DONGBU ROBOT CO,. LTD

iMS-J Series

Computer Link Driver

Supported version TOP Design Studio V1.0 or higher



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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".

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Describes the cable specifications required for connection.

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Refer to this section to check the addresses which can communicate with an external device.



1. System configuration

The system configuration of TOP and "DongBu Robot Co,.Ltd – iMS-J Series Computer Link" is as follows.

Series	СРИ	Link I/F	Communication method	System setting	Cable
	iMS–J Serie	S	RS–422 (4 wire)	3. TOP communication setting 4. External device setting	<u>5. Cable table</u>

Connection configuration

• 1:1 (one TOP and one external device) connection – configuration which is possible in RS232C/422/485 communication.





• 1:N (one TOP and multiple external devices) connection - configuration which is possible in RS422/485 communication.



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2. External device selection

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

PLC select [CO	OM1]				
Filter : [All]			\sim	Search :	
				۲	Model Vendor
Vendor		Model			
VIGOR Electric Corporat	ion '	^ 🌮	iM-U Series		
COMFILE TECHNOLOGY	Inc.	8	iM-SIGMA/DTR Serie	5	
DST ROBOT			iMS-J Series		
BACnet					
LS MECAPION					
HIGEN MOTOR Co., Ltd.					
EMOTIONTEK					
RKC Instrument Inc.					
HANYOUNG NUX					
SAMWONTECH					
SICK AG.					
ELUI Electric Co. Ltd					
SANCII Provision Co.	ы				
SANGJI Predsion Co., Li					
DEVA					
PLC Setting[iMS-J	Series]				
Interface	Consultation	nk	~		
ALL	: Computer Lir				
Protocol :	Computer Lin	k	\sim	(Comm Manual
Protocol : String Save Mode :	Computer Lin Computer lin	k Cha	∼ inge	(Comm Manual
Protocol : String Save Mode :	: Computer Lin : Computer lin : First LH HL	k Cha	v	(Comm Manual
Protocol : String Save Mode : Use Redundanc Operate Condition : A	: Computer Lin : Computer lin : First LH HL :Y ND ~	k Cha	∼ Inge		Comm Manual
Protocol : String Save Mode : Use Redundance Operate Condition : A Change Condition :	Computer Lin Computer lin First LH HL	k Cha	(Second)		Comm Manual
Protocol : String Save Mode : Operate Condition : A Change Condition :	Computer lin Computer lin First LH HL Y ND Condition	k Cha	(Second)		Comm Manual
Protocol : String Save Mode : Use Redundance Operate Condition : Change Condition :	Computer In Computer In Computer In First LH HL V TimeOut Condition	k Cha	(Second)		Comm Manual
Protocol : String Save Mode : Use Redundance Operate Condition : A Change Condition : P Primary Option Timeout	Computer In Computer In First LH HL Y ND ~ TimeOut Condition	k Cha	(Second)		Comm Manual
Protocol : String Save Mode : Use Redundance Operate Condition : Primary Option Timeout Send Wait	Computer In Computer In First LH HL TimeOut Condition	k Cha	(Second)		Comm Manual
Protocol : String Save Mode : Use Redundanc Operate Condition : A Change Condition : Primary Option Timeout Send Wait Retry	Computer III Computer III First LH HL Y ND V Condition	k Cha	(Second)		Comm Manual
Protocol : String Save Mode : Use Redundance Operate Condition : A Change Condition : Primary Option Timeout Send Wait Retry Station Num	Computer In Computer In First LH HL V ND V TimeOut Condition 300 C 5 C 0 2 0 2 0 2	k Cha	(Second)		Comm Manual
Protocol : String Save Mode : Use Redundanc Operate Condition : A Change Condition : Primary Option Timeout Send Wait Retry Station Num	Computer In Computer In First LH HL Y ND ✓ TimeOut Condition 3000 C 0 C 5 C 0 C 0 C	k Che	(Second)		Comm Manual
Protocol : String Save Mode : Use Redundanc Operate Condition : Primary Option Timeout Send Wait Retry Station Num	Computer In Computer In First LH HL ND ND Condition Conditio	k Che 5 msec msec	(Second)		Comm Manual
Protocol : String Save Mode : String Save Mode : Use Redundance Operate Condition : Primary Option Timeout Send Wait Retry Station Num	Computer In Computer In First LH HL ND 1 TimeOut 1 Condition 300 5 5 6 0 5 6 0 5 6 0 5 6 0 5 6 0 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7	k Cha	(Second)		Comm Manual
Protocol : String Save Mode : String Save Mode : Primary Option Timeout Send Wait Retry Station Num	Computer lin : Computer lin : First LH HL Y ND V 1 TimeOut 1 Condition 300 3 5 3 0 3 0 3 0 3 0 3 0 3 0 3 0 3 0	k Cha	(Second)		Comm Manual
Protocol : String Save Mode : String Save Mode : Primary Option Timeout Send Wait Retry Station Num	Computer In Computer In First LH HL V ND V TimeOut Condition 300 5 6 0 7 0 7 0 7 0 7 0 7 7 7 7 7 7 7 7 7 7 7 7 7	k Cha	(Second)		Comm Manual

Settings		Contents			
ТОР	Model	Check the TOP display and process to select the touch model.			
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "Dongbu(DASAROBOT)".			
	PLC	Select an external device to co	Select an external device to connect to TOP.		
		Model	Interface	Protocol	
		iMS-J Series	Computer Link		
Please check the system configue connect is a model whose system			iguration in Chapter 1 to see if em can be configured.	the external device you want to	



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 properties > TOP settings] → [Project option > Check "Use HMI settings" > Edit > Serial]
 - Set the TOP communication interface in TOP Design Studio.



Items	ТОР	External device	Remarks
Signal Level (port)	RS-422 RS-422		
Baud Rate	9600		
Data Bit	8		
Stop Bit	1		
Parity Bit	Nor	ie.	

* 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 properties > PLC settings > COM > "PLC1 : iMS-J Series"]
 - Set the options of the communication driver of DongBu Robot Co, Ltd iMS-J Series Computer Link in TOP Design Studio.

Project Option			×
Change HMI[H]	A Change PLC] Delete PLC[D]	
Change HMI[H] Add PLC	Image PLCIG PLC Setting[iMS-J Se Alias Name : PLCI Interface : Co Protocol : Co String Save Mode : Fir Use Redundancy Operate Condition : AND Change Condition : Time Cor Primary Option Timeout 30 Send Wait 0 Retry 5 Station Num 0	1 Delete PLC[D] ries] 1	Comm Manual
			Apply Close

Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External
Protocol	Select the communication protocol between the TOP and an external device.	device selection".
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.	
Station Num	Enter the prefix of an external device.	



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	ТОР	External device	Remarks
Signal Level (port)	RS-422	RS-422	
Baud Rate	960	0	
Data Bit	8		
Stop Bit	1		
Parity Bit	Nor	e.	

* 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]

	õ	1 00	PLC	×	
Run	🚳 System	Driver(COM1) Interface	PLC1(iMS-J Series) ▼ Computer Link ▼		
MIC	PLC	Protocol Timeout	Computer link		
YNC Viewer	6	Send Wait Retry Station N	0 🔹 msec		
	Ethernet	Station N			
Screen shot	Diagnost ic				
	[System]	Diagnostic		Apply Cancel	
ems	Settings			Remarks	

Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External
Protocol	Select "Computer Link".	device selection".
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.	
Station Num	Enter the prefix of an external device.	



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.

ОК	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	How to connect the system		OK	NG	1 System configuration	
configuration	Connection cable name		ОК	NG	1. System configuration	
ТОР	Version information		OK	NG		
	Port in use		OK	NG		
	Driver name		OK	NG		
	Other detailed settings	i	ОК	NG		
	Relative prefix	Project setting	OK	NG		
		Communication	OK	NC	2. External device selection	
		diagnostics	ŬK	NG	3. Communication setting	
	Serial Parameter	Transmission	OK	NC		
		Speed	ŬK	NG		
		Data Bit	ОК	NG		
		Stop Bit	OK	NG		
		Parity Bit	OK	NG		
External device	CPU name	OK	NG			
	Communication port n	ОК	NG			
	Protocol (mode)	OK	NG			
	Setup Prefix	OK	NG			
	Other detailed settings	OK	NG	4 External device setting		
	Serial Parameter	Transmission	OK	NC	4. External device setting	
		Speed	ÜK	NG		
		Data Bit	ОК	NG		
		Stop Bit	OK	NG		
		Parity Bit	OK	NG		
	Check address range				6. Supported addresses	
			ОК	NG	(For details, please refer to the PLC	
				vendor's manual.)		



4. External device setting

Refer to the manual of the external device to set the serial communication settings as follows (same as TOP serial communication settings).

Items	Settings
Signal Level	RS-422
Baud Rate	9600 BPS
Data Bit	8 BIT
Stop Bit	1 BIT
Parity Bit	NONE



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 chapter may differ from the recommendations of "DongBu Robot Co,.Ltd".)

■ **RS-422** (1:1 connection)

COM					External device			
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin		
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)		
1 5	RDA	1		- 1	RDA	1 5		
(° °)		2		- 2	RDB	(° °)		
		3		3	SDA			
Based on	RDB	4		- 4	SDB	Based on		
communication		5		5		communication		
cable connector	SDA	6	(6		cable connector		
front.		7		7		front,		
D-SUB 9 Pin male		8		8		D-SUB 9 Pin male		
(male, convex)	SDB	9		9		(male, convex)		

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

RS-422 1 : N connection - Refer to 1:1 connection to connect in the following method.

TOP	Cable connection and signal	External device	Cable connection and signal	External device
Signal name	direction	Signal name	direction	Signal name
RDA		SDA		SDA
RDB		SDB		SDB
SDA		RDA		RDA
SDB		RDB		RDB
SG		SG		SG



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.

Device	Bit Address	Word Address	Read/Write	Remarks
Contact point	IO00.0 ~ IO41.7	IO00 ~ IO41	Read/Write	*Note 1)
Integer variable	INT00.00 ~ INT99.15	INT00 ~ INT99	Read/Write	
Position variable	_	POS000 ~ POS999	Read/Write	*Note 2)
Controller status	STS0 ~ STS7	STS	Read	*Note 3)
Function failure error	_	MSG	Read	*Note 4)
Speed	-	SPD	Read/Write	*Note 5)
Current motion program file	-	JOB	Read	*Note 6)
Current position	-	CRP0 ~ CRP1	Read	*Note 7)
Relative direct move	-	JOG	Write	*Note 8)
Emergency stop	EMG	EMG	Write	*Note 9)
Execute the motion program	JOB_START	JOB_START	Write	*Note 10)
Stop the motion program	JOB_STOP	JOB_STOP	Write	*Note 11)
Reset the motion program	SYS_REBOOT	SYS_REBOOT	Write	*Note 12)
Return-to-origin execution	MOVE_ORIGIN	MOVE_ORIGIN	Write	*Note 13)
Start jog movement (+)	JOG_MOVE+	JOG_MOVE+	Write	*Note 14)
Start jog movement (–)	JOG_MOVE-	JOG_MOVE-	Write	*Note 15)
Move the jog continuously	JOG_CONTINUE	JOG_CONTINUE	Write	*Note 16)
End the jog movement	JOG STOP	JOG STOP	Write	*Note 17)

*Note 1) Contact point device (IO) has two bytes constituting one word, and has L/H structure. The bit range is "0 - 7".

*Note 2) The position variable device (POS) is Float-type data.

*Note 3) The bit information for the controller status (STS) is as follows.

Bit	Contents	Bit	Contents
STS 0	Robot Run	STS 4	Origin OK
STS 1	In Position	STS 5	Servo On
STS 2	Motor Power	STS 6	Exec Fail
STS 3	Alarm	STS 7	Seq Run

*Note 4) When an error occurs in the controller, the code for the cause of the error is displayed.

*Note 5) It displays the rotation speed when the motor is rotating.

The data range that can be entered is a percentage value of RPM set to "1 - 100".

*Note 6) It displays the file name of the currently running motion program. It can be used only as a character string (12 characters).



*Note 7) It reads the current position of the controller.

CRP	Туре	Data Type
CRP 0	Motor encoder pulse	Decimal
CRP 1	Distance (Joint)	Float

*Note 8) Relative direct move device (JOG) is Float-type data.

It moves relative to the current position according to the type of motion, position type and position information.

The input data range is -99999.999-99999.999. If it is out of range, the value is entered as the maximum or minimum value.

*Note 9) Stop the controller in emergency situations.

*Note 10) Execute the set motion program number.

*Note 11) Stop the running motion program.

*Note 12) Reset to the first step in step-by-step motion program execution.

*Note 13) Execute returning to the start point.

*Note 14) Start moving at the sped set in the jog speed parameter. (positive direction)

*Note 15) Start moving at the sped set in the jog speed parameter. (negative direction)

*Note 16) If executing continuous jog movement (JOG_CONTINUE) after starting jog movement (JOG_MOVE+,-), it moves continuously.

*Note 17) Stop jog movement.

% Write-only Device Use Method

(1) Pop-up the object's property window \rightarrow (2) Effects and actions \rightarrow (3)Condition setting \rightarrow (4)Action setting Set to enter data to the corresponding device when setting the action. (regardless of data value)

PREVIEW Shape Text Effect & Action JOB START No Condition Effect Action 1 Touch Down None [PLC1:JOB_START::DEC]=ON group:0 I Touch Down None [PLC1:JOB_START::DEC]=ON group:0 ID:2 SEQ:1 Image: Condition Image: Condition Image: Condition ID:2 SEQ:1 Image: Condition Image: Condition Image: Condition Image: Condition ID:2 SEQ:1 Image: Condition Ima	Rectangle Property							×
JOB START No Condition Effect Action 1 Touch Down None PLC1:JOB_START:1:DEC]=ON group:0 I I Touch Down Image: Condition Image: Condition ID:2 SEQ:1 Image: Condition Effect Action ID:2 SEQ:1 Image: Condition Effect Action Max Excute Count:1 Image: Condition Effect Action Max Excute Count:1 Image: Condition Image: Condition Image: Condition Security Level : O Image: Condition Image: Condition Image: Condition Image: Condition If Security Level : O Image: Condition Image: Condition Image: Condition Image: Condition Image: Condition I If Security Level : O Image: Condition	PREVIEW	Shape	Text	Effect & Action				
JOB START 1 Touch Down None [PLC1:JOB_START:1:DEC]=ON group:0 I Up [U] Down (O) Image: Add (A) Modify [M] X Delete [D] ID:2 SEQ:1 SEQ:1 Image: Condition Effect Action Max Excute Count: 1 Image: O imag		No		Condition	Effe	ect	Action	
ID:2 SEQ:1 X:355 Y:175 Width:83 Height:75 Security Level:0 Image: Condition Effect Action ID:2 SEQ:1 X:355 Y:175 Bit Image: Condition Effect Action ID:5 Security Level:0 ID:6 Y:175 Width:83 Height:75 Security Level:0 Image: Condition Effect Action Image: Condition Effect Action Image: Condition Effect Action ID:5 Y:175 Bit Image: Condition Effect Action Visible InterLock Icon Yisible Pression Icon ID:5 Image: Condition Effect Action Memo: Image: Condition Effect Action Memo: Image: Condition Effect Action Memo: Image: Condition Effect Action Image: Condition Effect Action Image: Condition Effect Action	JOB START	1		Touch Down	Nor	ne (F	PLC1:JOB_START:1:DEC]=ON group:0
	ID: 2 SEQ: 1 X: 355 ÷ Y: 175 ÷ Width: 83 ÷ Height: 75 ÷ Security Level: 0 ÷ Create Security Log Ignore GlobalLock If Security level is low then Hide Object Visible InterLock Icon Visible Pemission Icon Display on top when changed	Left Up Condi Max Exc Bit Up	U I	► Down [0] Effect Action t: 1 (0=∞) PLC1 JOB_5 CFF 0 C	Interval : 0		Add [A] Add [A] elay Time : 0 (1 Coup Index : 0 Pulse Time : 10] × Delete [D] .00ms) ↓
OK Cancel							ОК	Cancel