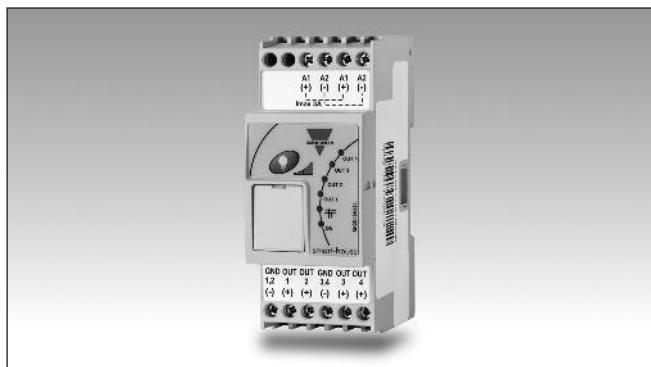


# Smart Dupline® Analogue Output Dimmer Type SH2D10V424

CARLO GAVAZZI



- Dimmer for adjustable ballast with 1 to 10 V input
- Supplied by 24V
- 4 independent dimmable outputs
- 2 DIN housing
- LED indication for power supply, Dupline® bus, output status
- Connection to other cabinet modules via local bus

## Product Description

This 1 to 10 V universal dimmer is designed for DIN-rail mounting and is 2 DIN wide. It has 4 independent outputs which, according to the defined dim percentage, give a relevant output from 1 to 10 V. It is suitable for dimming adjustable ballasts with 1 to 10 V analogue inputs.

To ensure the switching function to the electronic ballast, the SH2D10V424 has to be coupled with one or more output relay modules.

## Ordering Key

**SH 2 D 10V 4 24**

Smart House \_\_\_\_\_  
2-DIN housing \_\_\_\_\_  
Dimmer \_\_\_\_\_  
Max. voltage output \_\_\_\_\_  
Output number \_\_\_\_\_  
Power supply \_\_\_\_\_

## Type Selection

Housing	Mounting	Max. voltage output	Output number	Supply: 15 to 30 VDC
2 DIN	DIN-rail	10 V	4	SH2D10V424

## Output Specifications

Ballast outputs	4
Dimming capacity	4 x 1 to 10 V
Max. load capacity	50 mA on each output
Output type	Power mosfet
Ramp time	Programmable via Tool
Connections	
Output 1	1/2 -, 1+
Output 2	1/2 -, 2+
Output 3	3/4 -, 3+
Output 4	3/4 -, 4+

## Supply Specifications

Power supply	Overvoltage cat. II (IEC 60664-1, par. 4.3.3.2)
Rated operational voltage	24 VDC ±20%
Rated pulse voltage	500V (1,2/50µs) (IEC 60664-1, tab. F.1)
Rated operational power	430 mW
Protection for reverse polarity	Yes
Connection	2xA1 (+) and 2xA2 (-)- (2 pairs of terminals internally connected)
Power on delay	Typ. 4 s
Power off delay	≤ 1 s

## Input Specifications

Keypad	For local ON/OFF switching
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## Dupline® Output Specifications

Voltage	8.2 V
Maximum Dupline® voltage	10 V
Minimum Dupline® voltage	5.5 V
Maximum Dupline® current	1.1 mA

## General Specifications

<b>Installation category</b>	Cat. II	<b>Connection</b>	
<b>Dielectric strength</b>		Terminal	12 screw-type
Power supply to Dupline®	500V pulse 1.2/50µs	Cable cross-section	max. 1.5 mm <sup>2</sup>
	500V AC for 1 minute	Tightening torque	0.4 Nm / 0.8 Nm
Power supply to output and Dupline® to output	6 kV pulse 1.2/50µs	<b>Housing</b>	
	4 kV AC for 1 minute	Dimensions	2 DIN module
<b>Address assignment</b>	Automatic: the controller recognises the module through the SIN (Specific Identification Number) that has to be inserted in the configuration tool	Material	Noryl
<b>Fail-safe mode</b>	In case of interruption of the smart-house connection, the channel will be forced into a specific optional status as described below	<b>Weight</b>	150 g
<b>Environment</b>		<b>CE Marking</b>	Yes
Degree of protection		<b>EMC</b>	
Front	IP 50	Immunity	EN 61000-6-2
Screw terminal	IP 20	- Electrostatic discharge	EN 61000-4-2
Pollution degree	2 (IEC 60664-1, par. 4.6.2)	- Radiated radiofrequency	EN 61000-4-3
Operating temperature	-20° to +50°C (-4° to 122°F)	- Burst immunity	EN 61000-4-4
Storage temperature	-50° to +85°C (-58° to 185°F)	- Surge	EN 61000-4-5
Humidity (non-condensing)	20 to 80% RH	- Conducted radio frequency	EN 61000-4-6
<b>LED's indication</b>		- Power frequency magnetic fields	EN 61000-4-8
Power status	1 green	- Voltage dips, variations, interruptions	EN 61000-4-11
Dupline® status	1 yellow	Emission	EN 61000-6-3
Output status	4 red	- Conducted and radiated emissions	CISPR 22 (EN55022), cl. B
		- Conducted emissions	CISPR 16-2-1 (EN55016-2-1)
		- Radiated emissions	CISPR 16-2-3 (EN55016-2-3)

## Mode of Operation

### Working mode

If the SH2D10V424 is connected to the Dupline bus and the bus is working properly, the dimmer is in STANDARD mode and the green LED is ON. The dimmer enters LOCAL mode if the push button is pressed or if the bus is faulty or not connected. In LOCAL mode the dimmer doesn't accept any command from the bus and the green LED will be flashing. The dimmer can go back to STANDARD mode only when the bus is ok and after one of the following events: 1) As soon as the Dupline bus returns 2) After a timeout of 1 minute after a button press 3) After a power cycle.

### Push button

The push button can be used with a short or long pulse (>2 seconds). Short pulse: all the 4 outputs are switched ON/OFF (toggle

function) with the set value. Factory setting is 100%, so the first time this push button is pressed with a short pulse, the light is switched ON to 100%. If a different light scene is memorised in the module, the light is switched ON at that level. Long pulse: by keeping the key pressed for more than 2 seconds, the light will be increased up to 100% and then decreased down to 5%. This will be repeated until the key is kept pressed. Every time the button is pressed, the ramp is inverted. When pressing the button either short or long all the 4 outputs will be driven at the same time. The activation of the push button overwrites the failsafe condition.

### SH2D10V424 & Relay out module

Once configuring a dimmer function, if a SH2D10V424 is

used, the relay output modules also have to be selected: they could be the decentral or cabinet modules listed below.

- SH2RE16A4
- SH2RE16A2E230
- BDA-RE13A-U

### Programmable parameters

#### Output voltage

In order to set the best output curve to drive 1-10V dimmable LEDs or ballasts, the user can define 6 thresholds for the output voltage.

**Threshold 1.** This is the wanted output voltage at 0% of light intensity.

**Threshold 2.** This is the wanted output voltage at 5% of light intensity.

**Threshold 3.** This is the wanted output voltage at 30% of light intensity.

**Threshold 4.** This is the wanted output voltage at 50% of light intensity.

**Threshold 5.** This is the wanted output voltage at

70% of light intensity. **Threshold 6.** This is the wanted output voltage at 90% of light intensity. The programming of these 6 values are done by means of the SH tool software. One example of using this threshold are 1-10V, converters that have an energy save system according to which they shut down if the input voltage is below a pre-defined value, usually around 1.2-2V. In this case threshold 1 (@0%) should be set at this minimum value. Please see fig. Output curves: Ballast 1 is an example of output curve for a ballast while LED 1 is an example of an output curve for a 1-10V LED (see page 3).

### Soft start/stop

The soft start and soft stop times are programmable from 0 to 30 seconds via the configuration tool. The default value is 2.

## Mode of Operation (cont.)

### Ramp time

The ramp time is programmable from 0 to 30 seconds via the configuration tool. The default value is 2.

always OFF, always ON or back to the status they were before the disconnection. The factory setting is outputs always OFF.

### Fail safe condition

The output state of the dimmer is programmed via the SH Tool: the user can choose if the outputs are

## LEDs Indication

### Red LED: 4 output LEDs.

**OUT1:** Output 1 status indication: ON output1 active.

**OUT2:** Output 2 status indication: ON output2 active.

**OUT3:** Output 3 status indication: ON output3 active.

**OUT4:** Output 4 status indication: ON output4 active.

**Yellow LED:** if the dupline bus is working properly, it is always ON.

If there is a fault on the bus it will be flashing.

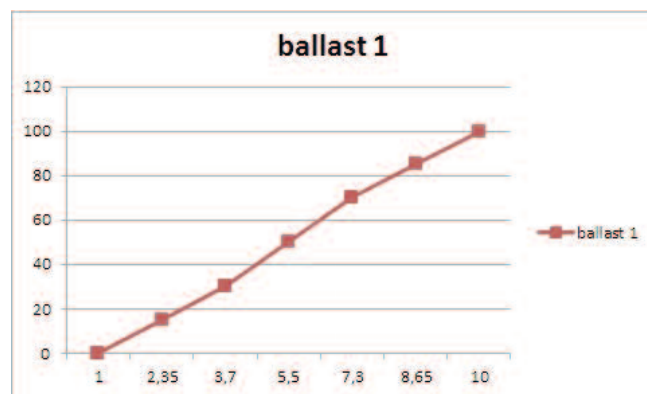
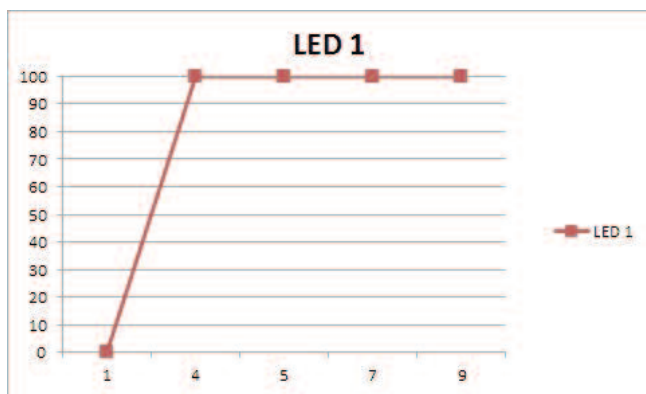
It is OFF if the bus is OFF or not connected.

### Green LED: power status.

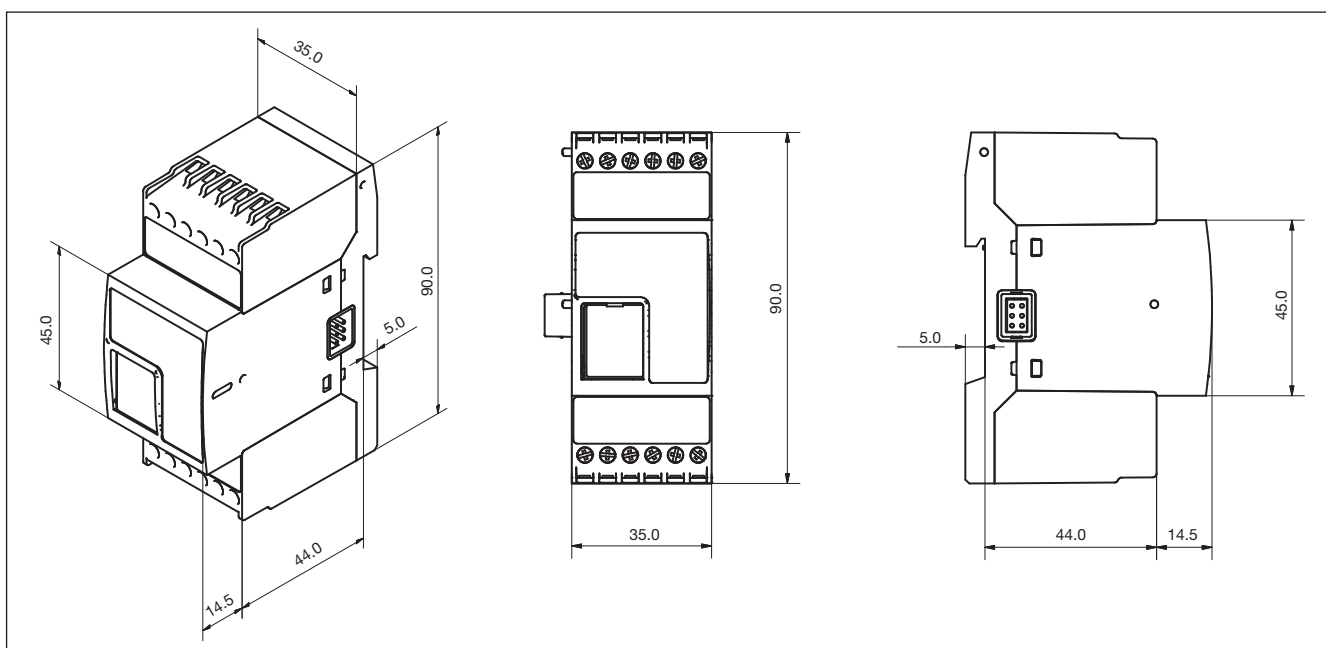
ON: Supply ON

OFF: Supply OFF

## Output Curves

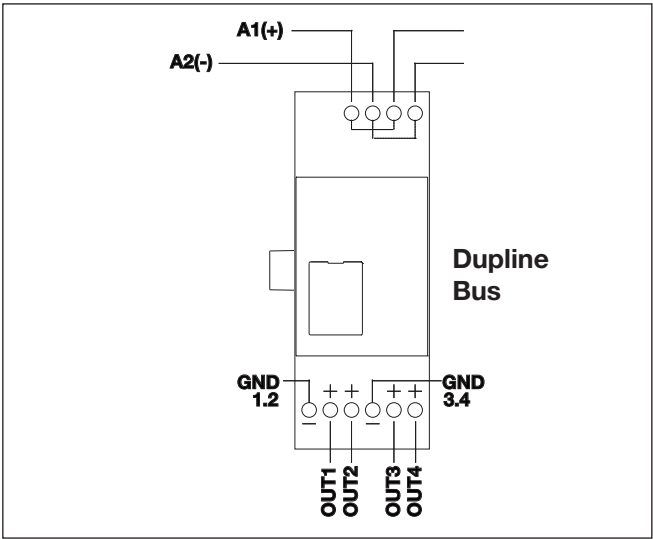


## Dimensions





Wiring Diagram



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