

## IST-CR\_QC

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ed.A

## CR\_QC RFID identification modules.

### Description

RFID Identifications modules + Electric connection module.

System for automatic recognition of gripping tool composed of a RFID reader (CRAQC/CRAQCN) and memory TAG (CRBQC).

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;
- sensor slot for the locking confirmation in CRAQC/CRAQCN;
- communication also through your smartphone thanks to the new app 'Gimatic Android App';

	CRAQC	CRAQCN	CRBQC
Frame	Polycarbonate, glass fibre reinforced		
Working distance	<10mm		
Working frequency	13.56 MHz		
Weight	70 g		50 g
User connection number	16		
Electrical connection	4 x cable 8 poles		2 x cable 8 poles
Cable conformation	8 x 0.14 mm <sup>2</sup>		
Cable length	500mm		
Cable insulation	PUR		
Cable jacket	PUR		
Environmental degree	IP40		
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		MIFARE 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		

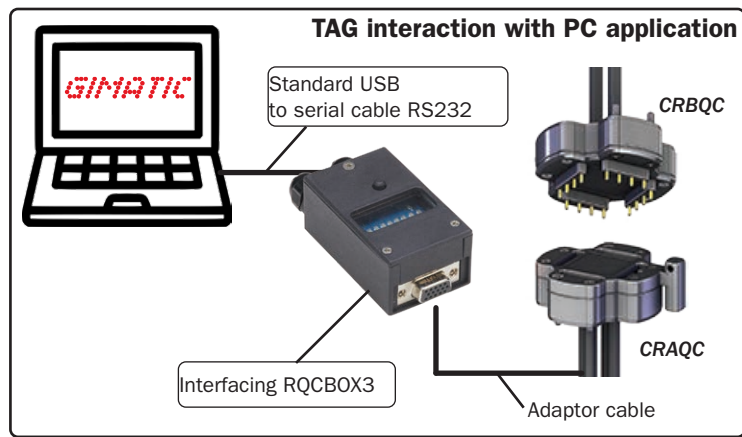
### Electrical connection

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)

### Principle of operation

The CR\_QC connectors are born as accessories of the QC75 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 (CRAQC/CRAQCN) and any EAOT may be equipped with a TAG memory component (CRBQC). 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 properties 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.



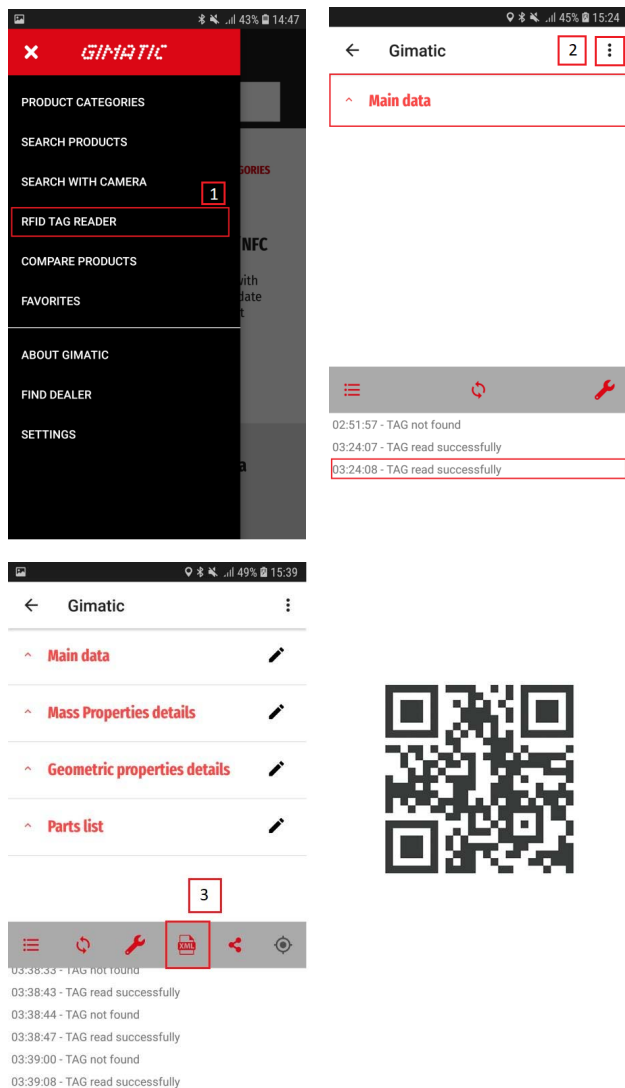


## Data memory of tag

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).

## App review



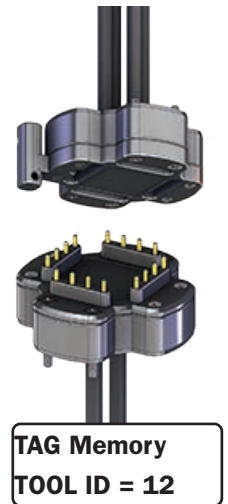
Once the APP has been downloaded and installed from the store, access NFC tag functionality (1) from main menu on the left.

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.

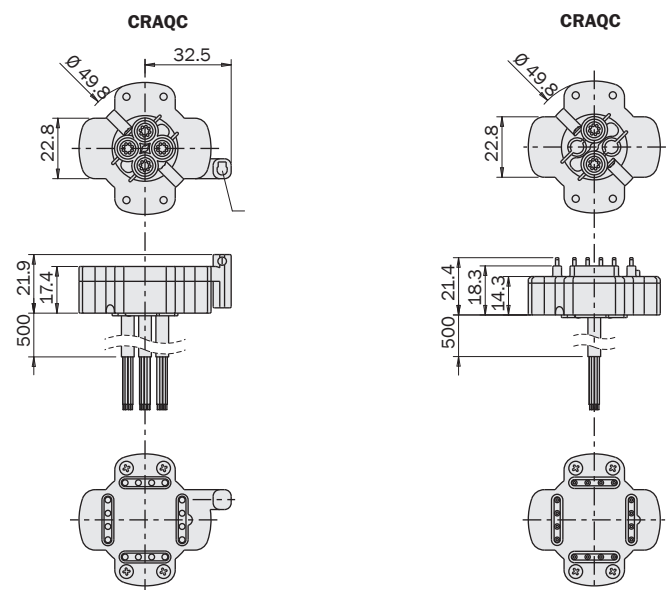
It's also possible to import and export XML formatted files (3) with an image of the data memory of the TAG to simplify data sharing between several users and between smartphone and PC based applications.

## Automatic tool recognition example (CRAQC - PNP output type)

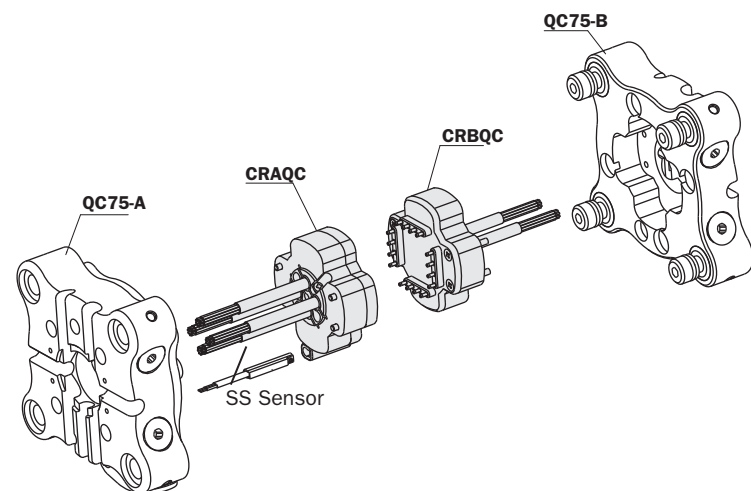
RQCB0X DB 15 connector (DO pin # only)		
DO_1	0	LOW
DO_2	0	LOW
DO_3	1	HIGH
DO_4	1	HIGH
DO_5	0	LOW
DO_6	0	LOW
DO_7	0	LOW
DO_8	0	LOW



## Dimensional



## Application examples



<sup>1</sup>Only 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).

<sup>2</sup>A dedicated Windows® based application can be downloaded for free from Gimatic website ([www.gimatic.com](http://www.gimatic.com))

<sup>3</sup>Available as separate product.