

# Multifunction devices, electronic

LED dual function displays	Universal with dual functions, 4 combinations (DC)	52U
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The 52U is a voltage-powered dual function counter with 4 functions in one device:

Counter with 2 totalizing ranges, totalizer and timer, totalizer and frequency meter, timer with 2 time ranges.

For fast and slow count pulses, with 6-digit LED display for NPN, PNP input signals.



<b>DC</b> 10 ... 30 V Power supply	<b>000000</b> DIN 48 x 24 DIN front bezel	<b>-20°...+65°C</b> Temperature range	<b>IP65</b> High protection level	<b>PROG</b> Menu-driven programming	<b>max.</b> 60 kHz Pulse counter/ Totalizer	<b>1/sec 1/min</b> Frequency meter/ tachometer	<b>Timer</b>	<b>t / Hz</b> HRA Frequency meter HRA
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### Powerful

- Fast count and frequency input – input frequency max. 60 kHz (can be damped to 30 Hz for mechanical contacts).
- Robust housing – IP65 protected.
- Very bright LED display, 8 mm high, 6 digits.
- Very accurate precise frequency measurement principle (HRA-High Rate Accuracy System)  
Frequencies up to 38 Hz are calculated using time-interval (period duration) measurement. Frequencies > 38 Hz are calculated using a special time base (gate time) measurement. A very high accuracy of < 0.1 % is achieved, even with very short gate times. The resulting measurement is available after a max. of 50 ms.
- Short start-up time – detects input pulses just 16 msec after being switched on => no pulses are lost with a simultaneous motor start-up.

### User-friendly and universal

- Large keys – can also be operated when wearing gloves.
- Programming:
  - Simple uniform menu-driven programming and operation.
  - Possible to enter the programming also during operation with a confirmation prompt.
  - Pressing the right key switches between displays.
- Individually programmable scaling: multiplication and division factor (0.0001...99.9999), to display corresponding engineering units, e.g. position in 1/10 mm and speed in RPM.
- Separate factors for frequency- and pulse counting.
- Inputs: as an alternative to the HTL inputs, devices are available with a 5V (4 ... 30 V DC) input level, for use as parallel displays to PLCs.
- Timer specials: timer or hours-run meter with various Start/Stop measurements, time range settings in hours, minutes or seconds, with decimal point. Resolutions up to 1/1000 can be programmed.

## Ordering Information

Example    52U    0

Series: \_\_\_\_\_

Input Level: \_\_\_\_\_

0= Standard

A= 5V level (4-30VDC)

### Accessories

NEMA4 wall mount enclosures available see NEMA-32 & LCN4X

32DINRAIL - DIN Rail Mounting Frame

DR-4 - 4" DIN Rail

115-24 - For all 24 volt applications

230-24 - For 230 VAC to 24 VDC applications

MDR-20-24 - 24VDC Din Rail Mount Power Supply

(Input: 85 to 264 VAC)

ML30.100 - 24V Power Supply

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## Technical data

General technical data	
<b>Display</b>	6 digits, red 7 segment LED display; 8 mm [0.32"] high
<b>Data backup</b>	EEPROM
<b>Operating temperature</b>	10 ... 26 V DC -20°C ... +65°C [-4°F ... +149°F] > 26 ... 30 V DC -20°C ... +55°C [-4°F ... +131°F] (non-condensing)
<b>Storage temperature</b>	-25°C ... +70°C [-13°F ... +158°F]

Electrical characteristics	
<b>Power supply</b>	10 ... 30 VDC, with integrated reverse polarity protection
<b>Current consumption</b>	max. 40 mA
<b>EMC standards</b>	EN 55011 class B, EN 61000-6-2, EN 61000-6-3 EN 61326-1
<b>UL approval</b>	file E128604

Mechanical characteristics	
<b>Housing</b>	front panel mount 48x24 mm [1.89 x 0.94"] acc. to DIN 43700; RAL 7021, dark grey
<b>Protection</b>	IP65 (front side)
<b>Weight</b>	approx. 50 g [1.76 oz]
<b>Vibration resistance</b> acc. to EN 60068-2-6	10 ... 55 Hz / 1 mm [0.04"] / 30 min
<b>Shock resistance</b> acc. to EN 60068-2-27	100 G: 2 ms 10 G: 6 ms

Inputs	
<b>Polarity of inputs</b>	programmable, NPN or PN
<b>Input resistance</b>	approx. 5 kΩ
<b>Counting frequency</b> <sup>1)</sup>	max. 60 kHz, can be damped to 30 Hz
<b>Display range</b>	timer 0.001 s ... 999999 h frequency meter 1/min or 1/sec
<b>Minimum pulse duration of the reset input</b>	5 ms
<b>Input switching level (HTL)</b>	LOW 0 ... 0.2 x U <sub>B</sub> [V DC] HIGH 0.6 x U <sub>B</sub> ... 30 V DC
<b>Input switching level at 5VDC (4 ... 30 V DC)</b>	LOW 0 ... 2 V DC HIGH 4 ... 30 V DC
<b>Accuracy</b>	< 0.1 % frequency meter, tachometer

# Multifunction devices, electronic

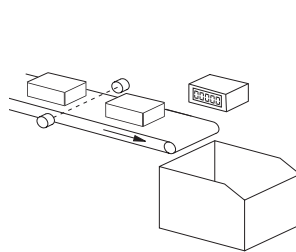
## LED dual function displays

## Universal with dual functions, 4 combinations (DC)

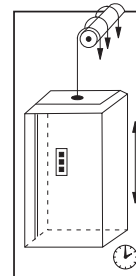
52U

### Applications for dual functions

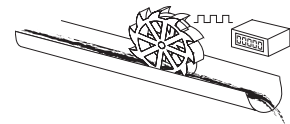
- Pulse and frequency (speed)  
e.g. production data acquisition: total piece count and speed on OEM equipment, flow rate measuring systems – total flow and current flow
- 2 pulse counters  
Measurement of batch and total piece count or of daily production count and total count values
- Pulse and time (maintenance counter)  
Used in the lift industry as trip counters and hours-run meters and on production machines for piece and time counting, flow and time measurement, materials handling time and quantities
- 2 timers  
Measurement of total time and orderspecific times, maintenance intervals and total time, time of day and total time



Piece count on conveyor and production speed

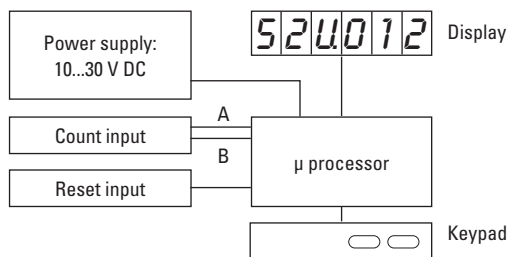


Trip counter and hours-run

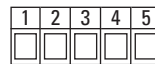


Flow rate and total volume

### Block diagram



### Terminal assignment



PIN	DC version
1	10 ... 30 V DC
2	0 V GND
3	INP A
4	INP B
5	Reset

Function of the inputs INP A, INP B

#### Counter with 2 totalizing ranges:

INP A: Dynamic count input counter 1 and counter 2  
INP B: Inactive

#### Totalizer and timer::

INP A: Dynamic count input for totalizer  
INP B: Start/Stop or gate input for timer

#### Totalizer and frequency meter:

INP A: Dynamic count input/frequency input  
INP B: Inactive

#### Timer with 2 time ranges:

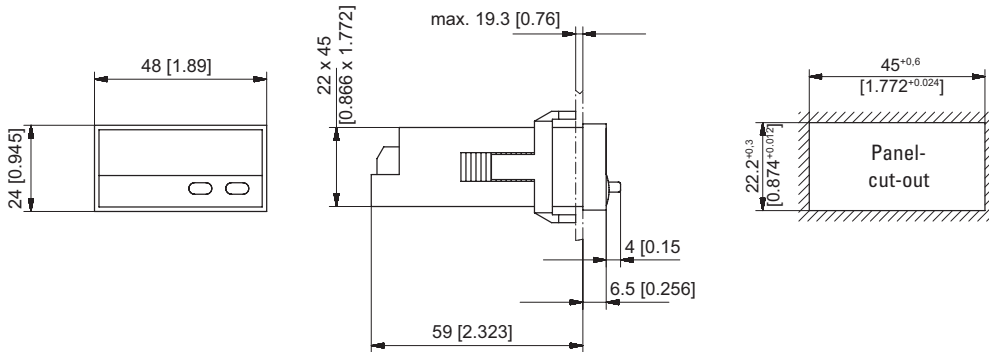
INP A: Start input (depends on input type)  
INP B: Start/Stop or gate input for timer (depends on input type)

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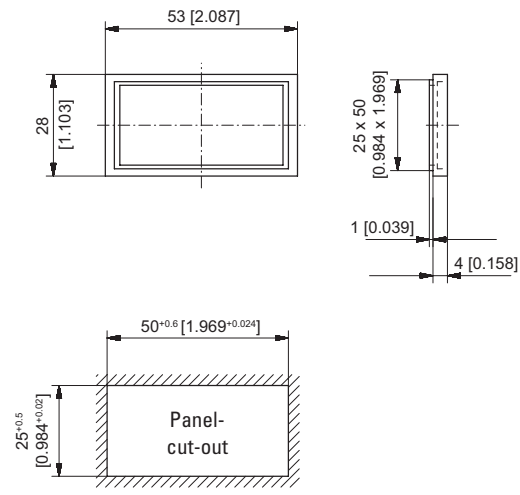
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## Dimensions

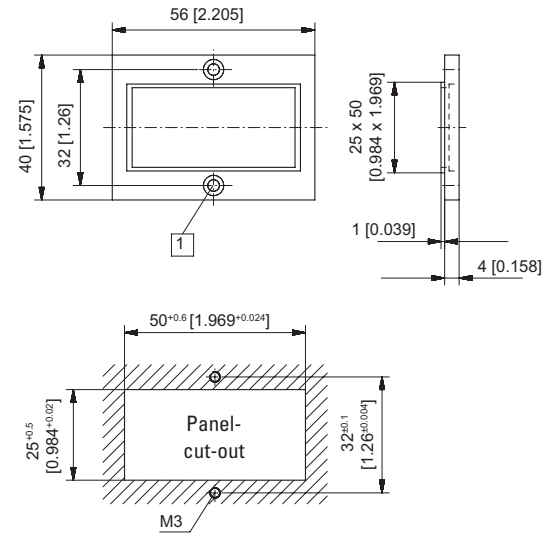
Dimensions in mm [inch]



Front bezel for clip mounting (included in delivery)



Front bezel for screw mounting (included in delivery)



1 Countersinking A13, DIN 74