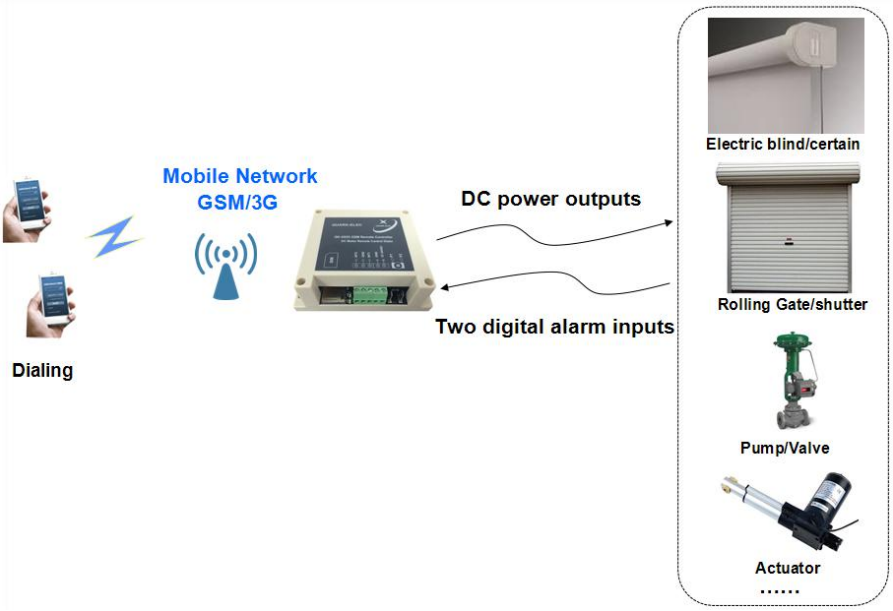
QK-G025 GSM Remote Controller

--- DC motor remote control dialler

Features	Applications
• Control DC motors (forward and reverse) via a toll free call • Uses caller ID for identification, unknown callers are ignored • Dual working modes, namely 'Dead Man' and time pulsed • Alternating or fixed direction settings via SMS • Easy to install and configure (no PC required) • Up to 4 mobile phones per unit • Request status via SMS • Compatible with all major GSM SIM networks • Tri-band GSM for use in Europe & USA	• Electric doors, shutters, garages • Electronic curtains/blinds • DC motors, actuators • Plant maintenance • Valve control • Pumping stations • Oil/gas pipeline control • Security systems • PLCs and automation systems



Document history

1.0	23-02-2015	Initial release
1.1	3-05-2016	Minor document changes

Order information

Part No	Description
QK-G025	GSM Remote Controller (DC motor control) module
QK-G025S	QK-G025 GSM DC Motor Remote Controller with enclosure

CONTENTS

1. INTRODUCTION

The QK-G025 module is an industrial grade product which is designed to provide remote control of DC motors or any DC powered devices. It allows operators to control remote equipment and machines via a toll free call through the GSM network. Up to four mobile phone numbers (SIM card numbers) can be registered and these mobile phones can belong to families/ technicians or engineers who have the requirement to control remote devices. Simply dialling from the registered SIM cards will allow barriers or doors to be opened and closed or machines to be turned on/off. There are no call costs since the GSM control module will not answer the call but will immediately take the necessary action after identifying the registered SIM card numbers.

- Dial from mobile phones to control remotely, no call fees charged.
- Four control mobile phones, one main control terminal and up to 3 additional control terminals can be registered with QK-G025.
- Two digital alarm inputs whereby various sensors can be monitored, e.g., photocell receivers, obstacle detectors, position sensitive detectors, motion sensors, temperature/wind detectors, carbon dioxide detectors and water leak detectors.
- The DC motor output can be set as 'Dead Man' mode (activation during dialling period) or pulsed time mode (activation time is set as a fixed time).
- The DC motor output can be either fixed polarity or alternating polarity.
- SIM 'kept alive' all the time by sending a status SMS on pre-set days (between 28 and 99 days)

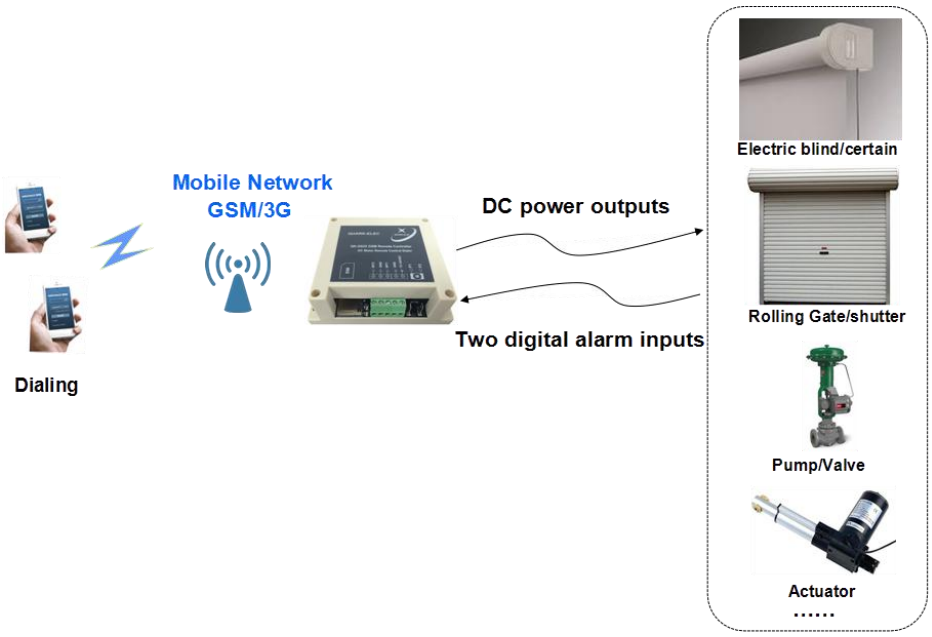


Figure 1 System diagram

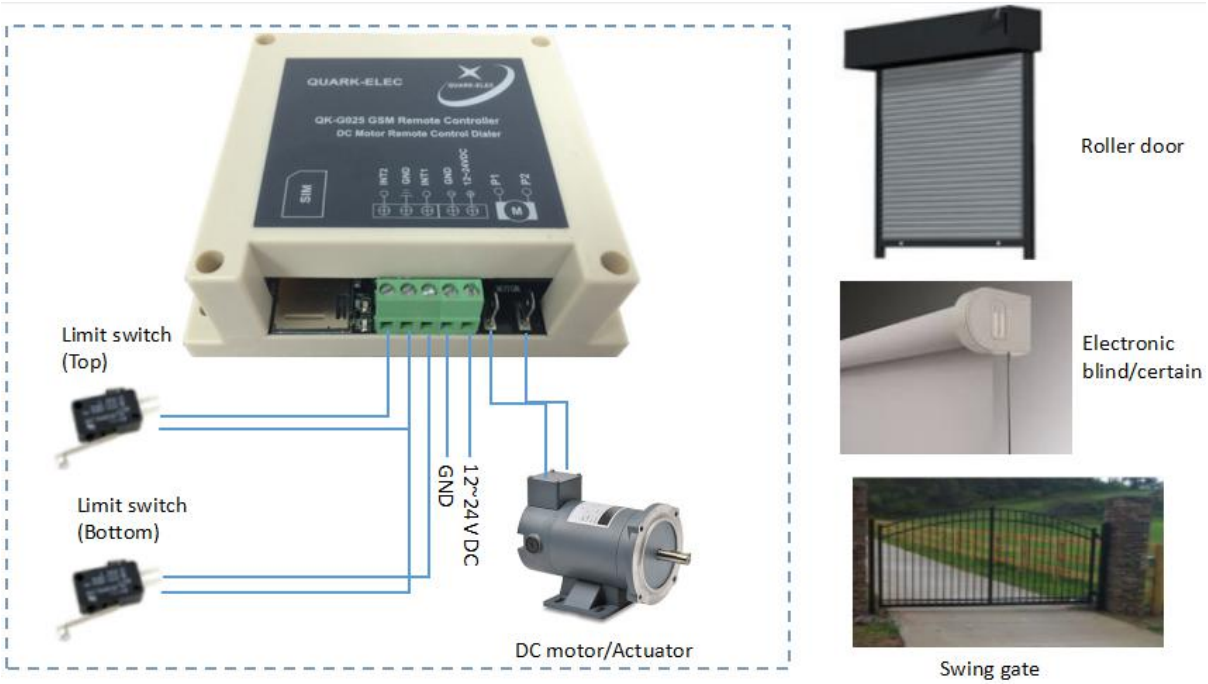


Figure 2 Connection diagram using for gate opener

2. PREPARING THE SIM CARD

All new SIM cards must be registered with the network provider before they can be used, usually by calling the network provider or by registering online. Please refer to the instructions supplied with your SIM card.

After successfully registering the SIM card, please ensure that there is sufficient credit on the card for confirmation texts to be sent from QK-G025 module. The PIN request should be disabled on the SIM card before inserting it into the QK-G025 module. To check the PIN request status of your SIM card, place the card in an unlocked mobile phone and switch the phone on. If a call can be made without entering a PIN number, then the PIN request is disabled.

Lastly, please disable any voicemail that is set up on the SIM card and retain the caller ID function. The SIM card is now ready for use.

If a 'pay as you go' (PAYG) SIM card is used, it is recommended that users choose automatic 'top-up' when the credit on the card falls below a certain limit. Some PAYG SIM cards will be de-activated by the network if not used for making outgoing voice calls or for sending an SMS text message within a specific period. To prevent this, simply use the set alive SIM message function to avoid the SIM card being deactivated.

3. HARDWARE

3.1. Module

A general view of the module is shown below and details of each function are provided in the next sections.

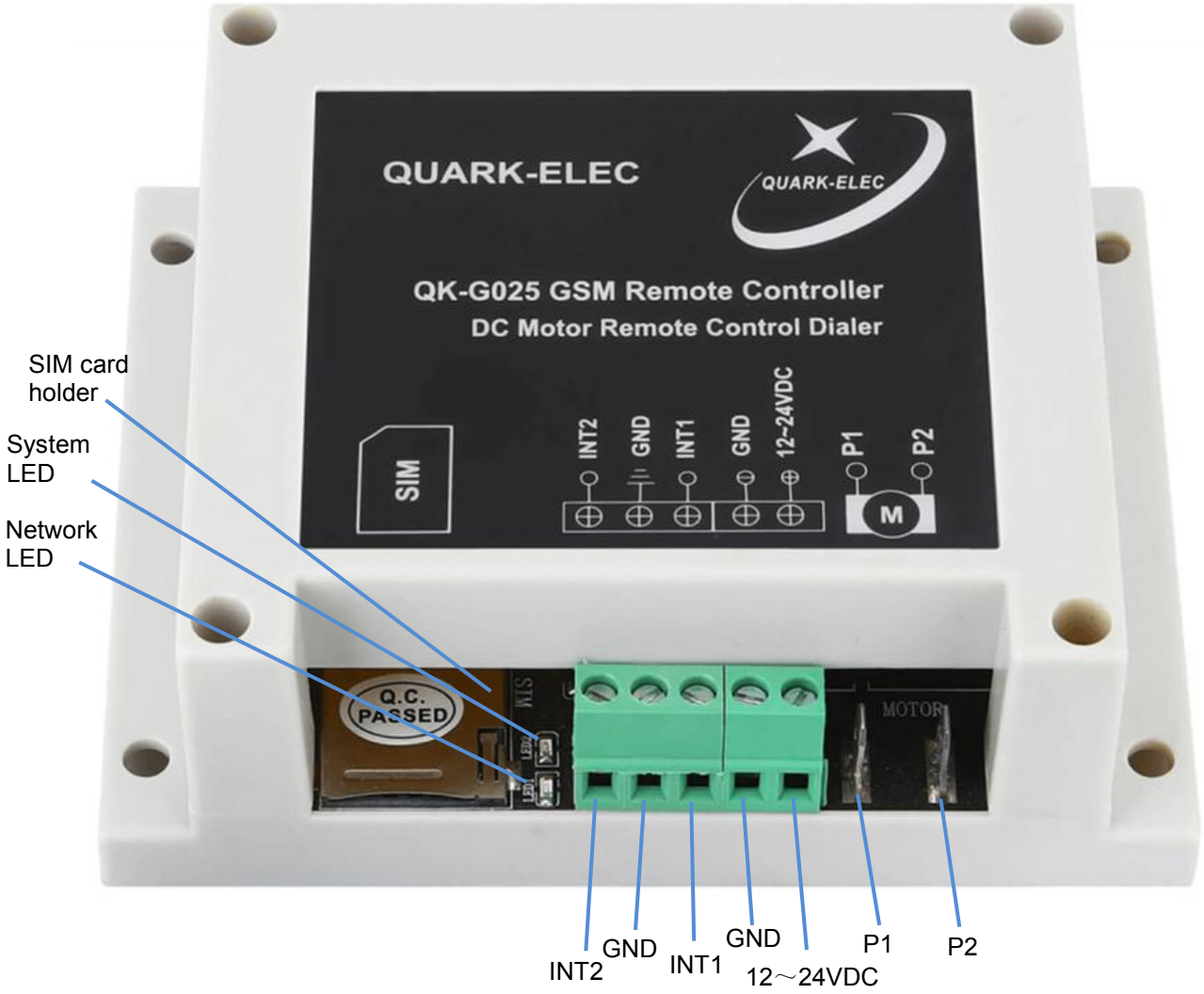


Figure 3 General view of the control module (V1.1)

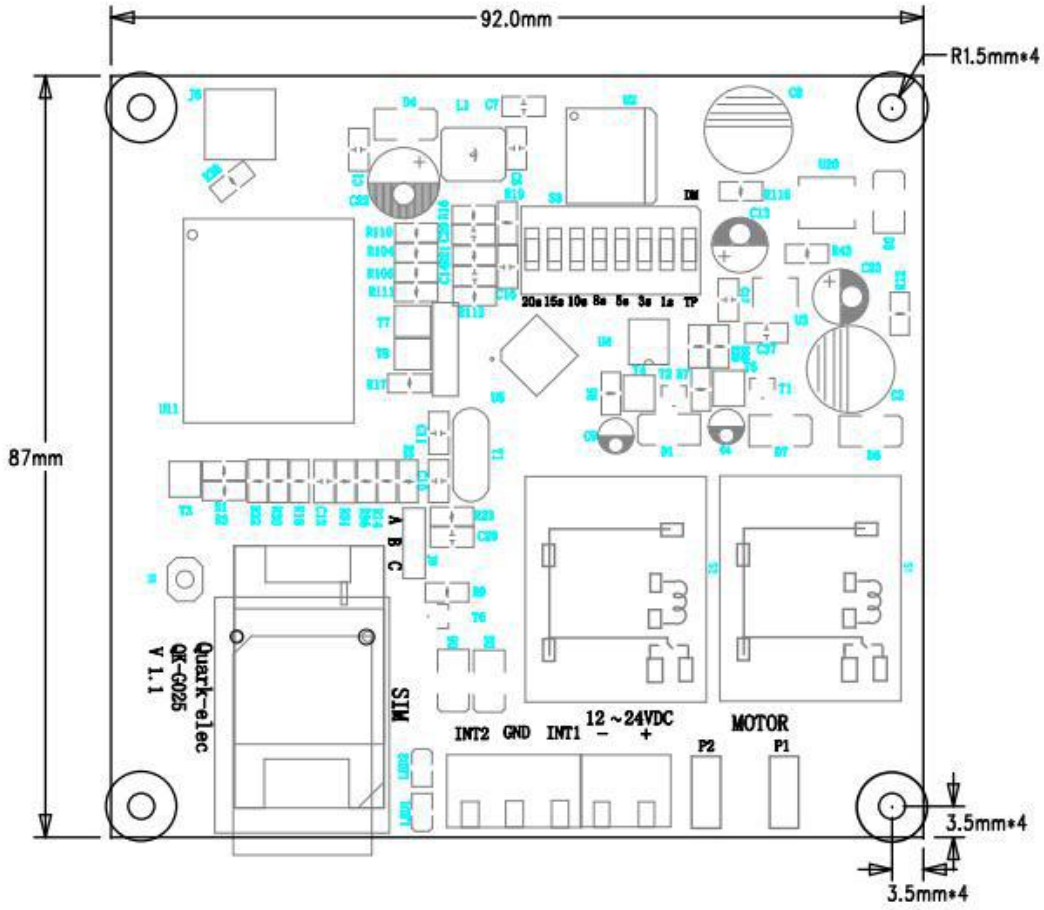


Figure 4 QK-G025 mechanical drawing (V1.1)

3.2. Power connections

The QK-G025 module can be powered by 12V to 24VDC. Connect a 12VDC power supply (or above, up to 24V) to the power screw terminals and the red power LED will flash at 1 second intervals once the system has finished initialisation. The blue network LED indicator will initially flash quickly and once logged onto the network it will flash more slowly (approximately once every 3 to 4 seconds).

3.3. Alarm function and digital input connection

The QK-G025 has two external monitoring/alarm input connectors and various sensors can be connected, such as photocell receivers, obstacle detectors, position sensitive detectors, motion sensors, temperature/wind detectors, carbon dioxide detectors and water leak detectors.

In the event of any of these connected sensor/detectors being triggered and sending a low level signal (0V) to QK-G025, QK-G025 will disable the output of P1 and P2 immediately.

There are two typical ways to connect the external alarm inputs to QK-G025 – the external alarm device can be used either as a switch or as an input source for INT1/INT2 on the QK-G025 module.

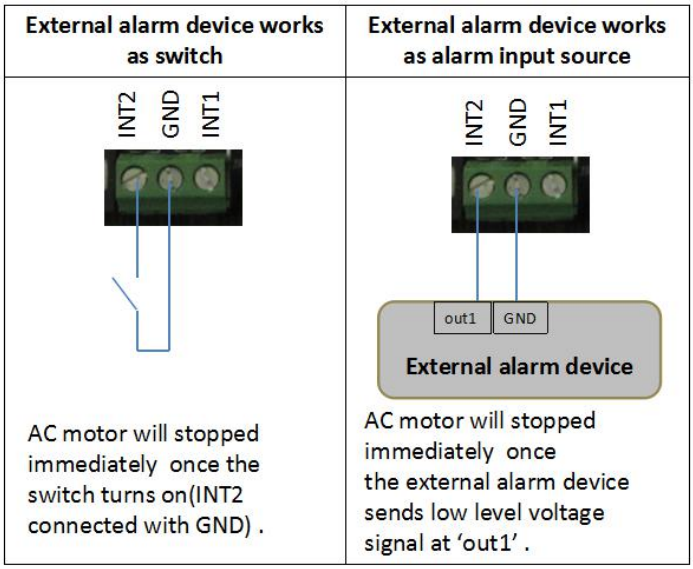


Figure 5 External alarm device connecting methods

3.4. SIM card slot

The SIM card should be inserted into SIM card slot before switching the power on. Most 3V SIM cards can work with the QK-G025 module and registration can take up to few minutes after the device has been powered up. The network LED flashes at 1Hz after registration is completed.

3.5. Enclosure

An IP56 Insulation Class 2 plastic enclosure with 115 x 90 x 40mm external dimensions is used for QK-G025.

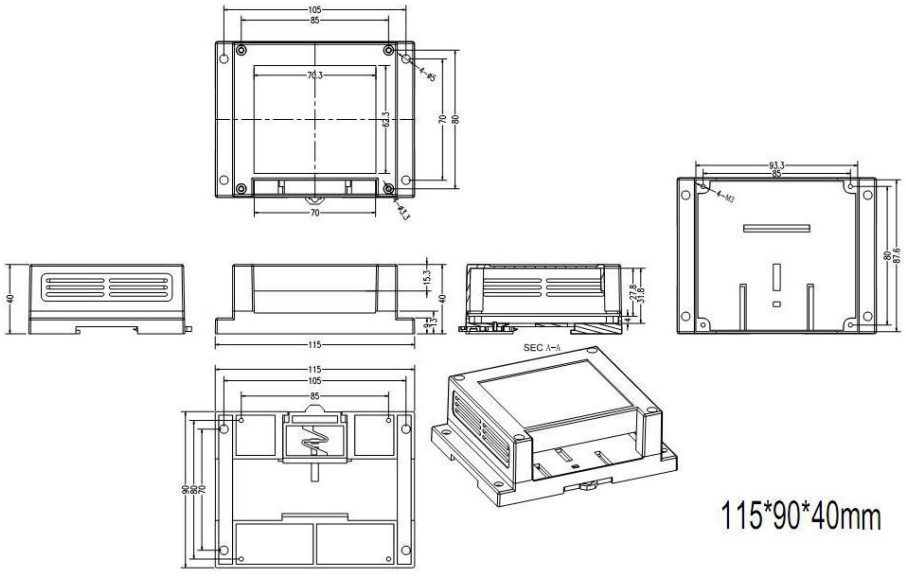


Figure 6 Enclosure drawing

Figure 7 GK-G025 (with enclosure)

Figure 8 GK-G025 (with enclosure) back view

4. CONFIGURATION

The following is required to configure QK-G025 for first time use:

- Insert the SIM card into the controller box.
- Power up and wait for the blue LED to flash slowly. Depends on the network situation, this normally takes about 1 to 2 minutes.
- Send '888888' as an SMS to QK-G025 controller and, if successful, the user should receive 'Thanks for using Quark-elec products. Your main phone has been registered'.
- If additional mobile terminals are required send 'BDn(mobile terminal number)F' to QK-G025 controller. Up to 3 additional terminals can be configured in this way. The operator can use the main terminal to register, delete and check additional SIM card numbers. The QK-G025 controller will verify the incoming numbers and, if they are in the registered SIM numbers, it will execute the actions.
- GK-G025 supports two working modes, namely "Dead Man" and pulsed time. When operating in pulsed time mode, the DC motor outputs are active for a fixed setting time and then they stop. When operating in "Dead Man" mode, the unit will maintain the active status until the call is terminated. For each mode, QK-G025 can be set to three different polarities, corresponding to three the different running directions of a DC motor:

    1. clockwise
    2. anti-clockwise
    3. alternating direction

- If the module was set to work in pulsed time mode, please ensure that the working time has been set.

By now, QK-G025 is ready for use. Details about the SMS commands and response SMS messages can be found in the next section.

5. COMMAND AND RESPONSE SMS

Please remember that all SMS text commands must always be sent using CAPITAL letters. Do NOT add spaces or any other characters in the SMS.

Function	Command	Note
Register SIM cards		
Register myself as main SIM number	888888	Register the main mobile terminal with QK-G025 module by sending '888888' to QK-G025 model. If registration has been successful the module will reply with 'Thanks for using Quark-elec products. Your main phone has been registered'. Each QK-G025 module can only have one main registered SIM card number.

Register additional SIM numbers	BDn(mobile number)F n=1 for 1st mobile terminal n=2 for 2nd mobile terminal n=3 for 3rd mobile terminal	Once the main mobile terminal has been registered with QK-G025, another three mobile terminals can be paired with QK-025. For example, by sending BD107919157124F, the first mobile terminal (number is 07919157124) has been paired with QK-025. Similarly, BD207909135124F, will pair QK-G025 with the second terminal (number is 07909135124). if the n mobile terminal is successfully paired the message 'Your No n phone has been registered' will be returned by QK-G025.
Delete additional SIM numbers	DELn n=1 for 1st mobile terminals n=2 for 2nd mobile terminals n=3 for 3rd mobile terminals	The registered SIM cards can be deleted from the authorised SIM list by sending DELn. The deleted SIM terminals can no longer control QK-G025..
Check registered SIM numbers	WHORED	QK-G025 will reply with the authorised SIM list in the following format: No.1 SIM is xxxxxxxx; No.2 SIM is xxxxxxxx; No.3 SIM is xxxxxxxx.
Switching relay & mode checking		
Set alive time (keep SIM alive text)	SIMALIVEnn Where 28≤nn≤99. Any input number outside of this range means this function will not operate. The factory default setting is SIMALIVE00, which means this function is disabled.	QK-G025 will reply with the authorized SIM list in the following format: QK-G025 will send a heart beat SMS message every nn days.
Set the working mode in Dead Man mode	DMM: Dead Man mode (alternating direction)	QK-G025 will reply with the authorised SIM list in the following format: QK-G025 has been set to operate in Dead Man mode (alternating, fixed clockwise or fixed anti-clockwise directions).
	CLM: Dead Man mode (fixed clockwise direction)	
	ANM: Dead Man mode (fixed anti-clockwise direction)	
Set the working mode in Pulsed Time mode	PTM: Pulsed Time mode (alternating direction)	QK-G025 will reply with the authorised SIM list in the following format:

	 GZY: Pulsed Time mode (fixed clockwise direction)	QK-G025 has been set to operate in Pulsed Time mode (alternating, fixed clockwise or fixed anti-clockwise directions).
	 GFY: Pulsed Time mode (fixed anti-clockwise direction)	
Set the working time in pulsed time mode	PTDnn Where 03≤nn≤99.	QK-G025 will reply with the relay state information in the following format: QK-G025 is working in pulsed time mode and the setting time is nn seconds.
Check relay working mode	RMODE	QK-G025 will reply with the relay working mode information in the following format: QK-G025 is working in xxx (xxx indicating which of the six modes has been set up).
Monitoring/alarm input		
QK-G025 has two digital input ports which can be used to monitor external signals. These input ports accept 0V to 5V voltage levels. In the case of any of the input voltage levels being below 1.0V, the DC motor output will be disabled.		

6. OPERATING SPECIFICATIONS

Item	Specification
Frequency bands	Quad-band: GSM850, EGSM 900, DCS1800, PCS1900.
SMS	MT, MO, CB, Test and PDU mode
Operating temperature	-25°C to +80°C
Storage temperature	-40°C to +85°C
DC supply	12 to 24VDC
Average supply current (typical quiescent)	40mA
Maximum supply current (during SMS transceiver activity)	600mA
GSM receive sensitivity	-107dBm
GSM transmitting power	Class 4 (2W) at GSM850, EGSM 900. Class 1 (1W) at DCS1800, PCS1900.
DC motor output voltage	12DC to 24DC
DC motor output maximum current	30A

For more technical information and enquiries please go to the Quark-elec forum at:
https://quark-elec.com/forum/

For sales and purchasing information, please email us at: info@quark-elec.com

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