M2I Corporation

User Define Protocol

Serial Driver

Supported version TOP Design Studio

lio V1.4.9.0 or higher



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We want to thank our customers who use the Touch Operation Panel.

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Describes how to draft a script.



1. System configuration

The system configuration of TOP and external device is as follows:

| Series | CPU | Link I/F | Communication method | System setting | Cable |
|--|-----|-------------|---|-------------------------------------|-------------|
| Supports serial connection for all devices | | Serial port | RS-232C RS-422 (4wire) RS-485 (2wire) | 3. TOP communication <u>setting</u> | User Define |

Connection configuration

1:1 connection







2. External device selection

■ Select a TOP model and a port, and then select an external device.

| PLC select [COM1] | | | | | |
|--|---|-------------------|------|-------|-----------|
| Filter : [All] | | × | Sea | rch · | |
| (ng | | | Sea | Model | Vendor |
| Vendor | Model | | | | |
| M2I Corporation | ^ 🌮 | TOP Master | | | |
| MITSUBISHI Electric Corporation | 8 | TOP Slave | | | |
| OMRON Industrial Automation | | Liser Define Proj | ncol | | |
| LS Industrial Systems | | oder benne fro | | | |
| MODBUS Organization | | | | | |
| SIEMENS AG. | | | | | |
| Rockwell Automation | | | | | |
| GE Fanuc Automation | | | | | |
| PANASONIC Electric Works | | | | | |
| YASKAWA Electric Corporation | | | | | |
| VOKOCAWA Electric Corporation | | | | | |
| Okogawa Electric Corporation | | | | | |
| schneider Electric Industries | | | | | |
| KDT Systems | | | | | |
| RS Automation | • | | | | |
| PLC Setting[User Define Pro Alias Name : PLC1 | otocol] | | | | |
| Interface : Serial | | \sim | | | |
| Protocol : User Define | ed | \sim | | Cor | nm Manual |
| | | | | | |
| | | | | | |
| Use Redundancy | | | | | |
| Operate Condition : AND ~ | • | _ | | | |
| Use Redundancy Operate Condition : AND Change Condition : TimeOut | 5 | (Second) | | | -174 |
| Use Redundancy Operate Condition : AND Change Condition : TimeOut Condition | 5 | (Second) | | E | dit |
| Use Redundancy Operate Condition : AND Change Condition : TimeOut Condition Primary Option | 5 | (Second) | | E | dit |
| Use Redundancy Operate Condition : AND Change Condition : TimeOut Primary Option Timeout 300 | 5 (| (Second) | | E | dit |
| Use Redundancy Operate Condition : AND Change Condition : Im TimeOut Im TimeOut Im Condition Primary Option Image: Condition in the second sec | 5 msec msec | (Second) | | E | dit |
| Use Redundancy Operate Condition : AND Change Condition : ImeOut Imeout Condition Primary Option Imeout Send Wait 0 | 5 (msec | (Second) | | 3 | dit |
| Use Redundancy Operate Condition : AND ✓ Change Condition : ImeOut Imeout Condition Primary Option Imeout Timeout 300 Send Wait 0 | s to the sec | (Second) | | | dit |
| Use Redundancy Operate Condition : AND Change Condition : TimeOut Change Condition Primary Option Timeout Send Wait 0 | s sec | (Second) | | | dit |
| Use Redundancy Operate Condition : AND Change Condition : TimeOut Condition Primary Option Timeout Send Wait 0 | s s | (Second) | | 3 | dit |
| Use Redundancy Operate Condition : AND ✓ Change Condition : □ TimeOut Imeout □ Condition Primary Option 1 Timeout 300 if Send Wait 0 | € msec | (Second) | | 3 | dit |
| Use Redundancy Operate Condition : AND ✓ Change Condition : ImeOut Imeout Condition Primary Option 300 € Send Wait 0 € | s the sec the | (Second) | | 3 | dit |
| Use Redundancy Operate Condition : AND ✓ Change Condition : ImeOut Imeout ImeOut Primary Option Imeout Send Wait 0 | s for the sec for | (Second) | | 3 | dit |

| Settings | | Contents | | | | | |
|-----------------|--------|---|---|--------------|--|--|--|
| ТОР | Model | Check the display and process of TOP to select the touch model. | | | | | |
| External device | Vendor | Select the vendor of the extension Select "M2I Corporation". | ect the vendor of the external device to be connected to TOP. ect "M2I Corporation". | | | | |
| | Model | Select the external device to be connected to the TOP. | | | | | |
| | | Model | Interface | Protocol | | | |
| | | User Define Protocol | Serial | User Defined | | | |

대한민국대표 터치패널 Touch Operation Panel

3. TOP communication setting

The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

- [Project > Project Property > TOP Setting] → [HMI Setup > "Use HMI Setup" Check > Edit > Serial]
 - Set the TOP communication interface in TOP Design Studio.



| Items | ТОР | External device | Remarks |
|--------------|---------------------------|---------------------------|---------|
| Signal Level | RS-232C / RS-422 / RS-485 | RS-232C / RS-422 / RS-485 | |
| Baud Rate | 384 | | |
| Data Bit | 8 | | |
| Stop Bit | | 1 | |
| Parity Bit | No | ne. | |

* The above settings are examples recommended by the company.

| Items | Description |
|--------------|---|
| Signal Level | Select the serial communication method between the TOP and an external device. |
| Baud Rate | Select the serial communication speed between the TOP and an external device. |
| Data Bit | Select the serial communication data bit between the TOP and an external device. |
| Stop Bit | Select the serial communication stop bit between the TOP and an external device. |
| Parity Bit | Select the serial communication parity bit check method between the TOP and an external device. |



(2) Communication option setting

- [Project > Project Property > Device Settings > COM1 > "PLC1 : User Define Protocol"]
 - Set the options of the User Define Protocol communication driver in TOP Design Studio.

| Items | Settings | Remarks |
|----------------|---|-----------------------|
| Interface | Select "Serial". | Refer to "2. External |
| Protocol | Select "User Defined". | device selection". |
| Timeout (ms) | Set the time for the TOP to wait for a response from an external device. | *Note 1) |
| Send Wait (ms) | Set the waiting time between TOP's receiving a response from an external device | |
| | and sending the next command request. | |

*Note 1) This corresponds to the internal response latency of the TOP; configuration of this setting is irrelevant.



3.2. Communication setting in TOP

* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

Touch the top of the TOP screen and <u>drag</u> it down. Touch "EXIT" in the pop-up window to go to the main screen.



(1) Communication interface setting

■ [Main Screen > Control Panel > Serial]



| Items | ТОР | External device | Remarks |
|--------------|---------------------------|---------------------------|---------|
| Signal Level | RS-232C / RS-422 / RS-485 | RS-232C / RS-422 / RS-485 | |
| Baud Rate | 384 | | |
| Data Bit | 8 | | |
| Stop Bit | | 1 | |
| Parity Bit | No | ne. | |

* The above settings are examples recommended by the company.

| Items | Description |
|--------------|---|
| Signal Level | Select the serial communication method between the TOP and an external device. |
| Baud Rate | Select the serial communication speed between the TOP and an external device. |
| Data Bit | Select the serial communication data bit between the TOP and an external device. |
| Stop Bit | Select the serial communication stop bit between the TOP and an external device. |
| Parity Bit | Select the serial communication parity bit check method between the TOP and an external device. |



(2) Communication option setting

■ [Main Screen > Control Panel > PLC]

| | Ö | 1001 | PLC | × | |
|----------------|--------------------|-----------------------|------------------------------|--------------|---|
| Bun | 🔯 System | Driver(COM1) | PLC1(User Define Protocol) - | | |
| | | Interface Protocol | Serial • User Defined • | | |
| MNC | PLC | Timeout | 300 🖨 msec | | |
| YNC Viewer | | Send Wait | 0 amsec | | |
| | Ethernet | | | | |
| | | | | | |
| Screen shot | intî ^{~7} | | | | |
| | Diagnostic | | | | |
| | [System] | Diagnostic | | Apply Cancel | |
| | | | | | J |

| Items | Settings | Remarks |
|----------------|---|-----------------------|
| Interface | Select "Serial". | Refer to "2. External |
| Protocol | Select "User Defined". | device selection". |
| Timeout (ms) | Set the time for the TOP to wait for a response from an external device. | *Note 1) |
| Send Wait (ms) | Set the waiting time between TOP's receiving a response from an external device | |
| | and sending the next command request. | |

*Note 1) This corresponds to the internal response latency of the TOP; configuration of this setting is irrelevant.



3.3 Communication diagnostics

% The following driver does not support a communication diagnostics feature for its counterpart.



4. External device setting

*Refer to the vendor's user manual to identically configure the communication settings of the external device to that of the TOP.



5. Script setting

Step 1. [Project > Device > COM1 > Right click "PLC1: User Define Protocol" > User Define Protocol]

| 🔤 TOP Design Studio - [1-NewBaseScreen1*] | | | | | | | |
|--|--|-----------------|----------|---------|---------|-------------|-------|
| File Project | Scre | een | Edit | | Object | | View |
| Select Dot Line | e Rectangle | Ellipse | PolyLine | e Image | A Paint | A String | Ruler |
| 1-NewBaseScreen1 | 8 | | | | | | |
| Project Manager Win | dow | Ψ× | | | 1 | 100 | |
| Project | | | | | | | |
| TOPRX 1000V | , | ^ | | | | | |
| FieldBus (0) | | | - | | | | |
| ✓ - ○ Device □ COM1 (0) □ ○ COM2 (0) □ ○ COM3 (0) | Device COM1 (0) COM2 (0) | | | | | | |
| V 🕽 Ethernet (1) | | | - | | | | |
| USBDevice (| ser Define Prot 0) Char | ncol nge PLC | | | | | |
| V 📁 Comm Table | Char | nge PLC (| Option | | | | |
| TAG (0) | te PLC | | | | | • • | |
| String (0) | String (0) Disco | | | | | | • • |
| Alarm (1) Block : 1 | User | Defined | Protocol | l | | | |
| | | | 8 | | | | |

Step 2. Draft and save the appropriate script for the communication.

| UserDefined Protocol | | |
|--|--|------------|
| New Delete[D] Save[S] | Image: Non-State Image: Non-State Image: Non-State Image: Non-State Find[E] Replace[H] Print[E] Up Down Address[A] Function[I] Operator[O] | |
| V - Device Setting | New Protocol* | 4 Þ |
| | Script ID : 1 CNew Protocol | |
| COM3 (0) ✓ ₩ Ethernet (1) | Run Time out (sec) : 30 🗘 Interval (10ms) : 0 🗘 | |
| Example User Define Protocol USBDevice (0) | | |
| | < | Markeret P |
| | Script is Empty | mdikcis, U |
| | | X Close |



■ User Define protocol function

| Items | Description | Remarks |
|-------------------------|--|---------|
| CommAsciiWrite(value) | Writes the ASCII data value to the external device. | |
| CommAsciiRead(size) | The external device reads ASCII data according to size. | |
| CommReset() | Resets the communication status with the external device. | |
| CommWait(msec) | Configures the driver's latency. (Units are in msec) | |
| CommErrorMsg(value) | Displays the communication error messages that occur with the external device. | |
| CommErrorClear() | Deletes the communication error messages that occur with the external device. | |