OMRON

Sensor Controller

S3D2

Easy-to-use Sensor Controller for Logic Control Functions

Wide voltage input for universal operation, (100–240 AC) has a built-in 12 VDC power supply for sensors.

Switch selectable functions include AND/OR operation, timer functions (ON-delay, OFF-delay, one-shot) adjustable from 0.1 to 10 secs and input signal selector.

Illuminating indicators register power supply, inputs 1 & 2 and output.

High speed response (0.1 ms) and input rising-edge functions combine to give excellent performances for processing high demand applications.

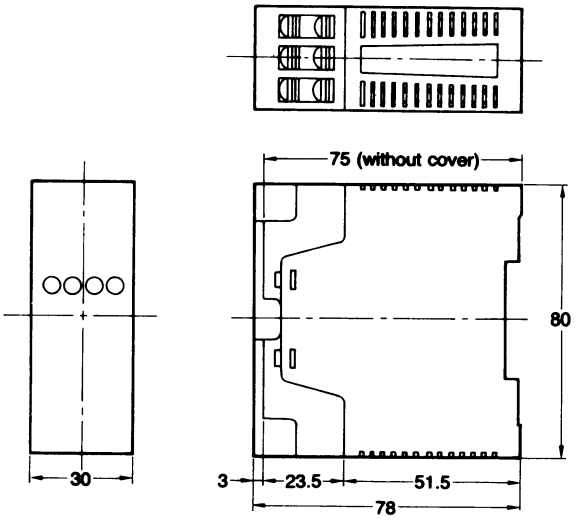
DIN Rail mounting

Ordering Information

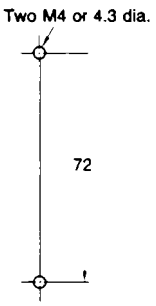
Order Number		S3D2-CK-US
Rated supply voltage		100 to 240 VAC±10% 50/60 Hz
Power supply for sensor		12 VDC 10% 200 mA max. (with short-circuit protection)
Connected sensor		NPN transistor output or contact output
Signal input	**ON**	0 to 4 V (5 mA min.)
	OFF	8 to 12 V (2 mA max.)
	Short circuit current	10 mA typ. (18 mA max.)
	Max. applied voltage	12 V

Input response time	0.1 ms
Control output	Relay output contact SPDT 250 VAC 3A
Output response time	10 ms max.
Timer functions	One-shot, ON-delay and OFF-delay selectable 0.1 to 1 s, 1 to 10 s (selectable)
Other functions	Signal input function. Synchronous mode selectable function AND/OR operation mode selectable function
Ambient temperature	Operation: –10° to 55°C

Dimensions

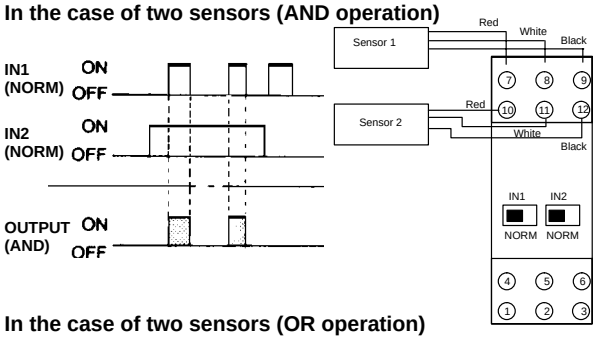


Mounting holes
(in the case of direct mounting)



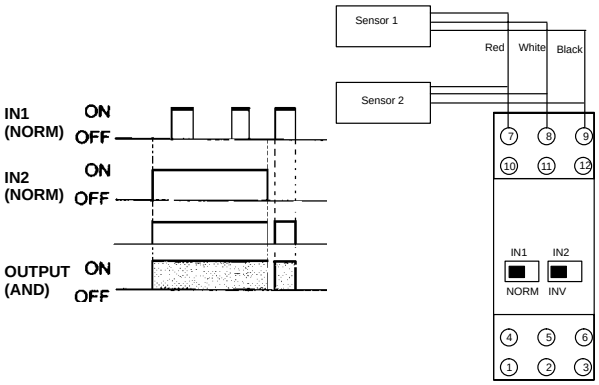
Operation

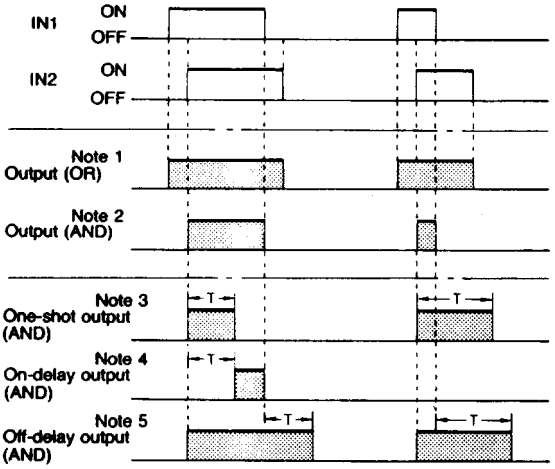
In the case of two sensors (AND operation)



In the case of two sensors (OR operation)

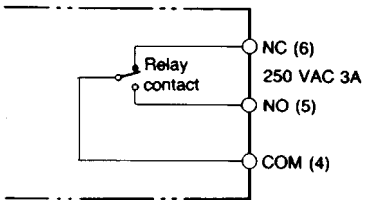
Note: When two sensors are wired OR and then receive input (IN1 or IN2), OR operation is possible.





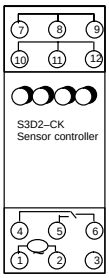
Output Circuit

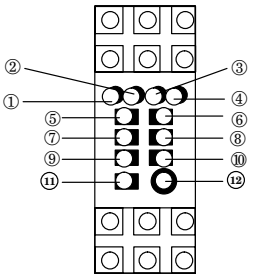
Relay output/S3D2-AK□-US/-BK-US/-CK□-US



Note: 1. IN1 and IN2 issue OR output.
2. IN1 and IN2 issue AND output.
3. IN1 and IN2 issue AND output for T seconds from the rising point
4. IN1 and IN2 issue AND output with a time delay of T seconds from rising point.
5. IN1 and IN2 issue AND output for T seconds from the falling point.

Nomenclature





Terminal arrangement

①&② Power terminal supplies a voltage of 100 to 240 VAC
③ FG terminal (In a location where much noise is expected, ground this terminal at a ground resistance of 100W max.)
④to⑥ Output terminals
⑦,⑩ Power terminal for the sensor (+12V)
⑨,⑪ Power terminal for the sensor (0V)
⑧,⑫ Output terminals for the sensor (input of the sensor, synchronous input)
Connect the output wiring of the sensor.

No.	Name	Functions
1	Power supply indicator	This lights when the operating power is turned on and at the same time, the output is issued from the power supply for sensors. It does not illuminate when the operating power is turned off, or the power supply output for sensors is short-circuited (between +12 V terminal and 0 V terminal).
2	IN1 indicator	This lights when it receives the output of the sensor which is connected with IN1 as an input.
3	IN2 indicator	This lights when it receives the output of the sensor which is connected with IN2 as an input.
4	OUT indicator	This lights when the output is turned on.
5	IN1 input signal selector switch	NORM: When the transistor (or output contact) is turned on, the switch receives it as a signal. INV: When the transistor (or output contact) is turned off, the switch receives it as a signal.
6	IN2 input signal selector switch	

No.	Name	Functions
7	AND/OR operation selector switch	AND: The output is turned on when input signals of both IN1 and IN2 are turned on. OR: The output is turned on when input signal of either IN1 or IN2 is turned on.
8	Synchronous mode selector switch (This switch can operate only when AND is selected on the AND/OR operation selector switch)	The output is turned on during the input signals when both IN1 and IN2 are turned on. If the input signal of IN2 is turned on (at the rising time), when that of the IN1 is in the ON state, the output is turned on.
9	Timer switch	With this switch, ON or OFF of timer operation is selected. When ON, the timer function operates. When OFF the timer function does not operate.
10	Timer timing selector switch	With this switch, ranges of timer setting are changed. (Model S3D2–CK, –CKB) 1s: Setting time lies in the range of 0.1 to 1s. 10 s Setting time lies in the range of 1 s to 10 s. (Model S3D2–CC, –CCB 0.1s: Setting time lies in the range of 0.01 to 0.1s 1 s: Setting time lies in the range of 0.1 to 1 s
11	Timer operation selector switch	OS: One shot delay timer ON.D ON delay timer OFF.D OFF delay timer
12	Time setting trimmer	Setting time can be adjusted with the necessary screwdriver. It rotates 190°

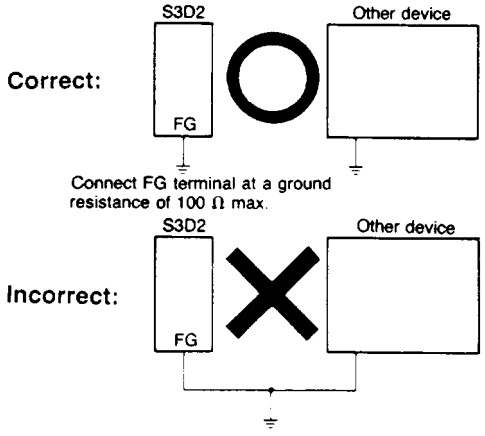
Precautions

Operation and wiring

Connect the power supply to the power terminals correctly. Use a power supply with a voltage range of 100 to 240 VAC (±10%).

FG is a ground terminal. When it is used in a location where much noise is expected, or in the case of malfunction of the S3D2, ground this terminal at a ground resistance of 100 Ω max.

Note that using a ground wire in common with other devices or connecting it with a beam of a building has no effect and may affect the sensor.

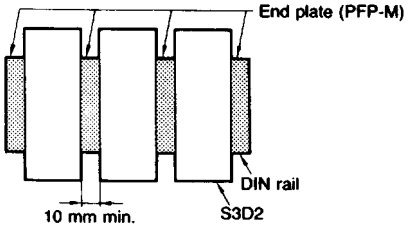


Storing in a protective case

Heat radiation from the body of the S3D2 may cause the insides of protection casings to heat up if adequate precautions are not taken.

Side-by-side mounting

When two or more units of the S3D2 sensor are to be mounted side-by-side, be sure to leave a minimum distance of 10 mm between the two units.



If side-by-side mounting is unavoidable, refer to the following load derating curve.

Load derating curve