

Photoelectrics Amplifier Types S1420, S1421

CARLO GAVAZZI



- Amplifier relay for photoelectric switches
- Sensivity range DIP-switch selectable
- Sensivity adjustment by potmeter
- Dirt accumulation alarm and alignment control
- Timer functions
- Modulated and synchronized light
- Make and break switching funct. DIP-switch selectable
- Rated operational voltage:
24 VDC or VAC, 115 VAC, 230 VAC
- Output 10 A/250 V SPDT relay and 100 mA NPN
- LED indications: Power supply, output, level
- Plug-in module

Product Description

Amplifier relay for long-range photoelectric switch types MIF, MKF, MHF, MCF, MDF, MMF, MNF and MFFD. Carlo Gavazzi "S-System" plug-in housing. Adjustable sensitivity, high and low range selection with LED indication. Mis-

alignment and dirt accumulation alarm output. Make and break switching function DIP-switch selectable. Short-circuit protected supply to photoelectric switches. ON-delay and OFF-delay adjustable from 0 to 10 s on S1421 types.

Ordering Key

S142 1 156 724

Type _____
Special function _____
Output type _____
Power supply _____

Type Selection

Plug type	Function	Ordering no. Supply: 24 VDC	Ordering no. Supply: 24 VAC	Ordering no. Supply: 115 VAC	Ordering no. Supply: 230 VAC
Circular 11 pins	Adjustable sensitivity, dirt alarm, alignment indication	S 1420 156 724	S 1420 156 024	S 1420 156 115	S 1420 156 230
Circular 11 pins	Adjustable sensitivity, dirt alarm, alignment indication, ON delay & OFF delay	S 1421 156 724	S 1421 156 024	S 1421 156 115	S 1421 156 230

Specifications

Rated operational volt. AC types (U_B) pins 2 & 10	230 115 024	195 to 265 VAC, 45 to 65 Hz 98 to 132 VAC, 45 to 65 Hz 20.4 to 27.6 VAC, 45 to 65 Hz	Supply to photoelectric switch	Pins 5 & 7 8 V square wave ≤ 100 mA short-circuit protected 35 kHz 47 Ω Pins 6 & 8 8 VDC 18 mA 470 Ω UL, CSA Yes
Voltage Interruption	≤ 40 ms		Emitter Supply voltage (open loop) Current	
Dielectric voltage	≥ 2.0 kVAC (rms)		Light modulation frequency Output resistance	
Rated impulse withstand volt.	4 kV (1.2/50 μs)		Receiver Supply voltage (open loop) Short circuit current Input resistance	
Rated operational volt. DC types (U_B) pins 2 positive & 10 negative	724	20.4 to 27.6 VDC	Approvals	
Dielectric voltage	None		CE-marking	
Rated impulse withstand volt.	800 V (1.2/50 μs)			
Rated operational power AC supply DC supply	2.5 VA 3 W			



Specifications (cont.)

Output Specifications Switching function Contact output current (1 & 3) Continuous AC (I_a) Continuous DC (I_a) Contact life mechanical Contact life electrical NPN Output (Pin 9) Continuous (I_a) Short-time (I) Alarm function (Pin 11) NPN Output Continuous (I_a) Short-time (I)	10 A/250 VAC ohmic load (2500 VA) 1 A/250 VDC ohmic load (250 W) 30 x 10 ⁵ operations 2.5 x 10 ⁵ operations 100 mA/40 VDC not protected 100 mA/40 VDC 100 mA/40 VDC, not protected 100 mA/40 VDC	Sensitivity (cont.) Operating frequency (f) Light/dark ratio 1:1 Contact output NPN output Response time OFF-ON (t_{ON}) ON-OFF (t_{OFF}) Power ON delay (t_v) Output function Indication Supply ON Output ON Alignment/dirt accumulation (sensitivity level) Environment Overvoltage category Degree of protection Pollution degree Temperature Operating Storage Weight AC supply DC supply	Note: <ul style="list-style-type: none"> Maximum range indicated on photoelectric switch data sheet in high sensitivity range only Operation within low sensitivity range, increases ambient light and crosstalk immunity. <table border="1"> <thead> <tr> <th></th> <th>S 1420</th> <th>S 1421</th> </tr> </thead> <tbody> <tr> <td>Contact output</td> <td>15 Hz</td> <td>5 Hz delayset</td> </tr> <tr> <td>NPN output</td> <td>15 Hz</td> <td>5 Hz delayset</td> </tr> <tr> <td>OFF-ON (t_{ON})</td> <td>33 ms</td> <td>0.1 to 14 s +/- 4 s</td> </tr> <tr> <td>ON-OFF (t_{OFF})</td> <td>33 ms</td> <td>0.1 to 14 s +/- 4 s ON and OFF delay</td> </tr> <tr> <td>Power ON delay (t_v)</td> <td colspan="2">< 300 ms</td> </tr> <tr> <td>Output function</td> <td colspan="2">Make and break switching DIP-switch selectable</td> </tr> <tr> <td>Indication</td> <td colspan="2">LED, green LED, red LED, yellow (Steadily on if sensitivity adjusted properly)</td> </tr> <tr> <td>Environment</td> <td colspan="2">III (IEC 66064) IP 20 (IEC 60529, 60947-1) 3 (IEC 60664/60664A, 60947-1)</td> </tr> <tr> <td>Temperature</td> <td colspan="2">-20° to +50°C (-4° to +122°F) -50° to +85°C (-58° to +185°F)</td> </tr> <tr> <td>Weight</td> <td colspan="2">200 g 125 g</td> </tr> </tbody> </table>		S 1420	S 1421	Contact output	15 Hz	5 Hz delayset	NPN output	15 Hz	5 Hz delayset	OFF-ON (t_{ON})	33 ms	0.1 to 14 s +/- 4 s	ON-OFF (t_{OFF})	33 ms	0.1 to 14 s +/- 4 s ON and OFF delay	Power ON delay (t_v)	< 300 ms		Output function	Make and break switching DIP-switch selectable		Indication	LED, green LED, red LED, yellow (Steadily on if sensitivity adjusted properly)		Environment	III (IEC 66064) IP 20 (IEC 60529, 60947-1) 3 (IEC 60664/60664A, 60947-1)		Temperature	-20° to +50°C (-4° to +122°F) -50° to +85°C (-58° to +185°F)		Weight	200 g 125 g	
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Weight	200 g 125 g																																			
Rated insulation volt. (U_i) Dielectric voltage Rated impulse withstand volt. Sensitivity (% of S_n)	250 VAC (rms) ≥ 2.0 kVAC (rms) (contact/electronics) 4 kV (1.2/50 μs) (contact/ electronics) (IEC 664) <ul style="list-style-type: none"> 2 ranges, DIP-switch selectable - low sensitivity (25%) - high sensitivity (100%) Fine adjustment with 270° turn knob 																																			

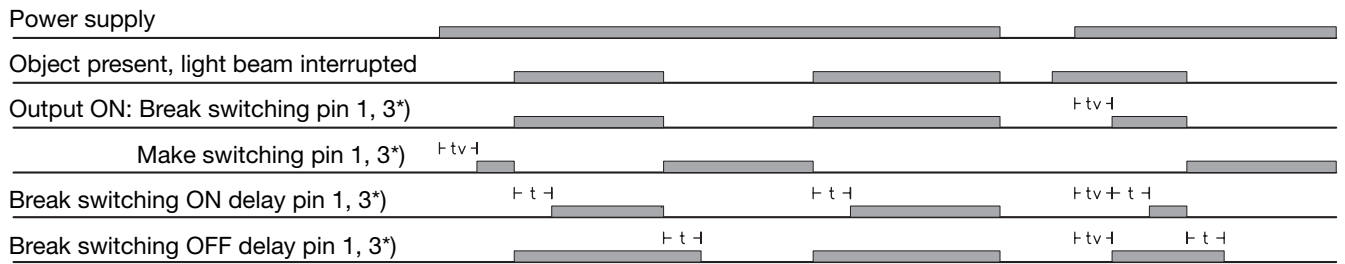
Truth Table

	Make switching			Break switching		
	Yes	No	No	Yes	No	No
Object present	Yes	No	No	Yes	No	No
Dirt on lenses, misaligned or sensitivity too low	--	No	Yes ¹⁾	--	No	Yes ¹⁾
Output LED red	OFF	ON	ON	ON	OFF	OFF
Level LED yellow	OFF	ON steadily	OFF or weakly OFF	OFF	ON steadily	OFF or weakly OFF
Load Pins 1&3	N-act.	Active	Active	Active.	N-act.	N-act.
Output NPN Pi. 9&7	High	Low	Low	Low	High	High
Alarm Output ²⁾ NPN Pins 11&7	High	High	Low	High	High	Low

¹⁾ Under normal operating conditions, the yellow level indication LED has to be on steadily (bright) and alarm output has to be high.

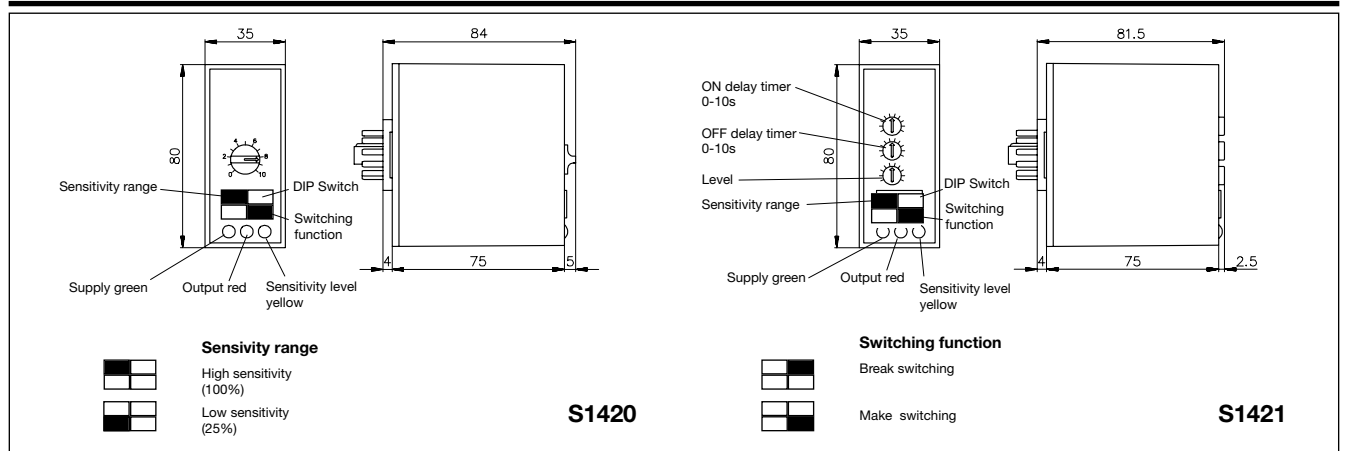
²⁾ The alarm output will turn on shortly each time an object enters or exits the sensing zone, even if the photoelectric switch is correctly installed and adjusted. To avoid false signals, the alarm functions should be delayed with an external ON delay timer (i.e. Carlo Gavazzi timer S111 series).

Operation Diagram

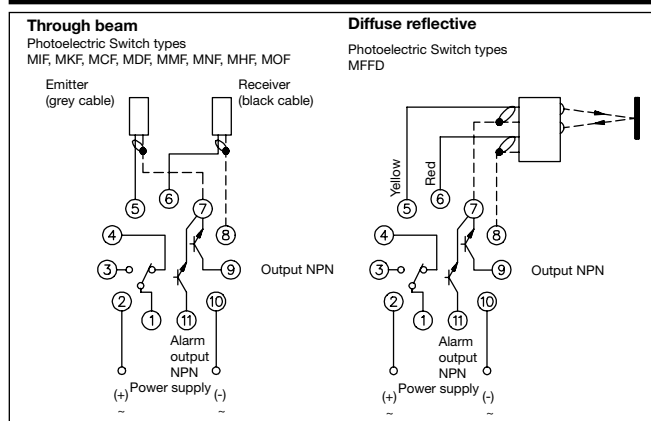


*) Switching function selected by DIP-switch, inverted function on pin 1, 4

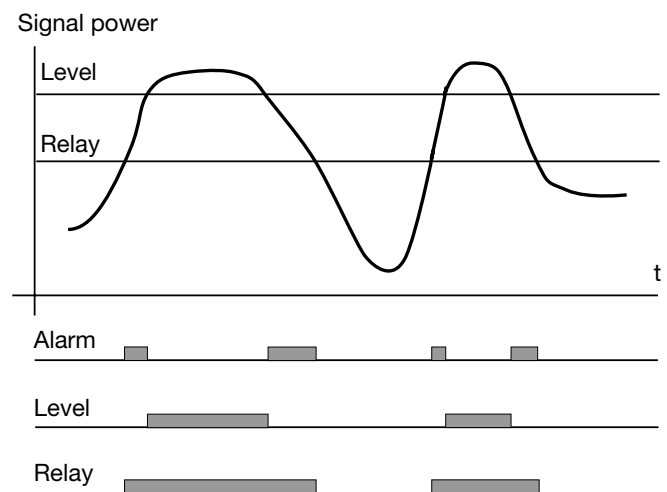
Dimensions



Wiring Diagrams



Alarm Diagram



Accessories

- 11 pole circular socket S111, S111A, S411, ZPD11
- Socket cover for S111 BB1
- Socket cover for S411 BB4
- Holding down spring HF
- Mounting rack SM13
- Front panel mounting bezel FRS2
- Potentiometer knob lock PL1

Delivery Contents

- Amplifier
- Packaging: styropor box