



FACTORY AUTOMATION

SENSORS 5

SECONDARY SWITCH DEVICES

Edition 2002/2003



With regard to the supply of products, the current issue of the following document is applicable:
The General Terms of Delivery for Products and Services of the Electrical Industry, as published by
the Central Association of the "Elektrotechnik und Elektroindustrie (ZVEI) e.V.",
including the supplementary clause "Extended reservation of title".

We at Pepperl+Fuchs recognise a duty to make a contribution to the future.
For this reason, this printed matter is produced on paper bleached without the use of chlorine.

2000 Purchase of Visolux

1998 Intelligent
opto-sensors

1995 Rotary encoders

1994 AS-Interface

1993 Microwave ID
system

2000 Purchase of Elcon
Italy

1998 IS Remote Process
Interface Zone 1

1996 Remote Process
Interface Zone 2

1995 HART Multiplexer

1993 Level control



1991 Division into business areas
Factory Automation and
Process Automation



1990 K-system

1990 Inductive ID system

1986 Opto-sensors

1984 Ultrasonic sensors

1968 Ex isolating switch
amplifier

1958 First Inductive
proximity switch worldwide

1945 Founding year

EXISTENCE

Signals in the world of automation

During the more than 50 successful years of company history, it has always been possible to blaze new trails with innovative products.

Our central challenge is to intensify the necessary growth through future innovations as well and, whenever it makes sense, to support them through acquisitions.

ONE COMPANY, TWO DIVISIONS

FACTORY AUTOMATION

Factory Automation Division

Product areas

- Binary and analogue sensors
- in various technologies
 - Inductive and capacitive sensors
 - Magnetic sensors
 - Ultrasonic sensors
 - Photoelectric sensors
- Incremental and absolute value rotary encoders
- Counters and secondary switching devices
- Identification systems
- AS-Interface

Branches and partners

- Mechanical engineering
- Printing and paper
- Conveyor and transport systems
- Packaging and beverage machines
- Automobile Industry



PROCESS AUTOMATION



Process Automation Division

Product areas

- Signal conditioners
- Intrinsically safe interface components
- Remote process interface
- Intrinsically safe field bus solutions
- Level control sensors
- Process measuring and control systems engineering at the interface level
- Ex-protection training

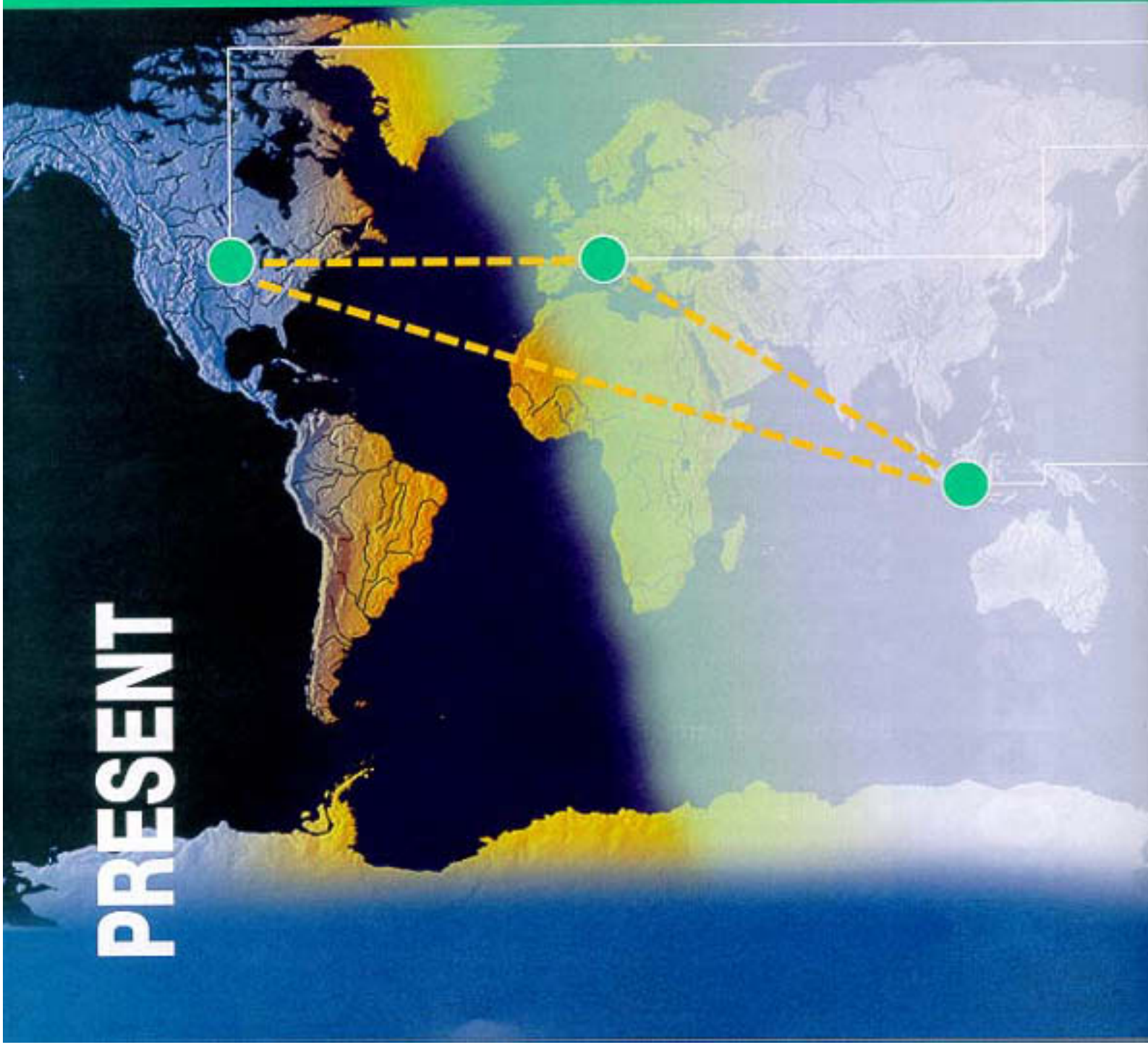
Branches and partners

- Chemistry
- Industrial and community wastewater systems
- Oil, gas and petro-chemicals
- PLC and process control systems
- Engineering companies for process systems

A worldwide presence

A worldwide sales and service organisation that provides consultation through competent and reliable employees, making it possible for you to reach us whenever and wherever you need us. There are more than 30 Pepperl+Fuchs companies throughout the world. You can find the current worldwide address information on our Web pages or in the Pepperl+Fuchs brochure, which you can request by e-mail.

PRESENT



IN HARMONY - THE PEPPERL+FUCHS TRIANGLE



Central office for America

- Founding year 1983
- More than 220 employees
- R&D, production, sales



Main headquarters of the company group

- Founding year 1945
- More than 1000 employees
- R&D, production, sales



Central office for Asia and Australia

- Founding year 1979
- More than 600 employees
- R&D, production, sales

Concentration and distribution - distributed unity

Know-how, professional expertise and highly motivated employees can be found everywhere in the world. It would be inefficient not to use this potential. As an integral part of making economical use of all available resources, we have concentrated precisely defined

assignment areas in Centers of Expertise. These are responsible not only for worldwide control and ongoing development, but also for ensuring that all relevant information is equally available at all locations.



	page
Counters and indicators	
DA5-IU-C	10
DA5-IU-2K-C	12
DA5-IU-2K-V	12
KCM-51-C	14
KCM-51-V	14
KCM-70-C	16
KCM-70-V	16
KCM-70A-C	18
KCM-70A-V	18
KCT-6S-C	20
KCT-6ST-C	20
KCT1-6SR-C	22
KCT1-6SR-V	22
KCT1-6WR/RS232-V	24
KCT2-6ST-V	26
KCT1-5SR-V	28
KCY1-6SR-B	30
KCN1-6SR-C	32
KCN1-6SR-V	32
KCN1-6ST-C	34
KCN1-6ST-V	34
KCN1-6WR-C	36
KCN1-6WR-V	36
KCN1-6WT-C	38
KCN1-6WT-V	38
KCX-B6WM-V	40
Tachometers	
TC-4B-V	46
TC-6A-V	52
Electronic cam-operated switching devices	
FT-11-V	54
FC-21-V	56
Sensor interface modules	
KCD2-E	64
KCD2-E1	64
KCD2-E2	64
KCD2-E3	64
KCD2-EL	66
KCD2-E2L	66
KCD2-R	68
RE 1	70
WE77-RE2	72
Rotational speed controller and frequency voltage current converter	
WE77-GS-04	74
KHU8-DW-1.D	76
KFU8-FSSP-1.D	82
KFD2-UFT-2.D	86
KFU8-UFT-2.D	88
Pepperl+Fuchs GmbH worldwide	90
List of types	96

Model number	Indicator type				Supply				Functionality								Dimensions					Page	
	Digital display	LED indicator	LCD indicator	Number of decades	24 V DC	110 V AC	240 V AC	2 x 3.6 V battery (Lithium)	Preselections	Adding	Subtracting	offset by 90°	Analogue input (V/mA)	Relay output	Transistor output	Reset button	External reset	48 x 24 mm	48 x 48 mm	96 x 48 mm	72 x 72 mm		32 x 15 mm
DA5-IU-C		•		5	•				0				•	0	0	•	•	•					10
DA5-IU-2K-C		•		5	•				2				•	2	0	•	•			•			12
DA5-IU-2K-V		•		5		•	•		2				•	2	0	•	•			•			12
KCM-51-C	•			5	•				0	•				0	0	•		•					14
KCM-51-V	•			5			•		0	•				0	0	•		•					14
KCM-70-C	•			7	•				0	•				0	0			•					16
KCM-70-V	•			7			•		0	•				0	0			•					16
KCM-70A-C	•			7	•				0	•				0	0							•	18
KCM-70A-V	•			7			•		0	•				0	0							•	18
KCT-6S-C		•		6	•				0	•	•	•		0	0	•	•	•					20
KCT-6ST-C		•		6	•				1	•	•	•		0	1	•	•	•					20
KCT1-6SR-C		•		6	•				1	•	•	•		1	0	•	•		•				22
KCT1-6SR-V		•		6		•	•		1	•	•	•		1	0	•	•		•				22
KCT1-6WR/RS232-V		•		6		•	•		2	•	•	•		2	0	•	•		•				24
KCT2-6ST-V		•		6		•	•		1	•	•	•		0	1	•	•			•			26
KCT1-5SR-V		•		5		•	•		1	•	•	•		1	0	•	•		•				28
KCY1-6SR-B			•	6				•	1	•	•	•		1	0	•	•		•				30
KCN1-6SR-C			•	6	•				1	•	•	•		1	0	•	•		•				32
KCN1-6SR-V			•	6		•	•		1	•	•	•		1	0	•	•		•				32
KCN1-6ST-C			•	6	•				1	•	•	•		0	1	•	•		•				34
KCN1-6ST-V			•	6		•	•		1	•	•	•		0	1	•	•		•				34
KCN1-6WR-C			•	6	•				2	•	•	•		2	0	•	•		•				36
KCN1-6WR-V			•	6		•	•		2	•	•	•		2	0	•	•		•				36
KCN1-6WT-C			•	6	•				2	•	•	•		0	2	•	•		•				38
KCN1-6WT-V			•	6		•	•		2	•	•	•		0	2	•	•		•				38
KCX-B6WM-V		•		6		•	•		2	•	•	•		2	2		•				•		40

Selection criteria for Indicators and Counters

1 Visibility

1.1 Sizes

Depending on type, you can choose from 4 standard sizes to suit the space available for your application. The front dimensions are 48x24 / 48x48 / 96x48 and 72x72 mm.

When good visibility is required for process visualisation, or perhaps if the observer is several metres from the display, the 96x48 mm size offers a solution with its super bright LED indicator.

1.2 Indicator type

With the exception of the electromechanical counters (Favourably priced digital indicators) and the straightforward indicator devices (Extremely bright LED display), there is a choice between a high-contrast liquid crystal display (LCD) and a light-emitting diode display (LED).

The LCD display is somewhat more favourably priced and requires less current, having a lower performance display as a consequence. Therefore, whenever exceptional readability is a requirement a large LED display should be selected.

2 Functionality

2.1 Counters

Electromechanical summators are used overall in cases where no output signals are required and a cost-effective counter function has to be achieved with or without a reset function. The KCM Series satisfies these requirements.

Electronic preset counters are used to control sequences via switch outputs and to display scaled values. Even without the use of the preset function the electronic counters with LED display offer better readability. This capability is provided by the KCT Series.

2.2 Time measurement

The multi-function devices in the KCN and KCT Series are suitable for both short term and long term measurements and also for measuring operating hours. These devices are capable of measuring times with an accuracy of one msec. The measuring intervals can be started and stopped automatically through the use of 2 inputs. Long term measurements are likewise possible. The maximum time that can be displayed is 999999 hours.

2.3 Velocity / frequency measurement

In order to measure revolutions and frequencies pulse separations are measured (Measurement of the period of oscillation between 2 pulses). The indication can simply be scaled and presented, for example, in Hertz or rpm. The KCN and KCT Series represent a quality solution for these applications.

2.4 Multi-function devices

The KCN and KCT Series with the Timer - Counter - Tachometer function can be universally applied to tasks, in which a number of signals have to be acquired by one device and the related programming adapted speedily to the specific application. These Series also offer advantages in cases where future plant modifications may be involved and in reducing stores holding requirements by utilising just one device for three applications.

2.5 Display of analogue values

The DA5 Series is used to display measured analogue values such as pressure, temperature and distance. These devices provide a scaled indication of the measured values in a digital presentation and with extremely good readability. Here the user has the choice between a 48x24 mm format display and a process display in the 96x48 mm format, with two relay outputs and linearisation for sequence control.

2.6 Operation

The requirements for an optimum operating philosophy vary depending on the specific application. The following requirements are pertinent:

- No adjustability / only reset function, so that nothing can be re-adjusted.
- Operation as simple and as straightforward as possible, with limited functionality.
- Menu-driven operating control with great flexibility in use.

These requirements are covered by the series as follows:

- KCM (No adjustment option)
- KCY and KCX (Simple adjustment of preset values by one button for each position)
- KCN and KCT (Menu-driven operation up to the connection via a RS 232 interface; push-button lock can be activated)



Model number

DA5-IU-C

Features

- Bright, high contrast 5-digit LED indicator
- Leading zero suppression
- Adjustable Decimal point
- Maximum- and minimum-value display

Technical data

	DA5-IU-C
General specifications	
Pre-selection	none
Data storage	10 ⁶ storage cycles or 10 years, EEPROM
Programming	keypad-driven menu
Indicators/operating means	
Type	7-segment LED display, red
Number of decades	5
Display value	digit height 8 mm
Display interval	-19999 ... 99999
Decimal point	freely adjustable
Resolution	14 Bit
Scale factor	via linear characteristic curve
Reset	maximum value, manually
Key interlock	-
Electrical specifications	
Operating voltage	10 ... 30 V DC
Power consumption P ₀	1.5 VA
Input	
Impedance	1 MOhm
Voltage	max. 30 DC
Analogue voltage input	0 ... 10 V / 2 ... 10 V DC
Analogue current input	0 ... 20 mA / 4 ... 20 mA
Ambient conditions	
Ambient temperature	-10 ... 50 °C (263 ... 323 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)
Mechanical specifications	
Connection type	7-pin screw terminal max. core cross-section 0.34 ... 1.5 mm ²
Mass	approx. 50 g
Dimensions	48 mm x 24 mm x 65 mm
Mounting	latch fastener/mounting frame

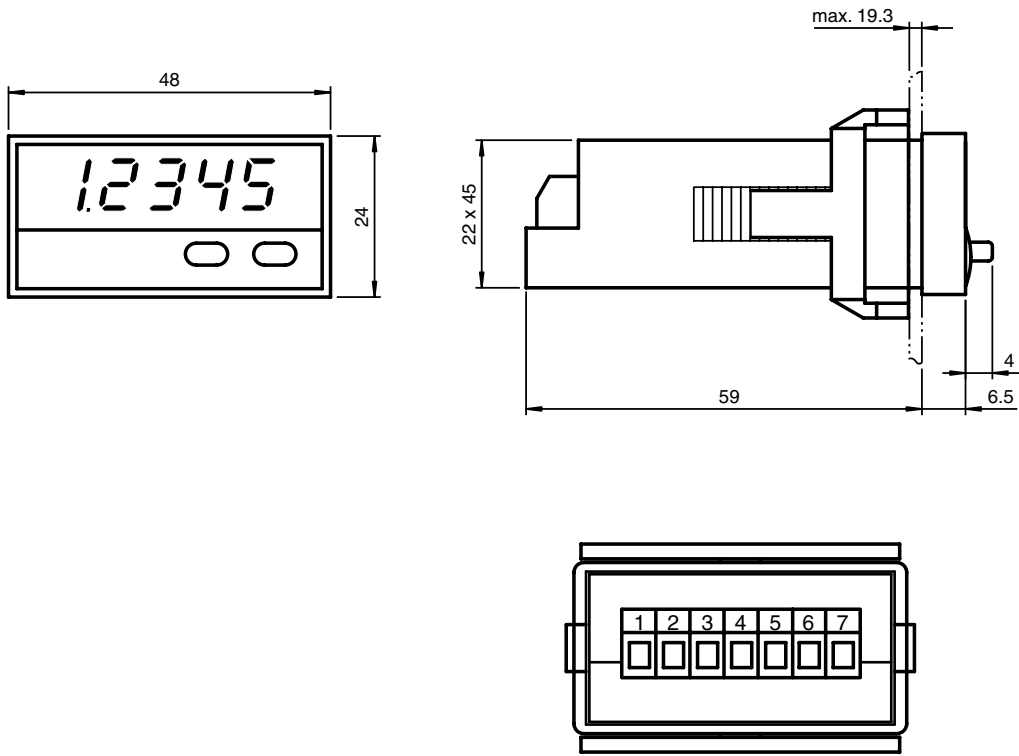
Notes

The DA5-IU-C permits a simple visual inspection by operating and maintenance personnel. It converts the analogue sensor output signal into a readable form for this purpose. Depending on the task or setting, 4 ... 20 mA or 0 ... 100 % values can be displayed.

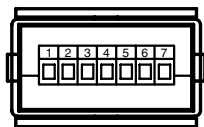
Scope of delivery:

- Process control unit DA5-IU-C
- Screw terminal, 7-pin
- Clamp clip
- Seal
- 1 sheet of adhesive symbols

Dimensions



Electrical connection



Terminal No.	
1	10 ... 30 V DC
2	0 V (GND)
3	0 V LATCH
4	LATCH
5	Current input
6	0 V input signal
7	Voltage input



Model number

DA5-IU-2K-C

DA5-IU-2K-V

Features

- 2 adjustable limit values
- 2 relay outputs
- Operation via keypad
- Programmable characteristics
- Resetting the outputs, automatic, manual or with external signal
- Connection via plug-in screw terminals
- Auxiliary power output for sensors (Only DA5-IU-2K-V)
- Protection degree IP65 in accordance with DIN EN 60529 (front only)
- Shock resistance in accordance with DIN EN 60068-2-27
- Vibration resistance in accordance with DIN EN 60068-2-6
- System hum suppression

Technical data

	DA5-IU-2K-C	DA5-IU-2K-V
General specifications		
Pre-selection	2-fold	2-fold
Data storage	10 ⁶ storage cycles or 10 years, EEPROM	10 ⁶ storage cycles or 10 years, EEPROM
Programming	keypad-driven menu	keypad-driven menu
Indicators/operating means		
Type	7-segment LED display, red	7-segment LED display, red
Number of decades	5	5
Display value	digit height 14.2 mm	digit height 14.2 mm
Pre-selection	digit height 14.2 mm	digit height 14.2 mm
Display interval	-19999 ... 99999	-19999 ... 99999
Decimal point	freely adjustable	freely adjustable
Resolution	14 Bit	14 Bit
Scale factor	via characteristic curve with up to 24 value pairs	via characteristic curve with up to 24 value pairs
Reset	manually or external	manually or external
Key interlock	with "high"-level at terminal "KEY"	with "high"-level at terminal "KEY"
Electrical specifications		
Operating voltage	10 ... 30 V DC	90 ... 260 V AC
Power consumption P ₀	2 W	7 VA
Input		
Impedance	> 1 MOhm for voltage measurement < 50 Ohm for current measurement	> 1 MOhm for voltage measurement < 50 Ohm for current measurement
Analogue voltage input	0 ... 10 V / 2 ... 10 V DC, -10 ... 10 V DC	0 ... 10 V / 2 ... 10 V DC, -10 ... 10 V DC
Analogue current input	0 ... 20 mA / 4 ... 20 mA	0 ... 20 mA / 4 ... 20 mA
Output		
Relay	2 x 250 V AC/ 300 V DC, 3 A, changeover contact	2 x 250 V AC/ 300 V DC, 3 A, changeover contact
Sensor supply	-	24 V DC, 100 mA
Ambient conditions		
Ambient temperature	-10 ... 50 °C (263 ... 323 K)	-10 ... 50 °C (263 ... 323 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)	≤ 80 % (non condensing)
Mechanical specifications		
Connection type	8-pin and 11 pin connectors with plug-in screw terminals	8-pin and 11 pin connectors with plug-in screw terminals
Mass	220 g	220 g
Dimensions	96 mm x 48 mm x 90 mm	96 mm x 48 mm x 90 mm
Mounting	mounting frame with latch fastener	mounting frame with latch fastener

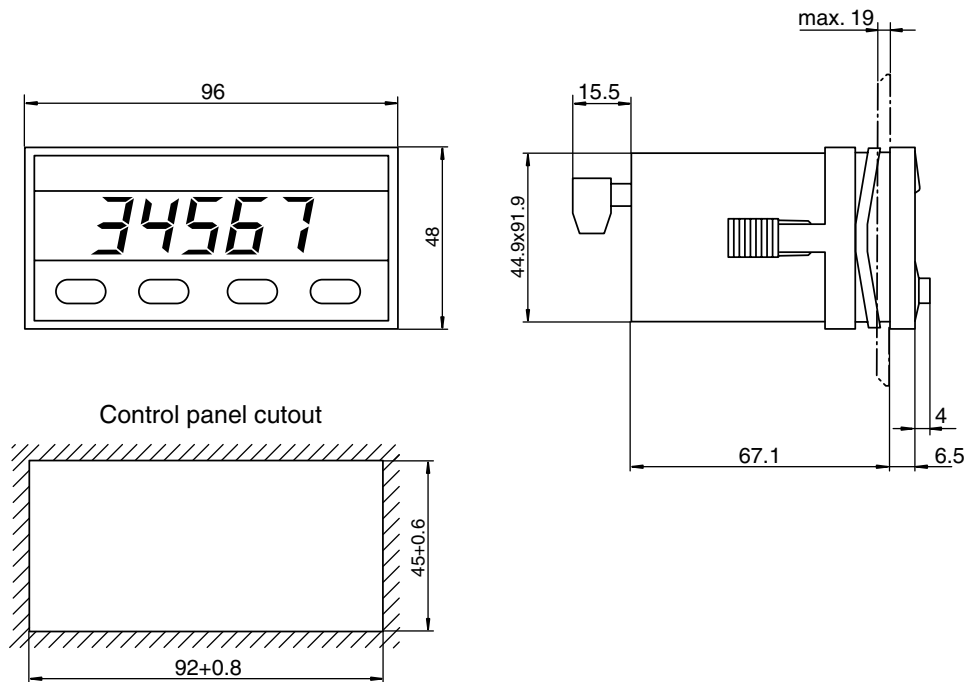
Notes

The DA5-IU-2K-... permits a simple visual inspection by operating and maintenance personnel. It converts the analogue sensor output signal into a readable form for this purpose. Depending on the task or setting, 4 ... 20 mA or 0 ... 100 % values can be displayed.

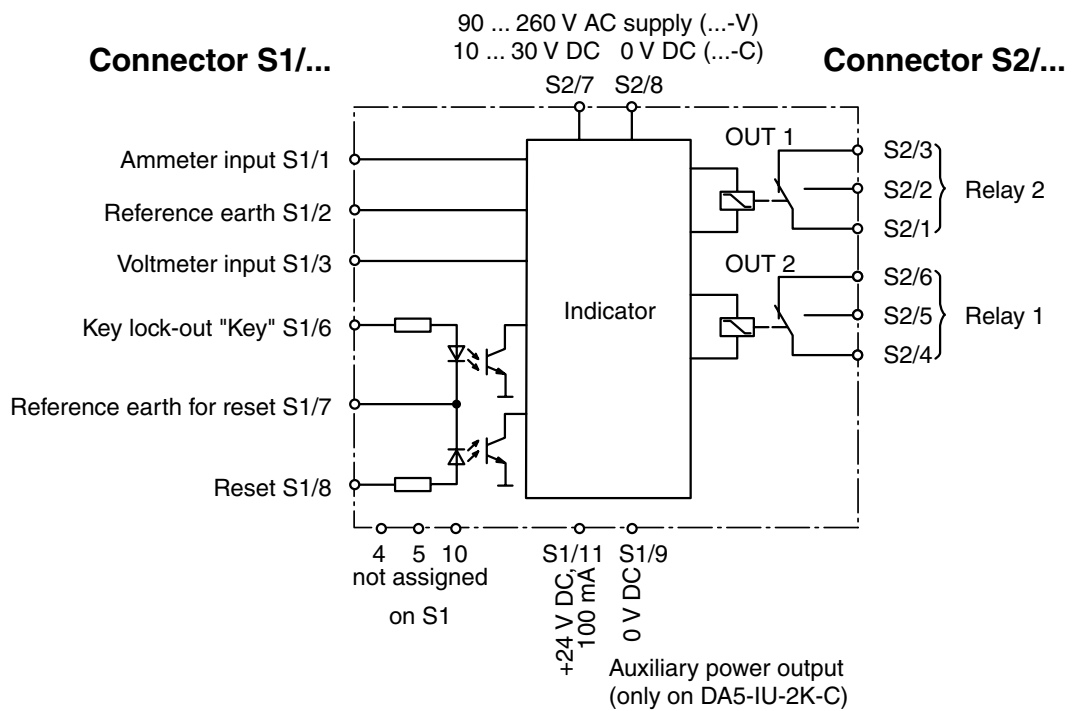
Scope of delivery:

- Process control unit DA5-IU-2K-...
- Screw terminals
 - 1 RM 5.08 8-pole terminal for power supply and outputs
 - 1 RM 3.81 11-pole terminal for measuring and control inputs
- Clamp clip
- Seal
- 1 sheet of adhesive symbols

Dimensions



Electrical connection





Model number

KCM-51-C

KCM-51-V

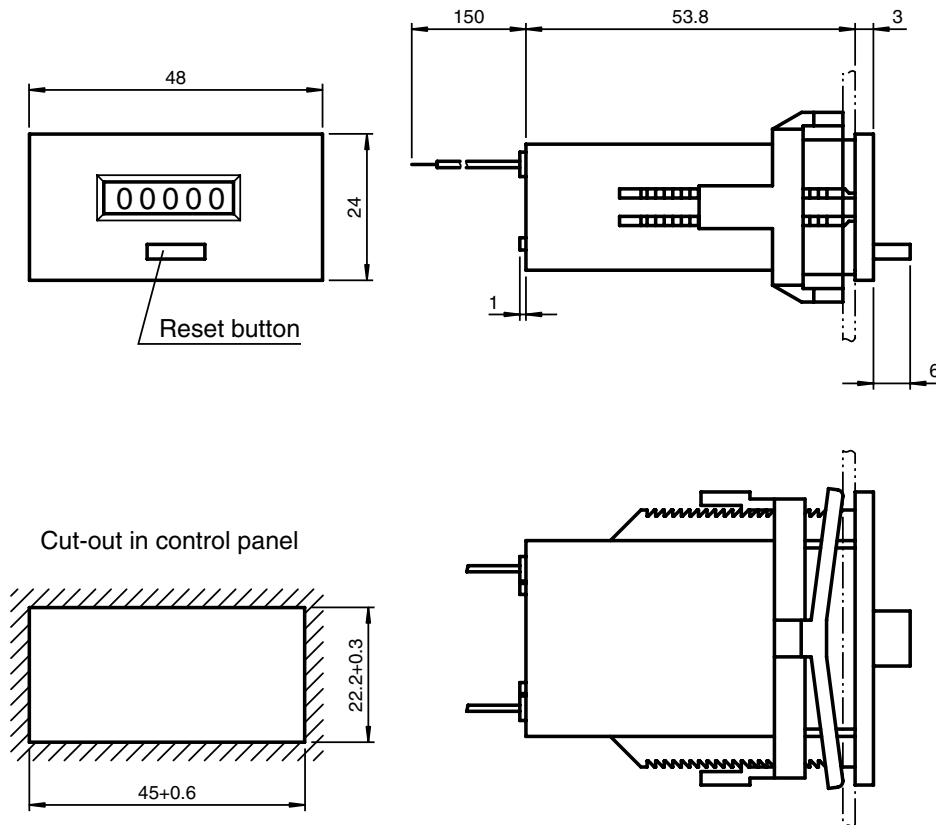
Features

- Electromechanical summator
- 5 decade devices
- Counter frequency 10 Hz
- Manual reset
- Power supply 24 V DC or 230 V AC
- Fixing with latch fastener for easy installation
- Protection degree IP42 in accordance with DIN EN 60529 (front only)
- Shock resistance in accordance with DIN EN 60068-2-27
- Vibration resistance in accordance with DIN EN 60068-2-6

Technical data

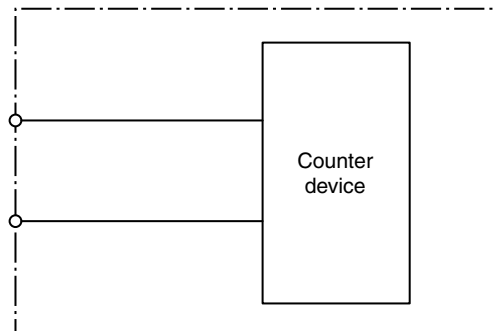
	KCM-51-C	KCM-51-V
Indicators/operating means		
Type	digital display	digital display
Number of decades	5	5
Display value	digit height 4 mm	digit height 4 mm
Reset	manually	manually
Electrical specifications		
Operating voltage	24 V DC	230 V AC
Power consumption P_0	0.6 W	1.3 VA
Input		
Pulse length/pulse interval	50 ms / 50 ms	50 ms / 50 ms
Counting frequency	10 Hz	10 Hz
Ambient conditions		
Ambient temperature	-10 ... 50 °C (263 ... 323 K)	-10 ... 50 °C (263 ... 323 K)
Storage temperature	-40 ... 90 °C (233 ... 363 K)	-40 ... 90 °C (233 ... 363 K)
Relative humidity	≤ 80 % (non condensing)	≤ 80 % (non condensing)
Mechanical specifications		
Lifetime	> 50 x 10 ⁶ pulses	> 50 x 10 ⁶ pulses
Connection type	flexible leads AWG 22 150 mm long	flexible leads AWG 22 150 mm long
Mass	62 g	48 g
Dimensions	48 mm x 24 mm x 59 mm	48 mm x 24 mm x 59 mm
Mounting	latch fastener	latch fastener

Dimensions

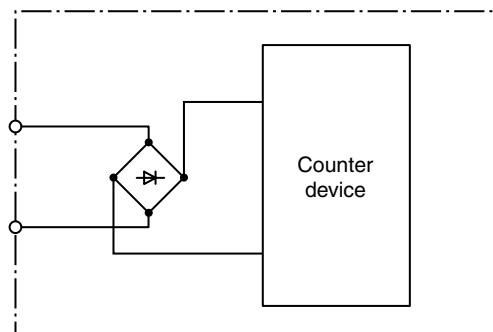


Electrical connection

DC Supply



AC Supply





Model number

KCM-70-C

KCM-70-V

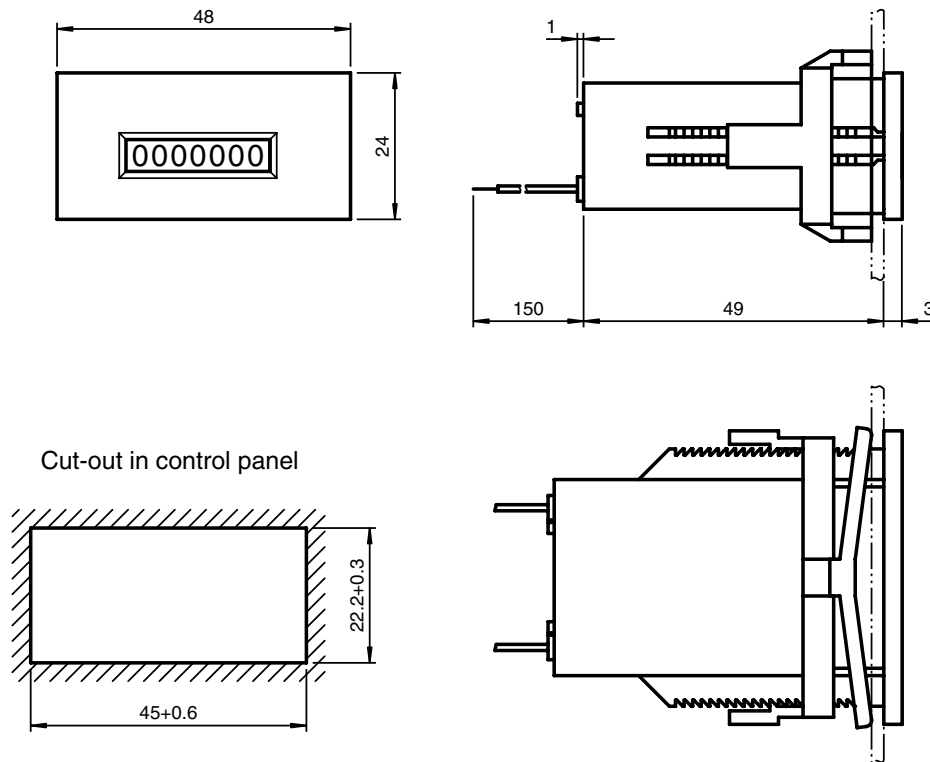
Features

- Electromechanical summator
- 7 decade devices
- Counter frequency up to 25 Hz
- Counter frequency 10 Hz
- Without reset
- Power supply 24 V DC or 230 V AC
- Fixing with latching spring or latch fastener for easy installation
- Protection degree IP42 in accordance with DIN EN 60529 (front only)
- Shock resistance in accordance with DIN EN 60068-2-27
- Vibration resistance in accordance with DIN EN 60068-2-6

Technical data

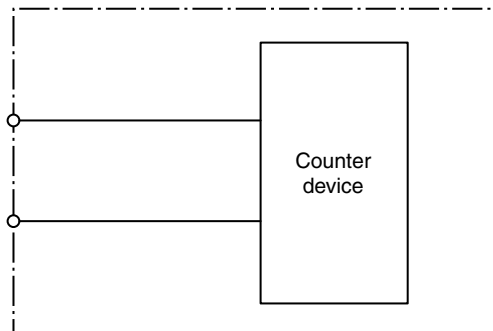
	KCM-70-C	KCM-70-V
Indicators/operating means		
Type	digital display	digital display
Number of decades	7	7
Display value	digit height 4 mm	digit height 4 mm
Electrical specifications		
Operating voltage	24 V DC	230 AC
Power consumption P ₀	0.6 W	1.3 VA
Input		
Pulse length/pulse interval	50 ms / 50 ms	50 ms / 50 ms
Counting frequency	10 Hz	10 Hz
Ambient conditions		
Ambient temperature	-10 ... 50 °C (263 ... 323 K)	-10 ... 50 °C (263 ... 323 K)
Storage temperature	-40 ... 90 °C (233 ... 363 K)	-40 ... 90 °C (233 ... 363 K)
Relative humidity	≤ 80 % (non condensing)	≤ 80 % (non condensing)
Mechanical specifications		
Lifetime	> 50 x 10 ⁶ pulses	> 50 x 10 ⁶ pulses
Connection type	flexible leads AWG 22 150 mm long	flexible leads AWG 22 150 mm long
Mass	60 g	50 g
Dimensions	48 mm x 24 mm x 54 mm	48 mm x 24 mm x 54 mm
Mounting	latch fastener	latch fastener

Dimensions

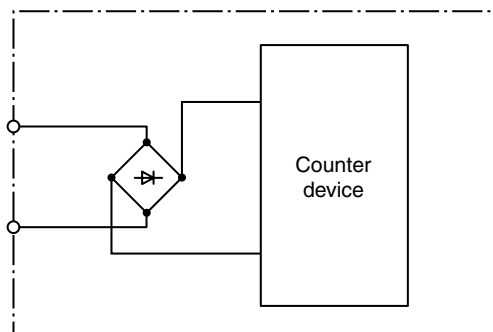


Electrical connection

DC Supply



AC Supply





Model number

KCM-70A-C

KCM-70A-V

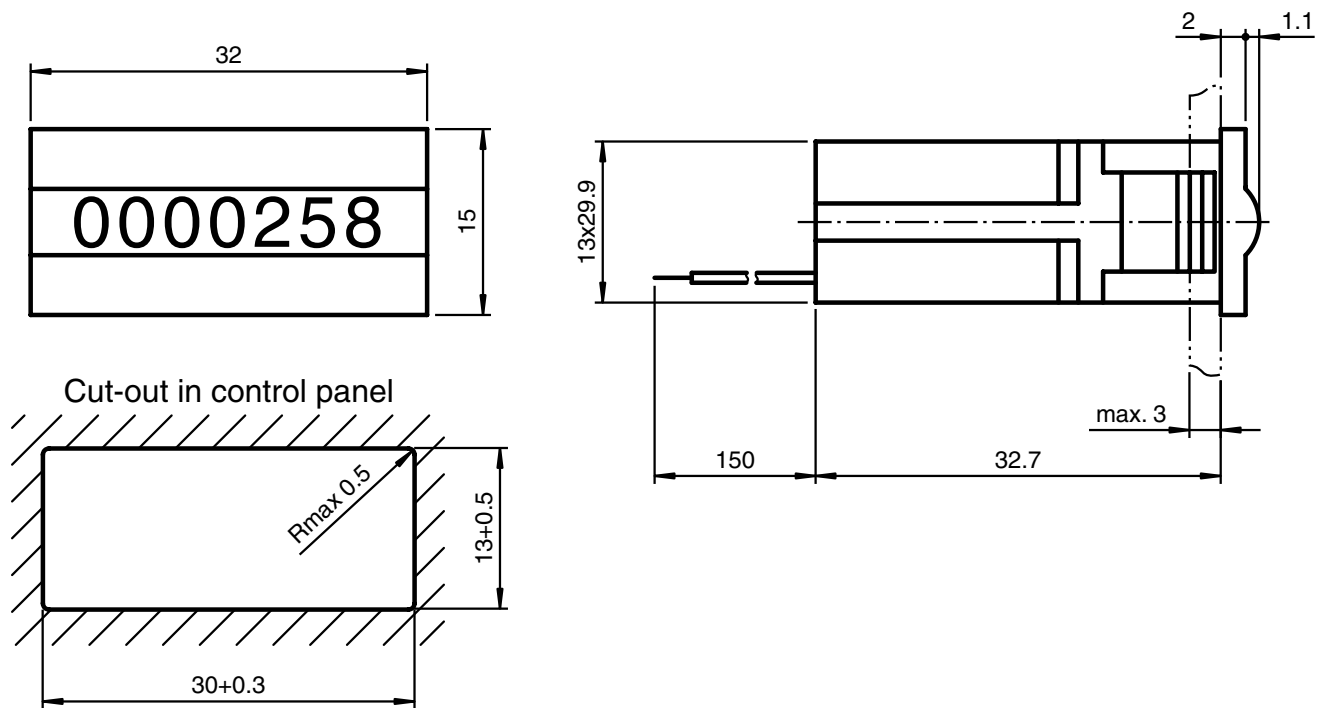
Features

- Electromechanical summator
- 7 decade devices
- Counter frequency up to 25 Hz
- Without reset
- Power supply 24 V DC or 230 V AC
- Fixing with latching spring or latch fastener for easy installation
- Protection degree IP65 in accordance with DIN EN 60529 (front only)
- Shock resistance in accordance with DIN EN 60068-2-27
- Vibration resistance in accordance with DIN EN 60068-2-6

Technical data

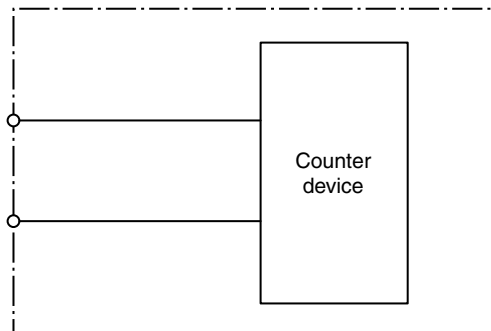
	KCM-70A-C	KCM-70A-V
Indicators/operating means		
Type	digital display	digital display
Number of decades	7	7
Display value	digit height 4 mm	digit height 4 mm
Electrical specifications		
Operating voltage	24 V DC	230 AC
Power consumption P ₀	0.3 W	0.9 VA
Input		
Pulse length/pulse interval	20 ms / 20 ms	50 ms / 50 ms
Counting frequency	25 Hz	10 Hz
Ambient conditions		
Ambient temperature	-10 ... 60 °C (263 ... 333 K)	-10 ... 60 °C (263 ... 333 K)
Storage temperature	-40 ... 90 °C (233 ... 363 K)	-40 ... 90 °C (233 ... 363 K)
Relative humidity	≤ 80 % (non condensing)	≤ 80 % (non condensing)
Mechanical specifications		
Lifetime	> 50 x 10 ⁶ pulses	> 50 x 10 ⁶ pulses
Connection type	flexible leads AWG 22 150 mm long	flexible leads AWG 22 150 mm long
Mass	18 g	18 g
Dimensions	32 mm x 15 mm x 36 mm	32 mm x 15 mm x 36 mm
Mounting	Locating springs	Locating springs

Dimensions

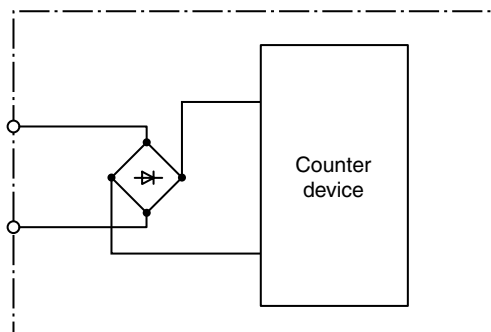


Electrical connection

DC Supply



AC Supply





Model number

KCT-6S-C

KCT-6ST-C

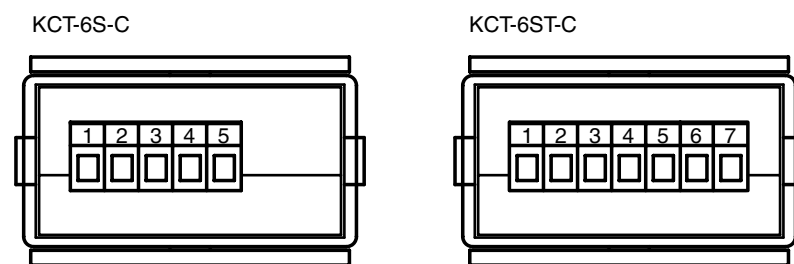
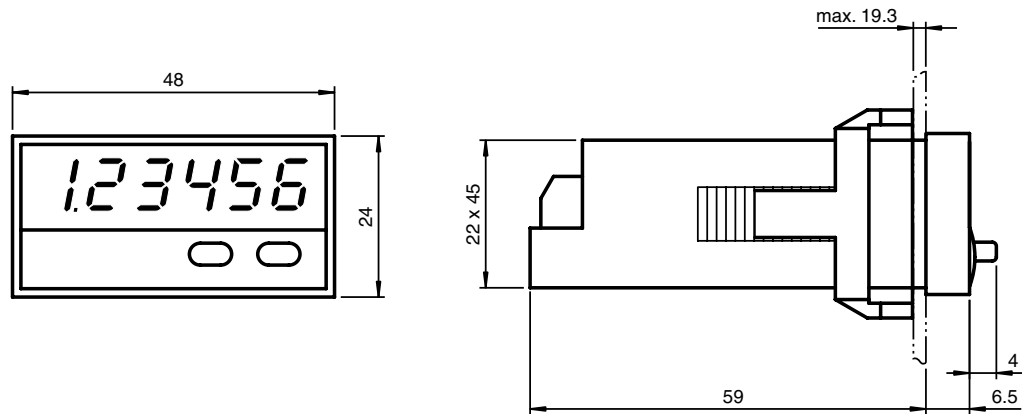
Features

- Counter/Timer/Tachometer
- Counter frequency up to 20 kHz
- LED indicator, red
- 6 decade devices
- Operation via keypad
- Two counter inputs
- Fixing with plug-in frame for easy installation
- Connection via screw terminals
- Manual or external reset
- PNP and NPN sensors can be connected
- Protection degree IP65 in accordance with DIN EN 60529 (front only)
- Shock resistance in accordance with DIN EN 60068-2-27
- Vibration resistance in accordance with DIN EN 60068-2-6

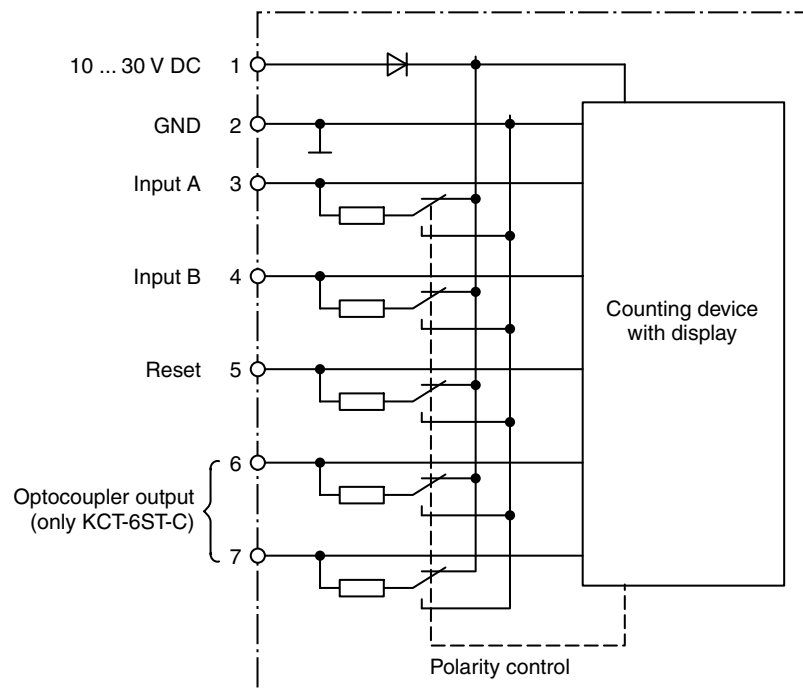
Technical data

	KCT-6S-C	KCT-6ST-C
General specifications		
Pre-selection	-	single
Data storage	10 ⁶ storage cycles or 10 years, EEPROM	10 ⁶ storage cycles or 10 years, EEPROM
Programming	keypad-driven menu	keypad-driven menu
Indicators/operating means		
Type	7-segment LED display, red	7-segment LED display, red
Number of decades	6	6
Display value	digit height 8 mm	digit height 8 mm
Pre-selection	-	active at counter value ≤ 0
Display interval	-199999 ... 999999 with suppression of leading zeros	-199999 ... 999999 with suppression of leading zeros
Decimal point	0 to max 3 fractional digits	0 to max 3 fractional digits
Scale factor	0.0001 ... 99.9999	0.0001 ... 99.9999
Reset	manually or external	manually or external
Key interlock	-	-
Electrical specifications		
Operating voltage	10 ... 30 V DC	10 ... 30 V DC
Power consumption P ₀	1.5 W	1.5 W
Input		
Counting frequency	30 Hz / 20 kHz	30 Hz / 20 kHz
Impedance	10 kOhm	10 kOhm
Voltage	low: 0 V DC ... 0.2 x supply voltage; high: 0.6 x supply voltage ... 30 V DC	low: 0 V DC ... 0.2 x supply voltage; high: 0.6 x supply voltage ... 30 V DC
Counting method	adding or subtracting	adding or subtracting
Output		
Optocoupler	-	Semiconductor output 30 V, max. 10 mA
Ambient conditions		
Ambient temperature	-10 ... 50 °C (263 ... 323 K)	-10 ... 50 °C (263 ... 323 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)	≤ 80 % (non condensing)
Mechanical specifications		
Connection type	5-pin screw terminal , max. core cross-section 0.34 ... 1.5 mm ²	7-pin screw terminal , max. core cross-section 0.34 ... 1.5 mm ²
Mass	48 g	48 g
Dimensions	48 mm x 24 mm x 65 mm	48 mm x 24 mm x 65 mm
Mounting	latch fastener	latch fastener

Dimensions



Electrical connection





Model number

KCT1-6SR-C

KCT1-6SR-V

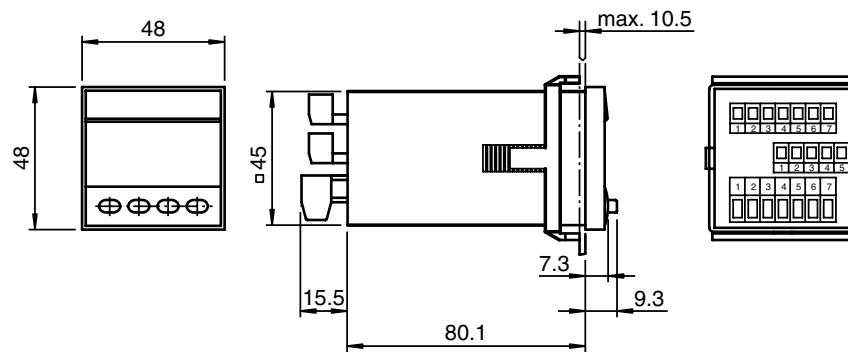
Features

- Counter/Timer/Tachometer
- Counter frequency up to 20 kHz
- 6-digit LED indicator, red
- 1 Pre-selection
- Status LED indication for output an preselection value
- Display range and preselection range from -199999 up to 999999
Overflow will be evaluated correctly up to 1 decade
- Programmable functionality as pulse counter, frequency counter, Timer or
- Relay output
- Adding/subtracting via 2 separate inputs
- PNP and NPN sensors can be connected
- Protection degree IP65 (front only)

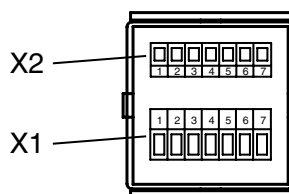
Technical data

	KCT1-6SR-C	KCT1-6SR-V
General specifications		
Pre-selection	single	single
Data storage	10 ⁶ storage cycles or 10 years	10 ⁶ storage cycles or 10 years
Programming	keypad-driven menu	keypad-driven menu
Indicators/operating means		
Type	7-segment LED display, red	7-segment LED display, red
Number of decades	6	6
Display value	digit height 8 mm	digit height 8 mm
Pre-selection	switchable	switchable
Display interval	-99999 ... 999999	-99999 ... 999999
Decimal point	0 to max 3 fractional digits	0 to max 3 fractional digits
Scale factor	0.0001 ... 99.9999	0.0001 ... 99.9999
Reset	manually or external	manually or external
Key interlock	with "high"-level at terminal "KEY"	with "high"-level at terminal "KEY"
Electrical specifications		
Operating voltage	10 ... 30 V DC	90 ... 250 V AC
Power consumption P ₀	max. 1.2 VA	max. 7 VA
Input		
Counting frequency	20 kHz	20 kHz
Minimum pulse duration	5 ms for reset input	5 ms for reset input
Impedance	approx. 10 kOhm	approx. 10 kOhm
Voltage	low: 0 ... 0.2 x U _e high: 0.6 x U _e ... 30 V DC	low: 0 ... 4 V DC high: 12 ... 30 V DC
Counting method	adding or subtracting	adding or subtracting
Output		
Relay	250 V AC, 0.3 ... 3 mA, changeover contact	250 V AC, 0.3 ... 3 mA, changeover contact
Sensor supply	-	14.4 ... 28 V DC, 100 mA
Response time	7 ms	7 ms
Ambient conditions		
Ambient temperature	-10 ... 50 °C (263 ... 323 K)	-10 ... 50 °C (263 ... 323 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)	≤ 80 % (non condensing)
Mechanical specifications		
Connection type	2 plug-in 7-pin screw terminals max. core cross-section 0.34 ... 1.5 mm ²	2 plug-in 7-pin screw terminals max. core cross-section 0.34 ... 1.5 mm ²
Mass	approx. 200 g	approx. 200 g
Dimensions	48 mm x 48 mm x 106 mm	48 mm x 48 mm x 106 mm
Mounting	latch fastener (dimension 50.5 mm x 54.5 mm)	latch fastener (dimension 50.5 mm x 54.5 mm)

Dimensions



Electrical connection



Connector assignment X1

supply voltage and outputs

Terminal No.	AC version	10 ... 30 V DC version
1	n.c.	
2	n.c.	
3	output relay common contact (C)	
4	output relay normally open contact (NO)	
5	output relay normally closed contact (NC)	
6	supply voltage 90 ... 250 V AC	operating voltage 10 ... 30 V DC
7	supply voltage 90 ... 250 V AC	0 V DC (GND)

Connector assignment X2

inputs

Terminal No.	Name	AC version	10 ... 30 V DC version
1	+24 VDC	Sensor Supply voltage	not connected
2	0 VDC (GND)	Reference voltage	not connected
3	INP A	Counter input A	
4	INP B	Counter input B	
5	RESET	Reset input	
6	GATE	Gate circuit	
7	KEY	Input for key locking	

Attention

Attention
In the case of selection of $\neg$ and $\neg$ (inverted relay function) the function of terminals 4 and 5 are changed:

Terminal No.	AC and DC versions
4	Relay normally closed (NC)
5	Relay normally open (NO)



Model number

KCT1-6WR/RS232-V

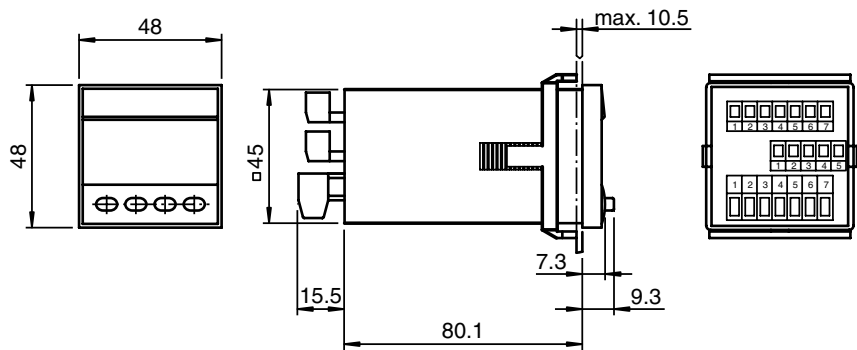
Features

- Counter/Timer/Tachometer
- 6-digit LED indicator, red
- 2 independent pre-select values
- RS 232 interface for parameter assignment
- Status LED indication for output an preselection value
- Display range and preselection range from -199999 up to 999999
Overflow will be evaluated correctly up to 1 decade
- Programmable functionality as pulse counter, frequency counter, Timer or
- Relay output
- Adding/subtracting via 2 separate inputs
- PNP and NPN sensors can be connected
- Protection degree IP65 (front only)

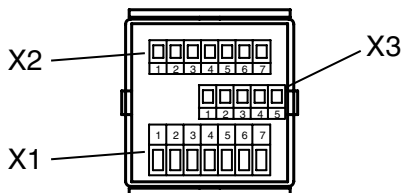
Technical data

KCT1-6WR/RS232-V	
General specifications	
Pre-selection	2-fold
Data storage	10 ⁶ storage cycles or 10 years
Programming	keypad-driven menu
Indicators/operating means	
Type	7-segment LED display, red
Number of decades	6
Display value	digit height 8 mm
Pre-selection	switchable
Display interval	-999999 ... 999999
Decimal point	0 to max 3 fractional digits
Scale factor	0.0001 ... 99.9999
Reset	manually or external
Key interlock	with "high"-level at terminal "KEY"
Electrical specifications	
Operating voltage	90 ... 250 V AC
Power consumption P ₀	max. 7 VA
Input	
Interface	RS 232 interface for parameter assignment
Counting frequency	20 kHz
Minimum pulse duration	5 ms for reset input
Impedance	approx. 10 kOhm
Voltage	low: 0 ... 4 V DC high: 12 ... 30 V DC
Counting method	adding or subtracting
Output	
Relay	250 V AC, 0.3 ... 3 mA, 1 changeover contact, 1 normally-open
Sensor supply	14.4 ... 28 V DC, 100 mA
Response time	7 ms
Ambient conditions	
Ambient temperature	-10 ... 50 °C (263 ... 323 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)
Mechanical specifications	
Connection type	2 plug-in 7-pin screw terminals
Mass	approx. 200 g
Dimensions	48 mm x 48 mm x 106 mm
Mounting	latch fastener (dimension 50.5 mm x 54.5 mm)

Dimensions



Electrical connection



Connection assignment X1

Supply voltage and outputs

Terminal No.	AC version
1	Output 1 relay contact
2	Output 1 relay contact
3	Output 2 relay common contact (C)
4	Output 2 relay normally open contact (NO)
5	Output 2 relay normally closed contact (NC)
6	Power supply 90 ... 250 V AC
7	Power supply 90 ... 250 V AC

Connection assignment X2

Inputs

Terminal No.	Name	AC version
1	+24 V DC	Sensor supply voltage
2	0 VDC (GND)	Reference voltage
3	INP A	Counter input A
4	INP B	Counter input B
5	RESET	Reset input
6	GATE	Gate input
7	KEY	Input of push-button lock

Attention

In the case of selection of $\neg$ and $\neg$ (inverted relay control) the connections of terminals 4 and 5 are changed:

Terminal No.	AC version
4	Relay normally closed contact (NC)
5	Relay normally open contact (NO)

Connection assignment X3

Serial interface



Model number

KCT2-6ST-V

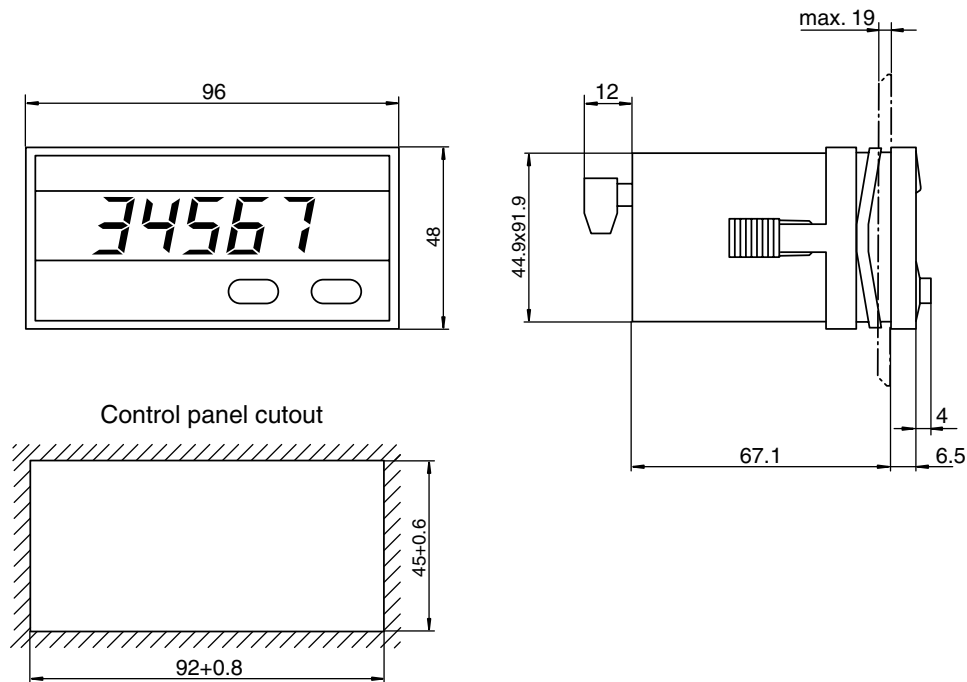
Features

- Counter/Timer/Tachometer
- Extremely bright LED indicator
- 1 pre-select value with transistor output
- PNP and NPN sensors can be connected
- Adding/subtracting via 2 separate inputs
- Protection degree IP65 (front only)

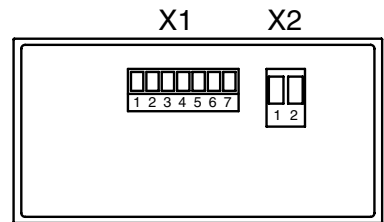
Technical data

	KCT2-6ST-V
General specifications	
Pre-selection	single
Data storage	10 ⁶ storage cycles or 10 years, EEPROM
Programming	keypad-driven menu
Indicators/operating means	
Type	7-segment LED display, red
Number of decades	6
Display value	digit height 14 mm
Pre-selection	active at counter value ≤ 0
Display interval	-199999 ... 999999 with suppression of leading zeros
Decimal point	0 to max 3 fractional digits
Scale factor	0.0001 ... 99.9999
Reset	manually or external
Key interlock	-
Electrical specifications	
Operating voltage	90 ... 260 V AC
Power consumption P ₀	max. 6 VA
Input	
Counting frequency	30 Hz / 20 kHz (max. 11 kHz when counting with phase discriminator)
Minimum pulse duration	5 ms for reset input
Impedance	10 kOhm
Voltage	low: 0 ... 4 V DC ; high: 12 ... 30 V DC
Counting method	adding or subtracting
Output	
Sensor supply	24 V DC ± 15 % / 100 mA
Response time	6 ms
Optocoupler	30 V / 15 mA
Ambient conditions	
Ambient temperature	-10 ... 50 °C (263 ... 323 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)
Mechanical specifications	
Connection type	2-pin and 7-pin plug-in connection terminals, core cross-section ≤ 1.5 mm ²
Mass	150 g
Dimensions	96 mm x 48 mm x 90 mm
Mounting	latch fastener (dimension 48 mm x 100 mm)

Dimensions



Electrical connection



Connection assignment X1

Terminal No.	AC version
1	Power supply 90 ... 260 V AC
2	Power supply 90 ... 260 V AC

Connection assignment X2

Terminal No.	AC version
1	Optocoupler emitter output
2	Optokoupler collector output
3	n.c.
4	n.c.
5	INP
6	GND out
7	+24 V out



Model number

KCT1-5SR-V

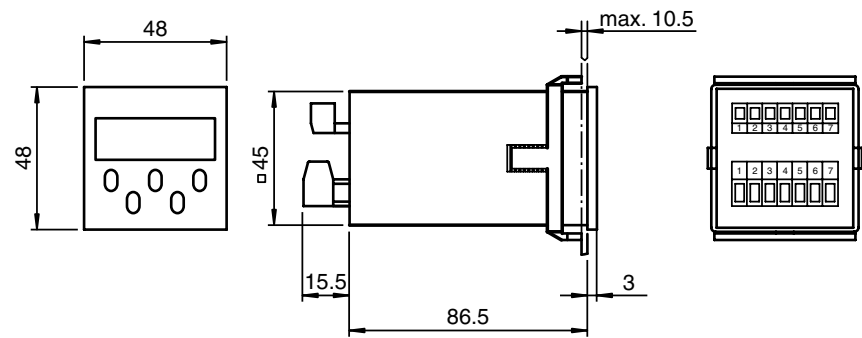
Features

- Counter/Timer/Tachometer
- 5-digit LED indicator, red
- 1 Pre-selection
- Simple pre-selection setting via one button per decade
- Adding/subtracting via 2 separate inputs
- Display range and preselection range from -199999 up to 999999
Overflow will be evaluated correctly up to 1 decade
- PNP and NPN sensors can be connected
- Protection degree IP54 (front only)

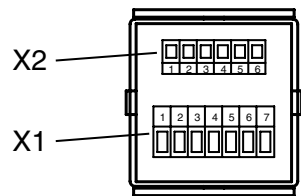
Technical data

	KCT1-5SR-V
General specifications	
Pre-selection	single
Data storage	10 ⁶ storage cycles or 10 years
Programming	keypad-driven menu and programming switch
Indicators/operating means	
Type	7-segment LED display, red
Number of decades	5
Display value	digit height 7.5 mm
Pre-selection	digit height: 7.5 mm (selectable)
Display interval	-19999 ... 99999
Decimal point	0 to max 3 fractional digits
Scale factor	0.001 ... 9.999
Reset	manually or external
Key interlock	with "high"-level at terminal "KEY"
Electrical specifications	
Operating voltage	230 V AC
Power consumption P ₀	max. 4 VA
Input	
Counting frequency	30 Hz / 10 kHz
Minimum pulse duration	5 ms
Impedance	approx. 10 kOhm
Voltage	low: 0 ... 4 V DC high: 12 ... 30 V DC
Counting method	adding or subtracting
Output	
Relay	250 V AC / 300 V DC, 3 A, changeover contact
Sensor supply	14.4 ... 27.6 V DC, 80 mA
Response time	6 ms
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)
Mechanical specifications	
Mass	approx. 240 g
Dimensions	48 mm x 48 mm x 110 mm
Mounting	latch fastener (dimension 50.5 mm x 54.5 mm)

Dimensions



Electrical connection



Connection assignment X1

Terminal No.	AC version
1	+24 V DC Sensor supply voltage
2	0 V DC (GND)
3	Output relay common contact (C)
4	Output relay normally open contact (NO)
5	Output relay normally close contact (NC)
6	Power supply 230 V AC
7	Power supply 230 V AC

Connection assignment X2

Terminal No.	Name	AC version
1	INP A	Counter input A
2	INP B	Counter input B
3	GATE	Gate input
4	RESET	Reset input
5	LATCH	Hold input
6	KEY	Input of push-button lock

Attention

In the case of setting the continuous signal = 99.99 (inverted relay function) the functions of terminals 4 and 5 are changed:

Terminal No.	AC version
4	Relay normally closed contact (NC)
5	Relay normally open contact (NO)



Model number

KCY1-6SR-B

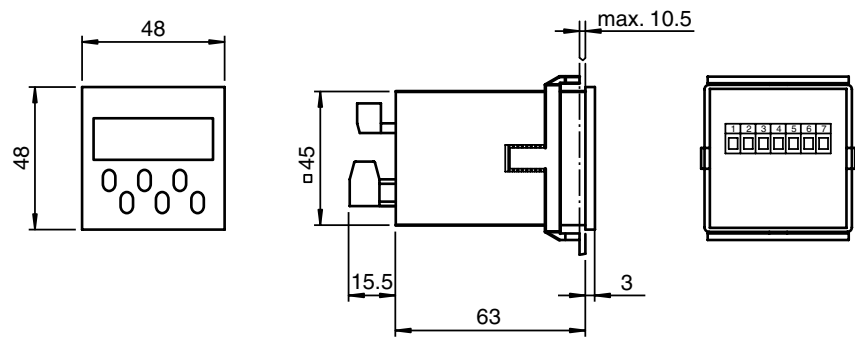
Features

- Addition/Subtraction pre-select counter
- Simple pre-selection setting via one button per decade
- Easy-to-read 2-line LCD indicator
- With battery operation
- PNP and NPN sensors can be connected
- Relay output
- Input for keypad locking

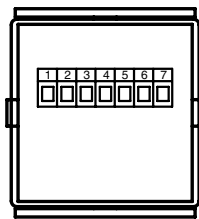
Technical data

KCY1-6SR-B	
General specifications	
Pre-selection	single
Data storage	5 x 10 ⁶ switchings or 8 years
Programming	keypad-driven menu
Indicators/operating means	
Type	2-line, 7-segment LCD display with signs
Number of decades	6
Display value	digit height 7 mm
Pre-selection	digit height 4.5 mm
Display interval	0 ... 999999
Decimal point	0 to max 3 fractional digits
Scale factor	-
Reset	manually or external
Key interlock	via external "high" signal
Electrical specifications	
Operating voltage	2 x 3.6 V batteries
Input	
Counting frequency	25 Hz
Impedance	110 kOhm
Counting method	adding or subtracting
Output	
Relay	230 V AC / 220 V DC, 2 A, normally open contact
Response time	< 20 ms
Ambient conditions	
Ambient temperature	-10 ... 50 °C (263 ... 323 K)
Storage temperature	-20 ... 60 °C (253 ... 333 K)
Relative humidity	≤ 80 % (non condensing)
Mechanical specifications	
Mass	80 g
Dimensions	48 mm x 48 mm x 85 mm
Mounting	latch fastener (dimension 50.5 mm x 54.5 mm)

Dimensions



Electrical connection



Terminal No.	
1	+3 V DC for terminal 2
2	Input of push-button lock
3	Relay contact
4	Relay contact
5	AC/DC optocoupler count input
6	AC/DC optocoupler reset input
7	Common AC/DC input for terminals 5 and 6



Model number

KCN1-6SR-C

KCN1-6SR-V

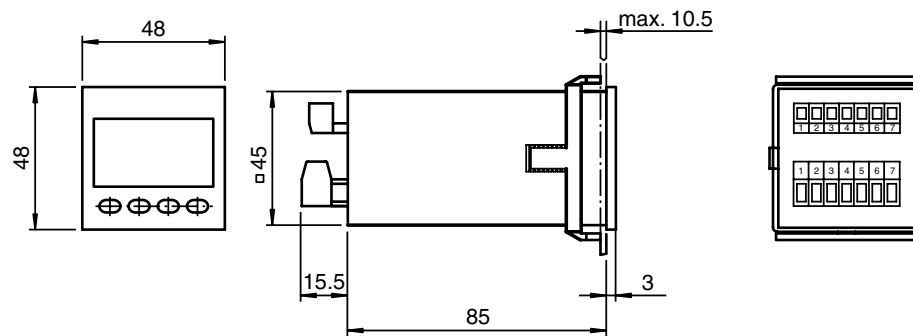
Features

- Counter/Timer/Tachometer
- Adding/subtracting via 2 separate inputs
- Batch controller with 1 pre-selection
- Easy-to-read, 2-line LCD display with symbols for indicated pre-selection and output status
- Display range and preselection range from -999999 up to 999999
Overflow will be evaluated correctly up to 1 decade
- PNP and NPN sensors can be connected
- Protection degree IP65 (front only)

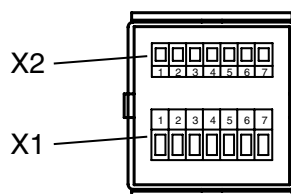
Technical data

	KCN1-6SR-C	KCN1-6SR-V
General specifications		
Pre-selection	single	single
Data storage	10 ⁶ storage cycles or 10 years	10 ⁶ storage cycles or 10 years
Programming	keypad-driven menu and programming switch	keypad-driven menu and programming switch
Indicators/operating means		
Type	2-line, 7-segment LCD display with signs	2-line, 7-segment LCD display with signs
Number of decades	6	6
Display value	digit height 9 mm	digit height 9 mm
Pre-selection	digit height 7 mm	digit height 7 mm
Display interval	-999999 ... 999999	-999999 ... 999999
Decimal point	0 to max 3 fractional digits	0 to max 3 fractional digits
Scale factor	0.0001 ... 9.9999	0.0001 ... 9.9999
Reset	manually or external	manually or external
Key interlock	with "high"-level at terminal "KEY"	with "high"-level at terminal "KEY"
Electrical specifications		
Operating voltage	11 ... 30 V DC	90 ... 260 V AC
Power consumption P ₀	max. 0.1 VA	max. 4 VA
Input		
Counting frequency	30 Hz / 10 kHz	30 Hz / 10 kHz
Minimum pulse duration	5 ms	5 ms
Impedance	approx. 10 kOhm	approx. 10 kOhm
Voltage	low: 0 ... 0.2 x U _e high: 0.6 x U _e ... 30 V DC	low: 0 ... 4 V DC high: 12 ... 30 V DC
Counting method	adding or subtracting	adding or subtracting
Output		
Relay	250 V AC / 300 V DC, 3 A, changeover contact	250 V AC / 300 V DC, 3 A, changeover contact
Sensor supply		14.4 ... 27.6 V DC, 80 mA
Response time	6 ms	6 ms
Ambient conditions		
Ambient temperature	0 ... 50 °C (273 ... 323 K)	0 ... 50 °C (273 ... 323 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)	≤ 80 % (non condensing)
Mechanical specifications		
Mass	approx. 240 g	approx. 240 g
Dimensions	48 mm x 48 mm x 110 mm	48 mm x 48 mm x 110 mm

Dimensions



Electrical connection



Connection assignment X1

Supply voltage and outputs

Terminal No.	AC version	DC version
1	n.c.	
2	n.c.	
3	Relay output common contact (C)	
4	Relay output normally open contact (NO)	
5	Relay output normally closed contact (NC)	
6	Power supply 230 V AC	Operating voltage 11 ... 30 V DC
7	Power supply 230 V AC	0 V DC (GND)

Connection assignment X2

Inputs

Terminal No.	Name	230 V AC version	10 ... 30 V DC version
1	+24 VDC	Sensor supply voltage	n.c.
2	0 VDC (GND)	Reference voltage	n.c.
3	INP A	Counter input A	
4	INP B	Counter input B	
5	RESET	Reset input	
6	GATE	Gate input	
7	KEY	Input of push-button lock	

Attention

In the case of selection of $\neg$ and $\neg$ (inverted relay control) the connections of terminals 4 and 5 are changed:

Terminal No.	AC and DC versions
4	Relay normally closed contact (NC)
5	Relay normally open contact (NO)



Model number

KCN1-6ST-C

KCN1-6ST-V

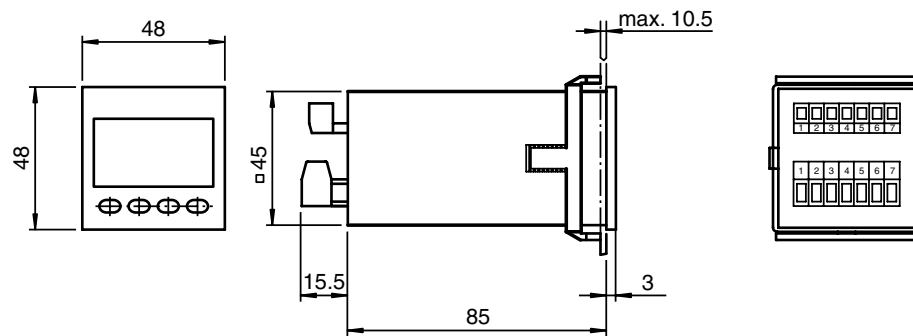
Features

- Counter/Timer/Tachometer
- Adding/subtracting via 2 separate inputs
- Batch controller with 1 pre-selection
- Easy-to-read, 2-line LCD display with symbols for indicated pre-selection and output status
- Display range and preselection range from -999999 up to 999999
Overflow will be evaluated correctly up to 1 decade
- PNP and NPN sensors can be connected
- Protection degree IP65 (front only)

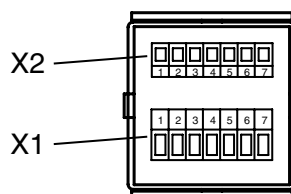
Technical data

	KCN1-6ST-C	KCN1-6ST-V
General specifications		
Pre-selection	single	single
Data storage	10 ⁶ storage cycles or 10 years	10 ⁶ storage cycles or 10 years
Programming	keypad-driven menu and programming switch	keypad-driven menu and programming switch
Indicators/operating means		
Type	2-line, 7-segment LCD display with signs	2-line, 7-segment LCD display with signs
Number of decades	6	6
Display value	digit height 9 mm	digit height 9 mm
Pre-selection	digit height 7 mm	digit height 7 mm
Display interval	-999999 ... 999999	-999999 ... 999999
Decimal point	0 to max 3 fractional digits	0 to max 3 fractional digits
Scale factor	0.0001 ... 9.9999	0.0001 ... 9.9999
Reset	manually or external	manually or external
Key interlock	with "high"-level at terminal "KEY"	with "high"-level at terminal "KEY"
Electrical specifications		
Operating voltage	11 ... 30 V DC	90 ... 260 V AC
Power consumption P ₀	max. 0.1 VA	max. 4 VA
Input		
Counting frequency	30 Hz / 10 kHz	30 Hz / 10 kHz
Minimum pulse duration	5 ms	5 ms
Impedance	approx. 10 kOhm	approx. 10 kOhm
Voltage	low: 0 ... 0.2 x U _e high: 0,6 x U _e ... 30 V DC	low: 0 ... 4 V DC high: 12 ... 30 V DC
Counting method	adding or subtracting	adding or subtracting
Output		
Sensor supply		14.4 ... 27.6 V DC, 80 mA
Response time	6 ms	6 ms
Optocoupler	30 V DC, 15 mA	30 V DC, 15 mA
Ambient conditions		
Ambient temperature	0 ... 50 °C (273 ... 323 K)	0 ... 50 °C (273 ... 323 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)	≤ 80 % (non condensing)
Mechanical specifications		
Mass	approx. 240 g	approx. 240 g
Dimensions	48 mm x 48 mm x 110 mm	48 mm x 48 mm x 110 mm

Dimensions



Electrical connection



Connection assignment X1

Supply voltage and outputs

Terminal No.	AC version	DC version
1	n.c.	
2	n.c.	
3	Optocoupler output emitter	
4	n.c.	
5	Optocoupler output collector	
6	Power supply 230 V AC	Operating voltage 11 ... 30 V DC
7	Power supply 230 V AC	0 V DC (GND)

Connection assignment X2

Inputs

Terminal No.	Name	230 V AC version	10 ... 30 V DC version
1	+24 VDC	Sensor supply voltage	n.c.
2	0 VDC (GND)	Reference voltage	n.c.
3	INP A	Counter input A	
4	INP B	Counter input B	
5	RESET	Reset input	
6	GATE	Gate input	
7	KEY	Input of push-button lock	

Attention

In the case of selection of $\neg$ and $\neg$ (inverted optocoupler control) the connections of terminals 4 and 5 are changed:

Terminal No.	AC and DC versions
4	Optocoupler output collector
5	Optocoupler output emitter



Model number

KCN1-6WR-C

KCN1-6WR-V

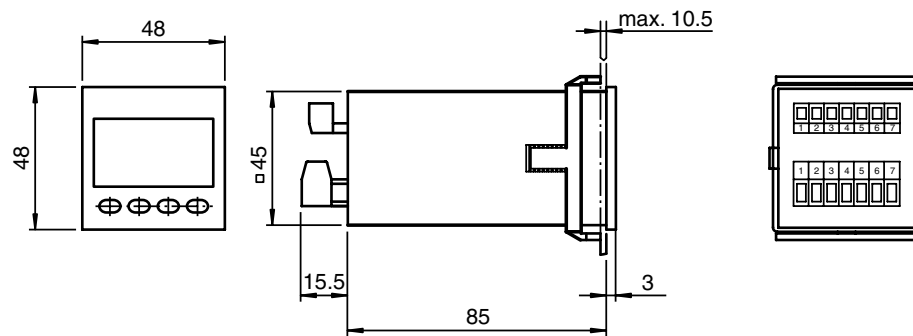
Features

- Counter/Timer/Tachometer
- Adding/subtracting via 2 separate inputs
- Batch controller with 2 pre-selections
- Easy-to-read, 2-line LCD display with symbols for indicated pre-selection and the status of the two outputs
- Display range and preselection range from -999999 up to 999999
Overflow will be evaluated correctly up to 1 decade
- PNP and NPN sensors can be connected
- Protection degree IP65 (front only)

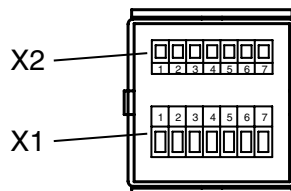
Technical data

	KCN1-6WR-C	KCN1-6WR-V
General specifications		
Pre-selection	2-fold	2-fold
Data storage	10 ⁶ storage cycles or 10 years	10 ⁶ storage cycles or 10 years
Programming	keypad-driven menu and programming switch	keypad-driven menu and programming switch
Indicators/operating means		
Type	2-line, 7-segment LCD display with signs	2-line, 7-segment LCD display with signs
Number of decades	6	6
Display value	digit height 9 mm	digit height 9 mm
Pre-selection	digit height 7 mm	digit height 7 mm
Display interval	-999999 ... 999999	-999999 ... 999999
Decimal point	0 to max 3 fractional digits	0 to max 3 fractional digits
Scale factor	0.0001 ... 9.9999	0.0001 ... 9.9999
Reset	manually or external	manually or external
Key interlock	with "high"-level at terminal "KEY"	with "high"-level at terminal "KEY"
Electrical specifications		
Operating voltage	11 ... 30 V DC	90 ... 260 V AC
Power consumption P ₀	max. 0.1 VA	max. 4 VA
Input		
Counting frequency	30 Hz / 10 kHz	30 Hz / 10 kHz
Minimum pulse duration	5 ms	5 ms
Impedance	approx. 10 kOhm	approx. 10 kOhm
Voltage	low: 0 ... 0.2 x U _e high: 0.6 x U _e ... 30 V DC	low: 0 ... 4 V DC high: 12 ... 30 V DC
Counting method	adding or subtracting	adding or subtracting
Output		
Relay	250 V AC / 300 V DC, 3 A, 1 changeover contact, 1 normally-open	250 V AC / 300 V DC, 3 A, 1 changeover contact, 1 normally-open
Sensor supply		14.4 ... 27.6 V DC, 80 mA
Response time	6 ms	6 ms
Ambient conditions		
Ambient temperature	0 ... 50 °C (273 ... 323 K)	0 ... 50 °C (273 ... 323 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)	≤ 80 % (non condensing)
Mechanical specifications		
Mass	approx. 240 g	approx. 240 g
Dimensions	48 mm x 48 mm x 110 mm	48 mm x 48 mm x 110 mm

Dimensions



Electrical connection



Connection assignment X1

Supply voltage and outputs

Terminal No.	AC version	DC version
1	Output 1 Relay	
2	Output 1 Relay	
3	Output 2 Relay common contact (C)	
4	Output 2 Relay normally open contact (NO)	
5	Output 2 Relay normally closed contact (NC)	
6	Power supply 230 V AC	Operating voltage 11 ... 30 V DC
7	Power supply 230 V AC	0 V DC (GND)

Connection assignment X2

Inputs

Terminal No.	Name	230 V AC version	11 ... 30 V DC version
1	+24 VDC	Sensor supply voltage	n.c.
2	0 VDC (GND)	Reference voltage	n.c.
3	INP A	Counter input A	
4	INP B	Counter input B	
5	RESET	Reset input	
6	GATE	Gate input	
7	KEY	Input of push-button lock	

Attention

In the case of selection of $\neg$ and $\neg$ (inverted relay control) the connections of terminals 4 and 5 are changed:

Terminal No.	AC and DC versions
4	Relay normally closed contact (NC)
5	Relay normally open contact (NO)



Model number

KCN1-6WT-C

KCN1-6WT-V

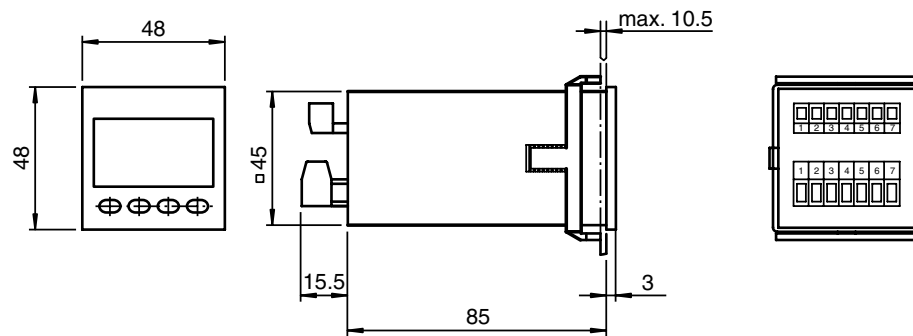
Features

- Counter/Timer/Tachometer
- Adding/subtracting via 2 separate inputs
- Batch controller with 2 pre-selections
- Easy-to-read, 2-line LCD display with symbols for indicated pre-selection and the status of the two outputs
- Display range and preselection range from -999999 up to 999999
Overflow will be evaluated correctly up to 1 decade
- PNP and NPN sensors can be connected
- Protection degree IP65 (front only)

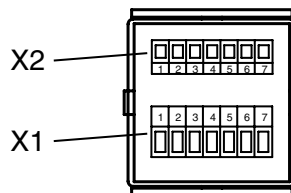
Technical data

	KCN1-6WT-C	KCN1-6WT-V
General specifications		
Pre-selection	2-fold	2-fold
Data storage	10 ⁶ storage cycles or 10 years	10 ⁶ storage cycles or 10 years
Programming	keypad-driven menu and programming switch	keypad-driven menu and programming switch
Indicators/operating means		
Type	2-line, 7-segment LCD display with signs	2-line, 7-segment LCD display with signs
Number of decades	6	6
Display value	digit height 9 mm	digit height 9 mm
Pre-selection	digit height 7 mm	digit height 7 mm
Display interval	-999999 ... 999999	-999999 ... 999999
Decimal point	0 to max 3 fractional digits	0 to max 3 fractional digits
Scale factor	0.0001 ... 9.9999	0.0001 ... 9.9999
Reset	manually or external	manually or external
Key interlock	with "high"-level at terminal "KEY"	with "high"-level at terminal "KEY"
Electrical specifications		
Operating voltage	11 ... 30 V DC	90 ... 260 V AC
Power consumption P ₀	max. 0.1 VA	max. 4 VA
Input		
Counting frequency	30 Hz / 10 kHz	30 Hz / 10 kHz
Minimum pulse duration	5 ms	5 ms
Impedance	approx. 10 kOhm	approx. 10 kOhm
Voltage	low: 0 ... 0.2 x U _e high: 0,6 x U _e ... 30 V DC	low: 0 ... 4 V DC high: 12 ... 30 V DC
Counting method	adding or subtracting	adding or subtracting
Output		
Sensor supply		14.4 ... 27.6 V DC, 80 mA
Response time	6 ms	6 ms
Optocoupler	30 V DC, 15 mA	30 V DC, 15 mA
Ambient conditions		
Ambient temperature	0 ... 50 °C (273 ... 323 K)	0 ... 50 °C (273 ... 323 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)	≤ 80 % (non condensing)
Mechanical specifications		
Mass	approx. 240 g	approx. 240 g
Dimensions	48 mm x 48 mm x 110 mm	48 mm x 48 mm x 110 mm

Dimensions



Electrical connection



Connection assignment X1

Supply voltage and outputs

Terminal No.	AC version	DC version
1	Output 1 Relay	
2	Output 1 Relay	
3	Output 2 Relay common contact (C)	
4	Output 2 Relay normally open contact (NO)	
5	Output 2 Relay normally closed contact (NC)	
6	Power supply 230 V AC	Operating voltage 11 ... 30 V DC
7	Power supply 230 V AC	0 V DC (GND)

Connection assignment X2

Inputs

Terminal No.	Name	230 V AC version	11 ... 30 V DC version
1	+24 VDC	Sensor supply voltage	n.c.
2	0 VDC (GND)	Reference voltage	n.c.
3	INP A	Counter input A	
4	INP B	Counter input B	
5	RESET	Reset input	
6	GATE	Gate input	
7	KEY	Input of push-button lock	

Attention

In the case of selection of $\neg$ and $\neg$ (inverted relay control) the connections of terminals 4 and 5 are changed:

Terminal No.	AC and DC versions
4	Relay normally closed contact (NC)
5	Relay normally open contact (NO)



Model number

KCX-B6WM-V



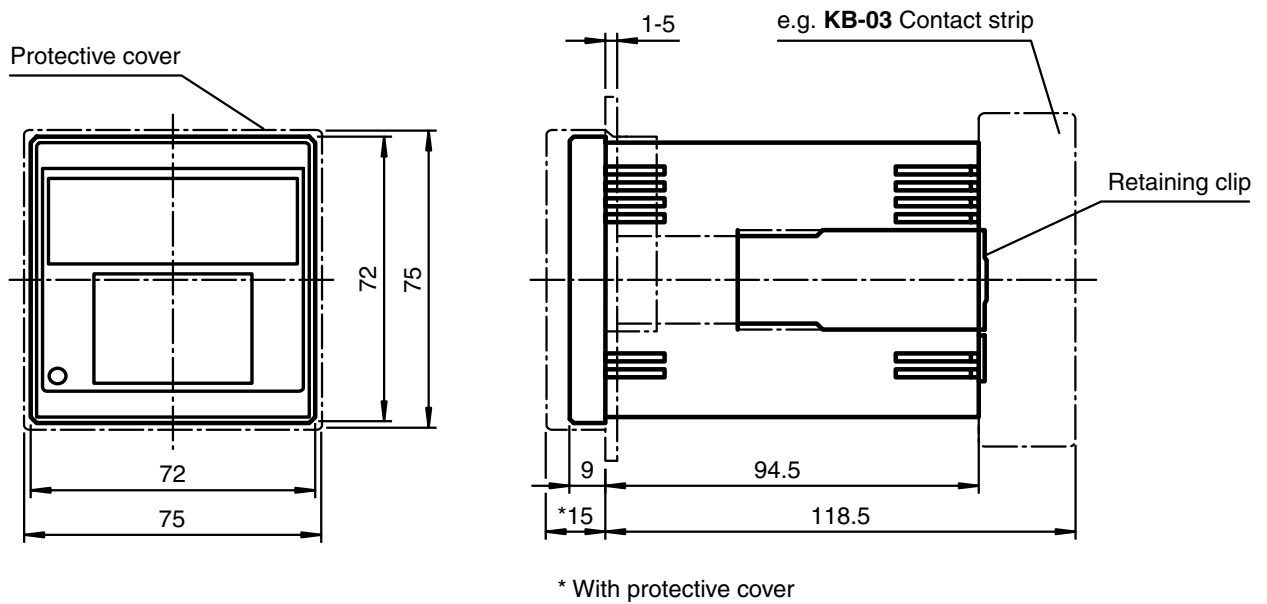
Features

- Addition/Subtraction counter
- 2 Pre-selections
- 6 decade devices
- LED indicator, green
- Counter frequency up to 20 kHz
- Power supply for pulse counter
- Positive or negative logic
- Display storage
- Counting frequency selectable via toggle switch 10 Hz / 20 kHz
- PNP or NPN output stages selectable
- 16 different operating modes
- Reset of the outputs, automatic or with external signal
- Flexible dust and spray protection cover in delivery package
- Base for surface or built-in mounting
- PNP and NPN sensors can be connected
- Accessory can be ordered separately

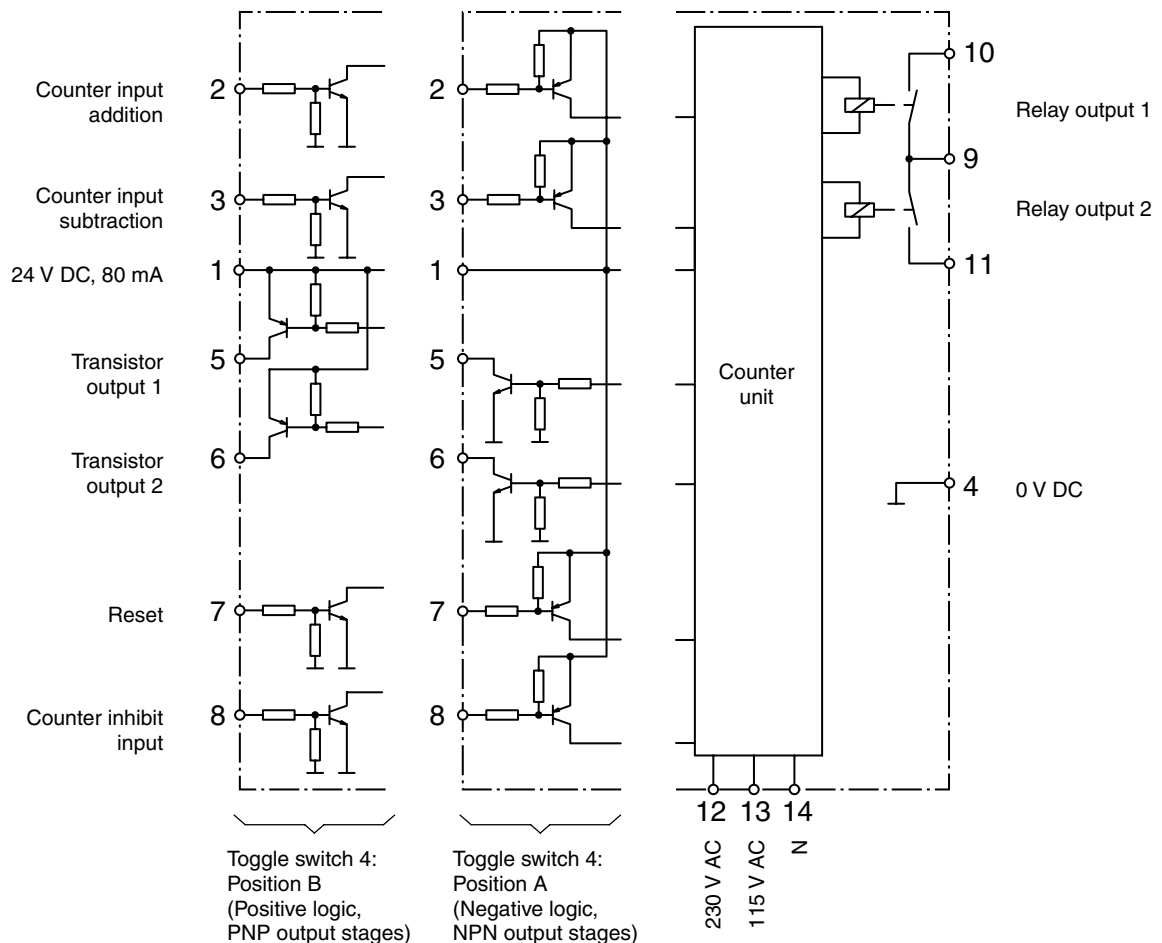
Technical data

KCX-B6WM-V	
General specifications	
Pre-selection	2-fold
Data storage	2000 h at 25 °C battery, charging time ≤ 50 h
Programming	via toggle switch and rotary switch
Indicators/operating means	
Type	LED green
Number of decades	6
Display value	digit height 8 mm
Pre-selection	via Zahnradschalter (Gear switch??)
Decimal point	not adjustable
Reset	automatically or externally
Key interlock	none
Electrical specifications	
Operating voltage	115 / 230 AC
Power consumption P ₀	7 VA
Input	
Sensor supply	24 V DC, 75 mA
Counting frequency	10 Hz / 20 kHz
Impedance	2.3/4.7 kOhm (PNP/NPN)
Voltage	low: 0 ... 6 V DC high: 16 ... 30 V DC
Counting method	adding or subtracting
Output	
Relay	NO (250 V AC/2 A)
Transistor	PNP, open collector (24 V/15 mA) NPN, open collector (35 V, 30 mA)
Delay	relay: ≤ 40 ms (≤ 10 ms at 20 kHz) transistor: ≤ 30 ms (≤ 30 μs at 20 kHz)
Duration of momentary impulse	50 ... 1000 ms
Delay times	
Reset	
External	5 ms / 5 ms
Automatic	50 μs
Hold-input	≤ 25 μs
Time delay before availability	0.2 s after restart
Ambient conditions	
Ambient temperature	-10 ... 70 °C (263 ... 343 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)
Relative humidity	≤ 80 % (non condensing)
Mechanical specifications	
Connection type	screw terminals max. core cross-section 0.34 ... 1.5 mm ²
Mass	approx. 500 g
Dimensions	72 x 72 x 104 mm

Dimensions

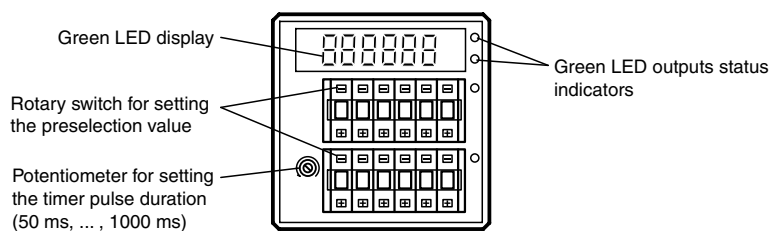


Electrical connection

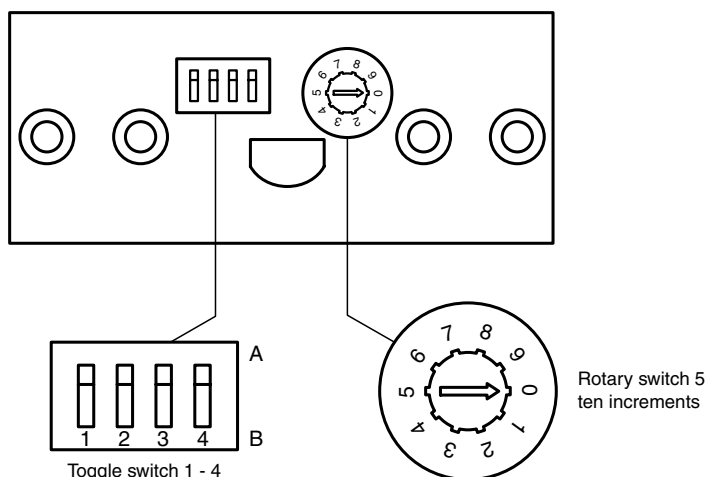


Notes

Controls and indicators



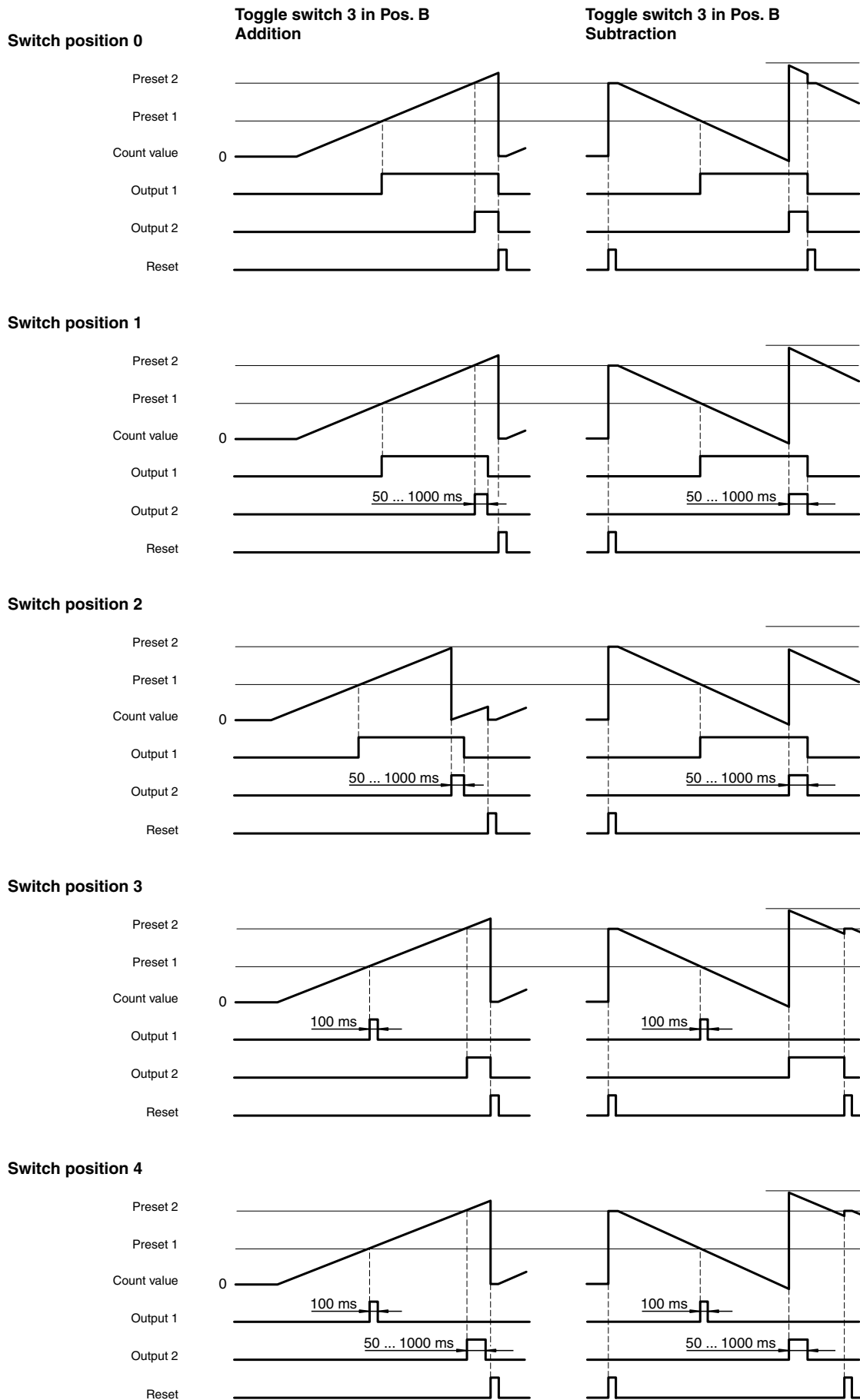
Rear view of counter

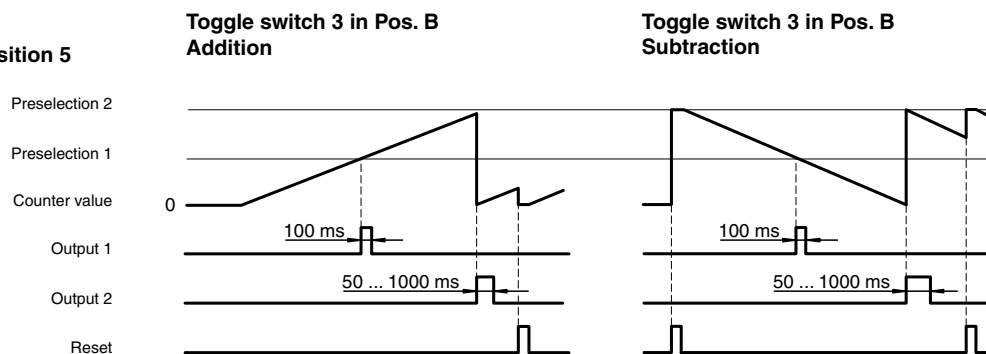
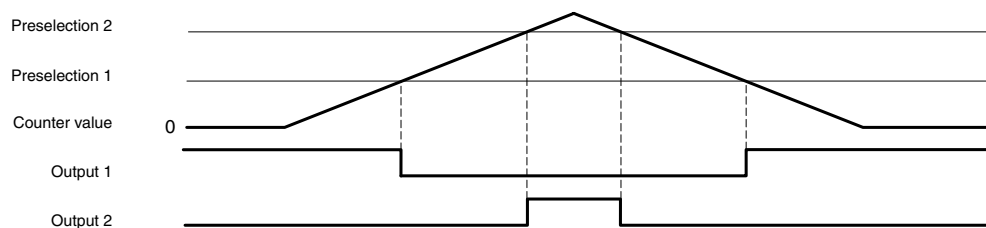
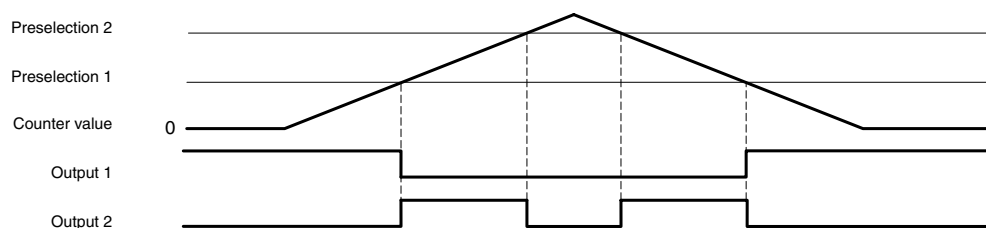
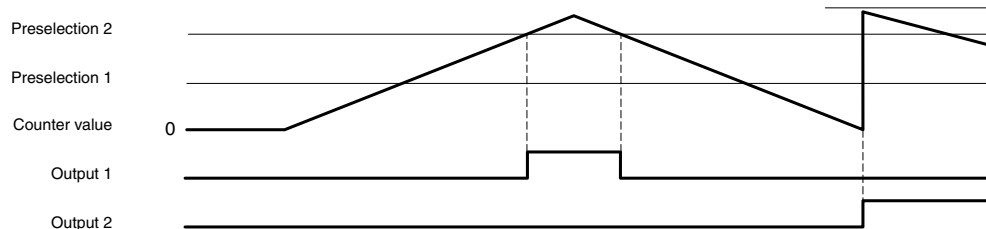
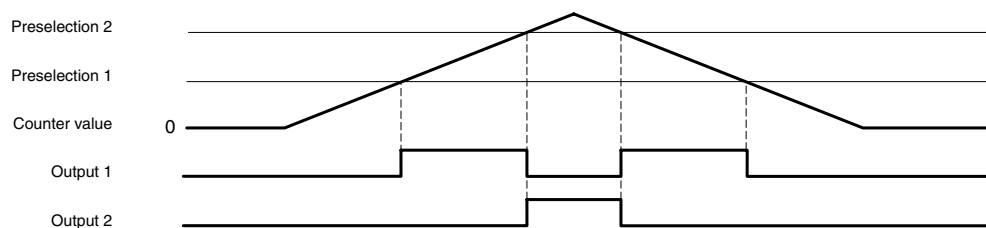


Toggle switch functions

Switch No.	Function	Switch position	Mode of operation
1	Maximum counting frequency	A	Counting frequency 10 Hz
		B	Counting frequency 20 kHz
2	Input operating mode	A	Separate signals for addition/subtraction
		B	2 signals, displaced in phase by 90°
3	Start value after activation of reset	A	On reset, the counter jumps to the set preselection 2.
		B	On reset, the counter jumps to 0.
4	Positive or negative logic	A	Negative input logic, NPN-outputs
		B	Positive input logic, PNP-outputs

Output operating modes

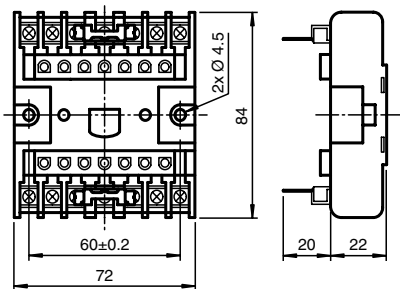


Switch position 5**Switch position 6****Switch position 7****Switch position 8****Switch position 9**

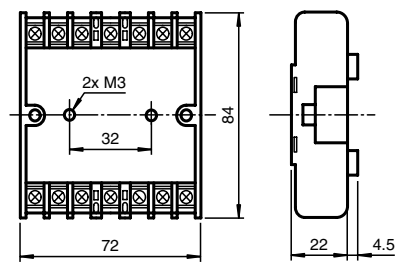
Accessories

KF-03, KB-03

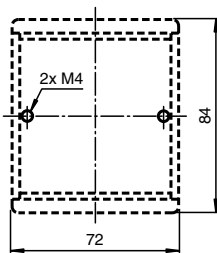
KF-03, Base for surface mounting



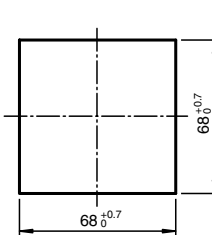
KB-03, Base for built-in installation



Base fixing **KF-03**

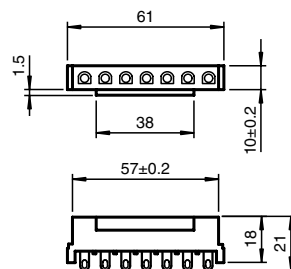


Installation cut-out



KA-01

KA-01, Base for soldered connection

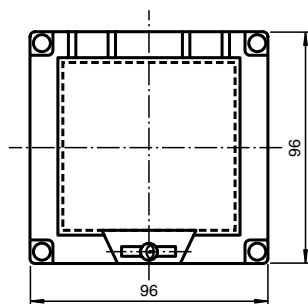


The KA-01 consists of 2 individual bases for solder connection, including the fixing bracket.

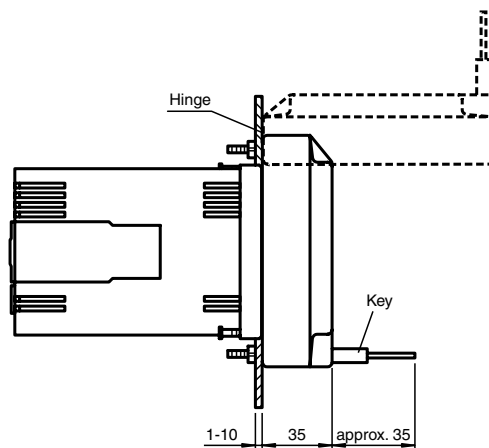
FPL-01

incl. 4 fixing screws and 2 keys

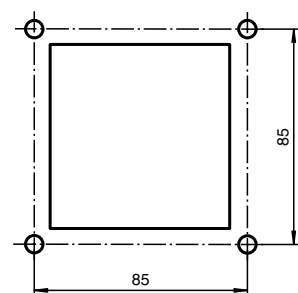
FPL-01 Lockable front frame



Dimensions relevant to use of the lockable front frame.



Installation cut-out



Ø4.5 mm for M4 screws



Model number

TC-4B-V

Features

- Tachometer
- 4 decade devices
- LED indicator, red
- Counter frequency up to 10 kHz
- Power supply for pulse generator
- 8 adjustable operating modes
- Surface or built-in mounting
- Protection degree IP64 in accordance with DIN EN 60529 (front only)
- Shock resistance in accordance with DIN EN 60068-2-27
- Vibration resistance in accordance with DIN EN 60068-2-6

Technical data

	TC-4B-V
General specifications	
Data storage	10 years, EEPROM
Programming	via toggle switch and rotary switch
Indicators/operating means	
Type	7-segment LED display, red
Number of decades	4
Display value	digit height 14.2 mm
Display interval	1 ... 9999
Decimal point	freely adjustable
Scale factor	0.1 or 1
Reset	external
Electrical specifications	
Operating voltage	90 ... 126 V AC 195 ... 264 V AC
Power consumption P ₀	14 VA
Input	
Counting frequency	10 Hz / 10 kHz
Impedance	2.3 kOhm (positive logic)
Voltage	low: 0 ... 6 V DC high: 16 ... 30 V DC
Output	
Transistor	PNP, open collector, 15 mA
Analogue voltage output	-
Analogue current output	-
Linearity	± 3 %
Sensor supply	24 V DC, 50 mA
Delay times	
Reset	
External	≤ 30 ms
Time delay before availability	≤ 0.5 ms
Jumping time	≤ 0.5 ms
Ambient conditions	
Ambient temperature	-10 ... 50 °C (263 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Relative humidity	45 ... 90 % (non condensing)
Mechanical specifications	
Connection type	screw terminals max. core cross-section 0.34 ... 1.5 mm ²
Mass	approx. 450 g
Dimensions	96 x 48 x 105 mm

Function

Tachometers are pulse-controlled time measuring devices.

In contrast to standard tachometers, which count the incoming pulses within a peak time, these tachometers evaluate the period of time between two consecutive input pulses (cyclic method). The period of time is assigned an adjustable multiplication factor and converted into a rotational speed in rpm or a velocity, depending on the mode of operation.

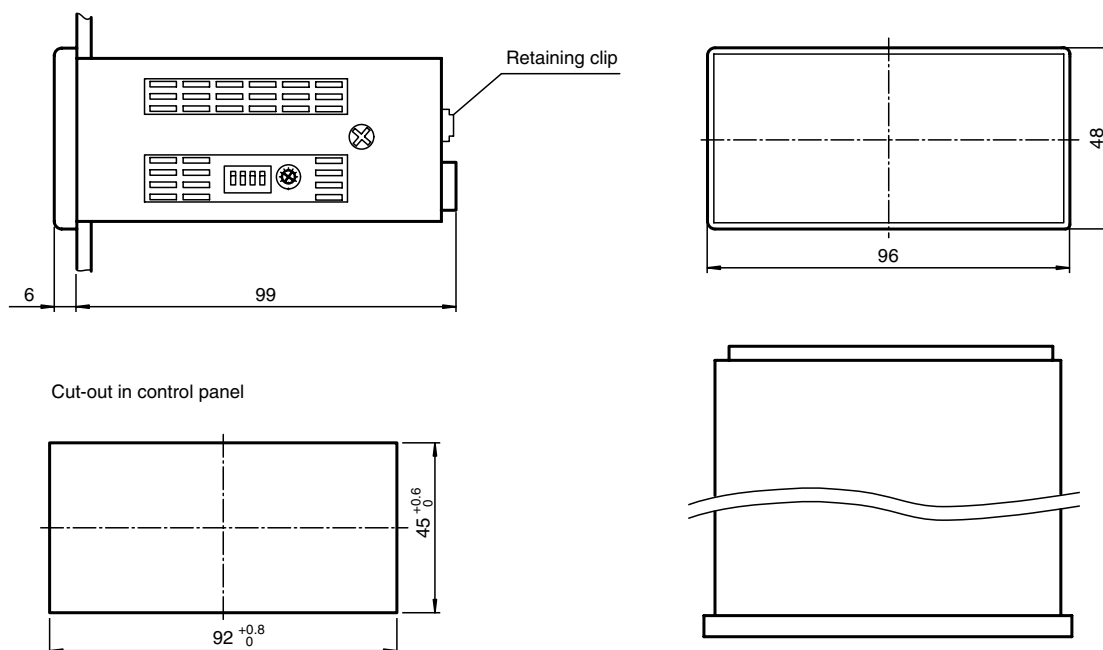
Advantage:

The cyclic method requires only one pulse per revolution and a maximum of two revolutions, in order to determine the rotational speed with high accuracy.

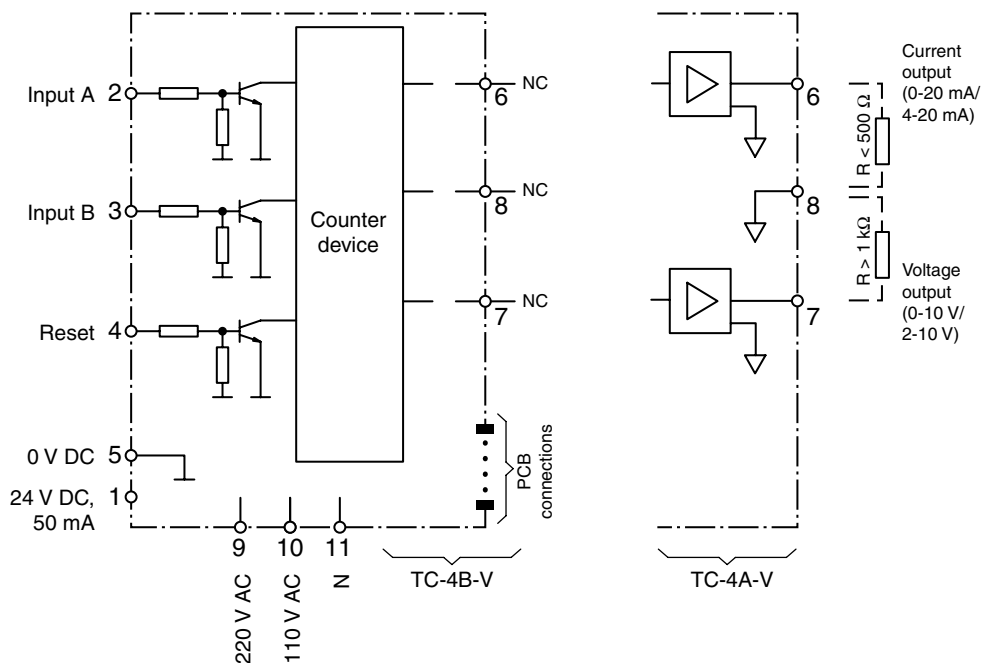
$$\text{rotational speed} = 1 / T \times 60 \text{ min}^{-1}$$

T = time between two pulses
min⁻¹ = revolutions/minute

Dimensions

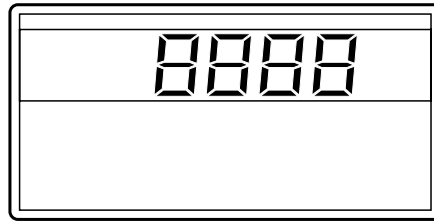


Electrical connection



Notes

Controls and indicators, front view



Controls and indicators, rear view

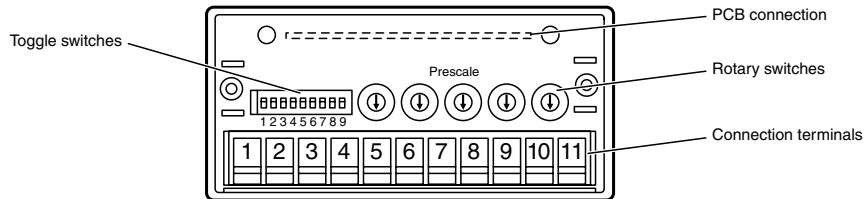


Table 1: Shift of decimal point

Switch	9999	999.9	99.99	9.999
2	OFF	ON	OFF	ON
3	OFF	OFF	ON	ON

Table 2: Operating modes

Switch / No.	1	2	3	4	5	6	7	8
4	OFF	ON	OFF	ON	OFF	ON	OFF	ON
5	OFF	OFF	ON	ON	OFF	OFF	ON	ON
6	OFF	OFF	OFF	OFF	ON	ON	ON	ON

Table 3: Number of measuring cycles

Switch / No.	1	10	100	100
7	OFF	ON	OFF	ON
8	OFF	OFF	ON	ON

Note on application:

Short measuring times with fluctuating input frequency reduce the measuring accuracy. The indicator becomes irregular and difficult to read. If the number of measuring cycles is increased to 10 or 100, the measured value is averaged and the indication is more accurate and readable.

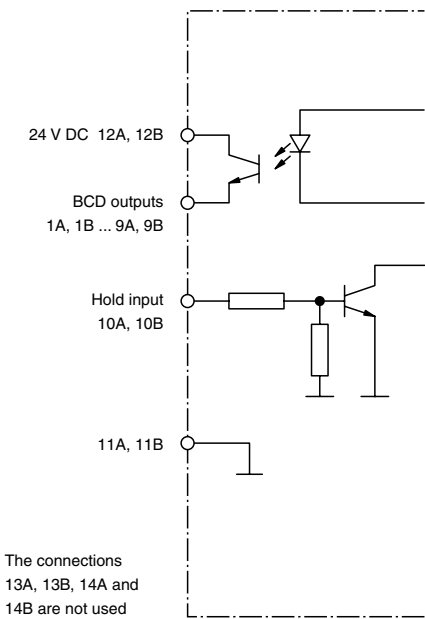
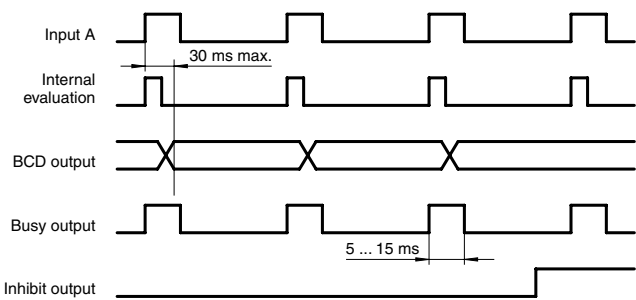
Function of the rotary switches at the back

Setting of the multiplication factors

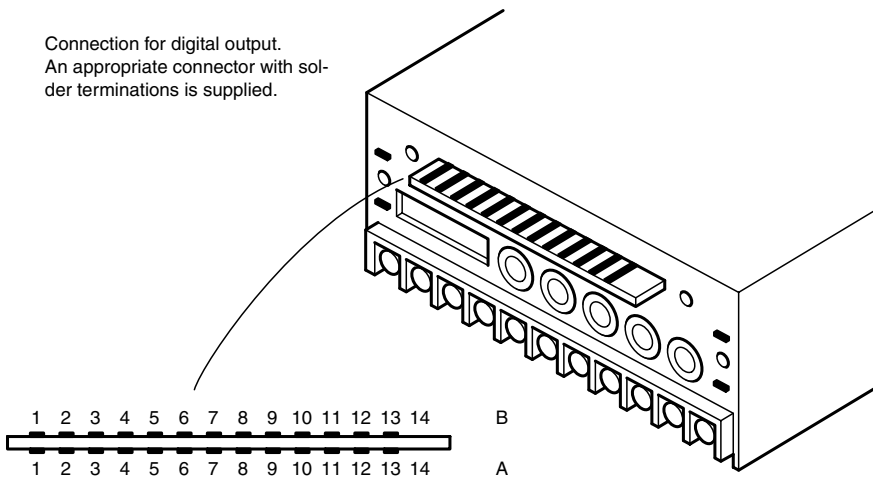
Exponent	Factor			

Display = Measured value x Factor x 10^N

Digital outputs and inputs (TC-4B-V)



Connection for digital output.
An appropriate connector with solder terminations is supplied.



Number		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Identification on circuit board	B	1A	1B	2A	2B	3A	3B	4A	4B	Busy	Hold	0 V	24 V DC	NC	NC
	A	1C	1D	2C	2D	3C	3D	4C	4D	Busy	Hold	0 V	24 V DC	NC	NC
Meaning of the signals	above B	1	2	1	2	1	2	1	2	Busy	Hold	0 V	24 V DC	NC	NC
	below A	4	8	4	8	4	8	4	8	Busy	Hold	0 V	24 V DC	NC	NC
		Digit 1		Digit 2		Digit 3		Digit 4		Output	Input	0 V	Input		

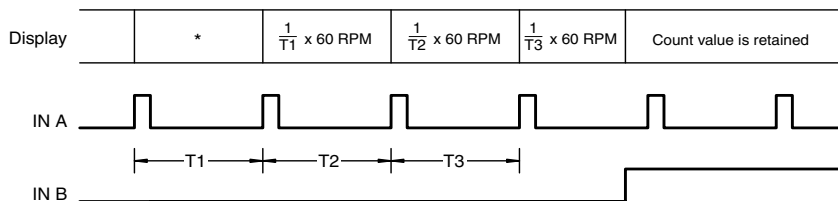
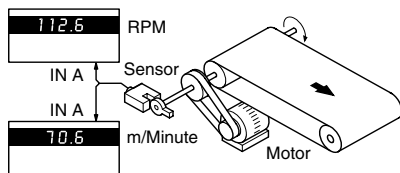
Operating modes

1. Rotation rate measurement

Example:

1 pulse/revolution, 1 measurement cycle, multiplication factor = 1, results in a display range of 10 ... 9999 RPM

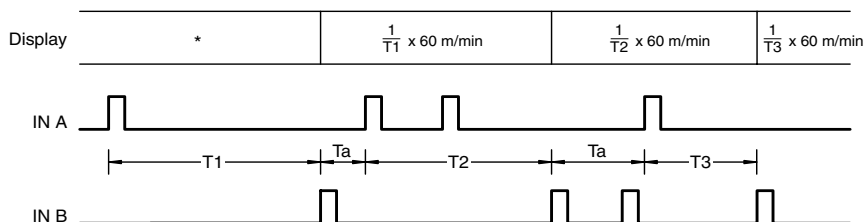
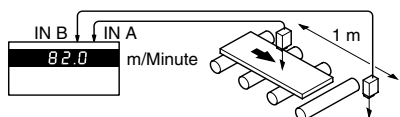
$T_1 \leq 6s$, $f_{\text{Input}} \geq 0,16 \text{ Hz} = 10 \text{ 1/min}$



2. Speed

$10 \text{ ms} \leq T_1 \leq 6 \text{ sec}$

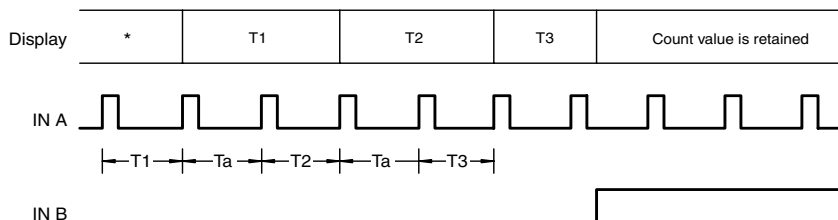
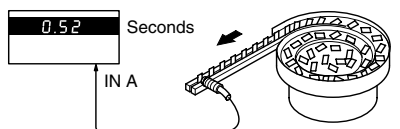
$T_a \geq 30 \text{ ms}$



3. Cycle times

$10 \text{ ms} \leq T_1 \leq 140 \text{ sec}$

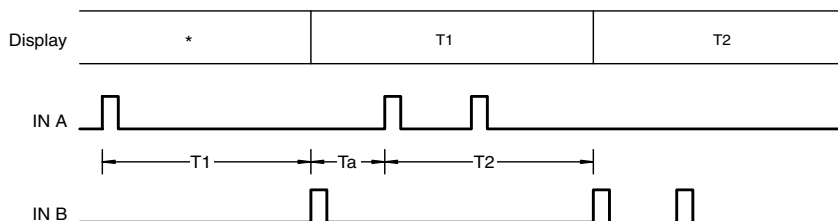
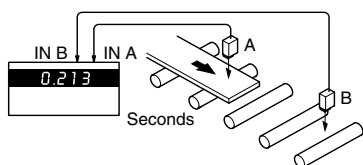
$T_a \geq 30 \text{ ms}$



4. Time differences

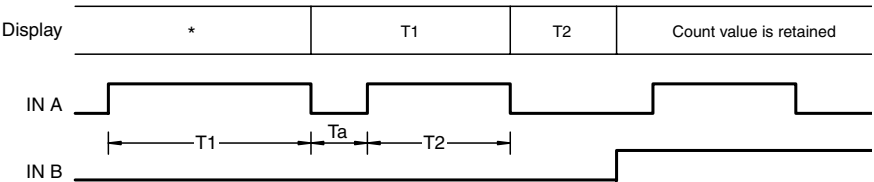
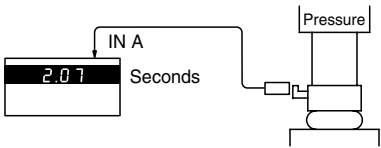
$10 \text{ ms} \leq T_1 \leq 140 \text{ sec}$

$T_a \geq 30 \text{ ms}$

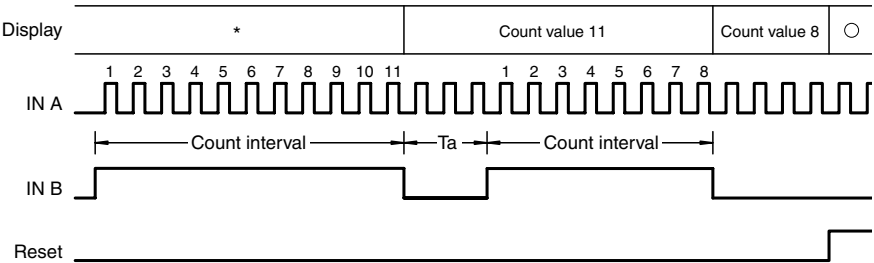
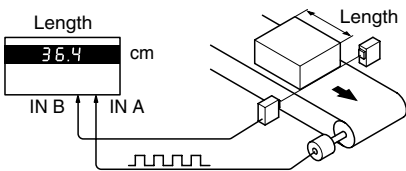


Operating modes

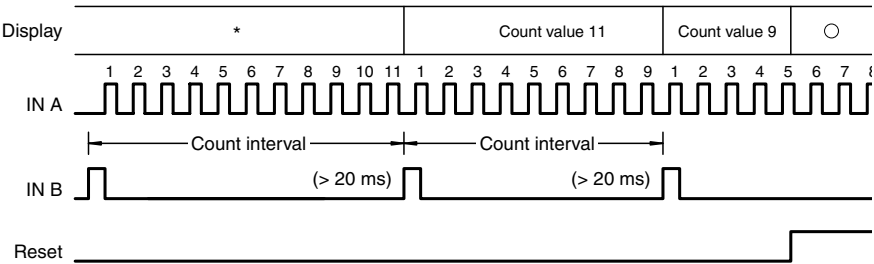
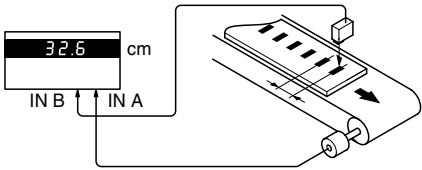
5. Time span
 $10\text{ ms} \leq T1 \leq 140\text{ sec}$
 $Ta \geq 30\text{ ms}$



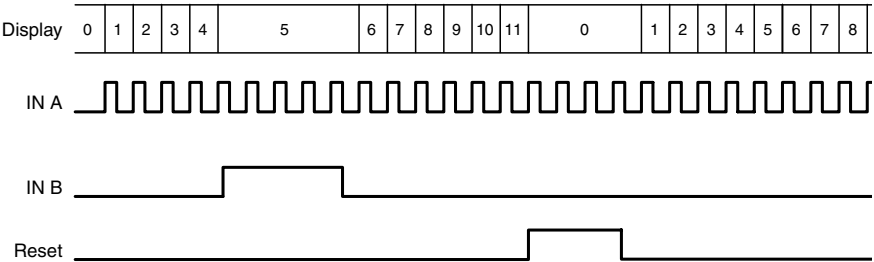
6. Pulse count A
Pulses at IN A are counted as long as IN B 1 is at logic 1
 $T \geq 1\text{ ms}$
 $Ta \geq 20\text{ ms}$



7. Pulse count B
The pulses at IN A are counted between two pulses at IN B



8. Pulse count C
The pulses at IN A are counted, logic 1 at IN B results in input pulse suppression





Model number

TC-6A-V

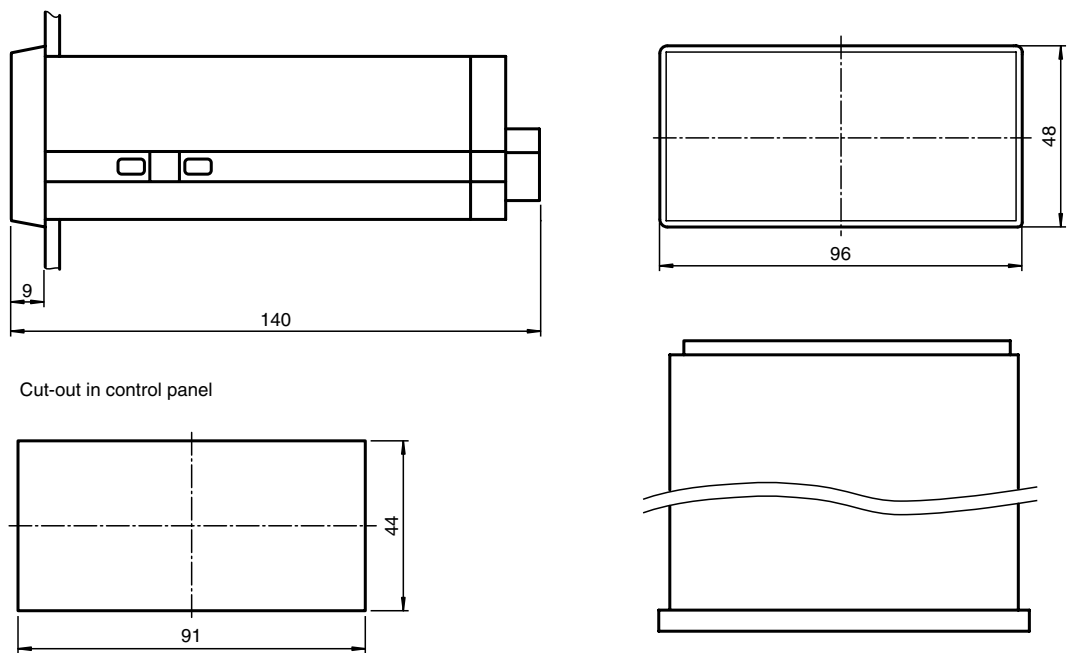
Features

- Counter/Timer/Tachometer with analogue voltage and current output
- Bright 6-digit LED indicator
- AC/DC multi-range power pack
- Counter frequency up to 25 kHz
- Power supply for pulse generator
- 2 separate switch inputs
- Menu driven operation
- Protection degree IP64 in accordance with DIN EN 60529 (front only)
- Incl. fixing for control panel mounting

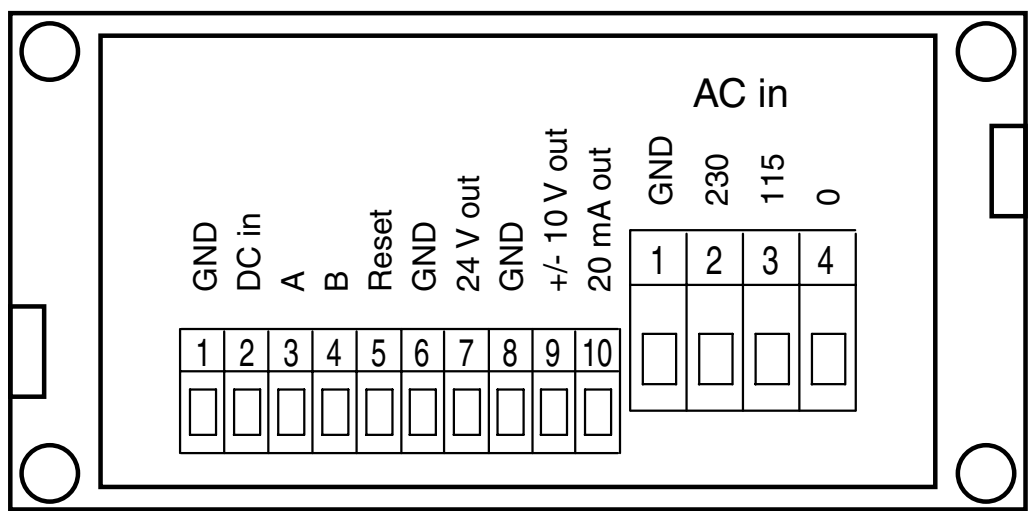
Technical data

	TC-6A-V
General specifications	
Data storage	10 years, EEPROM
Programming	keypad-driven menu
Indicators/operating means	
Type	7-segment LED display, red
Number of decades	6
Display value	digit height 15 mm
Display interval	-99999 ... 999999
Decimal point	freely adjustable
Scale factor	0.0001 ... 9.9999
Reset	manually/external/automatically
Electrical specifications	
Operating voltage	115 ... 230 V AC 16 ... 35 V DC
Power consumption P_0	7.5 VA
Input	
Counting frequency	25 kHz (Timer function 1 kHz)
Impedance	4.7 kOhm (positive logic)
Voltage	low: 0 ... 3.5 V DC high: 9 ... 35 V DC
Output	
Analogue voltage output	-10/0 ... 10 DC
Analogue current output	0/4 ... 20mA
Linearity	<0.1 %
Sensor supply	24 V DC, 150 mA
Ambient conditions	
Ambient temperature	0 ... 45 °C (273 ... 318 K)
Storage temperature	-25 ... 70 °C (248 ... 343 K)
Relative humidity	45 ... 90 % (non condensing)
Mechanical specifications	
Connection type	screw terminals, removable max. core cross-section 0.34 ... 1.5 mm ² (AC max. 2.5 mm ²)
Mass	approx. 450 g
Dimensions	96 x 48 x 140 mm

Dimensions



Electrical connection





Model number

FT-11-V

Features

- Electronic cam-operated switch
- Cycle 0 ... 999 adjustable in increments of 10
- Adding or subtracting
- 8 outputs
- LED indicator, red
- Counter frequency 5 kHz
- Incremental signals
- Memory structure matrix 8 x 1000
- 8 tracks with max. of 500 cams
- Counting range adjustable in increments of 10, from 10 ... 1000
- Shock resistance in accordance with DIN EN 60068-2-27
- Vibration resistance in accordance with DIN EN 60068-2-6

Technical data

	FT-11-V
General specifications	
Data storage	5 year lithium battery
Programming	keypad-driven menu
Indicators/operating means	
Type	7-segment LED display, red
Number of decades	3
Display value	digit height 8 mm
Display interval	0 ... 999 adding or subtracting
Decimal point	not adjustable
Scale factor	not adjustable
Electrical specifications	
Operating voltage	90 ... 132 V AC 180 ... 264 V AC 50 ... 60 Hz (External 24 V DC supply required for outputs)
Power consumption P_0	30 VA
Input	
Counting frequency	5 kHz
Impedance	2.3 kOhm
Voltage	low: 0 ... 6 V DC , high: 16 ... 30 V DC
Operating mode	READ for checking the program WRITE for program input RUN Device operating
Output	
Transistor	8 x PNP, open collector 24 V DC , 100 mA , voltage drop < 2 V at 100 mA
Sensor supply	20.4 ... 27.6 V DC
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-10 ... 50 °C (263 ... 323 K)
Relative humidity	45 ... 90 % (non condensing)
Mechanical specifications	
Connection type	plug-in screw terminals , max. core cross-section 0.34 ... 1.5 mm ²
Mass	920 g
Dimensions	144 mm x 72 mm x 143 mm

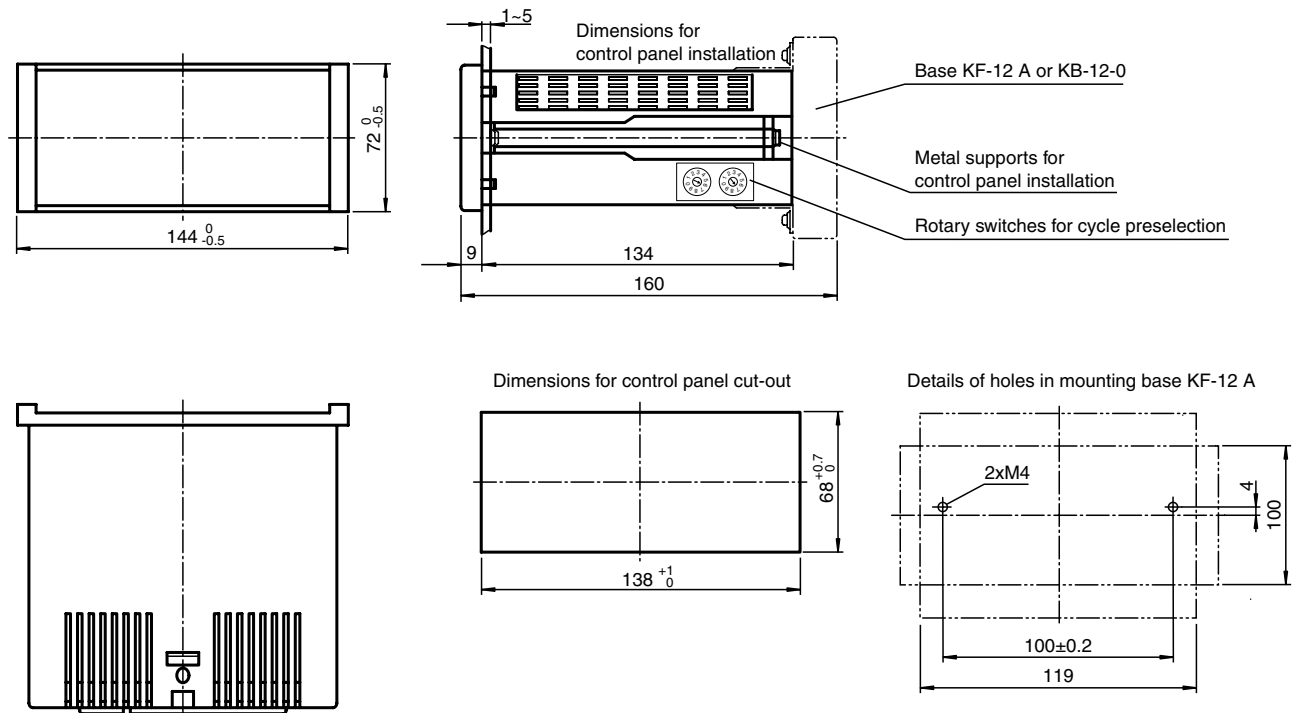
Function

The FT-11-V operates in association with an incremental encoder as an electronic cam switch unit for linear and rotary motion. The operating cycle can be set in steps of 10 between 10 and 1000. Depending on the operating cycle, up to 500 cams can be set on the 8 tracks. The outputs are used to initiate the actuating elements (Solenoid valves, relays, etc.) of the machine that is to be controlled, in accordance with the operating cycle, and they also provide the coupling to higher level systems (PLCs, etc).

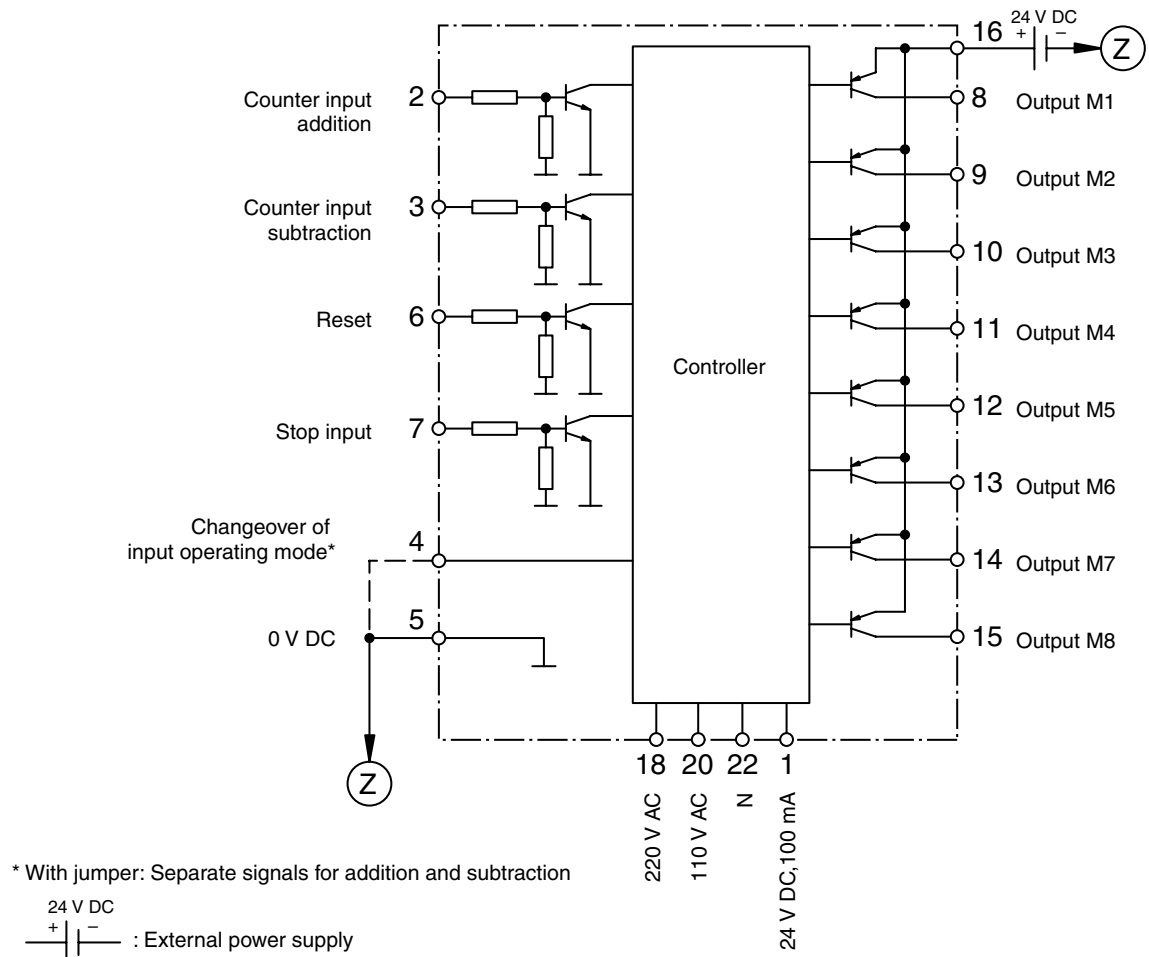
In addition, the FT-11-V can be used as a multi-presetting counter with 8 outputs, or as a positioning control.

When the device is used as a positioning control the outputs are used to initiate the drive (Reversal of direction of motion or change in speed) and the actuating elements.

Dimensions



Electrical connection





Model number

FC-21-V

Features

- Electronic cam-operated switch
- LED indicator, red
- Adding or subtracting
- Up to 24 outputs
- Storage of up to 10 programs
- 24 tracks with a max. of 512 cams
- Shock resistance in accordance with DIN EN 60068-2-27
- Vibration resistance in accordance with DIN EN 60068-2-6
- Manual inclusive
- Absolute value encoder can be connected (incl. connector plug MR-16L)
- FC-21D external indicator unit can be connected

Technical data

FC-21-V	
General specifications	
Data storage	EEPROM
Programming	keypad-driven menu
Indicators/operating means	
Type	7-segment LED display, red
Number of decades	4
Display value	digit height 8 mm
Display interval	0 ... 9999
Resolution	360, 512, 720 or 1024 position can be set
Switching state	via 24 LEDs
Electrical specifications	
Operating voltage	93 ... 126 V AC / 195 ... 264 V AC, 50 ... 60 Hz (and external 24 V DC supply required for the outputs)
Power consumption P_0	30 VA
Input	
Type	absolute encoder via Gray Code (10 bit) number of cam tracks: 24 number of cams: 512
Output	
Sensor supply	for absolute encoders
Optocoupler	max. 30 V and 30 mA every output
Measuring error	
Switch points, number	max. (resolution/2) per output
Ambient conditions	
Ambient temperature	0 ... 50 °C (273 ... 323 K)
Storage temperature	-20 ... 70 °C (253 ... 343 K)
Relative humidity	45 ... 90 % (non condensing)
Mechanical specifications	
Connection type	plug-in screw terminals, max. core cross-section 0.34 ... 1.5 mm ²
Mass	2000 g
Dimensions	210 mm x 162 mm x 58 mm

Function

The function of the FC-21-V Electronic Cam Switch Unit corresponds to that of a mechanical cam switch unit. The current position of the machine that is to be controlled is read in by an absolute value rotary encoder.

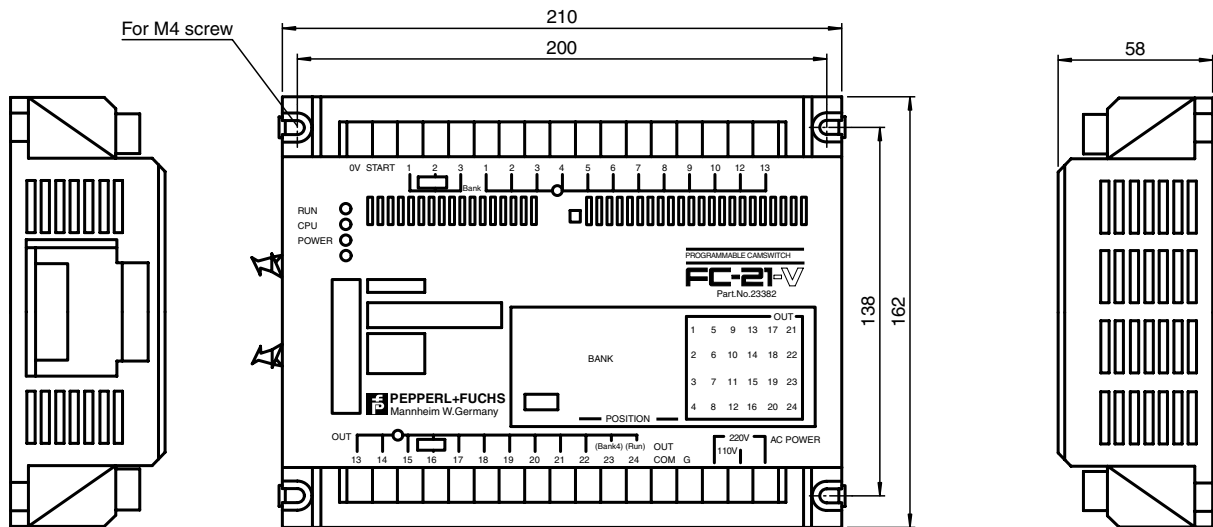
Depending on the resolution of the encoder, up to 512 cams can be programmed on each of the 24 cam tracks. The cams switch the electronic outputs on and off as a function of the read in position. The outputs of the FC-21-V are used to initiate the actuating elements of the machine (Solenoid valves, relays, etc.) in accordance with the operating cycle and they also provide the link to higher level control systems (PLCs, etc.).

The FC-21-V electronic cam switch unit satisfies the requirements of flexible manufacturing systems in that up to 10 different programs can be stored in the user memory (EEPROM) and selected externally.

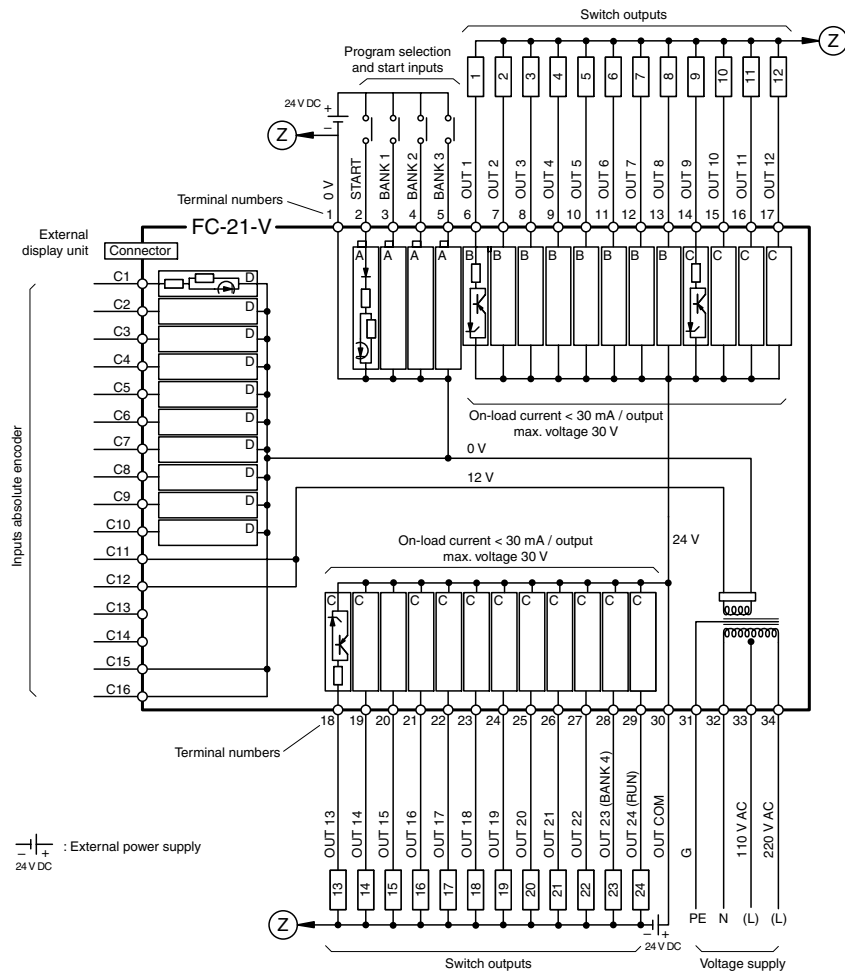
For the purpose of data security the programs can be stored on normal commercially available cassettes using a cassette recorder.

The FC-21-V electronic cam switch unit operates with the absolute value encoders in the TRD-AK...-GC-Series, which can code 360, 512, 720 or 1024 positions per revolution. The operating cycle of the machine that is to be controlled can be resolved into 1°, 0.7°, 0.5° or 0.35° intervals.

Dimensions



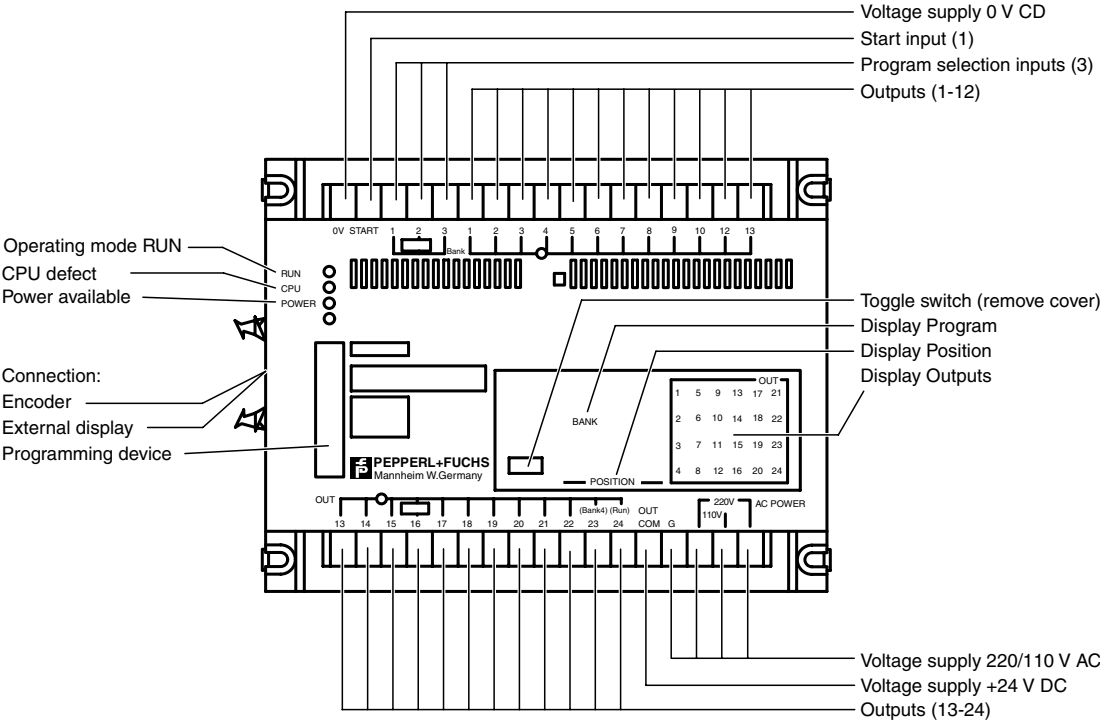
Electrical connection



Notes

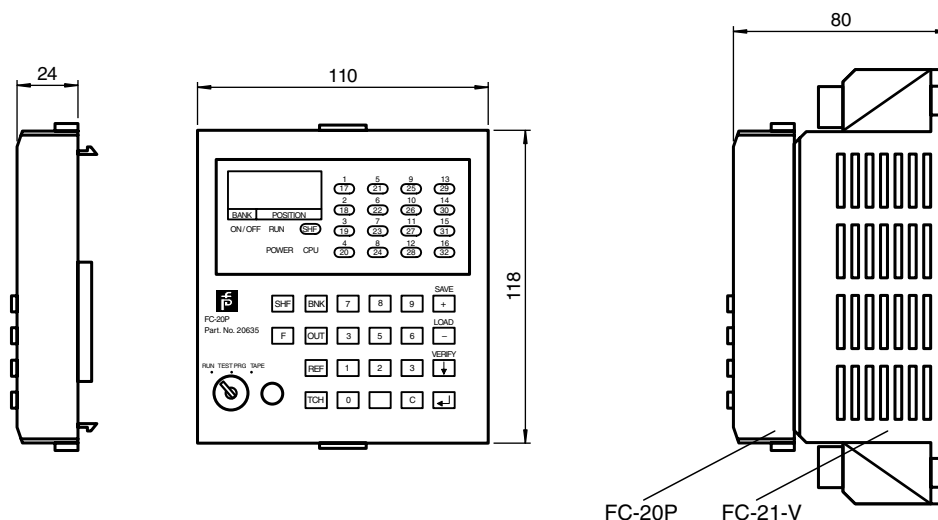
Maximum rpm	Min. switch point separation	Resolution per revolution			
		360	512	720	1024
	> 3° of the interval	3600	2520	1800	1260
	> 2° of the interval	2400	1680	1200	840
	> 1° of the interval	1200	840	600	420
Maximum possible programs	Number of programs	Resolution	Number of outputs		
	10	360	16		
	7	360	24		
	7	512	16		
	4	512	24		
	5	720	16		
	3	720	24		
	3	1024	16		
2	1024	24			
Switching direction (clockwise/anti-clockwise)	Clockwise: Increase of the instantaneous value by rotation of the shaft clockwise, as viewed on the top of the shaft. Anti-clockwise: Increase of the instantaneous value by rotation of the shaft anti-clockwise, as viewed on the top of the shaft. (adjustable via toggle switch 1)				
Write protection	ON: writing, correction and deletion of programs is blocked (adjustable via toggle switch 6)				
Correction of the reference point	Correction over the whole operating distance: 0 ... (resolution - 1)				

Controls and indicators



Accessories

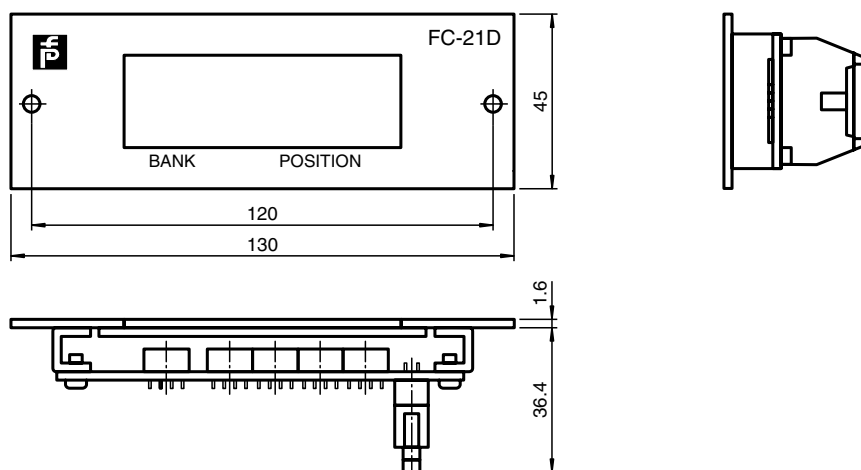
Programming Unit FC-20P



to be ordered separately

Accessory (delivery package): Cable connector for cassette recorder C-08J, 2 keys for program selector switch

External indicator unit FC-21D



to be ordered separately

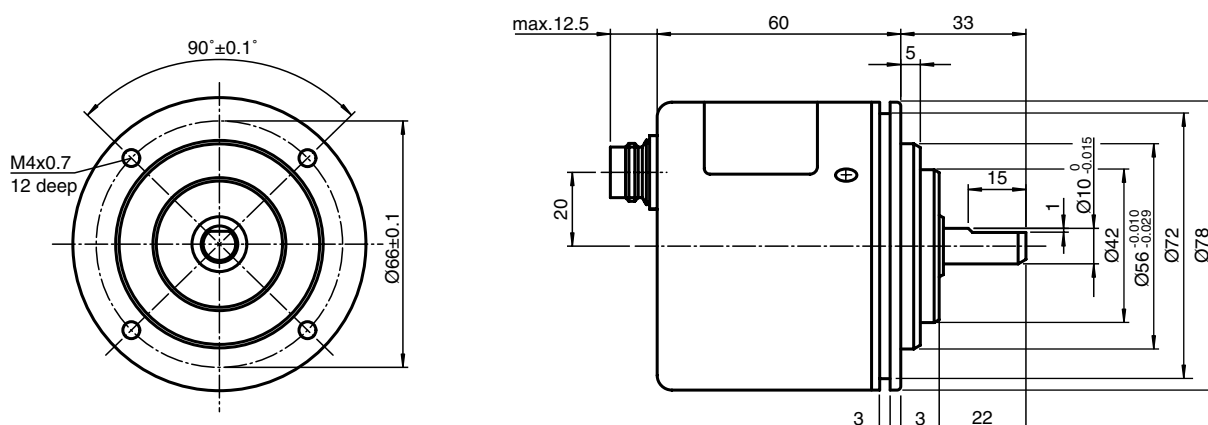
Technical data	
General specifications	
Function	Indicator for program, position or rotational speed (min^{-1})
Indicator	
Type	LED red
Digit height	14,2 mm
Ambient conditions	
Ambient temperature	0 ... 50 °C
Storage temperature	-10 ... 70 °C
Relative air humidity	45 ... 85 % (non-condensing)
Mechanical data	
Shock resistance	10 G in 3 axis directions
Vibration resistance	A = 0,3 mm, $f_{\text{max}} = 10 \dots 55 \text{ Hz}$ in 3 axis directions
Weight	200 g

Cassette recorder connection

A normal commercial cassette data recorder for PC with controllable recording level can be used. Radio recorders are usually unsuitable, since the recording level is not compatible.

Technical data	
Recording connection	Microphone input
Play-back connection	Ear phone > 300 mW an 4 ... 16 Ω
Frequency range	300 ... 4000 Hz $\pm$ 6 dB
Transfer rate	830 Baud
Modulation method	FSK "1": 2 kHz, FSK "0": 1 kHz
Head marker/end marker	2 kHz
File numbers	0 ... 999

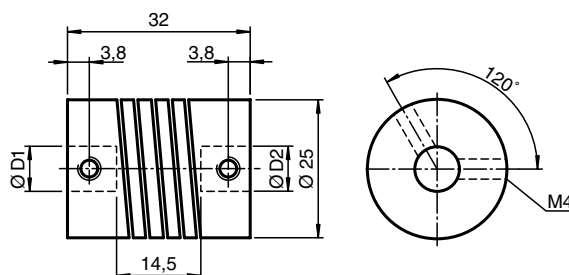
Absolute value rotary encoder



For further information see catalogue Sensors 4

Technical data	TRD-AK360-GC	TRD-AK512-GC	TRD-AK720-GC	TRD-AK1024-GC
Resolution	360 positions per revolution	512 positions per revolution	720 positions per revolution	1024 positions per revolution

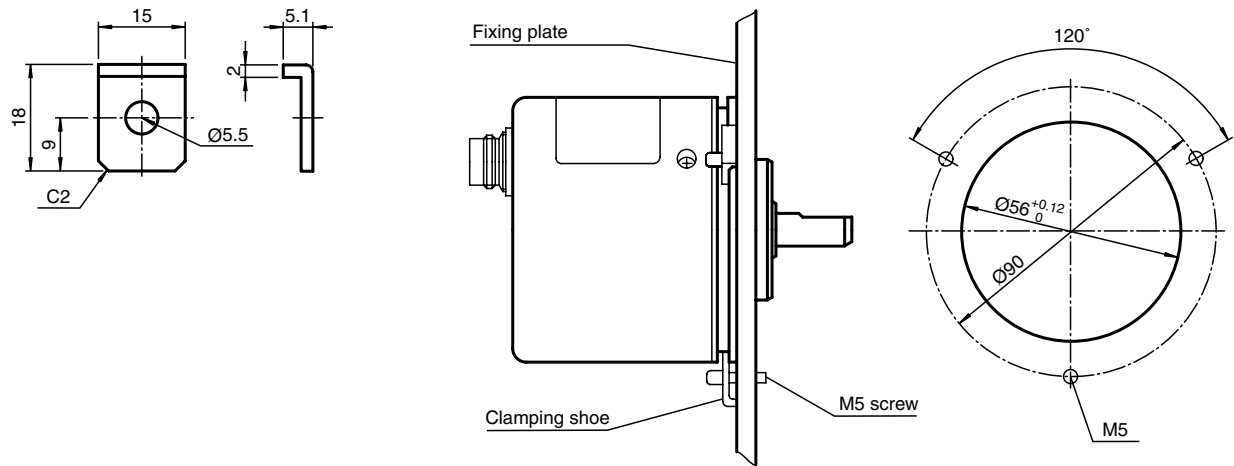
Coupling KW-.../...



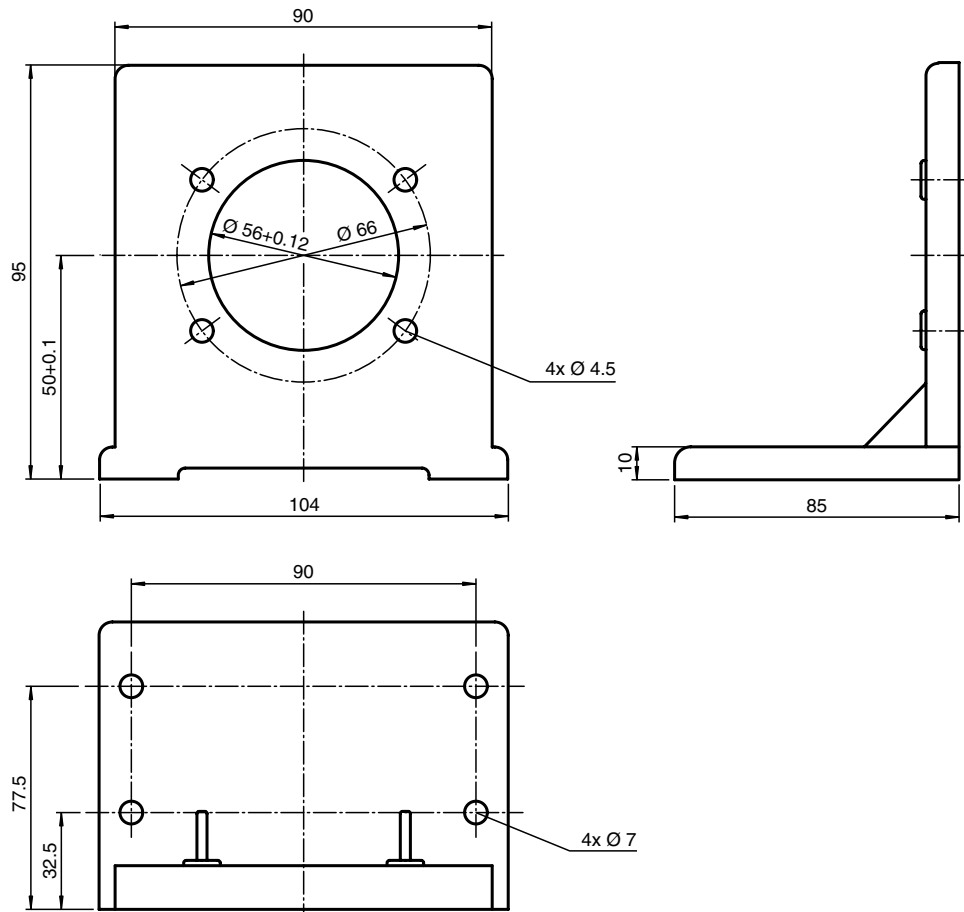
For further information see catalogue Sensors 4

Technical data	KW-6/10	KW-8/10	KW-10/10
Diameter D1	6	8	10
Diameter D2	10	10	10

Clamping shoe KM-9 - installation example



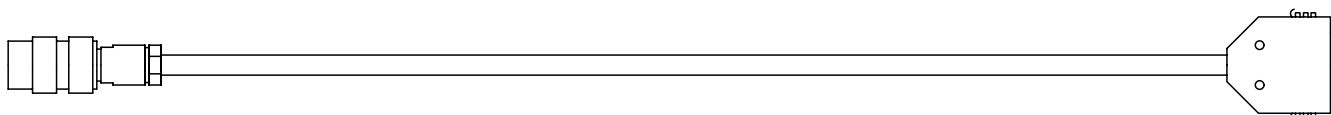
Right angled mounting bracket RT-11



Cable connector absolute value rotary encoder

TRD-AK..

FC-21-V



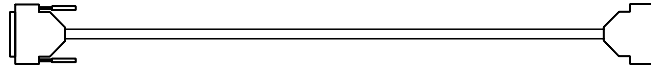
Binder-series 723, 12-pin connector (straight or angled), 12-core cable + screen, maximum length 30 m, cross section 0.25 mm².

Connection	Function	Core colours
A	+12 V DC	red
B	2 ⁰	brown
C	2 ¹	orange
D	2 ²	yellow
E	2 ³	green
F	2 ⁴	dark blue
G	2 ⁵	violet
H	2 ⁶	gray
J	2 ⁷	white
K	2 ⁸	pink
L	2 ⁹	light blue
M	0 V DC	black

screen not connected.

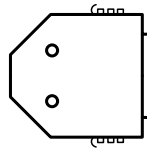
The binder connector and the cable must be ordered separately. The MRL-16L connector is supplied (separately) as an accessory for the FC-21-V. 5 m or 10 m pre-assembled connection cables are available on request.

Connection	Function	Core colours
1	2 ⁵	violet
2	2 ⁴	dark blue
3	2 ³	green
4	2 ²	yellow
5	2 ¹	orange
6	2 ⁰	brown
7	2 ⁹	light blue
8	2 ⁸	pink
9	2 ⁷	white
10	2 ⁶	gray
11	free	–
12	+12 V DC	red
13	free	–
14	free	–
15	0 V DC	black
16	screen	–

Cable connector E-15J for programming unit FC-20P

Length 1.5 m

For servicing work on awkwardly installed units, we recommend the use of this connection cable. The programming unit can then be operated from a more convenient position.

Connector MR-16L

Connector for connection cable between FC-21-V main unit and absolute value rotary encoder



Model number

KCD2-E

KCD2-E1

KCD2-E2

KCD2-E3

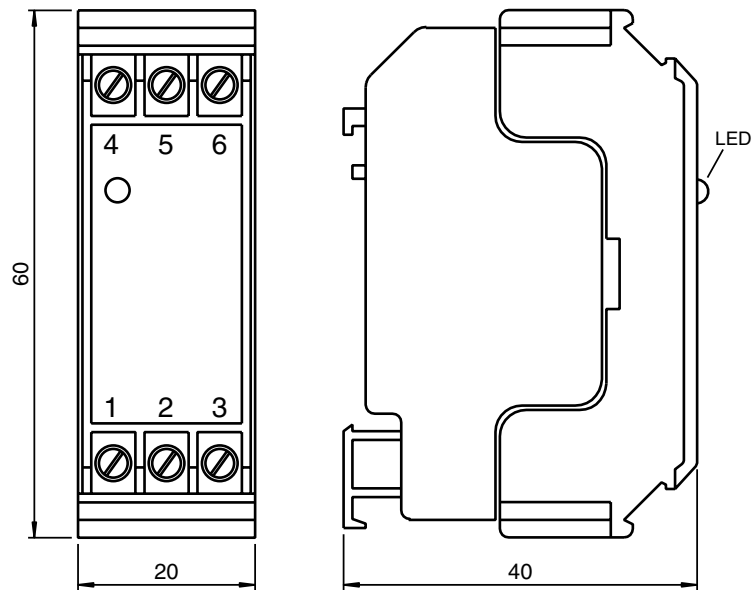
Features

- Single channel terminal amplifier
- Input for NAMUR sensors
- DC 24 V supply voltage
- Standard interface for prevention of signal transmission errors
- Switching status indicator, yellow LED
- Short-circuit proof electronic output
- Low noise sensitivity
- Compact terminal housing
- Mounting by clipping onto standard 35 mm rail to DIN EN 50022
- Protection degree IP20

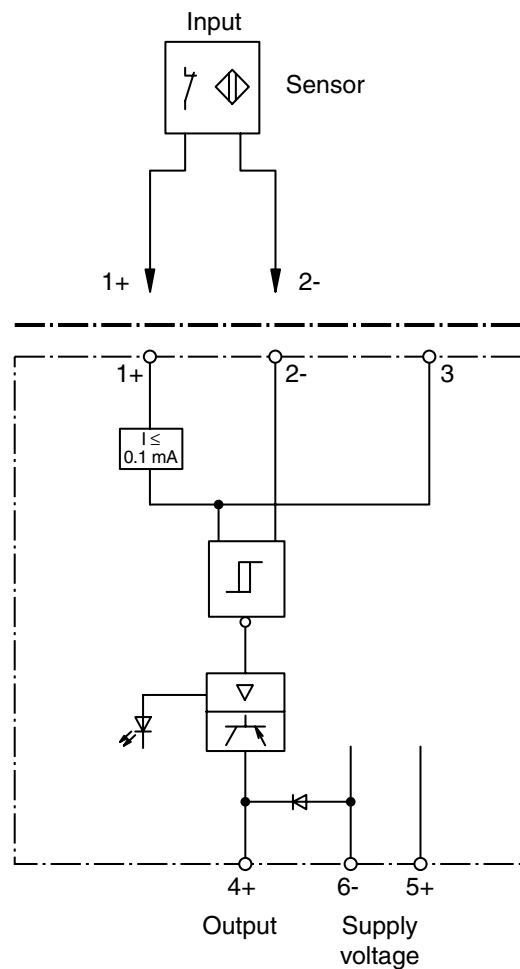
Technical data

	KCD2-E	KCD2-E1	KCD2-E2	KCD2-E3
Indicators/operating means				
LED yellow	switch output	switch output	switch output	switch output
Electrical specifications				
Operating voltage	10 ... 30 V DC	10 ... 30 V DC	10 ... 30 V DC	10 ... 30 V DC
Operating current	approx. 22 mA	approx. 22 mA	approx. 22 mA	approx. 22 mA
Ripple	≤ 10 %	≤ 10 %	≤ 10 %	≤ 10 %
Input				
Connection type	terminals 1+, 2-	terminals 1+, 2-	terminals 1+, 2-	terminals 1+, 2-
Connectable sensor types	NAMUR	NAMUR	NAMUR	NAMUR
Pulse length/pulse interval	≥ 0.5 ms / ≥ 0.5 ms	≥ 0.5 ms / ≥ 0.5 ms	≥ 0.5 ms / ≥ 0.5 ms	≥ 0.5 ms / ≥ 0.5 ms
Short-circuit current	approx. 8 mA	approx. 8 mA	approx. 8 mA	approx. 8 mA
Sensor supply	8 V DC	8 V DC	8 V DC	8 V DC
Switching point	1.2 ... 2.1 mA hysteresis approx. 0.2 mA	1.2 ... 2.1 mA hysteresis approx. 0.2 mA	1.2 ... 2.1 mA hysteresis approx. 0.2 mA	1.2 ... 2.1 mA hysteresis approx. 0.2 mA
Lead monitoring	without	without	without	without
Cutoff frequency	1 kHz	1 kHz	1 kHz	1 kHz
Output				
Connection type	terminal 4+	terminal 4+	terminal 4+	terminal 4+
Current	200 mA short-circuit proof	200 mA short-circuit proof	200 mA short-circuit proof	200 mA short-circuit proof
Transistor	NPN	NPN	PNP	PNP
Signal level	U _B - 1.8V	U _B - 1.8V	U _B - 1.1V	U _B - 1.1V
Transfer characteristics				
Mode of operation	NO	NC	NO	NC
Switching frequency	1 kHz	1 kHz	1 kHz	1 kHz
Ambient conditions				
Ambient temperature	-25 ... 70 °C (248 ... 343 K)	-25 ... 70 °C (248 ... 343 K)	-25 ... 70 °C (248 ... 343 K)	-25 ... 70 °C (248 ... 343 K)
Storage temperature	-25 ... 85 °C (248 ... 358 K)	-25 ... 85 °C (248 ... 358 K)	-25 ... 85 °C (248 ... 358 K)	-25 ... 85 °C (248 ... 358 K)
Mechanical specifications				
Connection type	self-opening apparatus connection terminals, max. core cross-section 0.34 ... 2.5 mm ²	self-opening apparatus connection terminals, max. core cross-section 0.34 ... 2.5 mm ²	self-opening apparatus connection terminals, max. core cross-section 0.34 ... 2.5 mm ²	self-opening apparatus connection terminals, max. core cross-section 0.34 ... 2.5 mm ²
Mass	60 g	60 g	60 g	60 g
Dimensions	20x60x40 (in mm)	20x60x40 (in mm)	20x60x40 (in mm)	20x60x40 (in mm)

Dimensions



Electrical connection





Model number

KCD2-EL

KCD2-E2L

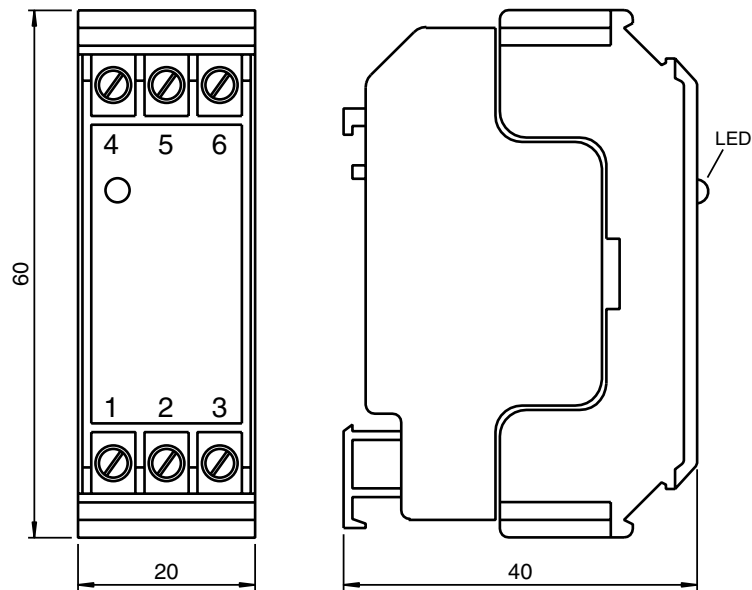
Features

- Single channel terminal amplifier
- Input for NAMUR sensors
- DC 24 V supply voltage
- Standard interface for prevention of signal transmission errors
- Switching status indicator, yellow LED
- Lead breakage monitoring: The lead breakage monitoring can be disconnected by bridging terminals 1 and 3 (When using a mechanical contact a 10 kOhm resistor is required in parallel circuit)
- Short-circuit proof electronic output
- Low noise sensitivity
- Compact terminal housing
- Mounting by clipping onto standard 35 mm rail to DIN EN 50022
- Protection degree IP20

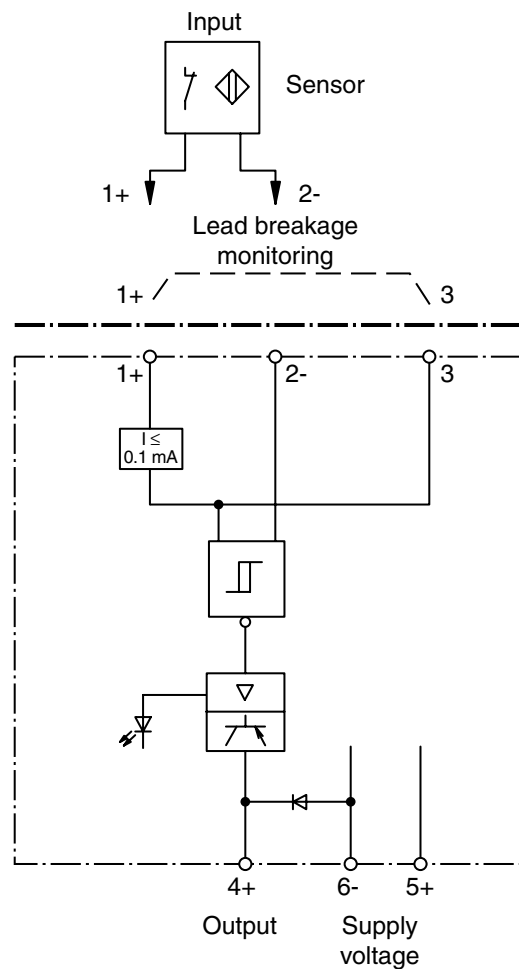
Technical data

	KCD2-EL	KCD2-E2L
Indicators/operating means		
LED yellow	switch output	switch output
Electrical specifications		
Operating voltage	10 ... 30 V DC	10 ... 30 V DC
Operating current	approx. 22 mA	approx. 22 mA
Ripple	≤ 10 %	≤ 10 %
Input		
Connection type	terminals 1+, 2-	terminals 1+, 2-
Connectable sensor types	NAMUR	NAMUR
Pulse length/pulse interval	≥ 0.5 ms / ≥ 0.5 ms	≥ 0.5 ms / ≥ 0.5 ms
Short-circuit current	approx. 8 mA	approx. 8 mA
Sensor supply	8 V DC	8 V DC
Switching point	1.2 ... 2.1 mA hysteresis approx. 0.2 mA	1.2 ... 2.1 mA hysteresis approx. 0.2 mA
Lead monitoring	with	with
Cutoff frequency	1 kHz	1 kHz
Output		
Connection type	terminal 4+	terminal 4+
Current	200 mA short-circuit proof	200 mA short-circuit proof
Transistor	NPN	PNP
Signal level	U _B - 1.8V	U _B - 1.1V
Transfer characteristics		
Mode of operation	NO	NO
Switching frequency	1 kHz	1 kHz
Ambient conditions		
Ambient temperature	-25 ... 70 °C (248 ... 343 K)	-25 ... 70 °C (248 ... 343 K)
Storage temperature	-25 ... 85 °C (248 ... 358 K)	-25 ... 85 °C (248 ... 358 K)
Mechanical specifications		
Connection type	self-opening apparatus connection terminals, max. core cross-section 0.34 ... 2.5 mm ²	self-opening apparatus connection terminals, max. core cross-section 0.34 ... 2.5 mm ²
Mass	60 g	60 g
Dimensions	20x60x40 (in mm)	20x60x40 (in mm)

Dimensions



Electrical connection





Model number

KCD2-R

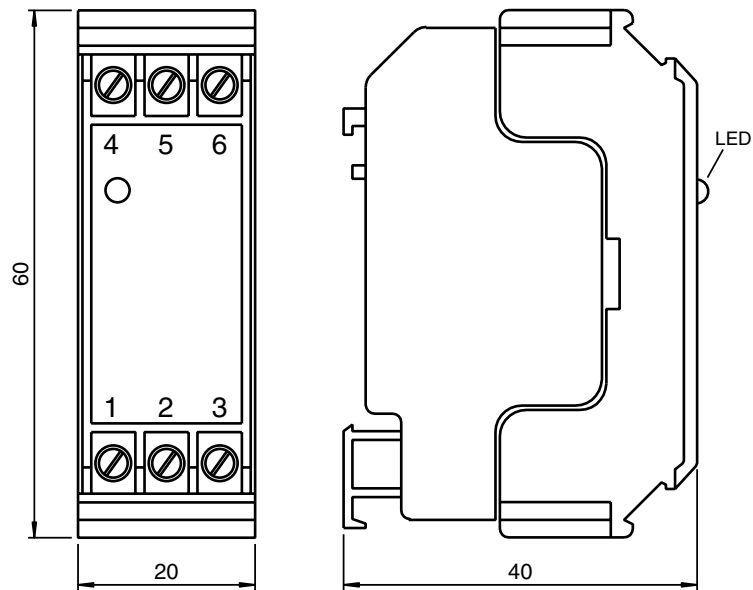
Features

- Relay output with 1 pole, indication of the switching state LED yellow
- Free-wheeling diode
- Compact terminal housing
- Mounting by clipping onto standard 35 mm rail to DIN EN 50022
- Protection degree IP20

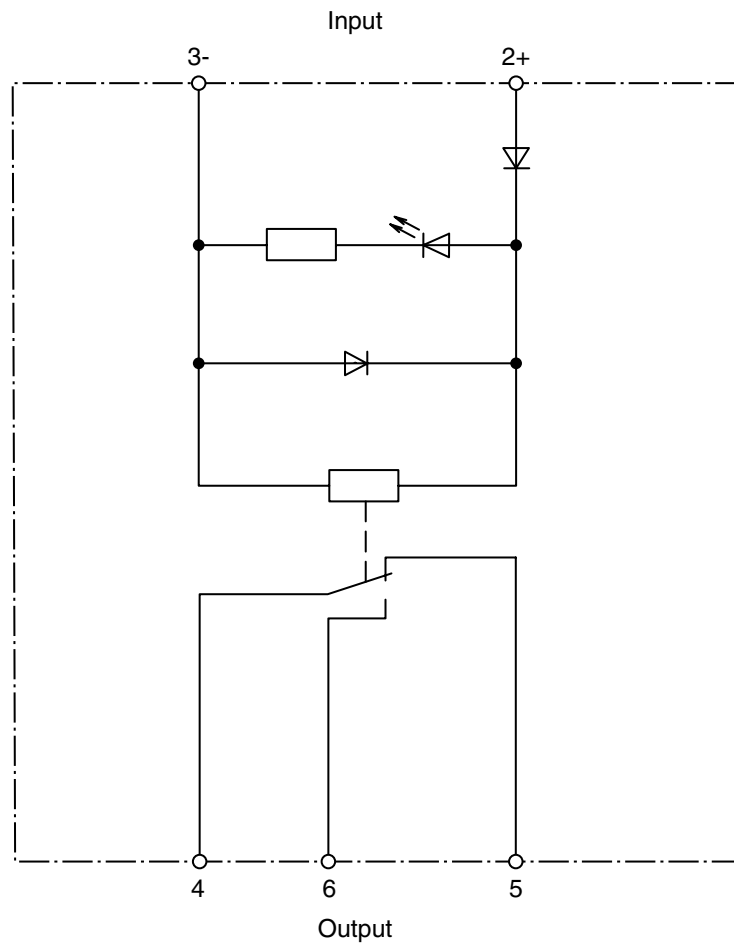
Technical data

	KCD2-R
Indicators/operating means	
LED yellow	switch output
Electrical specifications	
Operating voltage	20.4 ... 27.6 V DC $\pm$ 15 %
Operating current	16 mA
Ripple	$\leq$ 10 %
Input	
Connection type	terminals 2+, 3-
Connectable sensor types	PNP 3-wire sensors
Output	
Switching frequency f	$\leq$ 10 Hz
Relay	1 changeover contact
Contact loading	250 V AC/2A/cos $\varphi \geq$ 0.7 30 V DC/2 A resistive load
Delay	Pull-in: approx. 6 ms Drop-out: approx. 2 ms
Mechanical life	$\geq 10^8$ switchings
Ambient conditions	
Ambient temperature	-25 ... 60 °C (248 ... 333 K)
Storage temperature	-25 ... 85 °C (248 ... 358 K)
Mechanical specifications	
Connection type	self-opening apparatus connection terminals, max. core cross-section 0.34 ... 2.5 mm ²
Mass	60 g
Dimensions	20 mm x 60 mm x 40 mm

Dimensions



Electrical connection





Model number

RE 1

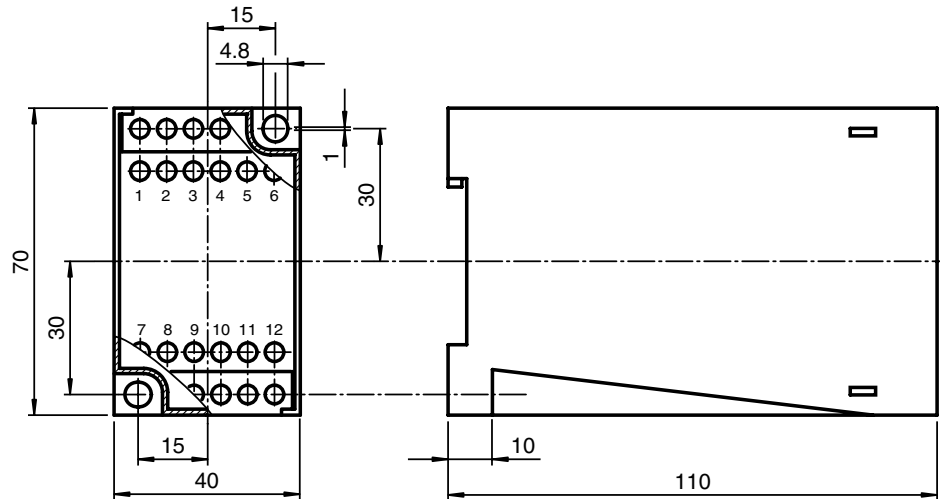
Features

- 1-channel isolating amplifier
- Control circuit designed for 3-wire sensors in PNP and NPN
- 220 V AC rated operating voltage
- Switching frequency 10 kHz
- 1 relay output with 1 changeover contact
- Modular housing
- Mode of operation adjustable; for PNP-sensors the terminals 5 and 6, for NPN-sensors the terminals 6 and 7 are to short out
- Protection degree IP20

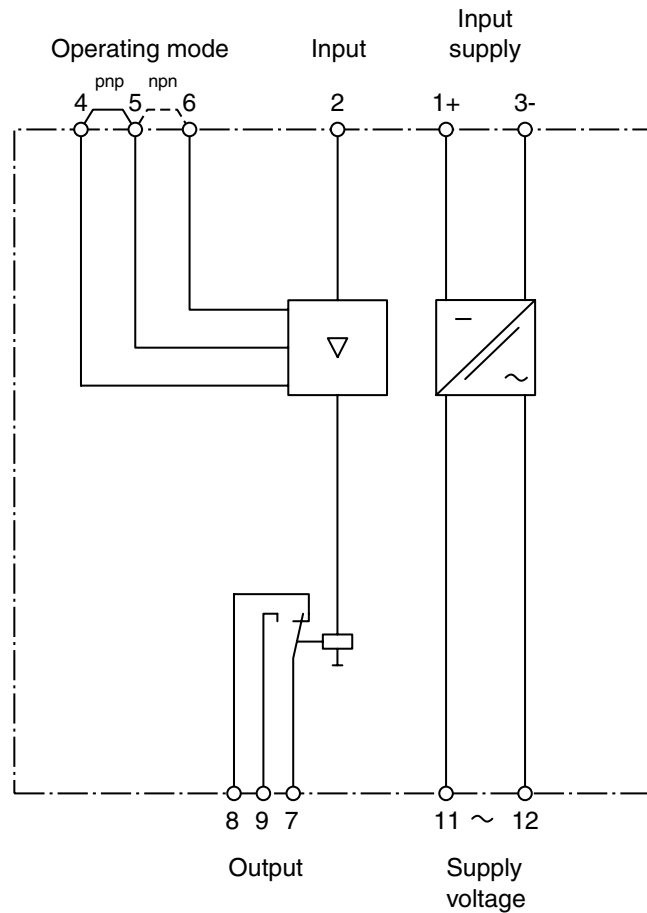
Technical data

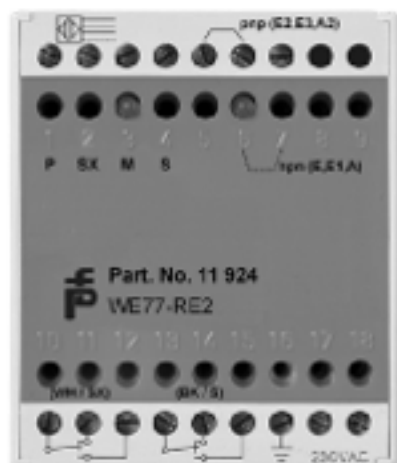
RE 1	
Electrical specifications	
Rated operational voltage U_e	198 ... 253 V AC ; 45 ... 65 Hz
Power consumption P_0	max. 3 VA
Input	
Current	low: ≤ 0.5 mA high: ≤ 33 mA
Voltage	low: 0 ... 1 V high: 18 ... 24 V
Output	
Connection type	terminals 7, 8, 9
Relay	1 changeover contact
Sensor supply	22.5 V at 30 mA 20.0 V at 50 mA 18.0 V at 70 mA
Contact loading	250 V AC/4 A/500 VA / $\cos \varphi = 0.7$ 220 V DC 0.1 A; 60 V / 0.6 A ; 24 V / 4 A
Energised/De-energised delay	approx. 20 ms / approx. 10 ms
Mechanical life	$\geq 1 \times 10^7$ switchings
Transfer characteristics	
Switching frequency	10 Hz
Ambient conditions	
Ambient temperature	-25 ... 60 °C (248 ... 333 K)
Storage temperature	-25 ... 85 °C (248 ... 358 K)
Mechanical specifications	
Connection type	self-opening apparatus connection terminals, max. conductor cross section $1 \times 2.5 \text{ mm}^2$
Mass	approx. 260 g
Dimensions	40 mm x 70 mm x 110 mm
Construction type	modular housing in NORYL SE 0 (Self-extinguishing), flammability classification to UL 94: V - 0
Mounting	snap-on to 35 mm standard rail or screw fixing

Dimensions



Electrical connection





Model number

WE77-RE2



Features

- 2 channel isolated switch amplifier
- Control circuit designed for the direct current versions of ultrasonic sensors and proximity switches
- 230 V AC/115 V AC mains nominal voltage
- Switching frequency 10 kHz
- Each with 1 relay output with 1 changeover contact
- One LED status display for each output relay
- Modular housing
- For PNP-sensors the terminals 5 and 6, for NPN-sensors the terminals 6 and 7 are to short out
- Mode of operation: input closed - energising the relay/input open - relay de-energised

Technical data

	WE77-RE2
Supply	
Connection type	terminals 17, 18
Rated operational voltage	98 ... 126 V AC / 198 ... 253 V AC ,45 ... 63 Hz , switchable
Power consumption	approx. 7 VA
Input	
Input signal	high: 24 V DC $\pm$ 20 % , 37 mA low: < 1 V DC, $\leq$ 0.5 mA
Output	
Connection type	terminals 1+, 3-
Current	160 mA at 60 °C , short-circuit proof
Voltage	24 V $\pm$ 20 %
Contact loading	AC: 250 V / 4 A / 500 VA / $\cos \varphi \geq 0.7$ DC: 220 V / 0.1 A; 60 V / 0.6 A; 24 V / 4 A
Energised/De-energised delay	20 ms / 10 ms
Mechanical life	10^7 switchings
Transfer characteristics	
Switching frequency	10 Hz
Ambient conditions	
Ambient temperature	-25 ... 60 °C (248 ... 333 K)
Storage temperature	-25 ... 85 °C (248 ... 358 K)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 650 g
Dimensions	60 mm x 70 mm x 110 mm
Construction type	modular housing
Mounting	snap-on to 35 mm standard rail or screw fixing
Connection possibilities	self-opening apparatus connection terminals, max. conductor cross section 1 x 2.5 mm ²

Notes

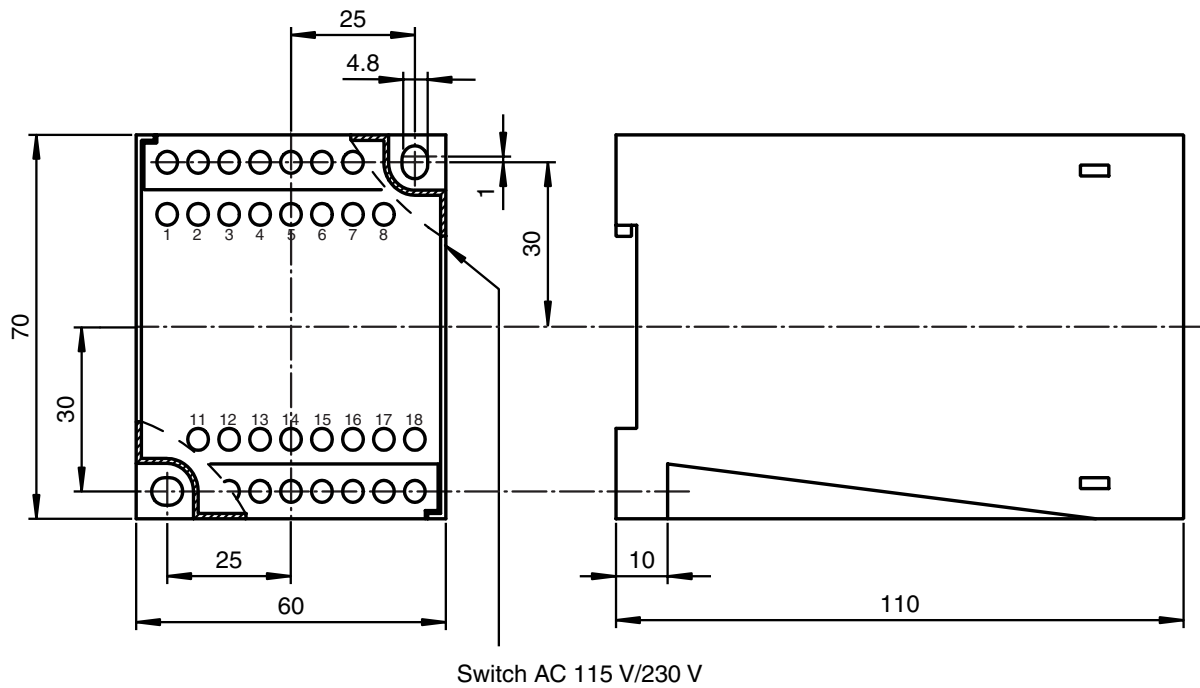
When using proximity switches (sensors) in pnp-technique (switched high), the connections 5 and 6 have to be bridged

When using proximity switches (sensors) in npn-technique (switched low), the connections 6 and 7 have to be bridged.

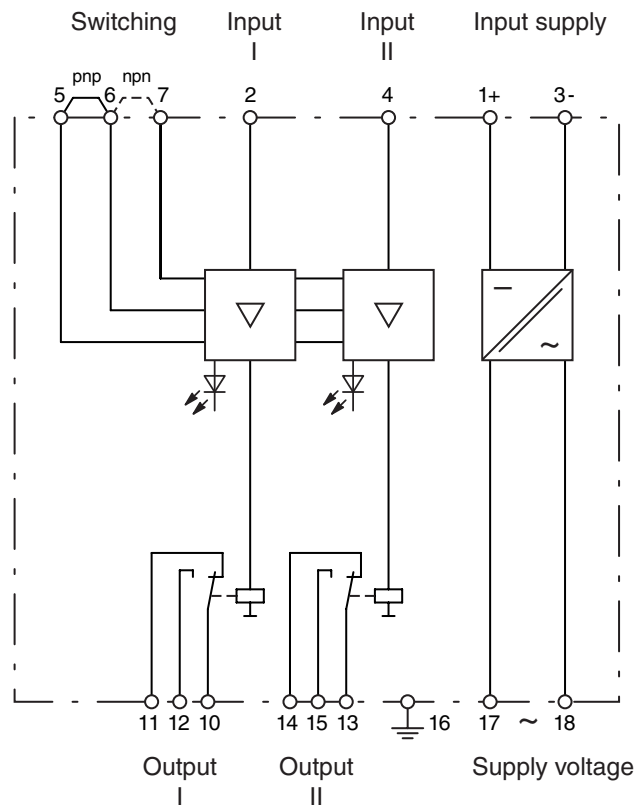
Mode of operation

Input	Output
	 energised
	 de-energised

Dimensions



Electrical connection





Model number

WE77-GS-04



Features

- 1-channel trip amplifier
- Current monitoring (0 ... 20 mA)
- 115/230 V AC operating voltage
- Integrated voltage supply for analogue output sensors
- Adjustment of 2 limit value windows with potentiometers (S1.1 for switch-on threshold and S1.2 for switch-off threshold)
- 2 output relays, each having 1 switch-over contact
- Direction of operation programmable with plug-in jumpers
- Modular housing
- Detection of different metals and hole diameters with analogue sensor
- Blocked or enabled inputs for relay 2 via terminal 4 or 7, respectively
- Protection degree IP20

Technical data

WE77-GS-04	
General specifications	
Programming	limit value range adjustable via 2 potentiometers
Supply	
Rated operational voltage	98 ... 126 V AC , 198 ... 253 V AC; 45 ... 65 Hz
Power consumption	4 VA
Indicators/operating means	
LED yellow	switching state
Input	
Measuring input	0 mA ... 20 mA (max. 50 mA)
Operating range	adjustable between 0 ... 20 mA
Input delay	approx. 2 ms
Repeat accuracy	≤ 1 %
Switching hysteresis	≤ 0.2 mA
Control input	16 V ... 30 V; 1 mA (terminal 4, 7)
Output	
Type	each with 1 relay output with changeover contacts for current and voltage input
Sensor supply	
Contact loading	24 V DC , 42 mA
	250 V / 4 A / 500 VA / cos φ ≥ 0.7
Ambient conditions	
Ambient temperature	-25 ... 60 °C (248 ... 333 K)
Storage temperature	-25 ... 85 °C (248 ... 358 K)
Mechanical specifications	
Protection degree	IP20
Connection type	self-opening apparatus connection terminals, max. conductor cross section 1 x 2.5 mm ²
Mass	
Dimensions	approx. 400 g
Construction type	60 mm x 70 mm x 110 mm
	modular housing in NORYL SE 0 (Self-extinguishing), flammability classification to UL 94: V - 0
Mounting	snap-on to 35 mm standard rail or screw fixing

Function

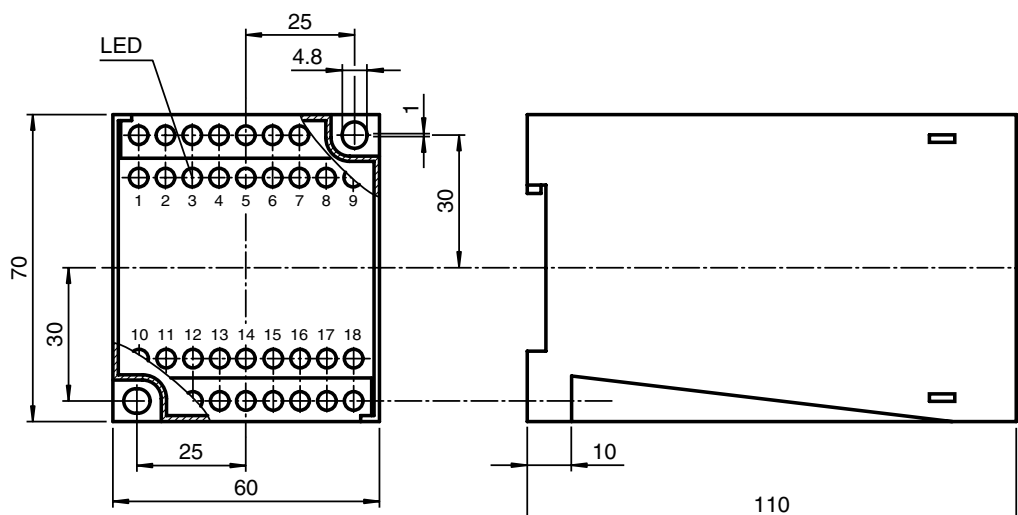
The WE77-GS-04 Limit Detector Switch can be used to monitor current (0 mA ... 20 mA). Two limit value windows can be set with the potentiometers in the housing cover. These operate independently of each other on 2 output relays.

The power supply for an analogue sensor is integrated in the device (DC 24 V / 42 mA). An LED is provided for coarse adjustment. This is located on the front panel and lights at a sensor current of 20 mA.

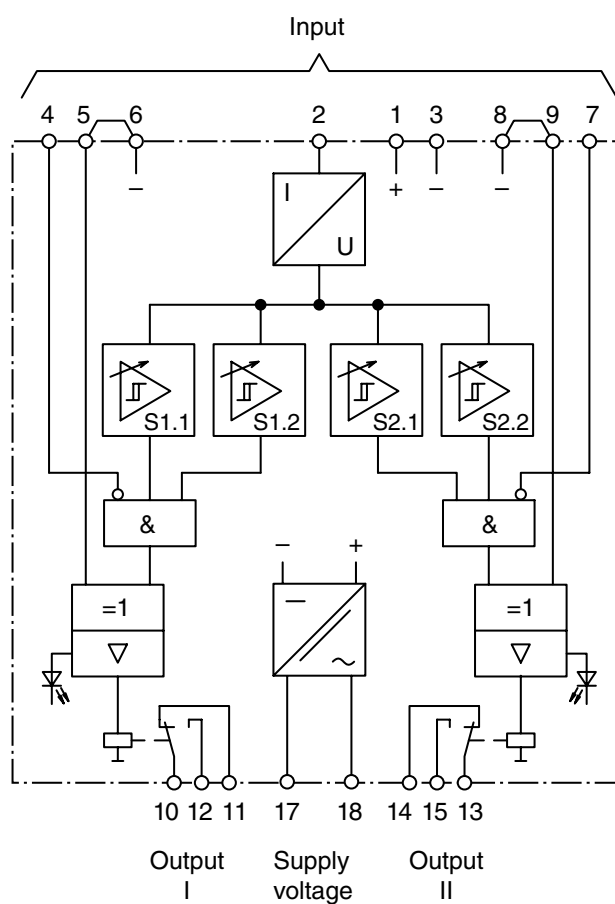
The limit values are provided by setting the S1.1 potentiometer (Relay 1 ON) and S1.2 potentiometer (Relay 1 OFF). (Corresponding setting via potentiometers S2.1, S2.2 for relay 2.) A reversal of the mode of operation can be programmed via the jumpers (5-6, 8-9).

On delivery the potentiometers S1.1 and S2.1 are on the left stop (25 revolutions). Potentiometers S1.2 and S2.2 are on the right stop. The jumpers (5-6, 8-9) are fitted.

Dimensions



Electrical connection





Model number

KHU8-DW-1.D

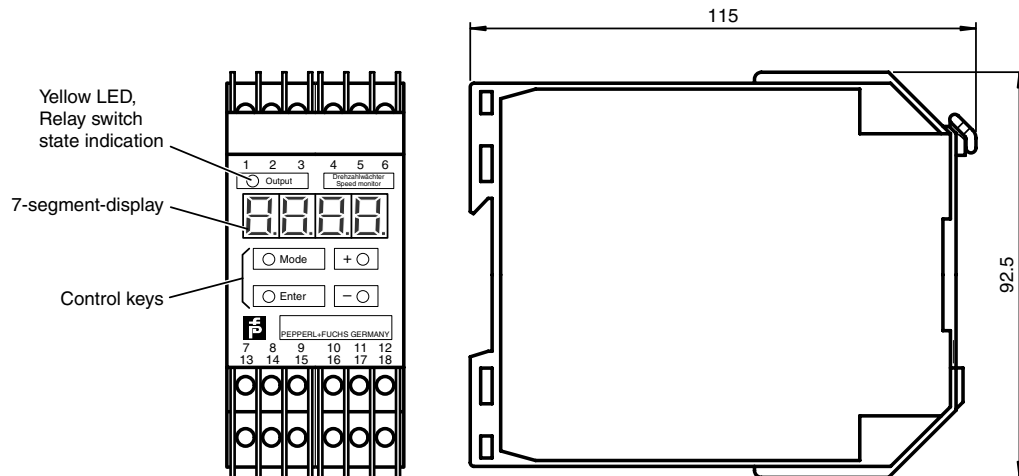
Features

- Rotational speed monitoring up to 5 kHz
- 1 pre-select value with relay output and LED indicator
- Multi-range power pack
- 2-, 3-, 4-wire and NAMUR sensors as well as rotary encoder connectable
- Start-up delay
- Auxiliary power output for sensors
- Connection via Power Rail
- Menu driven operation via 4 front keys
- Period measurement
- Indication in Hz or 1/min
- Password protection
- Output signal can be inverted
- Display devices can be set between 0.1 ... 2.5 sec.
- Protection degree IP20

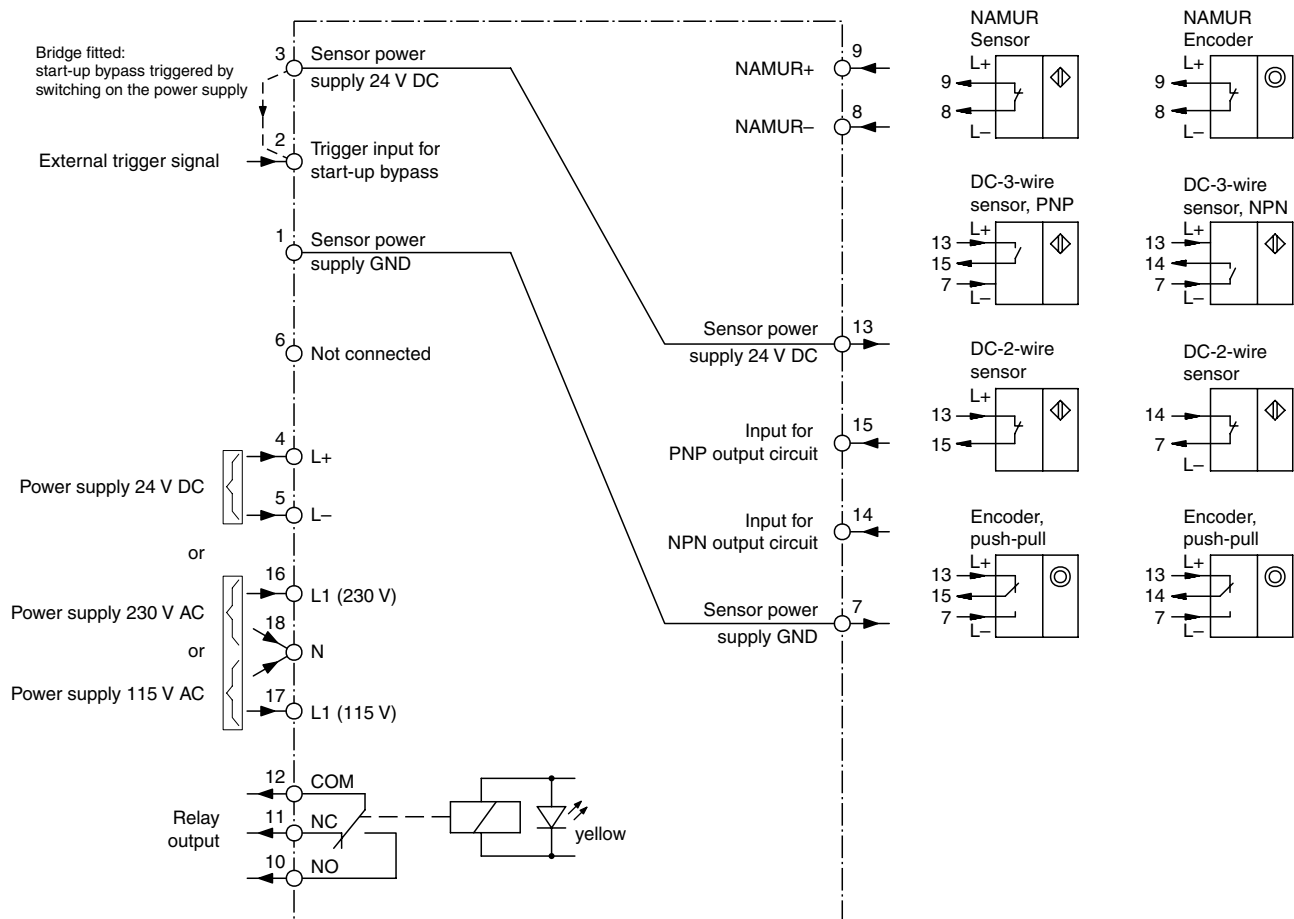
Technical data

KHU8-DW-1.D	
General specifications	
Pre-selection	single
Programming	keypad-driven menu
Supply	
Rated operational voltage	24 V DC +15 % / -10 %; 115 V AC ±10 %; 230 V AC ±10 %
Power consumption	5 W / 5 VA
Indicators/operating means	
Type	7-segment LED display, red
Number of decades	4
Display value	digit height 7 mm, in Hz or 1/min
LED yellow	switching state
Decimal point	freely adjustable
Accuracy	± 1 digit
Input	
Trigger input	12 V (terminal 2), max. 30 V, impedance 2.8 kOhm
Control input	NAMUR: 1,2 mA ≤ x ≤ 2,1 mA (terminal 8, 9), max. 8.2 V and 6.5 mA, impedance 1.2 kOhm PNP sensor: 12 V (terminal 15), max. 30 V, impedance 2.8 kOhm NPN sensor: 12 V (terminal 14), impedance 3.3 kOhm
Pulse duration	20 μs
Output	
Relay	1 changeover contact
Sensor supply	24 V DC ± 10 %, 30 mA, short-circuit proof
Contact loading	250 V AC/2 A/ cos φ ≥ 0.7 40 V DC/2 A
Duration of momentary impulse	0 ... 999.9 s
Measuring error	up to 100 Hz < 0.1% up to 1 kHz < 0.3% up to 5 kHz < 1.5%
Delay times	
Time delay before availability	≤ 400 ms
Start-up override	0.1 ... 999.9 s (External trigger signal)
Relay	≤ 20 ms
Timer function	ON/OFF delay
Ambient conditions	
Ambient temperature	-25 ... 70 °C (248 ... 343 K)
Storage temperature	-40 ... 85 °C (233 ... 358 K)
Mechanical specifications	
Lifetime	30 x 10 ⁶ switchings
Connection type	self-opening apparatus connection terminals, max. core cross-section 0.34 ... 2.5 mm ²
Dimensions	40 mm x 92.5 mm x 115 mm
Construction type	modular terminal housing in Makrolon, System KH
Mounting	snap-on to 35 mm standard rail or screw fixing

Dimensions



Electrical connection



Notes

Device description

The KHU8-DW-1.D Speed Monitor is a device for the **indication and monitoring of periodic signals**, which occur in almost all areas of automation and process technology, i. e. of frequencies in general and rotational speeds in special cases. The input signals are evaluated in accordance with the cycle method, i. e. by measurement of the period of oscillation and conversion into frequency or rotational speed by a very fast microcontroller.

The frequently occurring special case of rotational speed measurement has been paid particular attention in the development of the device. Thus **indication and input** can be either in **Hz** or in **1/min**. It is also possible, in applications involving slow processes, in which the signal sensors **provide many pulses per revolution**, to operate automatically with the **actual rotational speed** of the drive by specifying the number of pulses per revolution.

The indication of the measured value is provided on a **4-digit, 7-segment LED display** on the front of the device, with **up to 3 places after the decimal point**.

The monitoring function is achieved on the basis of a **limit value**, whose upper and lower hysteresis value is freely selectable within the respective display range.

The **output signal** is generated by a relay with a changeover contact, when the hysteresis limits are violated. Thanks to a high switching capability, the relay output can **be used for the direct activation** of an actuating element or **as an input signal for a higher level control system**.

Also, the switching status of the relay is indicated by means of a **yellow LED** on the front of the device.

A function block is connected in series with the relay, which **10 provides for various timer functions** and thus obviates the requirement for the subsequent addition of a timer relay. In addition to the **pull-in and drop-out delay, passing make contact and pulse extension**, the **direction of operation of the relay**, i. e. monitoring of speed fluctuation about a nominal value, can also be selected.

The built-in **start-up override**, initiated when the power supply is switched on, or by an external signal, **prevents error signals** during the running up of the monitored system.

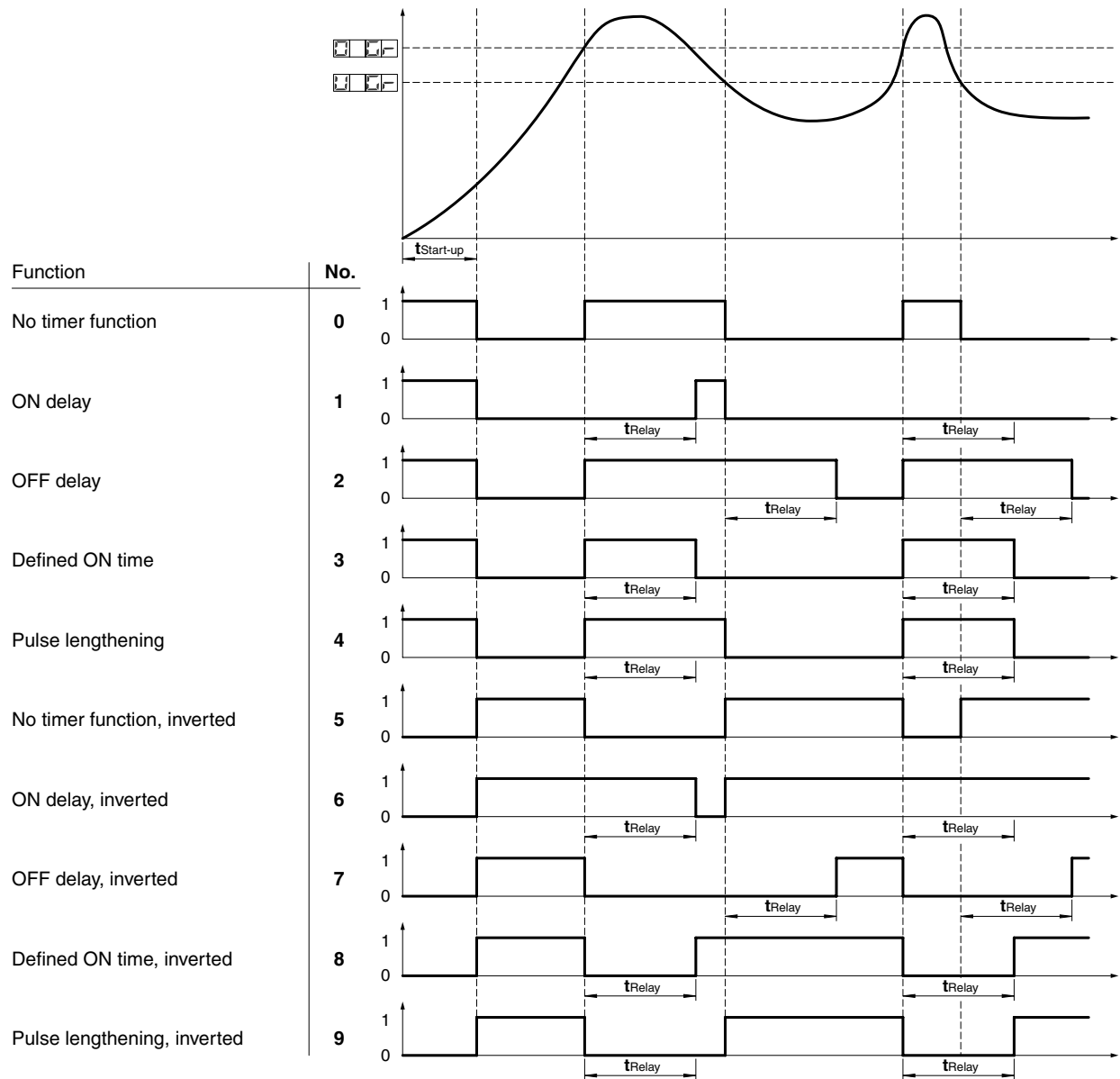
The speed monitor can be supplied with **115 V AC, 230 V AC or by a 24 V DC** supply and when connected to an alternating voltage it provides a **24 V DC source to supply the signal sensor**.

All current **two, three and four-wire proximity switches** and incremental **encoders** can be accepted as the signal sensor. In addition, two terminals are reserved for the connection of **proximity switches in accordance with DIN 19234 (NAMUR)**.

Terminal assignment

T. 1:	Signal sensor supply GND
T. 2:	Trigger input for start-up override
T. 3:	Signal sensor supply +24 V DC
T. 4:	Power supply + 24 V DC
T. 5:	Power supply GND
T. 6:	Not connected.
T. 7:	Signal sensor supply GND
T. 8:	NAMUR input L-
T. 9:	NAMUR input L+
T. 10:	Relay make contact, NO
T. 11:	Relay break contact, NC
T. 12:	Relay root, COM
T. 13:	Signal sensor supply +24 V DC
T. 14:	Signal sensor NPN input
T. 15:	Signal sensor PNP input
T. 16:	Power supply L1, 230 V AC
T. 17:	Power supply L1, 115 V AC
T. 18:	Power supply N

Timer functions, reversal of operating direction of the output relay





Model number

KFU8-FSSP-1.D

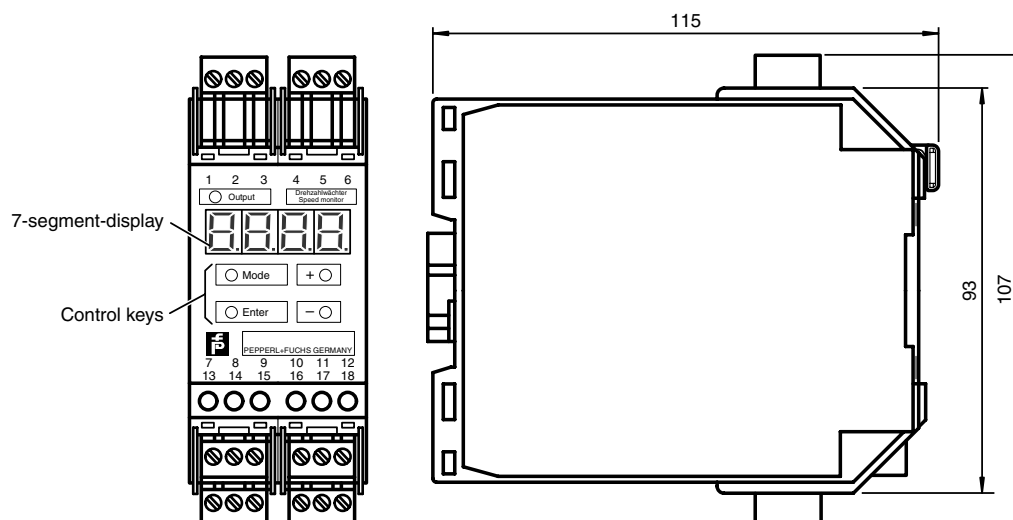
Features

- Limiting frequency 10 kHz
- Voltage or current output
- Indication in Hz or 1/min
- Incrementing output (Spacing factor 1 ... 1200)
- Multi-range power pack
- 2-, 3-, 4-wire and NAMUR sensors as well as rotary encoder connectable
- Auxiliary power output for sensors
- Connection via Power Rail
- Period measurement
- Display: Input in Hz or 1/min, output in V or mA
- Display devices can be set between 0.001 ... 2.5 sec.
- Protection degree IP20

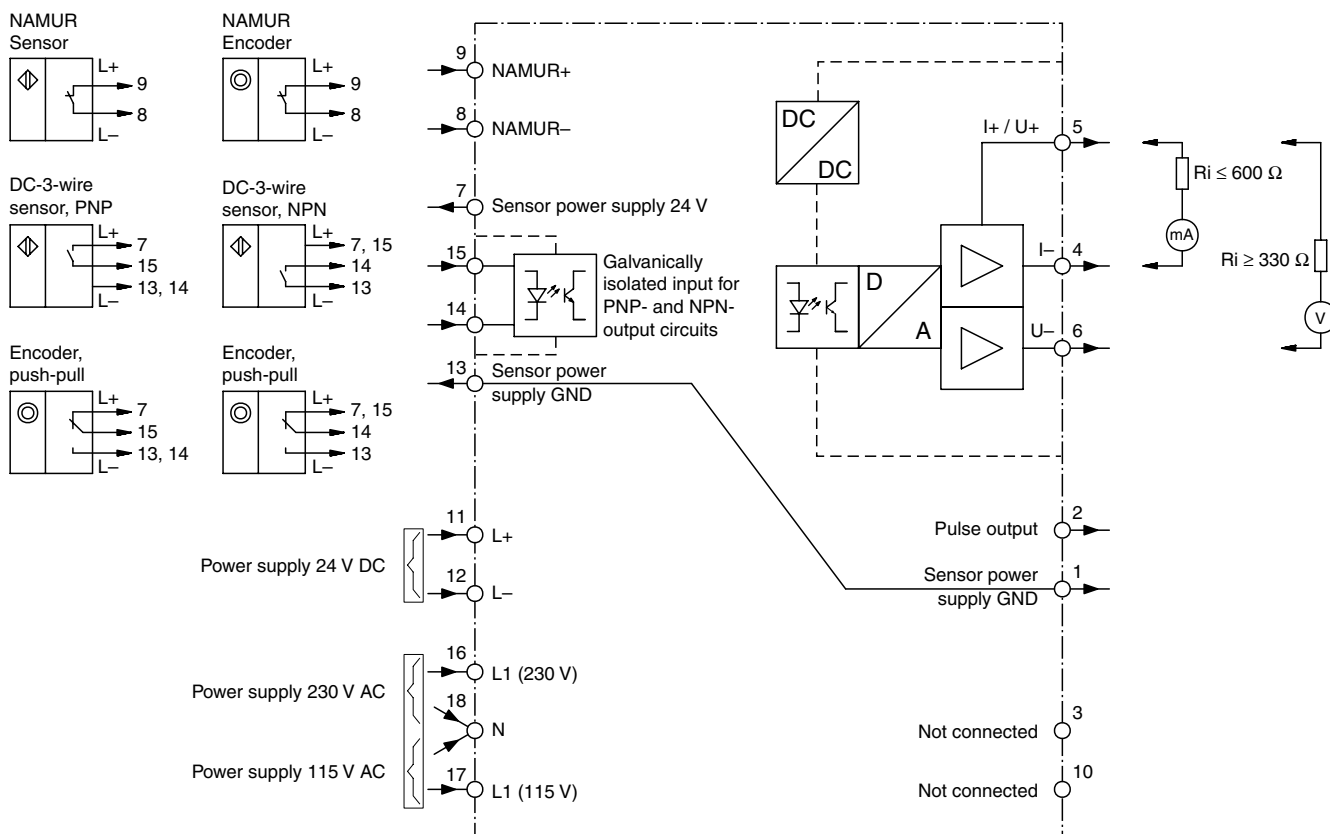
Technical data

	KFU8-FSSP-1.D
Supply	
Rated operational voltage	196 ... 264 V, 98 ... 132 V, 20.4 ... 27.6 V; 47 ... 63 Hz, 47 ... 63 Hz
Power consumption	< 5 VA < 5 VA < 5 W
Indicators/operating means	
Type	4-digit 7-segment display, red, 7 mm digit height
Parameter assignment	keypad-driven menu
Input 1	
Connection type	terminals 8-, 9+
Connectable sensor types	NAMUR sensors according to DIN EN 60947-5-6
Open loop voltage	8.2 V DC
Short-circuit current	6.5 mA
Switching point	1.2 ... 2.1 mA Switching hysteresis approx. 0.2 mA
Impedance	1.2 kOhm
Input 2	
Connection type	terminals 7+, 13- sensor supply terminals 14, 15 npn/pnp input (galvanically isolated)
Connectable sensor types	3-wire push-pull sensors
Sensor supply	21.6 ... 26.4 V DC ; ≤ 30 mA short-circuit proof
Switching point	high: 16 ... 30 V DC; max. 10 mA; $R_i \geq 3 \text{ kOhm}$ low: 0 ... 6 V DC
Output	
Analogue voltage output	0 ... 10 V DC; 2 ... 10 V DC; 30 mA max.; resolution: 10 mV; $R_i \leq 330 \text{ Ohm}$ (terminal 5+, 6-)
Analogue current output	0 mA ... 20 mA; 4 mA ... 20 mA; resolution: 20 μA ; $R_i \geq 600 \text{ Ohm}$ (terminal 4-, 5+)
Digital incrementing	$\geq (U_b - 3 \text{ V})$, 20 mA, short-circuit proof (Terminals 1-, 2+)
Sensor supply	24 V DC $\pm 10 \%$, 30 mA, short-circuit proof
Transfer characteristics	
Input frequency	$\leq 10000 \text{ Hz}$ pulse pause/pulse length: $\geq 40 \mu\text{s}$
Operating range	0.001 ... 9999 Hz
Deviation	$\leq 0.2 \%$ of full-scale value
Ambient conditions	
Ambient temperature	-25 ... 60 °C (248 ... 333 K)
Storage temperature	-40 ... 85 °C (233 ... 358 K)
Mechanical specifications	
Connection type	coded, removable terminals, max. core cross-section 0.34 ... 2.5 mm ²
Construction type	modular terminal housing in Makrolon, System KF
Mounting	snap-on to 35 mm standard rail or screw fixing

Dimensions



Electrical connection



Function

The Frequency-Voltage/Current Converter KFU8-FSSP-1.D is a device for indicating and monitoring periodic signals, which occur in almost all areas of automation technology, i. e. frequencies in general and rotational speeds in special cases.

The input pulse train is evaluated in accordance with the cycle method, i. e. by measurement of the period of oscillation, and converted into a frequency by a μ controller. Depending on the selected measuring range limit value, the μ controller calculates a voltage/current value, which is proportional to the input frequency and outputs this via a digital-analogue converter.

A selection can be made between the following analogue signals: 0 V ... 10 V, 2 V ... 10 V, 0 mA ... 20 mA, 4 mA ... 20 mA.

The serially switched output provides the input frequency subdivided by the adjustable factor (1 ... 1200).

The frequently occurring special case of rotational speed measurement has been paid particular attention in the development of the device. For example, indications and inputs can be either in Hz or in 1/min.

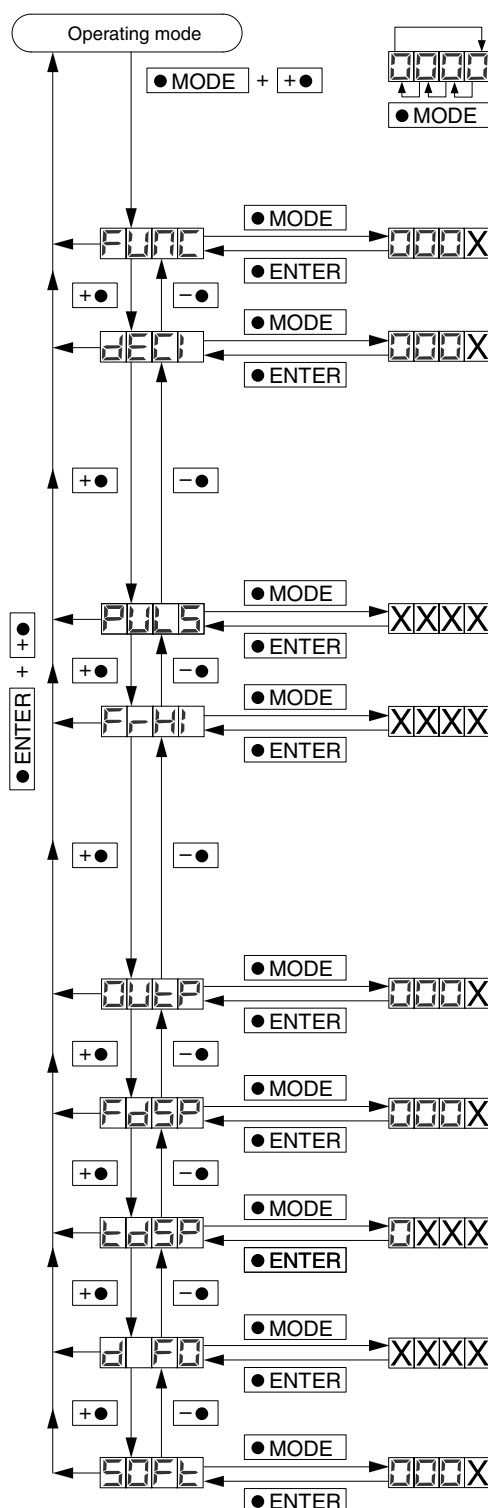
It is also possible, in applications involving slow processes, in which the signal sensors provide many pulses per revolution, to operate automatically with the actual rotational speed of the drive by specifying the number.

The supply voltage for the converter is 115 V AC, 230 V AC or 24 V DC. The version for alternating voltage provides a signal sensor supply of 24 V DC.

All current two, three and four-wire proximity switches and incremental encoders are accepted as a signal source at the input that is galvanically isolated via an opto coupler. Also, two terminals are reserved for the connection of proximity switches and incremental encoders in accordance with DIN 19234 (NAMUR).

The input signal - frequency in Hz or rotational speed in 1/min and the output signal - voltage in V or current in mA - is indicated on a 4-digit, 7-segment LED display on the front of the device. The parameter assignment is carried out via 4 buttons under the display.

Function description

**Function selection:**

X=0: Frequency measurement 0.001 Hz...9999 Hz

X=1: Speed measurement 0.02 min⁻¹...9999 min⁻¹

Factory set: X = 1

Display and measurement range:

0 ≤ X ≤ 3 at frequency measurement

0 ≤ X ≤ 2 at speed measurement

Factory set: X = 0

X	Frequency [Hz]	Speed [min ⁻¹]
0000	0 ... 9999	
000.1	0 ... 999.9	
00.02	0 ... 99.99	
0.003	0 ... 9.999	—

Pulse divider:

Number of signals per rotation

(is ignored during frequency measurement)

1 ≤ XXXX ≤ 1200, Factory set: XXXX = 1

Measurement range final value:

Frequency or speed, by which 10 V or 20 mA are applied to the analog output.

0 ≤ XXXX ≤ 9999, Factory set: XXXX = 9999

Teach in of the current frequency or speed value as a measurement range final value by pressing the "MODE" button and then the "ENTER" button.

X	Analog output
0	0 V ... 10 V
1	2 V ... 10 V
2	0 mA ... 20 mA
3	2 mA ... 20 mA

Factory set: X = 0

Display:

X=0: Frequency or speed

X=1: Voltage display or current display

Factory set: X = 0

Display rate:

0.01 s ≤ X.XX ≤ 2.5 s

Factory set: X.XX = 0.33 s

Division factor for pulse output:

1 ≤ XXXX ≤ 1200

Factory set: XXXX = 1

Software-version number:

Can only be read.

Model number

KFD2-UFT-2.D

Features

- 2 inputs
- 2 relay outputs
- 2 electronic outputs, isolated
- Reset input
- Lead breakage monitoring (can be deactivated)
- Parameterisation via control panel
- Input frequency 0.001 Hz ... 1 kHz (GLU function 10 Hz ... 1 kHz)

Function

The device processes 2 input frequencies (max. 1 kHz).

NAMUR- and non-rebounding switch signals can be processed.

The rotation direction indication evaluates input signals of both inputs offset by 90°. Depending on the direction of rotation, the corresponding outputs switch.

During synchronisation monitoring, the pulse counts of inputs I and II are compared during a measurement cycle. If the measured difference in pulse is greater than the value set in the parameter, the specified output switches. The two electronic outputs switch the input signal serially.

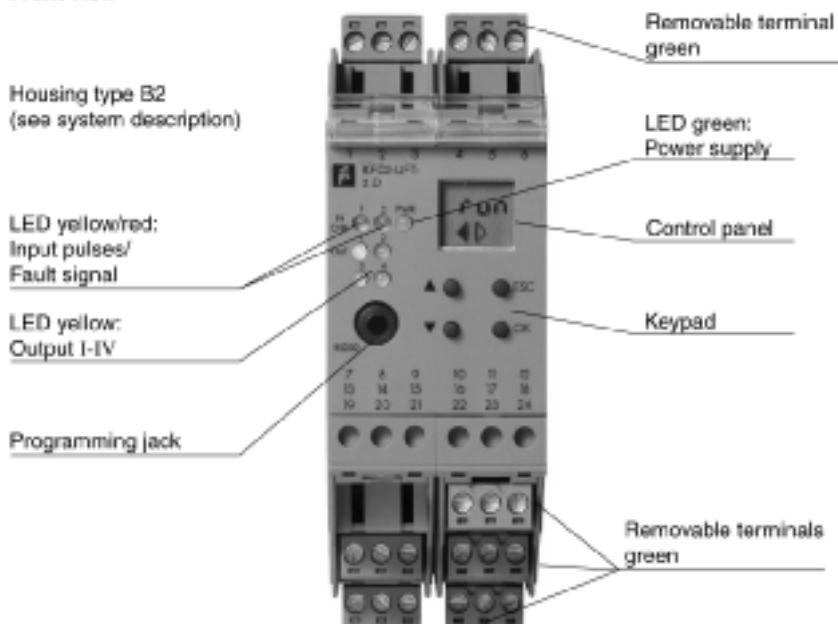
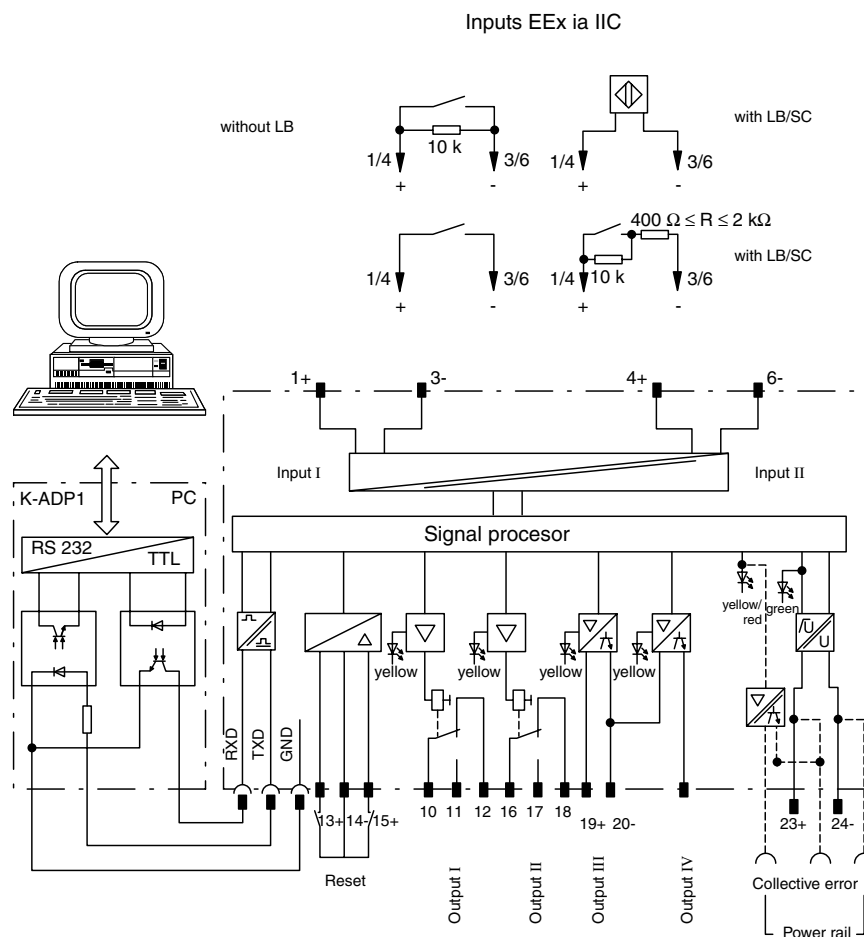
The input and output circuits are galvanically separated.

The Power Rail can take over the supply and the transmission of the combined fault indication (only KFD2-UFT-Ex2.D).

Accessories**Power Rail PR 05****Power Rail UPR 05****Power feed module KFD2-EB2**

The devices are supplied with 24 V DC due to the power feed module KFD2-EB2 and via the Power Rail PR 05 or UPR 05, simultaneously the combined fault indication will be evaluated.

Each power feed module serves the fusing and monitoring of groups with up to 100 single devices. The PR 05 Power Rail is an inset component for the DIN rail. The UPR 05 Power Rail is a complete unit consisting of the electrical insert and an aluminum 35 x 15 x 2000 mm DIN rail. Devices are simply snapped onto it for an electrical connection. Without the use of a Power Rail, the power supply to the device is directly through the device terminals.

Composition**Front View****Electrical connection**

Technical data

	KFD2-UFT-2.D
Supply	
Connection type	terminals 23+, 24- or Power Rail
Rated operational voltage	20 ... 30 V DC
Rated operational current	approx. 130 mA
Power loss	2.2 W
Power consumption	2.5 W
Input	
Connection type	reset: terminals 13+, 14- hold: terminals 15+, 14- input I: terminals 1+, 3- input II: terminals 4+, 6-
	according to IEC 60947-5-6 (NAMUR, DIN 19234); see system description for electrical data $\geq 0.5 \mu\text{s}$ / $\geq 0.5 \mu\text{s}$
Function	reset: rotation direction signaling: reset in preferred direction (left-hand rotation) slip monitoring: reset slip error hold: slip monitoring: if the input is bridged, the Hold function becomes active. Lead fault is only indicated by relay 2 and combined fault indication. The condition of the relay is hold during fault.
Active/Passive	$I > 4 \text{ mA}$ (for min. 100 ms) / $I < 1.5 \text{ mA}$
Lead monitoring	breakage $I \leq 0.15 \text{ mA}$; short-circuit $I > 6.5 \text{ mA}$
Output	
Connection type	output I: terminals 10, 11, 12 output II: terminals 16, 17; 18 output III: terminals 19, 20 output IV: terminals 21, 20
Output I and II	signal, relay
Contact loading	250 V AC / 2 A / $\cos \varphi \geq 0.7$; 40 DC / 2 A
Mechanical life	5×10^7 switchings
Energised/De-energised delay	approx. 20 ms / approx. 20 ms
Output III and IV	
Signal level	1-signal: (L+) -2.5 V (50 mA, short-circuit/overload proof) 0-signal: blocked output (off-state current $\leq 10 \mu\text{A}$)
Programming interface	
Connection type	programming socket
Interface	RS 232
Transfer characteristics	
Frequency range	rotation direction monitoring 0.001 ... 1000 Hz Slip monitoring 10 ... 1000 Hz
Galvanic isolation	
Input/Other circuits	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Output I, II/Other circuits	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Mutual output I, II, III	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Mutual output I, II, IV,	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Output III, IV/Power supply	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Output III, IV/Power supply and collective error	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Output III/IV	function insulation acc. to DIN EN 50178, rated insulation voltage 253 V _{eff}
Output III, IV/V	function insulation acc. to DIN EN 50178, rated insulation voltage 253 V _{eff}
Output III/IV/Reset/Hold	function insulation acc. to DIN EN 50178, rated insulation voltage 253 V _{eff}
Output V/Power supply and collective error	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Reset/Hold/power failure and collective error	according to DIN VDE 0106 Part 101 safety isolated, rated insulation voltage 253 V _{eff}
Interface/Power supply	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Interface/Output III, IV	function insulation acc. to DIN EN 50178, rated insulation voltage 253 V _{eff}
Standard conformity	
Coordination of insulation	acc. to DIN EN 50178
Galvanic isolation	acc. to DIN EN 50178
Electromagnetic compatibility	acc. to EN 50081-2 / EN 50082-2
Climatic conditions	acc. to DIN IEC 721
Input	according to DIN EN 60947-5-6
Ambient conditions	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
Mechanical specifications	
Protection degree	IP20
Mass	300 g

Model number

48 ... 253 V AC / 20 ... 90 V DC

KFU8-UFT-2.D

(with control panel)

Features

- 2 inputs
- 2 relay outputs
- 2 electronic outputs, isolated
- Reset input
- Lead breakage monitoring (can be deactivated)
- Parameterisation via control panel
- Input frequency 0.001 Hz ... 1 kHz (GLU function 10 Hz ... 1 kHz)

Function

The device processes 2 input frequencies (max. 1 kHz).

NAMUR- and non-rebounding switch signals can be processed.

The rotation direction indication evaluates input signals of both inputs offset by 90°. Depending on the direction of rotation, the corresponding outputs switch.

During synchronisation monitoring, the pulse counts of inputs I and II are compared during a measurement cycle. If the measured difference in pulse is greater than the value set in the parameter, the specified output switches. The two electronic outputs switch the input signal serially.

The input and output circuits are galvanically separated.

The Power Rail can take over the supply and the transmission of the combined fault indication (only KFD2-UFT-Ex2.D).

Accessories

K-CJC

Removable terminals with integrated temperature measurement sensor for cold junction compensation for thermocouples.

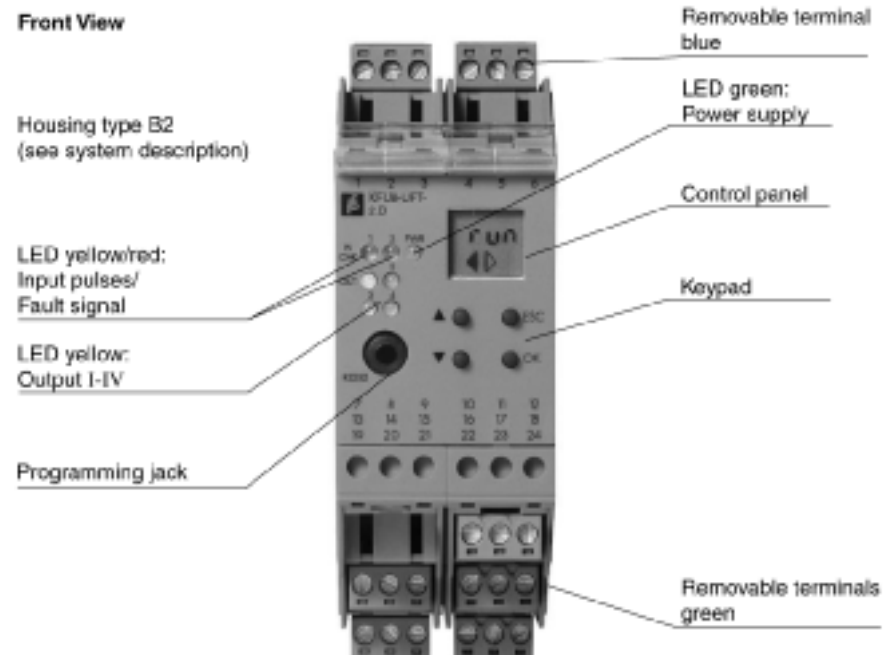
Pactware

Device specific drivers (DTM)

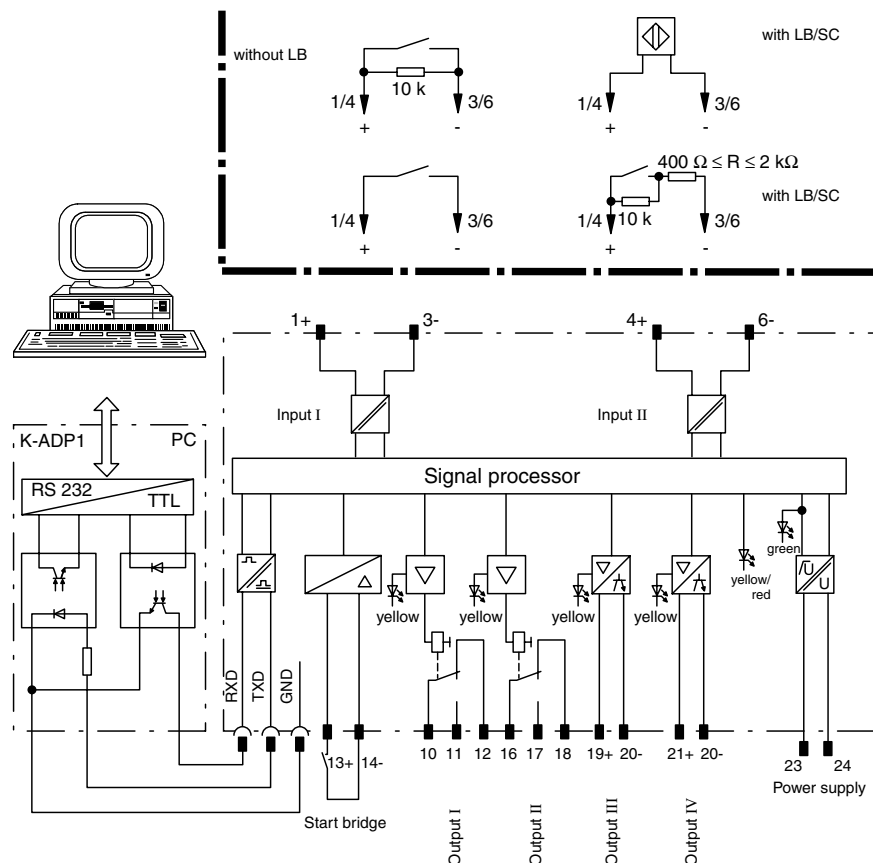
Adapter K-ADP1

Interface adapter for connecting with the serial interface of a PC/Notebook.

Composition



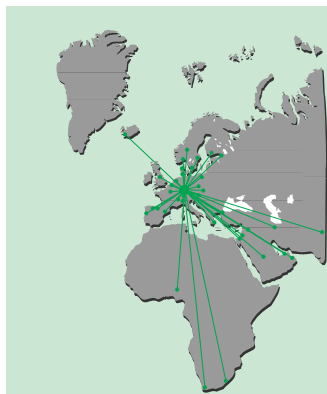
Electrical connection



Technical data

	KFU8-UFT-2.D
Supply	
Connection type	terminals 23, 24
Rated operational voltage	20 ... 90 V DC / 48 ... 253 V AC
Rated operational current	approx. 130 mA
Power loss	2.2 W / 3.5 VA
Power consumption	2.5 W / 4 VA
Input	
Connection type	reset: terminals 13+, 14- hold: terminals 15+, 14- input I: terminals 1+, 3- input II: terminals 4+, 6-
	according to IEC 60947-5-6 (NAMUR, DIN 19234); see system description for electrical data $\geq 0.5 \mu\text{s}$ / $\geq 0.5 \mu\text{s}$
Function	reset: rotation direction signaling: reset in preferred direction (left-hand rotation) slip monitoring: reset slip error hold: slip monitoring: if the input is bridged, the Hold function becomes active. Lead fault is only indicated by relay 2 and combined fault indication. The condition of the relay is hold during fault.
Active/Passive	$I > 4 \text{ mA}$ (for min. 100 ms) / $I < 1.5 \text{ mA}$
Lead monitoring	breakage $I \leq 0.15 \text{ mA}$; short-circuit $I > 6.5 \text{ mA}$
Output	
Connection type	output I: terminals 10, 11, 12 output II: terminals 16, 17, 18 output III: terminals 19+, 20- output IV: terminals 21+, 20-
Output I and II	signal, relay
Contact loading	250 V AC / 2 A / $\cos \varphi \geq 0.7$; 40 DC / 2 A
Mechanical life	5×10^7 switchings
Energised/De-energised delay	approx. 20 ms / approx. 20 ms
Output III and IV	signal, electronic output, passive
Signal level	1-signal: (L+) -2.5 V (50 mA, short-circuit/overload proof) 0-signal: blocked output (off-state current $\leq 10 \mu\text{A}$)
Programming interface	
Connection type	programming socket
Interface	RS 232
Transfer characteristics	
Frequency range	rotation direction monitoring 0.001 ... 1000 Hz Slip monitoring 10 ... 1000 Hz
Galvanic isolation	
Input/Other circuits	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Output I, II/Other circuits	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Mutual output I, II, III	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Mutual output I, II, IV,	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Output III, IV/Power supply	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Output III, IV/Power supply and collective error	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Output III/IV	function insulation acc. to DIN EN 50178, rated insulation voltage 253 V _{eff}
Output III, IV/V	function insulation acc. to DIN EN 50178, rated insulation voltage 253 V _{eff}
Output III/IV/Reset/Hold	function insulation acc. to DIN EN 50178, rated insulation voltage 253 V _{eff}
Output V/Power supply and collective error	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Reset/Hold/power failure and collective error	according to DIN VDE 0106 Part 101 safety isolated, rated insulation voltage 253 V _{eff}
Interface/Power supply	safely isolated according to DIN VDE 0106 Part 101, rated insulation voltage 253 V _{eff}
Interface/Output III, IV	function insulation acc. to DIN EN 50178, rated insulation voltage 253 V _{eff}
Standard conformity	
Coordination of insulation	acc. to DIN EN 50178
Galvanic isolation	acc. to DIN EN 50178
Electromagnetic compatibility	acc. to EN 50081-2 / EN 50082-2
Climatic conditions	acc. to DIN IEC 721
Input	according to DIN EN 60947-5-6
Ambient conditions	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
Mechanical specifications	
Protection degree	IP20
Mass	300 g

Zentrale weltweit
Worldwide Head Office
 Pepperl+Fuchs GmbH
 Königsberger Allee 87
 68307 Mannheim
 Telephone +49-621-776-0
 Telefax +49-621-776-1000
 info@de.pepperl-fuchs.com



Austria
 Pepperl+Fuchs Ges.m.b.H.
 Industriestraße B 13
 2345 BRUNN/GEB.
 Telephone +43-2236-33441
 Telefax +43-2236-31682
 info@at.pepperl-fuchs.com

Baltic States
 ELEKOMS Ltd.
 Turaidas Str. 10
 LV-1039 RIGA
 Telephone +371-7336444
 Telefax +371-7336448
 elekoms@apollo.lv

Belgium
 Pepperl+Fuchs N.V./S.A.
 Metropoolstraat 11
 2900 SCHOTEN
 Telephone +32-3-6442500
 Telefax +32-3-6442441
 sales@be.pepperl-fuchs.com

Bulgaria
 Process Control
 Tzarichina Str. 1
 1505 SOFIA
 Telephone +359-2-703549
 Telefax +359-2-703549
 processcontrol@bulmail.net

Croatia
 El-Pro d.o.o.
 (PA Representation)
 Fallerovo Setaliste 22
 10000 Zagreb
 Telephone +385-1-3 66 74 28
 Telefax +385-1-3 66 74 28
 el-pro@zg.tel.hr

Czech Republic
 FCC PRUMYSLOVE SYSTEMY
 S.R.O.
 U Slovanky 3
 182 00 PRAHA 8
 Telephone +420-2-66052099
 Telefax +420-2-86890252
 info@fccps.cz

Denmark
 Pepperl+Fuchs A/S
 Stamholmen 173
 2650 HVIDOVRE
 Telephone +45-70104210
 Telefax +45-70104211
 mail@pepperl-fuchs.dk

Egypt
 Pepperl+Fuchs Egypt (LLC)
 9 Abd Al Hamied Lotfy Street, Zone 8
 Nasr City
 Telephone +20-2-2721097
 Telefax +20-2-2756096
 mesmat@pepperl-fuchs.com.eg

Finland
 SensoNor Oy
 Kartanontie 20
 00330 HELSINKI
 Telephone +358-9-47772000
 Telefax +358-9-47772020
 joel.patriikka@sensonor.fi

France
 Pepperl+Fuchs SARL
 12 Avenue des Tropiques - Les Ulis
 91955 COURTABOEUF CEDEX
 Telephone F.A. +33-1-60921313
 Telephone P.A. +33-1-60921316
 Telefax +33-1-60921325
 commercial@fr.pepperl-fuchs.com

Germany
 Pepperl+Fuchs Drehgeber GmbH
 Föhrenstraße 33
 78532 Tuttlingen
 Telephone +49-7461-9298-0
 Telefax +49-7461-9298-22

Visolux, Zweigniederlassung
 der Pepperl+Fuchs GmbH
 Prinzenstraße 85
 10969 BERLIN
 Telephone +49-30-616720
 Telefax +49-30-61672450

Great Britain
 Pepperl+Fuchs (GB) Ltd.
 77 Ripponden Road
 OLDHAM OL1 4EL, Lancashire
 Telephone +44-161-6336431
 Telefax +44-161-6246537
 sales@gb.pepperl-fuchs.com

Greece
 Uteco A.B.E.E.
 16 Mavrogenous Street
 185 42 PIRAEUS
 Telephone +30-10-4210050
 Telefax +30-10-4212033
 uteco@uteco.gr

Hungary
 Pepperl+Fuchs Kft.
 Kisto Utca 16-18
 8200 VESZPREM
 Telephone +36-88-590100
 Telefax +36-88-590132
 kmikola@hu.pepperl-fuchs.com

Iceland
 Tölvusalan ehf.
 Suourlandsbraut 20
 P.O. Box 8960
 128 REYKJAVIK
 Telephone +354-5-500450/500454
 Telefax +354-5-500402
 agusta@islandia.is

Iran
 Farayand PAS
 5th Floor - No. 104
 Africa Express Way, Corner of
 Golshahr
 19697 TEHRAN
 Telephone +98-21-2054341
 Telefax +98-21-2054388
 fpas@farayandepas.com

Israel
 Kama Ltd.
 20 Hametsuda St.
 58 190 AZOR
 Telephone +972-3-5567747
 Telefax +972-3-5567548
 Kama@netvision.net.il

MAYSAN N. H. Ltd.
 Electrical & Control Systems
 Mirza Kadesh 5
 P.O. Box 85
 26272 KIRIAT HAIM
 Telephone +972-4-8409002
 Telefax +972-4-8409001
 maysan@netvision.net.il

Italy
 Pepperl+Fuchs ELCON S.r.l.
 Via delle Industrie, 4
 20050 MEZZAGO (Milano)
 Telephone +39-039-62921
 Telefax +39-039-6292240
 info@it.pepperl-fuchs.com

Netherlands

Pepperl+Fuchs B.V.
Het Wielsem 10
5231 BW's-HERTOGENBOSCH
Telephone +31-73-6409388
Telefax +31-73-6444749
sales@nl.pepperl-fuchs.com

Norway

Elteco A/S
Postboks 96
Floodmyrveien 24
3900 PORSGRUNN
Telephone +47-35-573800
Telefax +47-35-573849
firmapost@elteco.no

Pakistan

Techno-Commercial
Engineers - Representatives
18-24, Farid Plaza/65-Shadman
G.P.O. Box 937
LAHORE
Telephone +92-42-7584390
Telefax +92-42-7581771
eswaat@brain.net.pk

Poland

INTEX Sp. z o.o.
ul. W. Pola 16
44-100 GLIWICE
Telephone +48-32-2307516
Telefax +48-32-2307517
intex@intex.com.pl

Portugal

Pepperl+Fuchs, S.A.
Txorri-Erri Etorbidea, 46 Pol. Izarza
E-48150 SONDIKA (Vizcaya)
Spain
Telephone +349-4-4535020
Telefax +349-4-4535180
sov@es.pepperl-fuchs.com

Russia

INTERF L.L.C.
Office 1404, 18, str.1
Vadkovskiy per.
103055 MOSCOW
Telephone +7-095-9732072
Telefax +7-095-9783934
interf@com2com.ru

Prosoft Ltd.

108 Profsoyznaya Str.
117437 MOSCOW
Telephone +7-503-2340636
Telefax +7-503-2340640
victor@prosoft.ru

South Africa

P & F Products cc
P.O. Box 2809 60, Fourth Ave.
EDENVALE 1610
Telephone +27-11-6098188
Telefax +27-11-4522026
pandf@pandf.co.za

Spain

Pepperl+Fuchs, S.A.
Txori-Erri Etorbidea, 46 Pol. Izarza
48150 SONDIKA (Vizcaya)
Telephone +349-4-4535020
Telefax +349-4-4535180
sov@es.pepperl-fuchs.com

Sweden

Pepperl+Fuchs AB
Bultgatan 40 b
442 40 KUNGÄLV
Telephone +46-303-246070
Telefax +46-303-246089
info@se.pepperl-fuchs.com

Switzerland

Pepperl+Fuchs AG
Sägeweg 7
2557 STUDEN/BIEL-BIENNE
Telephone +41-32-3747676
Telefax +41-32-3747678
info@ch.pepperl-fuchs.com

Turkey

Onur Mühendislik ve Otomasyon
Sam. Tic. Ltd. Sti.
Emek mah. Yıldırım Sk. No. 23
81570 KUCUKYALI ISTANBUL
Telephone +90-216-3889590
Telefax +90-216-4896020
info@onurmuh.com.tr

Net Mühendislik ve Otomasyon
(FA Presentation only photoelectric)
San. Tic. Ltd. Sti.
Perpa Ticaret Merkezi A Blok
kat: 5 No:174/176
Okmeydani, İstanbul
Telephone +90-212-2109354
Telefax +90-212-2109359
info@netmuh.com.tr

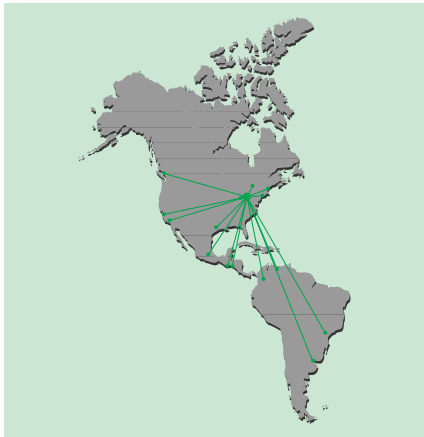
United Arab Emirates

Pepperl+Fuchs (M.E.) FZE
P.O. Box 61398
Jebel Ali Free Zone
DUBAI
Telephone +971-4-8817016
Telefax +971-4-8816935
pfme@emirates.net.ae

Zentrale USA

USA Head Office

Pepperl+Fuchs Inc.
1600 Enterprise Parkway
TWINSBURG OHIO, 44087
Telephone +1-330-4253555
Telefax +1-330-4254607
sales@us.pepperl-fuchs.com



Argentina

Dipl.-Ing. Bruno Schillig S.R.L.
Arenales (Dip. Ortiz) 4030
1602 Florida
Telephone +54-11-47301100
Telefax +54-11-47617244
schillig@schillig.com.ar

Bolivia

Hiller Electric SA
Av. El Trompillo 573
Casilla 370
SANTA CRUZ
Telephone +591-3-3524484
Telefax +591-3-3526404
rpux@hiller.com.bo

Brazil

Pepperl+Fuchs Ltda.
Avenida Kennedy, 164-4° Andar
Jardim do Mar
CEP 09726-250
SAO BERNARDO DO CAMPO
Telephone +55-11-41223233
Telefax +55-11-41257329
vendas@br.pepperl-fuchs.com

Canada

Pepperl+Fuchs Inc.
1600 Enterprise Parkway
Twinsburg, OHIO 44087
USA
Telephone +1-330-4253555
Telefax +1-330-4254607
sales@us.pepperl-fuchs.com

Chile

Desimat Ingeniería Ltda.
Rut.: 78.131.420-K
Av. Puerto Vespucio 9670
Loteo Industrial Puerto Santiago
PUDAHUEL-SANTIAGO
Telephone +56-2-7470152
Telefax +56-2-7470153
ventaschile@desimat.cl

Colombia

Alfatecnica S.A.
Control de Procesos y
Automatizacion Ind
Avenida El Dorado No. 98-51
Oficina 306 A
SANTAFE DE BOGOTA
Telephone +57-1-4 15 40 77
Telefax +57-1-2 98 74 60
importaciones@alfatecnica.com.co

Ecuador

Alfatecnica S.A.
Cll 93 No. 19-75
SANTAFE DE BOGOTA D.C.
Telephone +57-1-5 30 08 08
Telefax +57-1-53 83 88
importac@latino.net.co

Guatemala

PROYECT Asesoría Industrial
8a. Avenida 33-10, Zona 11
GUATEMALA C.A.
Telephone +502-4-7674-33 bis 38
Telefax +502-4-573311
Guatemala@GrupoProyect.com

Mexiko

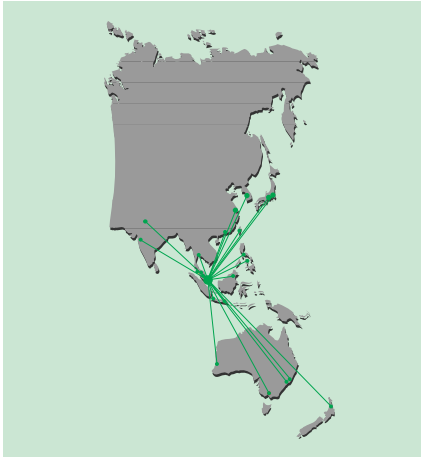
Pepperl+Fuchs México, S.A. de C.V.
Blvd. Xola 613, P.H.
Col. Del Valle
03100 MEXICO D.F.
Telephone +52-55-56391951
Telefax +52-55-56398865
pfmexico@mpsnet.com.mx

Venezuela

Pepperl+Fuchs, Inc.
1600 Enterprise Parkway
TWINSBURG OHIO, 44087
USA
Telephone +1-330-4253555
Telefax +1-330-4254607
sales@us.pepperl-fuchs.com

**Zentrale Asien
Asia Pacific Head Office**

Pepperl+Fuchs PTE Ltd.
P+F Building
18 Ayer Rajah Crescent
SINGAPORE 139942
Telephone +65-67799091
Telefax +65-68731637
sales@sg.pepperl-fuchs.com



Australia

Pepperl+Fuchs Australia Pty Ltd.
Unit 7/72-74 Chifley Drive
PRESTON, VICTORIA 3072
Telephone +61-3-94958600
Telefax +61-3-94846366
pfa@au.pepperl-fuchs.com

China

Pepperl+Fuchs Shanghai
(FA/Headquarters)
No. 9, Lane 163 Tan Jia Qiao Road
SHANGHAI, 200070
Telephone +86-21-56525989
Telefax +86-21-56527164
info@cn.pepperl-fuchs.com

Pepperl+Fuchs Beijing Rep. Office
(PA Headquarters)
Room 316 A, Prime Tower
No. 22 Chao Wai Street, Chaoyang
District
BEIJING 100020
Telephone +86-10-65885143
Telefax +86-10-65885144
pfbj@public.east.cn.net

Hong Kong

Foober (Hong Kong) Co., Ltd.
(FA Representation)
Room 1208 Shi On Centre
6-8 Harbour Road
WANCHAI
Telephone +8-52-2528 3558
Telefax +8-52-2528 9371
fooberhk@netvigator.com

ERA International Investment
Development
(FA Representation)
Room 1218, 12/F, Blk 2, Nam Fung
Ind. City
18 Tin Hau Road, Tuen Mun
N. T. Hong Kong
Telephone +8-52-8101 0385
Telefax +8-52-2322 4440
T001@netvigator.com

India

Pepperl+Fuchs India Pvt Ltd.
Head Office
Plot No. 10, 3rd Main. 1st Stage
Peenya Ind. Est.
BANGALORE 560 058
Telephone +91-80-8378030
Telefax +91-80-8378031
info@in-pepperl-fuchs.com

Pepperl+Fuchs (India) Pvt Ltd
(Regional Sales Office-West)
No.401, A-Wing, Subham Centre-1, 4th fl.
Cardinal Gracias Road, Chakala
Andheri (East)
MUMBAI 400 099
Telephone +91-22-8231946
Telefax +91-22-8231947
pepperl@bom3.vsnl.net.in

Pepperl+Fuchs (India) Pvt. Ltd
(Pune Area Sales Office)
Roof & Services, Ground Floor
Veer Savarkar Udyog Bhavan
Shivaji Nagar
Telephone +91-20-5538658
Telefax +91-20-5538757
pepperl@pn2.vsnl.net.in

Pepperl+Fuchs (India) Pvt. Ltd
(Baroda Area Sales Office)
215 Midas Business Centre
3rd Floor, "LANDMARK"
Race Course Circle (South)
Telephone +91-265-357101
Telefax +91-265-331563
pepperl@pi.zaverchand.co.in

Indonesia

PT Himalaya Everest Jaya
(FA Representation)
Jln. Daan Mogot Km. 10, No. 151
Pesing Poglar
JAKARTA Barat 11710
Telephone +62-21-5 44 89 56
Telefax +62-21-6 19 46 58
himalaya@indosat.net.id

PT Pepperl and Fuchs Bintan
SD 56, 57 Lobam
Bintan Industrial Estate
PULAU BINTAN, RIAU
Telephone +62-770-69 66 75
Telefax +62-770-69 66 77

PT Binakarya Sentosaprima
(PA Representation)
Citra Garden 1 Blok C-2/24
11840 JAKARTA
Telephone +62-21-5 45 11 36/37
Telefax +61-21-5 40 36 47
ptbina@cbn.net.id

Japan

Pepperl+Fuchs K.K.
German Industry Center 401
18-2 Hakusan 1-Chome, Midori-Ku
YOKOHAMA 226-0006
Telephone +81-45-9397802
Telefax +81-45-9397804
sales@jp.pepperl-fuchs.com

Korea

Pepperl+Fuchs Korea Ltd.
Bum-Yang Bang-Bae Bldg.
5th flr, #811-6, Bang Bae-dong
Seo Cho-Ku
SEOUL
Telephone +82-2-34819494
Telefax +82-2-34819495
info@pepperl-fuchs.co.kr

Malaysia

Industrial Automation (M) SDN BHD
(Kuala Lumpur Office FA)
30-3 & 30-4, Jalan Loke Yew
55200 KUALA LUMPUR
Telephone +60-3-92 21 05 11
Telefax +60-3-92 22 22 99
iakl@tm.net.my

Miran Engineering Sdn Bhd
(PA Representation)
No. 16 Jalan Astaka U8/82
Bukit Jelutong Commercial Area
40150 SHAH ALAM SELANGOR
Telephone +60-3-7847 3278
Telefax +60-3-7847 5236
zainuddin@trisisys.com.my

New Zealand

Unilink Automation LTD
(FA Representation)
P.O. Box 12142
15 Olive Road, Penrose
1135 AUCKLAND
Telephone +64-9-5 25 70 02
Telefax +64-9-5 25 70 11
sales@unilink.co.nz

Custom Control Ltd
(PA Representation)
16 Mahunga Drive, Mangere Bridge
Private Bag
92 902 ONEHUNGA
Telephone +64-9-6 34 13 91
Telefax +64-9-6 36 59 76
jneville@customcontrols.co.nz

Phillipines

Jaylan Mill Trades Inc.
(FA Representation)
Room 238, Comfoods Building
Sen. Gil J. Puyat Avenue
MAKATI, Metro Manila 1200
Telephone +63-2-8 44 63 26
Telefax +63-2-8 93 22 02
jlanmill@info.com.ph

Multiplex Instrumentation & Control
Equipment Services
(PA Representation)
3378 A Lbarra Street
PALANAN MAKATI CITY
Telephone +63-2-550 1473
Telefax +63-2-550 1474
mices@speedsurf.pacific.net.ph

Taiwan

Pepperl+Fuchs Pte Ltd
(Taiwan Representative Office)
TWTC Exhibition Hall, Room 7C16,
7FL,
No. 5, Sec. 5, Hsin-Yi Road
TAIPEI
Telephone +886-2-87 80 38 38
Telefax +886-2-27 23 88 11
pftaiwan@ms48.hinet.net

Thailand

Industrial Electrical Co., Ltd
(FA Representation)
85/3 Soi Sot Phin San
Rang Nam Road, Rajthevee
Rajthevee
Telephone +66-2-6 42 78 87
Telefax +66-2-6 42 42 49
iecl@ie.co.th

Delta Elmech Co., Ltd.
(PA Representation)
76 Pattanakarn Soi 53
(Muangthong 2/3)
Pattanakarn Road, Suanluang
BANGKOK 10250
Telephone +66-2-3 22 54 23 /30
Telefax +66-2-3 22 17 62
deltabkk@deltaelmech.co.th

Vietnam

Thien Luan Trading & Services Co.
Ltd.
(PA Representation)
21/6B Bui Van Ngu St., Dong Hamlet
Thoi Tam Thon Commune
HO CHIH MINH CITY
Telephone +84-8-8 11 95 26
Telefax +84-8-8 11 54 75
thienluan@hcm.vnn.vn

Provina Technology Co. Ltd
(FA Representation)
148B Nam Ky Khoi Nghia
Q1 TP HO CHI MINH
Telephone +84-8-829 8901
Telefax +84-8-829 5486
provina@hcm.vnn.cn

Thien Nghi Trading & Services Pte
(FA Representation)
206 Ngyen Thai Binh St,
Ward 12, Tan Binh Dist
HO CHIH MINH CITY
Telephone +84-8-8115476
Telefax +84-8-8115475
thiennghi@hcm.vnn.vn

List of types

DA5-IU-2K-C.....	12
DA5-IU-2K-V.....	12
DA5-IU-C.....	10
FC-21-V.....	56
FT-11-V.....	54
KCD2-E.....	64
KCD2-E1.....	64
KCD2-E2.....	64
KCD2-E2L.....	66
KCD2-E3.....	64
KCD2-EL.....	66
KCD2-R.....	68
KCM-51-C.....	14
KCM-51-V.....	14
KCM-70A-C.....	18
KCM-70A-V.....	18
KCM-70-C.....	16
KCM-70-V.....	16
KCN1-6SR-C.....	32
KCN1-6SR-V.....	32
KCN1-6ST-C.....	34
KCN1-6ST-V.....	34
KCN1-6WR-C.....	36
KCN1-6WR-V.....	36
KCN1-6WT-C.....	38
KCN1-6WT-V.....	38
KCT1-5SR-V.....	28
KCT1-6SR-C.....	22
KCT1-6SR-V.....	22
KCT1-6WR/RS232-V.....	24
KCT2-6ST-V.....	26
KCT-6S-C.....	20
KCT-6ST-C.....	20
KCX-B6WM-V.....	40
KCY1-6SR-B.....	30
KFD2-UFT-2.D.....	86
KFU8-FSSP-1.D.....	82
KFU8-UFT-2.D.....	88
KHU8-DW-1.D.....	76
RE 1.....	70
TC-4B-V.....	46
TC-6A-V.....	52
WE77-GS-04.....	74
WE77-RE2.....	72

AUTOMATION

the company

news

jobs and careers

products

factory automation

process automation

www.pepperl-fuchs.com

SIGNALS FOR THE WORLD OF AUTOMATION

Worldwide Headquarters

Pepperl+Fuchs GmbH · Königsberger Allee 87
68307 Mannheim · Germany
Tel. +49 621 776-0 · Fax +49 621 776-1000
<http://www.pepperl-fuchs.com>

USA Headquarters

Pepperl+Fuchs Inc. · 1600 Enterprise Parkway
Twinsburg, Ohio 44087 · Cleveland-USA
Tel. +1 330 4253555 · Fax +1 330 425 93 85
e-mail: sales@us.pepperl-fuchs.com

Asia Pacific Headquarters

Pepperl+Fuchs Pte Ltd. · P+F Building
18 Ayer Rajah Crescent · Singapore 139942
Tel. +65 67799091 · Fax +65 68731637
e-mail: sales@sg.pepperl-fuchs.com



 **PEPPERL+FUCHS**