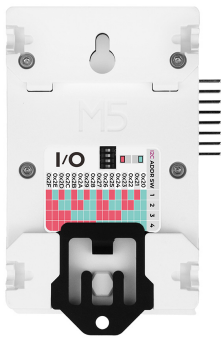
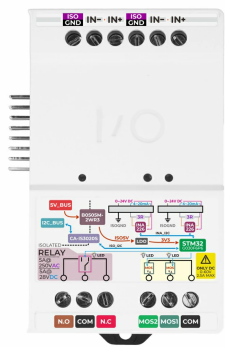
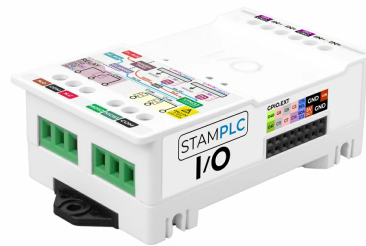
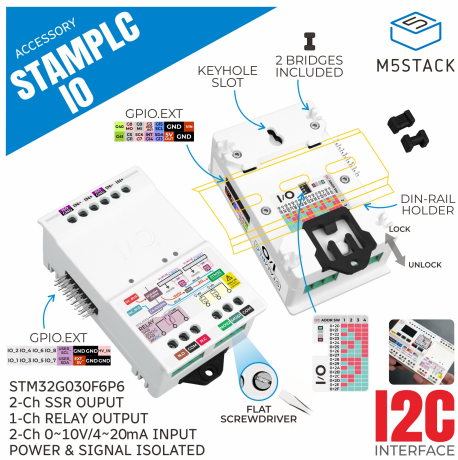


StamPLC IO

SKU:A176





Description

StamPLC IO is an electrically isolated IO expansion module designed for the StamPLC host and developed for industrial environments where high- and low-voltage circuits coexist. It provides two active analog acquisition channels, two solid-state relay outputs, and one mechanical relay output. The module supports signal acquisition from industrial active voltage and current sensors while controlling the on/off state of various load circuits. Its onboard STM32G030F6P6 main controller centrally manages external inputs and outputs, relay driving, address assignment, and I2C bus communication over the isolated channel. A hardware DIP switch allows the I2C address to be customized, enabling multiple modules to be connected in parallel or cascaded for flexible IO expansion.

The module integrates a CA-IS3020S digital isolator and B0505M-2WR3 isolated power module to provide complete electrical isolation between the communication bus and power circuit. This design effectively suppresses common-mode interference and surge impacts from sensors and field loads, significantly improving overall system stability. It is suitable for industrial automation applications such as power branch monitoring, low-voltage actuator driving, and sensor power management.

Features

- STM32G030F6P6 main controller
- I2C communication interface
- Onboard 4-position DIP switch for configuring the device I2C address
- 2 active analog signal detection channels
 - Supports DC 0 ~ 10V voltage-output sensors
 - Supports 4 ~ 20mA current-output sensors
- 2 solid-state relay control channels
 - Supports switching DC 0 ~ 60V MAX 2.5A circuits
- 1 mechanical relay control channel
 - Supports switching AC 250V@5A / DC 28V@5A circuits

- Built-in CA-IS3020S I2C isolator
- Built-in B0505M-2WR3 isolated power module
- Onboard relay output status indicator LEDs
- Protection circuits on input and output channels
- DIN rail mounting / mounting-hole installation

Includes

- 1 x StamPLC IO
- 2 x Mounting Bracket

Applications

- General-purpose analog signal acquisition
- External actuator switch control
- Remote control of relay dry contacts
- Multi-module isolated IO expansion

Specifications

Specification	Parameter
MCU	STM32G030F6P6
Communication	I2C @ 0x20
I2C Isolator	CA-IS3020S
Isolated Power Module	B0505M-2WR3
Power Conversion	TPAP7343D-33FS4
Voltage / Current Monitor	INA226AIDGSR
Detection Channels	2 analog signal detection channels (compatible with 4 ~ 20mA and 0 ~ 10V analog acquisition)
MOS Switch Output	2 solid-state relay outputs, MOS1 / MOS2, common terminal COM, supporting DC 0 ~ 60V MAX 2.5A switching
Relay Output	1 SRD-5VDC-SL-C mechanical relay, N.C / COM / N.O terminals, supporting AC 250V@5A / DC 28V@5A switching
Address Configuration	4-position DIP switch, configurable I2C address range: 0x20 ~ 0x2F
Control Interface Type	2 x 3P switch output / relay terminals, 1 x 6P input terminal
Installation	DIN rail mounting / mounting hole
Product Size	51.4 x 80.0 x 27.1mm
Product Weight	62.1g
Package Size	84.0 x 56.0 x 29.0mm
Gross Weight	69.2g

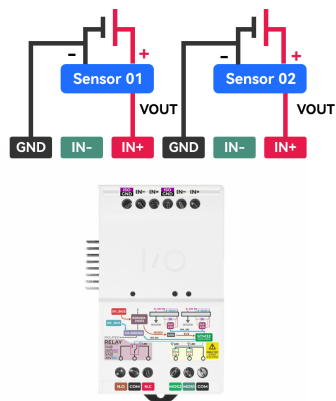
Learn

Voltage Sensor Wiring

- To measure voltage, connect an active device under test to the IN+ and ISO GND terminals of an input detection channel, as shown below:

Voltage Sensor

Input DC 0 ~ 10V

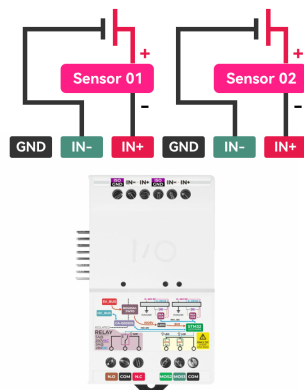


Current Sensor Wiring

- To measure current, connect an active device under test to the IN+ and IN- terminals of an input detection channel, as shown below:

Active Current Sensor

Input 4 ~ 20mA

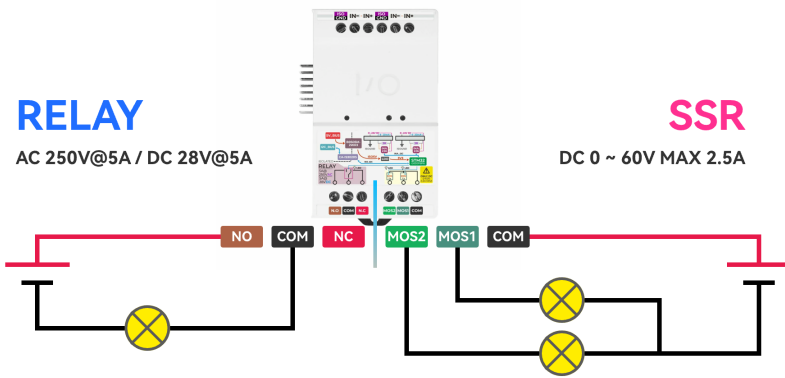


Relay Switch Wiring

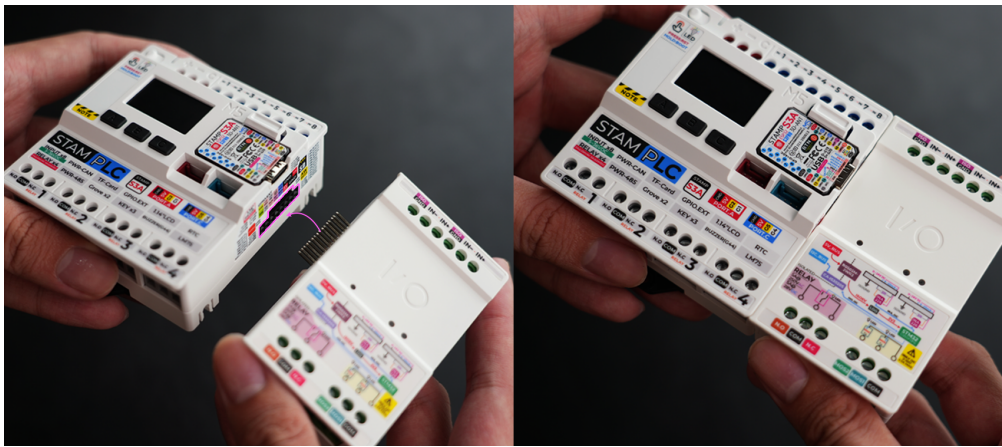
- The mechanical relay output provides N.C / COM / N.O terminals, while the solid-state relay output provides MOS1 / MOS2 / COM terminals. The wiring is shown below:

Safety Warning

When connecting 220V AC to the mechanical relay terminals, always follow safe operating procedures to avoid the risk of electric shock.

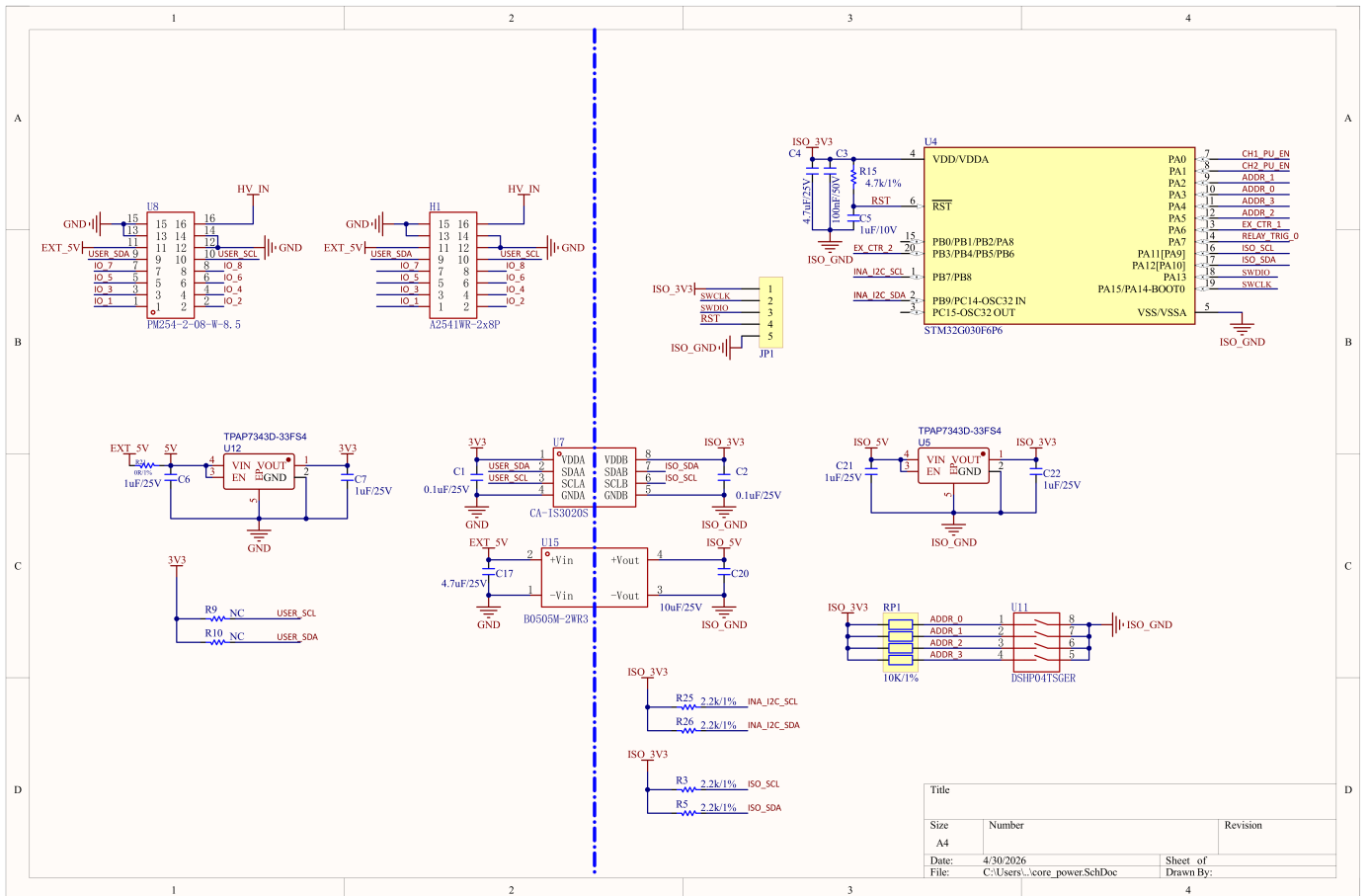
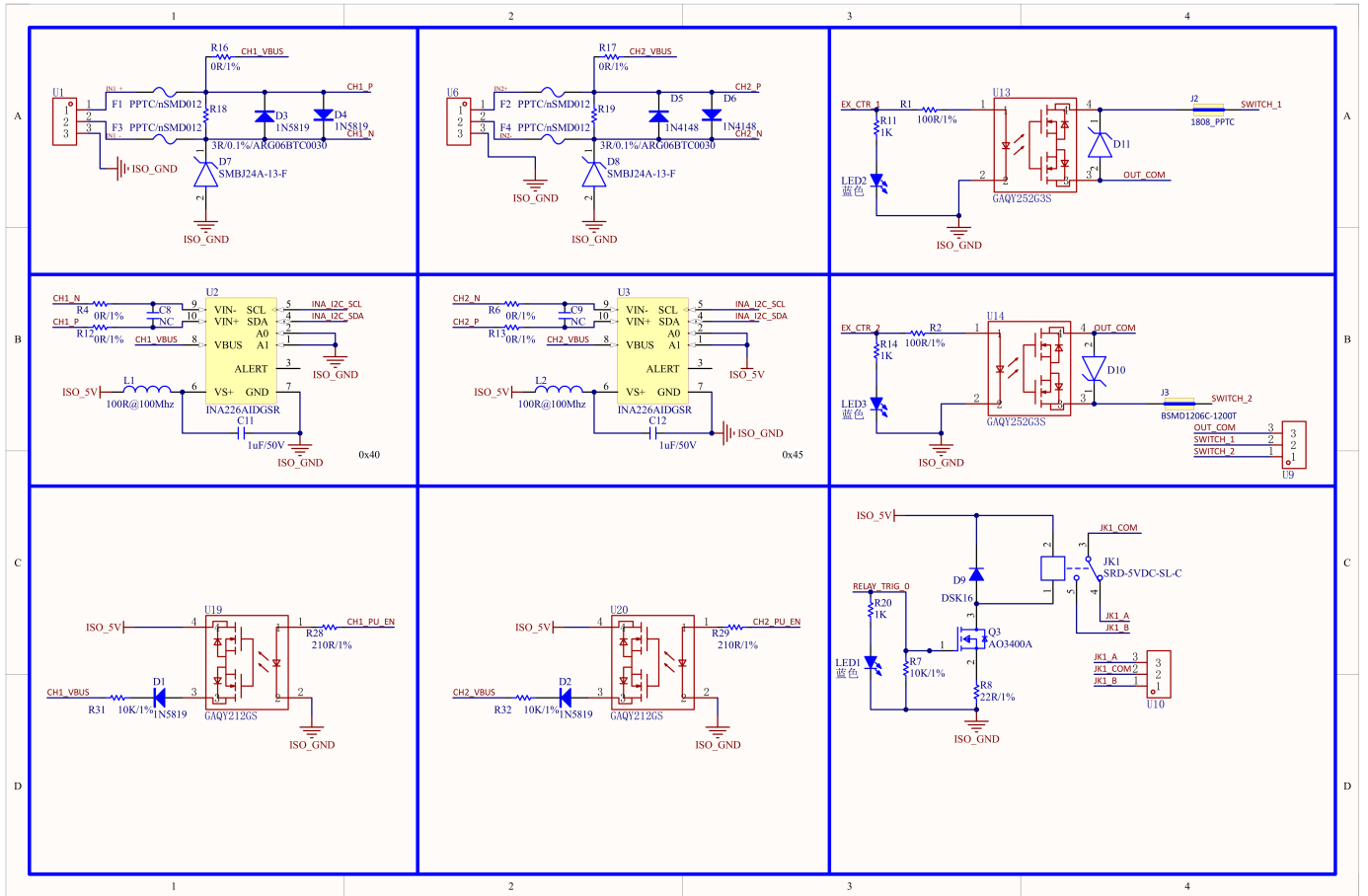


StamPLC and StamPLC IO Connection Diagram



Schematics

- [StamPLC IO Schematics PDF](#)



PinMap

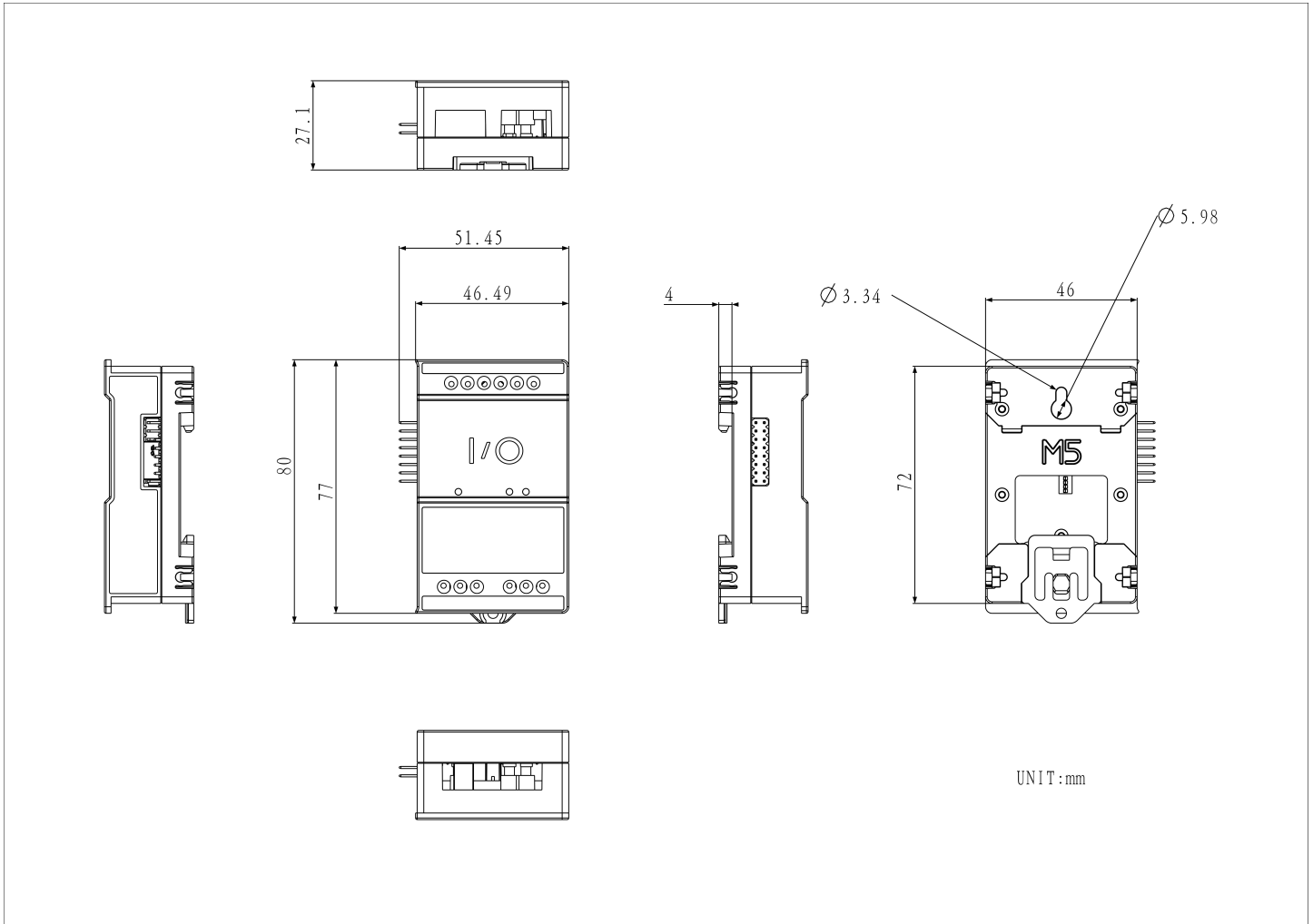
StamPLC	G15	G13
StamPLC IO	SCL	SDA

StamPLC-Bus

PIN	LEFT	RIGHT	PIN
IO_1	1	2	IO_2
IO_3	3	4	IO_4
IO_5	5	6	IO_6
IO_7	7	8	IO_8
USER_SDA	9	10	USER_SCL
EXT_5V	11	12	GND
GND	13	14	GND
GND	15	16	HV_IN

Model Size

◦ [StamPLC IO Model Size PDF](#)



Datasheets

- [STM32G030F6P6](#)
- [INA226AIDGSR](#)
- [CA-IS3020S](#)
- [TPAP7343D](#)

Softwares

Arduino

- [StamPLC IO Arduino Quick Start](#)
- [StamPLC IO Arduino Example](#)

Internal Firmware

- [StamPLC IO Internal Firmware](#)

Protocol

- [StamPLC IO I2C Protocol PDF](#)

StamPLC IO I2C Protocol														0x01 (FW Version)					
														6/16/2026					
REG MAP (Addr:0x20-0x2F)		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F		
INA226 Data	0x00 R	V_CH1 LSB (0x00)	V_CH1 MSB (0x01)	I_CH1 Byte0 (0x02)	I_CH1 Byte1 (0x03)	I_CH1 Byte2 (0x04)	I_CH1 Byte3 (0x05)	V_CH2 LSB (0x06)	V_CH2 MSB (0x07)	I_CH2 byte0 (0x08)	I_CH2 byte1 (0x09)	I_CH2 byte2 (0x0A)	I_CH2 byte3 (0x0B)					1. Voltage and current of INA226 channels 1 and 2, in mV and uA respectively. This register is read-only. 2. Configuration takes time to take effect; after writing, the register must be read to verify the data's validity.	
IO Control	0x10 W/R	IO Control (0x10)																IO Control: bit0 ev_ctr_1; bit1 ev_ctr_2; bit2 ch1_pu_en; bit3 ch2_pu_en; bit4 relay_trig_0; all are 1 for high level and 0 for low level. bit5 mode_select 0 = IO mode (controlled by bits 0-1), 1 = PWM mode (controlled by registers 0x30-0x34)	
INA226 Config	0x20 W/R	CH1 INA226 Config LSB (0x20)	CH1 INA226 Config MSB (0x21)	CH2 INA226 Config LSB (0x22)	CH1 INA226 Config MSB (0x23)													This register is a mapping of INA226 register 004. See the INA226 manual for details on AVG/VBUSCT/VSHTCT Bit Setting (bits 3-11). It can be used to configure the sampling time and averaging count. Other bits are readable and writable, but are protected and read-only.	
Time config	0x30 W/R	Freq	Duty1_Low	Duty1_High	Duty2_Low	Duty2_High												Freq: Timer frequency 1~100Hz (default: 50) Duty: Duty cycle (per mille) 0~1000 (default: 0)	
SYS	0xF0 R												SysStatus (0xF8)		Firmware (0xFE)	I2C Addr (0xFF)	SysStatus: bit0=1, Channel 1 INA226 initialization error; bit0=0, Channel 1 INA226 initialization normal; bit1=1, Channel 2 INA226 initialization error; bit1=0, Channel 2 INA226 initialization normal. Firmware: Firmware version. I2C Addr: When the STM32 is running, reading bits 0-6 of register 0xFF can obtain the 7-bit address set by the DIP switch. Writing the desired 7-bit address to bits 0-6 (used to verify that the user's desired I2C address matches the I2C address read by the DIP switch, and does not change the read values of bits 0-6), writing 1 to bit7 refreshes the setting, and the I2C address will be updated (bit7 is automatically cleared).		

I2C address corresponding to the DIP switch				
I2C_ADDR SW	0	1	2	3
0x20	OFF	OFF	OFF	OFF
0x21	ON	OFF	OFF	OFF
0x22	OFF	ON	OFF	OFF
0x23	ON	ON	OFF	OFF
0x24	OFF	OFF	ON	OFF
0x25	ON	OFF	ON	OFF
0x26	OFF	ON	ON	OFF
0x27	ON	ON	ON	OFF
0x28	OFF	OFF	OFF	ON
0x29	ON	OFF	OFF	ON
0x2A	OFF	ON	OFF	ON
0x2B	ON	ON	OFF	ON
0x2C	OFF	OFF	ON	ON
0x2D	ON	OFF	ON	ON
0x2E	OFF	ON	ON	ON
0x2F	ON	ON	ON	ON

Video

- [StamPLC IO Product Introduction and Feature Demonstration](#)

[A176_StamPLC_IO-video_EN.mp4](#)