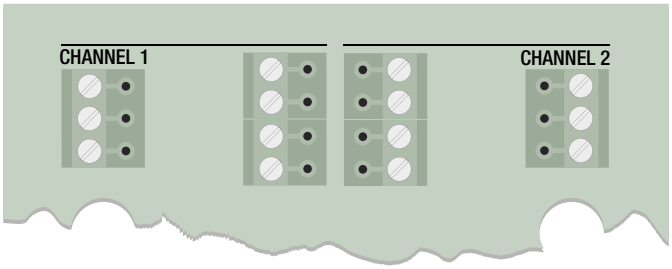
SX:UNO DUO

PRODUCT SHEET

INTRODUCTION

The SX:UNO/DUO is our standard module for fire damper control and is available in two versions. The SX:UNO provides channel 1 for connecting one damper, whereas the SX:DUO allows you to connect two dampers in separate channels.



FUNCTIONS

- Handles one (UNO) or two (DUO) fire/smoke dampers
- Smoke detector input
- Temperature sensor input (NTC)
- Able to control regulating fire/smoke dampers

The module is connected to a bus system that is controlled and supervised by a central unit (SX:ACCESS) or another technology such as PLC via a gateway (SX:NETLINK). The SX:ACCESS central unit is able to receive other fire alarms and to switch the module to fire alarm mode.

DID YOU KNOW

There is also a 10 kΩ NTC resistor input for a high temperature alarm or certain types of regulating dampers.

DFF FORM

The DFF form is a useful commissioning and troubleshooting tool. It provides a clear overview of the status and also allows you to change settings. Visual Setup needs to be installed before the DFF file can be run. All the software is available on our website siox.se

FUNCTION TESTING

There are several ways to start a function test:

- Via the central unit (SX:ACCESS)
- Via Modbus
- By pressing the button on the module
- Via a local schedule defined in the module*

NOTE

The timer restarts if there is a power failure. The interval is configured according to the chosen approach.

P marked dampers must be function tested every 48 hours.

The function test verifies that the damper closes and opens within a defined time. If it does not, a damper error is indicated and the module attempts to open the damper. The defined time is 40 seconds to close and 180 seconds to open.

A damper error is reset after a new function test cycle is completed successfully. Note that the module always starts with a function test when the power is switched on.

ALARMS

If an alarm occurs, the module cuts the power to the actuator, which closes by spring action.

The module switches to alarm mode when one of the following happens:

- The central unit reports a fire
- The higher-level system reports a fire (via Modbus)
- A connected smoke detector is triggered
- A connected temperature sensor exceeds the set limit
- The watchdog triggers on lost communication

A module can be included in multiple fire cells so it can be affected by different smoke detectors. The module always switches to alarm mode locally if a connected smoke detector or temperature sensor is triggered. When the module returns to normal mode, a function test is usually carried out. In alarm mode, function testing is blocked.

ALARM RELAY

The potential free alarm relay is closed unless the module is in fire alarm mode. For fan control, the function can be changed so that the relay is only closed when the dampers are indicated as open. Use the DFF form to change the function.

SMOKE DETECTOR

The smoke detector/smoke detector loop is connected between terminals SD (terminal 4) and GND (terminal 5). The module identifies service alarms and fire alarms and also whether the smoke detector contact is interrupted. If a fire alarm occurs or a smoke detector loop is interrupted, the connected dampers are closed. Smoke detectors with a 24 V DC power supply and a 2.2 kΩ termination resistor usually work with predefined alarm levels. The smoke detector alarm levels can be changed from the process diagram. The smoke detector is reset with the button, the Central Unit or via Modbus. When the product is delivered, the termination resistor is installed directly between terminals 4 and 5 (SD and GND).

TEMPERATURE SENSOR

A NTC temperature sensor (10 kΩ) is connected between terminals 6 and 7 (NTC and GND). The value can be obtained from the DFF form or via Modbus. If a temperature alarm level is set to a value other than 0 °C, a local fire alarm is indicated when the temperature is high or when the sensor is interrupted or short-circuited.

REGULATING DAMPERS

The module can control regulating dampers with spring return with the 0-10 V output at terminal 13 (and/or 23 for SX:DUO). If there is no need for the regulating function, this terminal is always at 10 V (fully open). The function is controlled by changing parameter 6 (and/or 7 for SX:DUO). You can set min/max values for the output in the DFF form.

DAMPER ERROR/DAMPER IN WRONG POSITION

A damper error is indicated after a failed function test or if a 2-position damper in the normal position drops its open indication. If a regulating damper is being used, the position indications are only monitored during the function test. A reset is only possible with a successful function test.

ADDRESSING

Each of the damper modules must have a unique address. When the modules is delivered, the station address is set to 62 (group address 0). Addressing normally takes place in a sequence using the Windows program SIOX Tools (recommended), the SX:ACCESS menu system, or the DFF form. During the addressing process, the physical button on the module is pressed. Normally a simple pressing on the button is needed, but if the button is pressed slightly longer before releasing (more than 2 seconds), the module also starts a function test after it receives its address.

Once they have been addressed, you will be able to identify the modules by sending a identification flash. You can do this from SIOX Tools - SEARCH AND LOAD or using the DFF form.

All the PC software you need can be downloaded from siox.se. Click here to go to our download package.

WATCHDOG

The watchdog monitors communication and switches the module to fire mode if communication is lost.

The watchdog can be set between 30-240 seconds via SX:ACCESS, the DFF form or Modbus.

NOTE

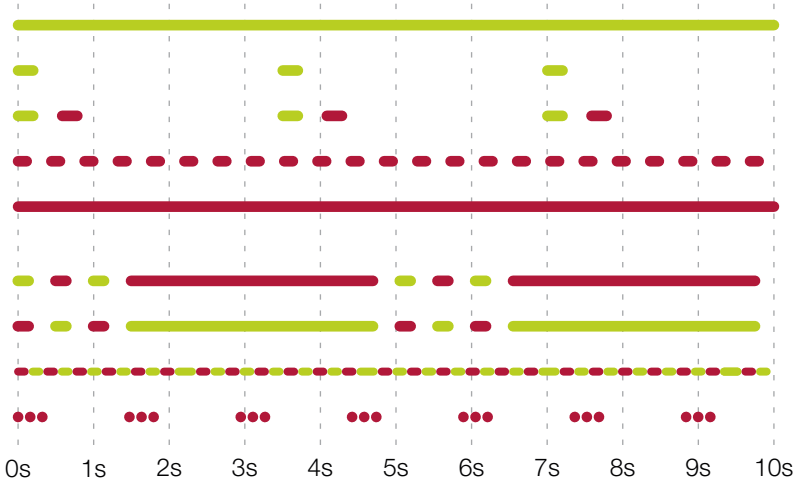
When the product is delivered, the watchdog is deactivated (set to 0 seconds) to prevent the dampers closing during the installation phase.

UNUSED DAMPER OUTPUT

If only one of the damper outputs is used, you can jumper the unused channel to prevent damper error alarms. I.e. if terminals 24-27 and 21-23 are unused, 24-25 and 26-27 should be jumpered. You can also permanently disable the fire damper function in the DFF form.

OPERATING MODE INDICATOR

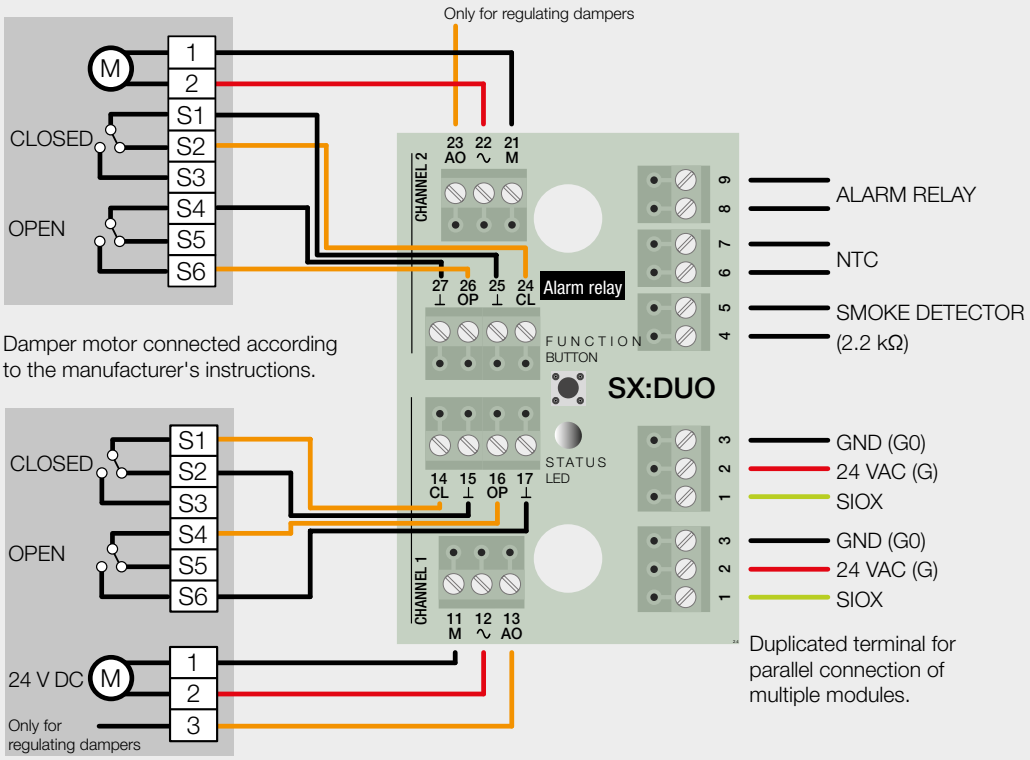
A bicolour LED (red/green) indicates the operating mode of the damper module.



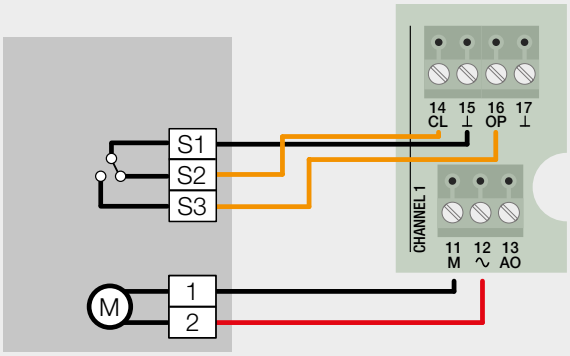
- Standby
- Standby with communication
- Standby with communication, watchdog not set
- Fire
- Damper fault / Motor short circuit / Service alarm in smoke detector / Button pressed
- Function test - Damper opening
- Function test - Damper closing
- Flashing for identification
- Sequential addressing taking place

CONNECTIONS

Connection of damper motors with S1-S6 as position indication.



Connection of 2-position damper motor with S1-S3 as position indication.



The connections above are only examples.
Variations may occur.

LIST OF PARAMETERS FOR SMOKE CONTROL OPTIONS

Each damper module has a 16-bit status register and a 16-bit command register (and some other registers which do not normally need to be changed). Each register can be read/written with a message according to the SIOX protocol. Settings can also be changed more permanently in EEPROM using similar protocol messages. If an SX:ACCESS or SX:NETLINK module is used, settings can also be changed with Modbus TCP, and there are two ways to define the register number. See also siox.se

STATUS FLAGS	SIOX		MODBUS			
	Param.	Bit	0base	1base	Bit	
Standby mode	$20	$0001	32.0	33.1	513	
Fire alarm mode	$20	$0002	32.1	33.2	514	Damper closed due to external/internal alarm
Smoke detector loop error	$20	$0004	32.2	33.3	515	Loop/temperature error
Error, damper 1	$20	$0008	32.3	33.4	516	
Function test mode	$20	$0010	32.4	33.5	517	
Error, damper 2	$20	$0020	32.5	33.6	518	For SX:DUO only
Sum error, damper 1 or 2	$20	$0040	32.6	33.7	519	
High temperature (NTC)	$20	$0080	32.7	33.8	520	Local alarm due to high temperature
Damper 1 closed	$20	$0100	32.8	33.9	521	
Damper 1 open	$20	$0200	32.9	33.10	522	
Damper 2 closed	$20	$0400	32.10	33.11	523	For SX:DUO only
Damper 2 open	$20	$0800	32.11	33.12	524	For SX:DUO only
Smoke detector normal mode	$20	$1000	32.12	33.13	525	
Fire, alarm point	$20	$2000	32.13	33.14	526	Local fire/temperature alarm
Smoke detector, service required	$20	$4000	32.14	33.15	527	
Smoke detector loop interrupted	$20	$8000	32.15	33.16	528	

The status flags are read as individual bits via Modbus function code 1 or 2. The status flags can also be read as register 32/33 via function code 3 or 4. Writing always takes place to the status flags.

COMMAND	SIOX		MODBUS			
	Param.	Bit	0base	1base	Bit	
Forced damper open	$2C	$0001	44.0	45.1	705	Selective smoke extraction, blocking alarm functions
External fire alarm	$2C	$0002	44.1	45.2	706	External fire closing order
Smoke detector reset	$2C	$0004	44.2	45.3	707	Reset automatically
Close damper	$2C	$0008	44.3	45.4	708	For example night closing
Function test	$2C	$0010	44.4	45.5	709	Reset automatically

Note: To reset the smoke detector and start the function test, writing should only take place once.

SETUP	SIOX		MODBUS		
	Param.	Default settings	0base	1base	
Watchdog time no comm.	$03	25	32771	32772	7705 = 30 seconds*. 25 = 0 seconds (default value)
Smoke detector, error level	$0C	200	32780	32781	Under this level, loop error=fire
Smoke detector, service level	$0D	1600	32781	32782	Above this level, a service alarm is indicated
Smoke detector, fire level	$0E	3000	32782	32783	Above this level, a fire alarm is set
High temperature level	$0F	0	32783	32784	(0.1ºC) 0=no alarm, 720 = 72ºC
Temperature sensor, actual value	$38		56	57	(0.1ºC). Only for reading RAM
Smoke detector, actual value	$39		57	58	(µA * 10). Only for reading RAM
Time until function test	$29		41	42	Hours RAM
Function test interval	$23	48	32803	32804	Hours 0=no local function testing
Closing time, damper	$24	40	32804	32805	Max damper closing time (s) in function test
Opening time, damper	$2A	180	32810	32811	Max damper opening time (s) in function test

Note: Modbus registers 32xxx are saved in EEPROM (non-volatile memory). Do not constantly write to them because each register is guaranteed for a maximum of 1 million write operations. The time unit for the closing time and opening time is 1/16 second. For example, the actual parameter value for 40 seconds is 640.

* Formula: Seconds x 256 + 25. (Example: 30 seconds x 256 + 25 = 7705)

ANALOGUE OUTPUT	SIOX		MODBUS		
	Param.	Default settings	0base	1base	
Analogue out, damper 1	$06	$1000	6	7	$1000=4096 means 100% open= 10 V
Analogue out, damper 2	$07	$1000	7	8	$1000=4096 means 100% open= 10 V