TT210903 – FUP - Manual Add IO Module
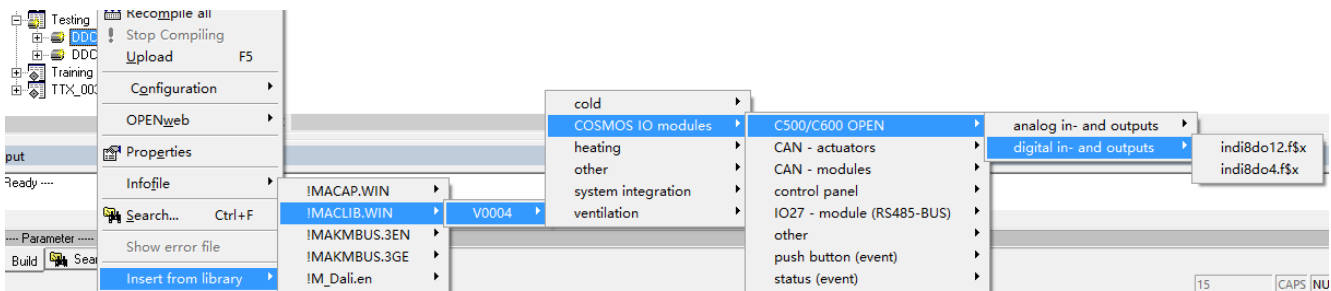
1. The easiest way to add and configure IO modules is to use the Excel template and import it to your controller in FUP. Please refer to TT180801 for details.

2. You can also add the IO module and configure them in FUP directly. If you're using an OPEN 600, let's add the internal IO first. Right click on the controller, follow the below path to select "indi8o12.f$x".

3. Select "Do not call definition file and replace definition directly" and click OK.

4. The internal DI and DO modules (indi8o12) are now added to your controller. The internal AI and AO modules (inai8ao4) are also added automatically.

FUP page name	Status	Functionality	Object group
clock.f	MACRO	time functions	General
const.f	MACRO	assignment of the constants	General
empty.f	MACRO	empty page for graphic	General
inai8ao4.f01	MACRO	COSMOS IO (internal) AI8AO4H (DDC100) (-)	COSMOS IO modules
indi8o12.f01	MACRO	COSMOS IO (internal) DI8DO12H (DDC100) (-)	COSMOS IO modules
weekclk.f	MACRO	global weekly clocks	General

5. Now we will set the point names for the DI and DO points. Double click the macro "indi8o12" to open it. Scroll down the list until you see "DIGITAL INPUTS" (line 94).

	Definition	Definition specification	Comment	Hint
94		—————————————— DIGITAL INPUTS		
95				
96				
97				
98				
99				
100				
101				
102				
103				
104		set UI page > DI-identifier < (maximum 35		
105				
106				
107	def00	reserve	identifier for digital input	e.g. SA-fan -automatic-
108	def01	reserve	identifier for digital input	e.g. SA-fan -operation-
109	def02	reserve	identifier for digital input	e.g. SA-fan -error-
110	def03	reserve	identifier for digital input	e.g. SA-fan serv.-switch

6. Below it you should see "DI-identifier". This is where you type in the point name for the DI points (DI0 to DI7).

		set UI page > DI-identifier < (maximum 35		
104		set UI page > DI-identifier < (maximum 35		
105				
106				
107	def00	reserve	identifier for digital input	e.g. SA-fan -automatic-
108	def01	reserve	identifier for digital input	e.g. SA-fan -operation-
109	def02	reserve	identifier for digital input	e.g. SA-fan -error-
110	def03	reserve	identifier for digital input	e.g. SA-fan serv.-switch
111				
112	def04	reserve	identifier for digital input	e.g. SA-fan flow monitor
113	def05	reserve	identifier for digital input	e.g. EX fan -automatic-
114	def06	reserve	identifier for digital input	e.g. EX fan -operation-
115	def07	reserve	identifier for digital input	e.g. EX fan -error-

7. Type the name for each point like below. For points that you don't use, you can leave it as "reserve" or change it to "spare", etc.

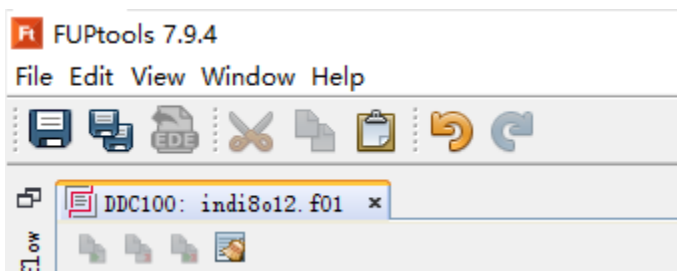|		set UI page > DI-identifier < (maximum 35		
104		set UI page > DI-identifier < (maximum 35		
105				
106				
107	def00	AHU-8F-01 Supply Fan Status	identifier for digital input	e.g. SA-fan -automatic-
108	def01	AHU-8F-01 Supply Fan Trip Alarm	identifier for digital input	e.g. SA-fan -operation-
109	def02	EAF-8F-01 Fan Trip Alarm	identifier for digital input	e.g. SA-fan -error-
110	def03	EAF-8F-02 Fan Trip Alarm	identifier for digital input	e.g. SA-fan serv.-switch
111				
112	def04	CH-RF-01 Chiller Running Status	identifier for digital input	e.g. SA-fan flow monitor
113	def05	CT-RF-01 Cooling Tower Status	identifier for digital input	e.g. EX fan -automatic-
114	def06	reserve	identifier for digital input	e.g. EX fan -operation-
115	def07	reserve	identifier for digital input	e.g. EX fan -error-

8. To set the name for the DO points, scroll down the list until you see "DIGITAL OUTPUTS"

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	Definition	Definition specification	Comment	Hint
167		——————————— DIGITAL OUTPUTS		
168				
169				
170				
171				
172				
173				
174				
175				
176				
177		set UI page > DO-identifier < (maximum 35		
178				
179				
180	def08	reserve	identifier for digital output	e.g. SA-fan stage -1-
181	def09	reserve	identifier for digital output	e.g. SA-fan stage -2-
182	def10	reserve	identifier for digital output	e.g. EX fan stage -1-
183	def11	reserve	identifier for digital output	e.g. EX fan stage -2-

9. Type the name for the DO points (DO0 to DO11) respectively.

	Definition	Definition specification	Comment
177		set UI page > DO-identifier < (maximum 35	
178			
179			
180	def08	AHU-8F-01 Supply Fan Command	identifier for digital output terminal >> DO00 <<
181	def09	EAF-8F-01 Fan Command	identifier for digital output terminal >> DO01 <<
182	def10	reserve	identifier for digital output terminal >> DO02 <<
183	def11	reserve	identifier for digital output terminal >> DO03 <<
184			
185	def12	reserve	identifier for digital output terminal >> DO04 <<
186	def13	reserve	identifier for digital output terminal >> DO05 <<
187	def14	reserve	identifier for digital output terminal >> DO06 <<
188	def15	reserve	identifier for digital output terminal >> DO07 <<
189			
190	def16	reserve	identifier for digital output terminal >> DO08 <<
191	def17	reserve	identifier for digital output terminal >> DO09 <<
192	def18	reserve	identifier for digital output terminal >> DO10 <<
193	def19	reserve	identifier for digital output terminal >> DO11 <<

10. After finished, click the save button 💾 and then close the window.

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File Edit View Window Help

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11. Now you can do the same for AI and AO points. Double click the macro "inai8ao4" to open it. Scroll down the list until you see "ANALOG INPUTS" (line 94). Type the name for the AI points (AI0-AI7) respectively.

	Definition	Definition specification	Comment	Hint
104		set UI page > AI-identifier < (maximum 35		
105				
106				
107	def00	AHU-8F-01 Supply Air Temperature	identifier for analog input terminal >> AI00 <<	e.g. OA temperature sensor
108	def01	AHU-8F-01 Supply Air Humidity	identifier for analog input terminal >> AI01 <<	e.g. SA-temperature sensor
109	def02	AHU-8F-01 Return Air Temperature	identifier for analog input terminal >> AI02 <<	e.g. EX temperature sensor
110	def03	AHU-8F-01 Return Air Humidity	identifier for analog input terminal >> AI03 <<	e.g. RE temperature sensor

12. To set the sensor type for AI points, scroll down the list until you see "sensor type"

138		set UI page > sensor type <			
139					
140					
141				Following sensor types are valid:	
142					
143				AS_Status_00 terminal not	no sensor connected
144				AS_V_10V_2 voltage	e.g. pressure sensor or CO2-sensor
145				AS_T_10mV_K_2 M-sensor with	temperature sensor (10 mV/K)
146				AS_T_Ni1000_2 Ni-1000	temperature sensor (Ni1000 (DIN) conn
147				AS_T_Ni1000L_2 Ni-1000	temperature sensor (Ni1000 (Tk5000) c
148				AS_T_Pt1000_2	temperature sensor (Pt1000 connected
149				AS_R_8000_2 resistance in	e.g. setpoint setter
150				AS_V_percent voltage	e.g. humidity sensor
151				AS_T_Pt100 Pt100 connected over	temperature sensor (Pt100 connected c
152				AS_T_Pt1000 Pt1000 connected over	temperature sensor (Pt1000 connected
153				AS_T_Ni1000 Ni1000 DIN connected over	temperature sensor (Ni1000 (DIN) conn
154				AS_T_Ni1000Tk Ni1000 Tk5000 connected over	temperature sensor (Ni1000 (Tk5000) c
155					
156	defftyp00	AS_Status_00	"input not connected" ▼	sensor type for analog input terminal >> AI00 <<	e.g. temperature sensor (10 mV/K)
157	defftyp01	AS_Status_00	"input not connected" ▼	sensor type for analog input terminal >> AI01 <<	e.g. temperature sensor (10 mV/K)
158	defftyp02	AS_Status_00	"input not connected" ▼	sensor type for analog input terminal >> AI02 <<	e.g. temperature sensor (10 mV/K)

13. Select the sensor type using the dropdown box. Below are the common sensor types we use normally. Do not select the others unless you know what they are. For spare point, just leave it as "AS_Status_00".

| 156	defftyp00	AS_V_10V_2	"voltage input (0...10V)" ▼	sensor type for analog input terminal >> AI00 <<	
157	defftyp01	AS_V_percent	"voltage input (0...100% = 0... ▼	sensor type for analog input terminal >> AI01 <<	
158	defftyp02	AS_T_Pt1000_2	"Pt-1000 (-50° C...650° C)" ▼	sensor type for analog input terminal >> AI02 <<	
159	defftyp03	AS_R_8000_2	"resistance in Ohm (0.5... ▼	sensor type for analog input terminal >> AI03 <<	

14. Finally go to "ANALOG OUTPUTS" to set the name for the AO points (AO0-AO3).

204		────────────── ANALOG OUTPUTS ──────────────		
205				
206				
207				
208				
209				
210				
211				
212				
213				
214		set UI page > AO-identifier < (maximum 35		
215				
216				
217	def08	reserve	identifier for analog output terminal >> AO00 <<	e.g. heating valve
218	def09	reserve	identifier for analog output terminal >> AO01 <<	e.g. HRC-damper
219	def10	reserve	identifier for analog output terminal >> AO02 <<	e.g. mix damper
220	def11	reserve	identifier for analog output terminal >> AO03 <<	e.g. cooling valve

15. Save and close the window. Now you can compile and upload to the controller to test the IO points online. For details, please refer to TT190505.
16. If you've custom FUP page that need to send the output to the IO module, please remember to set the "Cross Reference" as well. Please refer to TT180802 and TT190104 for reference.
17. If you're using OPEN 810 controller, or you need to add external CAN bus IO modules, you can do it similarly. Select the correct CAN IO module (like below). Make sure you select the "2nd Generation" IO module.
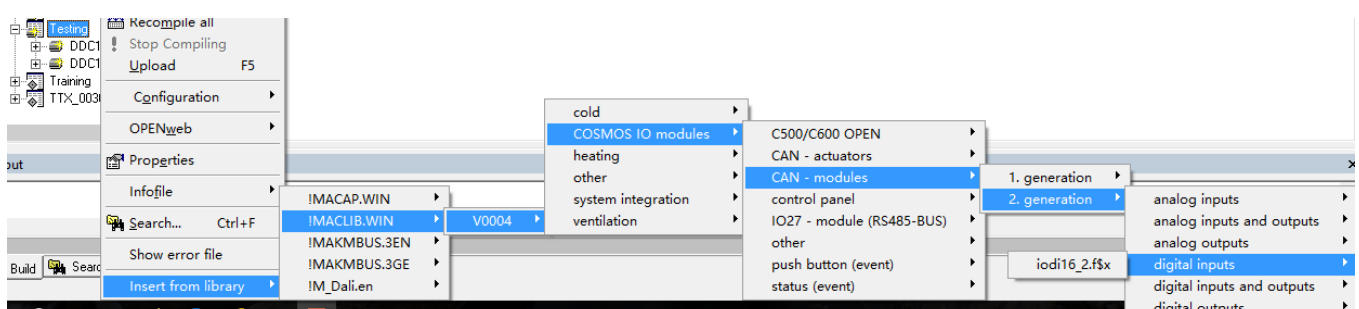
18. This time you need to be careful about the extension of the FUP page (.f0x). In the below example, the extension is ".f01". This means the IO module is set to CAN bus address 01.

19. The FUP page extension should match the CAN module address you installed on-site (like below). Please refer to TT200403 for details.

20. Normally, the address is automatically set when you add the module, starting from 01, 02, etc. You can also manually change it to another address if required.

21. You controller should look similar to this. Please note that the extension of the internal IO module (inai8ao4 and indi8o12) doesn't matter (it can be .f00 or .f01).

FUP page name	Status	Functionality	Object group
clock.f	MACRO	time functions	General
const.f	MACRO	assignment of the constants	General
empty.f	MACRO	empty page for graphic	General
inai8ao4.f01	MACRO	COSMOS IO (internal) AI8AO4H (DDC100) (-)	COSMOS IO modules
indi8o12.f01	MACRO	COSMOS IO (internal) DI8DO12H (DDC100) (-)	COSMOS IO modules
iodi16.f01	MACRO	COSMOS IO-module DI16 addr.01 (-)	COSMOS IO modules
iodo8.f02	MACRO	COSMOS IO-module DO8T addr.02 (-)	COSMOS IO modules
weekclk.f	MACRO	global weekly clocks	General