



**SAFEMASTER**  
 Delay module,  
 Release Delay  
 BA 7924, IL 7824, IN 7824

**Translation  
 of the original instructions**

0266527



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Before installing, operating or maintaining this device, these instructions must be carefully read and understood.



Keep instructions for future reference



The installation must only be done by a qualified electrician!



Do not dispose of household garbage!  
The device must be disposed of in compliance with nationally applicable rules and requirements.

To help you understand and find specific text passages and notes in the operating instructions, we have important information and information marked with symbols.

### Symbol and Notes Statement



**DANGER:**  
Indicates that death or severe personal injury will result if proper precautions are not taken.



**WARNING:**  
Indicates that death or severe personal injury can result if proper precautions are not taken.



**CAUTION:**  
Indicates that a minor personal injury can result if proper precautions are not taken.



**INFO:**  
Referred information to help you make best use of the product.



**ATTENTION:**  
Warns against actions that can cause damage or malfunction of the device, the device environment or the hardware / software result.

### General Notes

The product hereby described was developed to perform safety functions as a part of a whole installation or machine. A complete safety system normally includes sensors, evaluation units, signals and logical modules for safe disconnections. The manufacturer of the installation or machine is responsible for ensuring proper functioning of the whole system. DOLD cannot guarantee all the specifications of an installation or machine that was not designed by DOLD. The total concept of the control system into which the device is integrated must be validated by the user. DOLD also takes over no liability for recommendations which are given or implied in the following description. The following description implies no modification of the general DOLD terms of delivery, warranty or liability claims.

### Designated Use

The BA 7924, IL 7824 as well as IN 7824 is providing safe, delayed disconnection of safety circuits with testable switching status of the output relays, stop category 1 according to DIN EN 60204-1.

When used in accordance with its intended purpose and following these operating instructions, this device presents no known residual risks. Nonobservance may lead to personal injuries and damages to property.

### Safety Notes



#### **Risk of electrocution!** **Danger to life or risk of serious injuries.**

- Disconnect the system and device from the power supply and ensure they remain disconnected during electrical installation.
- The device may only be used for the applications described in the mutually applicable operating instructions / data sheet. The notes in the respective documentation must be heeded. The permissible ambient conditions must be observed.
- The contact protection of the elements connected and the insulation of the supply cables must be designed in accordance with the requirements in the operating instructions / data sheet.
- Note the VDE and local regulations, particularly those related to protective measures.



#### **Risk of fire or other thermal hazards!** **Danger to life, risk of serious injuries or property damage.**

- The device may only be used for the applications described in the mutually applicable operating instructions / data sheet. The notes in the respective documentation must be heeded. The permissible ambient conditions must be observed.
- The device may only be installed and put into operation by experts who are familiar with this technical documentation and the applicable health and safety and accident prevention regulations.



#### **Functional error!** **Danger to life, risk of serious injuries or property damage.**

- The device may only be used for the applications described in the mutually applicable operating instructions / data sheet. The notes in the respective documentation must be heeded. The permissible ambient conditions must be observed.
- The device may only be installed and put into operation by experts who are familiar with this technical documentation and the applicable health and safety and accident prevention regulations.
- The unit should be panel mounted in an enclosure rated at IP 54 or superior. Dust and dampness may lead to malfunction.



#### **Installation fault!** **Danger to life, risk of serious injuries or property damage.**

- Make sure of sufficient protection circuitry at all output contacts for capacitive and inductive loads.



#### **Attention!**

- The safety function must be triggered during commissioning.
- To achieve the safety levels stated under features of BA 7924.21/002 and BA 7924.21/003, a suitable supervising control must check the NC contact 15/16 before starting to make sure that both relays (K1 and K2) are switched off.
- Opening the device or implementing unauthorized changes voids any warranty



## SAFEMASTER Delay module, Release Delay BA 7924, IL 7824, IN 7824



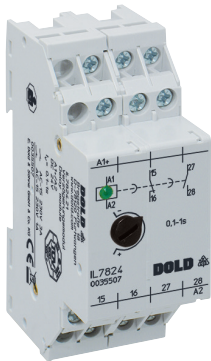
0221 537



BA 7924.21



BA 7924.21/002



IL 7824.21



IN 7824.21

- According to
  - Performance Level (PL) c and category 2 to EN ISO 13849-1
  - SIL Claimed Level (SIL CL) 2 to IEC/EN 62061
  - Safety Integrity Level (SIL) 2 to IEC/EN 61508
  - Category 2 to EN 954-1
- BA 7924.21/002 und BA 7924.21/003
  - Performance Level (PL) d and category 3 to EN ISO 13849-1
  - SIL Claimed Level (SIL CL) 2 nach IEC/EN 62061
  - Safety Integrity Level (SIL) 2 to IEC/EN 61508
  - Category 3 to EN 954-1
- Release delay
- Without auxiliary voltage
- Output: 1 NC, 1 NO contacts, forcibly guided
- Operating state display
- Optionally with adjustable or fixed time delay up to 30 s
- Optionally with redundant timing circuit
- Optionally with 1 or 2 separate timing circuits
- Optionally also in housing for distribution board
- Width 45 mm, 35 mm or 52.5 mm

### Approvals and Markings

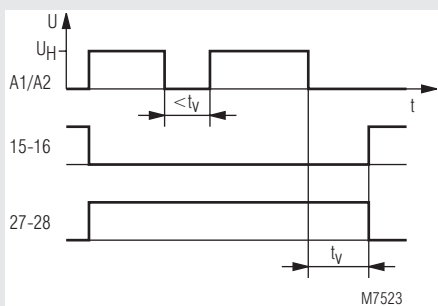


\* see variants

### Application

- Delayed disconnection with testable switching status of output relays.

### Function Diagram



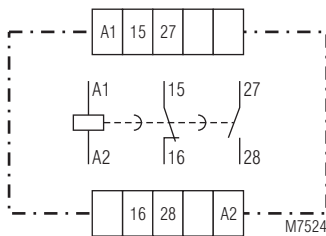
### Indicators

LED's comes on when A1 / A2 connected to supply

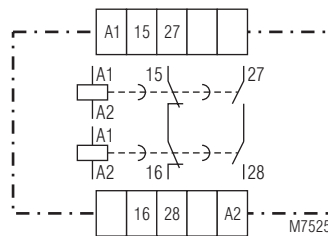
### Notes

The output contacts of the two timing circuits are connected in series in the BA 7924.21/002 and /003 modules. This results in so-called switch-off redundancy, i.e. the contact path 27-28 is opened reliably after expiry of the predefined delay time, even if a contact in this path is welded.

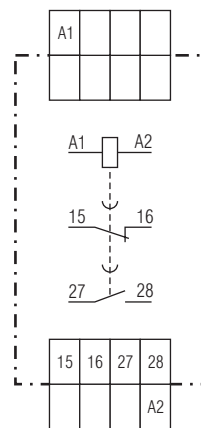
### Circuit Diagrams



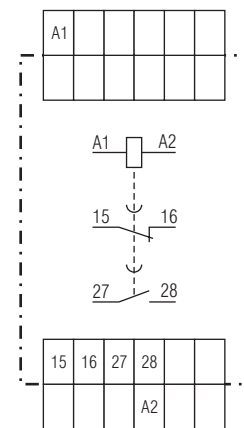
BA 7924.21  
BA 7924.21/100



BA 7924.21/002  
BA 7924.21/003



IL 7824.21



IN 7824.21

## Technical Data

### Time delay $t_v$

BA 7924.21:	0.1 ... 1 s; 0.3 ... 3 s; 0.5 ... 5 s; 1 ... 10 s; 3 ... 30 s
BA 7924.21/001:	1 s; 3 s; 5 s; 10 s; 30 s fixed
BA 7924.21/002:	5 s; 10 s fixed
BA 7924.21/003:	0.5 ... 5 s; 1 ... 10 s
IL 7824.21:	0.1 ... 1 s; 0.3 ... 3 s
IL 7824.21/100:	0.5 s; 1 s; 3 s fixed
IN 7824.21:	0.5 ... 5 s; 1 ... 10 s
IN 7824.21/100:	5 s; 10 s fixed
<b>Repeat accuracy:</b>	± 15 % of set value
<b>Minimum closing time:</b>	50 % of full scale value

### Input

<b>Nominal voltage <math>U_N</math>:</b>	DC 24 V AC 230 V (only BA 7924.21 and BA 7924.21/001)
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### Voltage range:

at 10 % residual ripple:	AC 0.8 ... 1.1 $U_N$
at 48 % residual ripple:	DC 0.9 ... 1.2 $U_N$

### Nominal consumption:

at BA 7924.21/002 and BA 7924.21/003:	0.85 W / 4.5 VA
	1.7 W
<b>Nominal frequency:</b>	50 / 60 Hz

### Output

#### Contacts

BA 7924.21:	1 NC, 1 NO contacts
IL/IN 7824.21:	1 NC, 1 NO contacts
<b>Contact type:</b>	Relay, forcibly guided
<b>Release delay typ. bei <math>U_N</math>:</b>	10 ms + $t_v$
<b>Nominal output voltage:</b>	AC 10 ... 250 V, DC 10 ... 110 V
<b>Thermal current <math>I_{th}</math>:</b>	Max. 8 A
<b>Switching capacity</b> to AC 15	
for NO contact:	3 A / AC 230 V IEC/EN 60947-5-1
for NC contact to AC 13	1 A / AC 230 V IEC/EN 60947-5-1
for NO contact:	2 A / DC 24 V IEC/EN 60947-5-1
for NC contact to DC 13:	2 A / DC 24 V IEC/EN 60947-5-1
for NO contact:	4 A / DC 24 V at 0.1 Hz
for NC contact:	3 A / DC 24 V at 0.1 Hz

#### Electrical life

6 A, AC 230 V  $\cos \varphi = 1$ : > 2 x 10<sup>5</sup> switching cycles

#### Permissible operating frequency:

Max. 2000 switching cycles / h  
but please note minimum closing time

#### Short circuit strength

**max. fuse rating:** 6 A gG / gL IEC/EN 60947-5-1

#### Mechanical life:

50 x 10<sup>6</sup> switching cycles

### General Data

<b>Operating mode:</b>	Continuous operation
<b>Temperature range</b>	
Operation:	- 20 ... + 60 °C
Storage:	- 40 ... + 60 °C
<b>Altitude:</b>	≤ 2000 m
<b>Clearance and creepage distances</b>	
rated impuls voltage / pollution degree:	4 kV / 2 IEC 60664-1
<b>EMC</b>	
Interference suppression:	Limit value class B EN 55011
<b>Degree of protection</b>	
Housing:	IP 40 IEC/EN 60529
Terminal plate:	IP 20 IEC/EN 60529
<b>Housing:</b>	Thermoplastic with V0 behaviour according to UL subject 94
<b>Vibration resistance:</b>	Amplitude 0.35 mm, IEC/EN 60068-2-6 frequency 10 ... 55 Hz
<b>Climate resistance:</b>	20 / 060 / 04 IEC/EN 60068-1
<b>Terminal arrangement</b> at BA 7924:	DIN 46199-5
<b>Terminal designation:</b>	EN 50005
<b>Wire fixing:</b>	Flat terminals with self-lifting clamping piece IEC/EN 60999-1 DIN rail IEC/EN 60715
<b>Mounting:</b>	
<b>Weight:</b>	
BA 7924 DC / AC:	200 g / 350 g
IL 7824 / IN 7824:	120 g / 150 g

### Dimensions

<b>Width x height x depth</b>	
BA 7924:	45 x 74 x 133 mm
IL 7824:	35 x 89 x 58 mm
IN 7824:	52.5 x 89 x 58 mm

## CCC-Data

### Nominal voltage $U_N$ :

BA 7924: DC 24 V, AC 230V

### Thermal current $I_{th}$ :

Max. 5 A

### Switching capacity

to AC 15		
NO contact:	2 A / AC 230 V	IEC/EN 60947-5-1
to DC 13		
NO contact:	1 A / DC 24 V	IEC/EN 60947-5-1
NC contact:	1 A / DC 24 V	IEC/EN 60947-5-1



Technical data that is not stated in the CCC-Data, can be found in the technical data section.

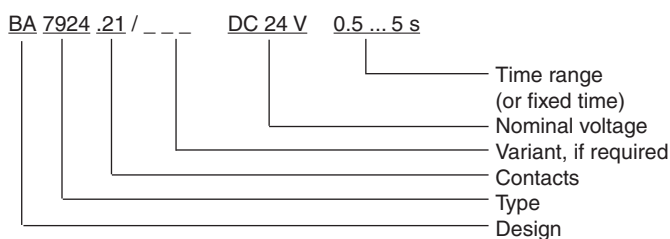
## Standard Type

BA 7924.21 DC 24 V 0.3 ... 3 s	
Article number:	0039707
• Output:	1 NO contact 1 NC contact
• Nominal voltage $U_N$ :	DC 24 V
• Time range:	0.3 ... 3 s
• Width:	45 mm

## Variants

BA 7924.21/61:	With UL approval (Canada/USA)
BA 7924.21:	1 timing circuit, adjustable time
BA 7924.21/001:	1 timing circuit, fixed time
BA 7924.21/002:	2 timing circuit, fixed time
BA 7924.21/003:	2 timing circuit, adjustable time
Delay modules in housing for distribution board:	
IL 7824.21:	1 timing circuit, adjustable time delay, 35 mm wide
IN 7824.21:	1 timing circuit, adjustable time delay, 55 mm wide
IL 7824.21/100:	1 timing circuit, fixed time delay, 35 mm wide
IN 7824.21/100:	1 timing circuit, fixed time delay, 55 mm wide

## Ordering example for variants



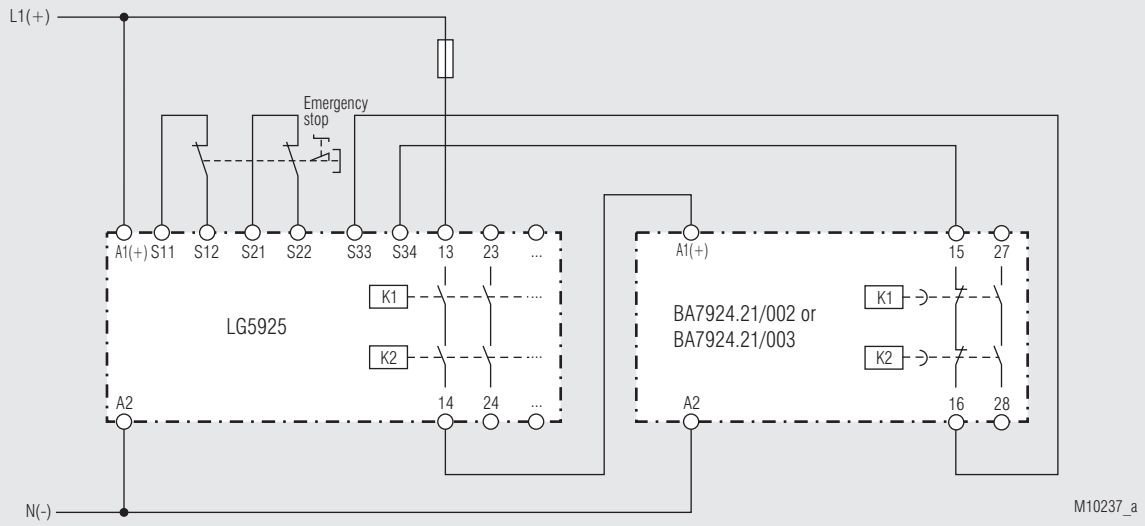
## Troubleshooting

Failure	Potential cause
Device cannot be activated	- Power supply not connected - Unit defective

## Maintenance and repairs

- The device contains no parts that require maintenance.
- In case of failure, do not open the device but send it to manufacturer for repair.

## Application Example



LG 5925 with BA 7924.21/002 e.g. BA 7924.21/003, suitable up to SIL 3, Performance Level e; Cat. 3

