

524 Series

Digital Add/Subtr. Counter, Timer, Freq./Rate Meter

Type 524

1. Description

The type series 524 is a multipurpose device. Depending on the programmed basic function the device operates like

- the adding counter and position indicator 521 or
- the frequency meter 522 or
- the time meter 523

2. Setting of the operating parameters

- Hold down keys on front panel and switch on supply voltage.
- The display shows

PrOb

- After releasing the keys the display alternates between menu title and corresponding menu item with a frequency of 0.5 Hz. After any key is pressed, only the menu item is displayed.
- Pressing the right key, the menu item will be switched to next value.
- Hold down the left key and press the right key to enter and switch to the next menu title.
- After programming the last menu item, the programming routine will be left and the new values will be stored by switching the menu item to „YES“. If you chose „NO“, the programming routine will be passed through once again.

3. Programming routine

The first menu item is the basic function

PrOde

Count

Operating mode pulse counter. See programming routine type series 521

Frcho

Operating mode frequency meter. See programming routine type series 522

timer

Operating mode time meter. See programming routine type series 523

4. 521K Counter/Position indicator Programming routine

Programmable parameters are shown in succession. After one pass, the device is fully programmed.

In each case the first shown item is the factory preset.

4.1 Input polarity

InPol

nPn

npn: switching to 0V

PnP

pnp: switching to +V (4-30)

4.2 Activating the 30 Hz filter

Filter

hi

max. count frequency 10 kHz

Lo

max. count frequency 30 Hz

4.3 Input mode

InPut

CountDir

Count input and count direction input
INP A: count input
INP B: count direction input

uP.dn

Differential input
INP A: count input adding
INP B: count input subtracting

QuAd

Quadrature input
INP A: count input 0°
INP B: count input 90°

QuAd 2

Quadrature input with pulse doubling
INP A: count input 0°
INP B: count input 90°
Each pulse edge of INP A will be counted

4.4 Scaling factor (Multiplier)

Factor

00.0001

Factor can be set from 00.0001 up to 99.9999. The decimal point is set to 4 decimal places. "0" won't be accepted!

99.9999

4.5 Decimal point (Display only)

dP

The decimal point indicates the number of decimal places.

0

0 no decimal place

0.0 one decimal place

0.00 two decimal places

0.000 three decimal places

0.000



4.6 Set mode

rESnrd

PRRnEL

manual set (red key) and electrical set

no rES

no set (red key and set input locked)

EL rES

electrical set only

PRRnrE

manual set only

4.7 Set value (Allows user to preset start number)

SEtPt

521K.2 (Opto output activates at "0" or less.

199999

Can be used as subtracting preset counter)

999999

Use 2 keys to set value -199999... 999999 (number of decimal places depends on the decimal point option)

4.8 End of programming

EndPro

no

Programming routine will be passed through once again. All parameters can be checked.

YES

Programming routine will be left and the new parameters will be stored. Afterwards the device is ready to use.

5. 522K Frequency meter Programming routine

Following all programmable parameters are shown in succession. After one pass, the device is fully programmed.

In each case the first shown item is the factory preset.

5.1 Input polarity

InPol

nPn

npn: switching to 0 V

PnP

pnP: switching to +24 V

5.2 Activating the 30 Hz filter

FILTEr

hi

max. count frequency 10 kHz

Lo

max. count frequency 30 Hz

5.3 Scaling factor (Multiplier)

FActoR

Factor = 1 ÷ number of pulses per whole unit. Add resolution by selecting more decimal places under dP.tRch

00.0001

Factor can be set from 00.0001 up to 99.9999. (Fixed decimal) "0" won't be accepted!

99.9999

5.4 Decimal point (Adds resolution)

dP.tRch

The decimal point indicates the number of decimal places.

0

0 no decimal place

0.000

0.0 one decimal place

0.00 two decimal places

0.000 three decimal places

5.5 Display mode frequency meter

d15Pn7

SEc - 1

Calculating and displaying the value to 1/sec

PP7n - 1

Calculating and displaying the value to 1/min

5.6 Max. time to wait until "0" is displayed

This parameter indicates, how long it takes at active measuring, until „0“ is displayed

UWA7t0

011

max. time to wait 01.1 s (min. value)

999

max. time to wait 99.9 s

5.7 End of programming

EndPro

no

Programming routine will be passed through once again. All parameters can be checked.

YES

Programming routine will be left and the new parameters will be stored. Afterwards the device is ready to use.

6. 523K Timer Programming routine

Following all programmable parameters are shown in succession. After one pass, the device is fully programmed.

In each case the first shown item is the factory preset.

6.1 Input polarity

InPol

nPn

npn: switching to 0 V

pPp

pnp: switching to +V (4-30)

6.2 Activating the 30 Hz filter

Filter

hi

Start/Stop response 50u seconds

Lo

Start/Stop response 16 milliseconds

6.3 Input mode time meter

Start

GateLo

Start/Stop via INP B. Timing while INP B (gate) inactive or open

GateHi

Start/Stop via INP B. timing while INP B (gate) active (High level at pnp; Low level at npn)

Inb.Inb

Timing will be started and stopped via INP B (LOW-HIGH edge at pnp; HIGH-LOW edge at npn). Every active edge changes the timer status.

InA.Inb

Timing will be started via INP A, stopped via INP B (LOW-HIGH edge at pnp; HIGH-LOW edge at npn).

6.4 Operating mode time meter

Mode

5EE

Timing in s (Resolution depending on position of the decimal point*)

mm

Timing in min. (Resolution depending on position of the decimal point*)

hour

Timing in h (Resolution depending on position of the decimal point*)

h.mm.ss

Timing in h:min:s (decimal point will be ignored)

*0, 0.1, 0.01, 0.001 means: Timing in 0, 0.1, 0.01, 0.001 units of time

6.5 Decimal point (Also sets resolution)

dp.t.in

The decimal point indicates the number of decimal places.

0

0 no decimal place

0.000

0.0 one decimal place

0.00 two decimal places

0.000 three decimal places

6.6 Reset mode

reset

pprnel

manual reset (red key) and electrical reset

no reset

no reset (red key and reset input locked)

el reset

electrical reset only

pprnrE

manual reset only

6.7 End of programming

EndPro

no

Programming routine will be passed through once again. All parameters can be checked.

YES

Programming routine will be left and the new parameters will be stored. Afterwards the device is ready to use.

7. Technical data

Supply voltage:

10...30 VDC

Max. current consumption:

50 mA

Display:

6digit LED-Display, 8 mm high characters

Polarity of input signals:

programmable for both common inputs (npn or pnp)

Input resistance: appr. 10 kohm

Count frequency: 10 kHz can be damped to 30 Hz

Min. pulse length of the control inputs: 5 ms

Input sensitivity:

Low: 0 to 1 VDC

High: 4 to 30 VDC

Pulse shape: variable (Schmitt Trigger characteristic)

Optocoupler output:

Max. 30V(off), Max. 10mA, Max. 1 volt drop @ 10mA

Data retention:

via EEPROM 1x10⁶ memory cycles or 10 years

Noise immunity:

EN 50081-2; EN 55011 class B; EN 50082-2

Ambient temperature: +14°F...+122°F (-10 °C...+50 °C)

Storage temperature: -13°F...+158°F (-25 °C...+70 °C)

Weight: appr. 1.76 oz.(50 g)

Protection: IP 65 (front)

Cleaning:

The front of the unit is only to be cleaned with a soft wet (water !) cloth.

7. Dimensions:

W = 1.88" (48mm) H = .944" (24mm) D = 2.32" (59mm)

8. Cutout:

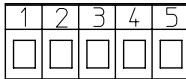
W = 1.78" (45.2mm) H = .876" (22.3mm)

With adaptor: W = 1.97" (50mm) H = 0.99" (25mm)

9. Connections

5.1 Without optocoupler output

- 1 10-30 VDC
- 2 0 V (GND)
- 3 INP A
- 4 INP B
- 5 SET



5.2 With optocoupler output (npn)

- 1 10-30 VDC
- 2 0 V (GND)
- 3 INP A
- 4 INP B
- 5 SET
- 6 Emitter
- 7 Collector

