

HMI to IO Modules via Modbus – sample application**Hardware required for testing**

1. HMI 605-S, Make: Brainchild, Modbus master
2. At least one IO Module say IO-8DIO, Make: Brainchild, Modbus slave
3. HMI to PC cable

Software required

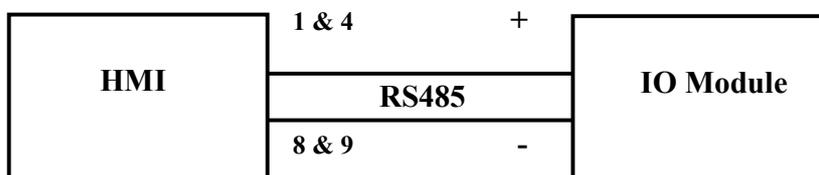
HMI Studio, Version 1.11, Update May3,2007 and later versions
 Application program: HMI_IO2_R1.pzm

IO Module setting:

Dip Switch1: ON, All other dip switches: OFF

That means, address of IO module is set to 1 and default communication settings as follows..

BAUD RATE	9600
DATA BITS	8
PARITY	NONE
STOP BITS	1

Connection scheme (RS485)

DB9-Male

HMI Side (DB9 Male connector):

- 1 & 4 shorted
- 8 & 9 shorted

Checking of sample program

1. Download “HMI_IO2_R1.pzm” application + firmware from PC to HMI 605 via COM1
2. Connect the communication cable between COM2 of HMI 605 and IO Module
3. Restart HMI and make sure that “Communicating with Modbus PLC on Port 2” message appears in HMI at power up. If any error, then check cable between HMI and IO, Dip switch at IO Module.
4. If you want to change communication settings of the IO module, you can set from the HMI (Screen 1)

Reference manuals:

UMIOA: <http://www.brainchild.com.tw/bc/images%5CUMIOA.pdf>

HMI 605-S Modbus driver configuration

(This is already done in sample application program-all the following pages is for user information only)

Software: HMI studio

Open new project with 605-S

Open network configuration

Port: COM2, Protocol: Modbus (Master), Model: Modbus Generic, Address:1

Default values: Inter frame delay: 10, Response time out: 800, Retry count: 3

Port settings: Select Baud rate, parity, data bits, stop bits same as IO Module default settings.

The screenshot shows the 'Network Configuration' dialog box. At the top, there is a table with the following data:

Node address		Ethernet	Name	HMI / PLC	Blocks
Com1	Com2				
000	000	----	Operator Panel	HMI 605	00028

Below the table, the configuration settings are as follows:

- Port: Com2 (selected in dropdown)
- Protocol: Modbus (Unit as Master) (selected in dropdown)
- Model: MODBUS GENERIC (selected in dropdown)
- Node:
 - Address: 01 [0 to 255]
 - Name: Com2 : Node1 (Max 15)
 - Inter frame delay: 10 [0 to 3000]
 - Response time out: 800 [10 to 6000] ms
 - Retry count: 3 [0 to 5]
- Ethernet PLC:
 - IP Address: []
 - PLC Port: [] [0 to 65535]

Buttons: Add, Delete, Change, Close, Help, Port settings, PLC specific settings.

Port communication settings ✖

Baud Rate

Parity

Data Bits

Stop Bits

Network Configuration ✖

Node address		Ethernet	Name	HMI / PLC	Blocks
Com1	Com2				
000	000	----	Operator Panel	HMI 605	00031
----	001	----	Com2 : Node1	Modbus (Unit as Master) (MODBUS GENERIC)	00037

Port

Protocol

Model

Node

Address [0 to 255]

Name (Max 15)

Inter frame delay (0 to 3000)

Response time out (10 to 6000) ms

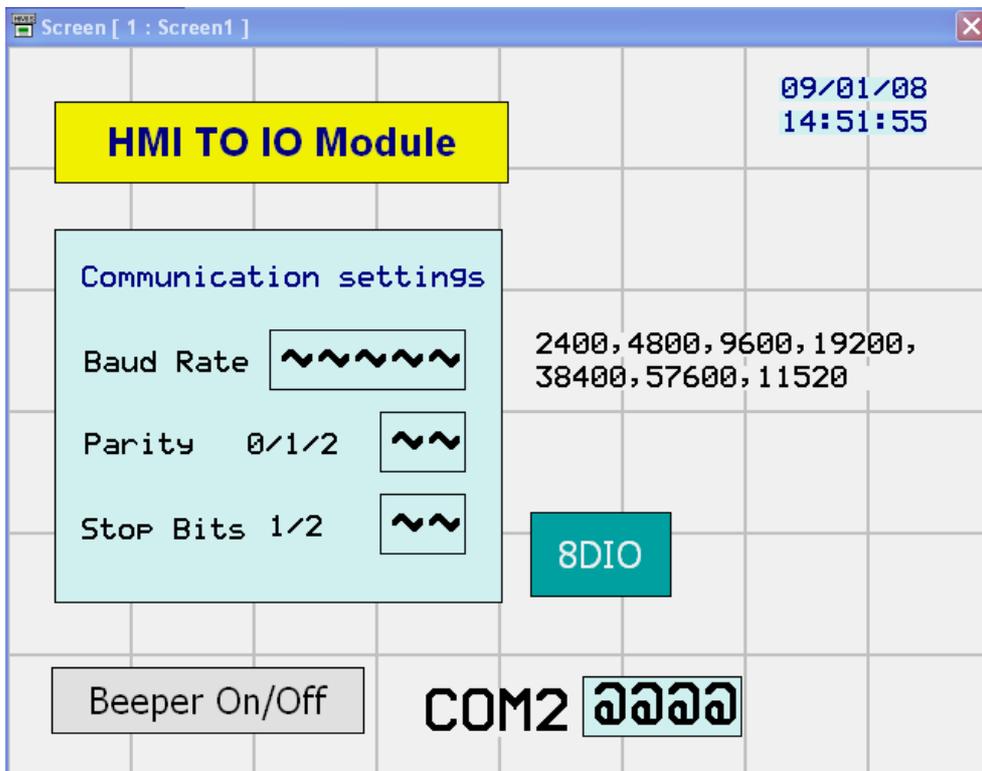
Retry count (0 to 5)

Ethernet PLC

IP Address . . .

PLC Port (0 to 65535)

Sample screens



How to use IO modules information in HMI ladder?

Please note that HMI ladder program allows only HMI internal memory and it is not possible to access IO module tags directly. So, it requires to “Copy” information between HMI internal memory to IO tags and vice versa. Special “COPY” functions are available which can be used in the global tasks or screen tasks

There are two ways

1. **Copy the DI/DO coils to HMI internal memory and vice versa in global tasks/screen tasks**

For IO-8DIO module,

Digital input1, DI1 address = 10001,
 Digital output1, DO1 address = 00017
 Digital input status = 30002

For ex: Copy 10001 to B101. That means, digital input1 status will be copied to HMI internal memory coil B1. Now, you can use B1 in ladder applications.

Note: You can use Copy function either in global tasks or screen tasks as per your application requirements.

HMI : Task-lists of Screen [2 : 8DIO]

Screen Preview

8DIO
09/01/08
14:54:23

DI	DI	DO	DO
10001	10005	00017	00021
10002	10006	00018	00022
10003	10007	00019	00023
10004	10008	00020	00024

Give DI1 and check status of DO1
Check "While showing"screen task

Back
Next

Select a Task to add

Close
Help

'Before showing' Tasks

↑
↓
✖

'While showing' Tasks

Copy Tag 100001 (COM2) to Tag B0101
Execute PLC Block Copy
Copy Tag B0102 to Tag 000017 (COM2)

↑
↓
✖

'After hiding' Tasks

↑
↓
✖

EDIT LOGIC BLOCK - [Copy]

Block Edit View Comments Search Help

📄 📁 💾 ✂ 📄 📁 📄 🔍

🖱 F2-| F3-| F4- F5| F11-| F12-| F6-| F7-CNT F9-<=> F8-| F2-MOV F3-END

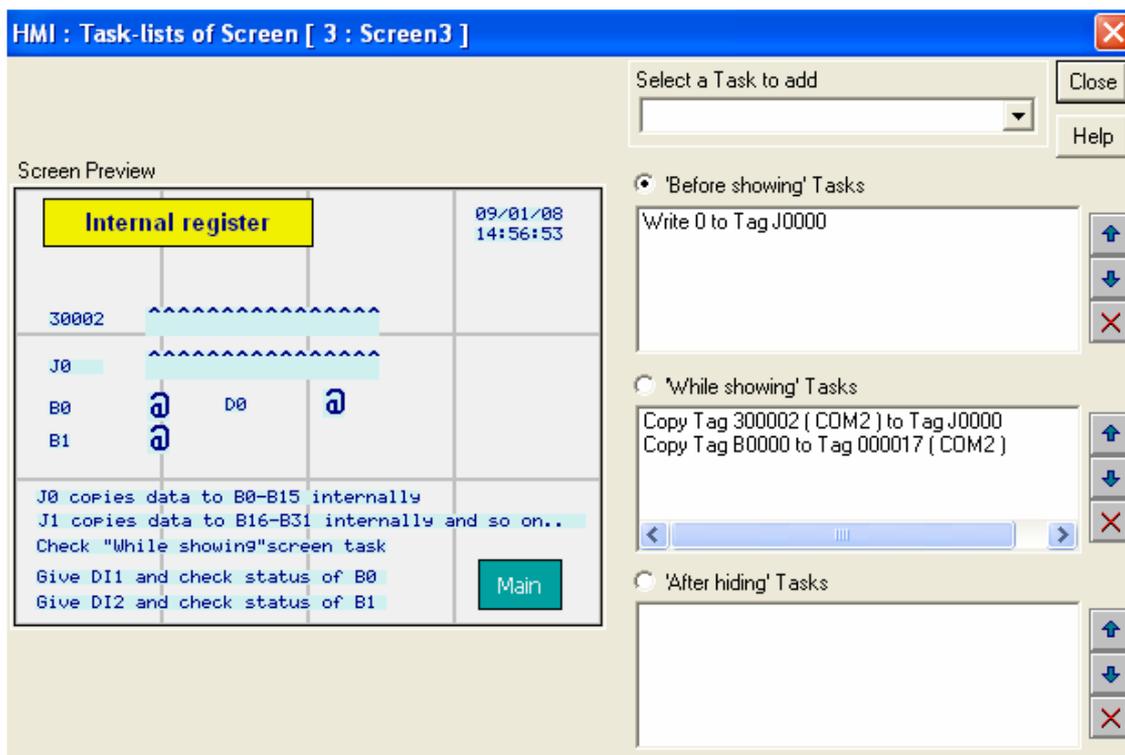
F4-(S) F5-(R) F6-SHIFT F7-ROTATE F8-LOG Immediate F9-I-O F11-SKIP F12-TIMER F2-Data Conv. F3-Float Math F1-Float Comp.

1	B0101		B0102
2			[END]

2. Usage of HMI internal register, J type

Copy Digital input status to HMI internal register J type. Then it will be linked with HMI internal memory coil B type memory internally. Now, you can use B type memory in ladder applications.

For IO-8DIO module, digital input status address = 30002. This register contains information about all the digital inputs



Ex: Copy 30002 to J0, then 16 nos. digital inputs information shall be copied to HMI internal memory B0 to B15. Now you can use HMI internal memory B type in the ladder program.

J0 = B0 to B15

J1 = B16 to B31 and so on..

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