

Photoelectrics Amplifier Type S1423

CARLO GAVAZZI



- Amplifier relay for photoelectric switches
- Multiplex system, master/slave 20 ms cycle
- Sensitivity range DIP-switch selectable
- Sensitivity adjustment by potmeter
- Dirt accumulation and alignment control
- 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, NPN Alarm
- Plug-in module
- LED indications: power supply, output, level

Product Description

Amplifier relay for multiplexed photoelectric switch system. Consisting of 1 master and up to 10 slave amplifiers. No optical crosstalk possible between high and low range.

Alignment or dirt accumulation and sensitivity level indication. Make and break switching function selectable. Short circuit protected supply to photoelectric switches.

Ordering Key

S142 3 156 724

Type _____
 Multiplex system _____
 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	Multiplex system, (master/slave), adjustable sensitivity, dirt accumulation and alignment indication	S 1423 156 724	S 1423 156 024	S 1423 156 115	S 1423 156 230

Note: Photoelectric switches types M.F to be ordered separately.

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 Emitter Supply voltage (open loop) Current	Pins 5 & 7 8 V square wave ≤ 100 mA short-circuit protected
Voltage interruption	≤ 40 ms		Output resistance	47 Ω
Dielectric voltage	≥ 2.0 kVAC (rms)		Receiver Supply voltage (open loop)	Pins 6 & 8 12 VDC
Rated impulse withstand volt.	4 kV (1.2/50 μs)		Short-circuit current	18 mA
Rated operational volt. DC types (U_B) Pins 2 positive & 10 negative	724	20.4 to 27.6 VDC	Input resistance	470 Ω
Dielectric voltage	None		Approvals CE-marking	UL, CSA Yes
Rated impulse withstand volt.	800 V (1.2/50 μs)			
Rated operational power AC supply DC supply	2.5 VA 1.5 W			

Specifications (cont.)

Output Specifications Switching function Contact output current (1 & 3) Continuous AC (I_e) Continuous DC (I_e) Contact life mechanical Contact life electrical	10 A/250 VAC ohmic load (2500 VA) 1 A/250 VDC ohmic load (250 W) 30 x 10 ⁶ operations 2.5 x 10 ⁵ operations	Multiplex cycle time 20 ms per amplifier relay Total cycle ¹⁾ = 20 ms x (N° amplifiers) + 20 ms	
Rated insulation volt. (U_i) Dielectric voltage Rated impulse withstand volt.	250 VAC (rms) ≥ 2.0 kVAC (rms) (contact/electronics) 4 kV (1.2/50 μs) contact/ electronics) (IEC 60664)	Operating frequency of multiplexed system $\frac{1}{2 * \text{Total cycle time}} = [\text{Hz}]$ Operating frequency (f) of each amp. while activated Response time Equals Multiplex cycle time	
Sensitivity (% of S _n)	<ul style="list-style-type: none"> 2 ranges, DIP switch selectable - low sensitivity (25%) - high sensitivity (100%) Fine adjustment with 270° turn knob 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. 	Output function Make and break switching DIP-switch selectable	
		Indication Supply ON Output ON Alignment/dirt accumulation (sensitivity level)	LED, green LED, red LED, yellow (steadily on if sensitivity adjusted properly)
		Environment Overvoltage category Degree of protection Pollution degree	III (IEC 60664) IP 20 (IEC 60529, 60947-1) 3 (IEC 60664/60664A, 60947-1)
		Temperature Operating Storage	-20° to +50°C (-4° to +122°F) -50 to +85°C (-58 to +185°F)
		Weight AC supply DC supply	200 g 125 g

¹⁾ If trigger signal out of the last slave amplifier in loop is connected to trigger signal in of the master; otherwise total cycle time = 300 ms (will cause a reset).

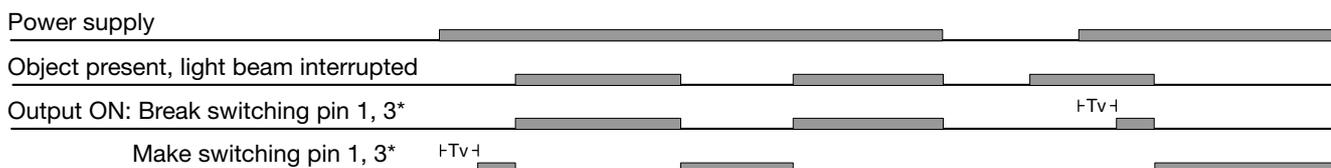
Truth Table

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

¹⁾ Operation diagram and truth table valid for an amplifier during its multiplex activated mode (trigger signal ON). During standby mode (trigger signal OFF) the amplifier status is like "no-object-present", e.g. light received.

²⁾ Under normal operating conditions, the yellow level indication LED has to be on steadily (bright).

Operation Diagram



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

Mode of Operation

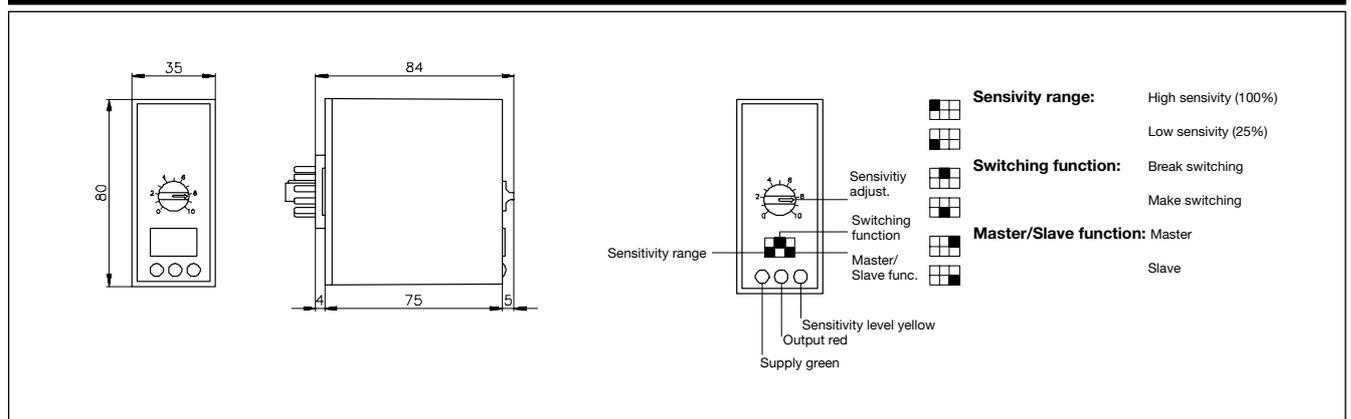
A multiplexed system consists of 1 master amplifier which initialises the multiplex cycle with a trigger signal, and up to 10 slave amplifiers connected together in a loop via the trigger signal. Pin 9 (trigger signal

out) to pin 11 (trigger signal in). The multiplex cycle is re-initialized automatically by the master each 300 ms or, immediately after the last slave amplifier in the loop has been activated, if the trigger

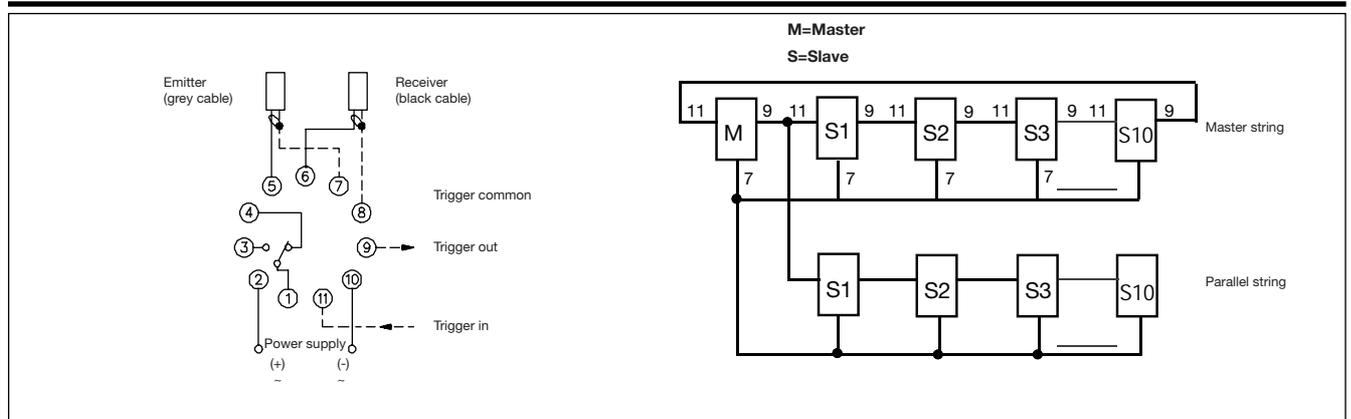
output of the last slave amplifier is connected to the trigger input of the master. Each photoelectric switch has its own amplifier with a relay output. A multiplexed system allows the use of up to 11

long range photoelectric switches mounted near one another, without having false output signals due to optical crosstalk.

Dimensions



Wiring Diagrams



Accessories

- 11 pole circular socket
- Socket cover for S111
- Socket cover for S411
- Holding down spring
- Mounting rack
- Front panel mounting bezel
- Potentiometer knob lock

- S111, S111A, S411, ZPD11
- BB1
- BB4
- HF
- SM13
- FRS2
- PL1

Delivery Contents

- Amplifier
- Packaging: styropor box