GW-QVGE-01

IQVCP Visual Control Panel with Ethernet

User's Guide

Simple way to smarter wireless solutions

Description

GW-QVGE-01 is a visual control panel with touchscreen, Ethernet and wireless connectivity and other features.

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

GW-QVGE-01 is intended for final production while the DS-QVGA-03 should be used for application development.

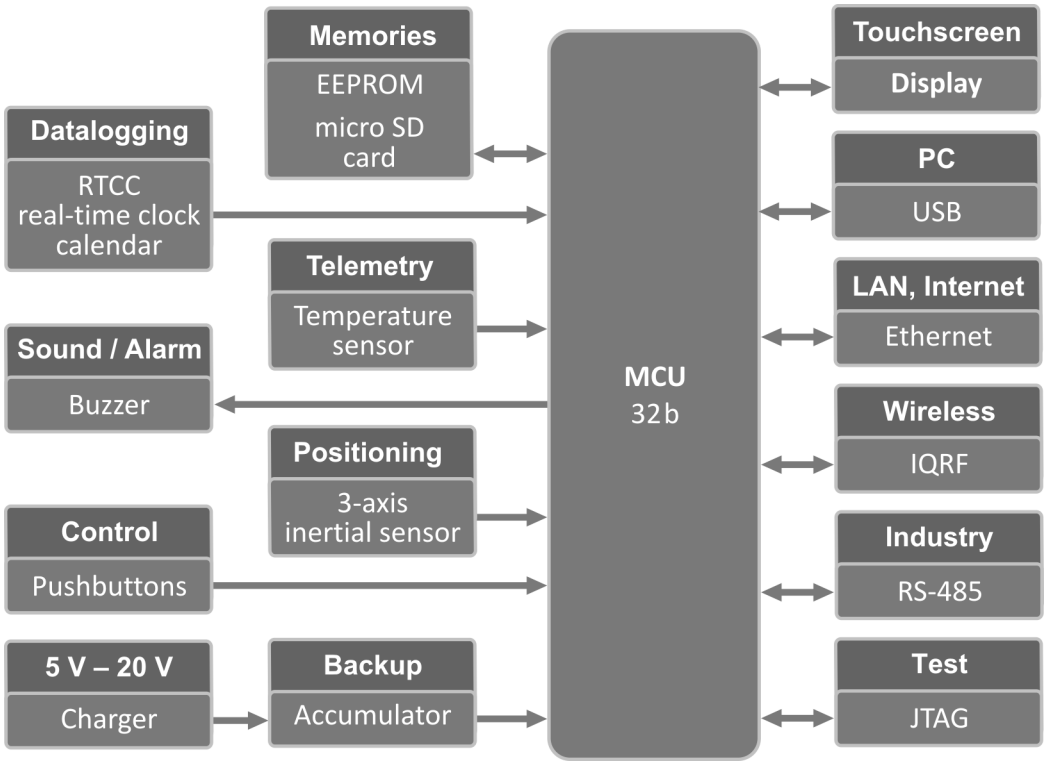
Applications

- Solutions tailored to user's needs
- Control panel for arbitrary use (not for IQRF only)
- Home automation
- Access control
- Security systems
- Heating systems
- Wireless control panel

Key features

- Display/touchscreen 3.2“, 320 x 240 pixels, 65535 colors
- RTCC (real time clock/calendar)
- MCU PIC32MX7
- Micro SD card interface
- ETH, USB and RS485 interface
- Backup accumulator
- Internal antenna
- Very low power consumption in Sleep mode
- Wall assembly option

Block schematics



Electrical specifications

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

Power supply:	7 – 20V DC (terminal clamp) / 5.0 ± 0.35 V DC (micro USB)
Accumulator:	LI14500-700-1L, 3.7 V, 700 mAh, Li-Ion, AA
Display:	DI-QVGA-3.2-02 TFT LCD 3.2“, 320 x 240 pixels, 256 K colors
Supply current:	
operational:	160 mA [1] (display backlight off) 180 mA [1] (display backlight on)
standby:	90 µA [2]
accumulator charging:	450 mA max.
Temperature range:	0 °C to +70 °C
Frequency range:	868 MHz or 916 MHz (according to the TR module)
RF output power:	3.5 mW
Supported TR modules:	TR-52BA (with on-board PCB antenna)
Temperature sensor accuracy:	±0.5 °C typ., ±3 °C max.
Dimensions:	120 mm x 80 mm x 28 mm
Display size:	8.1 mm (diagonal)
Weight::	143 g [3]

Note 1: This current is increased due to charging in case of external supply (depended on the accumulator state).

Note 2: All peripherals shut down.

Note 3: Including accumulator and TR module, without micro SD card.

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):	20V DC (terminal clamp) / 5.5 V DC (micro USB)
Storage temperature:	-30 °C to +80 °C

Hardware

GW-QVGE-01 is a generic equipment, i.e. the hardware is fixed and the user can realize specific functionality by software only.

Power supply

GW-QVGE-01 is intended to be supplied by external stabilized 7-20V DC connected to clamp (X1) or 5 V DC to micro USB connector (XC2). If both are connected, the internal logic gives priority to the supply from the clamp.
Proper run-up of the external power supply is indicated by a short flash of the LED1 inside the case. Accumulator serves as a backup for external power source and should be charged from it. Applying of an external source can be detected (digital signal SENSE_EXT_PWR) and accumulator voltage can be monitored (analog signal ACCU and digital signal MEASURE_ACCU).
Display backlight source can be switched on/off by signal PWR_BACKLIGHT. See QVGA Demo SW for details.

Jumper configuration for 5V external power connected to clamp X1: J1, J2, J3 connected; J4 disconnected
Jumper configuration for up to 20V external power connected to clamp X1: J4 connected; J1,J2,J3 disconnected

MCU

GW 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

GW reset (initialization/starting-up) can be invoked by the pushbutton on the side of the case or by software. Software has no influence upon the functionality of the pushbutton.

Sleep mode

This is intended for current consumption minimizing, especially in idle or while supplied from the accumulator. It is possible to switch off all functions and peripherals by software. Sleep can be invoked by the program and terminated e.g. by the reset pushbutton. GW power is not switched off, deactivation is realized by the Sleep mode.

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.

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 GW has the SPI interface to standard Flash memory micro SD card. The memory can be put to the standby mode (by the PWR_SD signal). The GW is delivered without the connector and the card. Recommended connector: DM3AT-SF-PEJ (Hirose).

RS485 interface

The RS485 circuitry is supplied directly from external source. Thus, it works with external supply only. Default voltage level is 5 V, alternatively 3.3 V is available on request.

Temperature sensor

Temperature can be measured by external sensor MCP9802 with I2C interface. The temperature sensor can be connected via XC5 terminal.

Accelerometer

3-axis linear accelerometer is connected to the corresponding analog inputs.

User pushbutton

The pushbutton (S2) functionality is fully under the user's control.

User LED

Dual color (red/green) LED2 inside the case. It is fully under the user's control, especially intended for service and debug.

Beeper

Beeper can be driven from the PWM module output or by software. The functionality is fully under the user's control.

TR module and antenna

The TR-52BA wireless IQRF transceiver module in SIM card format with built-in PCB antenna.

Connectors

connector	pins	type
External power	2	Micro USB and the clamp connector
Accumulator	2	Soldering stripes
TR module	8 + 1	SIM connector + through hole soldering for possible mechanical fixation
RS485	2	Clamp connector
USB	4	Micro USB (power+usb)
MCU programming (ICSP) and debugging (ICD)	5	Cable connector
SD card	8	DM3AT-SF-PEJ (Hirose)
Temperature	5	Cable connector
Ethernet	8	RJ45 Hirose

The cable to the clamp connector can be connected after breaking the molded cover at the bottom of the case.

Software – demo application

Sample programs for the MCU inside the GW, for TR modules to demonstrate wireless connectivity and PC demo for USB communication are available in the DS-QVGA-03 development set.

Pack list

- GW-QVGE-01 with Demo application programmed, in Sleep mode
- No TR module included
- Accumulator (soldered)
- Power source TY-A6-microUSB (5V DC, 500 mA, stabilized, with micro USB connector)

Ordering codes

- DS-QVGA-03 Developemnt set for GW-QVGE-01
- GW-QVGE-01 Visual control panel

Recommended options

- CABUSBABMICRO-200 Micro USB cable
- TR-52BA TR module with integrated antenna (other suitable types are also supported)
- Micro SD card

Document history

- MNGWQVGE01_110126 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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