KCT-6S…

Totalizer

Manual

$C \, \epsilon$

PEPPERL+FUCHS

Manual
Counter/Tachometer/Timer
KCT-6S-C/KCT-6ST-C

1.1 Safety instructions and warnings

Only use this display

– in a way according to its intended
purpose
– if its technical condition is perfect
– adhering to the operating
instructions and the general
safety instructions.

1.2 General safety instructions

1. Before carrying out any installation or mainte-
nance work, make sure that the power supply
of the digital display is switched off.
2. Only use this digital display in a way according
to its intended purpose:
If its technical condition is perfect.
Adhering to the operating instructions and the
general safety instructions.
3. Adhere to country or user specific regulations.
4. The digital display is not intended for use
in areas with risks of explosion and in the
branches excluded by the standard EN 61010
Part 1.
5. The digital display shall only operated if it has
been correctly mounted in a panel, in accord-
ance with the chapter "Technical features".

1.3 Use according to the intended purpose

The digital display may be used only as a pan-
el-mounted device. Applications of this product
may be found in industrial processes and con-
trols, in manufacturing lines for the metal, wood,
plastics, paper, glass, textile and other process-
ing industries.
Over-voltages at the terminals of the digital dis-
play must be kept within the limits in Category II

If the digital display is used to monitor machines
or processes in which, in case of a failure of the
device or an error made by the operator, there
might be risks of damaging the machine or caus-
ing accidents to the operators, it is your responsi-
bility to take appropriate safety measures.

1.4 Description

KCT-6S-C/KCT-6ST-C is a multipurpose device.
Depending on the programmed basic function, the
device operates like
• Pulse counter (see page2) or
• Frequency meter (see page 4) or
• Time meter (see page 6)

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2. Setting of the operating parameters

a. Press both front side keys keys and switch on
the supply voltage or, if the supply voltage is
already on, press both keys simultaneously
during 5 s.
b. The display shows

c. After releasing the keys, the display shows

c1. Hold the left key pressed and press the right
key to leave the programming operation.

c2. Press the right key to switch to
.

d. Hold the left key pressed and press the right
key to switch to the first parameter.
e. After releasing the keys, the display alternates
between the menu title and the current menu
item setting. After pressing any key, only the
menu item setting is displayed.
f. Pressing the right key, the menu item setting
will be switched to the next value.
If figures are to be input (e.g. when setting the
scaling factor), select first the decade using
the left key, and then set the value using the
right key.
g. Hold the left key pressed and press the right
key to switch to the next menu item.
h. The last menu title "EndPro" allows, when
selecting "Yes", to exit the programming menu
and to take over (store) the new values. If "no"
is selected, the programming routine is re-
peated, the latest values set remaining active.
They can now be checked again or modified.

3. Programming routine

The first menu item is the selection of the basic operating mode, which determines the functions of the device.

$$\boxed{P\ \Pi o d E}$$

$$\boxed{C o u n t}$$ Operating mode pulse counter. Continued in point 4. on page 2

$$\boxed{t R c h o}$$ Operating mode frequency meter. Continued in point 4. on page 4

$$\boxed{t \bar{\imath} \bar{\imath} E r}$$ Operating mode time meter. Continued in point 4. of on page 6

Pulse counter/Position indicator
KCT-6S-C/KCT-6ST-C

1. Description

- 6-digit display counter with SET/RESET-function
- Red LED display, character height 8 mm
- Display range from -199 999 to 999 999
- Leading zeros suppression
- Programming via two setting keys on the front side
- During programming, the display guides the user with text prompts
- Counter operating modes:
    Count input INP A + count direction input
    INP B (Cnt.Dir)
    Differential count INP A – INP B (up.dn)
    Totalising INP A + INP B (up.up)
    Count Up/Down INP A 90° INP B x 1 (quAd)
    Count Up/Down INP A 90° INP B x 2 (quAd2)
    Count Up/Down INP A 90° INP B x 4 (quAd4)
- Optional optocoupler output

2. Inputs

INP A
Dynamic count input.
INP B
Dynamic count input.
SET/RESET
Dynamic SET/RESET input. Linked in parallel to the red SET/RESET key. Resets the counter to the predefined setting value.

3. Optocoupler output (optional)

Active if count value ≤ 0. Simple preset counter can be realized, when using subtract mode.

4. Programming routine

The programmable parameters of the device are described below, in the order in which they can be set. The device is fully programmed after one pass of the routine.

The first values stated correspond to the factory settings

4.1 Polarity of the inputs

| $InPoL$ |

| nPn | npn: switching for 0 V |

| PnP | pnp: switching for $+U_B$ |

4.2 Switching on the 30 Hz filter (INP A, INP B)

| $FiLtEr$ | The filter provides input damping* |

| oFF | 30 Hz filter off (f_{max}) |

| on | 30 Hz filter on |

4.3 Input mode

| $InPut$ |

| $Cnt.dir$ | Count input and count direction input
INP A: Count input
INP B: Count direction input |

| $uP .dn$ | Differential input
IINP A: count input adding
INP B: count input subtracting |

| $uP .uP$ | Totalising
INP A: count input adding
INP B: count input adding |

| $9uAd$ | Quadrature input
INP A: count input 0°
INP B: count input 90° |

| $9uAd 2$ | Quadrature input with pulse doubling
INP A: count input 0°
INP B: count input 90°
Each pulse edge of INP A will be counted |

| $9uAd 4$ | Quadrature input with pulse quadrupling
INP A: count input 0°
INP B: count input 90°
Each pulse edge of INP A and INP B will be counted. |

4.4 Multiplying factor

| $FRctor$ |

| 01.0000 | It can be set from 00.0001 up to 99.9999.
The decimal point is set to 4 decimal places.
„0" is not accepted! |
| 99.9999 | |

4.5 Dividing factor

| $diUiba$ |

| 01.0000 | It can be set from 00.0001 up to 99.9999.
The decimal point is set to 4 decimal places.
„0" is not accepted! |
| 99.9999 | |

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4.6 Decimal point

| dP | The decimal point defines the way of displaying the count values. It does not affect counting. |

| 0 | 0   no decimal place
0.0   one decimal place
0.00   two decimal places
0.000   three decimal places |
| 0.000 | |

4.7 SET/RESET Mode

| $rESnid$ |

| $PRRnEL$ | manual reset via the red SET/RESET key and electrical reset via the SET/RESET input |

| $no rES$ | no reset (red SET/RESET key and SET/RESET input locked) |

| $EL rES$ | only electrical reset via the SET/RESET input |

| $PRRnrE$ | only manual reset via the red SET/RESET key |

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4.8 SET value

S E t P t

0 0 0 0 0 0

9 9 9 9 9 9

The device will be set to the set point by pressing the red SET/RESET key or activating the SET/RESET input.
SET value -199999... 999999 (number of decimal places depends on the decimal point option)

For programming the decimal point see 4.6

4.9 End of programming

E n d P r o

n o

The programming routine is repeated once more. The values set until now can be checked and modified.

Y E S

The programming routine wil be left and all values set will be stored as new parameters.
Afterwards the device is ready for operation.

Tachometer/Frequency meter KCT-6S-C/KCT-6ST-C

1. Description
- 6 digit frequency meter
- Red LED display, character height 8 mm
- Display range from 0 to 999 999
- Leading zeros suppression.
- Programming via two setting keys on the front side
- During programming, the display guides the user with text prompts
- Value conversion and display in 1/s or 1/min
- Optional optocoupler output

2. Inputs
INP A
Dynamic count input.

3. Optocoupler output (optional)
Active at f=0. Can be used e.g. to activate a „No operation" lamp.

4. Programming routine
The programmable parameters of the device are described below, in the order in which they can be set. The device is fully programmed after one pass of the routine.

The first values stated correspond to the factory settings

4.1 Polarity of the inputs

I n P o L

n P n

npn: switching for 0 V

P n P

pnp: switching for +U$_B$

4.2 Switching on the 30 Hz filter

$$F\bar{\imath}LtEr$$

The filter provides input damping*

$$oFF$$

30 Hz filter off (f_{max})

$$on$$

30 Hzfilter on

4.3 Multitplying factor

$$FRctor$$

$$0\ 1.0000$$

$$99.9999$$

It can be set from 00.0001 up to 99.9999.
The decimal point is set to 4 decimal places.
„0" is not accepted!

4.4 Dividing factor

$$d\bar{\imath}U\bar{\imath}bo$$

$$0.0.00\ 1$$

$$99.9999$$

It can be set from 00.0001 up to 99.9999.
The decimal point is set to 4 decimal places.
„0" is not accepted!

4.5 Decimal point

$$dP$$

The decimal point defines the resolution

$$0$$

$$0.0.00$$

0   no decimal place
0.0   one decimal place
0.00   two decimal places
0.000 three decimal places

4.6 Display mode

$$d\bar{\imath}SPn\bar{\imath}$$

$$5EC\ \ -\ 1$$

Value conversion and display in 1/s

$$P\bar{\imath}\bar{\imath}n-1$$

Value conversion and display in 1/min

4.7 Max. time to wait until „0" is displayed

This parameter indicates, how long it takes, when measuring is active, until „0" is displayed.

$$\bar{\imath}\bar{\imath}\bar{\imath}\bar{\imath}\bar{\imath}\bar{\imath}\bar{\imath}$$

$$00.1$$

Max. time to wait 00.1 s (min. value)

$$99.9$$

Max. time to wait 99.9 s

4.8 End of programming

$$EndPro$$

$$no$$

The programming routine is repeated once more. The values set until now can be checked and modified.

$$yES$$

The programming routine wil be left and all values set will be stored as new parameters.
Afterwards the device is ready for operation.

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Time meter KCT-6S-C/KCT-6ST-C

1. Description

- 6 digit time meter with SET/RESET function
- Red LED display, character height 8 mm
- Display range from 0 to 999 999
- Leading zeros suppression.
- Operation indicator: the decimal point of the lowest digit blinks while the count is active.
- Programming via two setting keys on the front side
- During programming, the display guides the user with text prompts
- Time meter operating modes
  - Counting while INP B is inactive (GAtE.Lo)
  - Counting while INP B is active (GatE.hi)
  - Count Start/Stop with INP B edge (Inb.Inb)
  - Count Start with INP A edge, count Stop with INP B edge (InA.Inb)
- Counting ranges h; min; s; h.min.s
- Optional optocoupler output

2. Inputs

INP A
Start input (depending on the input mode chosen)
INP B
Start/Stop or gate input (depending on the input mode chosen)
SET/RESET input
Dynamic SET/RESET input. Linked in parallel to the red RESET key. Resets the counter to the predefined setting value.

3. Optocoupler output (optional)

On active counting the output alternates at a frequency of 1 Hz between active and inactive.

4. Programming routine

The programmable parameters of the device are described below, in the order in which they can be set. The device is fully programmed after one pass of the routine.

The first values stated correspond to the factory settings

4.1 Polarity of the inputs

| $InPoL$ |

| nPn |

| PnP |

4.2 Switching on the 30 Hz filter (INP A, INP B)

| $FiLtEr$ |

The filter provides input damping*

| oFF |

30 Hz filter off
Start/Stop inputs not damped

| on |

30 Hz filter on
Start/Stop inputs damped for use with mechanical switches.

4.3 Input mode

| $StArt$ |

| $GAtE.Lo$ |

Start/Stop via Inp B. counting while Inp B (Gate) not active or open

| $GAtE.hi$ |

Start/Stop via Inp B. counting while Inp B (Gate) active (High level with pnp; Low level with npn)

| $Inb.Inb$ |

Count Start/Stop via INP B (LOW-HIGH edge with pnp; HIGH-LOW edge with npn). Every active edge changes the counter status.

| $InA.Inb$ |

Count start via INP A, stop via INP B. (LOW-HIGH edge with pnp; HIGH-LOW edge with npn)

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4.4 Operating mode

`tMode`

`SEC`

Time unit: seconds (accuracy depending on position of the decimal point*)

`Min`

Time unit: minutes (accuracy depending on position of the decimal point*)

`hour`

Time unit: hours (accuracy depending on position of the decimal point*)

`h.MinS`

Time units: Hours:Minutes:Seconds (decimal point setting is ignored)

*0, 0.1, 0.01, 0.001 means: time measurement in 0, 0.1, 0.01, 0.001 time units

4.5 Decimal point

`dP`

The decimal point defines the resolution of the pro-grammed time unit.

`0`   0   1

`0.000`   0.0   1/10   (0,1)
0.00   1/100   (0,01)
0.000   1/1000   (0,001)

4.6 SET/RESET mode

`rESnd`

`MAn.EL`

manual reset via the red SET/RESET key and electrical reset via the SET/RESET input

`no rES`

no reset (red SET/RESET key and SET/RESET input locked)

`EL rES`

only electrical reset via the SET/RESET input

`MAnrE`

only manual reset via the red SET/RESET key

4.7 SET value

`SEtPt`

`0 0.0 0 0`

`999999`

The device will be set to the set point by pressing the red SET/RESET key or activating the SET/RESET input.
SET value 0 ...999 999 or 99.59.59 (number of decimal places depends on the decimal point option)

4.8 End of programming

`EndPro`

`no`

The programming routine is repeated once more. The values set until now can be checked and modified.

`YES`

The programming routine wil be left and all values set will be stored as new parameters.
Afterwards the device is ready for operation.

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5. Technical data

Supply voltage
DC power supply: 10 ... 30 V DC/max. 55 mA with inverse-polarity protection

Display: 6 digits, red 7 segment LED display, height 8 mm

Data retention: EEPROM

Polarity of the inputs:
Programmable, npn or pnp for all inputs

Input resistance:
appr. 5 kOhm

Count frequency:

Power supply DC:	24 V	12 V	10 ...30 V
Input level:	Standard		5V
typ. Low Level:	2,5 V	2,0 V	1,0 V
typ. High Level:	22,0 V	10 V	4,0 V
Fmax*:	**kHz**	**kHz**	**kHz**
CntDir	60	20	8
UpDown	25	15	8
Up.Up	25	15	8
Quad1	25	15	8
Quad2	25	15	8
Quad4	15	15	8

Count frequency:

Frequency measurement
Accuracy <0.1 %
Measuring principle:
$\leq$ 38 Hz: period measurement
> 38 Hz: gating time measurement
                gating time 26,3 ms

Power supply DC:	24 V	12 V	10 ...30 V
Input level:	Standard		5V
typ. Low Level:	2,5 V	2,0 V	1,0 V
typ. High Level:	22,0 V	10 V	4,0 V
Fmax*:	**kHz**	**kHz**	**kHz**
Tacho	60	20	8

* at maximum frequency square wave pulses 1:1

Counting ranges:

Seconds	0.001 s ... 999999 s
Minutes	0.001min ... 999999 min
Hours	0.001 h ... 999999 h
h.min.s	00 h 00 min 01 s
	... 99 h 59 min 59 s
Accuracy	<50 ppm

Minimum pulse length for the Reset input:
     5 ms

Input sensitivity:
Standard sensitivity: Low: $0 ... 0,2 \times U_B$ [V DC]
                     High: $0,6 \times UB ... 30$ V DC
5 V sensitivity: Low: 0 ... 2 V DC
                     High: 4 ... 30 V DC
Pulse shape: any*, Schmitt-Trigger inputs

Optocoupler output (optional):
NPN optocoupler with open collector and open
emitter; max. switching performance:
30 V DC/10 mA

Ambient temperature:
         -20 ... +65 °C at 10 ... 26 V DC
         -20 ... +55 °C at >26 ... 30 V DC

Storage temperature:
         -25 ... +70 °C

EMC:
Interference resistance:
         with shielded signal and
         control cables

Housing:
For front panel mounting:
         48 x 24 mm
         acc. to DIN 43700, RAL7021,
         dark grey

Weight: appr. 50 g

Protection: IP65 (front)

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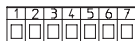soft wet (water !) cloth.

6. Terminal assignment

without optocoupler
1   10 ... 30 V DC
2   0 V GND
3   INP A
4   INP B
5   SET/RESET

with optocoupler
1   10 ... 30 V DC
2   0 V GND
3   INP A
4   INP B
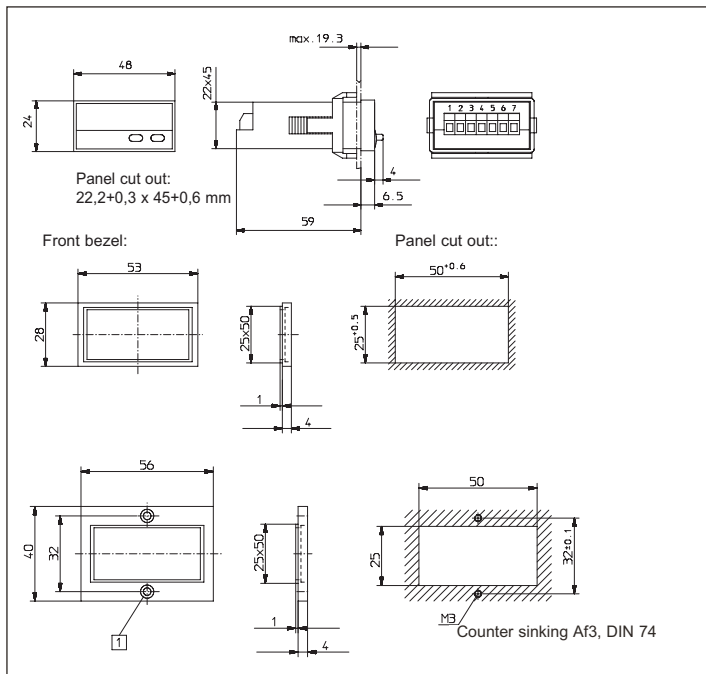5   SET/RESET
6   Emitter
7   Collector

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7. Delivery includes:

1 Digital display

1 Panel mounting clip

1 Bezel for screw mounting,
  panel cut out 50 x 25 mm

1 Bezel for clip mounting,
  panel cut out 50 x 25 mm

1 Seal

1 Multilingual operating instructions

8. Ordering code:

KCT-6S-C   No output
KCT-6ST-C   Optocoupler output

9. Dimensions:

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Panel cut out:
22,2+0,3 x 45+0,6 mm

Front bezel:

Panel cut out::

Counter sinking Af3, DIN 74

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Explosion Protection

- Intrinsic Safety Barriers
- Signal Conditioners
- FieldConnex® Fieldbus
- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
- Industrial HMI
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity

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