

## Operating Instructions

### LCD Display Counters

#### E5024C Series

The E5024C Series display counters are battery-powered. They are controlled by contact or voltage pulses. They may be used in various applications, like totaling, parts counting, position acquisition, differential

counting, etc. In addition, the various models with specific input types may be extended using control inputs to select operating modes.

### Overview

Model	Operating mode	Counting inputs					
		INP A			INP B		
E5024C0400	Count	4 – 30V DC	PNP	12 kHz	0 – 0.7V DC	NPN	30 Hz
E5024C0408		10 – 260V AC/DC	AC/DC	30 Hz	10 – 260V AC/DC	AC/DC	–
E5024C0410	Cnt.Dir/Up.Dn	0 – 0.7V DC	NPN	7 kHz	0 – 0.7V DC	NPN	7 kHz

Table 1

#### DC models:

- Count:** Fast and slow counting inputs  
 INP A: Fast counting input  
 INP B: Slow counting input
- Cnt.Dir:** Counting and counting direction input  
 INP A: Counting input  
 INP B: Counting direction input
- Up.Dn:** Differential counting input  
 INP A: Adding counting input  
 INP B: Subtracting counting input

#### AC/DC models:

- Count:** Counting and reset inputs  
 INP A: AC/DC counting input  
 INP B: AC/DC reset input
- Cnt.Dir:** Counting and counting direction input  
 INP A: AC/DC counting direction input  
 INP B: AC/DC counting input
- Up.Dn:** Differential counting input  
 INP A: AC/DC subtracting counting input  
 INP B: AC/DC adding counting input

Main technical features:

- Display: LCD, 8 decades, height of the figures 8 mm [0.31 in.]
- Display range: -9999999 – 99999999 with leading zeros suppression.
- Overflow: In case of a display range overflow, the counter starts again from 0, but without removing the leading zeros and activating all decimal points.  
In case of a display range underflow, the counter starts again from 0 and displays the minus sign, without removing the leading zeros and activating all decimal points.
- Reset key: Requires rear terminal jumper to enable.
- Housing: Panel mounting, 48 x 24 mm [1.89 x 0.94 in.] according to DIN 43 700, RAL 7021
- Panel cut-out: 22.2 x 45 mm [0.87 x 1.77 in.]  
22.5 x 45.6 mm [0.89 x 1.80 in.] max.
- Mounting depth: approximately 48 mm [1.89 in.]
- Weight: approximately 50 g [1.76 oz.]
- Front panel rating: IP65
- Connection: Screw terminals, RM 5.00, 8 poles  
Rated cross-section: 4.0 mm² solid wire  
2.5 mm² stranded wire  
AWG 12  
Connection diameter: 0.4 – 2.3 mm² solid wire, AWG 28-12
- EMC: Emissions per EN55011 Class B  
Susceptibility per EN61000-6-2
- Low Voltage Directive (for the AC/DC models): EN 61010 Part 1 ; overvoltage category 2, pollution level 2
- Power supply: Non-replaceable lithium battery  
(lifetime approximately, 8 years at 20°C [68°F])
- Working temperature: -10 to +55°C [14 to 131°F], relative humidity < 85%, non-condensing
- Operating temperature: -10 to +60°C [14 to 140°F]
- Storage temperature: -20 to +70°C [-4 to 158°F]
- Backlighting: external electrical source  
(24V DC ±20 %, 50 mA)

Input specification, pin assignment and adjustable operating modes (DC versions).

A control input (screw terminal 5) allows adjusting the operating mode.

Screw terminal	No. 1		No. 2		No. 3	No. 4	No. 5		No. 6	No. 7	No. 8
Designation	INP A		INP B		Reset	Reset Enable	Control inputs for operating mode (Mode)		GND	BL –	BL +
Model					NPN reset input	Reset key enabled when connected to gnd.			GND = 0V DC	Backlighting (–)	Backlighting (+)
E5024C0400	12 kHz	PNP	30 Hz	NPN			open = adding	contact with GND = subtracting			
E5024C0410	7 kHz	NPN	7 kHz	NPN			open = Cnt.Dr Mode	contact with GND = Up.Dn Mode			

Table 2

Screw terminals 1 and 2:

Function and max. frequencies (50-50 duty cycle)  
see Table 2

- NPN : active for negative edge  
Input resistance: approximately 1 MOhm  
Low level: 0 – 0.7V DC  
High level: 3 – 30V DC
- PNP : active for positive edge  
Input resistance: approximately 100 kOhm  
Low level: 0 – 0.7V DC  
High level: 4 – 30V DC

### Screw terminal 3:

Reset input, active for negative edge  
Contact input / Open Collector NPN  
(switching at 0 V DC)  
Low level: 0 – 0.7V DC  
High level: 3 – 30V DC  
Min. pulse duration: 50 ms  
Input resistance: approximately 2.2 MOhm

### Screw terminal 5:

Operating mode switch (Mode)  
Contact input / Open Collector NPN  
(switching at 0 V DC)  
Low level: 0 – 0.7V DC  
High level: 3 – 5V DC  
Input resistance: approximately 2.2 MOhm  
Function: see Table 2

### Screw terminal 4:

Reset key enable  
Contact input / Open Collector NPN  
(switching at 0 V DC)  
Low level: 0 – 0.7V DC  
High level: 3 – 5V DC  
Input resistance: approximately 2.2 MOhm  
Input not active: Reset key disabled  
Input in contact with GND: Reset key enabled

### Screw terminal 6:

GND connection common for all inputs

### Screw terminal 7:

(–) external power supply for the LCD backlight option

### Screw terminal 8:

(+) external power supply for the LCD backlight option (24V DC  $\pm 20\%$ , 50 mA)

## Input specification and pin assignment (AC/DC-version)

Screw terminal	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
Designation	INP A AC/DC	Common AC/DC	INP B AC/DC	Reset Enable	Reset	GND	BL –	BL +
Model								
E5024C0408	counting	Common connection for INP A and INP B	reset	NPN reset key locking input, Contact with GND. key free.	not connected	GND = 0V DC	Backlighting (–)	Backlighting (+)

Table 3

### Screw terminals 1 and 3:

Function: see Table 3  
Optocoupler input 10 – 260V AC/DC  
galvanic isolation, active for High signal  
Min. pulse duration: 16 ms  
Max frequency: approximately 30 Hz  
Low level: 0 – 2V AC/DC  
High level: 10 – 260V AC/DC  
Input resistance: approximately 160 kOhm

### Screw terminal 2:

Common AC/DC, common connection for the optocoupler inputs (screw terminals 1 and 3).

### Screw terminal 4:

Reset key enable  
Contact input / Open Collector NPN  
(switching at 0 V DC)  
Low level: 0 – 0.7V DC  
High level: 3 – 5V DC  
Input resistance: approximately 2.2 MOhm  
Input not active: Reset key disabled  
Input in contact with GND: Reset key enabled

### Screw terminal 5:

Function: see table 3, active for negative edge  
Contact input / Open Collector NPN  
(switching at 0 V DC)  
Low level: 0 – 0.7V DC  
High level: 3 – 5V DC  
Min. pulse duration: 50 ms  
Input resistance: approximately 2.2 MOhm  
Input High: – – –  
Input Low: Reset of the counter  
Dynamic resetting behavior

### Screw terminal 6:

Common GND connection for screw terminal 4 (reset key locking input) and screw terminal 5 (reset input).

### Screw terminal 7:

(–) external power supply for the backlight option

### Screw terminal 8:

(+) external power supply for the backlight option (24 V  $\pm 20\%$ , 50 mA)

## Contents:

Digital display  
Clamp  
Front frame for screw mounting,  
Panel cut-out 50 x 25 mm [1.97 x 0.98 in.]

Front frame for clamp mounting,  
Panel cut-out 50 x 25 mm [1.97 x 0.98 in.]  
Seal  
Operating instructions

## Installation:

### DC versions:

Use shielded wires for the counting and control inputs to obtain the maximum EMC resistance.

### AC/DC versions:

Use shielded wires for the counting and control inputs to obtain the maximum EMC resistance.

## Use according to the intended purpose:

This device may only be used as a panel-mounted device! Applications of this product may be found in industrial processes and controls in the branch of the manufacturing lines for the metal, wood, plastics, paper, glass, textile, etc., processing industries. It must be considered that the overvoltages at the terminals of the device must be limited to the values of overvoltage category II. Overvoltage category II is described in the standard EN 61 010 Part 1.

This device shall only operate when it has been correctly mounted in a panel. It may only be used in accordance with the chapter "Main technical features".

This device shall not be used:

- in areas with risks of explosion
- in the branches expressly quoted in the standard EN 61 010 T1.

If this device is used to monitor machines or a process in which, in case of a failure of the device, there might be risks of damaging the machine or causing accidents to the operators, it is up to you to take appropriate safety measures.

## Note:



This product includes a **lithium** battery. Do not open it by force, do not throw it in the fire. Avoid temperatures below -20°C [-4°F] and above 70°C [158°F]!

## Safety instructions:



Only use these counters

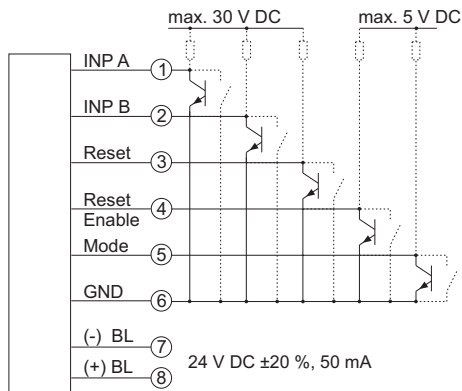
- **according to their intended purpose**
- **if their technical condition is perfect**
- **adhering to the operating instructions and the general safety instructions.**

Also take into account the fact that there may exist user or country-specific safety regulations, which must also be followed.

Connections/Conexiones/Schémas de branchement/Anschlussbilder:

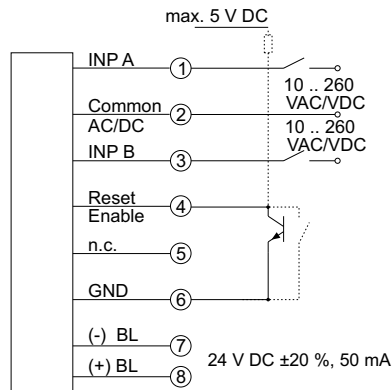
DC-Typ:

E5024C0410



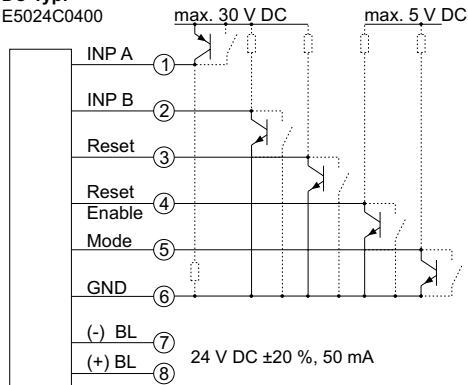
AC-Typ:

E5024C0408



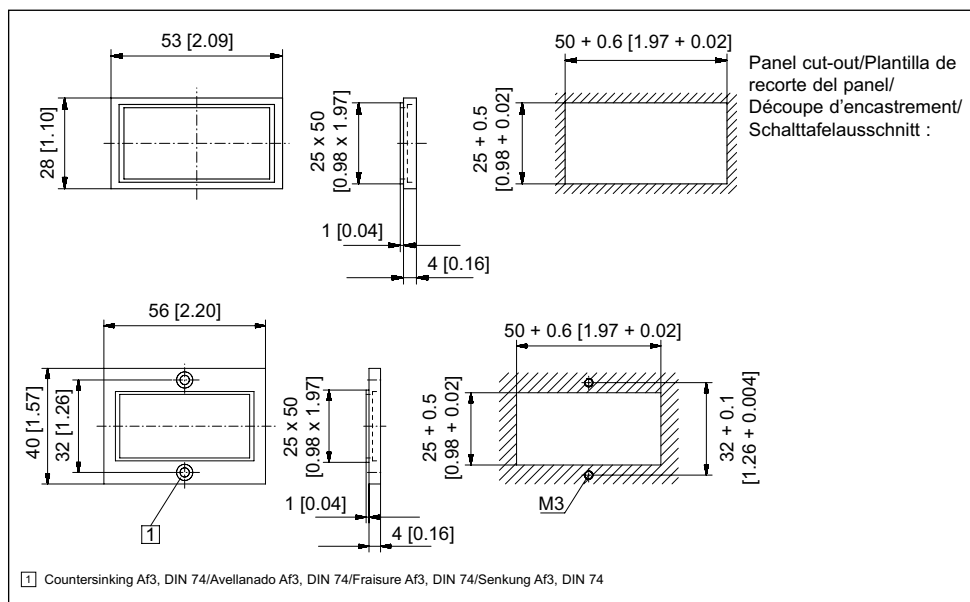
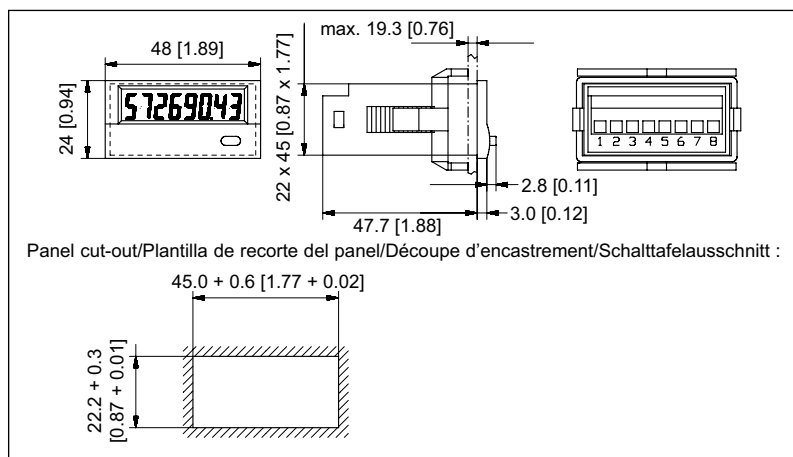
DC-Typ:

E5024C0400



BL = backlight/iluminación posterior/rétroéclairage/Hinterleuchtung

# Dimensions in mm [in.]/Dimensiones/Dimensions/Abmessungen:



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