

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, Make: Brainchild, Modbus slave
3. HMI to PC cable

Software required**HMI Studio**

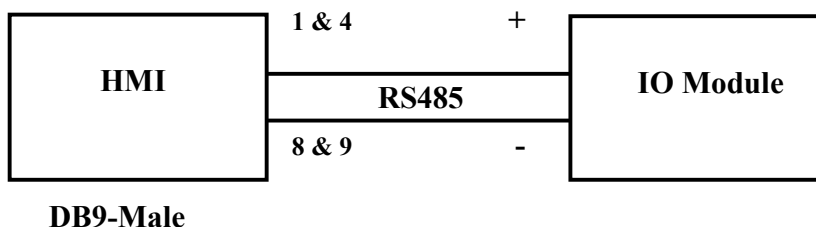
Application program: HMI_IO_R1.pzm

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)**HMI Side (DB9 Male connector):**

- 1 & 4 shorted
- 8 & 9 shorted

Checking of sample program

1. Download “HMI_IO_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 columns: Node address (Com1, Com2, Ethernet), Name, HMI / PLC, and Blocks. Below the table are configuration options for a node.

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

Configuration options for the selected node:

- Port: Com2 (dropdown), Port settings (button)
- Protocol: Modbus (Unit as Master) (dropdown)
- Model: MODBUS GENERIC (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, PLC specific settings (button).

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

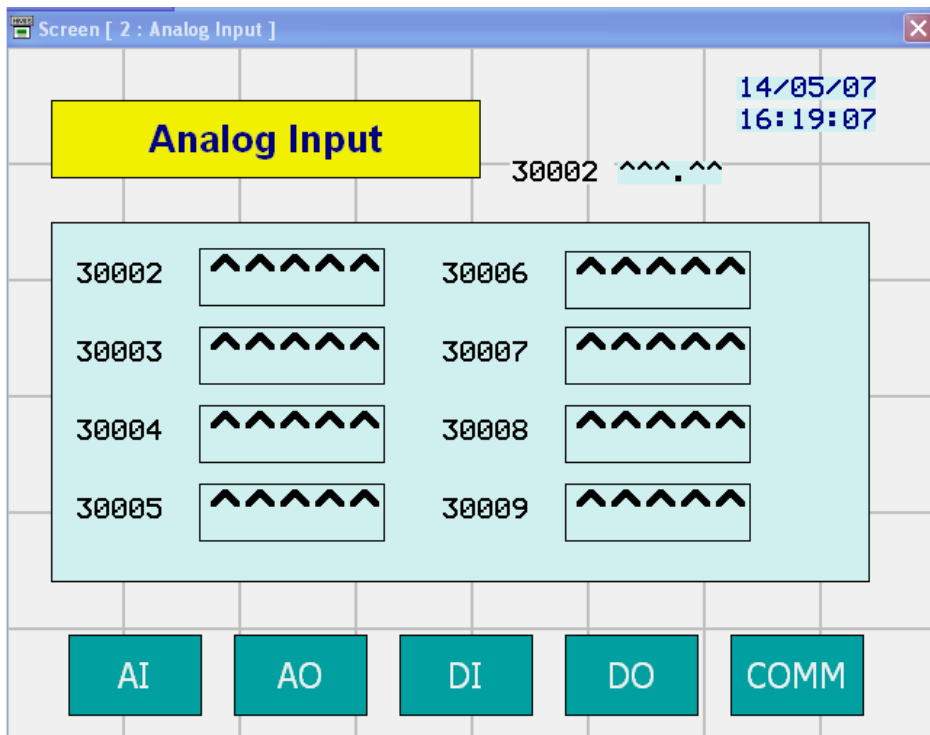
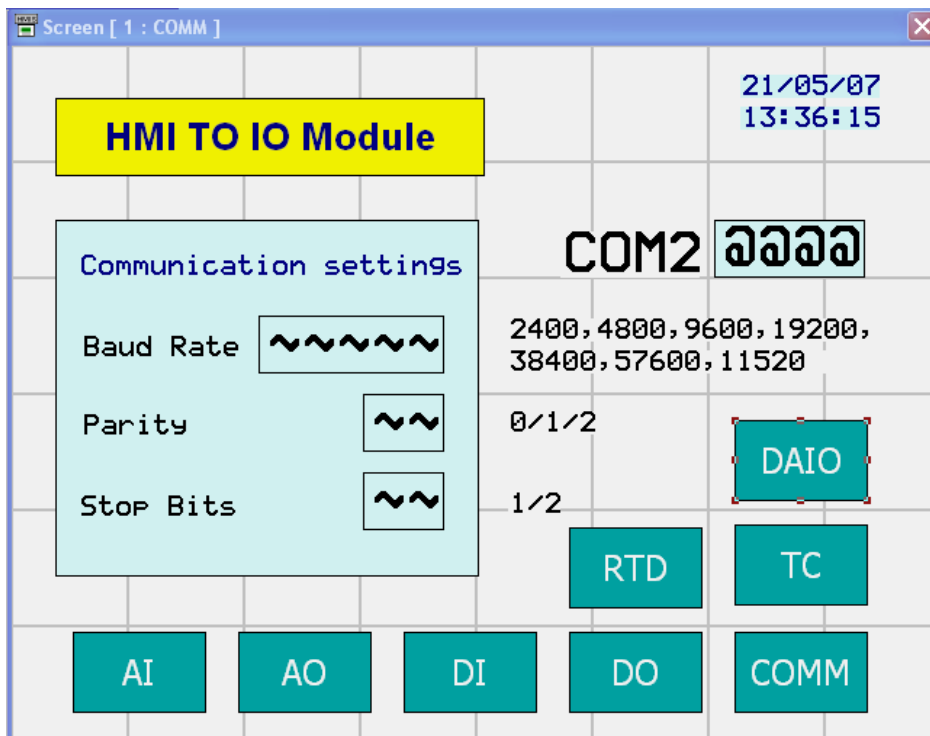
Retry count (0 to 5)

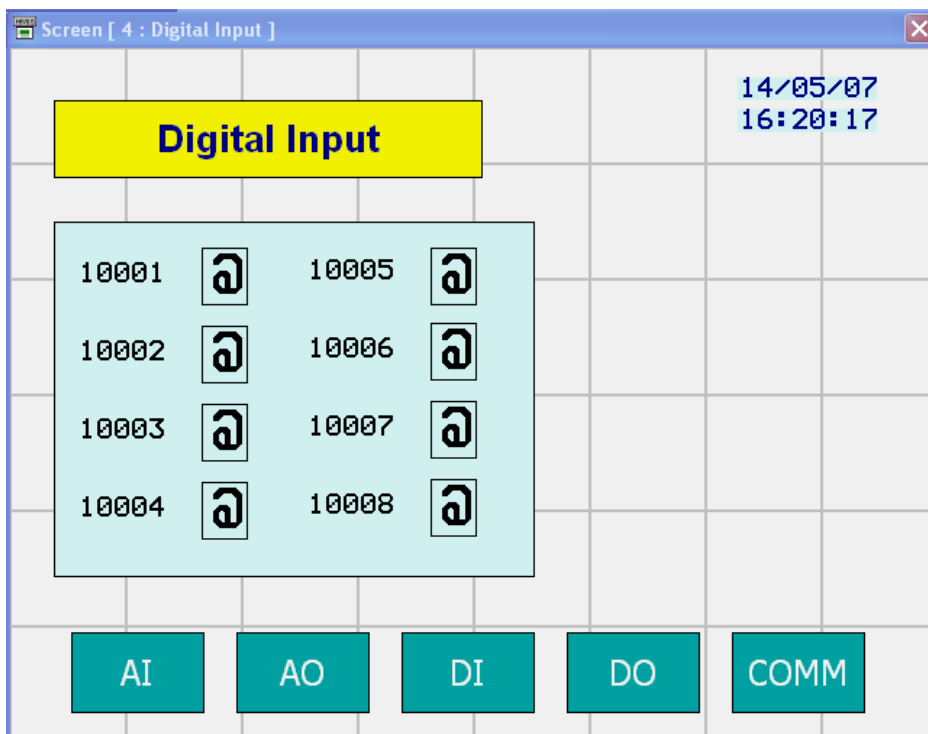
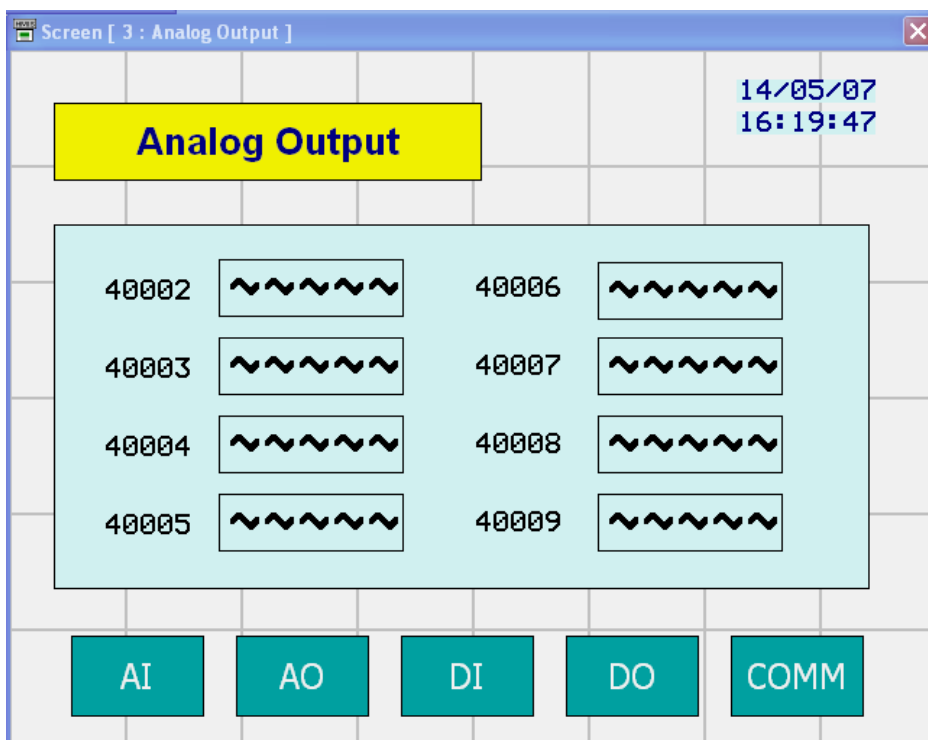
Ethernet PLC

IP Address . . .

PLC Port (0 to 65535)

Sample screens





Screen [5 : Digital Output]

14/05/07
16:20:55

Digital Output

00001	#	00005	#
00002	#	00006	#
00003	#	00007	#
00004	#	00008	#

AI AO DI DO COMM

Screen [8 : DAIO]

11/06/07
09:15:59

DAIO

DI	DO	RTD	AI
10001 @	00017 #	40004 ^^^^.^	40006 ^^^^^
10002 @	#	40005 ^^^^.^	40007 ^^^^^
10003 @	00018 #	Type ~~~~~	Type ~~~~~
10004 @			AO
			40008 ~~~~~
			Type ~~~~~

AI AO DI DO COMM

Screen [7 : TC]

Thermocouple 21/05/07
13:39:08

Type ^^ Unit ^^

30002	^^^^.^	30006	^^^^.^
30003	^^^^.^	30007	^^^^.^
30004	^^^^.^	30008	^^^^.^
30005	^^^^.^	30009	^^^^.^

AI AO DI DO COMM

Screen [6 : RTD]

RTD 21/05/07
13:40:05

Type ^^ Unit ^^

30002	^^^^.^	30006	^^^^.^
30003	^^^^.^	30007	^^^^.^
30004	^^^^.^		
30005	^^^^.^		

AI AO DI DO COMM

Tag Data base in HMI

Note: Create tag data base for the IO modules in HMI, please refer IO user manual for address details.

Tags

No	Port	Node	Block	Tag	Byte(s)	Tag-Name
00045	02	001	100001 : 001	100001	-	DI1
00046	02	001	100002 : 001	100002	-	DI2
00047	02	001	100003 : 001	100003	-	DI3
00048	02	001	100004 : 001	100004	-	DI4
00049	02	001	100005 : 001	100005	-	DI5
00050	02	001	100006 : 001	100006	-	DI6
00051	02	001	100007 : 001	100007	-	DI7
00052	02	001	100008 : 001	100008	-	DI8
00053	02	001	300002 : 001	300002	2	AI1
00054	02	001	300003 : 001	300003	2	AI2
00055	02	001	300004 : 001	300004	2	AI3
00056	02	001	300005 : 001	300005	2	AI4

Node: [001 : Com2 : Node1] Modbus (Unit as Master) (MODBUS GENERIC)

Input registers Read - Only

Tag-Type: Register Coil or Bit-addressed Register

Size: 2 bytes [00001 - 65536]

Register: 300002 00002

Tag-Name: AI1 Max 40 chars

Byte(s): 2-Bytes (1-Word)

Buttons: Close, Help, Delete, Add, Change, Cancel

Linearization:

16-Point Linearization

General Channel 1

Configuration for Channel no: 1

Mode: Non Linear

No. of points: 2

Input tag: D0000 0

Output tag: D0001 1

Valid ranges: (D0000 to D0999)

Linearization Table

Valid ranges: (K00000 to K65535) or (D0000 to D0999 [if indirect addresses are used instead of constant K])

Data type: unsigned int

Point	Input	Output
1	K00000	K00000
2	K04095	K10000
3	K00000	K00000
4	K00000	K00000
5	K00000	K00000
6	K00000	K00000
7	K00000	K00000
8	K00000	K00000
9	K00000	K00000
10	K00000	K00000
11	K00000	K00000
12	K00000	K00000
13	K00000	K00000
14	K00000	K00000
15	K00000	K00000
16	K00000	K00000

Buttons: OK, Cancel

Note: 32 channels available for Linearization in HMI software. If more is required, you can use ladder programming in HMI to meet the requirements.

BrainChild

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