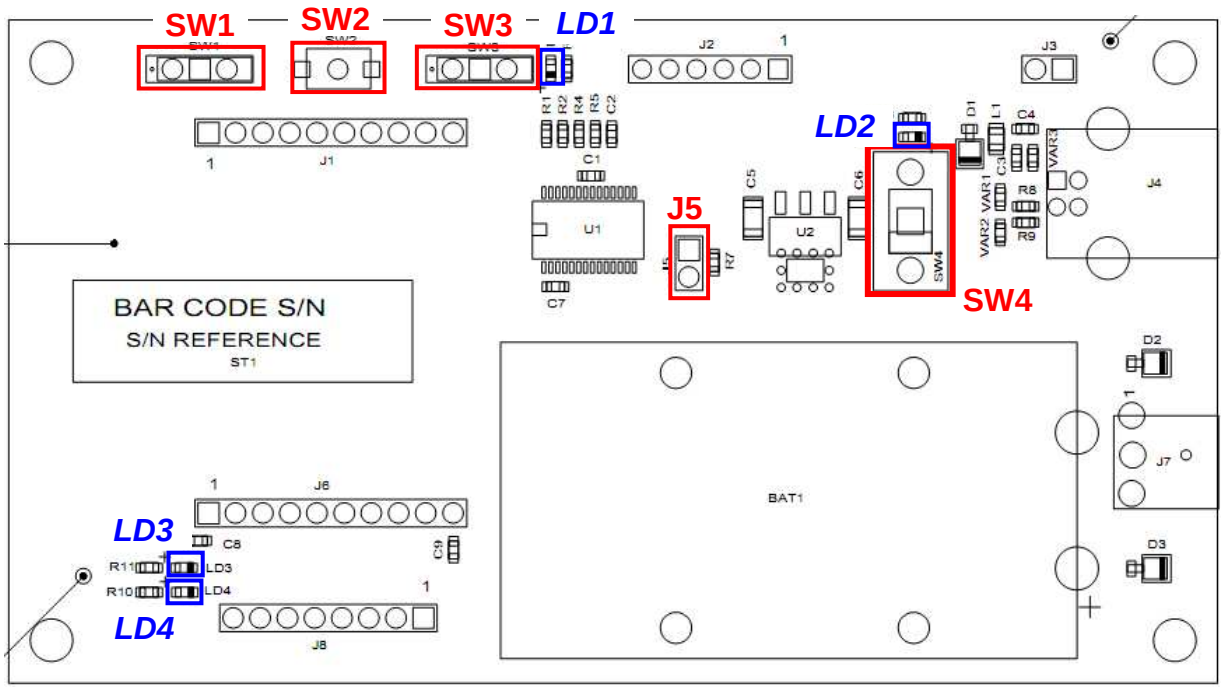
2.5. List of equipment

The LE70-868 Demokit supplies the following items:

- 2 USB EVKs
- 2 LE70-868 modules installed on their DIP-WA support
- 2 USB cables
- 2 Antennas (SMA)
- 2 Lithium primary batteries (+9V)
- 2 Power supply 100-240VAC/5,9VDC 1150mA
- 2 Jack straight coaxial connector

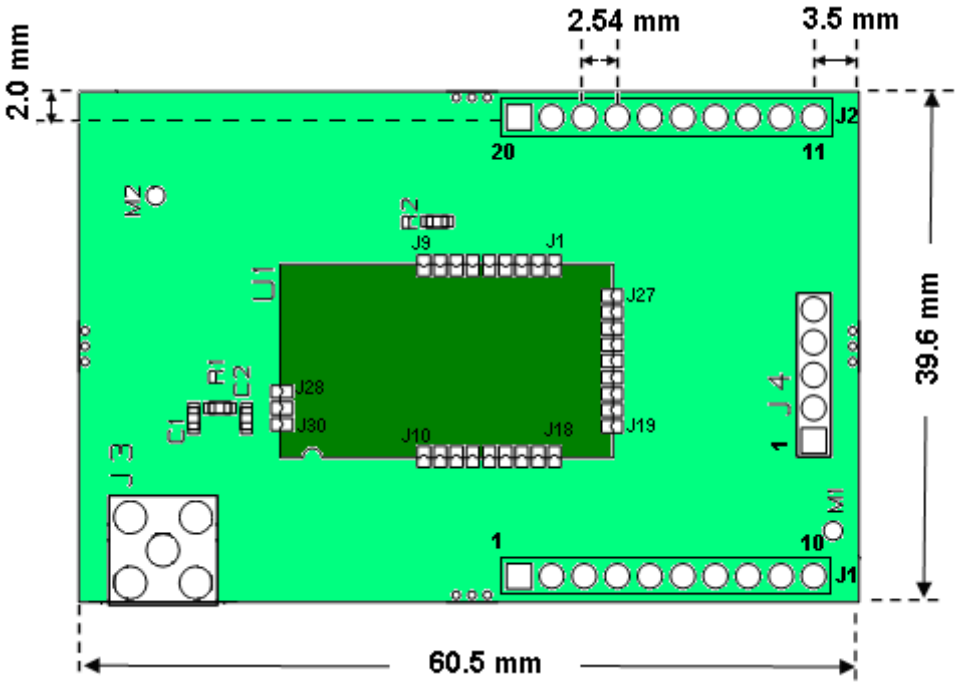
3. Detailed equipment description

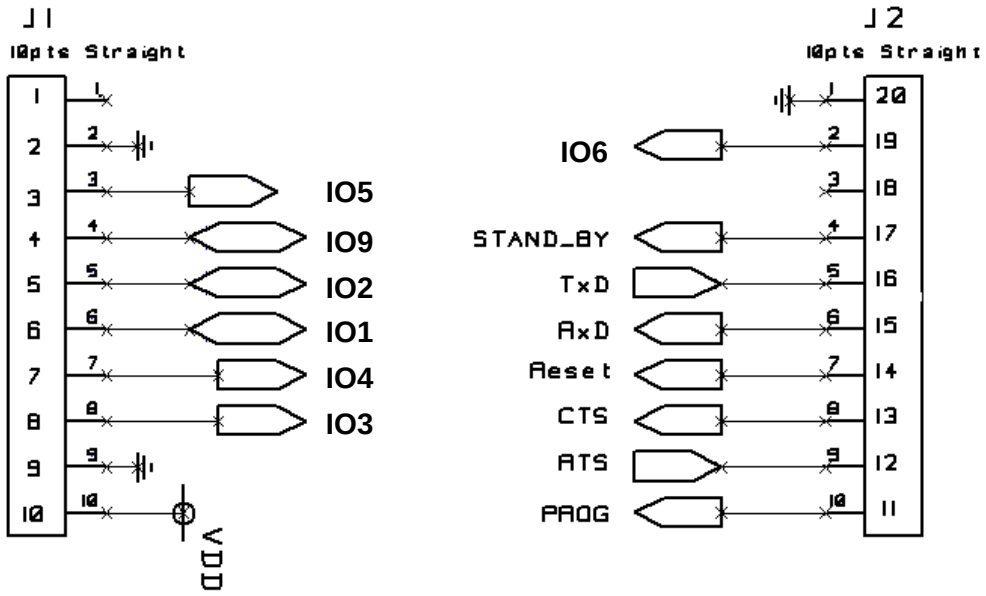
3.1. EVK Description



Designation	Feature
SW1	Stand-by switch
SW3	Programming switch
SW2	Reset push button
SW4	ON/OFF switch
LD1	PROG Yellow LED
LD2	ON/OFF Yellow LED
LD3	Red LED
LD4	Green LED

3.2. LE70-868 DIP Pin Out



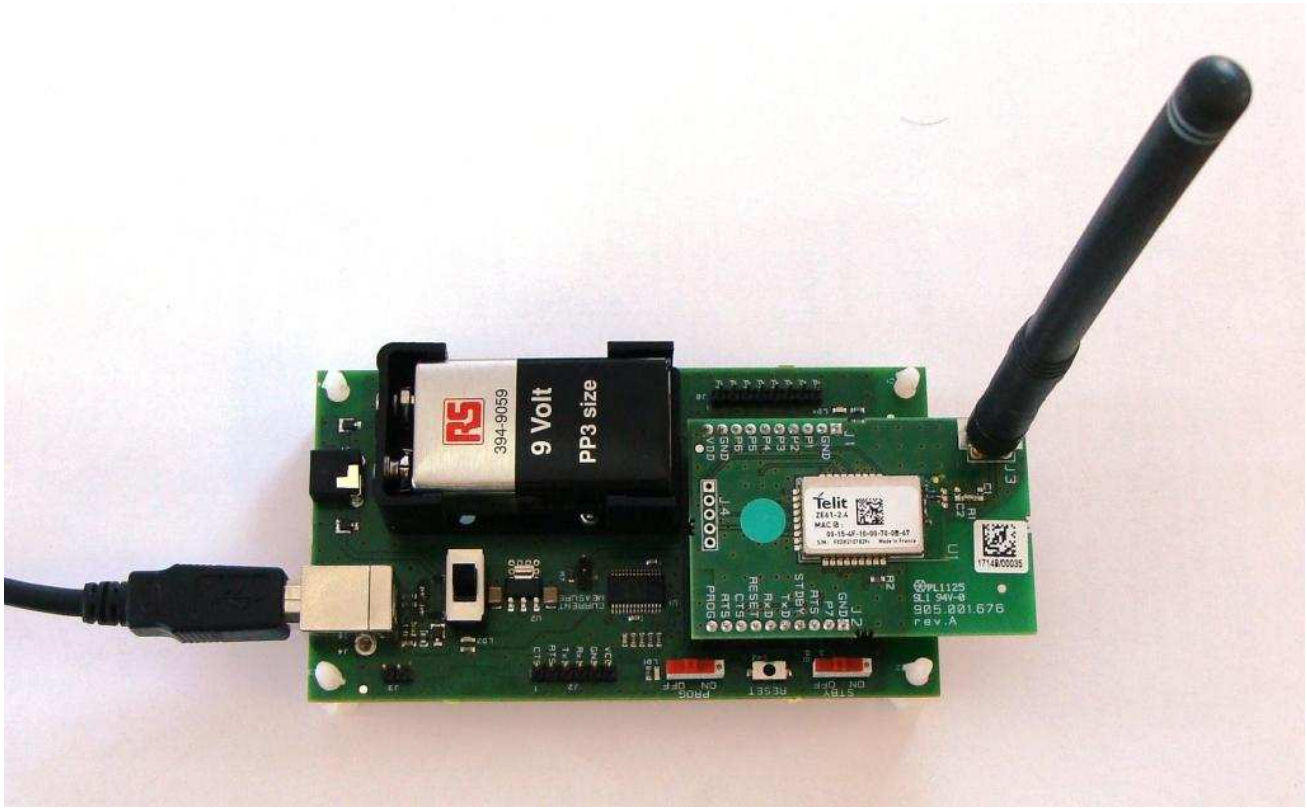


4. Installation

4.1. Demoboard Construction

In order to build each demoboard :

1. Plug 1 DIP module on 1 EVK board.
2. Screw a SMA antenna on each DIP module.
3. Plug a USB cable to each EVK board.
4. Plug a +9B battery if needed



4.2. DemoBoard Connection

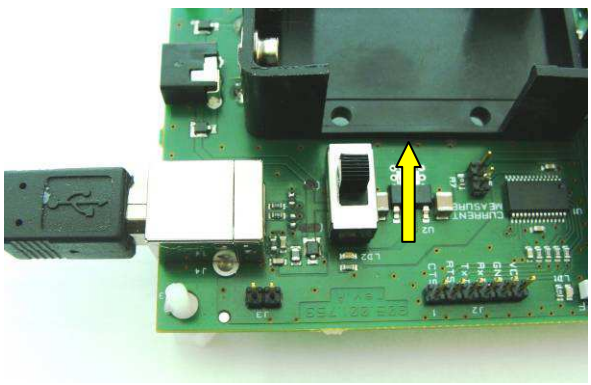
In order to connect a demoboard :

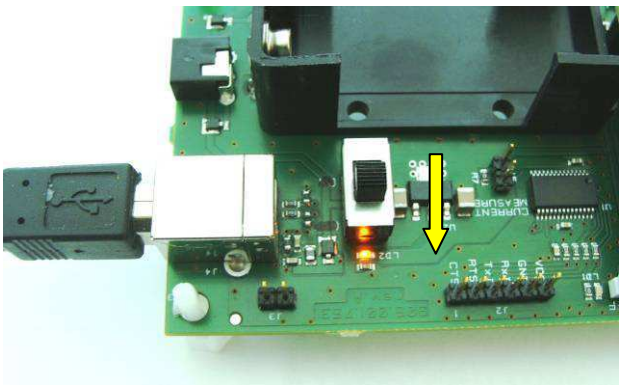
1. Connect the USB cable to the PC.

The Demoboard is supplied directly through the USB connection. In case of mobility is needed, a +9V battery can be used. When battery is plugged, it has priority on the USB power supply.

2. Check that stand-by (STBY, SW1) and programming (PROG, SW3) switches are turned OFF.
3. Switch the DemoBoard ON (SW4).

OFF ***ON***





4. Check that the yellow LED LD2 lights on when power supplying the DemoBoard, and that both LEDs LD3 and LD4 blinks once.
5. Red LED LD3 lights on when the module is transmitting data frames on RF link.
6. Green LED LD4 lights on when the module is receiving data frames from RF link

4.3. SR Tool Installation

Refer to SR Tool user guide ([2]) for a detail description of SR tool installation

5. Advanced operations

5.1. Flashing operation

In order to reflash a demoboard :

1. Switch the DemoBoard OFF (SW2).
2. Turn programming switch (PROG, SW4) to ON.
3. Switch the DemoBoard ON (SW2).
4. Reflash the demoboard using SR Tool (Refer to SR Tool user guide ([2]) for a detail description of flashing procedure)
5. Switch the DemoBoard OFF (SW2).
6. Turn programming switch (PROG, SW4) back to OFF.

5.2. Functional operation

Refer to SR Tool user guide ([2]) and Wireless Star Network Protocol Stack user guide ([3]) for a detailed description of usage.

6. Safety Recommendations

READ CAREFULLY

Be sure the use of this product is allowed in the country and in the environment required. The use of this product may be dangerous and has to be avoided in the following areas:

- Where it can interfere with other electronic devices in environments such as hospitals, airports, aircrafts, etc.
- Where there is risk of explosion such as gasoline stations, oil refineries, etc. It is responsibility of the user to enforce the country regulation and the specific environment regulation.

Do not disassemble the product; any mark of tampering will compromise the warranty validity. We recommend following the instructions of the hardware user guides for a correct wiring of the product.
The product has to be supplied with a stabilized voltage source, Safety Extra Low Voltage, with no energy hazard. The wiring has to be conforming to the security and fire prevention regulations. The product has to be handled with care, avoiding any contact with the pins because electrostatic discharges may damage the product itself.
The system integrator is responsible of the functioning of the final product; therefore, care has to be taken to the external components of the module, as well as of any project or installation issue, because the risk of disturbing external devices or having impact on the security. Should there be any doubt, please refer to the technical documentation and the regulations in force.
When installed in final product, a fire protection enclosure must be provided. Every module has to be equipped with a proper antenna with specific characteristics. The antenna has to be installed with care in order to avoid any interference with other electronic devices and has to guarantee a minimum distance from the body (20 cm).

The European Community provides some Directives for the electronic equipments introduced on the market. All the relevant information's are available on the European Community website:

http://ec.europa.eu/enterprise/sectors/rtte/documents/

The text of the Directive 99/05 regarding telecommunication equipments is available, while the applicable Directives (Low Voltage and EMC) are available at:

http://ec.europa.eu/enterprise/sectors/electrical/

7. Glossary

ACP	Adjacent Channel Power
BER	Bit Error Rate
Bits/s	Bits per second (1000 bits/s = 1Kbps)
CER	Character Error Rate
dBm	Power level in decibel milliwatt (10 log (P/1mW))
EMC	Electro Magnetic Compatibility
EPROM	Electrical Programmable Read Only Memory
ETR	ETSI Technical Report
ETSI	European Telecommunication Standard Institute
FM	Frequency Modulation
FSK	Audio Frequency Shift Keying
GFSK	Gaussian Frequency Shift Keying
GMSK	Gaussian Minimum Shift Keying
IF	Intermediary Frequency
ISM	Industrial, Scientific and Medical
kbps	kilobits/s
LBT	Listen Before Talk
LNA	Low Noise Amplifier
MHz	Mega Hertz (1 MHz = 1000 kHz)
PLL	Phase Lock Loop
PROM	Programmable Read Only Memory
NRZ	Non return to Zero
RF	Radio Frequency
RoHS	Restriction of Hazardous Substances
RSSI	Receive Strength Signal Indicator
Rx	Reception
SRD	Short Range Device
Tx	Transmission
SMD	Surface Mounted Device
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Controlled and Temperature Compensated Crystal Oscillator

8. Document History

Revision	Date	Changes
0	2013-05-22	First Release