INSTRUCTION GUIDE

Gang Programmer

MTI-100u (USB Type)
MTI-100   (Parallel Type)

Release Date : 08.Jul.2014

Table of Contents

1.Introduction

The gang programmer is a tool designed for programming up to 8,10,12 flash
microcontroller of various manufacture.
It runs in either remote or standalone mode.

In Remote Mode, the gang programmer is connected to a PC through
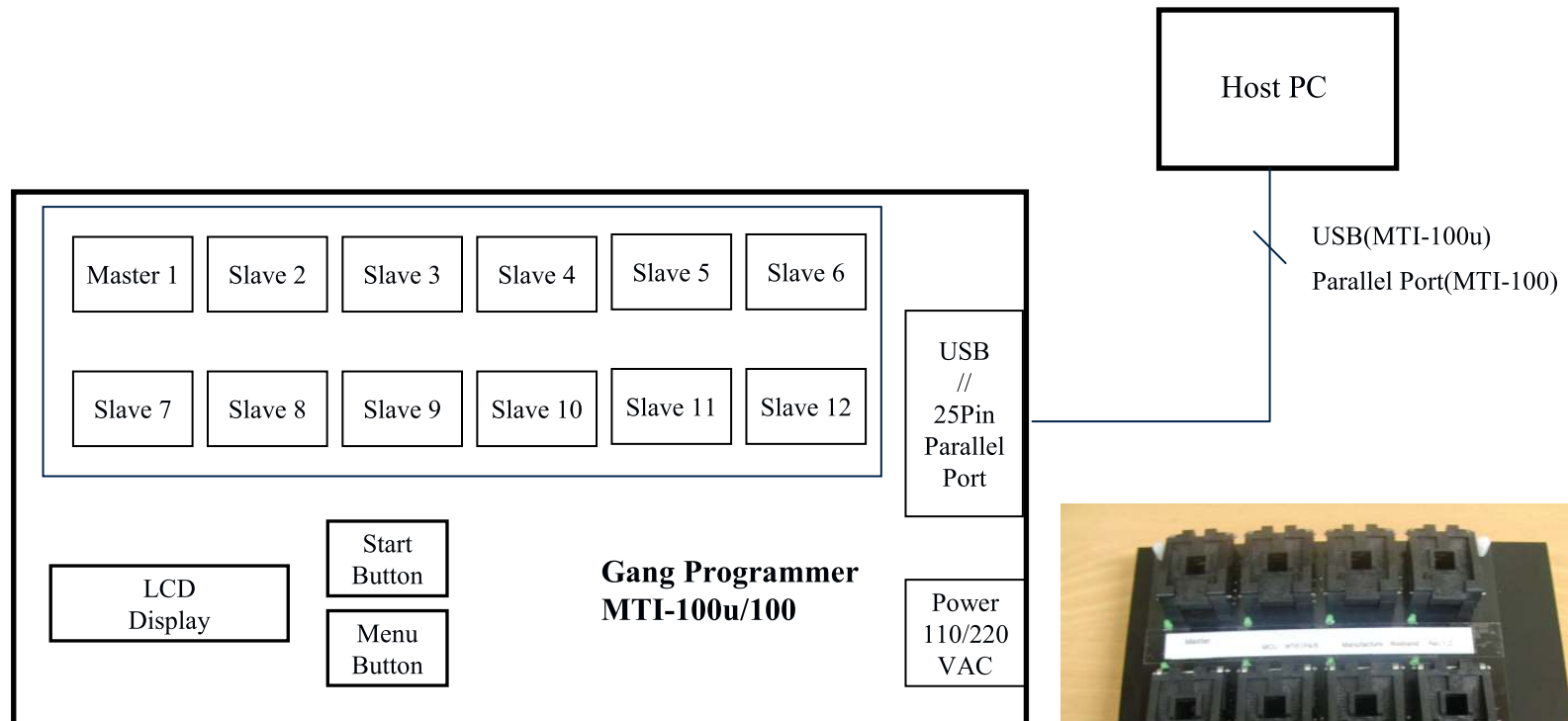USB or parallel port with attached cable.
In this mode, the programmer read the Intel .hex or Binary object code format,
and then program to Internal Memory and Master Socket MCU.

In Stand-alone Mode, the microcontroller can be programmed by simple key
operation directly.

Led Status : blanking → Program / Verify / UpLoad Progressing
After Operation Led Status : success (Green) , error (Off).

2. Connection & Block Diagram

Host PC

USB(MTI-100u)

Parallel Port(MTI-100)

Master 1	Slave 2	Slave 3	Slave 4	Slave 5	Slave 6
Slave 7	Slave 8	Slave 9	Slave 10	Slave 11	Slave 12

USB
//
25Pin
Parallel
Port

LCD
Display

Start
Button

Menu
Button

**Gang Programmer
MTI-100u/100**

Power
110/220
VAC

Gang Programmer
MTI-100

Max Tech Corp.

3.Remote Mode (PC)

3-1. **Software Installation**

In remote mode, the gang programmer is connected to a PC through USB or parallel port.   And the gang programmer includes with CD-ROM that contains software installation files.

To install this software, follow these steps.

1)Insert the CD-ROM into your computer system.
2)Make folder for these files on your PC. (ex. C:\Gang)
3)Copy all files to above folder.
4)Run "gangwriter.exe"

** MTI-100 Parallel Type Note :
For Windows95/98/Me the execution file will work directly,
however for Windows NT/2000/XP, you have to install
the communication driver file and reboot ,
and then run "gangwriter.exe".

3-2. Software Operation

1. In remote mode, <u>you should insert the MCU to master socket or port.</u>
   the software operation is explained as follows:

2. To program Master MCU correctly, you should program to internal memory in advance after load file.
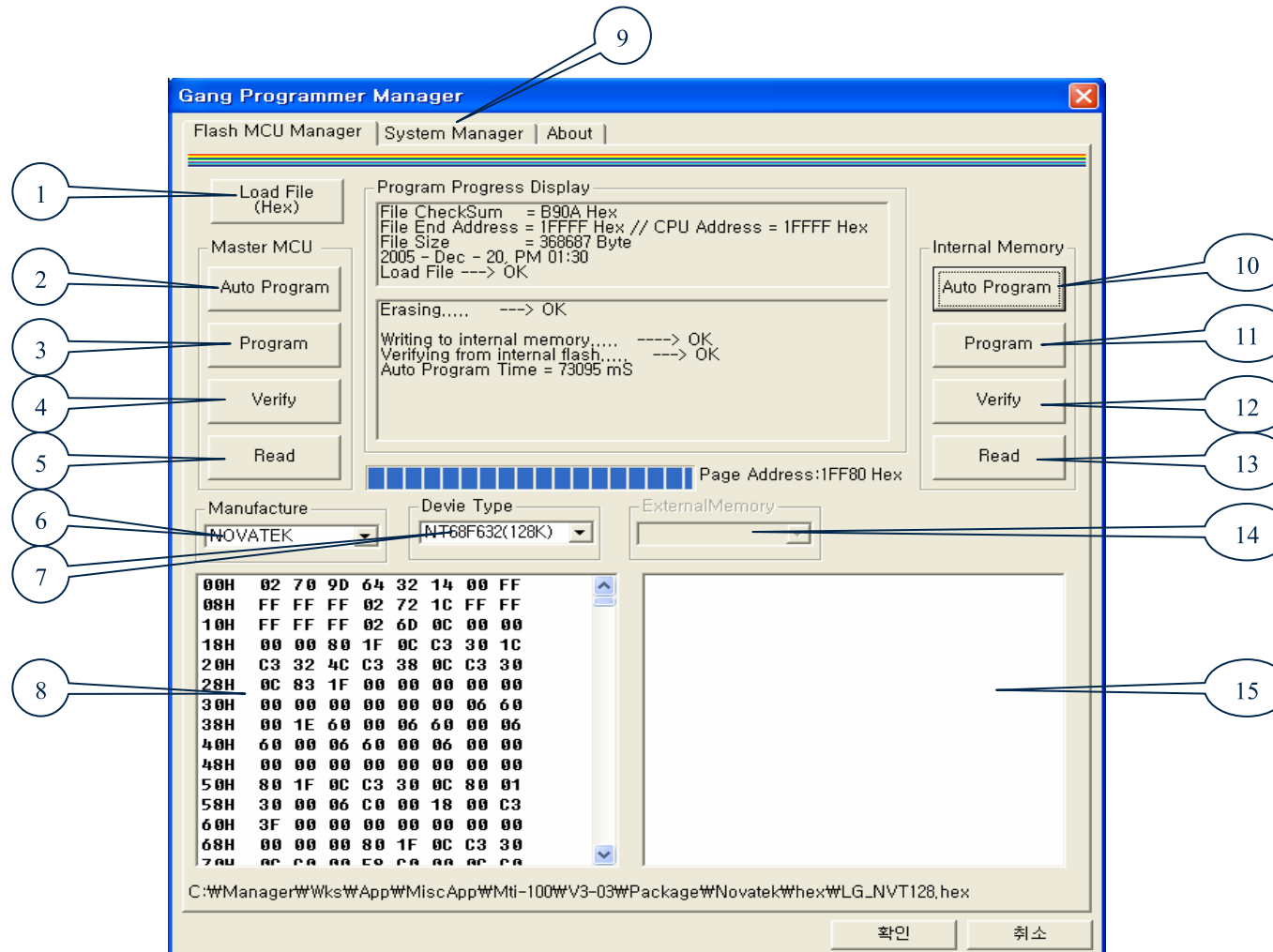
1) **Load File (Hex)** : This button read the PC execution file (Intel Hex, program code).

2) **Auto Program** : Master MCU Auto Program button operates as follows.
     - Writing Master MCU ROM → Verify Master MCU ROM

3) **Program** : Program to Master MCU

4) **Verify** : Compare the data between PC loaded file and Master MCU ROM.

5) **Read** : Read the Master MCU ROM and display the data at window no.8.

6) Manufacture : Selection for Memory or MCU's manufacture.

7) Device Type : Selection for Memory or MCU's type.

8) Display Hex Data.

9) window page for System Upgrade.

10) **Auto Program** : Internal Memory Auto Program button operates as follows.
     - Writing to Internal Memory → Verify Internal Memory

11) **Program** : Program to Internal Memory.

12) **Verify** : Compare the data between PC loaded file and Internal Memory.

13) **Read** : Read the Internal Memory and display the data to window no.15.

14) External Memory : Selection for Monitor Control MCU External Flash Memory.

15) Display Hex Data.

<Note>

1.Master MCU : This MCU is inserted in Master Socket or Port.

2. Internal Memory : This is located in the equipment and this programmer read this data and write to all socket MCU
     and flash memory.

3. To use the gang programmer for the first time, you should down load to this internal memory first.

4. After down load to this Internal Memory, you should Power off and on.

5. To program Master MCU, you should program Internal Memory in advance after load file.

4. Stand – Alone Mode

In stand-alone mode, <u>you should insert at least 2 pieces MCU including master socket.</u>
the gang programmer operate the program , verify and UpLoad function without PC system.

1)Start Button
Execute the program , verify and upload and so on.
Before press this button, you should verify the selection of menu.

2)Menu Button
This button is used for selection of menu. <u>After this button setting, you must power On/Off.</u>
In order to execute this button, press button at least for 3seconds continuously.
<Menu loop>
1>Pro + Ver : Program and Verify
2>Program : Program
3>Verify : Verify
4>UpLoad : Read back from master MCU to Internal Memory
   This is used for loading data from master MCU ROM area and writing to Internal Memory area.
   After uploading, please verify the CheckSum value.
   Before you use the upload function, you should confirm the MCU Type between LCD display and
    master MCU, Otherwise Upload data will be corrupted.
  If you have many kind of model for ROM code, you could use this function easily.
   - UpLoad Order : MCU Chg (Mem.Chg) → UpLoad → Pro + Ver → Power off/On → Start Button
 5>MCU Chg : Microcontroller change

*** Note : When you use program for mass production, you must set "Pro + Ver" mode,
   otherwise the ROM data could not program because of MCU boot ROM.

5. System Upgrade

System Upgrade will be needed when the new device release or software function upgraded.

< Upgrade Method>
1. Connect the USB or parallel cable between Gang Programmer and PC system.
2. Power on the gang programmer.
3. Load file1,file2 and file3 at correct position.
4. Press the System Upgrade button.
5. After System Upgrade, you must power off/on the gang programmer.

Warning : Don't mis-load file for file1, file2, file3 .
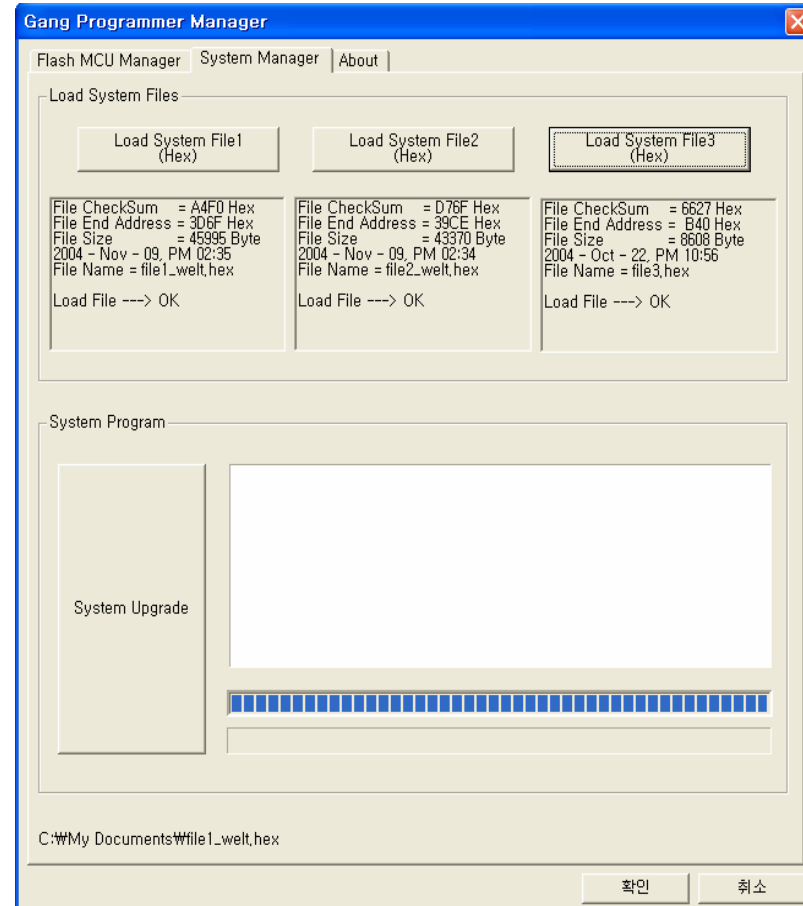
6.Socket Board

1. Socket Board design will be changed by MCU or flash memory type.
2. Regarding to DSUB Socket Board
   <Specification>
   - Power supply with DC Jack +5V
   - Power supply from DSUB Board's No.9 pin
   - DSUB #5,#6,#7,#8,#11 pins are connected to GND pattern.
   -

3. DSUB Socket Board 구성

Master 1	Slave 2	Slave 3	Slave 4
Slave 8			Slave 5
Slave 7		DC Jack	Slave 6
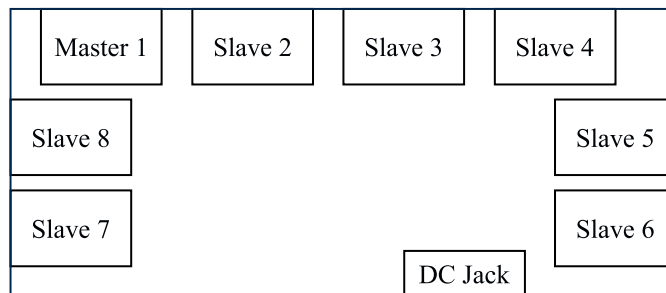
4. Refer to Manufacture's Warning.

7.Comparison of MTI-100u and MTI-100

Model	Communication Port	Port Number	Support Mfg.
MTI-100u	USB	10 ~ 12 EA	ADSemi, Coreriver, Mstar, Radippulse, Weltrend, Semisens,Novatek
MTI-100	Parallel	10 EA	ADSemi, Coreriver, Weltrend, Mstar, Samsung, ST, Toshiba

8.Components

1. MTI-100 Gang Programmer → 1PCS

2. USB(Parallel) Cable →   1PCS

3. Installation Disk → 1PCS

4. Manual File

9.Manufacture's Warning

1. CORERIVER(MTI-100u/MTI-100)

1) After power on, you have to check the CheckSum Data, otherwise the MCU will be fault product
2) After complete program, you have to check the EndAddress Data, otherwise the MCU will be fault product.
3) Gang programmer person always can check the CheckSum and EndAddress, so make chart for all model's CheckSum and EndAddress.
4) The specification of 10(12) port external 4pin connector is SMW250-4Pin Angle Type. Manufacture is Yeonho Electronics.
5) Refer to picture as below for 4Pin pin-map external port.
6) MCU Chg(change) and Upload function doesn't use at this Coreriver version.

* Coreriver IC Memory Size & CheckSum Address

Device Type	MemorySize (Last Address)	CheckSum Address
TC32	8KByte (0x1FFF)	0x1FDF
TC32M	16KByte(0x3FFF)	0x1FDF (0x3FFF)
TC32n	16KByte(0x3FFF)	0x1FDF (0x3FFF)
TC34n_1	31.7KByte(0x7BFF)	0x7BFF
TC370	32KByte(0x7FFF)	0x7FFF
TC350	8KByte(0x1FFF)	0x1FFF

Model Information
<TC3xxK Series>
 1.TC3xxK (IC Size : 0x3FFF(16KByte))

<TC32 Series>
 1.TC32   (IC Size : 0x1FFF(8KByte)) The checksum doesn't count last 32byte.
 2.TC32M (IC Size : 0x3FFF(16KByte)) has show checksum (Max. 0x1FCF)
 3.TC32n (IC Size : 0x3FFF(16KByte)) has show checksum (Max. 0x1FCF)
 4.TC34n_1 (IC Size : 0x7BFF(31KByte))
 5.TC30Q (IC Size : 0xFFFF(64KByte))
 6.TC300S (IC Size : 0x7FFF(32KByte))

<TC350 Series>
 1.TC350 (IC Size : 0x1FFF(8KByte))
 2.TC370 (IC Size : 0x7FFF(32KByte))
 3.TC380 (IC Size : 0x3FFF(16KByte))
 4.TC390 (IC Size : 0x7FFF(32KByte))

Data   GND   Vcc   Clock

1-1. CORERIVER2(MTI-100u/MTI-100)

1) Coreriver2's all operation is the same as conventional Coreriver.
2) Coreriver2's upper socket board is different from the conventional Coreriver.   [4pin → 5pin connector], [Add Vpp High Voltage Supply line]
3) When program ATOM120, Use 5pin connector.
4) When program ATOM120, 1K,2K,4K BYTE program mode is fixed, when you setting the device type..
5) When program ATOM120, Press Verify button on PC , you can see the CFGWD Data of current IC connected master port.
6) The specification of 12 port external 5pin connector is SMW250-5Pin Angle Type. Manufacture is Yeonho Electronics.
7) Refer to picture as below for 5Pin pin-map external port.
8) MCU Chg(change) and Upload function doesn't use at this Coreriver2 version.

* Coreriver IC Memory Size

Device Type	MemorySize (Last Address)	
ATOM120	1K,2K,4KByte(0xFFF)	
ATOM130	1K,2K,4KByte(0xFFF)	

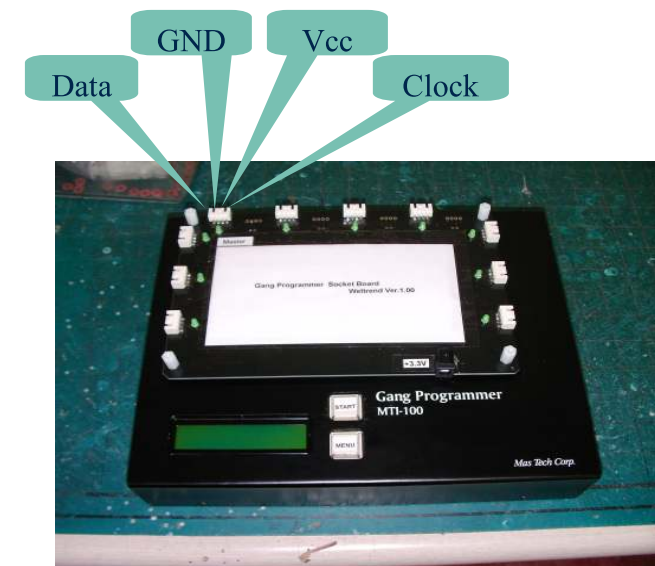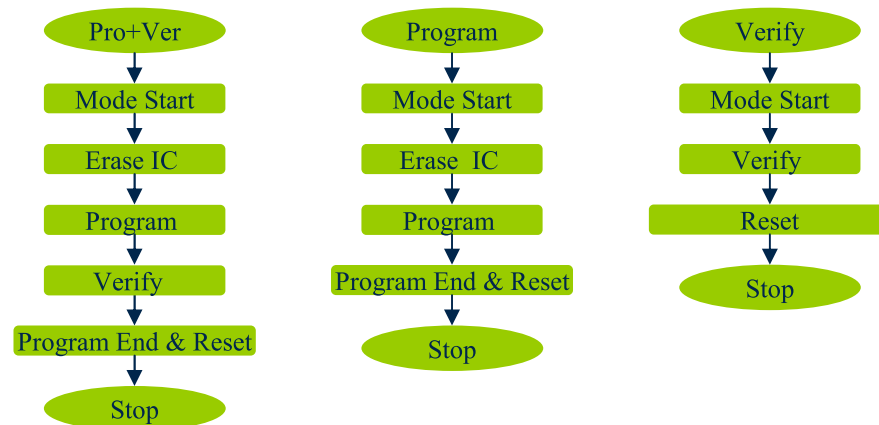Data   GND   Vcc   Clock   Vpp(+7.5V)

2. CYPRESS(MTI-100u)

1) After power on, you have to check the CheckSum Data, otherwise the MCU will be fault product
2) After complete program, you have to check the EndAddress Data, otherwise the MCU will be fault product.
3) Gang programmer person always can check the CheckSum and EndAddress, so make chart for all model's CheckSum and EndAddress.
4) The specification of 10 port external 4pin connector is SMW250-4Pin Angle Type. Manufacture is Yeonho Electronics.
5) Refer to picture as below for 4Pin pin-map external port.
6) MCU Chg(change) and Upload function doesn't use at this Coreriver version.

7)Program Flow
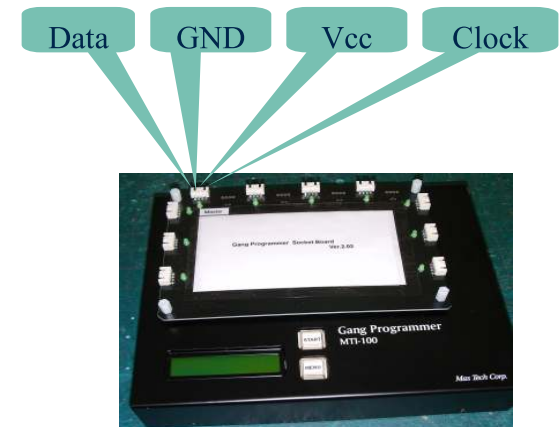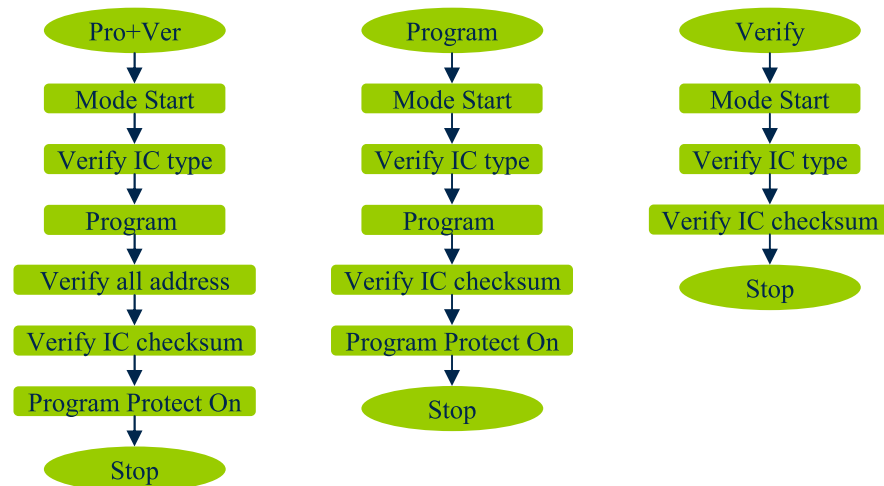
3. Weltrend(MTI-100)

1) After power on, you have to check the CheckSum Data, otherwise the MCU will be fault product
2) After complete program, you have to check the LED status.
3) The specification of 10 port external 4pin connector is SMW250-4Pin Angle Type. Manufacture is Yeonho Electronics.
4) Refer to picture as below for 4Pin pin-map external port.
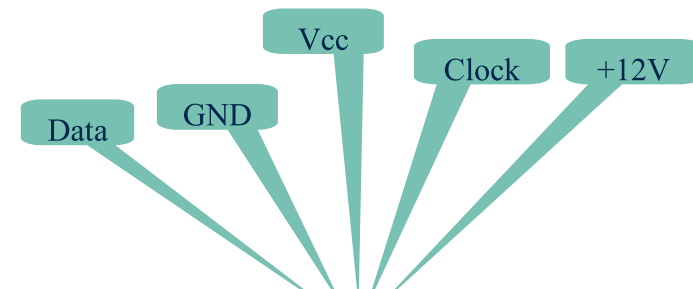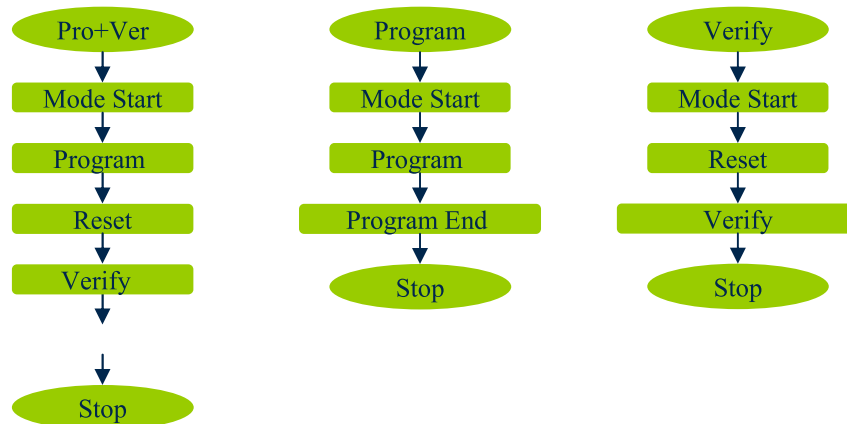5) External Power is +3.3V. This is used only for external target PCB IC.

6)Program Flow

```
  Pro+Ver              Program              Verify
     │                    │                   │
  Mode Start          Mode Start          Mode Start
     │                    │                   │
   Erase IC            Erase  IC            Verify
     │                    │                   │
   Program             Program              Reset
     │                    │                   │
   Verify          Program End & Reset      Stop
     │                    │
Program End & Reset     Stop
     │
    Stop
```

4. ADSemiconductor(MTI-100/MTI-100u)

1) After power on, you have to check the CheckSum Data, otherwise the MCU will be fault product
2) After complete program, you have to check the LED status.
3) The specification of 10 port external 4pin connector is SMW250-5Pin Angle Type. Manufacture is Yeonho Electronics.
4) Refer to picture as below for 5Pin pin-map external port.
5) External Power is +12V. This is used only for external target PCB IC.
6) Program under no.5 OTP space.

7)Program Flow

Pro+Ver → Mode Start → Program → Reset → Verify → Stop

Program → Mode Start → Program → Program End → Stop

Verify → Mode Start → Reset → Verify → Stop

Data GND Vcc Clock +12V

5. Radiopulse(MTI-100u)

1) After power on, you have to check the CheckSum Data, otherwise the MCU will be fault product
2) After complete program, you have to check the LED status.
3) The specification of 12 port external 5pin connector is SMW250-5Pin Angle Type. Manufacture is Yeonho Electronics.
4) Refer to picture as below for 5Pin pin-map external port.
5) Connect between Radiopulse IC's ISP pin and Vcc(+3.3V) line.
6) When it use under 12 port, connect the port clock wise.
7) The GangWriter.exe's folder must have the \DataBase\Mti-100u_logfile.txt. After PC program execute, you can run the MTI-100u.
8) In order to modify the IEEE Address and Manufacture Code, you can change at a last line of MTI-100u_logfile.txt.

9)Program Flow
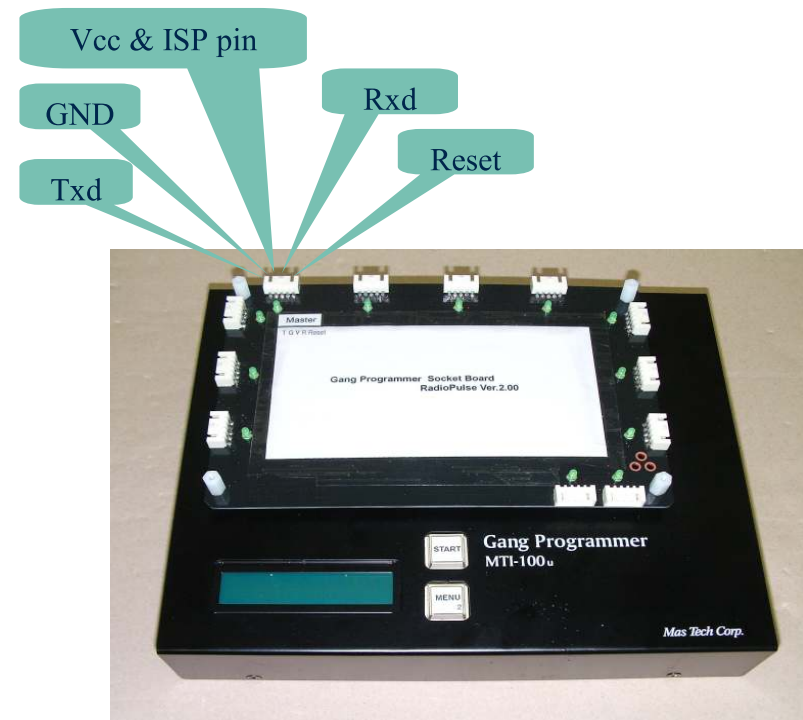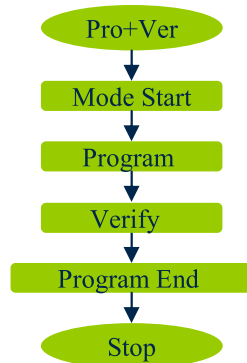
5. Semisens(MTI-100u)

1) After power on, you have to check the CheckSum Data, otherwise the MCU will be fault product
2) After complete program, you have to check the LED status.
3) The specification of 12 port external 5pin connector is SMW250-5Pin Angle Type. Manufacture is Yeonho Electronics.
4) Refer to picture as below for 5Pin pin-map external port.
5) When it use under 12 port, connect the port clock wise.

6)Program Flow
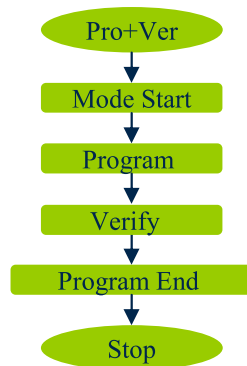
* Semisens IC Memory Size

Device Type	MemorySize (Last Address)	
SN240	16KByte (0x3FFF)	
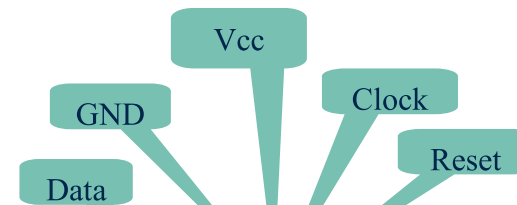
10.Trouble Shooting

1. Unable to communicate for USB

-Solution
  1)Power On the MTI-100u.

  2)Connect the USB Cable between PC and MTI-100u.

  3)Operate the Dip S/W as follows:
      < No.1 On → No.2 On → No.2 Off → No.1 Off >

  4)Execute the "Gangwriter.exe" .

  5)Move to System Manager page, load file1, file2, file3 and then press button the "System Upgrade".

  6)After system upgrade, you must do power Off/On and execute "Gangwriter.exe" again.

2. Parallel Port communication Driver Installation method And
   Frequently when the data communication error occur at Windows XP,2000,NT,Vista,Win7.


 -root cause
   1)Windows' Printer Port Driver interfere the I2C communication..

 -Solution
   1)Update Driver from Parallel Port Driver(LPT1) to 'MasTech I2c Communication Driver2'.

   Desktop → MyComputer → ClickRightMouse → Properties → Harware → Equipment Manager → Port →
   → ECP PrinterPort(LPT1) → ClickRightMouse → Properties → Drivers → Update Driver
   → No, now no connect, → 목록 또는 특정 위치에서 설치 → 검색 안함, 설치할 드라이브를 직접 선택
   → Disk → Search → winDDC Folder (MTPARISP.inf) .
   → Press button install the driver with OK, NEXT.
   → Use after reboot.
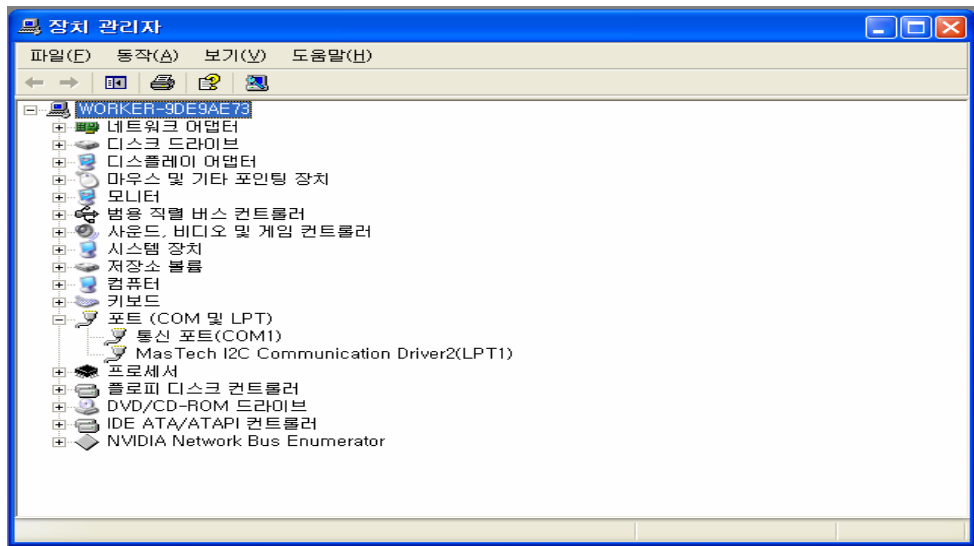
3.To recover original parallel port operation
  - Solution
    1)Desktop → MyComputer → ClickRightMouse →Properties → Hardware → Equipment Manager → Port →
      → MasTech I2c Communication Driver(LPT1) → ClickRightMouse → Properties → Driver → Rollback Driver