Transponder Evaluation and Development Kit, 2nd Generation: TED-Kit2, Version 1

Automotive Safety & Comfort - Car Access and Immobilization

2008-04-23
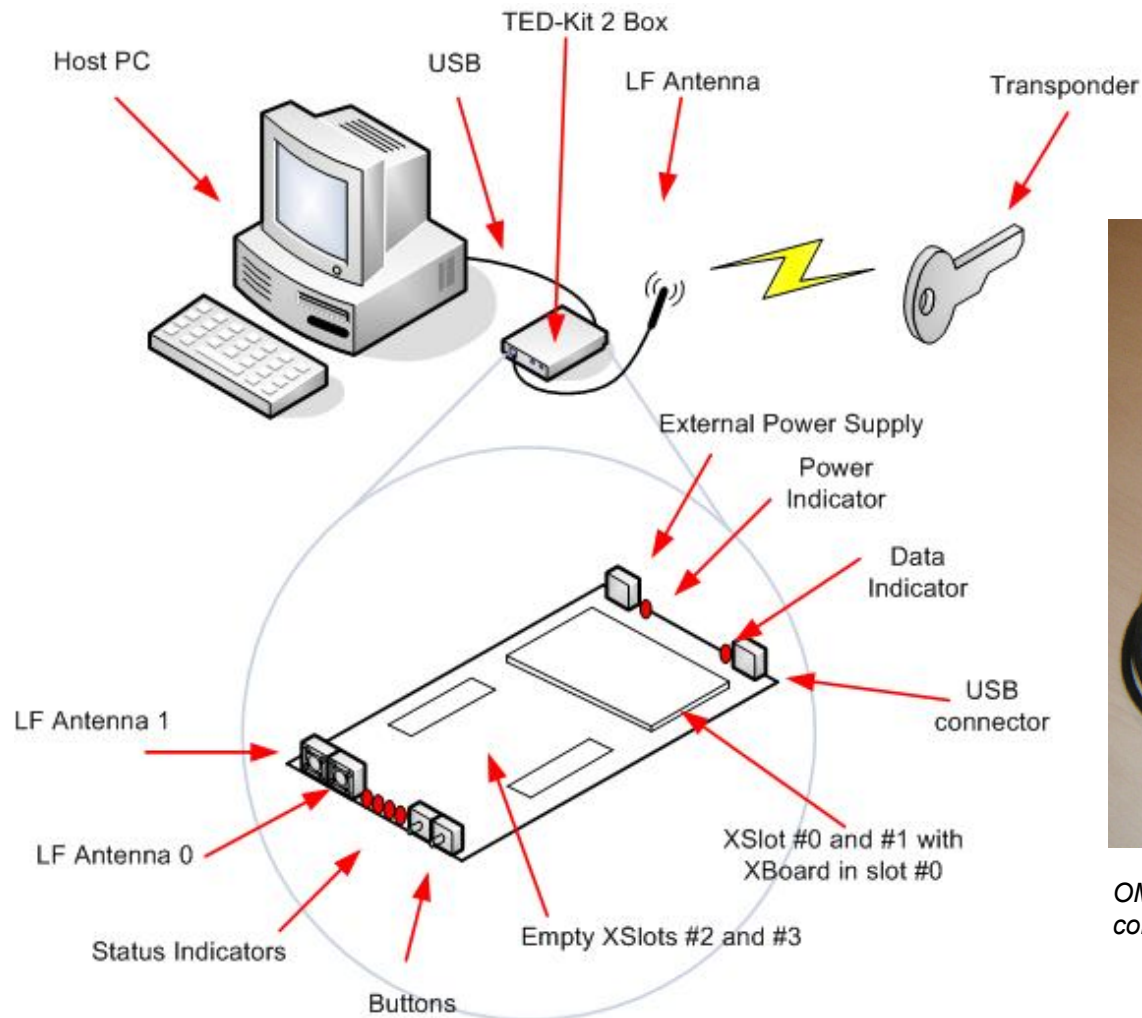
Business update – TED-Kit2 ready for orders

Part name	Description	NXP 12 NC	ASP, €
OM6716	TED-Kit2, Version 1 Supports ABIC, HT2, HT2ext, HT-Pro	9352 864 68599	790.-

▸ Tools are at stock. Lead-time is 'ship to' time. Please place order via SAP system.

▸ Easy upgrade of future functionality by additional stacked extension boards ("Xboards") and software update
  – Software updates available via https://download.semiconductors.com/
  – Update embeds GUI, API library and firmware

▸ Supporting information:
  – General overview
  – System overview
  – Package and CD contents
  – Solution value to customer
  – Concept: Main board hardware architecture, Xboard interface and Firmware architecture
  – Basic feature table to next generations
  – Business outlook

http://www.BDTIC.com/NXP

General overview TED-Kit2

Host PC · USB · TED-Kit 2 Box · LF Antenna · Transponder

External Power Supply · Power Indicator · Data Indicator · USB connector

LF Antenna 1 · LF Antenna 0 · Status Indicators · Buttons · Empty XSlots #2 and #3 · XSlot #0 and #1 with XBoard in slot #0

OM6716 - TED-Kit2 comes in metal casing (easy upgrade of containing boards due to stacked Xboard concept)

http://www.BDTIC.com/NXP

TED-Kit2 package content

1. TED-Kit2 in metal housing, equipped with a PCF7991AT (ABIC1)

2. LF antenna

3. Three PCF7936AS (HITAG 2) transponders

4. Three PCF7937EA (HITAG 2 Extended) transponders

5. Three PCF7939PA (HITAG Pro) transponders

6. USB cable

7. Installation CD-ROM
    - Software installation package (setup.exe)
    - "Read Me" document (ReadMe.pdf)
    - Product profiles
    - User's Manual (User's Manual.pdf)

8. Leaflet with quick start instructions

Basic feature table – hardware, firmware

Function	TED-Kit (end of life)	TED-Kit2 V1 (initial release)	TED-Kit2 V2 / V3	TED-Kit2 V4 (fully featured)
Host connection	RS232, external power supply	USB, host powered (optional external supply)	USB, host powered (optional external supply)	USB, host powered (optional external supply)
Extensibility	1x UHF receiver	4x standardized slots	4x standardized slots	4x standardized slots
Microcontroller	8051, 14MHz	ARM, 48MHz, JTAG IF	ARM, 48MHz , JTAG IF	ARM, 48MHz , JTAG IF
Interfaces	SPI (ABIC1), 1 analog IN, 16 digital I/O	SPI, LIN, I2C, 1 analog IN, 1 analog OUT, 16 digital I/O	SPI, LIN, I2C, 1 analog IN, 1 analog OUT, 16 digital I/O	SPI, LIN, I2C, 1 analog IN, 1 analog OUT, 16 digital I/O
Base station	ABIC	ABIC Xboard	ABIC Xboard	ABIC and ABIC2 Xboard
Antennas	1x LF, 1x RF (together w/ RF add-on board)	Per XBoard 2x LF	Per device 2x LF plus 1x RF	Per device 2x LF plus 1x RF
UHF/RF support	UAA3220	-	VIPeR / LoPSTer	LoPSTer
LF/RF protocols	Manchester (transmission with special firmware), CDP (receive only), BPLM (transmit only)	Manchester, CDP, BPLM	Manchester, CDP, BPLM	Manchester, CDP, BPLM, Analog I/O, GPIO, free waveform, plain data
Reception synchronization	Timing-based (pattern based with special firmware)	Timing-based	Timing-based, pattern based	Timing-based, pattern based

http://www.BDTIC.com/NXP

Basic feature table - GUI

Function	TED-Kit (end of life)	TED-Kit2 V1 (initial release)	TED-Kit2 V2 (next release)	TED-Kit2 V3	TED-Kit2 V4 (fully featured)
Supported NXP products	7x41A, 7936A, 7x45A, 7952A, 7953A, 7x61A, 7991	7x41A, 7x41E, 7936A, 7937E, 7939P, 7x45A, 7x45P, 7952A, 7952E, 7953A, 7953P, 7x61A, 7x61E, 7991	7x41A, 7x41E, 7936A, 7937E, 7939P, 7942A, 7943A, 7944A, 7x45A, 7x45P, 7946A, (7947A), 7952A, 7952E, 7953A, 7953P, 7x61A, 7x61E, 7991	7x41A, 7x41E, 7936A, 7937E, 7939P, 7942A, 7943A, 7944A, 7x45A, 7x45P, 7946A, 7947A, 7952A, 7952E, 7953A, 7953P, 7x61A, 7x61E, 7910, 7980, 7991	7x41A, 7x41E, 7936A, 7937E, 7939P, 7942A, 7943A, 7944A, 7x45A, 7x45P, 7946A, 7947A, 7952A, 7952E, 7953A, 7953P, 7x61A, 7x61E, 7910, 7980, 7991, 7992
State-of-the-art GUI	No, dialog based	Yes, concurrent multiple applets and devices, Hot plugging	Yes, concurrent multiple applets and devices, Hot plugging	Yes, concurrent multiple applets and devices, Hot plugging	Yes, concurrent multiple applets and devices, Hot plugging
Firmware update	Manual	Fully automated firmware management	Fully automated firmware management	Fully automated firmware management	Fully automated firmware management
Immobilizer	HT2, HT2+	HT2, HT2ext, HT-Pro	HT2, HT2ext, HT-Pro HT2+, (HT2+EE)*	HT2, HT2ext, HT-Pro, HT2+, HT2+EE	HT2, HT2ext, HT-Pro, HT2+, HT2+EE, HT3*, PIT*
RKE evaluation	-	-	-	PCF7946 style RKE with PCF7941 / 7961	PCF7946 style RKE with PCF7941 / 7961
PKE / RKE evaluation	PCF7952/53 ref. design (separate GUI & firmware)	-	PCF7952/53 reference design	PCF7952/53 ref. design, LoPSTer 2-way key	PCF7952/53 ref. design, LoPSTer 2-way key
Support multiple devices	No	Unlimited	Unlimited	Unlimited	Unlimited
Oscilloscope	No	No	No	Yes, shows Xboard internal signals	Yes, shows Xboard internal signals

*) may be subject to change

http://www.BDTIC.com/NXP

Solution value to customer - TED-Kit2 tool chain

▸ Evaluation tool for major NXP's Car Access and Immobilizer products
  – Hitag2, Hitag2Extended, HitagPro transponder families*
  – ABIC1, ABIC2
  – LoPSTer

▸ Platform for reference design / demonstrator developments
  – Broad modularity and extendibility using Xslot / Xboard concept
  – Windows application supports simultaneous operation of unlimited number of TED-Kit2 boards
  – Easy integration into customer and reference designs
  – Fully documented including firmware source code and application examples

▸ Programming device in customer's production lines
  – USB 2.0 interface allows paralleled mass programming
  – Windows 32-bit application programming interface library (API DLL) including examples
  – Easy integration into automation tools like LabVIEW

*) excluding PIT/SECT

http://www.BDTIC.com/NXP
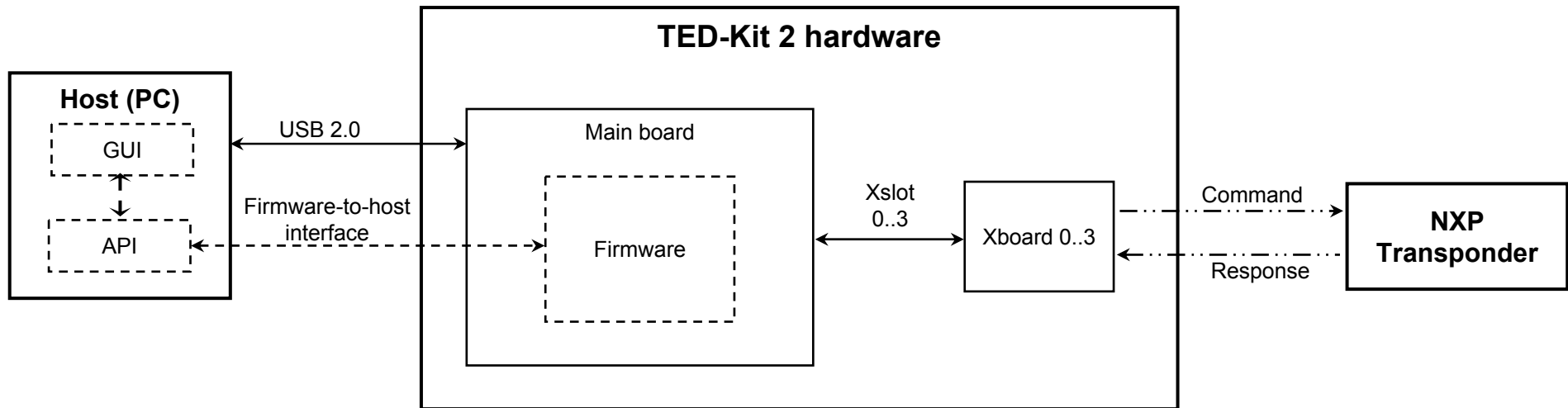
Business Outlook

▸ Ordering / Pricing TED-Kit2 V1

– Supports ABIC and Transponder protocols for HT2, HT2ext, HT-Pro

– Ordering code, 12NC 9352 864 68599

– Sales price per unit 790 €

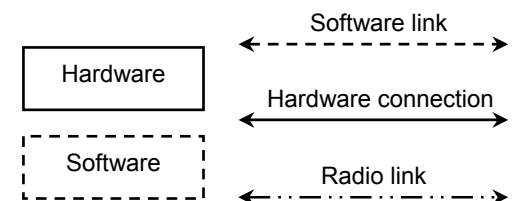▸ Next versions planned (upgrades by additional Xboards and new firmware)

– TED-Kit2 V2   Q4'08

– LoPSTer reference design   Q2'09*

– ABIC2 reference design   2009*

*) time and function may subject to change

http://www.BDTIC.com/NXP

More information: System Overview TED-Kit2

TED-Kit 2 hardware

Host (PC)
- GUI
- API

USB 2.0

Firmware-to-host interface

Main board
- Firmware

Xslot 0..3

Xboard 0..3

Command

Response

NXP Transponder

Legend

Hardware	Software link
	Hardware connection
Software	Radio link

http://www.BDTIC.com/NXP

Concept: Main board hardware architecture (1)

http://www.BDTIC.com/NXP
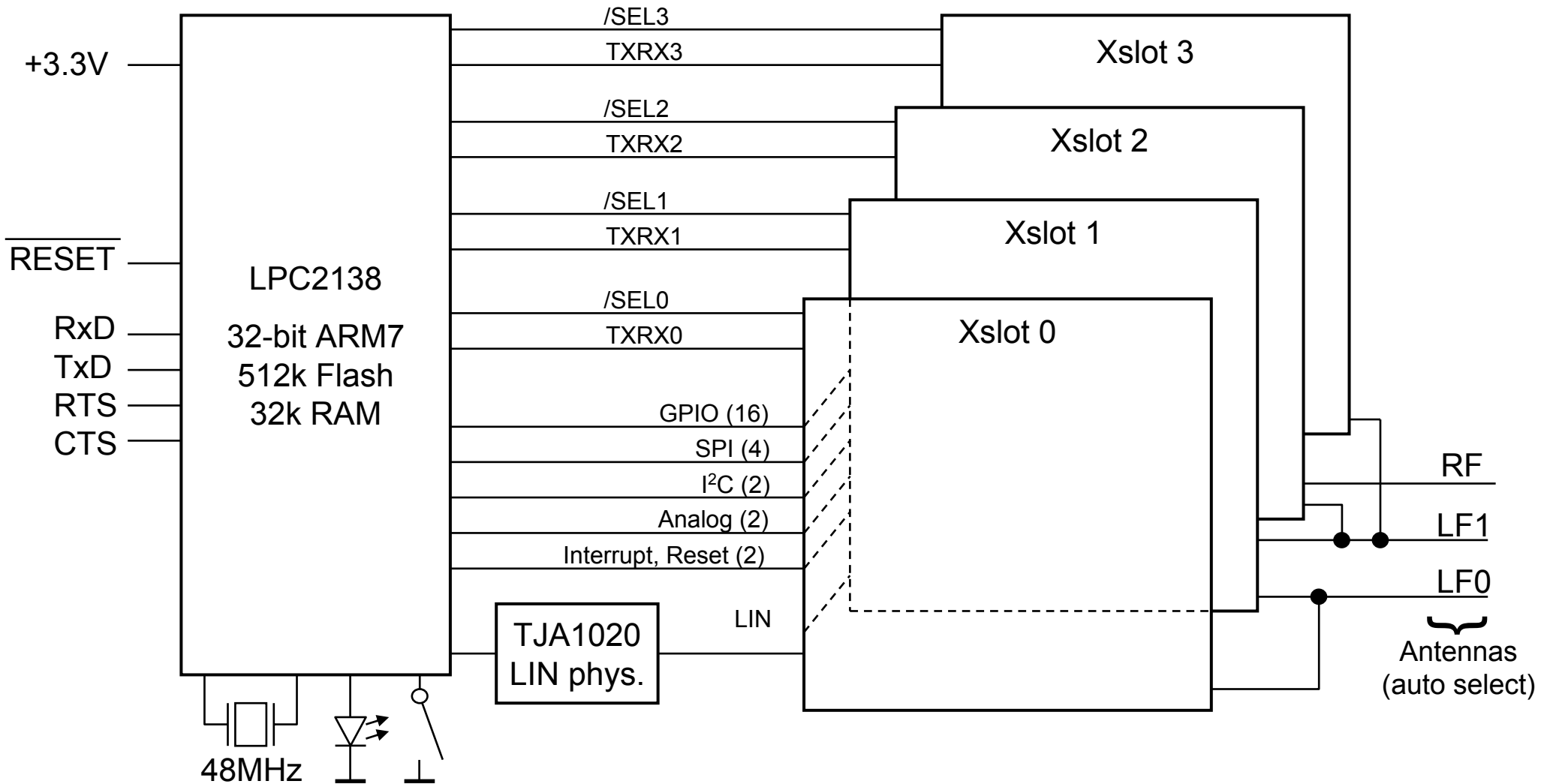
Concept: Xboard interface (2)

- Multiple power supplies
  - 3.3V, 100mA [*]
  - 5V, 150mA [*]
  - 7V ~ 27V, 250mA [*]

- Automatic type detection
  - Via resistive divider at /SELx line
  - 31 distinguishable types
  - Empty slot detection

- Single-line "TXRX" interface
  - Available per Xslot
  - Connected to powerful µC capture/compare timer unit
  - Accurate, high resolution encoding and decoding of serial data streams

- Standard interfaces
  - Physical LIN
  - GPIO, SPI (hardware), I^{2}C (hardware), Analog via ADC / DAC of µC
  - Interrupt, reset
  - 3.3V logic signals except LIN
  - Connected to all Xslots in parallel, must only be driven/interpreted while Xslot is selected (/SELx = 'low')

[*] Total supply current shall not exceed 270mA to avoid excess USB supply current that may result in port shutdown by PC operating system. Connect an external supply for higher loads and/or supply voltages.

http://www.BDTIC.com/NXP

Concept: Firmware architecture (3)

- High degree of portability
  - No assembler code
  - MISRA-2005 certified
  - Hardware abstraction layer to be adapted to target hardware
  - Functional layer pure ANSI-C, standardized data types
  - Open source, self-contained example projects
  - Single configuration file controls all project parameters

- Modularized
  - Xboard control separated from communication (TXRX line control)
  - Plugin concept simplifies adding new features (Xboard types, communication protocols)
  - Inclusion / exclusion of plugins at compile time

- Enhanced debug ability
  - Release / debug modes (compile time)
  - ASSERT(): runtime condition testing, failure reason displayed on host PC
  - TRACE(): displays debugging information on host PC during normal operation

http://www.BDTIC.com/NXP

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for RFID Transponder Tools *category:*

Click to view products by NXP *manufacturer:*

Other Similar products are found below :

SP-MX-08-HF-M2 V700-A43 10M WF-SM-30 V700-A44 20M V680-A81 V680-A60 2M WS02-CFSC1-EV3 V680-A60 5M V680-HAM91 V680-A60 10M V700-A46 50M V680S-HMD66-ETN MEDP-MF-RFID-R10 ST25-TAG-BAG-U MIKROE-3644 MIKROE-2395 1482 MIKROE-2462 2800 2802 X-NUCLEO-NFC05A1 359 360 361 362 363 365 3781 789 884 4032 4034 4043 4429 4701 AS3980-QF_DK_ST AS3930 DEMOSYSTEM AS3953-DK-TAGS ATARFID-EK1 ATARFID-EK2 EVB90109 MIKROE-3659 MIKROE-3971 MIKROE-4208 MIKROE-1434 MIKROE-1475 MIKROE-1726 MIKROE-262 MIKROE-4309 13429-6001