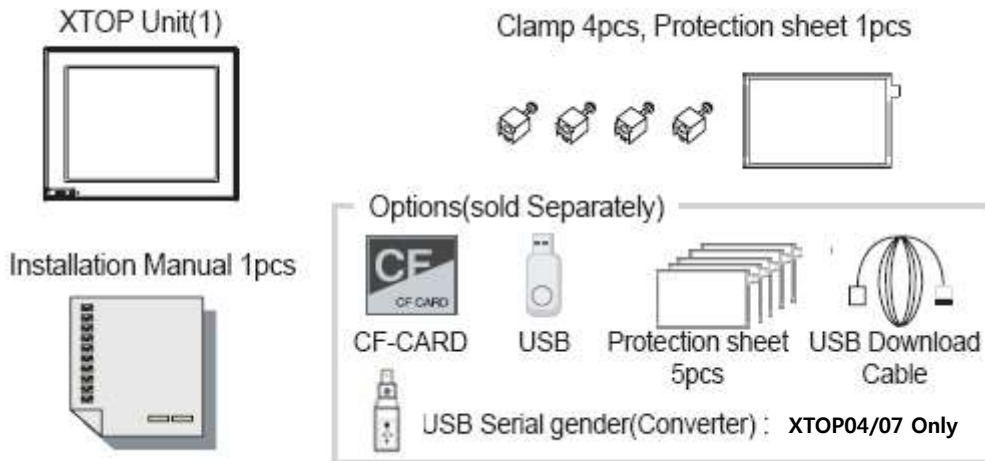# XTOP SERIES Installation Manual

Package Contents

Package contents of XTOP are below. Before using XTOP, please make sure that all of components are in the package.

XTOP Unit(1)

Clamp 4pcs, Protection sheet 1pcs

Installation Manual 1pcs

Options(sold Separately)

CF-CARD   USB   Protection sheet 5pcs   USB Download Cable

USB Serial gender(Converter) : **XTOP04/07 Only**

* Protection sheet is option content in XTOP04TW.

◆ XTOP Series Model Description

XTOP	08	T	V	- E	D	- E
Series	Display Size	LCD type	Resolution	S : S type	A : AC power	E : Ethernet
	04 : 4.3″	T : TFT Color LCD	Q : QVGA(320*240)	E : E type	D : DC power	+ CF Card
	05 : 5.7″	S : STN Color LCD	V : VGA(640*480)	U : U type		
	08 : 8.4″	M : STN Mono LCD	S : SVGA(800*600)			
	10 : 10.4″		X : XGA(1024*768)			
	12 : 12.1″		W: WQVGA(480*272)			
	15 : 15″		WVGA(800*480)			

Safety Precautions

Products to safely and efficiently use it, please read through the contents of this manuals. Precautions for the safety of using the products safely and properly will prevent accidents and risk in advance, so please just do it.

Precautions on Disposal

When you dispose of product and battery, please treat it as industrial wastes. It can create poisonous substances or explosion.

Design Precautions

Install protection circuit on the outside of Products to protect the entire control system when external power supply or Products have problems.

1. As the malfunction & incorrect result of Products could damage the stability of the entire systems and human body, You must install damage preventing interlock circuit such as emergency stop, protective circuits, positioning upper and lower limit switch and interlock for forward/reverse operation.

2. When computer or other controllers communicate and exchange data with products or change operation mode of products, set up protective sequence program in PC or Controller for protecting system from communication error.

3. The output signal or communication lines should be separated from the power line or high tension wire. They should be installed 100mm(3.94 Inch) or more from each other.
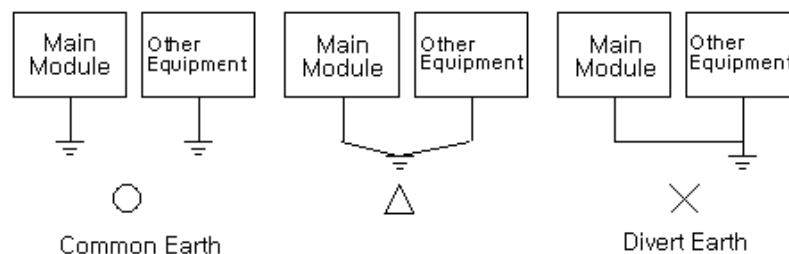
Precautions on wiring

Be sure the wiring is done correctly by checking the product's rated voltage and the terminal layout. Incorrect wiring could result in fire, damage or malfunctions.

Tighten the terminal screw with the specified torque. If the screw of terminal are loose, it could result in short circuit, fire, malfunctions.

The FG Terminal must be used a dedicated ground. Not doing so could result in malfunctions.

1. Grounding should be the Class 3 grounding. The cable for grounding should be more than 2㎟

2. The grounding point be closed to the products and make short the distance to the ground cable if possible. Please see below.

[pic. Grounding Example Diagram]

Precautions on Install

Do not install the location which exceeds allowed temperature. Product can be damaged or shorten the life. Especially Install environment as below should be avoided.

1. Do not Install product to the place which the ambient temperature is out of limits, from 0℃ to 50℃ or on the surface of control board which high pressure equipment is installed.

2. Do not install to the place where strong shock or vibration continuously have impacted on product.

3. The space between back of product and back of control board must be more than 100mm for maintenance and ventilation.

4. Do not storage and operate in the place in direct sunlight. By the strong ultraviolet rays can degrade the quality of LCD Displays.

General Precautions

Do not strike the touch screen with a hard or pointed object (such as drill, driver, pen, etc) or press on the touch screen with too much force. It may cause malfunction of touch panel by damaged front sheet.

Do not use or store in severe vibration environment.

Do not allow water, liquids, foreign substances such as metal powder into product. It can damage product or cause malfunction by an electric shock.

Do not allow water, liquids, foreign substances like metal powder into the space between protection sheet and front sheet.　It may cause malfunction of touch panel and indistinct screen display.

Use a cellular phone or walky-talky more than 30cm (11.81 inch) away from the product.

Specification and Exchanging on Battery

Turn off the product By using a screwdriver, open the battery case of product and exchange the battery. After exchange of battery, Please do assemble the case again.

Because rechargeable battery is built in, the internal memory is backed up when the battery is exchanged.

Specification of Battery

Item	Content
Battery Voltage	DC 3V
Battery Model	CR2032
Battery lifetime	2 Years or more(In case of ambient temperature 25℃)
Rechargeable Battery	Last about 7 days After turn it off 　(When power off, rechargeable battery can back up)

　** Above specification are flexible to the model of XTOP

Serial Interface(RS-232C)

For Serial communication with RS-232C, Please refer below tables of each XTOP Model.

Twisted Pair Cable must be used to communication cable corresponding to each Signal Pins such as RD & SD and SG. The RD & SD should be wired by cross connection. SG must be wired direct connection

Transport Protocol

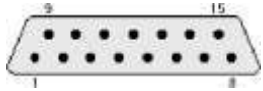| No.	Item		Contents
1	Protocol		Half Duplex
2	Synch.		Asynchronous
3	Communication Distance		About 15m
4	Type of connection		1:1
5	Control Code		ASCII Code or HEXA Code
6	Baud Rate		9600,19200,38400,57600,76800,115200,187500 bps
7	Data Type	Data Bit	7, 8 bit
		Parity Bit	NONE,ODD, EVEN Parity
		Stop Bit	1, 2 bit

The Connector Pins and Signals of COM1(6Pin) with RS-232C Interface

The contents of Below Table are corresponding to all XTOP tyoe.

TYPE	Pin No.	Signal	Direction	Contents
6Pin Female 	2	RD (RxD)	Input	Project file Receive (COM1)
	6	SD (TxD)	Output	Project file Send (COM1)
	3	SG		Signal Ground

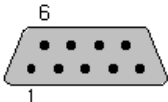The Connector Pins and Signals of COM2(15Pin) with RS-232C Interface

The contents of Below Table are corresponding to XTOP05MQ/05TQ/08TV/08TS S type, E type, and XTOP07 U type.

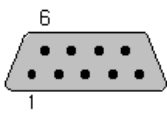| TYPE	Pin No.	Signal	Direction	Contents
15Pin Female (COM2)	1	N/A		Not Used
	2	RD(RxD)	Input	Data Receive
	3	SD(TxD)	Output	Data Send
	4	DTR	Output	Data Terminal Ready
	5	SG		Signal Ground
	6	DSR	Input	Data Set Ready
	7	RTS	Output	Send Request Signal
	8	CTS	Input	Send Enable Signal
	9	RD(RxD)	Input	Project file Receive (Acting as a COM1)
	10	SD(TxD)	Output	Project file Send (Acting as a COM1)
	11~15	RS422/485 Serial Interface		

Note: In case of 2 way communication by using COM1 port, you can download project file such as COM1 Port using above No.9,10 pins.

The Connector Pins and Signals of COM2(9PIN) with RS-232C Interface

The contents of Below Table are corresponding to XTOP Standard Models like XTOP10TV/10TS/12TS/15TX&Economy Model XTOP10TV-ED/ED-E&XTOP04TW

Type	Pin No.	Signal	Direction	Contents
9Pin Female 	1	N/A		Not Used
	2	RD(RxD)	Input	Data Receive
	3	SD(TxD)	Output	Data Send
	4	DTR	Output	Data Terminal Ready
	5	SG		Signal Ground
	6	DSR	Input	Data Set Ready
	7	RTS	Output	Send Request Signal
	8	CTS	Input	Send Enable Signal
	9	N/A		Not Used

The Connector Pins and Signals of COM2(9PIN) with RS-232 Interface of RS-422 Terminal

TYPE	Pin No.	Signal	Direction	Contents
9Pin Female	2	RD (RxD)	Input	RS232C Date Receive
	3	SD (TxD)	Output	RS232C Data Send
	5	SG		Signal Ground

Note: The RS-232 Pins(No.2,3Pin) in the RS-442 Terminal of COM2 Port can be used to download Project file such as COM1 Port.)
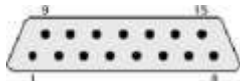
Serial Interface RS-422/485

For Serial Interface with RS-422/485, Product should be connected according to the below items. Twisted Pair Cable must be used to communication cable corresponding to each Signal Pins such as RDA&RDB and SDA&SDB. The shield cable of communication should not be used to signal ground. It may cause failure of communication.

Transport Protocol

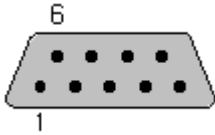| No.	Items		Contents
1	Protocol		Half Duplex
2	Synch.		Asynchronous
3	Communication Distance		About 500m
4	Type of connection		1:N (N ≤ 31)
5	Control Code		ASCII Code or HEXA Code
6	Baud Rate		9600,19200,38400,57600,76800,115200,187500 bps
7	Data Type	Data Bit	7, 8 bit
		Parity Bit	NONE,ODD, EVEN Parity
		Stop Bit	1, 2 bit

The Connector Pins and Signals of COM2(15Pin) with RS-422/485 Interface

The contents of Below Table are corresponding to XTOP05MQ/05TQ/08TV/08TS S type, E type, and XTOP07 U type.

Type	Pin Number	Signal	Direction	Contents
15Pin Female	11	RDA(RD+)	Input	Data Receive(+)
	12	RDB(RD-)	Input	Data Receive(-)
	13	SDA(SD+)	Output	Data Send(+)
	14	SDB(SD-)	Output	Data Send(-)
(COM2)	15	SG		Signal Ground
	1~8	For RS232C Serial Interface		

The Connector Pins and Signals of COM2(9PIN) with RS-422/485 Interface

The contents of Below Table are corresponding to XTOP10TV/10TS/12TS/15TX E type, S type and XTOP04TW U type.

Type	Pin No.	Signal	Direction	Contents
9Pin Female	1	RDA(RD+)		Data Receive(+)
	4	RDB(RD-)		Data Receive(-)
	5	SG		Signal Ground
	6	SDA(SD+)		Data Send(+)
	9	SDB(SD-)		Data Send(-)

Ethernet Communication and Connection

Ethernet Specification

Item	Specification
Ethernet Method	10BaseT / 100BaseT
Speed	10M / 100Mbps
Communication Method	Base Band
Maximum Segment Length	100m (Hub between Node(XTOP)
Communication Cable	UTP (Unshielded Twisted Pair)

RJ – 45 Pin Layout

Connector Front Side

Connector Back Side

① ⑧
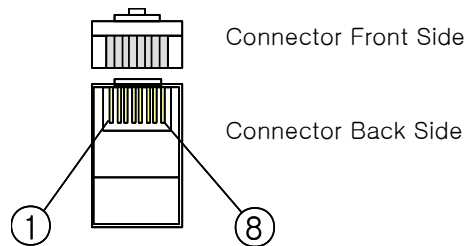
Pin No.	Color	Signal
1	Orange/White	TD+
2	Orange	TD-
3	Green/White	RD+
4	Blue	Not Available in 10BaseT
5	Blue/White	Not Available in 10BaseT
6	Green	RD-
7	Brown/White	Not Available in 10BaseT
8	Brown	Not Available in 10BaseT

In case of Using HUB

When HUB is using, Straight cable should be used.

Ex) Straight cable: Connect by one to one according to above RJ-45 Pin Layout.

In case of do not using HUB

Do not use HUB, when it is connected directly, Cross Cable should be used.

Ex) Crossover cable: Change the Pins of TD+ and RD+, TD- and RD- with above RJ-45 Pin
Layout and connect.

USB Hardware Specification

USB Host Hardware

Item	Specification
USB Interface	OHCI Specification Version 1.0
Communication Method	Control/Bulk
Transfer Speed	500Kb/s –10Mb/s
Support Device	USB Storage (Only M2I Option product is available, Only FAT File Format Available))
	USB Printer (HP PCL Level 3)

USB Device Hardware

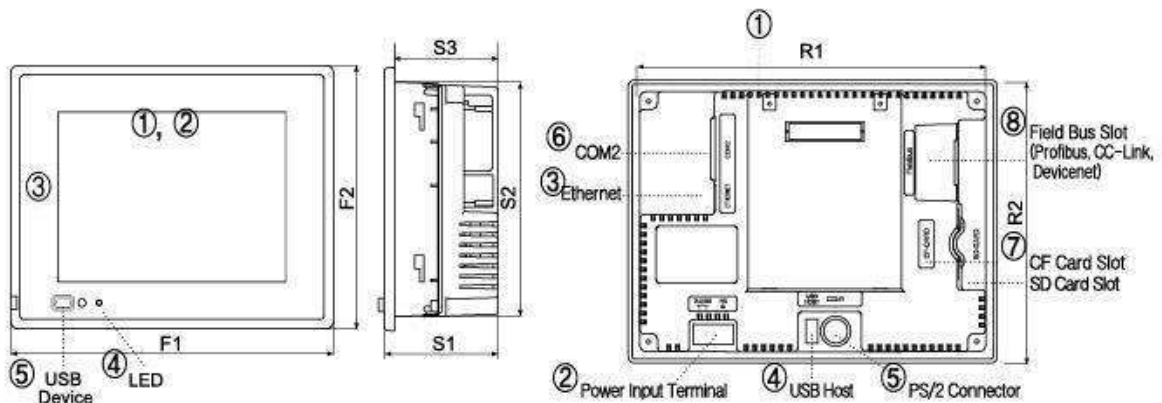| Item	Specification
USB Interface	USB Specification Version 1.1
Communication Method	Control/Interrupt/Bulk
Transfer Speed	500Kb/s –10Mb/s
Supporting OS	Windows 98SE/2000/XP/VISTA/7(32bit)
Cable Length	3m (recommended to use our Option Cable.)
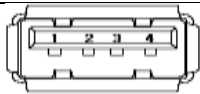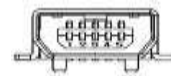
[pic 1] USB Host Port   [pic 2] MINI USB Device Port

Part Names and General Specifications

XTOP05/08 SERIES

[Pic1. Front View]   [Pic2. Side View]   [Pic3. Rear View]

[Table1. Outer Dimension]

Model	FRONT		SIDE			REAR	
	F1	F2	S1	S2	S3	R1	R2
XTOP05 Series	170	138	60	123	54.5	155.5	123.3
XTOP08 Series	232	177	60	165	54.5	220	165

Front Part Names and Specifications

No.	Title		Feature			
1	LCD	Model	05MQ 05MQ-E	05TQ-S 05TQ-E	08TV-S 08TV-E	08TS-S
		TYPE	STN 16 GLAY MONO	TFT 65536 COLOR		
		Brightness	260cd/㎡ 230cd/㎡	450cd/㎡ 400cd/㎡	450cd/㎡ 400cd/㎡	350cd/㎡
		Screen Size	14cm/5.7 Inch		21cm/8.4 Inch	
		Resolution	320X240		640X480	800x600
2	Touch Panel	Touch Type	Analog			
3	Front Sheet		Front Vinyl Cover Sheet for Damp Proof and Dust Proof			
4	Status LED		Status of Power, Communication and CPU			
5	USB Port		USB Download Port			

Rear Part Names and Specifications

No.	Title	No. of Pin	Feature
1	Rubber Packing		Shock Absorber for Panel Mounting
2	Power Input Terminal		Input voltage typical 24VDC
3	ETHERNET Connector		Download and ETHERNET Comm. Application
4	USB Connector		USB Connector for USB Storage
5	PS/2 Connector	6	COM1 Serial Comm. for download/upload
6	RS-232/422C Connector	15	COM2 Serial Communication for Comm. with PLC
7	CF-CARD Connector		CF-Card Memory Option Connector
8	Fieldbus Connector		Extension-Card Connector for Fieldbus or CC Link

Note: XTOP05/08 E type have options for above item No. 3,7,8. Please check the details of each model's specifications.

XTOP10/12/15 SERIES
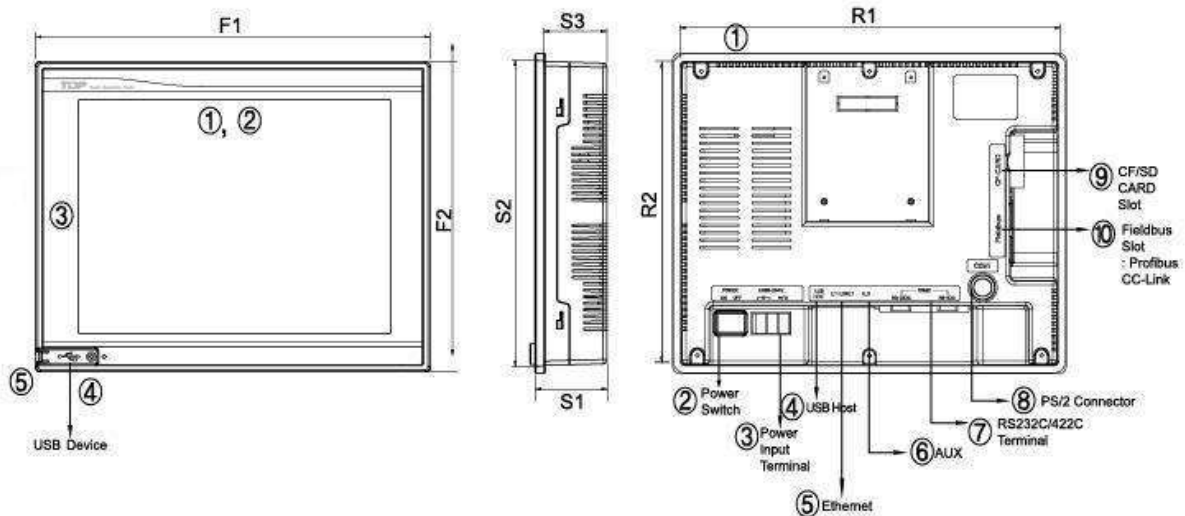
[Pic1. Front View]   [Pic2. Side View]   [Pic3. Rear View]

[Table1. Outer Dimension]

Model	FRONT		SIDE			REAR	
	F1	F2	S1	S2	S3	R1	R2
XTOP10TV-E	270	212	58	199.9	49.8	257.9	199.9
XTOP10TV/TS-S	305	239	58	226.4	51	292.4	226.4
XTOP12TS-S	317	257	58	244.3	51	303.8	244.3
XTOP15TX-S	366	296.5	58	283.5	51	352.8	283.8

Front Part Names and Specifications

No.	Title		Feature			
1	LCD	Model	10TV-S 10TV-E	10TS	12TS-S	15TX-S
		TYPE	TFT 65,536 Color LCD			
		Brightness	380cd/㎡ 350cd/㎡	400cd/㎡	380cd/㎡	350cd/㎡
		Screen Size	26cm 10.4inch		31cm 12.1inch	38cm 15inch
		Resolution	640X480	800X600		1024X768
2	Touch Panel	Touch Type	Analog			
3	Front Sheet		Front Vinyl Cover Sheet for Damp Proof and Dust Proof			
4	Status LED		Status of Power, Communication and CPU			
5	USB Port		USB Download Port			

Rear Part Names and Specifications

| No.	Title	No. of Pin	Feature
1	Rubber Packing		Shock Absorber for Panel Mounting
2	Switch		Power Switch
3	Power Input Terminal	3	Input voltage typical 24VDC
4	USB Connector		USB Connector for USB Storage
5	ETHERNET Connector		Download or ETHERNET Communication
6	RS-232C Connector	9	COM2 RS-232CSerial Comm. for Comm. with PLC
7	RS-422 Connector	9	COM2 RS-422 Serial Comm. for Comm. with PLC
8	PS/2 Connector	6	COM1 Serial Comm. for Download/Upload
9	CF-Card Connector		CF-Card Memory Option Connector
10	FieldBus Connector		Extension-Card Connector for Fieldbus or CC Link

Note: XTOP10TV-E have options for above item No. 5,9,10. Please check the details of each model's specifications.

XTOP04TW-UD
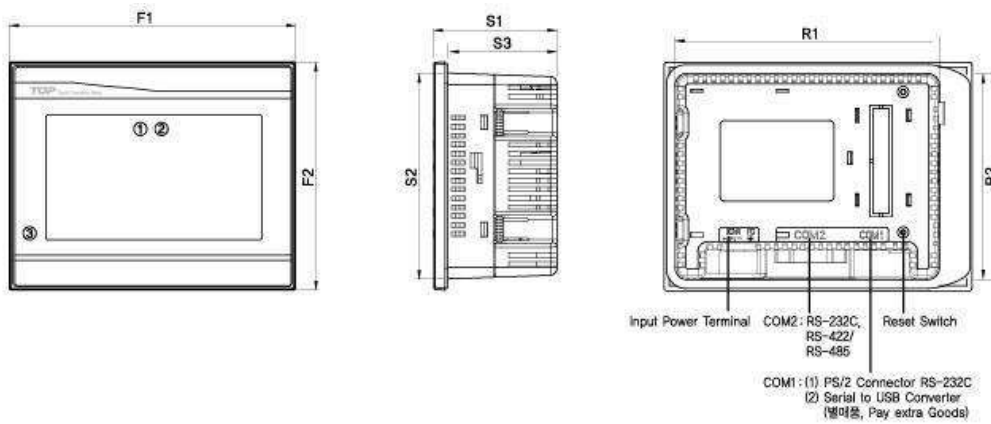
[Pic1. Front View]   [Pic2. Side View]   [Pic3. Rear View]

XTOP07TW-UD
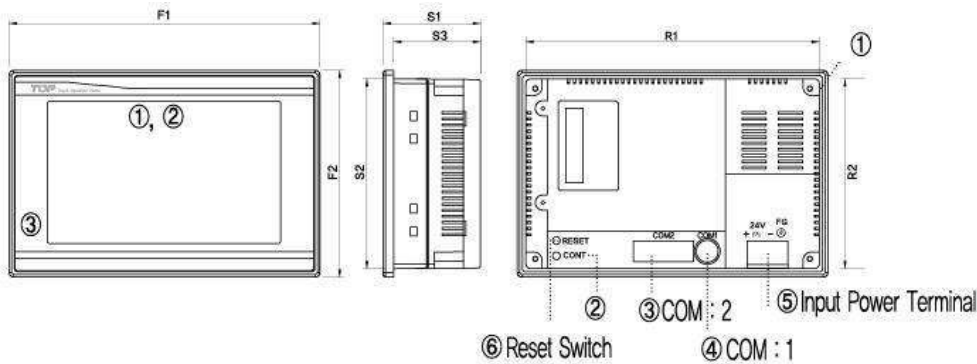
[Pic1. Front View]   [Pic2. Side View]   [Pic3. Rear View]

[Table1. Outer Dimension]

Model	FRONT		SIDE			REAR	
	F1	F2	S1	S2	S3	R1	R2
XTOP04TW-UD	128	102	55	92.3	50	118.3	92.3
XTOP07TW-UD	206	136	64.5	125	57.5	194.5	125

Front Part Names and Specifications

No.	Title		Feature	
1	LCD	Model	XTOP04TW	XTOP07TW
		TYPE	TFT 65,536 Color LCD	
		Brightness	500 cd/m²	350 cd/m²
		Screen Size	4.3 inch	7 inch
		Resolution	480 X 272	800 X 480
2	Touch Panel	Touch Type	Analog	
3	Front Sheet	Front Vinyl Cover Sheet for Damp proof and Dust Proof		

Rear Part Names and Specifications

No.	Title	No. of PIN	설명
1	Rubber Packing		Shock Absorber for Panel Mounting
2	Contrast Volume		Contrast Adjust In this model, Contrast Adjust is possible in [Setup] in Menu mode
3	RS-232C, 422 Connector	15	XTOP04: 9 pin, XTOP07: 15 pin
4	PS/2 Connector or USB	6	For Download/Upload, Serial or USB comm. In USB, it needs USB to Serial converter[Optional]
5	Power Input Terminal	3	Input Voltage 24VDC Typical
6	Reset Button		Reset Switch for XTOP

Installation and Panel Cut Size

For mounting product to the control panel, It should be recommended following below items.

Make a panel cut which product is mounted and insert product to the panel form the front side.
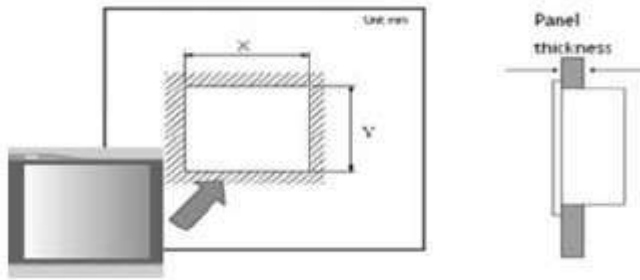
Installation methods should be following by using the supplied installation Clamp 4PCS.
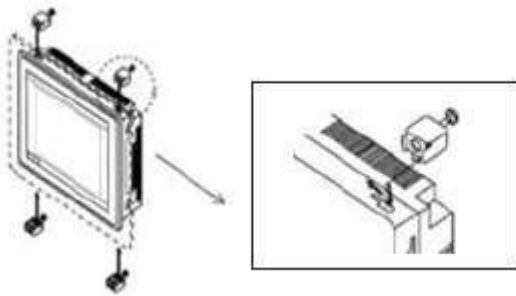
1) Insert the product into the Panel Cut(mounting place). Attach the installation Clamps to the Installation slot of the product and secure the product to the Panel Cut(mounting place) with screw driver.

2) If the screw is over tightened, it may cause the front deformation, thus resulting the touch sensor can't work properly.

The Size of Panel Cut(Mounting Place)

Making the Panel Cut (Mounting Size) per each XTOP Series according to below Table, Before Install the Product.

Measure:[mm]

Model	X(Width)	Y(Height)	Detail Model	Thickness
XTOP05 Series	158	126	XTOP05MQ/05TQ S type, E type	1.6~9.0
XTOP08 Series	222	168	XTOP08TV/08TS S type, E type	
XTOP10 Series	295	229	XTOP10TV/10TS S type	
XTOP10TV-E	260	202	XTOP10TV E type	
XTOP12TS-S	306	247	XTOP12TS S type	
XTOP15TX-S	355	286	XTOP15TX S type	
XTOP04TW	121	95	XTOP04TW U type	
XTOP07TW	199	128	XTOP07TW U type	

Main Menu(SETUP MENU)

• Main Menu

It display TOP type and communication level, version, language, time and you can set it up. If you want to change time or language, you have to touch the value.

Comm. Setup

It can set the parameters of Communication of COM1/COM2 Port, 2 Port(2Way) Communication. N:1 Communication, Ethernet Communication. They should be same value with the parameter of Target PLC.

Note) In case of communication by CPU Module, another word target PLC be set as Loader Protocol in the Target PLC List of Project Information in XDesigner Plus, their value of communication setting are constant by each makers, so It is impossible to change the value of above COM1/COM2 In this Comm. Setup Menu.

Setup

For setting the Product configuration, product have to be changed to the Main Menu Mode, In this Main Menu user can set the value of Communication Setup/Diagnosis/System Information and Set up. Below is the Setup Screen of Main Menu

In Setup Menu Screen, It can set the value of Power on Mode/Initial Screen Number/Screen Save /Buzzer/Latch Address/Printer/Password/Touch Sensitivity/LCD Brightness and Contrast/Initialize all setting.

Dignosis

It can test various items like Test Page Print/Memory Diag./Touch key Diag./Display Diag./Comm. Diag./COM Port Diag./CF Card Diag. Below is the Communication Diagnosis with PLC the most frequently used in Main Menu Items.

Communication Diagnosis

When item No.5 "COM2 Communication Diagnosis: Start" is touched in above Picture, the "COM2 Diagnosis Window" is appeared. This Self Test is simple Diagnosis with sample protocol in communication between PLC and XTOP Series. This test can identify the following. First, The status of wiring with Target PLC, Second, The suitability of PLC Communication Setup, Third, Whether the communication parameters be equally set between PLC and XTOP communication setup. Fourth, In case using Station Number, they are set same both PCL and XTOP. If "Timeout Error" is displayed at the item 3 like above "COM2 Diagnosis" Window, Please look at above 4 items again.

  Note: As to communication with PLC, there are so many PLC or Controller and their user manual according to installing communication. So please download each communication manual in our website. The bulletin board for data downloading is [Customer Center] – [Download Data]-[Communication Manual]. There are explanations for wiring Diagram, Communication Setup and Address Setup in Communication Manual.
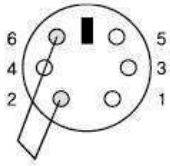
COM Port Self Diagnosis

As above Communication Diagnosis, When starting the Item No.8/9 COM Port Self Diagnosis,

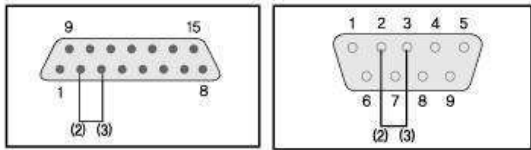It can check the status of COM1 Port & COM2 Port in advance.

Please wiring COM1/COM2 Port as below Pic., Before testing the Self Diagnosis of each COM Port in the Main Menu.

1. COM1 Port Wiring

2. COM2 Port Wiring(RS-232C)

Note: As stated above wiring of Each COM2 Port is set by RS-232C. So It is essential to change the COM2 Serial Signal Level No.5 Item to "RS-232C" in the Comm. Setup of Main Menu.

3. COM2 Port Wiring(RS-422/485)

Note: As stated above wiring of Each COM2 Port is set by RS-422/485. So It is essential to change the COM2 Serial Signal Level No.5 Item to "RS-232C" in the Comm. Setup of Main Menu.

Method of shifting from RUN Mode to Main Menu Mode

Method to make setting screen of XTOP Module. As described earlier, It is the way of making Main Menu Mode of All TOP Series.

[Pic. 1. Turn it on and Touch]   [Pic.2. Main Menu Screen]

1.   Turn the power of XTOP Module off.
2.   While the power was on and the buzzer was beeped, Touch the screen's upper part under the TOP logo on the front sheet.
    Note: When turn on the power while pressing the touch, it does not convert into the Menu mode.
            When the buzzer sound is unable to confirm because of the noise surroundings, the power of touch shall be allowed while continuously press and off on the lower part of the logo.

Screen Calibration steps of XTOP Series

When the Analog touch glass don't work properly, for correcting the touch command, you have the touch pad be calibrated.

- Touch any point
  for calibration.
- 터치를 보정하려면
아무 곳이나 누르시오.

- Touch the center point.
- 화면의 가운데를 누르시오.
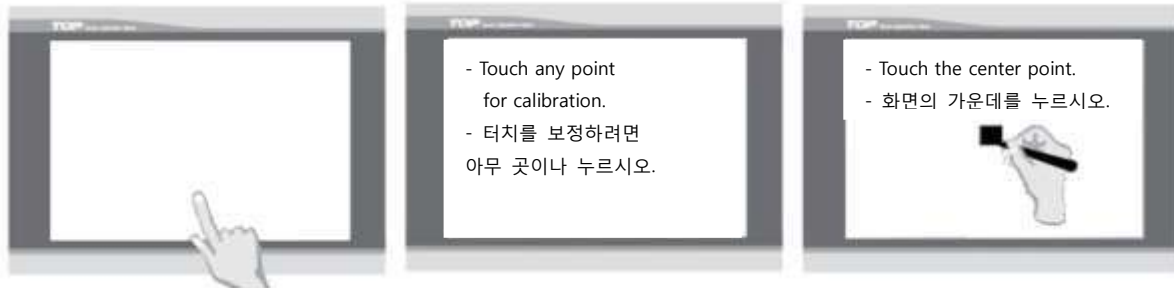
[Pic1. Touch Lower Part] [Pic2. Message Display Before Calibration] [Pic 3 . Point Indicates]

1. Turn the power of XTOP Module off
2. When the power of TOP Module is on, Keep the lower part of the screen is touched
3. When the screen is turned white color, remove your hand from the screen.
4. Then the screen display " Touch any point for Calibration" and the number is counted down.
5. Touch anywhere on the screen before changing this number to "0".
6. Along with the message of Calibration Mode, Touch the black square is indicated in the middle of the screen.
   Continuously touch the upper left, upper right, lower left and lower right part's black square..
   When completed, the calibration is completed together with the message of Data Saving.

When you are going to download project file/Font/OS to XTOP with our USB Cable, It must be need to install USB Driver to your PC. USB Driver of XTOP could not be recognized automatically in your PC. So you have to follow up below methods to install USB Driver in Device Manager of Control Board.

[Pic. Reserach USB Install Driver of Device Manager]

Note) When you install XDesigner Plus Software, Our USB Driver have automatically copied to the designed folder(C:₩ProgramFiles₩M2ICorp₩XDesignerPlus₩usb_driver). So it must be need to install USB Driver manually, please search USB Driver and update it in the Device Manager like above Pictures.

[[Pic. Create M2I USB Device after Installing USB Driver of M2I]

Note) In case of USB to Serial Converter, named USB COMM, the driver must be installed with their CD. If you need it and there is no CD including their Driver file, please ask us anytime through our website or email in customer inquiry.

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- **When using M2I equipment, thoroughly read this datasheet and associated manuals introduced in this datasheet, Also pay careful attention to safety and handle the module properly.**
- **Store this datasheet in a safe place so that you can take it out read it whenever necessary.**