



*iQ Backup procedure to Memory Card*

# Quick Start Guide

An illustration of a person in silhouette running from left to right. A dotted line follows the person's path, ending in an arrow that points to a button labeled "START". A mouse cursor is shown clicking the "START" button. The background features a stylized building and a green-to-white gradient.

# Contents

Contents .....	i
FURTHER READING REFERENCE LIST .....	ii
Chapter 1 Introduction .....	1-1
Chapter 2 Applicable Hardware and Software .....	2-1
Chapter 3 The backup procedure for Motion CPU .....	3-1
Chapter 4 The backup procedure for PLC CPU .....	4-1
4.1 Backup data selection .....	4-1
4.2 Execution procedure for Backup .....	4-1
4.3 Setting for back up target data and Automatic restore .....	4-2
4.4 Backup using a GX Works2 programming tool .....	4-3
Chapter 5 Automatic restoration procedure for PLC and Motion controller. ....	5-1
5.1 Restoration status in LEDs indicating of the PLC module .....	5-1
5.2 Restoration status in LEDs indicating on the Motion module .....	5-1
Revisions .....	1

## **FURTHER READING REFERENCE LIST**

QnUCPU User's Manual (Function Explanation, Program Fundamentals) SH(NA)080807

Motion Controller Q170MCPUCPU User's Manual (Details) IB(NA)-0300156

Q173DCPU/Q172DCPU Motion controller Programming Manual (COMMON) IB(NA)-0300134

Q173DCPU/Q172DCPU Motion controller SV13/SV22 Programming Manual (REAL MODE) IB(NA)-0300136

Q173DCPU/Q172DCPU Motion controller SV13/SV22 Programming Manual (Motion SFC) IB(NA)-0300135

Q173DCPU/Q172DCPU Motion controller SV22 Programming Manual (VIRTUAL MODE) IB(NA)-0300137

# 1

---

## Chapter 1 Introduction

In this document is described how to back up the Motion and PLC project to the memory card and restore the project to the controller. Motion system data, Servo parameter, Servo program, Motion SFC parameter, Motion SFC program, Mechanical system data, CAM data can be stored in the memory card. Absolute position data and latched device are not stored. One memory card can store PLC back up data and three motion CPUs. The backup data file of motion CPUs will be named as M\_CBKUP2.MBP, M\_CBKUP2.MBP and M\_CBKUP3.MBP. A backup data file of PLC is named "MEMBKUP0.QBP" in a memory card. Only one PLC backup data file can be stored to a memory card. Motion data must be stored to memory card first than PLC backup. Don't backup more than one CPU at a time. The user must follow the sequence as below if they want to store the PLC and Motion backup data to same memory card.

- Format the Memory Card
- Backup the motion controller Data
- Backup the PLC Data
- Restore the PLC and Motion controller data<sup>\*</sup>.

***\* Restore the only one motion controller at a time if system exist more than one motion CPU.***

## Chapter 2 Applicable Hardware and Software

### Motion Controller:

- Q172DCPU
- Q173DCPU
- Q170MCPU(S1)

### Motion OS Version:

This function is available the following the motion OS version.

SW8DNC-SV13QB, SW8DNC-SV13QD, SW8DNC-SV13QG,

SW8DNC-SV22QA, SW8DNC-SV22QC, SW8DNC-SV22Q.

**Version N or later**

### PLC CPU Module and OS Version:

Q03UD Sequence CPU or Higher module.

Serial number (first 5 digits): **11031 or later.**

### Memory Card:

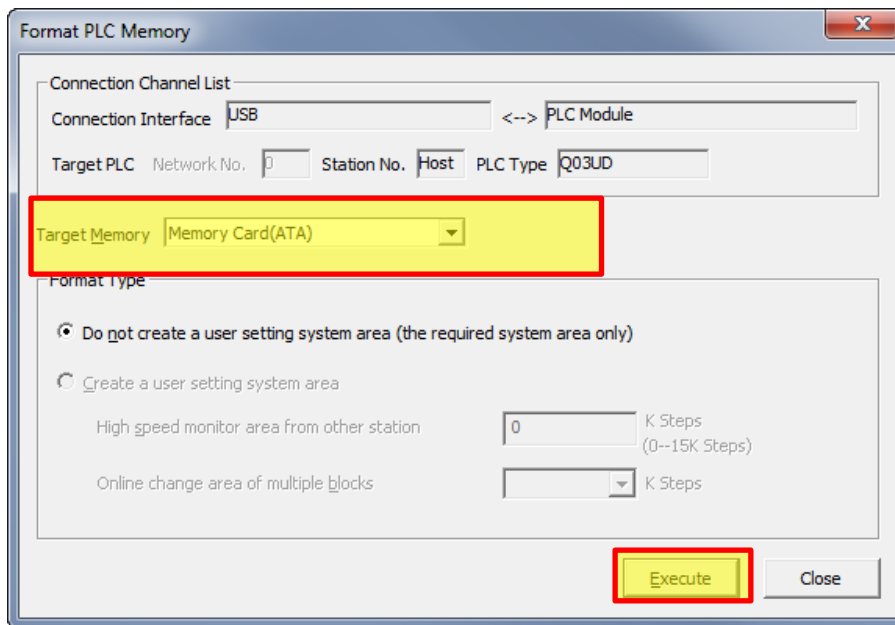
- SRAM CARD : Q2MEM-2MBS, Q3MEM-4MBS, Q3MEM-2MBS
- ATA Card : Q2MEM-8MBS, Q3MEM-16MBS, Q3MEM-32MBS

***Note: Required memory size depends on the size of the PLC program and every Motion controller data size of backup file is fixed. Memory is 1949760 byte per motion CPU.***

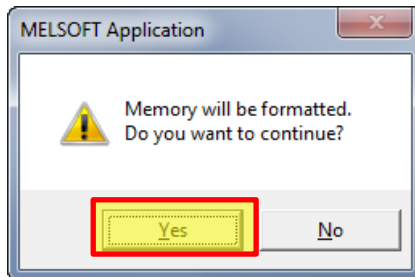
## Chapter 3 The backup procedure for Motion CPU

The user must follow the step by step procedures is given below for back up the Motion CPU data.

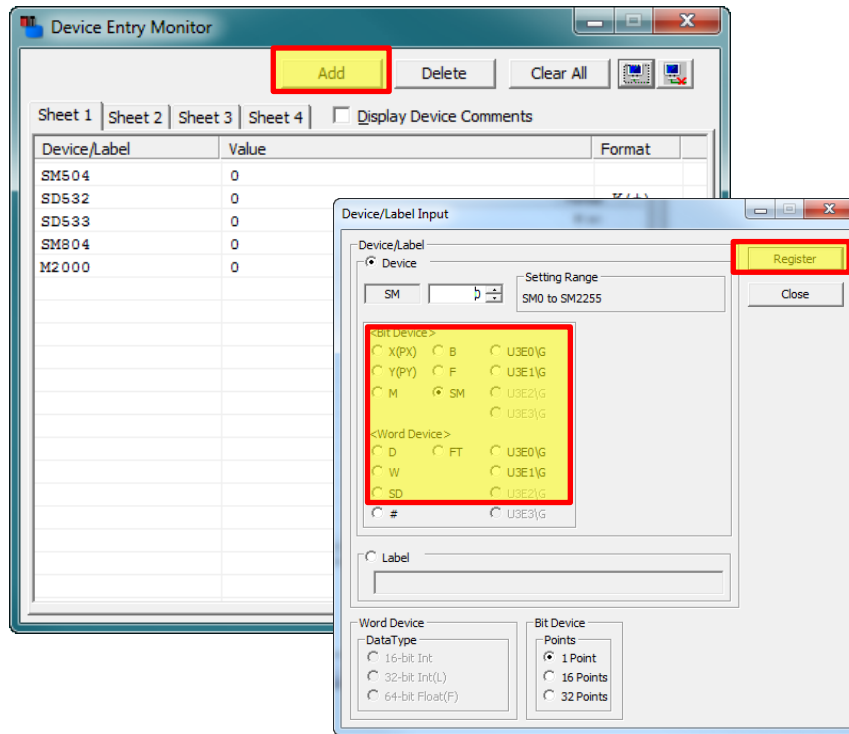
- 1) Turn off the System power and set the Motion CPU's Rotary switch position [SW1 → 0 and SW2 → 0] or [SW1 →0 and SW2 →6]
- 2) Bring the PLC "RUN" switch to the "STOP" position for formatting the Memory Card.
- 3) Turn On the system power
- 4) Open the GX Works2 and establish the communication
- 5) Open the "Format PLC Memory" window from GX Works2 menu bar.  
→[Online] → [PLC Memory Operation] →[Format PLC Memory]
- 6) Select "Memory Card(ATA) for Target Memory.



- 7) Click "Execute "and Yes to continue the formatting process.



- 8) Open the MT Works and establish the communication.
- 9) **Check there is no system error, no Watch dog error and no multi CPU Error on the system.**
- 10) Open the “Device Entry Monitor” and add the following device  
→[Online] →[Monitor Commons] → [Device Entry Monitor]

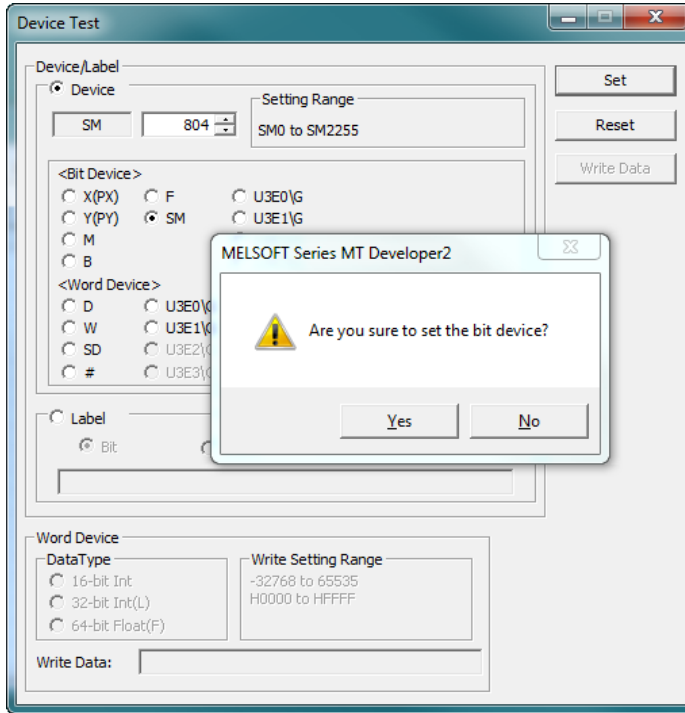


The description of device status and error message:

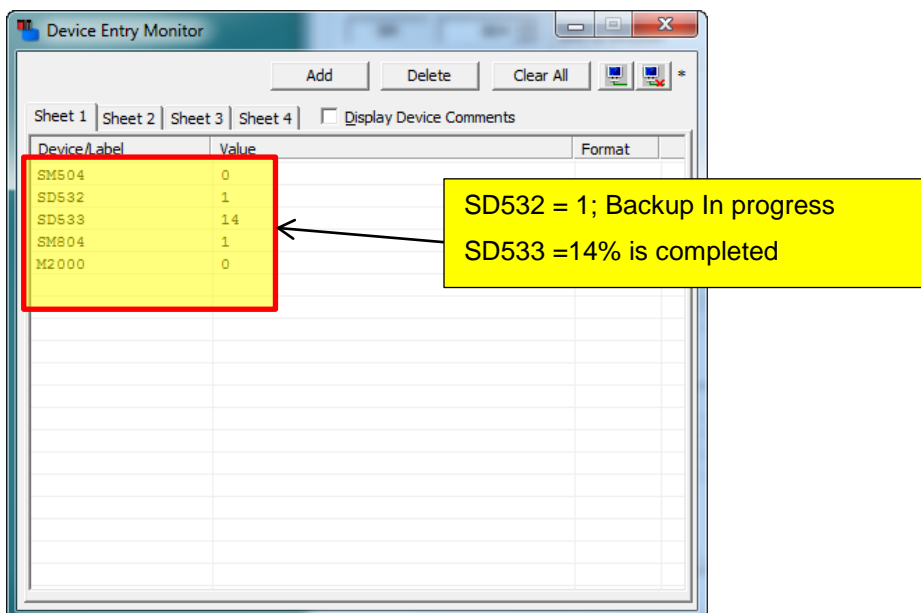
- a) SM504 ( Turn ON when the writing is completed and Turn OFF when SM804 goes On to OFF)
- b) SD532 (Writing status)
  - 0: Waiting for request
  - 1: Backup in progress
  - 2: Comparing
  - 3: completed without error
  - 1: Writing error
  - 2: Comparing error
  - 3: Incompatibility Memory card
  - 4: Operation Error (Like M2000 turn on or SM804 Turn OFF during the write process)
- c) SD533 (Writing progress status)
  - 0 to 50: writing in progress
  - 51 to 99: comparing the backup data.

- d) SM804 ( Start the Backup process)
- e) M2000( PLC Ready Flag)

11) Turn ON SM804 bit by using "Device Test" Window for starting backup process. Double click on SM804 in the [Device Entry Monitor] window

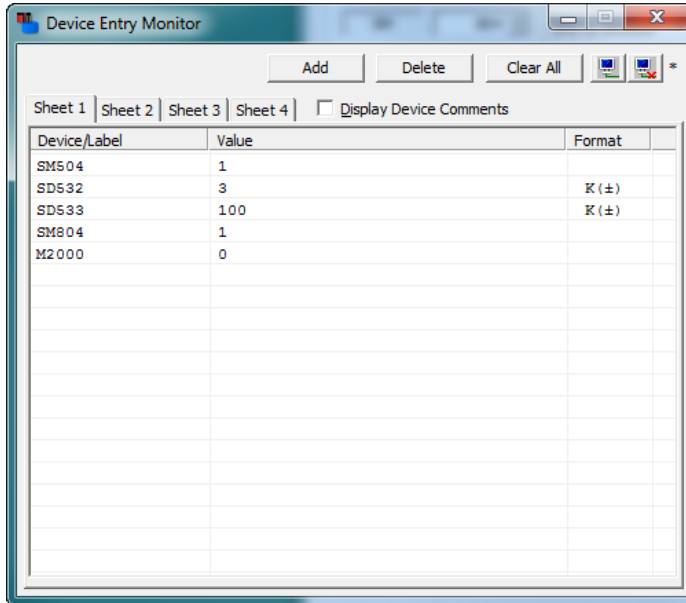


The below figure shows backup in progress status:





- 12) If the backup procedure is completed successfully, the user should get SM504 → ON (writing complete), SD532 → 3 (completed without error) and SD533 → 100 (100% complete) that is shown in figure below.



The screenshot shows the 'Device Entry Monitor' window. It has a menu bar with 'Add', 'Delete', and 'Clear All' buttons. Below the menu bar, there are tabs for 'Sheet 1', 'Sheet 2', 'Sheet 3', and 'Sheet 4', and a checkbox for 'Display Device Comments'. The main area contains a table with the following data:

Device/Label	Value	Format
SM504	1	
SD532	3	K (±)
SD533	100	K (±)
SM804	1	
M2000	0	

- 13) The backup procedure is complete, now you can back up other motion CPU data or the PLC data to the memory card.

## Chapter 4 The backup procedure for PLC CPU

This section describes how to back up data in the CPU module to a memory card by using GX Works2 and next chapter describes the restores procedure automatically from the backup data to another CPU. Please find more details in the manual QnUDCPU User's Manual (Function Explanation, Program Fundamentals) SH(NA)080807 section [3.30 CPU Module Change Function with Memory Card]

### 4.1 Backup data selection

The following table shows the data that can be backed up to the memory card.

Backup data (drive)	Description	Backup selection by the user
Program memory (drive 0)	All data in the program memory (drive 0) <sup>*1</sup>	Selectable
Standard RAM (drive 3)	All data in the standard RAM (drive 3)	
Standard ROM (drive 4)	All data in the standard ROM (drive 4)	
Device data <sup>*2</sup>	Internal user device (L, B, F, V, T, ST, C, D, W)	Not selectable (Data are automatically backed up by the system.)
System data	Data managed by the system (such as error history)	

\*1 Data in the program cache memory are backed up.

\*2 Only the latch relay (L) and devices to which the latch range setting can be configured are backed up.

### 4.2 Execution procedure for Backup

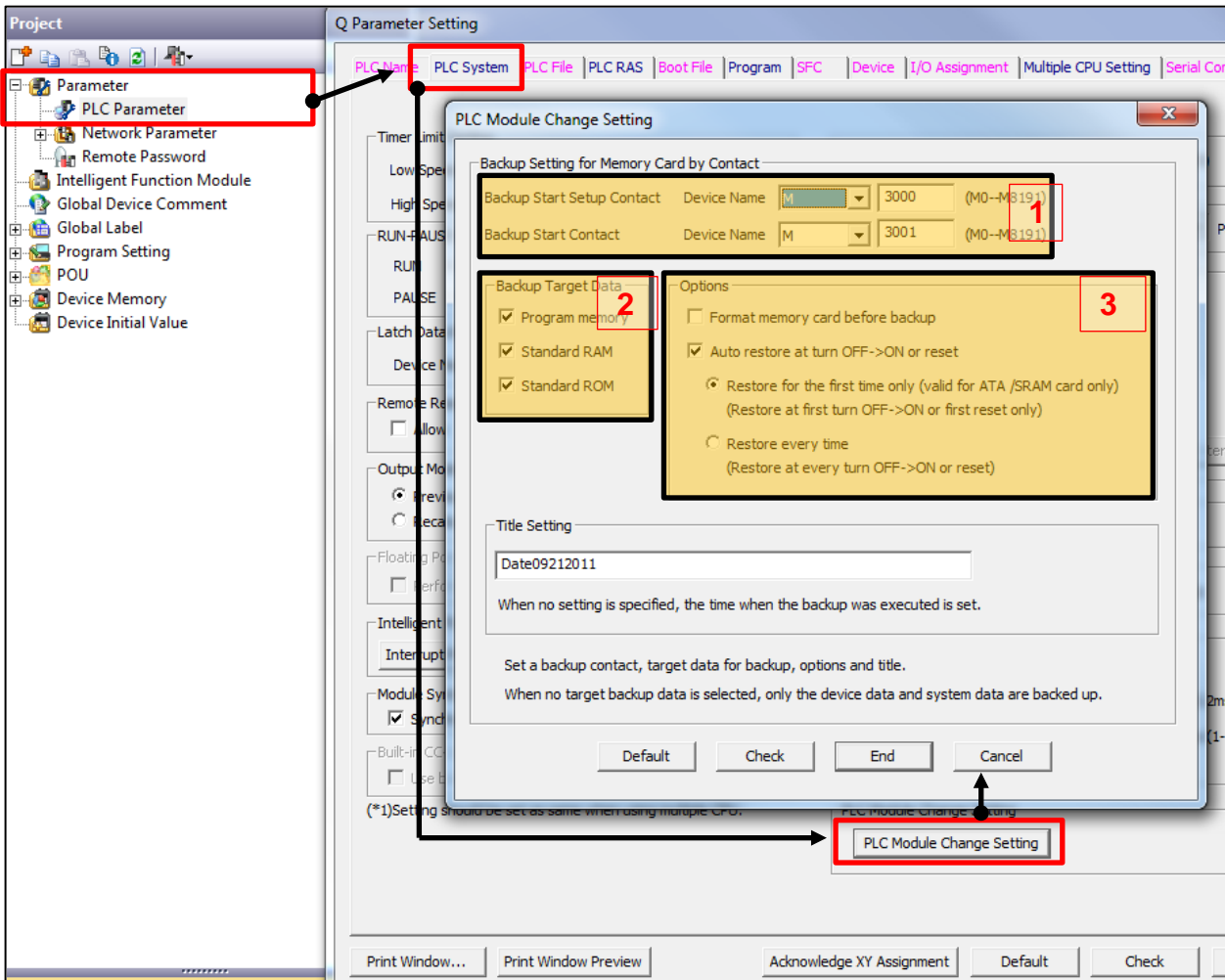
There is two different ways data can be backed up from PLC module.

- a) Execution method using contacts (user device X, M, or B.)
- b) Using a programming tool GX Works2.

In this document is shows the backup procedure by using a programming tool GX Works2. For execution method using contacts is referred to QnUCPU User's manual section 3.30.1.

### 4.3 Setting for back up target data and Automatic restore

To setting back up data target data open the "PLC Module Change Setting" screen, From Project Navigator window by clicking →Parameter →PLC Parameter →PLC System Tab→ the button on the PLC system "PLC Module Change Setting".



- 1) Set two bit device for starting the back up procedure(Set 2 dummy bit's that are not use in project, if use GX works2 to make the backup file)
- 2) Set the Backup target Data
- 3) Set the option for auto restore procedure.

After completing the setting of PLC module change setting, download the PLC parameter to PLC for completing back up and restore the PLC data.

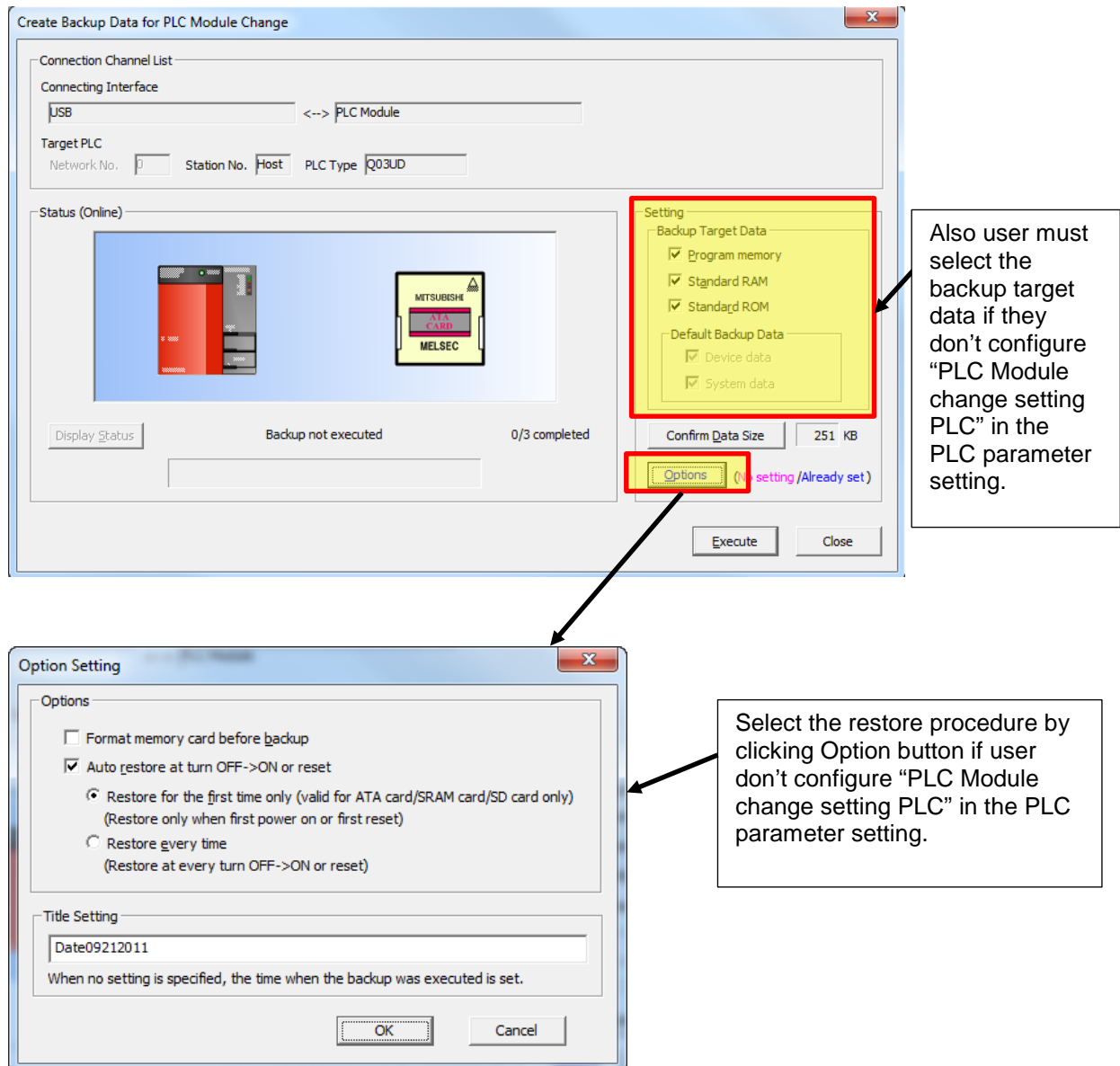
*Note: User can ignore this setting if GX works is used for back the PLC data but they must be needed to set backup target data and restore method see details section 4.4.*

#### 4.4 Backup using a GX Works2 programming tool

Follow the step by step procedure to back up the PLC data by using GX Works programming tools.

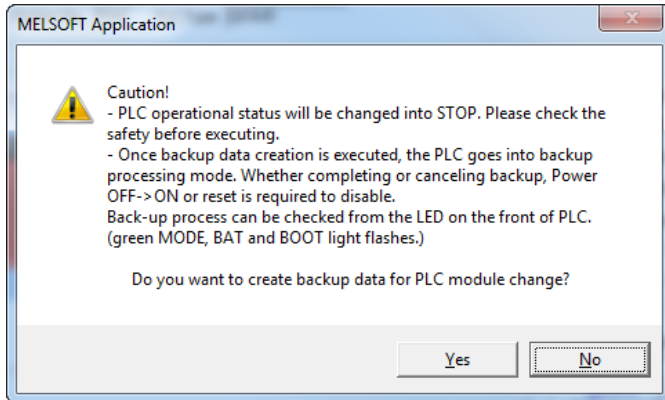
- 1) Open GX Works Programming tools and create the new project associate with PLC type.
- 2) Establish the communication from PC to PLC via desired method (USB/xx).
- 3) Bring the PLC "RUN" switch button to "Stop" position.
- 4) Insert the Memory Card into PLC memory card slots
- 5) Select [Online]→ [PLC Module Change]→ [Create Backup Data].

The following pop up window is appeared.

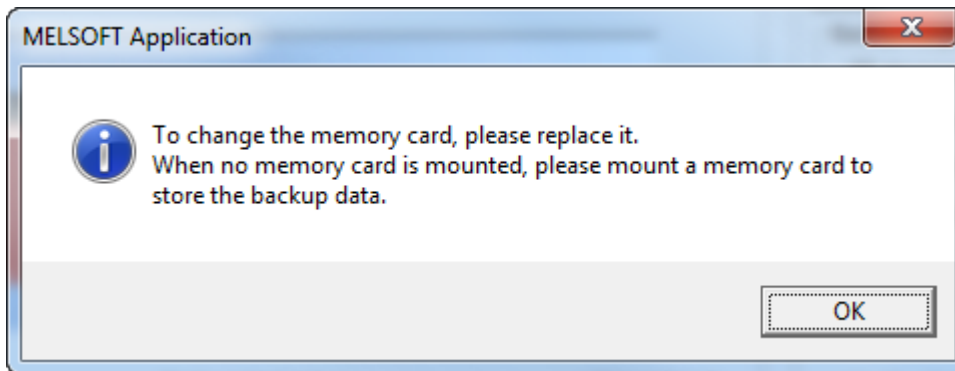


- 6) Click "Execute" button to start the PLC data backup to memory card and the following popup windows will be appeared

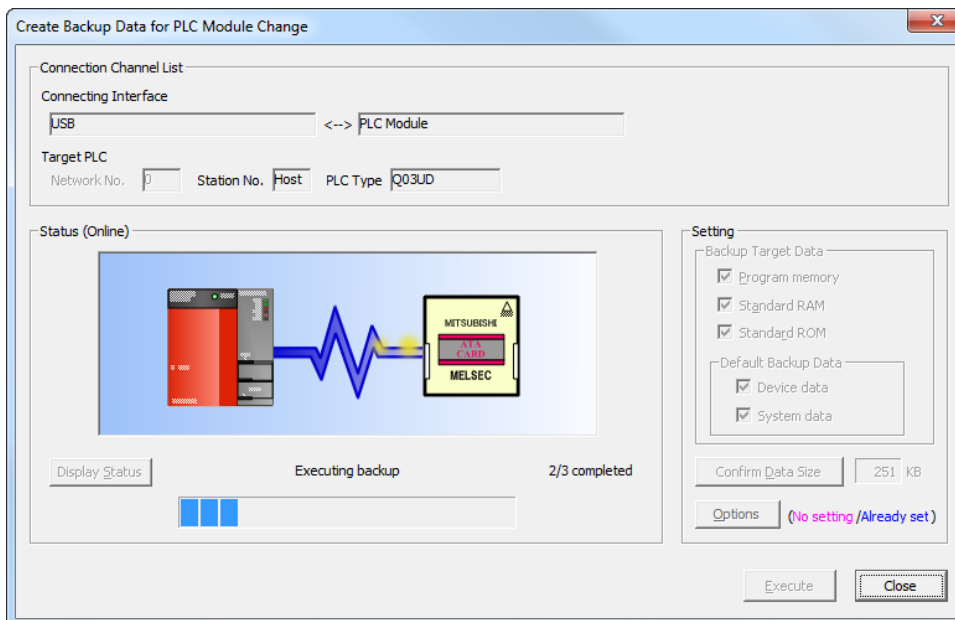
- a) Click "Yes" the popup window



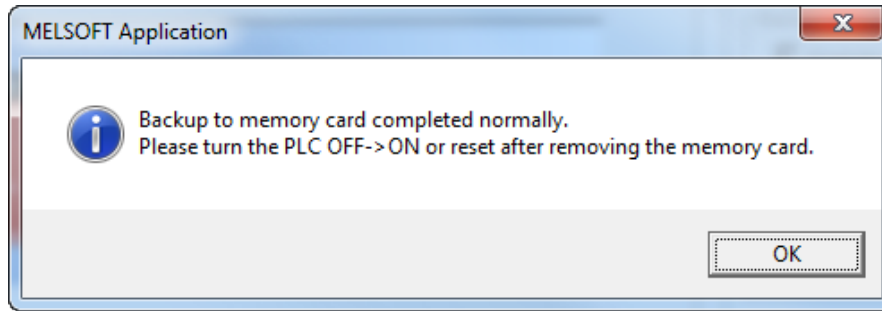
- b) Click "OK" if memory card are inserted. Otherwise insert the memory card and then click "OK"



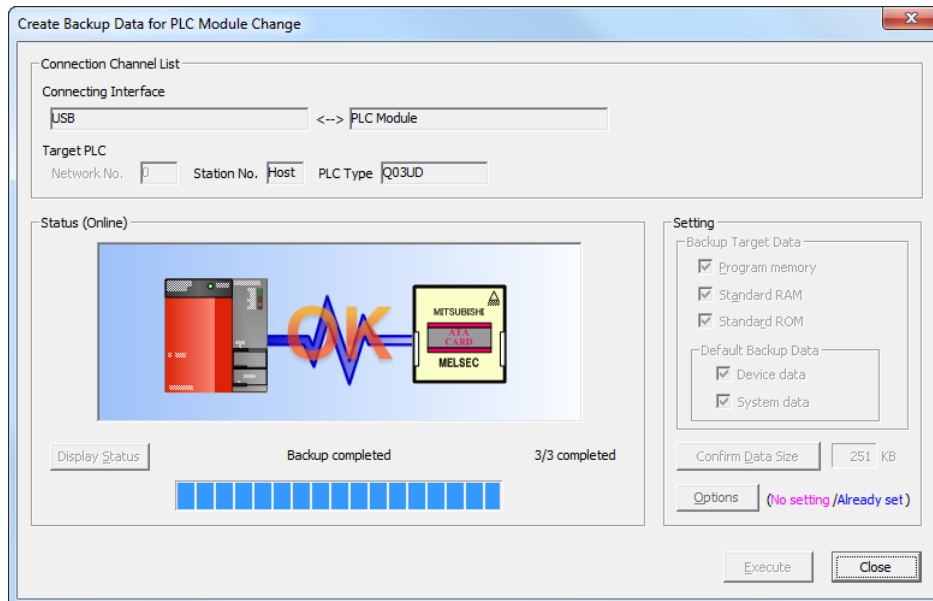
- c) The following figure shows back up progress status.



- d) Click "OK" on back up complete message window



- e) The figure shows the backup completion status.



- f) Remove the memory card and all the back data stored in the memory card. Now you can restore the backup data to new other system.

## Chapter 5 Automatic restoration procedure for PLC and Motion controller.

Follow the step by step procedure for restoring the backup data from memory card to controller(PLC and one motion CPU).

- 1) Turn of the power and bring the PLC RUN switch to STOP position.
- 2) Insert the memory card which has the backed up data already stored in the PLC memory card slots.
- 3) Change the rotary switch position of the motion controller SW1→0 and SW2→7.
- 4) Turn On the Power
- 5) The restoration procedure start automatically

### 5.1 Restoration status in LEDs indicating of the PLC module

The MODE led will be ON (green) on the PLC display if restoration procedure is completed successfully. Otherwise ERR led will be red flashing. See details on the following table.

Value stored in SD693	Restoration status	LED indication
0 <sub>H</sub>	Before restoration start	MODE: On (green)
1 <sub>H</sub>	Restoration in execution	Indication status changes as follows at 800ms intervals. 1) MODE: Flash (orange), BAT.: On (green) ↓ 2) MODE: Flash (orange), BAT.: On (green), USER: On (red) ↓ 3) MODE: Flash (orange), USER: On (red)
2 <sub>H</sub>	Restoration completed	<ul style="list-style-type: none"> <li>• Restoration using a programming tool MODE: Flash (orange), BAT.: Flash (green), BOOT: Flash (green)</li> <li>• Automatic restoration MODE: On (green)</li> </ul>
FF <sub>H</sub>	Restoration error	<ul style="list-style-type: none"> <li>• Restoration using a programming tool MODE: Flash (orange), USER: Flash (red), BAT.: Flash (green)</li> <li>• Automatic restoration MODE: On (green), ERR.: Flash (red)</li> </ul>

### 5.2 Restoration status in LEDs indicating on the Motion module

The LED display will be shown the message R00, R01.....R99 during the restoration process. If the restoration procedure is completed successfully, the led will be displayed EN2 (EN2 means motion CPU2 and EN3 means motion CPU3). Otherwise NG2 (error) will be displayed on the LED if the restoration process is failed. You can find details error code on the system device SD534 by using MT Works2 device monitoring function.

The table shows the list of restoration status on SD534.

Value on SD534	Description
0	Starting

---

1 to 99	Percent of completion
9999	Complete without error
-1	Restore start with Memory card
-2	No back up data in memory card
-3	Motion OS is different in the Target motion CPU
-4	Read was unsuccessful
-5	Reading data was incorrect
-6	Data size was incorrect



## Revisions

11/02/2011

Frist Print

Ver.-A