CTC-67

Easy PLC Programming Board
Instruction Manual

Document No. SXE-00151D-EN

Ver. 1.30 MN0808D

Dyadic Systems Co.,Ltd.

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1. Features of the CTC-67 Easy PLC Board

By using the CTC-67, it is easy to buid a system that controls up to 8 Dyadic actuators and includes programmable I/O.
Programming is done visually by the CTC-Tool software which allows motion sequence programming, sequence run testing, and position data editing. For simple applications this system will greatly reduce programming and setup time compared to a traditional PLC.
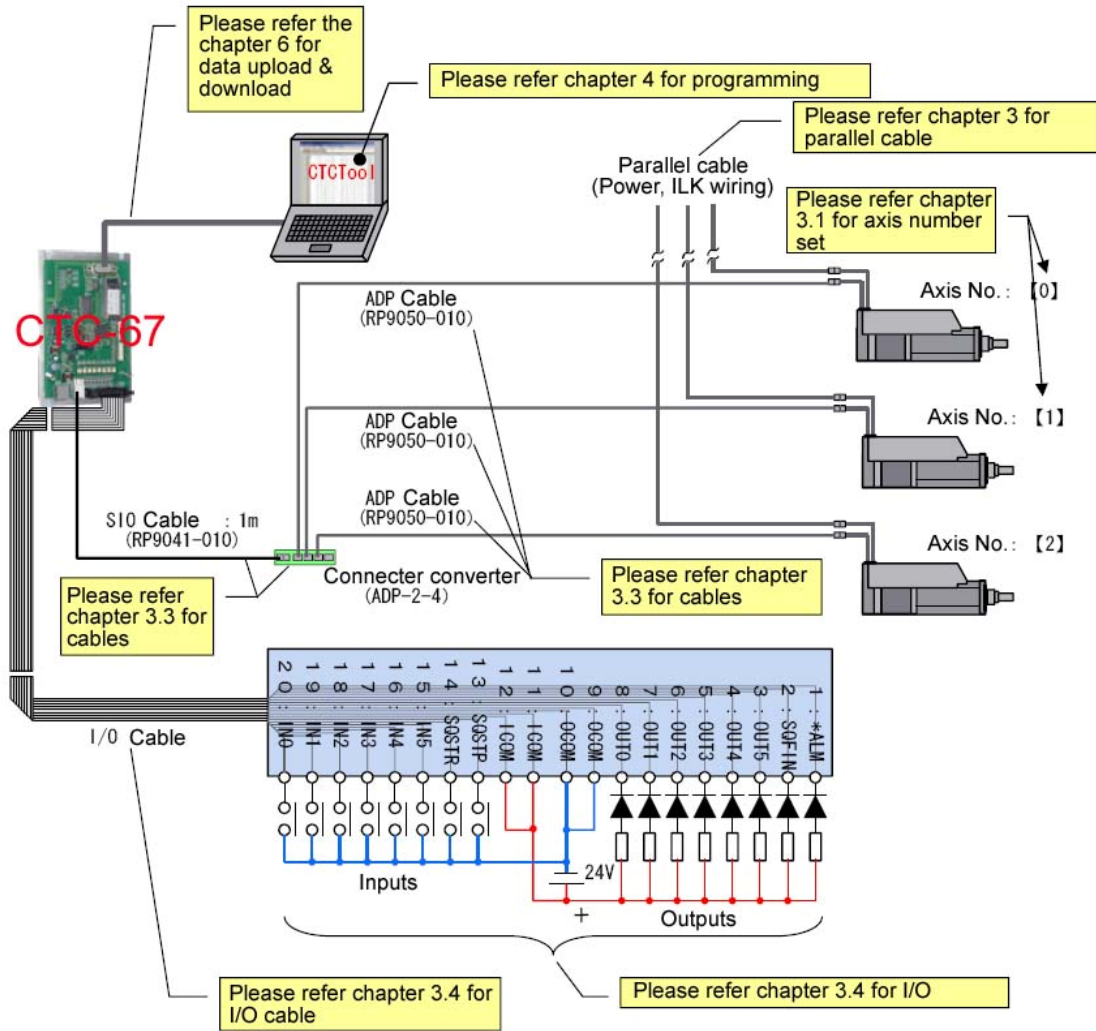
2. Check parts

Please check that you have all the neccesary parts:

Check Items

☐   **1.**   Easy PLC Board (CTC-67)

☐   **2.**   I/O Cable (RP9170-XXX or RP9161-XXX)
      (This is necessary if the system has an external start switch or external I/O communication)

     RP9170-XXX   **or**   **RP9161-XXX**
     I/O cable with terminal block   with flying leads

☐   **3.**   Multiple axis connection cables (Please refer to the system schematic on the previous page and section 3.3)
      (These are necessary to connect Mechatronics Cylinders and/or Dyadic Servo Motors with CTC-67)

	Number of actuators connected to CTC-67 (in axes)									Function
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	Ref. fig.	
ADP cable (RP9050-xxx)	1	2	3	4	5	6	7	8	Fig. 1	Connect Mech.Cylinder(s) to ADP-2-4
SIO cable (RP9041-xxx)	0	1	1	1	1	1	1	1	Fig. 2	Connect CTC-67 to ADP-2-4
SIO cable (RP9040-xxx)	0	0	0	0	1	1	1	1	Fig. 3	Connect ADP-2-4 to another ADP-2-4
Connector converter (ADP-2-4)	0	1	1	1	2	2	2	2	Fig. 4	Connect SIO cable to one or more ADP cables

     Fig. 1   **Fig 2**   **Fig. 3**   **Fig. 4**

☐   **4.**   Mechatronics Cylinder (SCN5, SCN6, SCLL6, Servo Motor, etc.)

SCN6 Models   Amp.   SCLL6 Models   Amp.   Amp.   Servo Motor Models
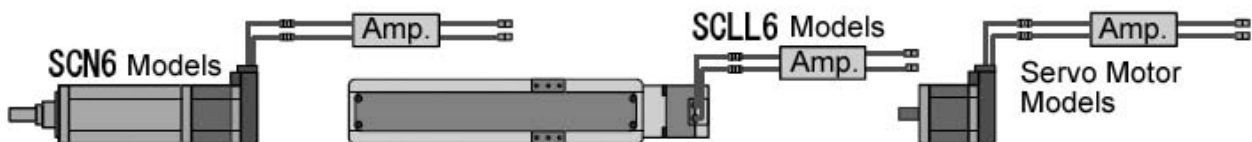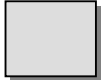
5. Parallel (Power & I/O) cable (SCN5: RP9100-XXX, Other than SCN5: RP9120-XXX)
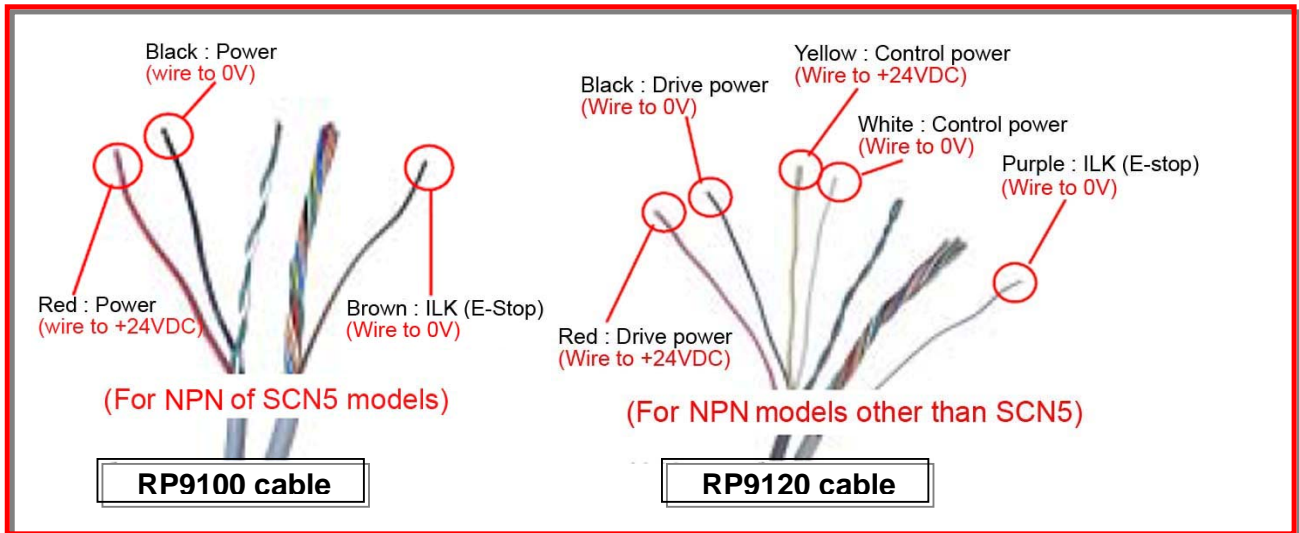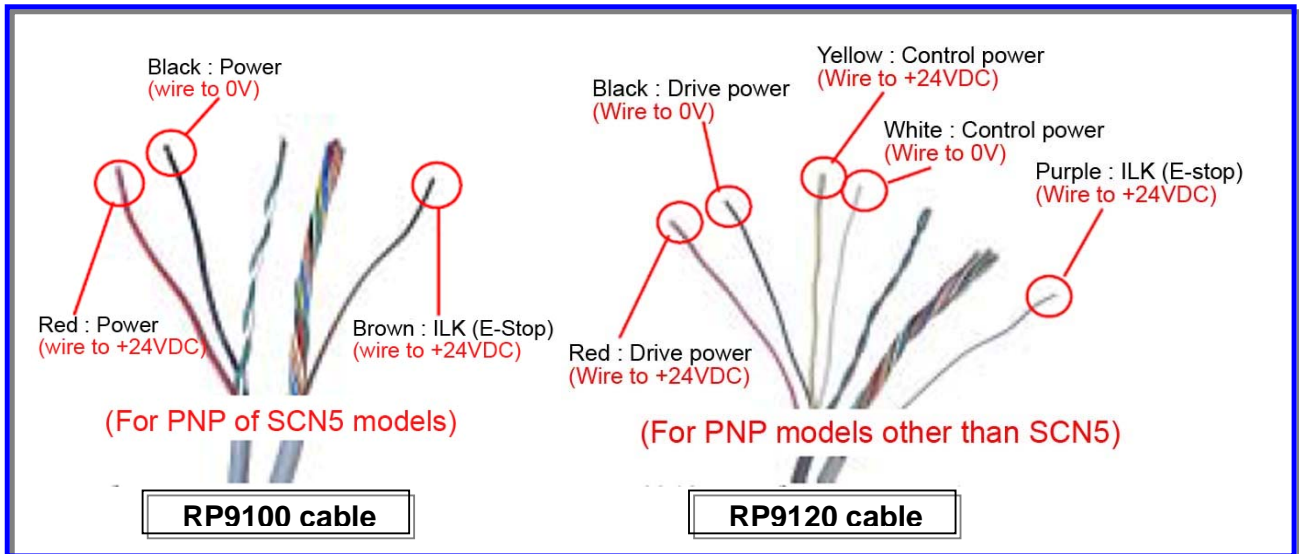(This is necessary to supply power to the drives and controllers)

6. PC Programming Tool Kit (TBVST-CTC-EN-SET)
Includes Visual sequence programming software (CTCTool)

7. Power supply (regulated DC24V+/-10%, capacity 3 Amps minimum)
(This is provided by the customer)

3. Some Important Notes

Please strip the flying leads of the Power & I/O cable (RP9100 or RP9120) for each cylinder and wire +24V DC and 0V as follows:

Black : Power
(wire to 0V)

Red : Power
(wire to +24VDC)

Brown : ILK (E-Stop)
(wire to +24VDC)

(For PNP of SCN5 models)

RP9100 cable

Yellow : Control power
(Wire to +24VDC)

Black : Drive power
(Wire to 0V)

White : Control power
(Wire to 0V)

Purple : ILK (E-stop)
(Wire to +24VDC)

Red : Drive power
(Wire to +24VDC)

(For PNP models other than SCN5)

RP9120 cable

Black : Power
(wire to 0V)

Red : Power
(wire to +24VDC)

Brown : ILK (E-Stop)
(Wire to 0V)

(For NPN of SCN5 models)

RP9100 cable

Yellow : Control power
(Wire to +24VDC)

Black : Drive power
(Wire to 0V)

White : Control power
(Wire to 0V)

Purple : ILK (E-stop)
(Wire to 0V)

Red : Drive power
(Wire to +24VDC)

(For NPN models other than SCN5)

RP9120 cable

### 3.1   For Multi-Axis Systems - Set Axis Numbers First!

When connecting multiple Mechatronics
Cylinder and/or RSA Servo Motors
to the CTC-67, **unique axis numbers
must be set for each axis.**
This operation (axis number change) must
be **done with ONLY one axis connected**
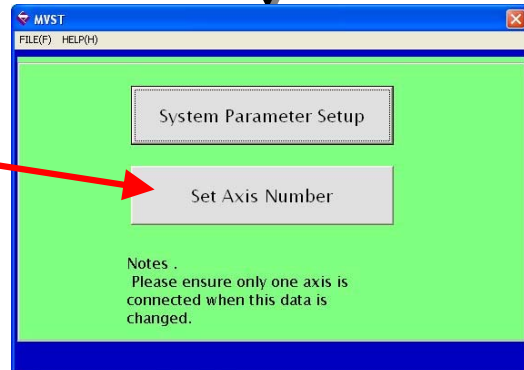using the MVST software.
Ensure the axis is connected to the first
connector on the ADP-2-4 (CN2)
to set the axis number.
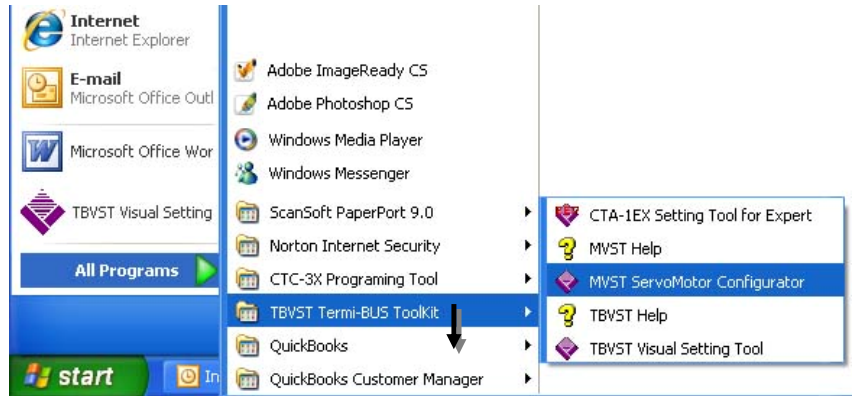
The SIO cable is used to connect the ADP-1 to the
ADP-2-4 and the ADP-1 should be connected to the PC
after the actuator is powered up (via its power and I/O
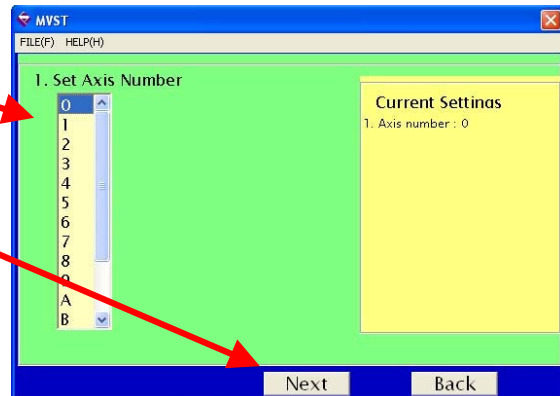cable).
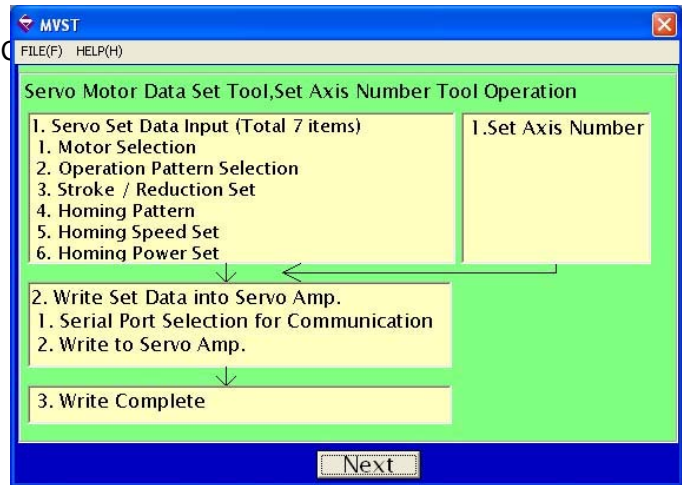
Click [Set Axis Number] to go
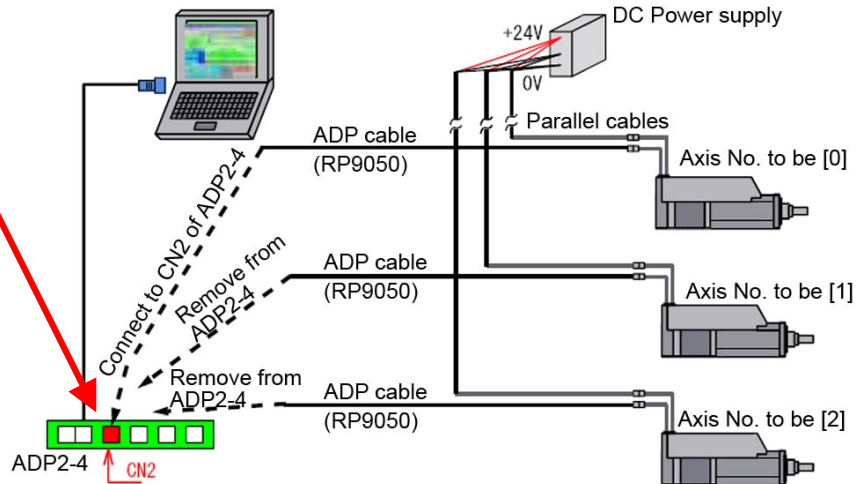to the axis number change menu.

The following menu will appear.

Please choose the new number
for the actuator.
Then click [Next].

If this operation should be
cancelled, click [Back].

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Please connect the PC to
ONLY one Mechatronics
Cylinder at a time as
shown at right.

DC Power supply

+24V

0V

Parallel cables

ADP cable
(RP9050)

Axis No. to be [0]

Connect to CN2 of ADP2-4

Remove from
ADP2-4

ADP cable
(RP9050)

Axis No. to be [1]

Remove from
ADP2-4

ADP cable
(RP9050)

Axis No. to be [2]

ADP2-4

CN2

The Save Menu will save
the new axis number
to the actuator memory.

Click [Write to Controller]

[Data Change] will step
back to the previous screen.

MVST

FILE(F)   HELP(H)

Data to Servo Amp.
Save

Current Settings

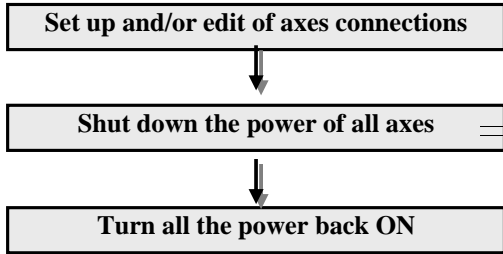1. Axis number : 0

Write to
Controller

Data
Change
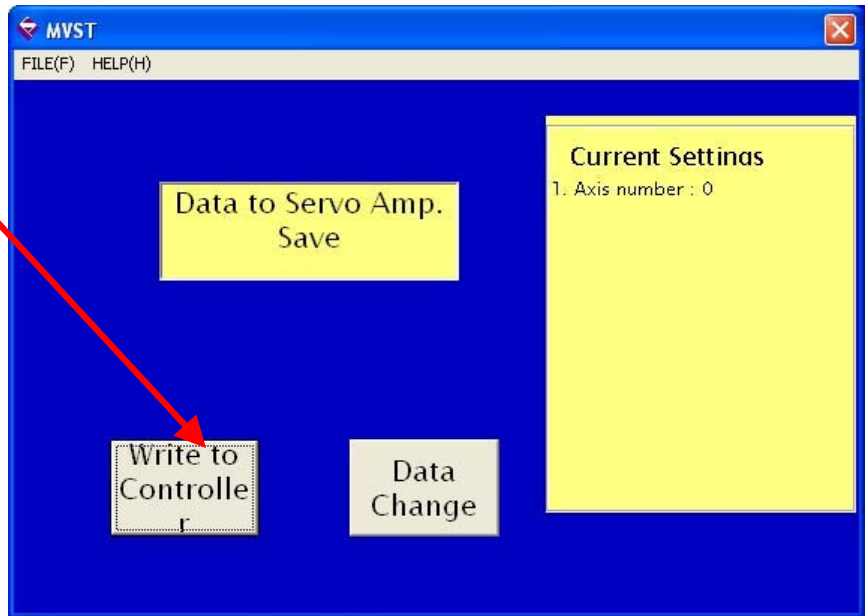
After clicking [Write to Controller], the serial port number selection
menu as shown at right will appear.
Please select the serial port number that the Mechatronics Cylinder is
connected to.

Click [Set] to start the communication.

Set up Communication

Port

Select the Port number
that connect with the
Termi-BUS.

1

Set   Stop
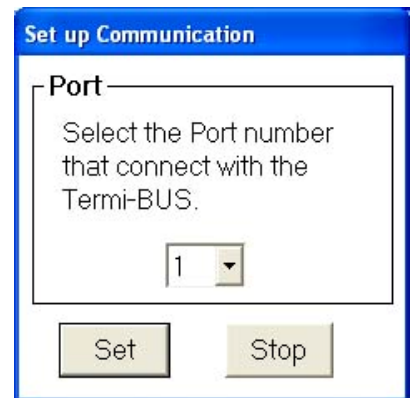
3.2 After changing the axis number, cycle power for all actuators

If power is not cycled the new axis numbers may not register properly, in which case the network will create an error at power up.

Set up and/or edit of axes connections

↓

Shut down the power of all axes

↓

Turn all the power back ON

3.3 Connection schematics

When creating a system using multiple Mechatronics Cylinders and/or RSA Servo Motors controlled by the CTC-67, **please connect as shown below.**
The interlink cable (9-pin serial) is a standard accessory of the product.   The I/O cable is sold separately.
If only one axis is connected the ADP cable can connect the actuator and CTC-67 directly.
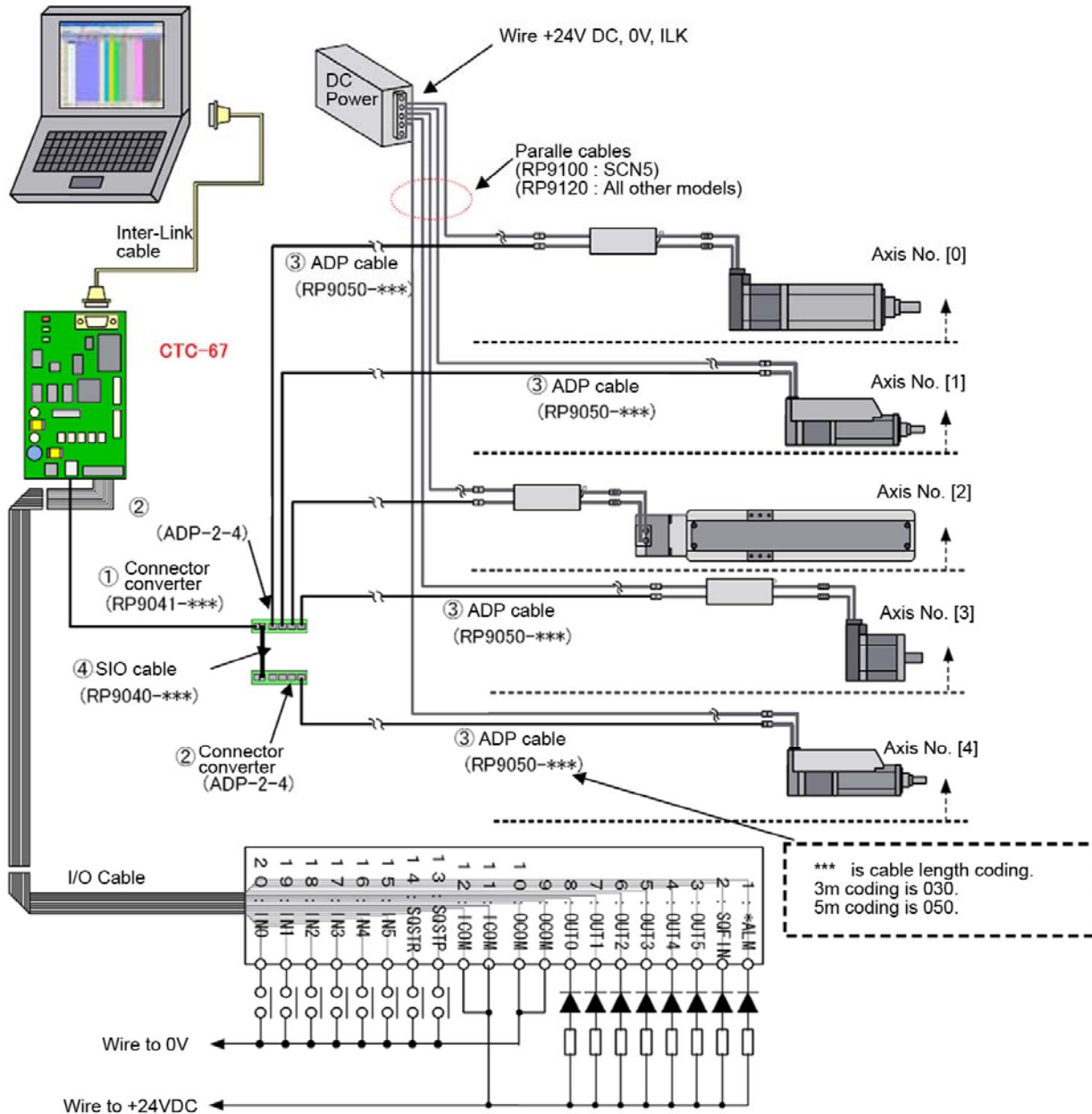
Notes:
Required system accessories are as follows:

	Quantity of Connecting mechatronics cylinders							
	1 axis	2 axes	3 axes	4 axes	5 axes	6 axes	7 axes	8 axes
ADP cable (RP9050- xxx)	1	2	3	4	5	6	7	8
SIO cable (RP9041- xxx)	0	1	1	1	1	1	1	1
SIO cable (RP9040- xxx)	0	0	0	0	1	1	1	1
Connector converter (ADP-2-4)	0	1	1	1	2	2	2	2

3.4   I/O Cable

Please use I/O cables listed below. (Sold separately)
Please note that the CTC-67 requires an I/O cable to run the program via Start/Stop (SQSTR/SQSTP) signal inputs.

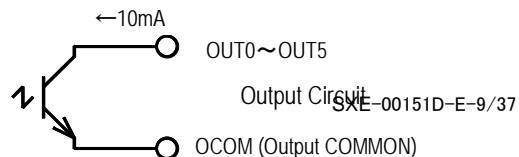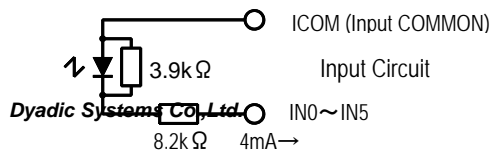| Items	Coding	Notes	
I/O cable (3m)	RP9170-030	Terminal block output	
I/O cable (5m)	RP9170-050		
I/O cable (10m)	RP9170-100		
I/O cable (3m)	RP9161-030	Flying leads	
I/O cable (5m)	RP9161-050		
I/O cable (10m)	RP9161-100		

Names and connections of the external I/O signals are as per the chart below:
Please note that the conductor colors are for RP9161-∗∗∗ (cables with flying leads), Terminal numbers are for the RP9170-∗∗∗ (Terminal block output).

**User I/O Cable wiring list (Connector type: HIROSE HIF3BA-20D-2.54R)**

Input signal					Output signal				
I/O Connector Pin No.	Conductor color	Terminal No.	Signal name /Symbol	Descriptions	I/O Connector Pin	Conductor color	Terminal No.	Signal name /Symbol	Descriptions
20	Black	B10	IN0	User Input signal 0	8	Grey	B4	OUT0	User Output signal 0
19	White	A10	IN1	User Input signal 1	7	Purple	A4	OUT1	User Output signal 1
18	Grey	B9	IN2	User Input signal 2	6	Blue	B3	OUT2	User Output signal 2
17	Purple	A9	IN3	User Input signal 3	5	Green	A3	OUT3	User Output signal 3
16	Blue	B8	IN4	User Input signal 4	4	Yellow	B2	OUT4	User Output signal 4
15	Green	A8	IN5	User Input signal 5	3	Orange	A2	OUT5	User Output signal 5
14	Yellow	B7	SQSTR	Sequence Start command signal	2	Red	B1	SQFIN	Sequence Completion signal
13	Orange	A7	SQSTP	Sequence Stop command signal	1	Brown	A1	*ALM	Alarm signal
11,12	Brown/Red	B6,A6	ICOM	Input COMMON (connect to +24V)	9,10	White/Black	A5,B5	OCOM	Output COMMON (connect to 0V)

Representative external (User) I/O circuit of CTC-67 (Manufacturer: Hirose, HIF3BA-20D-2.54R)

ICOM (Input COMMON)

3.9kΩ

Input Circuit

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8.2kΩ   4mA→

IN0～IN5

←10mA

OUT0～OUT5

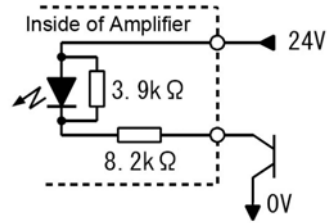Output Circuit

OCOM (Output COMMON)

Wiring examples of Input signals and external circuit

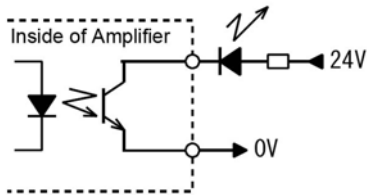Following are Input wiring examples for the CTC-67 I/O cable:
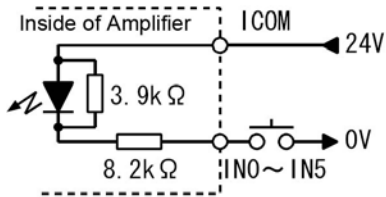
Wiring example of miniture relay,
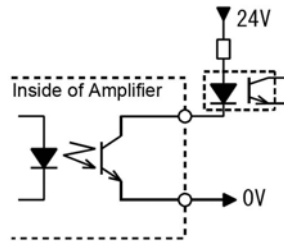toggle switch, push button switch, etc.

Wiring example of open collector
transistor.

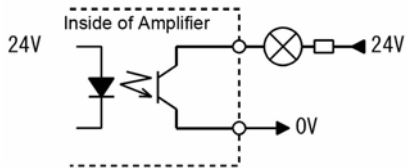## Wiring examples of Output signals and external circuit

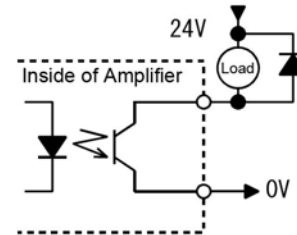Following are Output wiring examples for the CTC-67 I/O cable:

Wiring example of LED

Wiring example of photo coupler
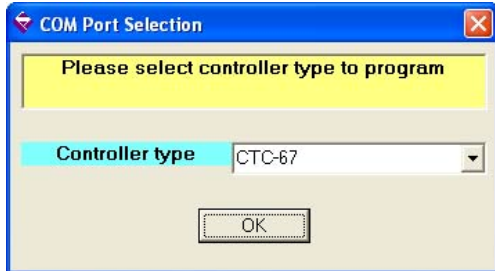
Wiring example of lighting load
(max output 10mA)

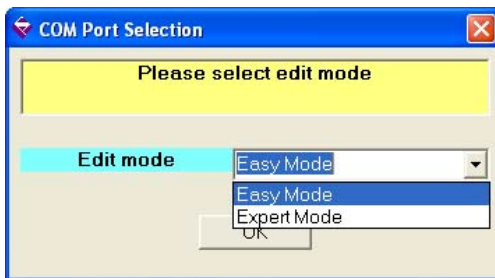Wiring example of relay load
(max output 10mA)

4.   Sequence programming procedure for CTC-67

The CTCTOOL software included in the PC/CTC Tool Kit is used to program/edit the sequence in the CTC-67. After starting CTCTOOL program, the dialog menu as shown below will be displayed, please follow the procedures as described below:
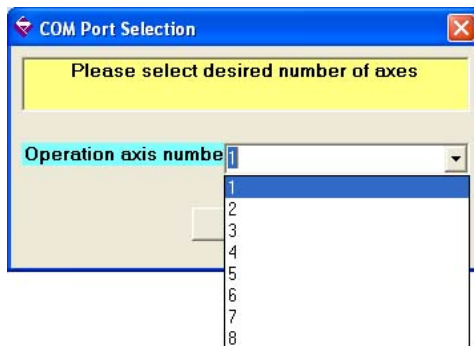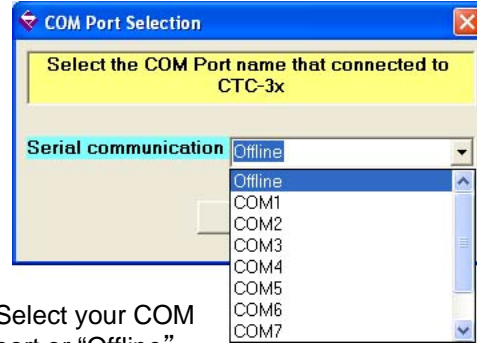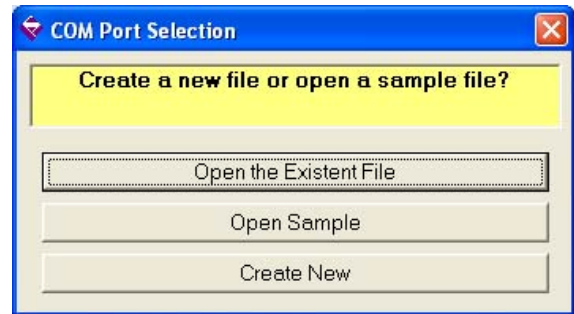
4.1   Program start up

COM Port Selection

Please select controller type to program

Controller type   CTC-67

OK

Select CTC-67

COM Port Selection

Please select edit mode

Edit mode   Easy Mode
Easy Mode
Expert Mode
OK

Select "Easy Mode"

COM Port Selection

Please select desired number of axes

Operation axis number 1
1
2
3
4
5
6
7
8

Select your axes quantity

COM Port Selection

Select the COM Port name that connected to CTC-3x

Serial communication Offline
Offline
COM1
COM2
COM3
COM4
COM5
COM6
COM7

Select your COM port or "Offline"

COM Port Selection

Create a new file or open a sample file?

Open the Existent File

Open Sample

Create New

Choose whether you prefer to open an existing file, a sample file, or a new file.

COM Port Selection

The data will be uploaded from the Condroller and the Cylinders.
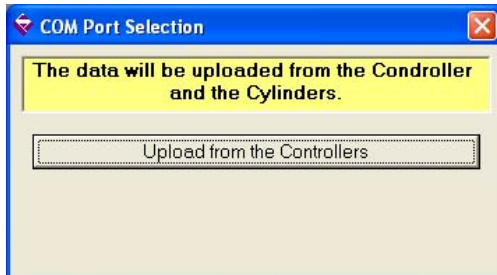
Upload from the Controllers
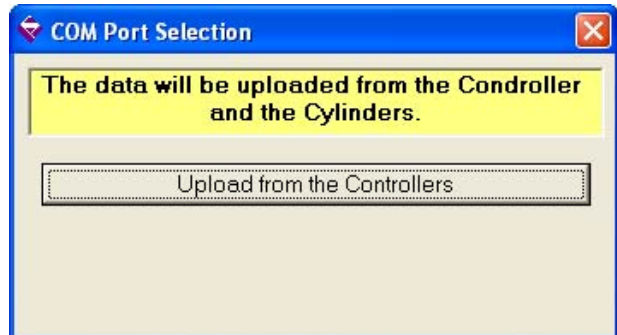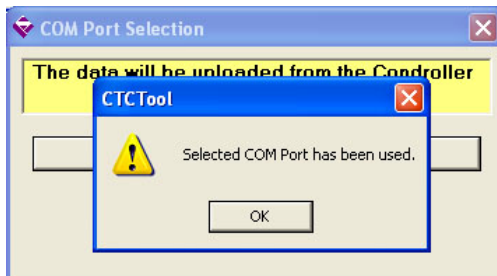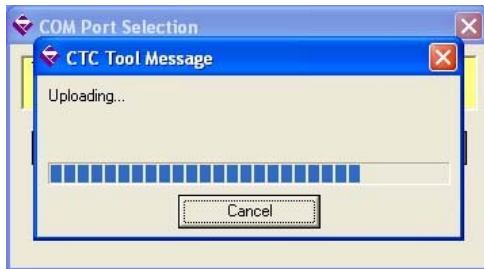
Click "Upload from the Controllers".

4.2 Selection of serial port number
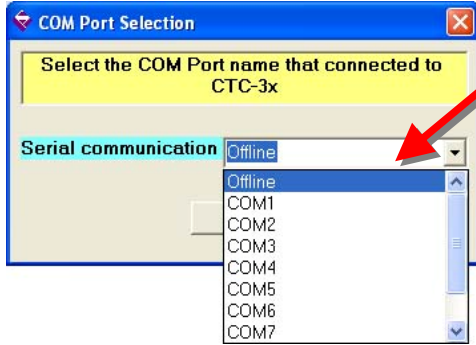
Please select the serial port connected to the PC and click "OK".
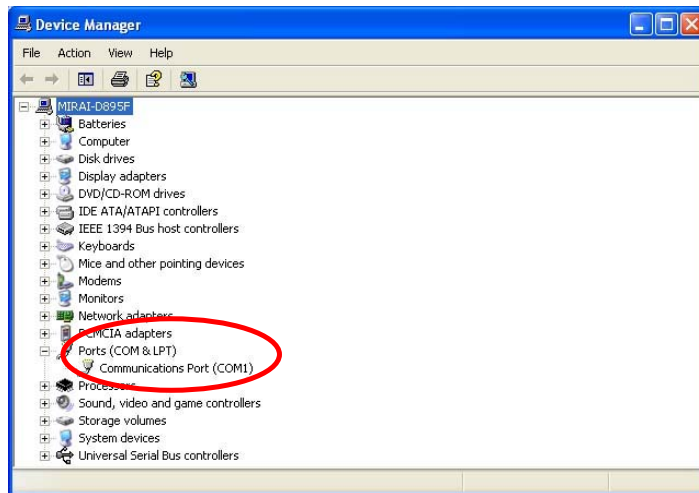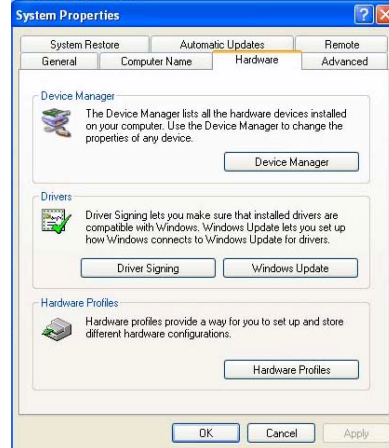
The data in the CTC-67 and Mechatronics Cylinders will be uploaded to the PC.

If left screen appeared, the port selection was denied. Please check the connected serial port as follows:

If the number of the serial port is unknown:

Check [CONTROL PANEL] => [SYSTEMS] => [HARD WARE] => [DEVICE MANAGER] => [PORT]

4.3 Read Position Data

When the ONLINE communication starts between the CTC-67 and the computer (after serial port number selection), click "Upload from the controllers".

4.4. Sequence steps of CTC-67

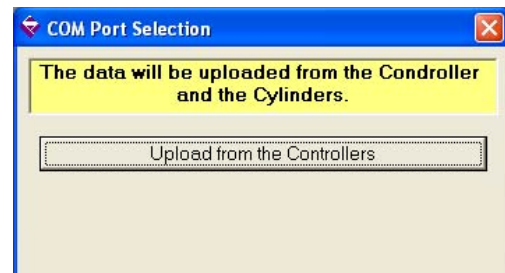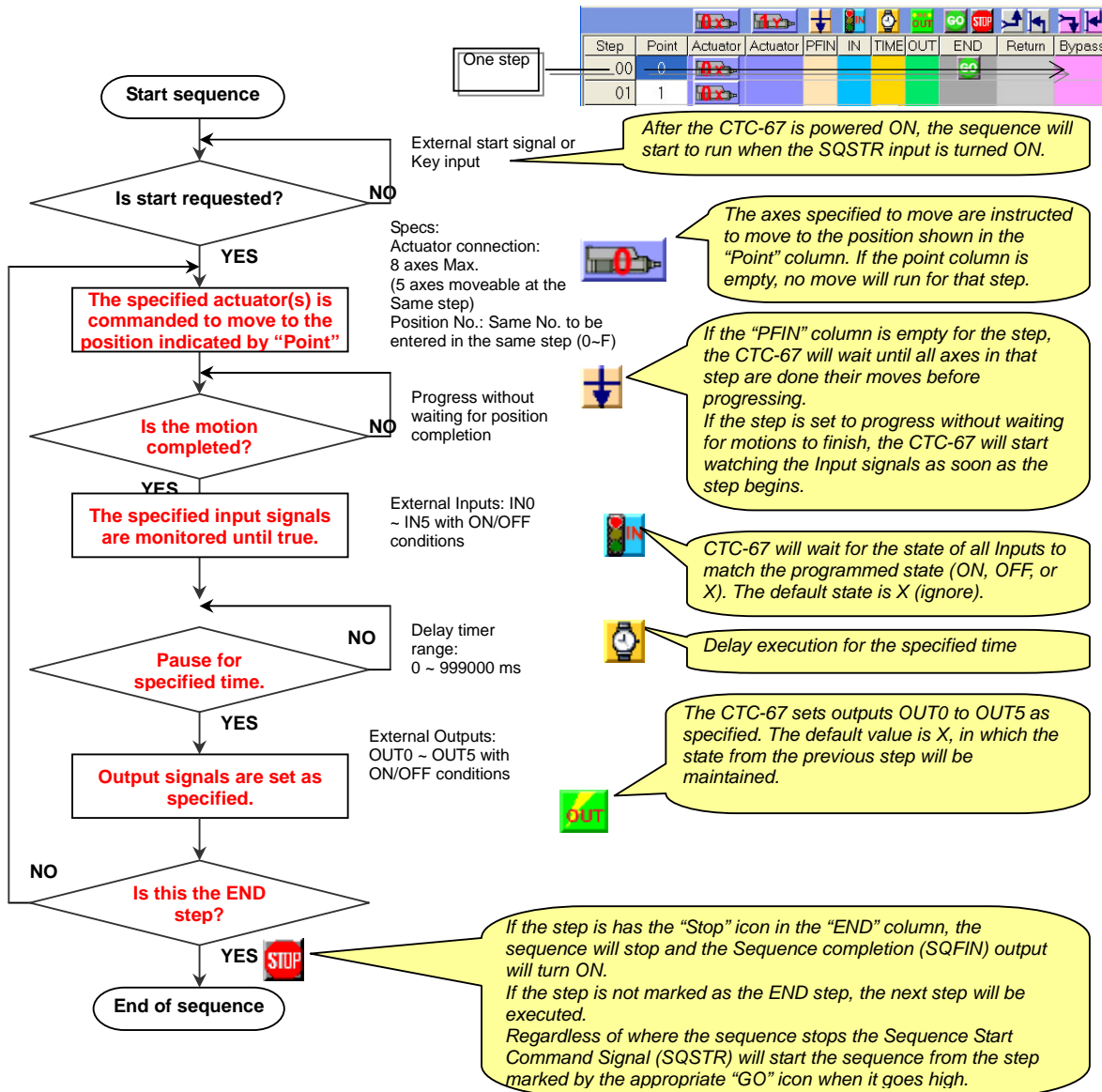Each step of the CTC-67 program sequence will be executed as per the flow chart below:

The flow chart:

- **Start sequence**
- External start signal or Key input
- **Is start requested?** — NO (loops back)
  - *After the CTC-67 is powered ON, the sequence will start to run when the SQSTR input is turned ON.*
- YES
- **The specified actuator(s) is commanded to move to the position indicated by "Point"**
  - Specs: Actuator connection: 8 axes Max. (5 axes moveable at the Same step) Position No.: Same No. to be entered in the same step (0~F)
  - *The axes specified to move are instructed to move to the position shown in the "Point" column. If the point column is empty, no move will run for that step.*
- **Is the motion completed?** — NO: Progress without waiting for position completion
  - *If the "PFIN" column is empty for the step, the CTC-67 will wait until all axes in that step are done their moves before progressing. If the step is set to progress without waiting for motions to finish, the CTC-67 will start watching the Input signals as soon as the step begins.*
- YES
- **The specified input signals are monitored until true.**
  - External Inputs: IN0 ~ IN5 with ON/OFF conditions
  - *CTC-67 will wait for the state of all Inputs to match the programmed state (ON, OFF, or X). The default state is X (ignore).*
- **Pause for specified time.** — NO
  - Delay timer range: 0 ~ 999000 ms
  - *Delay execution for the specified time*
- YES
- **Output signals are set as specified.**
  - External Outputs: OUT0 ~ OUT5 with ON/OFF conditions
  - *The CTC-67 sets outputs OUT0 to OUT5 as specified. The default value is X, in which the state from the previous step will be maintained.*
- **Is this the END step?** — NO (loops back)
- YES
  - *If the step is has the "Stop" icon in the "END" column, the sequence will stop and the Sequence completion (SQFIN) output will turn ON. If the step is not marked as the END step, the next step will be executed. Regardless of where the sequence stops the Sequence Start Command Signal (SQSTR) will start the sequence from the step marked by the appropriate "GO" icon when it goes high.*
- **End of sequence**

The sequence execution starts when the Sequence Start Signal (SQSTR) turns ON.
The program will start from the step with the appropriate "GO" icon (typically step 00), and end at the step with the "STOP" (END) icon. This is one cycle.
If the end step is not specified, the last step (step 99) of the program will be the end of the program. When the CTC-67 reaches the sequence end the Sequence Completion Signal (SQFIN) will turn ON and the CTC-67 will stay in the TEACH mode.
If the Sequence Start Signal (SQSTR) is left ON the CTC-67 will repeat the cycle from step 00 after the last step is executed.

If the Sequence Stop command signal (SQSTP) is turned ON during program execution, the CTC-67 will stop all actuators and all sequence execution immediately. This signal input has priority over any other input.
*The Alarm Output Signal (*ALM) is normally ON. If any actuator(s) connected to the CTC-67 indicates an alarm, this output signal will turn OFF.*

4.5. CTC-Tool Software Overview

4.5.1 Key Elements of the Main Menu

External input condition skip command

External input condition skip cancel command

Execute Previous Step

Execute Next Step

Execute Current Step

Output conditions set up icon (see 4.4)

Timer set up icon (see 4.4)

Input conditions set up icon (see 4.4)

Position completion NOT wait command icon (See 4.4)

Download to controller

Upload from controller

CTC Tool - Edit

File(F) Transfer(T) Edit(E) TestRun(G) Setup(S) Window(W) Help(H)

Step	Point	Actuator	PFIN	IN	TIME	OUT	END	Return	Bypass
00	0						GO		
01	0								
02	0								
03	0								
04	0								
05	0								
06	0								
07	0								
08	0								
09	0								
10	0								
11	0								
12	0								
13	0								
14	0								
15	0								

Program end command icon

Sequence Starting Step Icon

Axis enter cell

Position No.

Step No.

4.5.2 Basic Function Examples

For this example we will assume the following positions are programmed prior to CTC operation.

	Position 0	Position 1	Position 2
Mech Cylinder Axis 0	0 mm	20 mm	40 mm
Mech Cylinder Axis 1	0 mm	30 mm	50 mm

(1) Command axis 0 to move to position 0.

(2) Command axis 0 and axis 1 to move to position 0.

(3) Command axis 0 to run position 0 then axis 1 to move to position 1.

(4) Command axis 0 to run position 0 and axis 1 to move to position 1 at the same time.

(5) Command axis 0 to run position 0 then wait for input 0 to be turned ON to go to the next step.

(6) As soon as axis 0 starts to move to position 0, the CTC-67 controller starts to monitor IN0. The controller will continue to the next step as soon as IN0 turns on.

(7) After axis 0 moves to position 0, the sequence will wait for the specified time delay (1 sec).

4.5.3 Test run menu
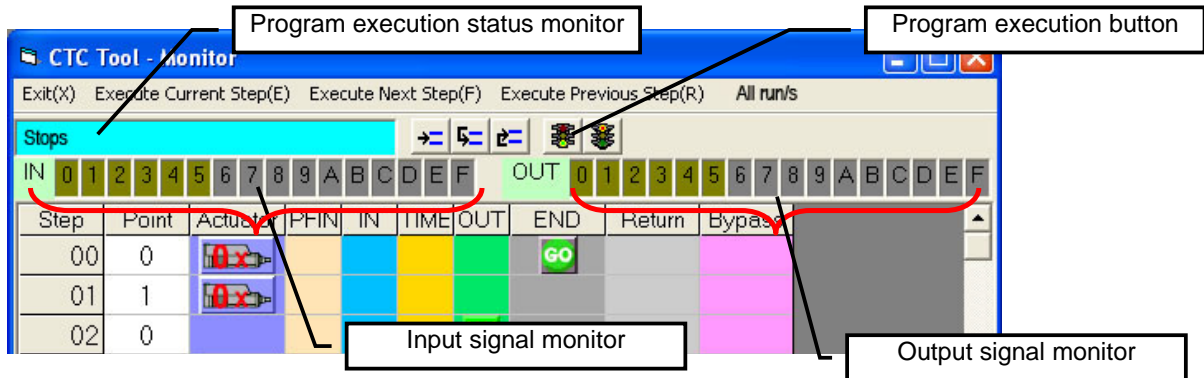
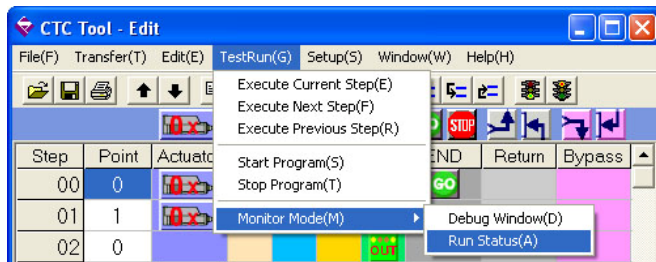*Following is the test run menu.*
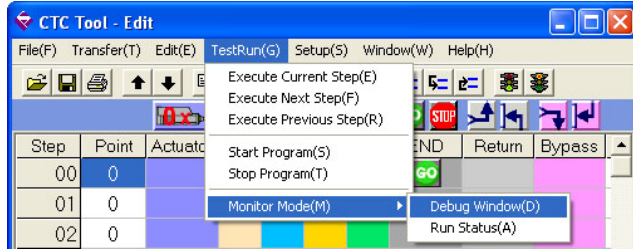
The program can be executed from this menu, I/O and program execution status can be monitored.
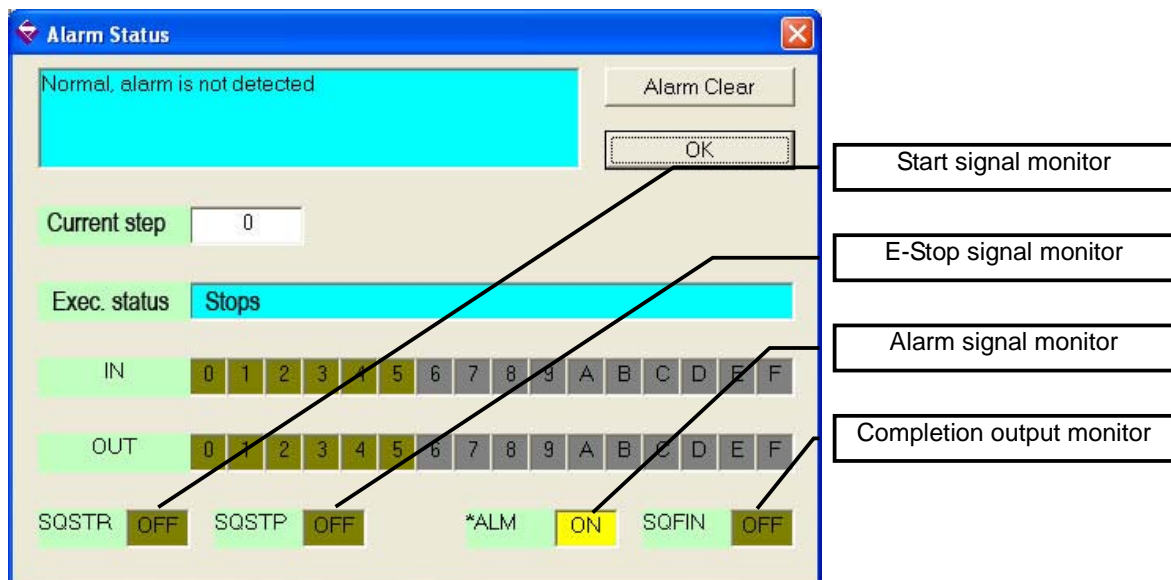

4.5.4 Test Run Menu

By selecting the "Run Status" option the system overview can be monitored during operation.
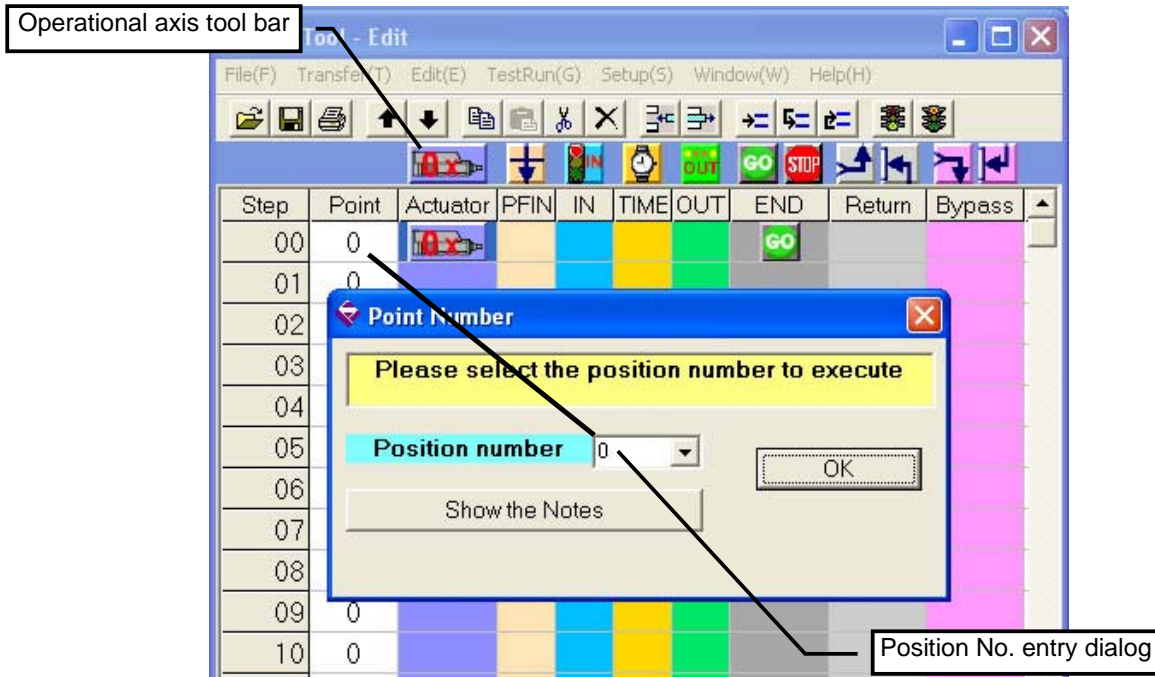

The status of all parameters can be monitored as follows:

### 4.6. Position move motion command

To program moves, drag the icon with the desired axis number to the appropriate step.   The position number dialog window will be displayed.   Please select the position number to be run by all axes in that step.


4.7. PFIN Progression

This command is used to determine whether the sequence will wait for all axes to finish their moves before going to the next step. It can be also used to make multiple axes initiate different motions at the same time.
When the icon is dragged to the PFIN column in the appropriate step, the step will be executed then go to the next step without waiting for the motion to finish.
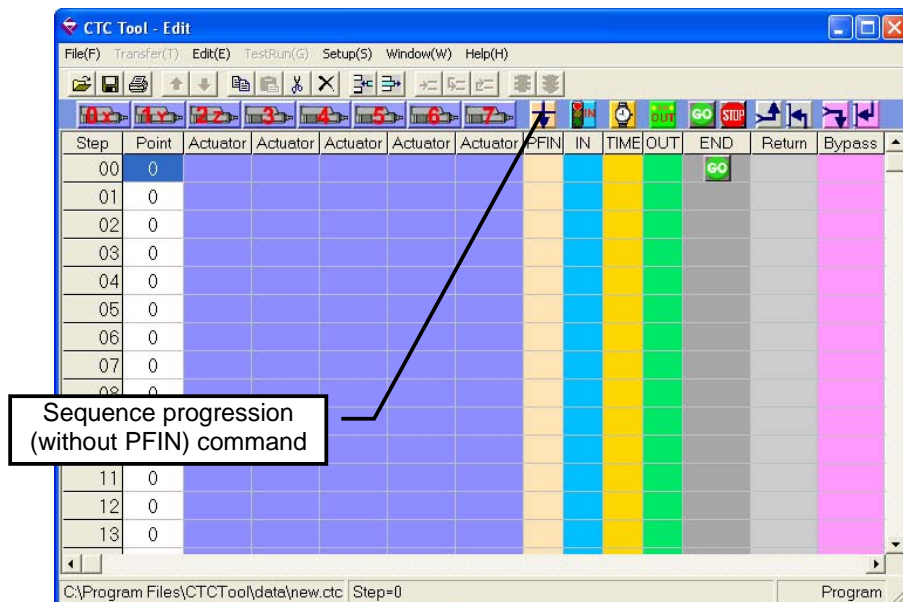
4.8. Programmable Inputs

To set desired input conditions for a given step, drag the input icon to the step, then identify the appropriate input conditions in the dialog box.


Input Condition Icon

Input Setup Dialog
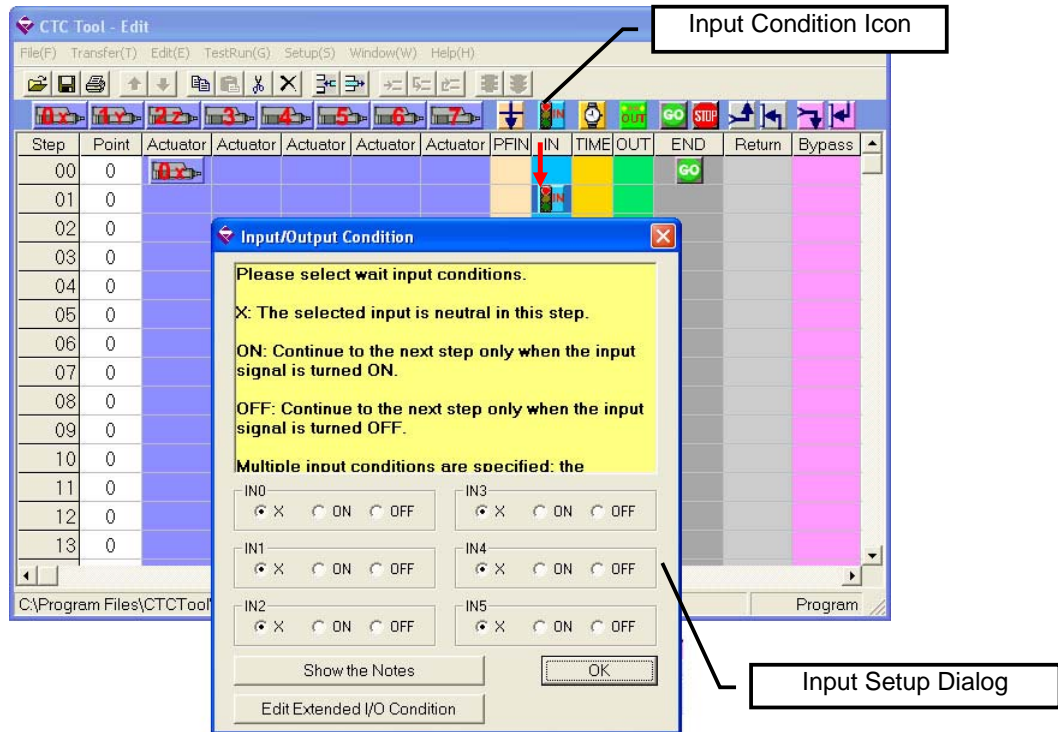
4.9. Delay Timer

The delay timer will run after the previous command(s) in the step (the position motion and input condition monitoring commands). Time is set in seconds. If 0 is entered, there will be no delay and the sequence will go to the next step.


Timer set dialog
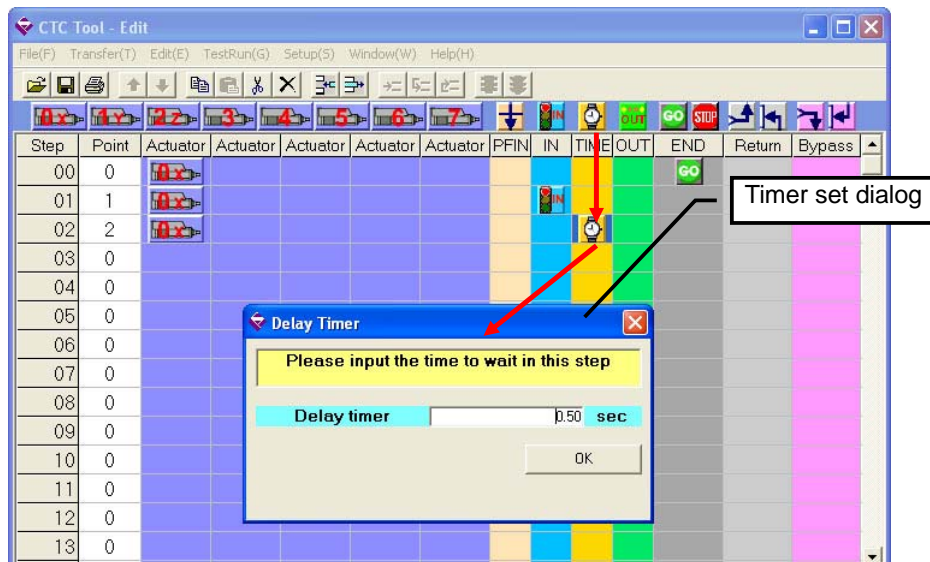
4.10. Programmable Outputs

To set desired output states for a given step, drag the output icon to the step, then set the outputs using the dialog box.

Output condition set icon

Output condition set dialog
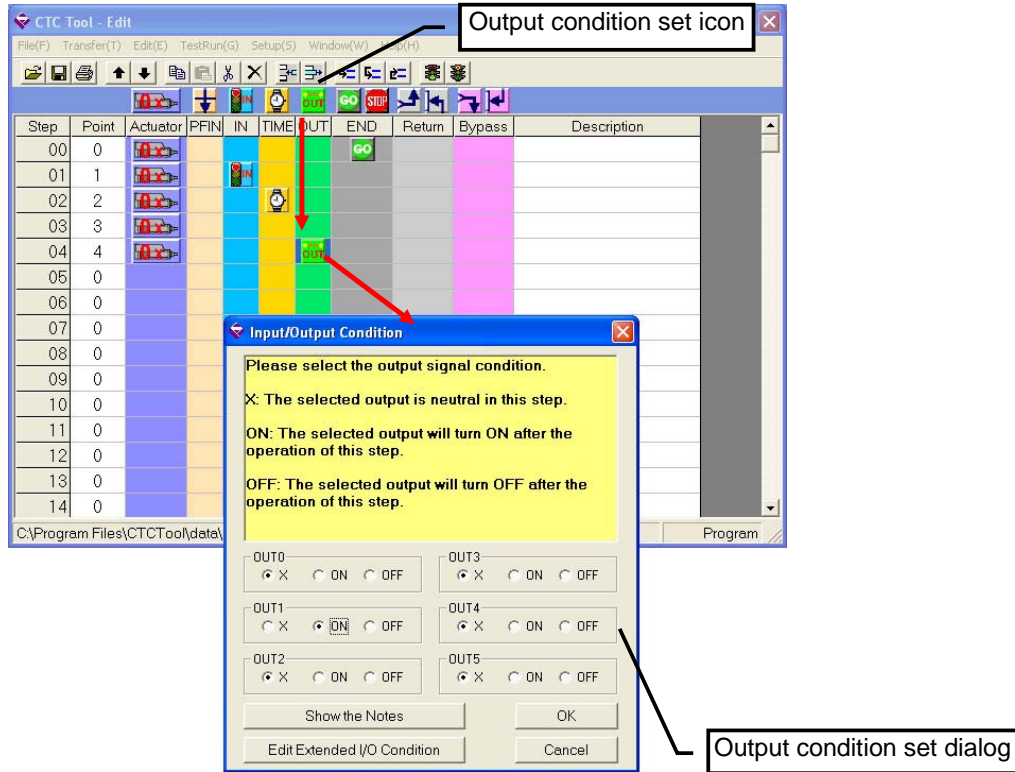
4.11. Return Step Command

This command will return the sequence to a previous step if the external inputs don't meet the specified conditions.
This will continue until the inputs meet the specified conditions, at which point the sequence will continue to the next step.

External input condition dialog
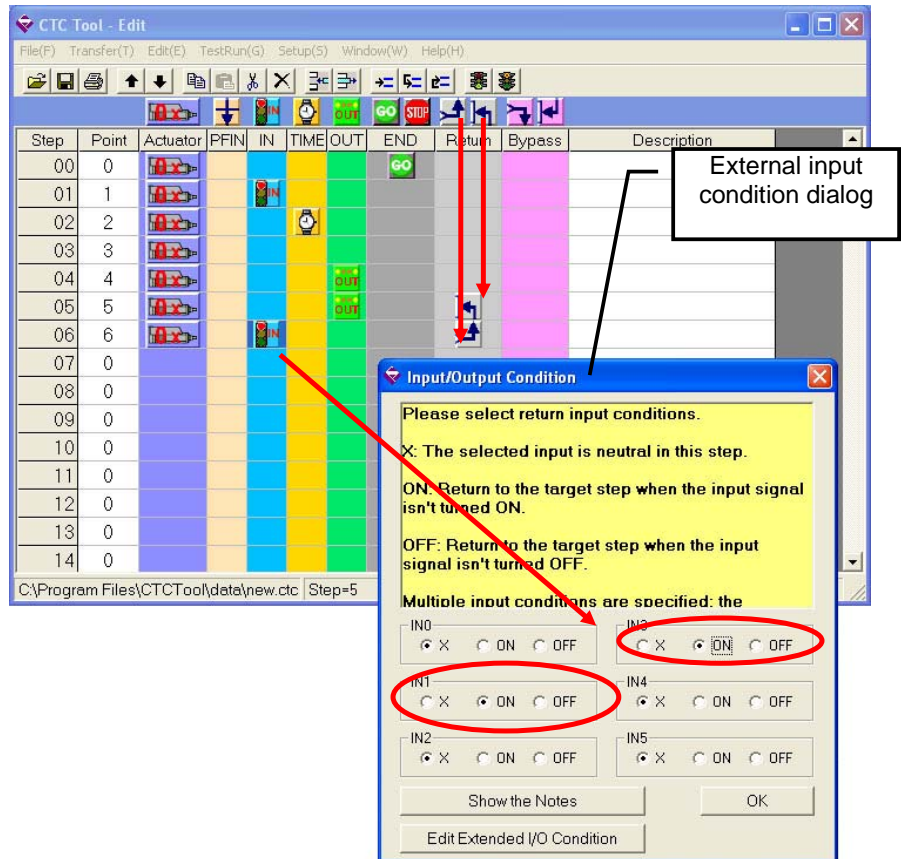
4.12. Return Command Special Feature - Subroutine Repeat Counter

If all the external input conditions are set to [X] in the return function for a given step, a timer value in that step will control the number of times that the return step will be repeated. When the subroutine has been repeated the required number of times the sequence will continue to the next step.   A value of 0.10 represents 10 cycles.
This function is only available for versions newer than 1.20, and must be enabled through the Parameter menu – see section 7.3.

Please do not set al all in the input condition set window shown by icon drag, then please press [OK.]

4.13. Bypass Command

This command will jump the sequence forward if the states of the external inputs matches the designated states. If the external inputs don't match the states designated in the bypass command, the sequence will continue to the next step.

External input condition dialog

4.14. Bypass Command Special Feature - Sub Program Execute

If the input conditions of the Bypass command are all set to [X], a timer value in that step will become the step number at which a sub program starts.
The sub program can be outside of the original program and will include its own END step. After the sub program executes, the sequence will return to the step following the original bypass command, then continue execution.
This function is available only for versions newer than 1.30.

Please do not set al all in the input condition set window shown by icon drag, then please press [OK.]

Input/Output Condition

Please select bypass input conditions.

X: The selected input is neutral in this step.

ON: Bypass to the target step when the input signal isn't turned ON.

OFF: Bypass to the target step when the input signal isn't turned OFF.

Multiple input conditions are specified: the

[0.10] specifies step 10 where the sub program starts

Delay Timer

Please input the time to wait in this step

Delay timer   0.10 sec

4.14.1 Sub Program Return Memory Function

When a sub-program is done it is possible to make specific axes return to the positions they were in when the program was executed. This is done by adding key axis values (shown in the accompanying table) to the step value in the timer setting. An example of this function is shown below. This function is available only for versions newer than 1.30.

Key Axis Values:

Axis 0	=	2.56 sec
Axis 1	=	5.12 sec
Axis 2	=	10.24 sec
Axis 3	=	20.48 sec
Axis 4	=	40.96 sec
Axis 5	=	81.92 sec
Axis 6	=	163.84 sec
Axis 7	=	327.68 sec

Positioning parameters such as speed and acceleration for the return move will be the same as previously executed for that actuator.

This example commands the sequence to skip ahead to step 10 while also storing the current positions of axis 0 and axis 1:

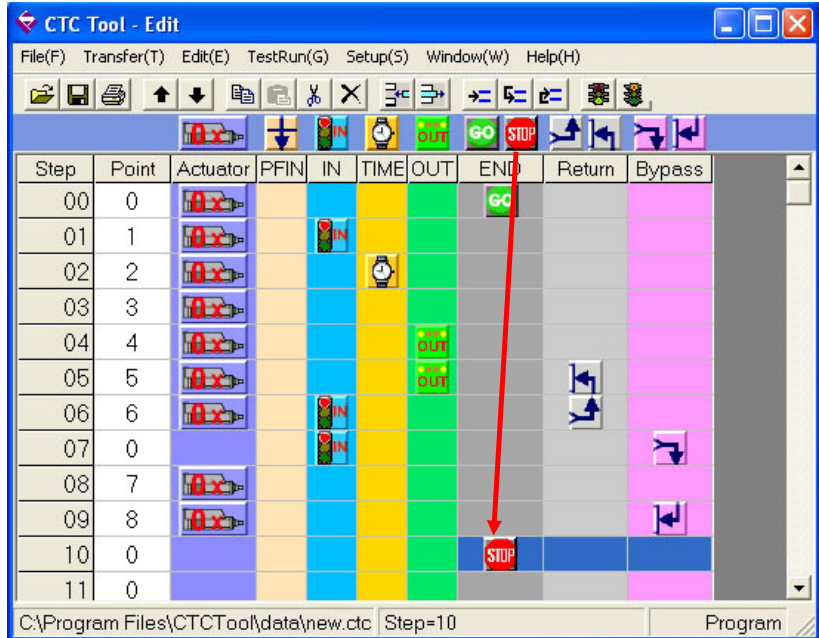**2.56sec(axis 0) + 5.12sec(axis 1) + 0.10(step10) = 7.78sec**

4.15. End Step Designation

Drag the [STOP] icon to the last step of the program to indicate the end. If the program has no end step it will continue to step 99.

The program capacity of the CTC-67 is 100 steps, from step 00 up to step 99.
*The sequence is stored in EEPROM on board the CTC-67.*

5. Programming Examples

The CTCTOOL software included in the PC/CTC Tool Kit is used to program sequences in the CTC-67.

5.1 Example 1: 2 Axis Application

The sequence will be as below:
- Machine power turned ON
- Axis 0 and Axis 1 home to position 0 (reverse position)
- Axis 0 to move to position 1, then Axis 1 Cylinder to move to position 1.
- Axis 0 Cylinder to return to position 0 (retracted), then Axis 1 to return to position 0.
- Repeat the above sequence once, and then stop.
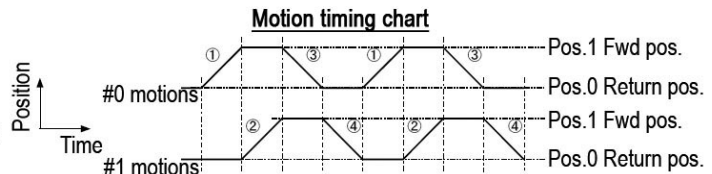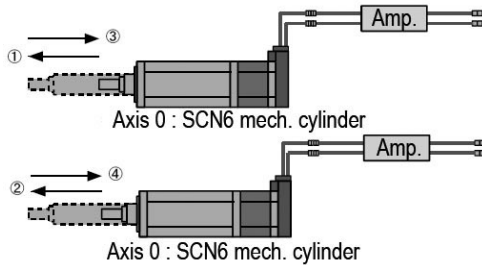
Step	Descriptions
0	Both axes 0 & 1 move to position 0
1	Axes 0 moves forward to position 1
2	Axes 1 moves forward to position 1
3	Axes 0 returns to position 0
4	Axes 1 returns to position 0
5	Axes 0 moves forward to position 1
6	Axes 1 moves forward to position 1
7	Axes 0 returns to position 0
8	Axes 1 returns to position 0
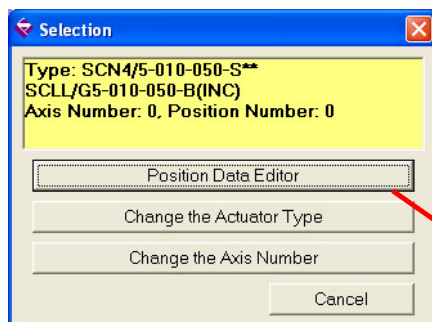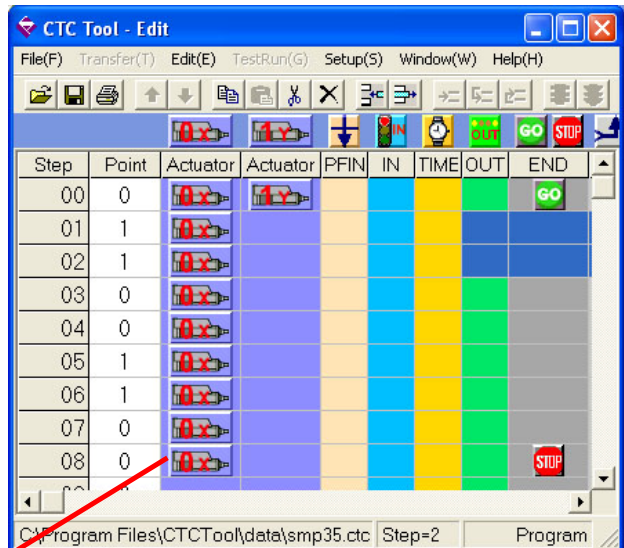
Double click the axis icon to display the dialog menu shown at left.

Click the "Position Data Editor" button to open the Position Data Editor Menu (shown below):
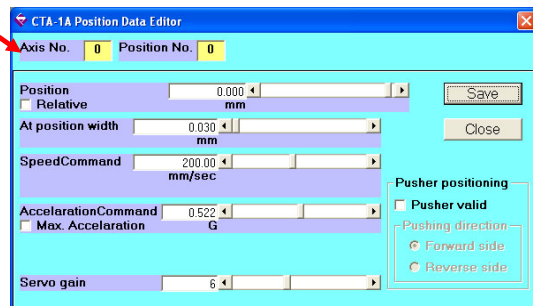
5.2 Example 2: 2 Axis System Using Input and Output Signals and a Timer

The sequence will be as below:
- Machine power turned ON
- Axis 0 and Axis 1 home to position 0 (reverse)
- Axis 0 moves to position 1, then Axis 1 moves to position 1.
- Output 0 (OUT0) turns ON.
- Sequence waits for Input 0 (IN0) to be turned ON.
- After the input signal is ON, the CTC-67 will turn the output (OUT0) OFF.
- Axis 0 and Axis 1 to move to position 0 (reverse)
- When both axes have finished their moves to position 0, the sequence will run a timer for 1 second.
- When the timer is finished, Axis 0 will move to position 1, and then Axis 1 will move to position 1.
- When the Axis 1 move is complete the CTC-67 to turn Output 0 (OUT0) ON.
- Axis 0 will move to position 0, and then the CTC-67 will turn Output 0 (OUT0) OFF.
- Axis 1 will move to position 0, after which the sequence will end.

Motion timing chart
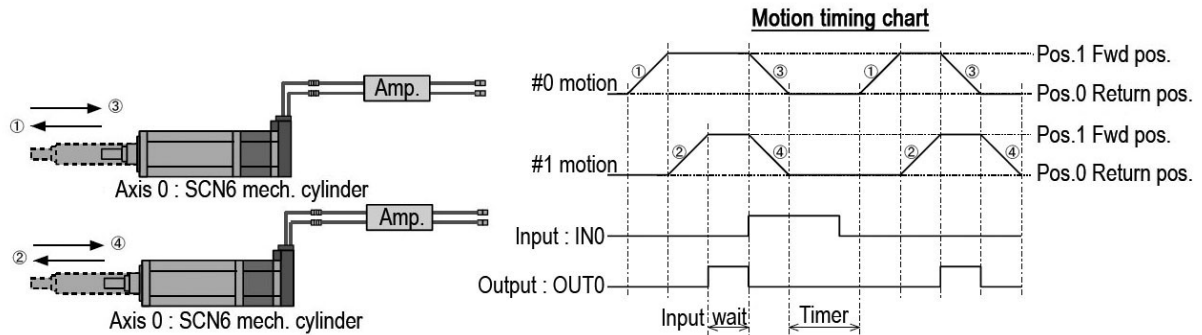
| Step	Descriptions
0	Both axes 0 & 1 move to position 0
1	Axes 0 moves to position 1
2	Axes 1 moves to position 1, then turn OUT0 ON
3	Wait for IN0 ON. Then turn OUT0 ON
4	Both axes 0 & 1 move to position 0, then start timer
5	Axes 0 moves to position 1
6	Axes 1 moves to position 1, then turn OUT0 OFF
7	Axes 0 moves to position 0, then turn OUT0 OFF
8	Axes 1 moves to position 0
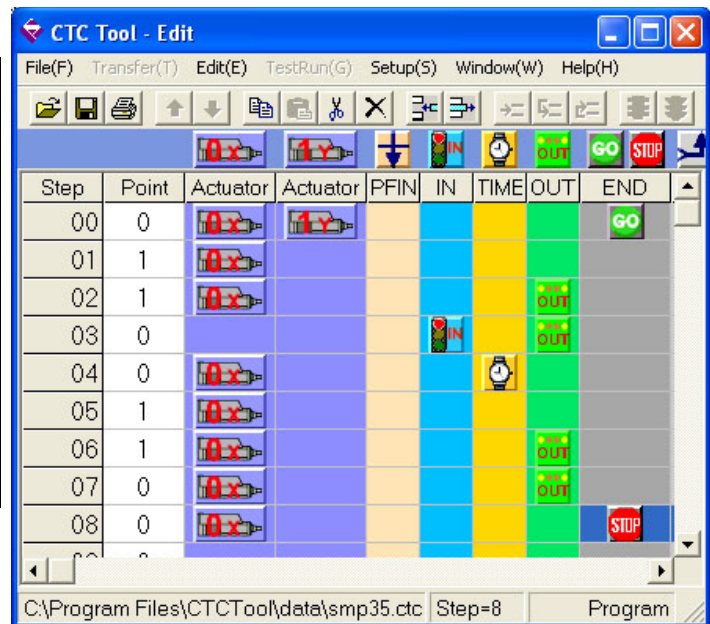
5.3 Example 3: Tray Lifting and De-Stacking

This sequence will lift and de-stack a pile of trays using the SCN5 Mechatronics Cylinder. The conveyor is driven continuously by a simple motor, and timing for the next de-stack motion is given by the tray detect sensor signal as shown below:

Tray detect sensor (IN1)

Axis 1 mech cylinder

Axis 2 mech cylinder
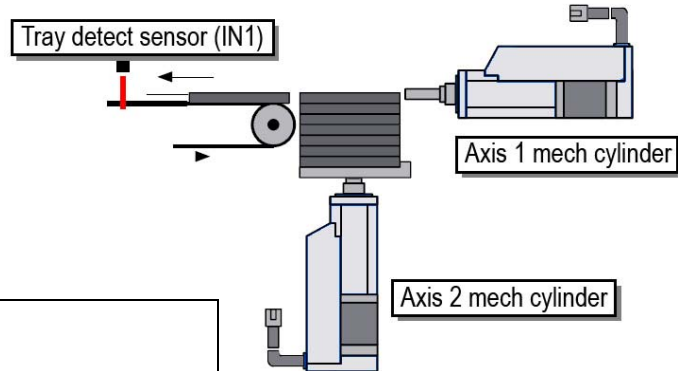
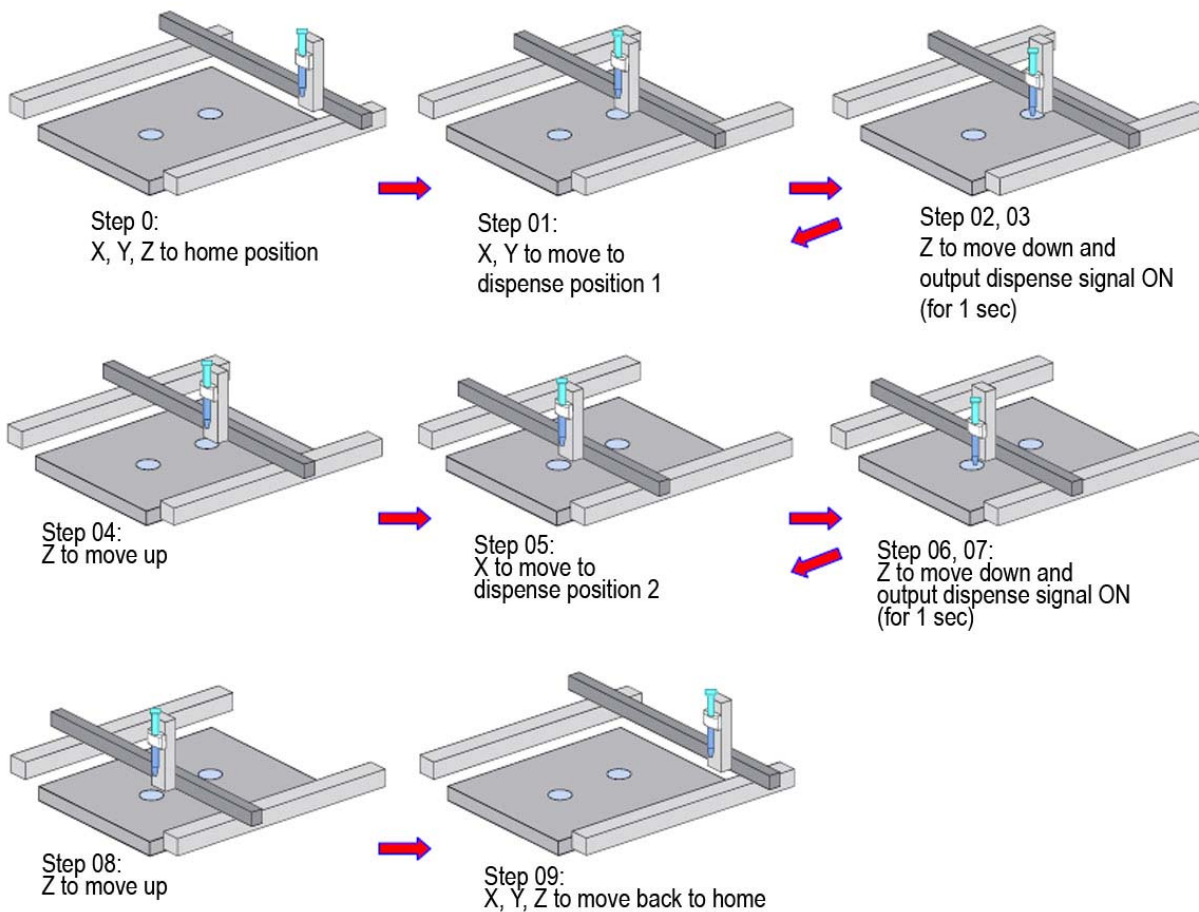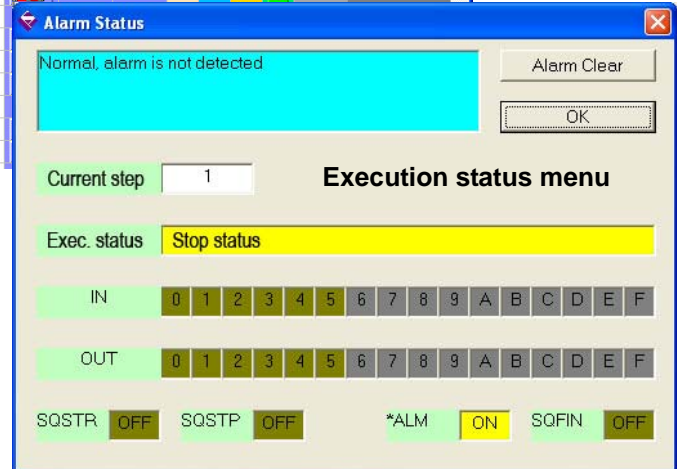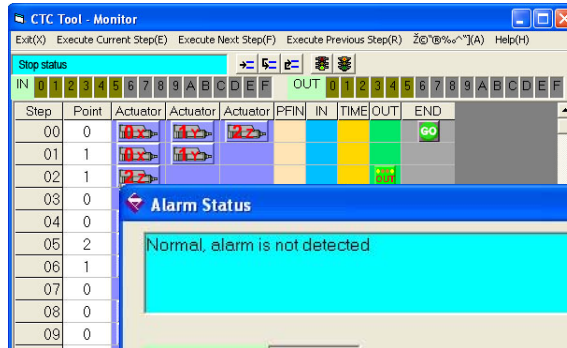| Step	Descriptions
0	Both axes to stack full position; wait for start signal
1	Axes 1 moves forward to push tray
2	Axes 1 returns
3	Axis 0 raises stack by one tray; sequence waits for IN0 signal
4	Axis 1 moves forward to push tray
5	Axes 1 returns
6	Axis 0 raises stack by one tray; sequence waits for IN0 signal
7	Axis 1 moves forward to push to push tray
8	Axes 1 returns
9	Axis 0 raises stack by one tray; sequence waits for IN0 signal
10	Axis 1 moves forward to push tray
11	Axis 1 returns
12	Axis 0 raises stack by one tray; sequence waits for IN0 signal
13	Axis 1 moves forward to push tray
14	Axis 1 returns
15	Axis 0 raises stack by one tray; sequence waits for IN0 signal
16	Axis 1 moves forward to push tray
17	Axis 1 returns
18	Axis 0 raises stack by one tray; sequence waits for IN0 signal
19	Axis 1 moves forward to push tray
20	Axis 1 returns
21	Axis 0 raises stack by one tray; sequence waits for IN0 signal
22	Axis 1 moves forward to push tray
23	Axis 1 returns
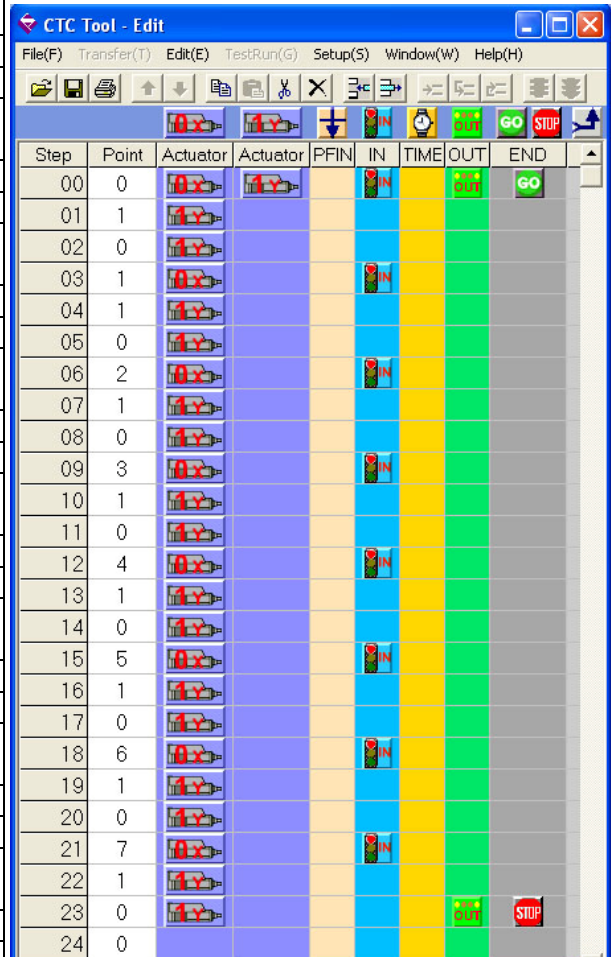
5.4 Example 4: Dispensing Application

We will assume the following data are programmed into the actuators prior to sequence programming:

	Position 0	Position 1	Position 2
X Axis Mech Cylinder (Axis 0)	0 mm	25 mm	75 mm
Y Axis Mech Cylinder (Axis 1)	0 mm	50 mm	-
Z Axis Mech Cylinder (Axis 2)	0 mm	50 mm	-

**Dispenser Program Example
(2 Places)**

Step 0:
X, Y, Z to home position

Step 01:
X, Y to move to
dispense position 1

Step 02, 03
Z to move down and
output dispense signal ON
(for 1 sec)

Step 04:
Z to move up

Step 05:
X to move to
dispense position 2

Step 06, 07:
Z to move down and
output dispense signal ON
(for 1 sec)

Step 08:
Z to move up

Step 09:
X, Y, Z to move back to home
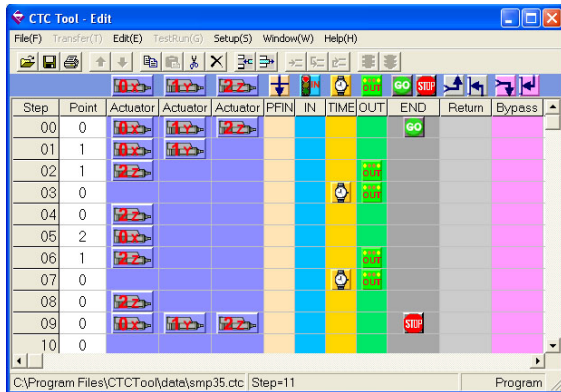
5.5 Example 5: 3-Axis Bar Code Printer Driver

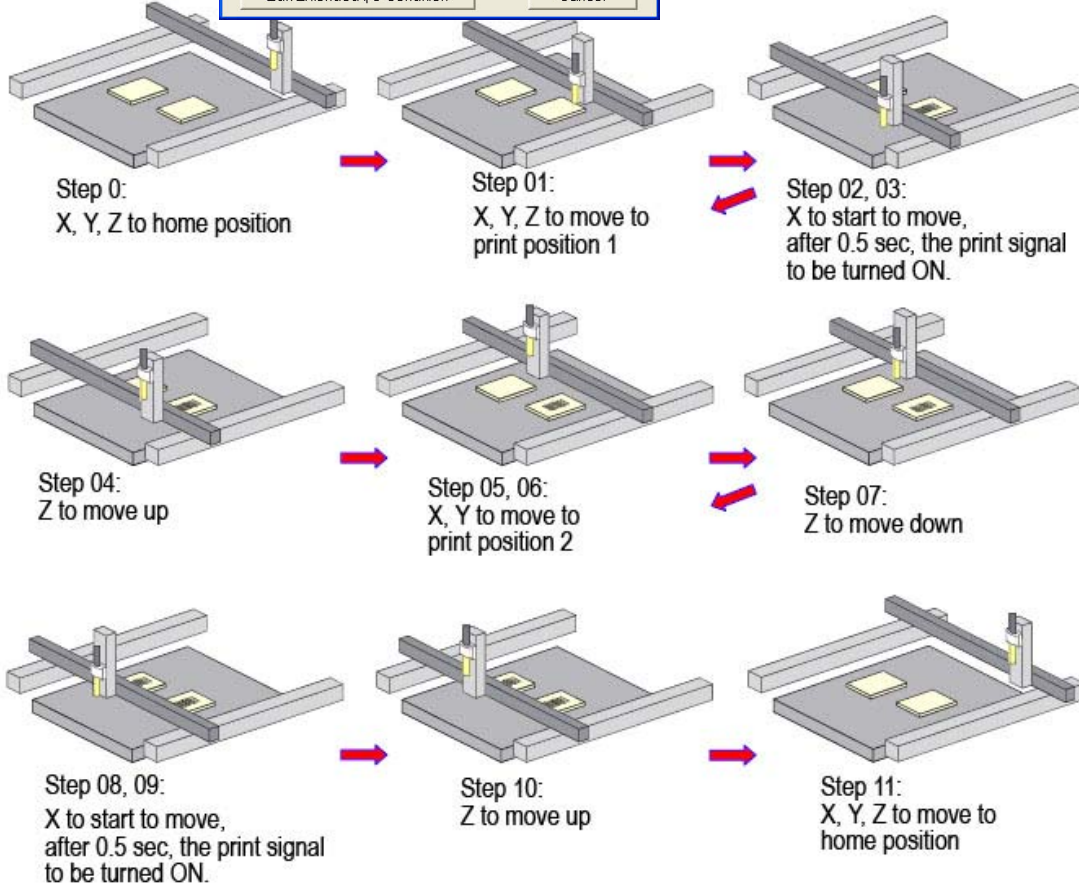*We will assume the following data are programmed into the actuators prior to sequence programming:*

	Position 0	Position 1	Position 2
X Axis Mech Cylinder (Axis 0)	0 mm	100 mm	200 mm
Y Axis Mech Cylinder (Axis 1)	0 mm	100 mm	200 mm
Z Axis Mech Cylinder (Axis 2)	0 mm	30 mm	-

Program Example

Step 0:
X, Y, Z to home position

Step 01:
X, Y, Z to move to
print position 1

Step 02, 03:
X to start to move,
after 0.5 sec, the print signal
to be turned ON.

Step 04:
Z to move up

Step 05, 06:
X, Y to move to
print position 2

Step 07:
Z to move down

Step 08, 09:
X to start to move,
after 0.5 sec, the print signal
to be turned ON.

Step 10:
Z to move up

Step 11:
X, Y, Z to move to
home position

6.   Data Upload / Download

The Upload and Download icons are used to transfer files between the CTC-67 and the PC.   This operation requires connecting the PC and the CTC-67 via serial cable (D-SUB 9 pin for both ends, female, cross cable wiring).

Download (PC→CTC67)

Upload (CTC67→PC)
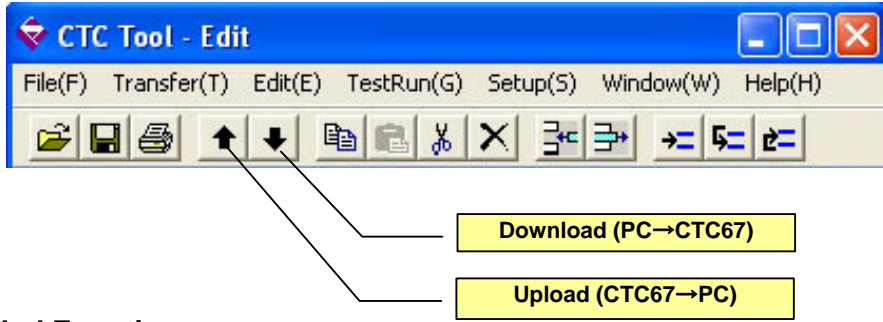
7.   Extended Functions

7.1 Creating a Program with Multiple Start Points

When the "GO" icon is placed in a step the icon can be set to look for certain combinations of the binary inputs.   This allows the user to create a program with multiple start points, and select the start point at time of program initiation (SQSTR ON) by changing the status of the inputs.   The IN0 ~ IN3 inputs function as 4-bit binary code to specify 16 program numbers (0 ~ 15).   The selected sequence will end upon encountering the first step of the sequence which includes the end icon and the sequence completion signal (SQFIN) will turn on.

Sequence Start Maker (Double-Click the "GO" Icon)	Input conditions when SQSTR turns ON			
	IN0	IN1	IN2	IN3
Program 0	OFF	OFF	OFF	OFF
Program 1	ON	OFF	OFF	OFF
Program 2	OFF	ON	OFF	OFF
Program 3	ON	ON	OFF	OFF
Program 4	OFF	OFF	ON	OFF
Program 5	ON	OFF	ON	OFF
Program 6	OFF	ON	ON	OFF
Program 7	ON	ON	ON	OFF
Program 8	OFF	OFF	OFF	ON
Program 9	ON	OFF	OFF	ON
Program 10	OFF	ON	OFF	ON
Program 11	ON	ON	OFF	ON
Program 12	OFF	OFF	ON	ON
Program 13	ON	OFF	ON	ON
Program 14	OFF	ON	ON	ON
Program 15	ON	ON	ON	ON

Drag the [GO] to the desired step for the start point.   The Input Condition Setup window will appear.

7.2. Forcing All Outputs OFF Upon SQSTP

By default the CTC-67 will maintain the last state of the outputs when the sequence is forced to stop by the SQSTP input. By using the Parameter menu in the Expert Mode it is possible to set the CTC-67 such that all outputs will be forced OFF upon a SQSTP input.

(1) Click [Window]

(2) Click [Expert]

(3) Click [Window]

(4) Click [Parameter]

(5) Click [Step 00 of this column]

(6) Click [1]

7.3. Enabling the Subroutine Loop Counter

Part or all of a sequence can be repeated a set number of times by enabling the loop counter. This setting is controlled from the Parameter menu. See section 4.12 for details on use.

(1) Click [Window]

(2) Click [Expert]

(3) Click [Window]

(4) Click [Parameter]

(5) Click [Step 00 of this column]

(6) Click [1]

(7) Click [Window]

(8) Click [Program]

(9) Click [Easy]

Please enter the sub-routine repeat time.
0.10 sec means 10 time repeat

7.4. Enabling the Cycle Time Monitor Function

The CTC-67 has the ability to monitor the running time of its cycle and output an error if the preset time is exceeded.   If the cycle time monitor is enabled, a timer setting in the end step of the sequence will serve as the cycle time-out limit. If this value of the timer in the final step is 0, the cycle time won't be monitored.

(1) Click [Window]

(2) Click [Expert]

(3) Click [Window]

(4) Click [Parameter]

(5) Click [Step 00 of this column]
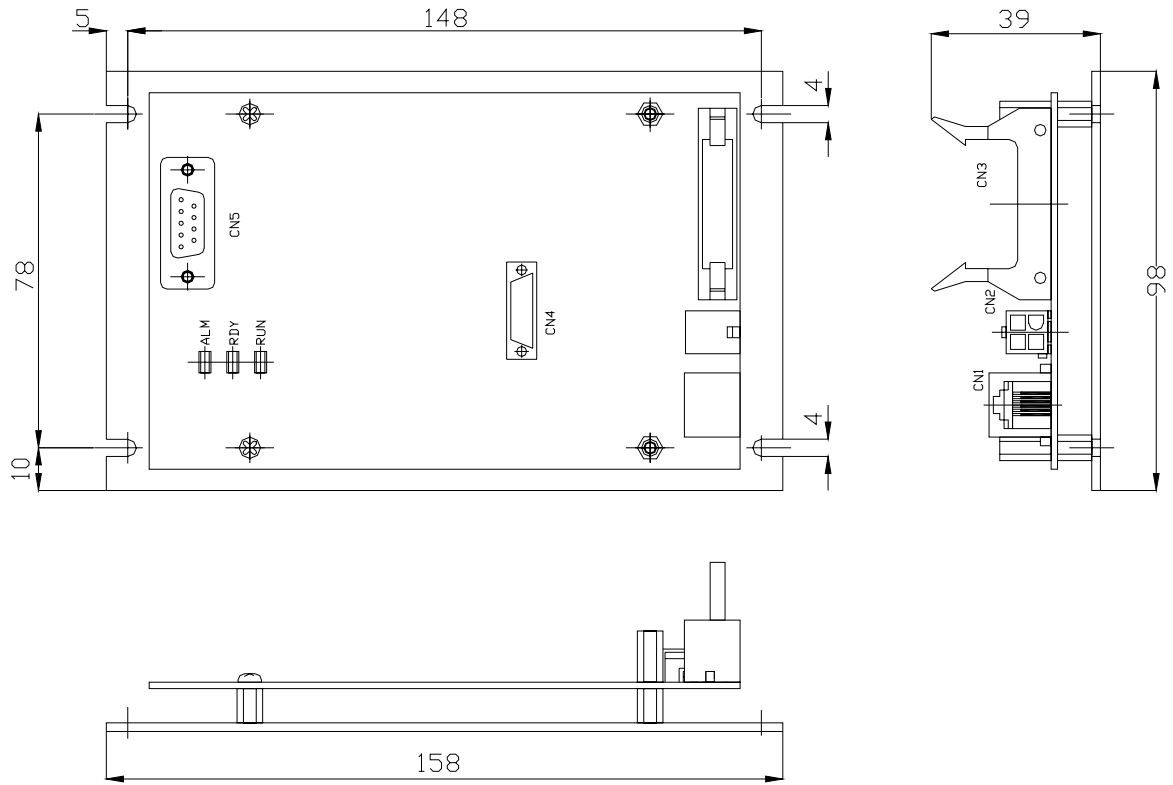
(6) Click [1]

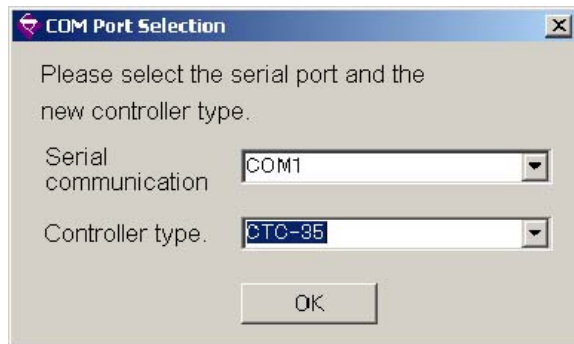(7) Click [Window]

(8) Click [Program]

(9) Click [Easy]

Please enter the cycle time. (5.0 sec in this example)
Please click [OK]

8. Dimensions

148

5

39

4

78

10

4

CN5

ALM RDY RUN

CN4

CN3

CN2

CN1

98

158

Appendix A.   Converting a Program from CTC-33 Format

The CTC-67 can run more program steps than the CTC-33, so the file format for the 2 controllers is different.
CTCTOOL Ver1.10 and newer can convert one program format to the other.
For example, if necessary to convert a CTC-33 sequence to CTC-67 format, please follow the steps below:

- Start CTCTOOL so that the communication port selection dialog box comes up
- Select CTC-67 in the box of controller model
- Open the CTC-33 file
- The CTC-33 file will be automatically converted to the CTC-67 format.
- Save the new file to CTC-67.
- The new file in the CTC-67 is identical to the original program from the CTC-33.

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Please feel free to contact us for further assistance and/or any questions.
Please note that the specifications may be changed without notice.