Operating instructions
Digital display with analogue inputs

CODIX 529

Ordering code: 6.529.012.300

1. Description

- 5digit digital display with analogue inputs
- LED-Display with 8 mm high characters and very high luminosity
- Display range -19999..99999 with leading zero blanking
- Programming of functions and operating parameters via the setting keys. During programming the display guides the user with text prompts.
- Programmable features:
  Range
  Max. value display yes/no
  Max. value reset yes/no
  Min. value display yes/no
  Min. value reset yes/no
  Decimal point
  Min. input signal
  Displayed value at min. input signal
  Max. input signal
  Displayed value at max. input signal

2. Inputs

LATCH (Connect 4)
Static input to freeze the displayed value. If this input (pnp) is supplied with 4 ... 30 V DC the actual value is frozen until the input is released or the signal level gets below 2 V DC. The calculating of max. and min. value is not affected.

CURRENT INPUT (Connect 5)

Analogue current input with reverse connection protection and current limitation to max. 50 mA. Connect the signal line with the analogue **+** signal with this input.

CAUTION: To prevent interfering signals caused by the supply voltage, this input is isolated from the supply voltage. Connect the signal line with the **-** Signal to the analogue reference input.

ANLOGUE REFERENCE INPUT
(Connect 6)

If no isolation between measuring circuit and supply voltage is necessary, connect pin 2 or 3 to this input

VOLTAGE INPUT
(Connect 7)

Analogue voltage input. Connect the signal line with the analogue **+** signal with this input. In case of reverse connection, the display shows „Err4“.

CAUTION: To prevent interfering signals caused by the supply voltage, this input is isolated from the supply voltage. Connect the signal line with the **-** Signal to analogue reference input.

3. Setting of the parameters

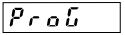
3.1 Selecting the displayed value

By pressing the right key, the display can be switched between the current, min., or max. value.

Pressing the right key once the current function („Act“, „Min“ or „Max“) is displayed for 2 seconds. If within this period the right key is pressed again, the current function is changed. The display shows the new current function for two seconds. Afterwards the corresponding value is displayed. If „Min“ or „Max“ is the current function, the value can be resetted by pressing the left key. If neither storing of min. nor max. value is activated in set up, both keys are out of function.

3. 2 Setting the operating parameters

a. Hold down both keys on front panel and switch on the supply voltage.
b. The display shows
c. After releasing the keys the display alternates between menu title and corresponding menu item at a frequency of 0.5 Hz. After any key is pressed, only the menu item is displayed.

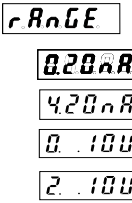


d. Pressing the right key, the menu item will be switched to next value.
e. Hold down the left key and press the right key to switch to the next menu title.
f. After programming the last menu item, the programming routine will be left and the new values will be stored by switching the menu item to „YES“. If you chose „NO“, the programming routine will be passed through once again.

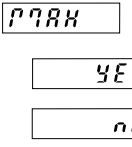
4. Programming routine

Programmable parameters are shown in succession. After one pass, the device is fully programmed.
In each case the first shown item is the factory preset.

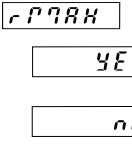
4.1 Range of input signal



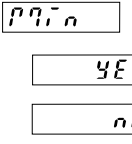
4.2 Max. value display



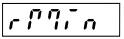
4.3 Max. value reset

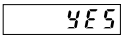


4.4 Min. value display

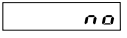


4.5 Min. value reset





Min. value can be reset by pressing left button. (Current value becomes new min. value)



Min. value can't be reset.

4.6 Decimal point

The decimal point indicates the number of decimal places.

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

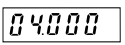
0.000 three decimal places
0.0000 four decimal places

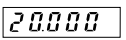
4.7 Min. input signal (only if input signal range is 4..20 mA or 2..10 V)

This menu title allows a limitation of the display range (have a look at 4.9 and 9.4)

Depending on chosen input range a) or b) is selected.

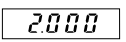
a)

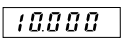




If the input signal level at input range 4..20 mA becomes below this value, the display shows „lo".

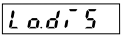
b)

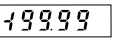


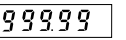


If the input signal level at input range 2..10 V becomes below this value, the display shows „lo".

4.8 Displayed value at min. input signal



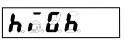




A corresponding display value between -19999 and 99999 can be assigned to the lowest input signal. The decimal point's position is considered.

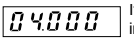
4.9 Max. input signal (only if input signal range is 4..20 mA or 2..10 V)

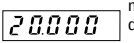
This menu title allows a limitation of the display range (have a look at 4.7 and 9.4)



Depending on chosen input range a) or b) is selected.

a)



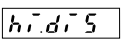


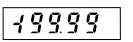
If the input signal level at input range 4..20 mA becomes above this value, the display shows „high".

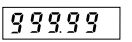
b)

If the input signal level at input range 2..10 V becomes above this value, the display shows „high".

4.10 Displayed value at max. input signal







A corresponding display value between -19999 and 99999 can be assigned to the highest input signal. The decimal point's position is considered.

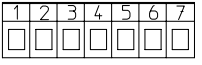
4.11 End of programming

EndPro

no — Programming routine will be passed through once again. All parameters can be checked.

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

5. Connections



1 10-30 VDC
2 0 V (GND)
3 0 V LATCH
4 LATCH
5 CURRENT INPUT
6 ANLOGUE REFERENCE INPUT
7 VOLTAGE INPUT

6. Technical data

Display:
5digit LED-Display, 8 mm high characters

Range of input signals

0..10 VDC

2..10 VDC

0..20 mA

4..20 mA

Resolution: 14 bits

Accuracy: 0.03% ± 1 digit

Linearity:

< 0.01% ± 1 digit at an ambient temperature of 20 °C

Measuring frequency: 2 s^{-1}

Temperature drift: ± 2 digits acc. to full range

Current measuring:
Input resistance: appr. 100 Ω at 5 mA
appr. 70 Ω at 20 mA
Voltage drop: max. 1.5 VDC
Current limitation: 50 mA

Voltage measurement:
Input resistance: appr. 1 MΩ
Max. input signal level: 30 VDC

Elimination of power line hum:
digital filter at 50 Hz

Supply voltage:
10...30 VDC

Max. current consumption:
50 mA

Ambient temperature: -10 °C...+50 °C

Storage temperature: -25 °C...+70 °C

Data retention:
via EEPROM 1 Mio.memory cycles or 10 years

Weight: appr. 50 g

Protection: IP 65 (front)

EMC:
EN 50081-2; EN 55011 class B;
EN 50082-2
max. drift ± 12 digits

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

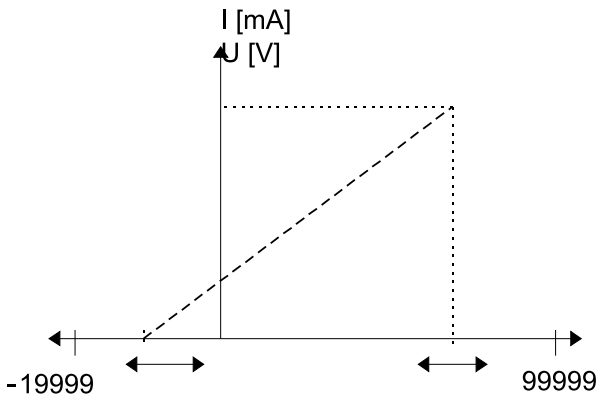
7. Delivery includes:

- Digital display with analogue inputs
- Panel mounting clip
- Bezel for screw mount, panel cut-out 50x25 mm
- Bezel for clip mount, panel cut-out 50x25 mm
- Sealing
- Tack dry symbols

8. Examples:

8.1 Temperature measurement

A temperature sensor with linear characteristic (non-linear sensors, e.g. thermocouples have to be linearised) supplys 0 V at -10 °C and 10 V at 80 °C. 0..10 V is chosen as input range.
Assign -10 as „displayed value at min. input signal“ to the lowest input level (0 V) and 80 as „displayed value at max. input signal“ (10V). The device is now tuned to the sensor, measurement values and their corresponding display values in between are calculated.



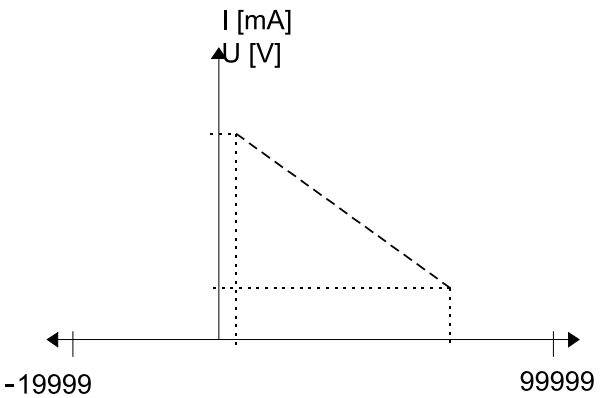
Displayed value can be freely adjusted to the input value inside the display range.

8.2 Level measurement

A level sensor with linear characteristic (non-linear sensors haveto be linearised) supplys 19 mA at full tank and 5 mA at empty tank. If the tank is filled up, 10 m^3 should be displayed and if the tank is empty 0 m^3 should be displayed.
4..20 mA is chosen as input range.
Assign 0 as „displayed value at min. input signal“ to the lowest input level (5 mA) and 10 as „displayed value at max. input signal“ (19 mA). The device is now tuned to the sensor, measurement values and their corresponding display values in between are calculated.

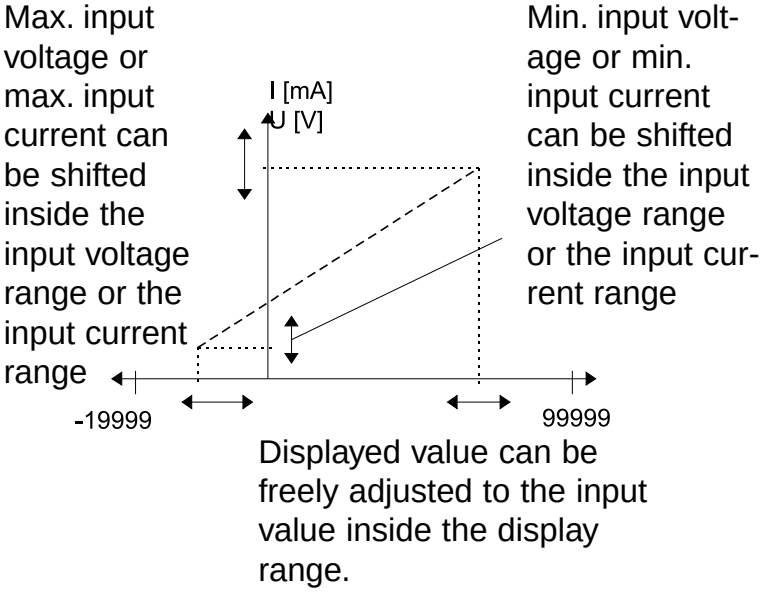
8.3 Drawn quantity

Instead of the level, the drawn quantity should be displayed.
Again 4..20 mA is chosen as input range.
Assign 10 as „displayed value at min. input signal“ to the lowest input level (5 mA) and 0 as „displayed value at max. input signal“ (19 mA).



8.4 Level measurement with limitated display range

A third example is level measurement with limited display range, that means a tank with 10 m^3 have to be filled up at best to 8 m^3 and its the level should not decrease below 1 m^3. At values > 8 m^3 the display shows „hi“ and at values < 1 m^3 the display shows „lo“.
4..20 mA is chosen as input range.
Assign 0 as „displayed value at min. input signal“ to the lowest input level and 10 as „displayed value at max. input signal“to the highest input level.
Additionally at menu title „min. input signal“ the value which corresponds to the 1 m^3 level, e.g. 5.6 mA is programmed. Do the same with the value which corresponds to the 8 m^3 level, e.g. 16.8 mA.
At input levels > 16.8 mA „hi“ will be displayed and at input levels < 5.6 mA „lo“.



Notice de mise en service de l'afficheur digital à entrées ana-logiques

CODIX 529

Codification de commande
6.529.012.300

1. Description

- Affichage digital à 5 chiffres avec entrées analogiques
- Affichage par LED hauteur 8 mm à haute luminosité pour une lecture aisée.
- Plage d'affichage de -19999 à 99 999 avec suppression des zéros non significatifs
- Programmation des paramètres de fonctionnement à l'aide des deux boutons-poussoirs. L'affichage indique en abrégé les différents paramètres.
- Peuvent être programmés :
  La plage de mesure
  L'affichage de la valeur maximum oui/non
  La redéfinition de la valeur maximum oui/non
  L'affichage de la valeur minimum oui/non
  La redéfinition de la valeur minimum oui/non
  Le point décimal
  Le signal d'entrée minimum
  La valeur à afficher dans le cas du signal d'entrée le plus petit
  Le signal d'entrée maximum
  La valeur à afficher dans le cas du signal d'entrée le plus grand

2. Entrées

LATCH (Raccordement 4)

Entrée statique de blocage d'affichage. Lors de son activation (pnp) par un signal de niveau 10 à 30 V DC ; la valeur de mesure instantanée est figée jusqu'à ce que cette entrée soit libérée ou que le niveau du signal descende en-dessous de 2 V DC. La détermination des valeurs minimum et maximum continue en arrière-plan.

ENTREE EN COURANT
(Raccordement 5)
Entrée analogique de mesure de courant avec protection contre l'inversion de polarité et limitation du courant à 50 mA maximum. Connecter ici le conducteur du signal analogique +.
Attention : Cette entrée est isolée électriquement afin d'éviter les signaux parasites véhiculés par la tension d'alimentation. Il faut donc relier, pour la mesure, le conducteur du signal le plus négatif à l'entrée de masse analogique de référence.

SIGNAL DE MESURE 0 V
(Raccordement 6)
entrée de référence analogique
Dans le cas où il n'y a pas lieu d'avoir une isolation galvanique entre la boucle de mesure et la tension d'alimentation, effectuer un pont entre la broche 2 ou 3 et cette entrée.

ENTREE EN TENSION
(Raccordement 7)
Entrée analogique de mesure de tension. Connecter ici le conducteur du signal analogique +. Dans le cas d'une erreur de branchement, le message " Err4 " est affiché.
Attention: Cette entrée est isolée électriquement afin d'éviter les signaux parasites véhiculés par la tension d'alimentation. Il faut donc relier, pour la mesure, le conducteur du signal le plus négatif à l'entrée de masse analogique de référence.