VCP-QVGA-02

IQVCP visual control panel

User's Guide

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Description

VCP-QVGA-02 is a visual control panel to be built in user equipment.

It is a generic device, i.e. the hardware is fixed and the user can realize specific functionality by software only.

For development of VCP-QVGA-02 applications development set DS-QVGA-02 is available.

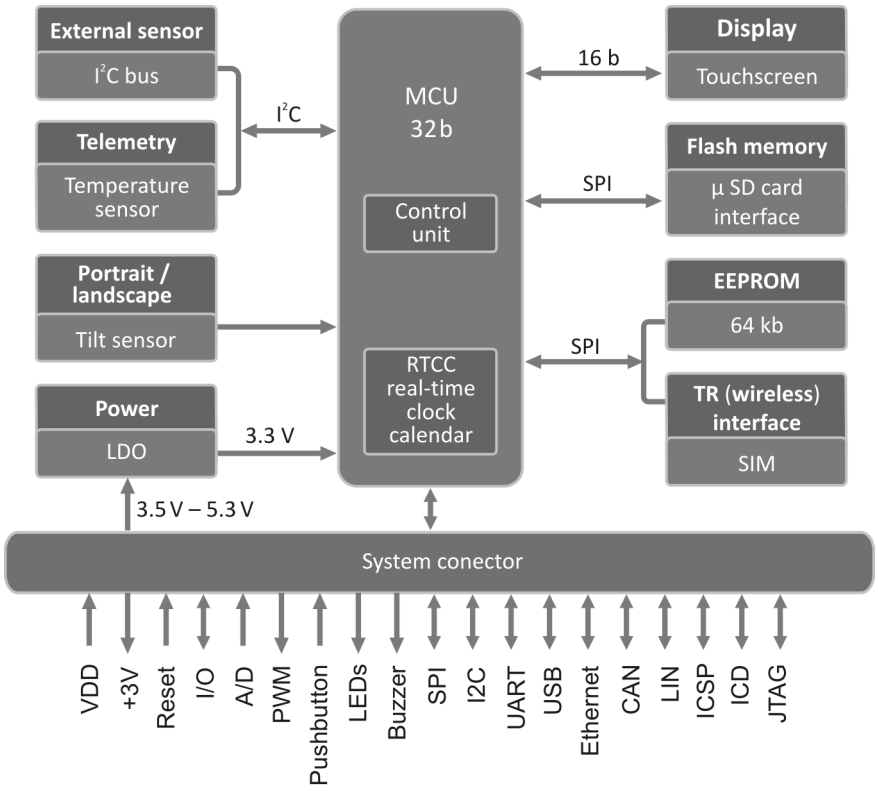
Applications

- Control panel for arbitrary use
- Home automation
- Access, security, heating systems,…
- Wireless control
- VCP-QVGA-02 is intended for final production.
- DS-QVGA-02 development set is intended for development of VCP-QVGA-02 applications.

Key features

- Display/touchscreen unit to be built-in user equipment
- Ethernet and USB connectivity, IQRF (wireless) interface
- Additional peripherals, interfaces and connectors
- Compatible with development board DK-QVGA-02

Block schematics



Electrical specifications

*(**typical values** unless otherwise stated)*

Power supply (VDD)	3.5 V to 5.3 V DC (via system connector)
Supply current in Sleep mode	75 µA
Temperature sensor accuracy	±0.5 °C typ., ±3 °C max.
Dimensions	120 mm x 80 mm x 23 mm
Weight	61 g
Temperature range	0 °C to +70 °C

Absolute maximum ratings

Stresses above those values may cause permanent damage to the device. Exposure to maximum rating conditions for extended periods may affect device reliability.

Supply voltage (VCC):	5.8 V DC
Storage temperature:	-30 °C to +80 °C

Hardware

VCP-QVGA-02 is a generic equipment, i.e. the hardware is fixed and the user can realize specific functionality by software only. See DS-QVGA-02 documentation and demo SW for details.

Power supply

VCP-QVGA-02 is intended to be supplied by external power supply (VDD) connected via system connector. This is converted to 3.3 V by internal LDO regulator.

MCU

VCP is controlled by the 32b microcontroller PIC32MX795F512LPL, up to 80 MHz, 100 pins.

Oscillators

MCU is clocked by external 16 MHz crystal oscillator which allows to reach up to 80 MHz using the internal PLL. For minimized power consumption, RTCC operation in Sleep mode etc. secondary crystal oscillator 32.768 kHz is available.

Reset

VCP reset (initialization/starting-up) can be invoked by low level on the MCLR MCU pin via system connector or by software.

Sleep mode

This is intended for current consumption minimizing, especially in idle or while supplied from an accumulator. It is possible to switch off all functions and peripherals by software.

QVGA display

Display / touchscreen DI-QVGA-3.2-02 with diagonal 3.2“, 320x240 pixels RGB, 262144 colors (graphic library uses 65535 colors only), QVGA TFT LCD, transmissive, with LED backlight and 16b data bus.

Proper display functionality requires a calibration (setting the touch sensors in accordance to display pixels) to compensate variations in parameters due to temperature, tolerance of parts and so on. The GW has the display factory calibrated and this can also be done in application software whenever needed (3x3 touches in places indicated by an arrow). The calibration is stored to the EEPROM. See the Demo software.

LED backlight can be switched on/off by the software.

EEPROM memory

Capacity: 64 kb, serial interface SPI (shared with the TR module) 1 000 000 erase/write cycles (typ.).

Micro SD interface

The VCP has the SPI interface to standard Flash memory micro SD card. The memory can be put to the standby mode by SW. SD connector (Hirose DM3AT-SF-PEJ) is included if the VCP is a part of the DS-QVGA-02 development set only.

UART interface

Digital pins to connect serial UART hardware module inside the MCU are available on the system connector. To connect standards like RS-232 or RS-485 proper circuitry must be used on the user equipment.

Temperature sensor

Temperature can be measured by sensor MCP9802 with I2C interface. This IC is not assembled in standard delivery.

External I2C device

Any device with I2C interface can be connected externally.

Tilt sensor

3-axis linear accelerometer LIS344AL is connected to the corresponding analog inputs. It is intended as a tilt sensor to support portrait/landscape view switching by SW.

TR module

IQRF wireless transceiver module in SIM card format, e.g. TR-52B is supported. It is delivered on request only. The SIM connector is always included.

Connectors

connector	pins	type
System	40	FX2-40P-1.27SVL (Hirose). Mating type: FX2-40S-1.27SVL (Hirose).
TR module	8 + 1	SIM connector + through hole soldering for possible mechanical fixation
SD card	8	DM3AT-SF-PEJ (Hirose)
I2C	5	Cable connector

Programming and debugging

Refer to the DS-QVGA-02 development set.

Software

Refer to the DS-QVGA-02 development set.

Product information

Pack list

- VCP-QVGA-02, Demo application programmed
- No temperature sensor assembled
- No TR module included

Ordering codes

• VCP-QVGA-02	Visual control panel
• DS-QVGA-02	Developemnt set for VCP-QVGA-02

Recommended options

• TR-52BA	TR module with integrated antenna (other suitable types are also supported)
• Micro SD card	
• MCP9802	Temperature sensor
• FX2-40S-1.27SVL	Mating system connector

Document history

• 110810	First release

Sales and Service

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Partners and distribution

Please visit www.iqrf.org/partners

Quality management

ISO 9001 : 2000 certified

Complies with ETSI directives EN 30279 V.1.2.1:99, ETS 30683:97, ETSI EN 301489-1:00, ETSI EN 300220-1:00, ETSI EN 300390-2V.1.1.1:00

Complies with FCC directives FCC CFR, Title 47, Part 15, Section 15.209, FCC CFR, Title 47, Part 15, Section 15.249

Complies with Directive 2002/95/EC (RoHS)

Trademarks

Legal

On-line support: http://iq-esupport.com

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