

# Photoelectrics Amplifier Type S142A..

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- $\mu$ -Processor controlled
- Amplifier relay for photoelectric switches
- Automatic or manual emitter power regulation
- Self-diagnostic functions
- Alignment help
- Timer option, S142B..
- Rated operational voltage:  
24 VAC/DC, 24 VAC, 115 VAC or 230 VAC
- Output 8 A/250 VAC SPDT relay and 100 mA NPN
- LED indication: Automatic gain, output, level, emitter or receiver fault



## Product Description

$\mu$ -Processor controlled amplifier for one set of photoelectric sensors, type MOFTR. Utilising an 11-pin circular plug for easy connection. 8 A SPDT relay output, NPN / PNP transistor output or alarm output. Diagnostics for sensor test during oper-

ation. Alignment help via LED or alternation of alarm output. Level indication for dirt accumulation. Manual or automatic emitter power regulation. Two emitter codes available for high neighbour immunity.

## Ordering Key

**S142 A RNN 924**

Type \_\_\_\_\_  
 Special function \_\_\_\_\_  
 Output type \_\_\_\_\_  
 (R-Relay, N-NPN, P-PNP, T-Test)  
 Power supply \_\_\_\_\_

## Type Selection

Function diameter	Ordering no. Supply: 24 VAC/DC	Ordering no. Supply: 24 VAC	Ordering no. Supply: 115 VAC	Ordering no. Supply: 230 VAC
NPN output & Test input	S142 A RNT 924	S142 A RNT 024	S142 A RNT 115	S142 A RNT 230
NPN output & Alarm output	S142 A RNN 924 <sup>1)</sup>	S142 A RNN 024 <sup>1)</sup>	S142 A RNN 115 <sup>1)</sup>	S142 A RNN 230 <sup>1)</sup>
PNP out., PNP alarm & Test	S142 A PPT 924		S142 A PPT 115	S142 A PPT 230

<sup>1)</sup> Amplifier replacement for S1420156xxx

## Specifications

<b>Rated operational voltage (U<sub>B</sub>)</b> Pins 2 & 10	230	195 to 265 VAC, 45 to 65 Hz	<b>Output function</b> Relay Transistor  Alarm	Make or break on DIP-switch SPDT	
	115	98 to 132 VAC, 45 to 65 Hz		NPN / PNP, 100 mA, 10-40 VDC	
	024	20.4 to 27.6 VAC, 45 to 65 Hz		NPN / PNP, 100 mA, 10-40 VDC	
	924	20.4 to 27.6 VAC/DC Class 2		Delay on alarm 10 sec	
<b>Rated operational power</b>	AC supply	3.3 VA	<b>Test input (Mute)</b> Emitter enabled Emitter disabled I <sub>max</sub> @ 40 VDC	<b>NPN</b>	<b>PNP</b>
	AC/DC supply	1.6 VA / 1.4 W		> 5.0 VDC	< V <sub>CC</sub> - 3 VDC
<b>Delay on operate (t<sub>v</sub>)</b>		< 300 mS		< 3.0 VDC	> V <sub>CC</sub> - 5 VDC
<b>Outputs</b>	<b>Relay Rating (AgCdO)</b>	$\mu$ (micro gap)	<b>Protection output transistor</b>	Reverse polarity, short circuit and transients	
		Resistive loads AC1		8 A / 250 VAC (2500 VA)	<b>Supply to sensors</b>
		DC1		0.2 A / 250 VDC (50 W)	
or	2 A 25 VDC (50 W)	Supply voltage (open loop)	Pins 5 & 7		
Electrical life (typical)	AC1	> 100.000 operations	Current	< 450 mA, short circuit protected	
<b>Transistor output data</b>	Output current (I <sub>e</sub> )	< 100 mA @ 10-40 VDC (max. load capacity 100 nF)	Output resistance	10 $\Omega$	
		Voltage drop (U <sub>d</sub> )	< 2,5 VDC @ 100 mA	<b>Receiver</b>	
				Supply voltage (open loop)	Pins 6 & 8
			Short-circuit current	5 VDC	
			Input resistance	10 mA	
				470 $\Omega$	

## Specifications

<b>Emitter power</b> Power	Settings on DIP switch no 4, 50 % or 100 % range	<b>Response time</b> OFF-ON ( $t_{ON}$ ) ON-OFF ( $t_{OFF}$ )	20 mS 30 mS
<b>Sensitivity adjustment</b> Manual Automatic /Auto LED ON)	240° Potentiometer Potentiometer settings fully counter clockwise	<b>Environment</b> Overvoltage category Degree of protection Pollution degree	III (IEC 60664) IP 20 /IEC 60529, 60947-1) 3 (IEC 60664/60664A, 60947-1)
<b>Max. sensing distance</b>	Maximum range indicated on photoelectric switch data- sheets in 100 % settings	<b>Temperature</b> Operating Storage	-20° to +50°C (-4° to +122°F) -50° to +85°C (-58° to +185°F)
<b>Rated insulation voltage (U)</b>	250 VAC	<b>Housing material</b>	NORYL SE1, light grey
<b>Dielectric voltage</b>	>2.0 KVAC (rms) (contacts / electronics)	<b>Weight</b> AC supply AC/DC supply	200 g 125 g
<b>Rated impulse withstand volt.</b>	4 kV (1.2/50 $\mu$ S) (contacts / electronics) (IEC 664)	<b>Approvals</b>	UL508, UL325, CSA
<b>Operating frequency (f)</b> Light / Dark ratio Relay output Transistor output	1:1 20 HZ 20 HZ	<b>CE marking</b>	EN12445, EN12453, EN12978

## Specifications

### Diagnostic

If a fault occurs on either the emitter or receiver the Alarm LED and output will turn ON.

### Receiver fault

During normal operation the receiver is monitored for faults.

If the wires are short-circuited the "Code A, Yellow LED" flashes at a rate of 2 Hz.

If the wires are broken the "Code A, Yellow LED" flashes at a rate of 4 Hz.

### Emitter fault

During normal operation the emitter is monitored for faults.

If the wires are short-circuited the "Code B, Green LED" flashes at a rate of 2 Hz.

If the wires are broken the "Code B, Green LED" flashes at a rate of 4 Hz.

### Alignment

If the alignment DIP switch is set the Yellow Signal LED Flashes according to the signal quality.

Low frequency means weak signal.

Steady indication means maximum signal. On long distance it is not possible to get a steady signal but the alignment is optimal when

the led flashes with the highest frequency.

On short distance the sensitivity can be reduced using the potentiometer and then get better readings in the alignment LED.

The ALARM output will follow the Signal LED in alignment mode, so a Sensor tester (optional) can be connected to serve as a remote indication during alignment of the sensors.

**NB!** In alignment mode the output is off.

### Code A or B

When two sensor pairs are mounted close to each other

it is recommended to select one set to Code A and the other to Code B to minimize crosstalk.

### Dirt reserve

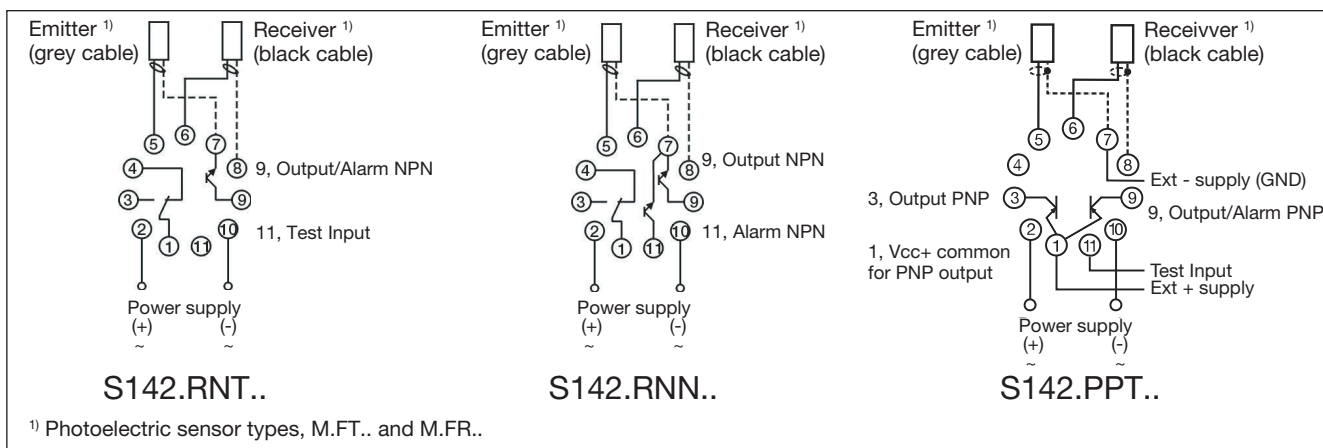
For optimal detection excess gain settings can be selected using the Level Low/High DIP switch:

- High: Allows high dirt build-up.
- Low: Allows detection of semi-transparent objects.

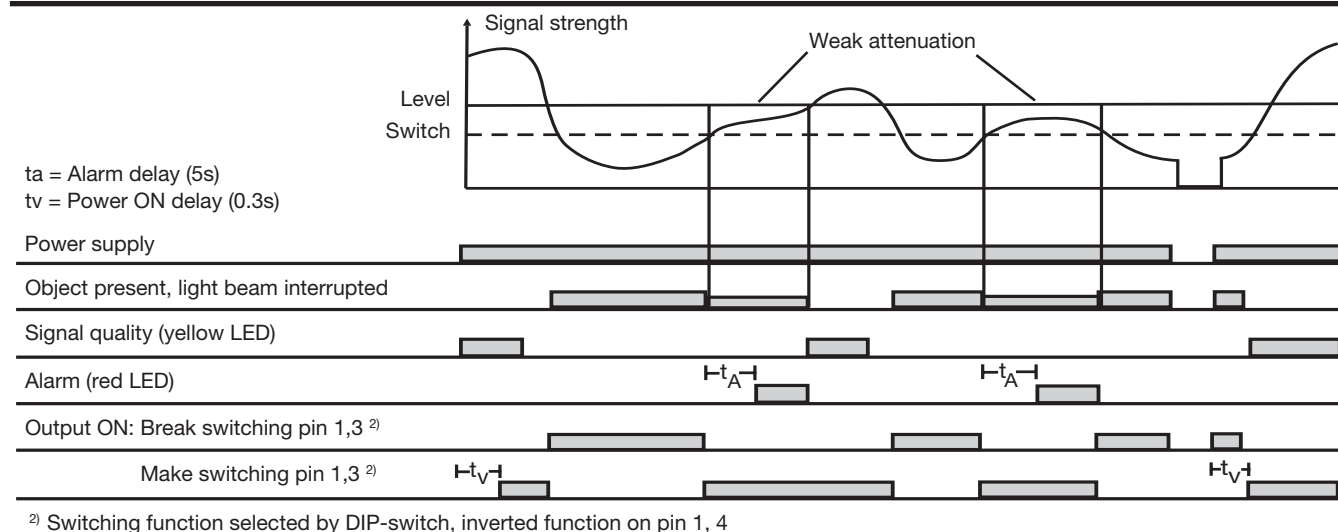
### Power settings

To avoid a too strong emitter the power can be reduced to 50% reducing the max distance to 25%

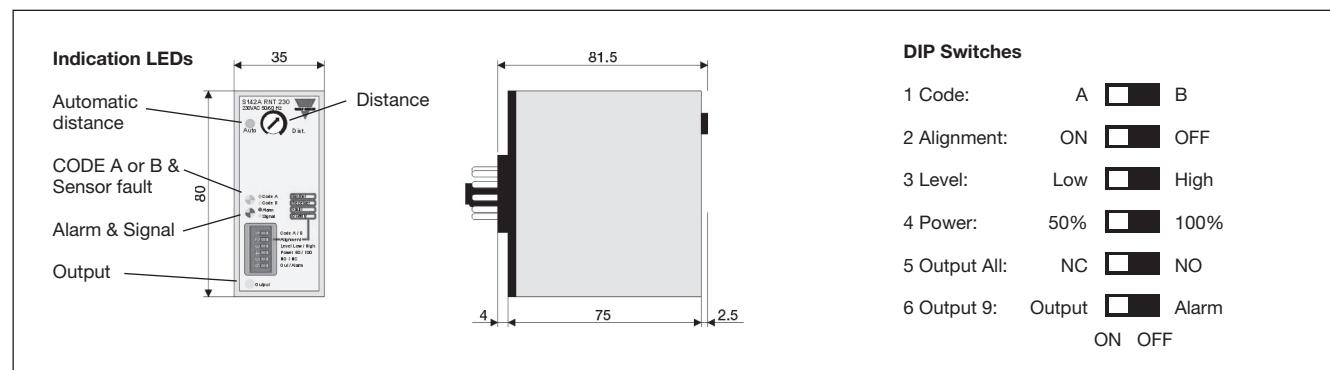
## Wiring Diagram



## Operation Diagram



## Dimensions



## Connection to sortester

Connection to sortester ST-03 for alignment

	Sortester		
	-	Signal	+
RNT Pin no.	10	9	
RNN Pin no.	10	11	
PPT Pin no.		9	2

## Accessories

- 11 pole circular socket ZPD11
- Holding down spring HF
- Mounting rack SM13
- Front panel mounting bezel FRS2

## Delivery Contents

- Amplifier
- **Packaging:** Carton box