# LS Industrial Systems Co., Ltd.

# XGT(XGK-CPU), XGB(XBC-CPU/XBM-CPU) Series

# CPU Direct Driver

Support version OS V4.0 and over

XDesignerPlus 4.0.0.0 and over

## CONTENTS

Thank you for using TOP series of M2I corporation.
Please read this manual carefully to know connection methods and procedures of "TOP to External device".

# 1. System configuration

System configuration of TOP and "LS Industrial Systems Co., Ltd – XGT(XGK), XGB(XBC/XBM) Series"

| Series | CPU*1) | Link I/F | Comm. type | System setting | Cable |
|---|---|---|---|---|---|
| XGK | XGK-CPUH<br>XGK-CPUA<br>XGK-CPUS<br>XGK-CPUE<br>XGK-CPUU | PADT connection connector (9pin) *2) | RS232 | setting ex 1 ( 4 page ) | cable diagram 1 ( 8 page ) |
| XGB | XBM-D□16S<br>XBM-D□32S<br>XBC-D□32H<br>XBC-D□64H | PADT connection connector (6pin) *2) | RS232 | setting ex 1 ( 4 page ) | cable diagram 2 ( 9 page ) |

*1) Confirm that version written CPU unit label is 1.1 and over.

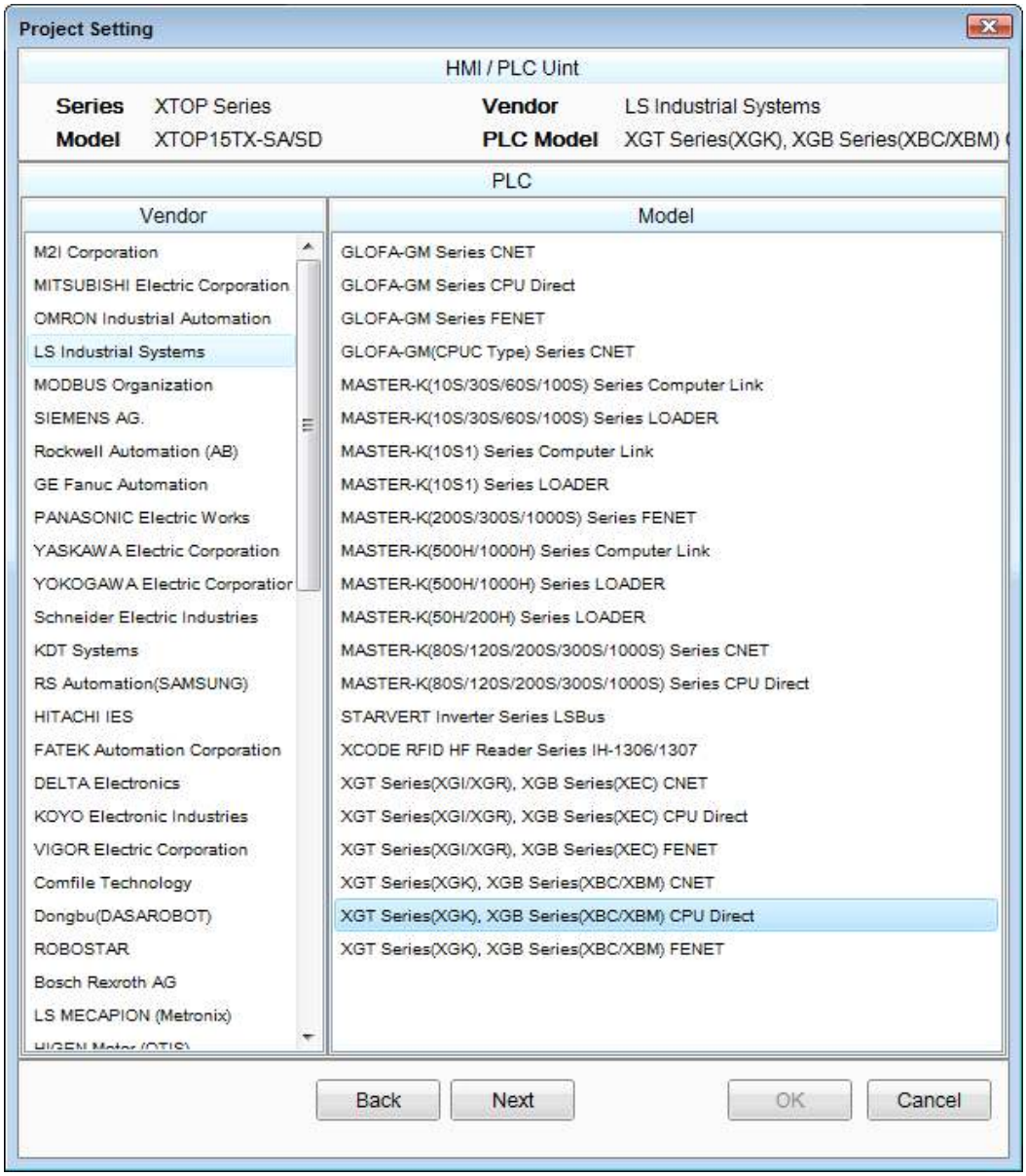
*2) PADT connection connector : PLC CPU connector of PC Ladder S/W XG5000

■ Connection configuration ( TOP number : External number )

・1 : 1(TOP 1 unit to External device 1 unit) connection – It is available with RS232C.

# 2. Selection of TOP, External device

Select a external device which is communicated to the TOP.




| Setting Items | | Description |
|---|---|---|
| TOP | Series | Select a TOP series which is communicated with external device.<br>Install an OS file v3.1 as diagram below before download a project file you have made.<br><br>Series: XTOP / HTOP — OS Version: V4.0 |
| | Name | Select a TOP model which is communicated with external device. |
| External Device | Vendor | Select vendor of the external device which is communicated with TOP.<br>Select "LS Industrial Systems Co., Ltd". |
| | PLC | Select a model name of the external device which is communicated with TOP.<br>Select "XGT(XGK), XGB(XBC/XBM) Series CPU Direct".<br>Check whether the external device you want to use is connectable or not in "1. System configuration". |

# 3. Example of system setting

Set Communication interface of TOP and external device as below.

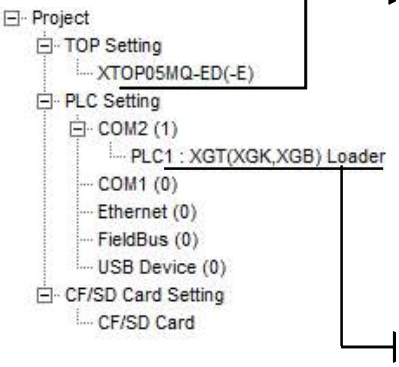
## 3.1 Example 1

Set your system as below.

| Item | TOP | XGT Series | Note |
|---|---|---|---|
| Serial Signal Level (port/channel) | RS-232 | | fixation |
| Serial Baud rate [BPS] | 115200 | | fixation |
| Serial Data bit [Bit] | 8 | | fixation |
| Serial Stop bit [Bit] | 1 | | fixation |
| Serial Parity bit [Bit] | NONE | | fixation |

### (1) XDesignerPlus Setting

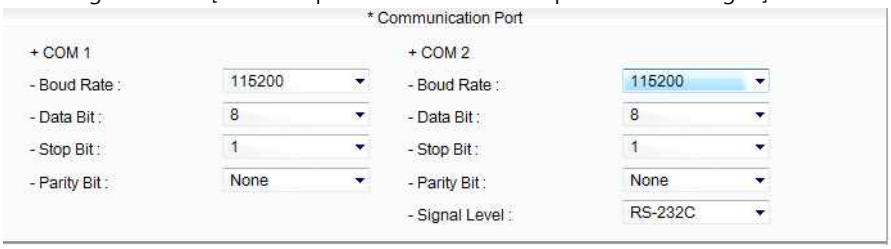
[Project >Project property] of XDesignerPlus as below and download it to TOP machine.




■ [ Project > Project property > project > TOP Setting > TOP's Name ]

Set communication interface of TOP.

- From right window [ HMI Setup > check Use HMI Setup > Device Manager ]




■ External Device Settings

Set up the "XGT(XGK), XGB(XBC/XBM) Series CPU Direct" communication option


-PLC Address : External setting station number (Don't use this option)

- CPU Type : Set up the CPU Type

### (2) External device setup

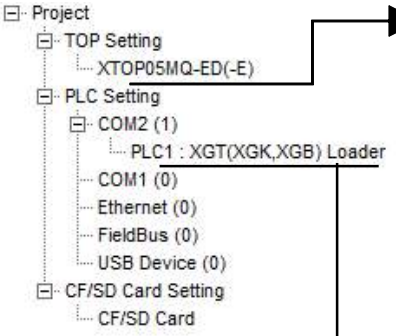
Setting value of loader communication port interface of "XGT(XGK), XGB(XBC/XBM) Series" is fixed.

# 4. Communication setting

Communication setup can be set on XDesignerPlus or TOP Main Menu. The setting should be the same with the external device.

## 4.1 XDesignerPlus Setup

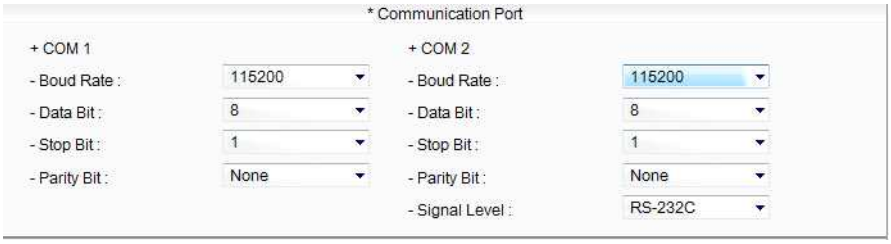
Set [Project >Project property] of XDesignerPlus as below and download TOP machine.



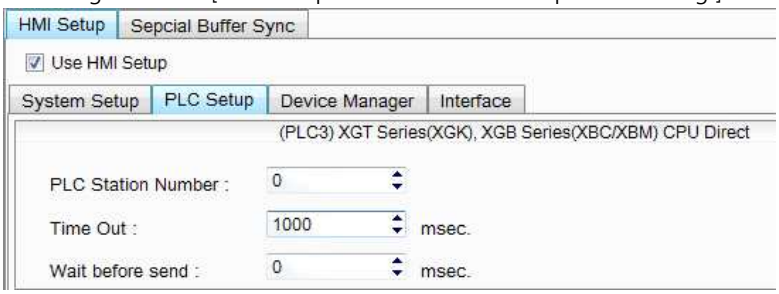

■ [ Project > Project property > project > TOP Setting > TOP's Name ]

Set communication interface of TOP.

- From right window [ HMI Setup > check Use HMI Setup > Device Manager ]




- From right window [ HMI Setup > check Use HMI Setup > PLC Setting ]




■ External Device Settings

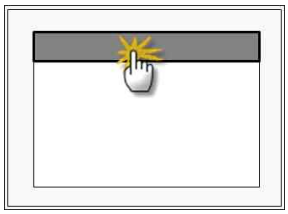
Set up the "XGT(XGK), XGB(XBC/XBM) Series CPU Direct" communication option


■ Setting communication Interface

| Item | Description |
|---|---|
| Serial Signal Level | Setup signal level(RS-232C/422/485) of PLC connected with COM2/1 port. (COM1 only RS-232C) |
| Serial Baud Rate | Setup [communications Baud rate] of PLC connected with COM2/1 port. |
| Serial Data Bit | Setup [Data Bit] of PLC connected with COM2/1 port. |
| Serial Stop Bit | Setup [Stop Bit] of PLC connected with COM2/1 port. |
| Serial Parity Bit | Setup [Parity Bit] of PLC connected with COM2/1 port. |
| Time Out [ x100 mSec ] | Setup [Time Out] of PLC connected with COM2/1 port. (Timeout:: waiting time for answer of PLC) |
| Send Wait [ x10 mSec ] | Setup [Send Wait] of PLC connected with COM2/1 port.<br>(Send Wait: communicate after waiting setting time when touch screen requires communications.) |
| Station Num. in Diag.[0~31] | Out of use |

## 4.2 TOP main menu setup item

- When a buzzer is on during the power reset, touch 1 spot at the upper LCD to move to "TOP Management Main" display.
- Set up driver interface at TOP according to below **Step1 → Step2**.
  (Press "TOP COM 2/1 setup" in **Step 1** to change setup at **Step 2**.)



**Step 1**. [ PLC setup ] - Setup driver interface.

| PLC setup | |
|---|---|
| PLC Address : 00<br>Timeout : 1000 [mSec]<br>Delay time of transmission : 0 [mSec]<br>TOP COM 2/1 : RS – 232C , 115200 , 8 , 1 , NONE<br>TOP COM 2/1 setup  communication test | Communication Interface Settings |

**Step 1–Reference.**

| Details | Contents |
|---|---|
| PLC address [0~65535] | Address of other device. Select between [0 - 65535]. |
| Timeout [ x1 mSec ] | Set up TOP's response waiting time from external device at [ 0 – 5000 ] x 1 mSec. |
| Delay time of transmission [ x1 mSec ] | Set up TOP's waiting time between response receiving – next command request transmission from external device at [ 0 – 5000 ] x 1 mSec. |
| TOP COM 2/1 | TOP's Interface setup to external device. |

**Step 2**. [ PLC setup ] >[ TOP COM2/COM1 setup ] – Setup relevant port's serial parameter.

| **Port Settings** | |
|---|---|
| * Serial communication<br>+ COM-1 Port<br>- Baud rate : 115200 [BPS]<br>- Data bit : 8 [BIT]<br>- Stop bit : 1 [BIT]<br>- Parity bit : NONE [BIT]<br>- Signal level : RS – 232C | COM 1 Port Communication Interface Settings |
| + COM-2 Port<br>- Baud rate : 115200 [BPS]<br>- Data bit : 8 [BIT]<br>- Stop bit : 1 [BIT]<br>- Parity bit : NONE [BIT]<br>- Signal level : RS – 232C | COM-2 Port Communication Interface Settings |

**Step 2–Reference.**

| Details | Contents |
|---|---|
| Baud rate | External device – select serial communication speed between TOPs. |
| Data bit | External device – select serial communication data bit between TOPs. |
| Stop bit | External device – select serial communication stop bit between TOPs. |
| Parity bit | External device – select serial communication parity bit check method between TOPs. |
| Signal level | External device – select serial communication method between TOPs. |

## 4.3 Communication Diagnosis

■ TOP - Confirming interface setting condition between external devices

- Move to Menu by clicking the top side of LCD screen as resetting the power of TOP.
- Confirms if Port [COM 2 or COM 1] setting that is willing to use in [Communication Settings] matches with the setting of external devices.

■ Port Communication Issue Diagnosis

- PLC Setup > TOP [ COM 2 or COM 1 ] click "Communication Diagnosis" button.
- Diagnosis dialog box will pop up on the screen, you can judge by following information that are shown on box no. 3 section.

| | |
|---|---|
| **OK!** | **Communication setting succeeded** |
| **Time Out Error!** | Communication setting error<br>- Error in the setting situation of Cable and TOP / External device<br>**(reference : Communication Diagnosis sheet)** |

■ Communication Diagnosis Sheet

- Please refer to the information below if you have a problem between external devices and communication connection.

| | | | | | | |
|---|---|---|---|---|---|---|
| Designer Version | | O.S Version | | | | |
| Details | Contents | | | | Confirm | |
| System configuration | Name of CPU | | | | OK | NG |
| | Name of confront port that is communicating | | | | OK | NG |
| | System Connection Method | 1:1 | 1:N | N:1 | OK | NG |
| Connection Cable | Name of Cable | | | | OK | NG |
| PLC setup | Setup address | | | | OK | NG |
| | Serial baud rate | [BPS] | | | OK | NG |
| | Serial data bit | [BIT] | | | OK | NG |
| | Serial Stop bit | [BIT] | | | OK | NG |
| | Serial parity bit | [BIT] | | | OK | NG |
| | Assigned Address Limit | | | | OK | NG |
| TOP setup | Setup port | COM 1 | COM 2 | | OK | NG |
| | Name of Driver | | | | OK | NG |
| | Confront Address | Project Property Setup | | | OK | NG |
| | | Diagnosing Communication | | | OK | NG |
| | Serial baud rate | [BPS] | | | OK | NG |
| | Serial data bit | [BIT] | | | OK | NG |
| | Serial Stop bit | [BIT] | | | OK | NG |
| | Serial parity bit | [BIT] | | | OK | NG |

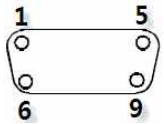
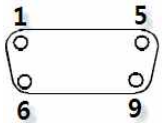
# 5. Cable diagram

This Chapter introduces cable wiring guidance for communication between TOP and PLC concerned. (The cable diagrams in this section may differ from the recommendations of "LS Industrial Systems, Ltd.")

## 5.1 Cable Diagram Table 1

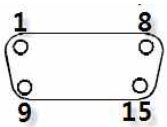
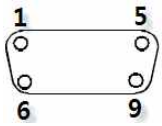
■ 1 : 1 Connection

(A) XTOP COM 2 port(9pin)

| XTOP COM2 | | | Cable Wiring | PLC | | |
|---|---|---|---|---|---|---|
| Pin Assignment *1) | Signal | Pin No | | Pin No | Signal | Pin Assignment *1) |
|  Front View of D-SUB 9 Pin (male, convex) | CD | 1 | | 1 | CD |  Front View of D-SUB 9 Pin (male, convex) |
| | RD | 2 | | 2 | RD | |
| | SD | 3 | | 3 | SD | |
| | DTR | 4 | | 4 | DTR | |
| | SG | 5 | | 5 | SG | |
| | DSR | 6 | | 6 | DSR | |
| | RTS | 7 | | 7 | RTS | |
| | CTS | 8 | | 8 | CTS | |
| | | 9 | | 9 | | |

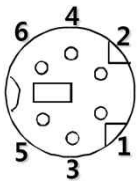
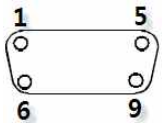
*1) Pin assignment of the cable connector is seen on the face of Front View.

(B) XTOP COM 2 port(15pin)

| **XTOP COM2** | | | **Cable Wiring** | **PLC** | | |
|---|---|---|---|---|---|---|
| Pin Assignment *1) | Signal | Pin No | | Pin No | Signal | Pin Assignment *1) |
|  Front View of D-SUB 15 Pin (male, convex) | CD | 1 | | 1 | CD |  Front View of D-SUB 9 Pin (male, convex) |
| | RD | 2 | | 2 | RD | |
| | SD | 3 | | 3 | SD | |
| | DTR | 4 | | 4 | DTR | |
| | SG | 5 | | 5 | SG | |
| | DSR | 6 | | 6 | DSR | |
| | RTS | 7 | | 7 | RTS | |
| | CTS | 8 | | 8 | CTS | |
| | | 9 | | 9 | | |

*1) Pin assignment of the cable connector is seen on the face of Front View.

(C) XTOP/ATOP COM 1 port( 6pin)

| XTOP/ATOP COM 1 port | | | Cable Wiring | PLC | | |
|---|---|---|---|---|---|---|
| Pin Assignment *1) | Signal | Pin No | | Pin No | Signal | Pin Assignment *1) |
|  | | 1 | | 1 | CD |  Front View of D-SUB 9 Pin |
| | RD | | | 2 | RD | |

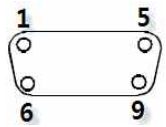
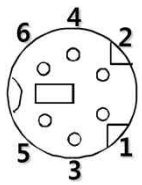
| | | | | | | |
|---|---|---|---|---|---|---|
| Front View of D-SUB 6 Pin (male, convex) | | 2 | | | | (male, convex) |
| | SG | 3 | | 3 | SD | |
| | | 4 | | 4 | DTR | |
| | | 5 | | 5 | SG | |
| | SD | 6 | | 6 | DSR | |
| | | | | 7 | RTS | |
| | | | | 8 | CTS | |
| | | | | 9 | | |

*1) Pin assignment of the cable connector is seen on the face of Front View.

## 5.2 Cable Diagram Table 2

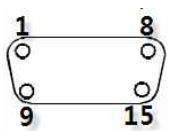
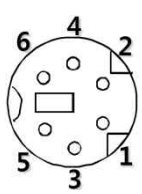
■ 1 : 1 Connection

(A) XTOP COM 2 port(9pin)

| XTOP COM2 | | | Cable Wiring | PLC | | |
|---|---|---|---|---|---|---|
| Pin Assignment *1) | Signal | Pin No | | Pin No | Signal | Pin Assignment *1) |
|  Front View of D-SUB 9 Pin (male, convex) | CD | 1 | | 1 | |  Front View of D-SUB 6 Pin (male, convex) |
| | RD | 2 | | 2 | RD | |
| | SD | 3 | | 3 | SG | |
| | DTR | 4 | | 4 | | |
| | SG | 5 | | 5 | | |
| | DSR | 6 | | 6 | SD | |
| | RTS | 7 | | | | |
| | CTS | 8 | | | | |
| | | 9 | | | | |

*1) Pin assignment of the cable connector is seen on the face of Front View.

(B) XTOP COM 2 port(15pin)

| XTOP COM2 | | | Cable Wiring | PLC | | |
|---|---|---|---|---|---|---|
| Pin Assignment *1) | Signal | Pin No | | Pin No | Signal | Pin Assignment *1) |
|  Front View of D-SUB 15 Pin (male, convex) | CD | 1 | | 1 | |  Front View of D-SUB 6 Pin (male, convex) |
| | RD | 2 | | 2 | RD | |
| | SD | 3 | | 3 | SG | |
| | DTR | 4 | | 4 | | |
| | SG | 5 | | 5 | | |
| | DSR | 6 | | 6 | SD | |
| | RTS | 7 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | CTS | 8 | | | |
| | | 9 | | | |

*1) Pin assignment of the cable connector is seen on the face of Front View.

(C) XTOP/ATOP COM 1 port( 6pin)

| XTOP/ATOP COM 1 port | | | Cable Wiring | PLC | | |
|---|---|---|---|---|---|---|
| Pin Assignment *1) | Signal | Pin No | | Pin No | Signal | Pin Assignment *1) |
| | | 1 | | 1 | | |
| | RD | 2 | | 2 | RD | |
| | SG | 3 | | 3 | SG | |
| | | 4 | | 4 | | |
| | | 5 | | 5 | | |
| | SD | 6 | | 6 | SD | |
| Front View of D-SUB 6 Pin (male, convex) | | | | | | Front View of D-SUB 6 Pin (male, convex) |

*1) Pin assignment of the cable connector is seen on the face of Front View.

# 6. Available Address

The available address of device are as below.

Device(address) range might be different according to series/type of CPU. TOP Series are capable of supporting maximum address range which is available in external Device.

Be careful get out of address range.

| Device | Bit Address | Word Address | 32 Bit | Property |
|---|---|---|---|---|
| Input / Output Relay | P00000 – P2047F | P0000 – P2047 | L/H*1) | R/W |
| Auxiliary Relay | M00000 – M2047F | M0000 – M2047 | | R/W |
| Keep Relay | K00000 – K2047F | K0000 – K2047 | | R/W |
| Link Relay | L000000 – L11263F | L00000 – L11263 | | R/W |
| Special Relay | F00000 – F2047F | F0000 – F2047 | | R |
| Timer (Contact) | T0000 – T2047 | ———— | | R/W |
| Counter (Contact) | C0000 – C2047 | ———— | | R/W |
| Timer (Current Value) | ———— | T0000 – T2047 | | R/W |
| Counter (Current Value) | ———— | C0000 – C2047 | | R/W |
| Data Register | D00000.00 – D65535.15 | D00000 – 65535 | | R/W |
| Communication Data Register | N00000.00 – D65535.15 | N00000 – N21503 | | R/W |
| File Register | R00000.00 – R32767.15 | R00000 – R32767 | | R/W |
| File Register | ZR00000.00 – ZR65535.15 | ZR00000 – ZR65535 | | R/W |

R:read / W:write

*1) Low 16BIT of 32BIT data is saved address input by touch program, high 16Bit of 32BIT data is saved next address input by touch program.

(Ex) If you input [12345678] of hex 32bit data at address [D00100], it will save in 16bit device as below.

| Item | 32BIT | 16BIT | |
|---|---|---|---|
| address | D00100 | D00100 | D00101 |
| Input data(Hex) | 12345678 | 5678 | 1234 |