

Summary

This guide is intended to walk an installer through the basic setup and verification steps upon initial RQ system installation in order to configure the controllers for basic operation.

Background

All mechanical limits and adjustments to products travel lengths must be completed before performing these steps.

A computer with a working serial communications connection and any terminal emulator program is required. For instructions on setting up a terminal session on a windows PC please see the Hyperterminal for XP or Vista and 7 Technical Documents.

An RS232 connection to the RQ Bridge and a straight through six conductor cable from the RQ Bridge to the first RQ60 motor control is required.

Serial String Explanation

Serial strings sent to the RQ system via RS232 are in the standard ASCII character set. Each string is sent with an exclamation point (!) as the header and a semi-colon (;) as the carriage return.

Command strings for the RQ BRIDGE generally range from six to ten characters:

To open controller ABC to its mechanical limit: !ABC0;

Header	Node Address	Cmd Character	Data	Terminator	Response
!	ABC	o (open)	n/a	;	!ABCr00;

To send controller FLR to 33: !FLRm33;

Header	Node Address	Cmd Character	Data	Terminator	Response
!	FLR	m (move to)	33	;	!FLRr33;

Note: using !000 will communicate to ALL controllers connected to the BUS

Procedures

For the following examples where !XXX is used, XXX represents the controller's node address. Each RQ's address is randomized at the factory unless it has been requested that it be programmed with a specific address.

Step 1: Query the system by sending a global version request

Send the following string: !000v?;

This requests all connected controllers to report their current node address, node type, and version number.

A typical response with 1 bridge and 2 RQ motor controllers might look like this:

!BR1vB10;!XA1vA10;!S8RvD10;

These responses represent the following reports:

!BR1vB10; Node Address = BR1 (default for ALL RQ bridges)
 Node Type = B = Bridge
 Node Version = v10 = Firmware version 1.0

!XA1vA10; Node Address = XA1 (randomized at factory)
 Node Type = A = RQ AC motor Controller
 Node Version = v10 = Firmware version 1.0

!S8RvD10; Node Address = S8R (randomized at factory)
 Node Type = D = RQ DC motor Controller
 Node Version = v10 = Firmware version 1.0

Step 2: Verify the controllers/products associated with specific nodes

Option 1 - Identify controllers.

Send this command to each controller: !XXXi;

The targeted controller will flash its red LED for approximately 20 seconds.

Option 2 - Identify products physically connected to the controllers.

Send this command to each controller: !XXXo; or !XXXc;

The targeted product should operate in either the open (o) or closed (c) direction.

Unsolicited Responses

When a command is received by any RQ motor controller, it will immediately send an unsolicited response back to a terminal or automation system. These responses vary based upon the command sent. The following is a table of common responses based on common commands:

CMD	Function	example send:	example response:
@	Re-address (old address=M00, new=ABC)	!M00@ABC;	!ABCAM00;
A	Statement: Acknowledge Name		
c	Close	!ABCc;	!ABC>30; !ABCr99;
d	Define Scene (example scene is `a`)	!ABCda30;	!ABCda30;
g	Execute Scene (example scene is `a`)	!ABCga;	!ABC>00; !ABCr30;
m	Move to position (60= 60%)	!ABCm60;	!ABC>00; !ABCr60;
N	Assign Name	!ABCNMomsBed;	!ABCNMomsBed;
N?	Request Name	!ABCN?;	!ABCNMomsBed;
o	Open	!ABCc;	!ABC<60; !ABCr00;
r	Statement: current motor position		
r?	Request motor position	!ABCr?	!ABCr30;
s	Motor Stop	!ABCs;	!ABCr43;
p	Assign Parameter	See Parameters Sheet for your specific RQ	
p?	Request Parameter		
U	Undefined/Bad Message	!ABCasdfghj;	!ABCU;
v	Statement: Version		
v?	Request version	!ABCv?;	!ABCvD14;

Step 3: Re-address controllers for easier identification

If the controllers have been pre-programmed at the factory and the address has been confirmed, skip this step.

The @ command is used to change the three digit node address of the RQ controller.

To change a randomized factory address of W9X to something that makes more sense, i.e. MB1 for Master Bedroom 1,

Send string: !W9X@MB1; (re-address from W9X to MB1)
Response: !MB1AW9X; (Acknowledge W9X is now MB1)

Step 4: Verify correct direction of travel – Reverse Motor Direction

It is not uncommon for motors to respond in the opposite direction as desired because of swapped polarity or directional wires on the motor or controller. The motor direction can be reversed via programming.

Send string: !XXXpM02;

Step 5: Calibration

In order to use gain a higher level of control including specific move to commands a calibration must be performed.

Option 1 – Calibrate a specific controller

Send string: !XXXpTC;

Controller XXX will begin moving from limit to limit to record its individual travel time and will store it for reference when told to move to a specific percentage.

Option 2 – Calibrate ALL controllers connected on the BUS

Send string: !000pTC;

ALL motors will begin moving from limit to limit to record each individual travel time and will store it for reference when told to move to a specific percentage.

CAUTION: DO NOT perform calibration if the mechanical limits for motors have not been set. Products may run past too far in one direction or another possibly causing damage to the product or surrounding area.

Step 6: Test individual control

Test each controller's individual operation by sending OPEN, CLOSE, and MOVE TO commands. MOVE TO commands will only work after calibration.

OPEN XXX

Send string: !XXXo;

Response: !XXX<99;!XXXr00 Moved from 99(closed) to 00(open)

CLOSE XXX

Send String: !XXXc;

Response: !XXX>55;!XXXr99; Moved from 55 to 99(closed)

MOVE XXX to 33%

Send string: !XXXm33;

Response: !XXX<00;!XXXr33; Moved from 00(open) to 33

Step 7: Define groups for scene activation

The RQ system supports a feature that allows a pre-set scene to be defined in each local controller. There are up to 62 scenes that can be defined in an RQ system. These can be used to operate multiple products in a room from a single command, or can move many products in a project to any desired preset position.

Available scenes can be defined using letters a-z, letters A-Z, and numbers 0-9 (62 total).

To set a scene for XXX to move to position 99 on scene "a"
Send string: !XXXda99;
Response: !XXXda99;

To set a scene for ABC to move to position 37 on scene "a"
Send string: !ABCda37;
Response: !ABCda37;

To activate scene "a"
Send string: !000ga;
Response: !XXX>00; !ABC>00; !ABCr37; !XXXr99;

XXX and ABC moved away from 00. XXX arrived at 99 and ABC arrived at 37.

Notes:

There are many other features that can be activated and utilized in more complex installations. For detailed explanations of these features and how to operate them, please see the specific RQ Command Summary for each controller.

There are changes between firmware revisions of products so make sure the command summary matches the controller's version.

Sources

RQ Protocol Summary V1.0
RQ Bridge Command Summary V1.0
RQ60AUMHG RQ Command Summary V1.3
RQ60DUM RQ Command Summary V1.5