Atlas Copco
POWER FOCUS
Serial Driver

Supported version TOP Design Studio V1.4.11.18 or higher

CONTENTS

We would like to thank our customers for using M2I's "Touch Operation Panel (M2I TOP) Series". Read this manual and familiarize yourself with the connection method and procedures of the "TOP and external device".

1. System configuration

The following driver is "POWER FOCUS" of "**ATLASCOPCO**".

The system configuration with an external device supported by this driver is as follows:

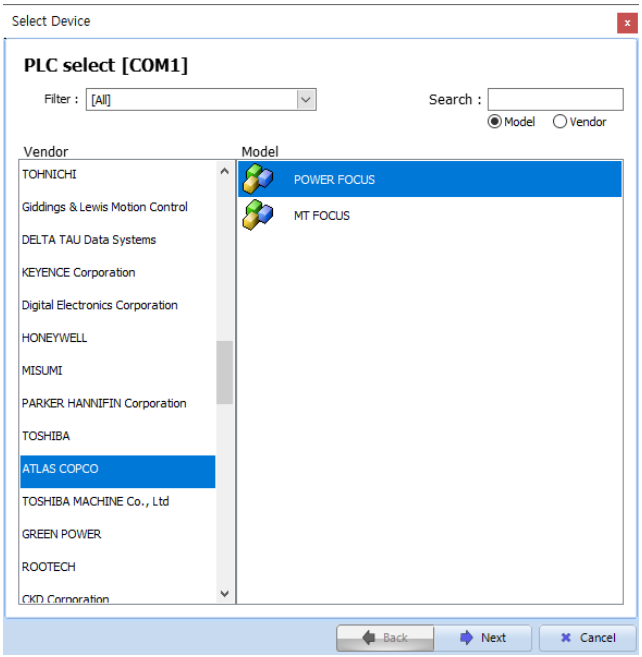
Series	CPU	Link I/F	Communication method	System setting	Cable
POWER FOCUS			RS-232C	3.1 Settings example 1 (Page 4)	5.1. Cable table 1 (Page 9)

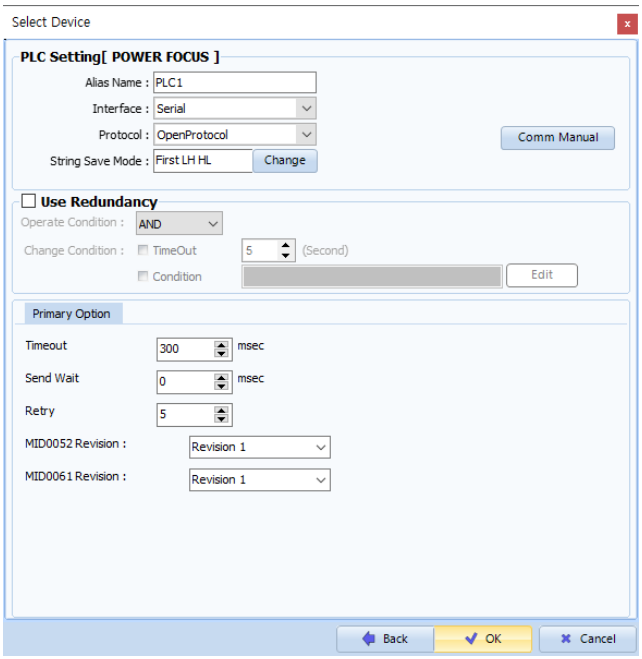
■ Connection configuration

・1:1 (one TOP and one external device) connection

2. External device selection

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





Settings		Contents
TOP	Model	Check the display and process of TOP to select the touch model.
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "AtlasCopco".
	PLC	Select an external device to connect to TOP. **Model** / **Interface** / **Protocol** POWER FOCUS / Serial / OpenProtocol Please check the system configuration in Chapter 1 to see if the external device you want to connect is a model whose system can be configured.

3. TOP communication setting

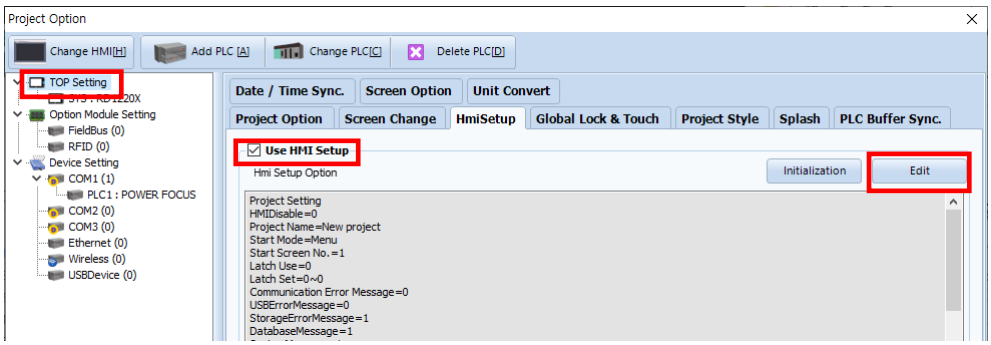
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

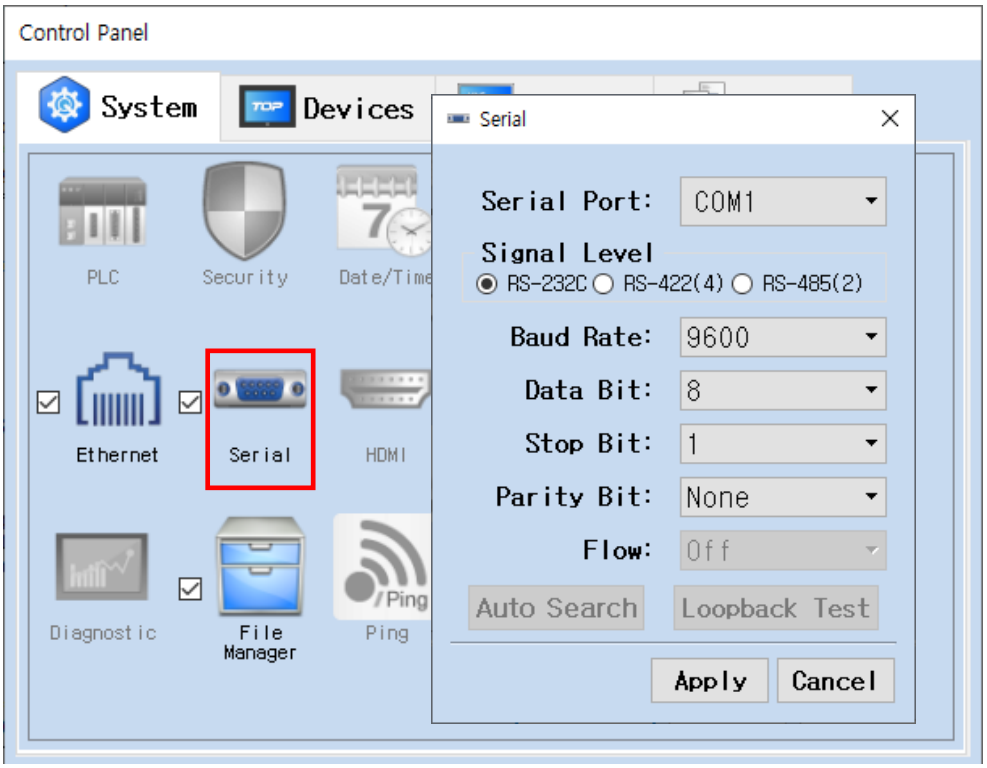
3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project Property > TOP Setting] → [Project Option > "Use HMI Setup" Check > Edit > Serial]

– Set the TOP communication interface in TOP Design Studio.





Items	TOP	External device	Remarks
Signal Level (port)	RS-232C	RS-232C	Fixed
Baud Rate	9600		Fixed
Data Bit	8		Fixed
Stop Bit	1		Fixed
Parity Bit	None.		Fixed

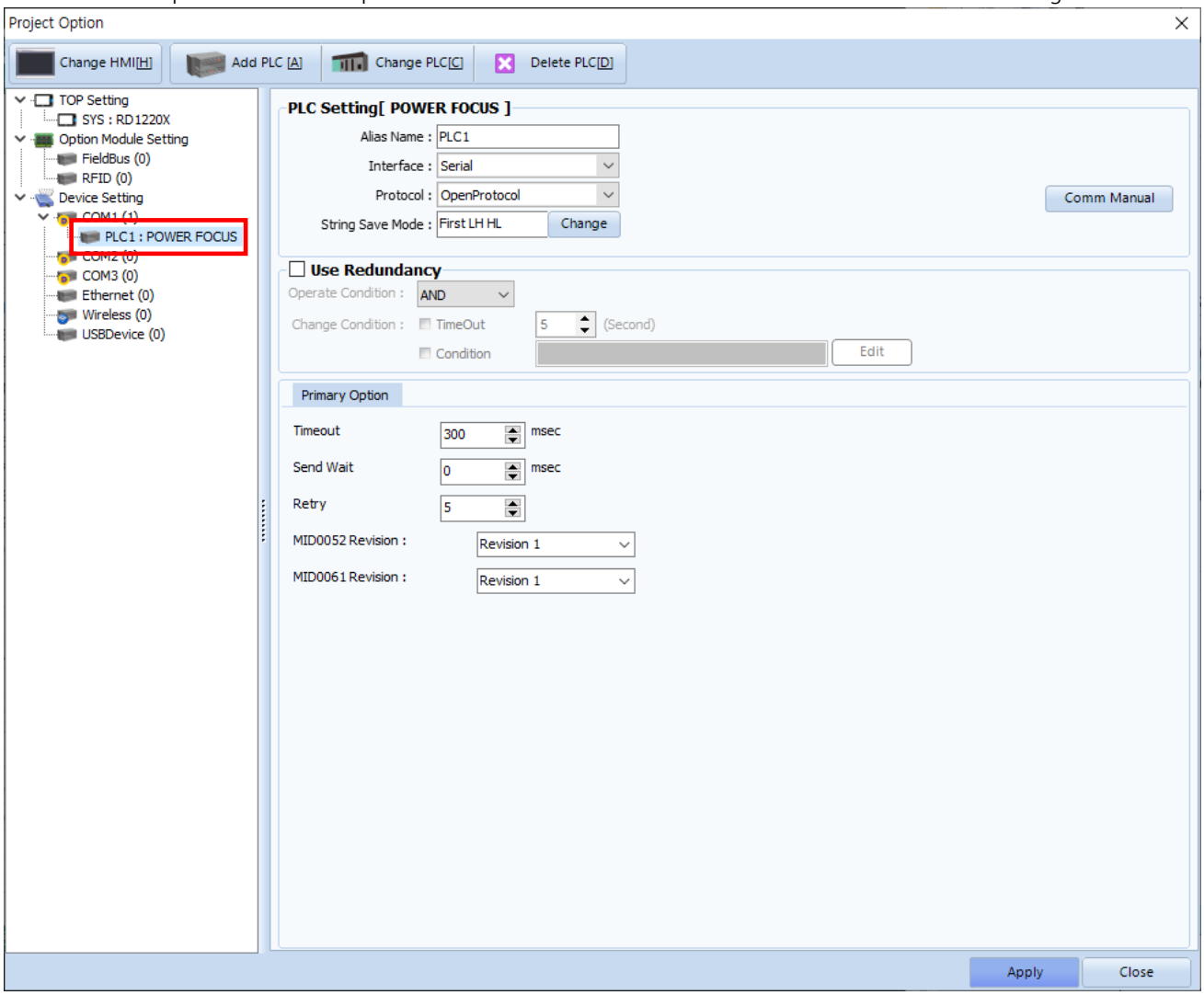
* The above settings are examples recommended by the company.

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 Setting > COM > "PLC1 : POWER FOCUS"]

– Set the options of the AtlasCopco POWER FOCUS PLC Series CPU Direct communication driver in TOP Design Studio.

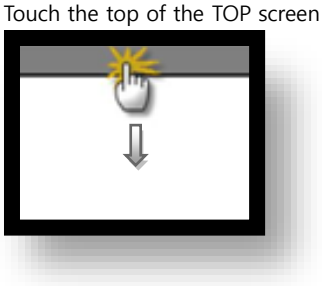


Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External device selection".
Protocol	Select "OpenProtocol".	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	
MID0052 Revision	Configure the revision for MID0052.	
MID0061 Revision	Configure the revision for MID0061.	

3.2. Communication setting in TOP

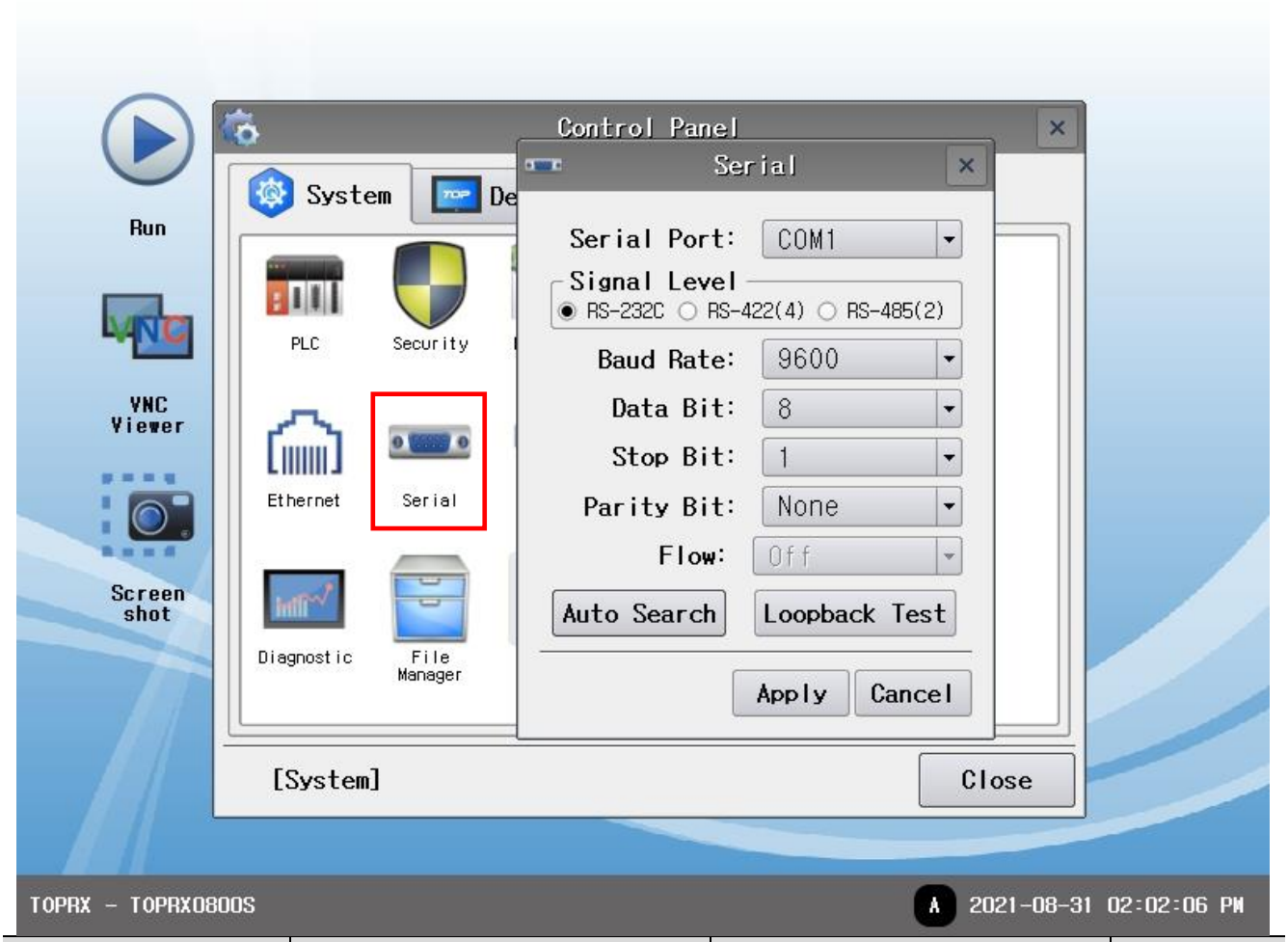
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ Touch the top of the TOP screen and drag 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	TOP	External device	Remarks
Signal Level (port)	RS-232C	RS-232C	
Baud Rate	9600		Fixed
Data Bit	8		Fixed
Stop Bit	1		Fixed
Parity Bit	None.		Fixed

* The above settings are setting 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]

Items	Settings	Remarks
Interface	Select “Serial”.	Refer to “2. External device selection”.
Protocol	Select “OpenProtocol”.	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP’s receiving a response from an external device and sending the next command request.	
MID0052 Revision	Configure the revision for MID0052.	
MID0061 Revision	Configure the revision for MID0061.	

3.3 Communication diagnostics

■ Check the interface setting status between the TOP and an external device.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
- Check if the COM port settings you want to use in [Control Panel > Serial] are the same as those of the external device.

■ Diagnosis of whether the port communication is normal or not

- Touch "Communication diagnostics" in [Control Panel > PLC].
- The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

OK	**Communication setting normal**
Time Out Error	**Communication setting abnormal** - Check the cable, TOP, and external device setting status. **(Reference: Communication diagnostics sheet)**

■ Communication diagnostics sheet

- If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

Items	Contents		Check		Remarks
System configuration	How to connect the system		OK	NG	1. System configuration
	Connection cable name		OK	NG	
TOP	Version information		OK	NG	2. External device selection 3. Communication setting
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings		OK	NG	
	Relative prefix	Project setting	OK	NG	
		Communication diagnostics	OK	NG	
	Serial Parameter	Transmission Speed	OK	NG	
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
External device	CPU name		OK	NG	4. External device setting
	Communication port name (module name)		OK	NG	
	Protocol (mode)		OK	NG	
	Setup Prefix		OK	NG	
	Other detailed settings		OK	NG	
	Serial Parameter	Transmission Speed	OK	NG	
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
	Check address range		OK	NG	5. Supported addresses (For details, please refer to the PLC vendor's manual.)

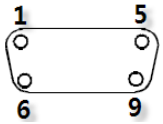
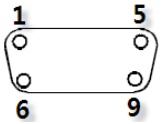
4. External device setting

- Refer to the manual of the external device and configure the communication options.

5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device. ((The cable diagram described in this section may differ from the recommendations of "**AtlasCopco**")

■ **RS-232C** (1:1 connection)

COM			Cable connection	PLC		
Pin arrangement*Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement*Note 1)
 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)	CD	1		1		 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)
	RD	2		2	RD	
	SD	3		2	SD	
	DTR	4		4		
	SG	5		5	SG	
	DSR	6		6		
	RTS	7				
	CTS	8				
		9				

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

6. Supported addresses

The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and be take caution to not deviate from the address range supported by the device you want to use.

Address	Size (Bit)	Read/Write	Remarks
START_BIT	1	Read	*Note 1)
MID0052_VIN_NUMBER	ASCII	Read	
MID0061_CELL_ID	16	Read	
MID0061_CHANNEL_ID	16	Read	
MID0061_TORQUE_CONTROLLER_NAME	ASCII	Read	
MID0061_VIN_NUMBER	ASCII	Read	
MID0061_JOB_ID	16	Read	*
MID0061_PARAMETER_SET_ID	16	Read	
MID0061_BATCH_SIZE	16	Read	
MID0061_BATCH_COUNTER	16	Read	
MID0061_TIGHTENING_STATUS	16	Read	*Note 2)
MID0061_TORQUE_STATUS	16	Read	*Note 3)
MID0061_ANGLE_STATUS	16	Read	*Note 3)
MID0061_TORQUE_MIN_LIMIT	32	Read	*Note 5)
MID0061_TORQUE_MAX_LIMIT	32	Read	*Note 5)
MID0061_TORQUE_FINAL_TARGET	32	Read	*Note 5)
MID0061_TORQUE	32	Read	*Note 5)
MID0061_ANGLE_MIN	32	Read	
MID0061_ANGLE_MAX	32	Read	
MID0061_FINAL_ANGLE_TARGET	32	Read	
MID0061_ANGLE	32	Read	
MID0061_TIME_STAMP	ASCII	Read	
MID0061_LAST_CHANGE_TIME	ASCII	Read	
MID0061_BATCH_STATUS	16	Read	*Note 4)
MID0061_TIGHTENING_ID	32	Read	

*Note 1) SET when communication starts.

*Note 2) 0 : NOK 1 : OK

*Note 3) 0. Low / 1. OK / 2 .High

*Note 4) 0 : NOK 1 : OK 2: not used

*Note 5) Must configure to show 2 decimal points at the object properties of the registered address.