

IST-RR_QC

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ed.A

RR_QC RFID identification modules.

Description

RFID Identifications modules + Electric connection module.

System for automatic recognition of gripping tool composed of a RFID reader (RRAQC/RRAQCN) and memory TAG (RRBQC).

Main characteristics:

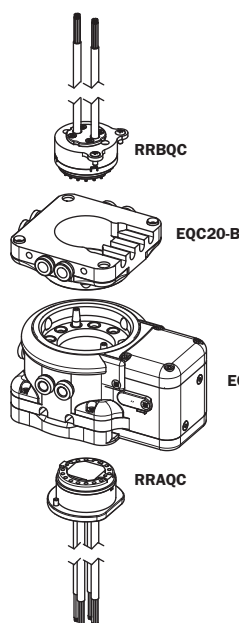
- up to 255 identifiable tools with a single TAG;
- binary coding of tools by means of 8 digital output signals (24Vdc);
- digital input to counting tool cycles execution (stored in TAG memory);
- generation of a maintenance warning signal once the tool reached the preset number of cycles;
- memorization of tool technical data and user data memory available;
- 16 user connections;
- communication also through your smartphone thanks to the new app 'Gimatic Android App';

| | <i>RRAQC</i> | <i>RRAQCN</i> | <i>RRBQC</i> |
|-------------------------|---|--|----------------------------------|
| Frame | Polycarbonate, glass fibre reinforced | | |
| Working distance | <10mm | | |
| Working frequency | 13.56 MHz | | |
| Weight | 75 g | | 45 g |
| User connection number | 16 | | |
| Electrical connection | 4 x cable 8 poles | | 2 x cable 8 poles |
| Cable conformation | 8 x 0.14 mm2 | | |
| Cable length | 500mm | | |
| Cable insulation | PUR | | |
| Cable jacket | PUR | | |
| Environmental degree | IP40 | | IP67 |
| Power supply RFID | 24 Vdc ± 10%, 0.15 Arms | | None |
| Contact type | Female | | Male |
| Nominal contact tension | 30V AC/DC | | |
| Maximum contact current | 1 A | | |
| Communication interface | RS232 | | None |
| Memory type | None | | M I F A R E DESfire EV2 4K |
| Output signals | 8 digital (tool ID) + 2 digital (alarm) (PNP) | 8 digital (tool ID) + 2 digital (alarm)(NPN) | None |
| Input signals | 1 digital (PNP) cycle counting | 1 digital (NPN) cycle counting | None |
| Temperature range | 5-60°C | | |
| CE reference norm | EN 60950 2001, EN 300330-2 V1.3.1, EN 301489-1-3 V1.4.1 | | |

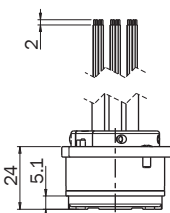
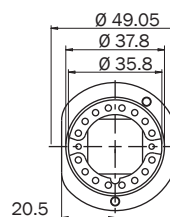
Electrical connection

| Cable | Color | Name | Description |
|-------|--------|--------|--|
| 1 | \ | \ | Free electrical connection |
| 2 | \ | \ | Free electrical connection |
| 3 | Yellow | GND | Power supply GND |
| | Pink | RX | RS232 RX signal (only for TAG configuration) - optional use |
| | Green | TX | RS232 TX signal (only for TAG configuration) - optional use |
| | Blue | DI_CNT | Digital input cycle completed triggering signal (the number of executed cycles is increased by one per any rising edge of this signal) |
| | White | DO_FLT | Digital output FAULT CONDITION |
| | Brown | DO_CNT | Digital output MAINTENANCE ALARM: when set, tool executed the predefined number of workin cycles |
| | Red | GND | Power supply GND |
| | Grey | 24Vdc | Power supply 24 Vdc |
| 4 | Yellow | DO_1 | Digital output #1 (bit 1 of the binary representation of tool ID) - LSb |
| | Pink | DO_2 | Digital output #2 (bit 2 of the binary representation of tool ID) |
| | Green | DO_3 | Digital output #3 (bit 3 of the binary representation of tool ID) |
| | Blue | DO_4 | Digital output #4 (bit 4 of the binary representation of tool ID) |
| | White | DO_5 | Digital output #5 (bit 5 of the binary representation of tool ID) |
| | Brown | DO_6 | Digital output #6 (bit 6 of the binary representation of tool ID) |
| | Red | DO_7 | Digital output #7 (bit 7 of the binary representation of tool ID) |
| | Grey | DO_8 | Digital output #8 (bit 8 of the binary representation of tool ID) |

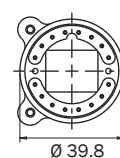
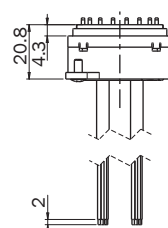
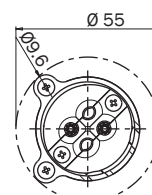
Application examples



Dimensional RRAQC



RRBQC



Principle of operation

The RR_QC connectors are born as accessories of the EQC20 electric tool changer. The primary context of application of the system is the automatic handling of components. Usually to this purpose a robot is used in combination with several EOATs (End Of The Arm Tools) anyone dedicated to a specific operation. In a similar application the robot wrist may be equipped with a reader unit (RRAQC/RRAQCN) and any EAOT may be equipped with a TAG memory component (RRBQC).

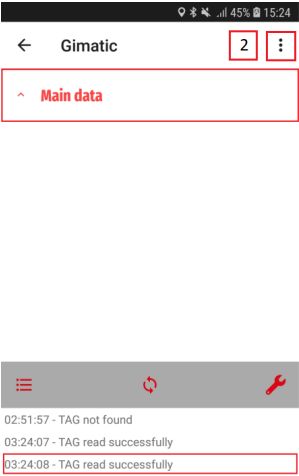
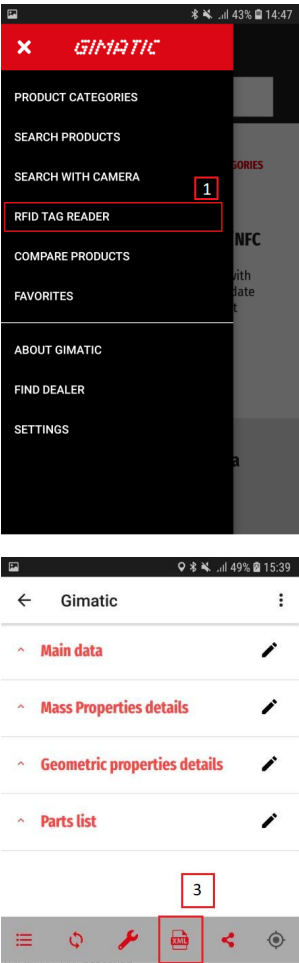
During the setup of the application any single TAG can be filled up with EAOT specific information (by using a smartphone with the dedicated APP1 or a software PC2 with a dedicated interfacing box) such as an identification number (ID), mass or geometrical proprieties and a part list.

All these data are permanently stored into the TAG memory and some of them are eventually updated by the reader unit during normal operation.

Whenever the reader approaches a specific TAG the binary representation of the TAG's ID is generated on 8 digital output pins (DO_1...DO_8) allowing the robot to verify the correspondence of the installed EOAT with the programmed task. A specific digital input signal (DI_Count) is also available to counting the number of cycles executed by the EOAT (i.e. signal coming from a sensorbox) allowing the implementation of predictive maintenance.



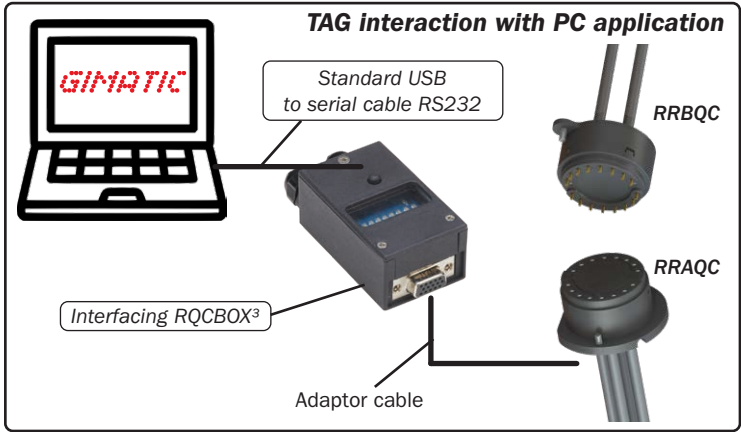
App review



Once the APP has been downloaded and installed from the store, access NFC tag functionality (1) from main menu on the left.

Anonymous users have read only access permissions to the MAIN DATA group. Registered users can access the Expert mode (2) with read and write permissions of all the data fields.

It's also possible to import and export XML formatted files (3) with an image of the data memory of the TAG to simplify data sharing between several users and between smartphone and PC based applications.



Data memory of tag

The memory of the TAG is divided into several data groups and the following information can be stored into and retrieved from the TAG. Additional memory space is available upon request to store custom data.

- MAIN DATA (i.e. tool name and description, tool ID number, tool mass and overall dimensions, etc);
- MASS PROPERTIES (i.e. tool principal moments of inertia, tool centre of gravity coordinates, etc);
- GEOMETRIC PROPERTIES (i.e. geometric calibration parameters);
- PARTS LIST (i.e. up to 40 entries as parts list with editable description, quantity and edition).

Automatic tool recognition example (RRAQC-PNP output type)

| RQCBOX DB 15 connector (DO pin # only) | | |
|---|---|------|
| DO_1 | 0 | LOW |
| DO_2 | 0 | LOW |
| DO_3 | 1 | HIGH |
| DO_4 | 1 | HIGH |
| DO_5 | 0 | LOW |
| DO_6 | 0 | LOW |
| DO_7 | 0 | LOW |
| DO_8 | 0 | LOW |



¹Only smartphones with Android O.S. are currently supported. Download Gimatic APP for free from your Store to interact with TAG (a registration of the APP might be necessary).

²A dedicated Windows® based application can be downloaded for free from Gimatic website (www.gimatic.com)

³Available as separate product.