DIEGON

Manual DSE-S7

- **8 Digit SSI-display in DIN-housing 144 X 72 mm**
- **Supply voltage 10 – 35V DC**
- **2 Programmable outputs**
- **In- and outputs optically isolated**
- **Programmable multiplicator**

Table of content

1 INTRODUCTION

1.1 General

The microprocessor controlled SSI-display DSE-S7 is a display for sensors, singleturn and multiturn, with a SSI encoder input.

By programming several parameters the function of the unit can be determined and stored in an EEPROM.
By programming 4 presetvalues it is possible to generate different output-functions. These presetvalues are also stored in an EEPROM.

It is possible to adjust the displayed value to every desired read-out using parameters like the multiplicator and the position of the decimal point.

1.2 Important information

- ✓ The DSE-S7 is a high-tech electronic product. To ensure safety and a correct functioning of the product it is important that only qualified specialists will install and operate the DSE-S7.
- ✓ If through a failure or fault the DSE-S7 an endangering of persons or damage to plant is possible, this must be prevented using additional safety measures. These must remain operational in all possible modes of the DSE-S7.
- ✓ Necessary repairs to the DSE-S7 are only to be carried out by the manufacturer.

1.3 EMC Measures

To ensure the best possible electromagnetic compatibility, it is recommended to pay attention to shielding and grounding the DSE-S7:

- ✓ Shielding on both sides and with the largest possible contact area.
- ✓ Keep wiring as short as possible.
- ✓ Earth-connections should be short and with the highest possible wiring-diameter.
- ✓ Signal-connections and supply-connections must be separated.

Figure 1 and 2 show the earthing when using 1 or 2 supplies. Figure 3 shows how to use the earthing strip.

Figure 1. Single supply voltage

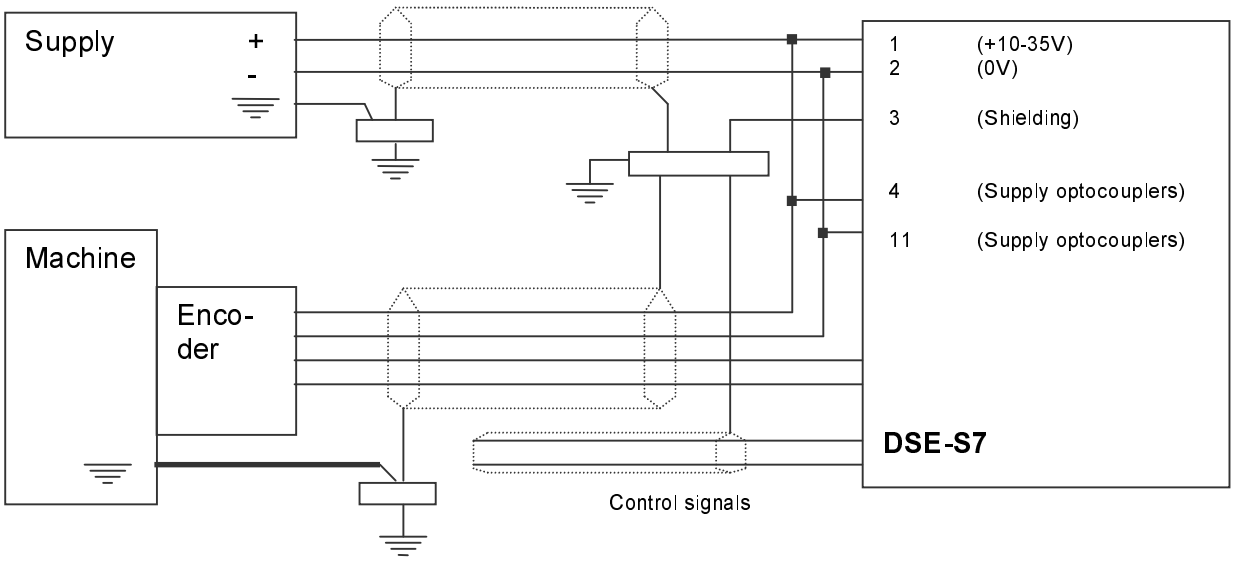


Figure 2. Double supply voltage

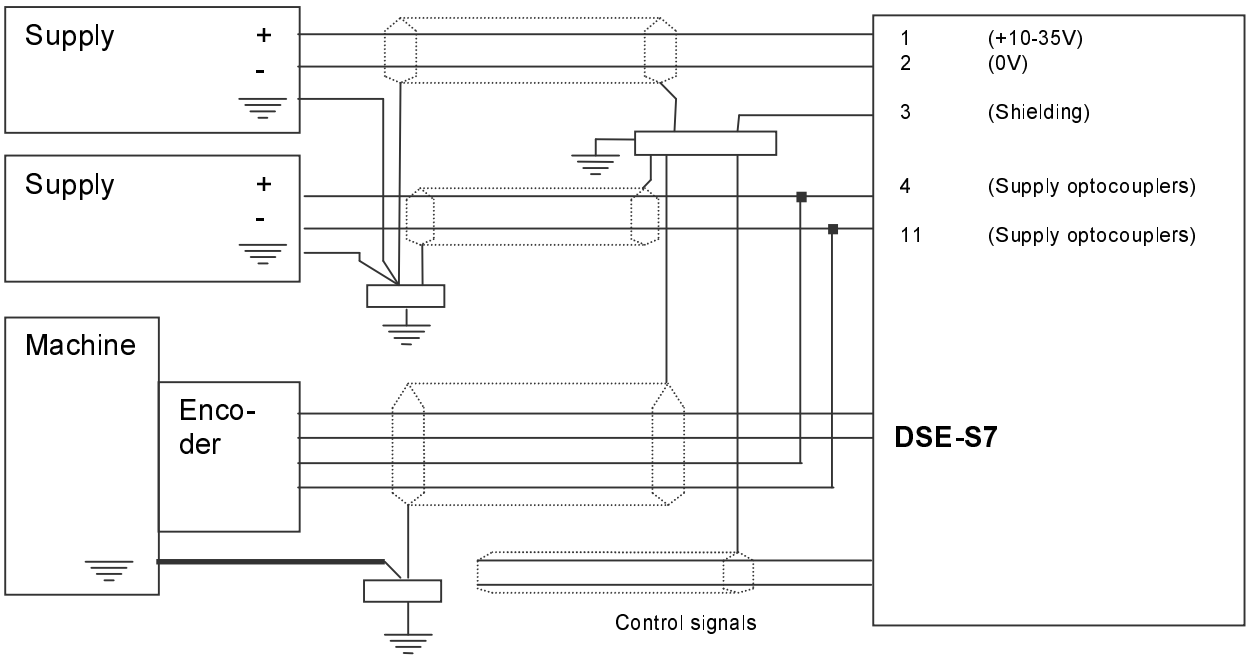
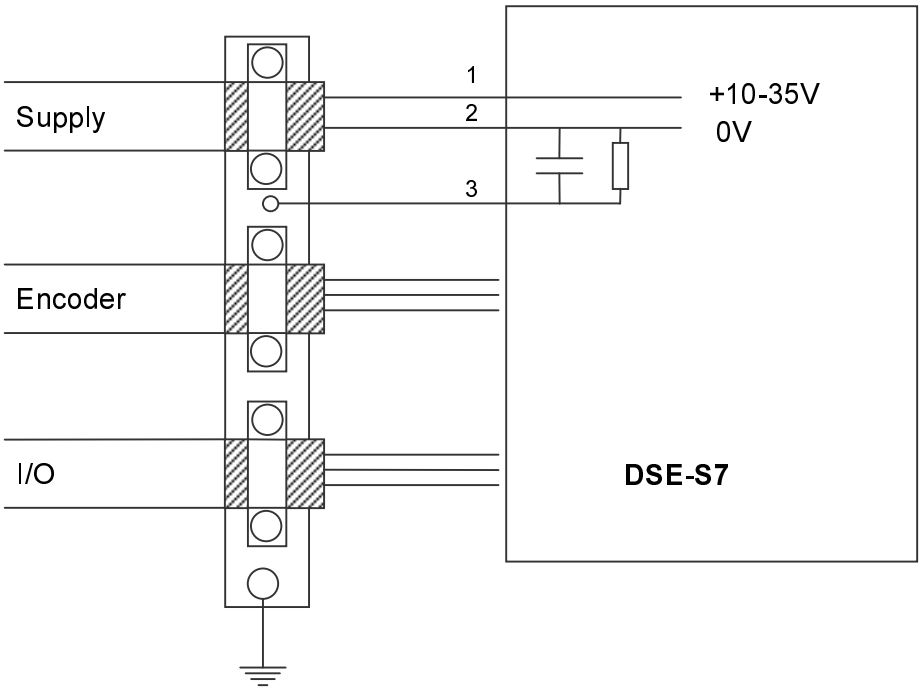


Figure 3. Shielding to earthing strip



2 OPERATION

2.1 Key functions

[P] Key
- activate the programming mode (in combination with other keys)
- terminate the programming mode
- leave edit mode for presets or parameters
- LED burns when edit mode for presets or parameters is active

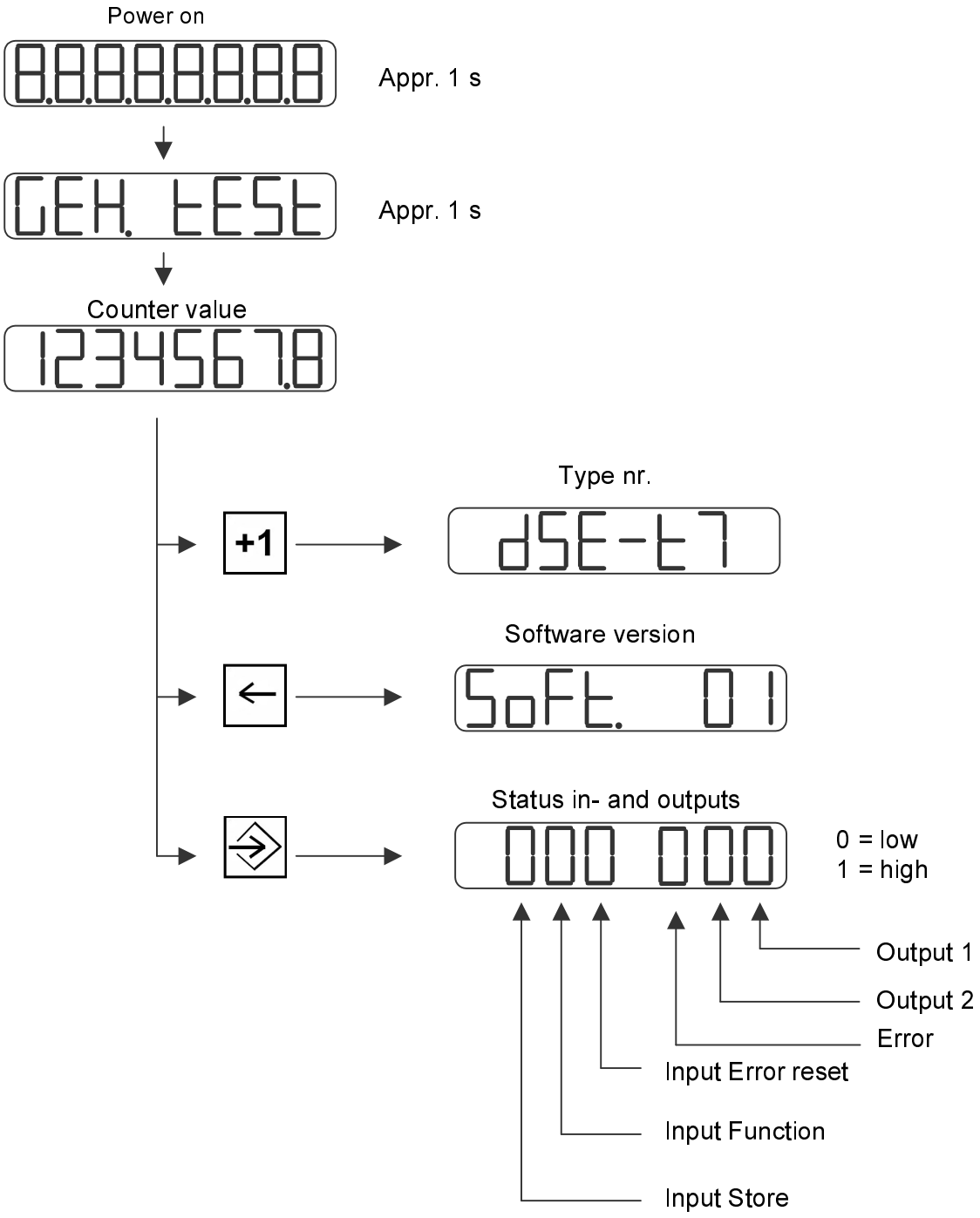
[+1] Key
- view type number
- increase preset/parameter number
- increase value

[Cursor] Key
- view software version
- activate edit mode
- move one digit to the left in edit mode

[Enter] Key
- store changes in programming
- view status in- and outputs
- increase preset/parameter number
- clear input (edit mode)

2.2 Display functions

2.2.1 Status functions



2.2.2 Error messages

SSI-communication error

Preset 2 <= preset 1

Hysteresis too big or preset 2 too small
(preset 2 – hysteresis <= preset 1)

Preset 4 <= preset 3

Hysteresis too big or preset 4 too small
(preset 4 – hysteresis <= preset 3)

RAM Error (replace DSE-S7)

EEPROM Error (replace DSE-S7)

No access to parameters
(see PAR-08)

No access to presets
(see PAR-08)

PAR-07 too big

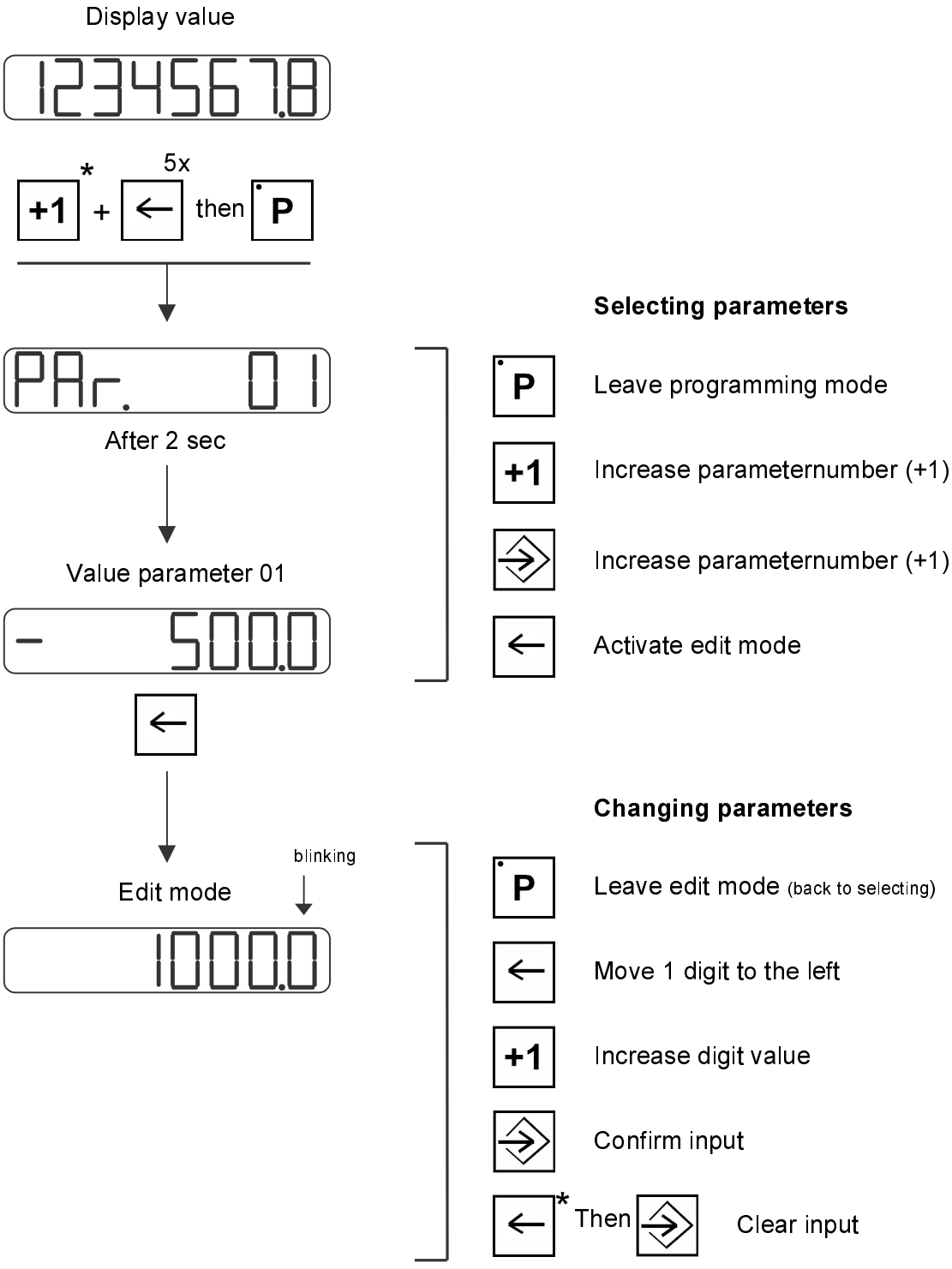
Singleturn part PAR-04 > 13 BIT

Multiturn part PAR-04 > 12 BIT

Single/Multiturn part PAR-04 = 0

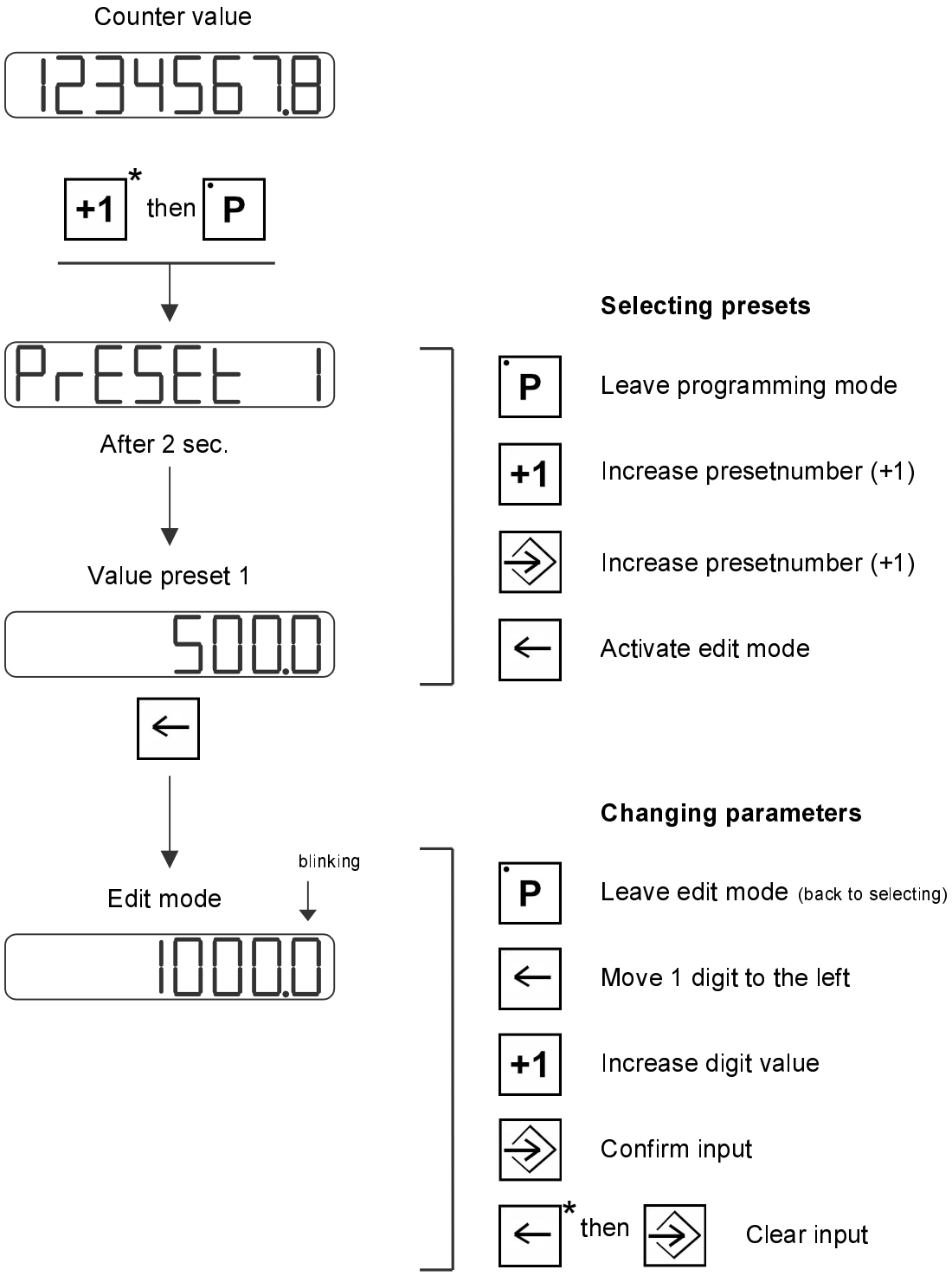
3 PROGRAMMING

3.1 Input parameters



* keep pressed

3.2 Input presets



* keep pressed

4 FUNCTIONS

4.1 SSI-protocol

Using this protocol the data is being transferred in Gray or Binary code. Using PAR-02 it is possible to choose between 25 bit or 13 bit. The direction can also be changed using PAR-02.

4.2 Number of bits

The encoder used determines the number of bits that can be used. In PAR-04 the number of bits that are actually used can be set.

PAR-04: XX.YY

Where XX = number of bits multiturn part
And YY = number of bits singleturn part

4.3 Multiplicator

If the actual counted steps are not equal to the desired display value, the display value can be changed using the multiplicator (PAR 03).

For example:
600 steps = 50 mm displacement
resolution = 0.1 mm

multiplicator = 500 / 600 = **0,8333**

4.4 Adjustment of the absolute value

To make an electrical adjustment of the absolute value you can choose between two possibilities. You can adjust through PAR-07 or adjust through “ZERO-SET”. Using this option means you will not have to mechanically rotate the axis of the encoder.

4.4.1 Adjustment through PAR-07
This is possible only if PAR-12 = 1.
The value stored in PAR-07 will be used to adjust the absolute value of the encoder. The value will be added to the encoder-value and corrected for the maximum possible display-value.

4.4.2 Adjustment through “ZERO-SET”
The “ZERO-SET” function is available if PAR-12 = 2.
Using this function the absolute value of the encoder can be changed to 0. To activate the adjustment a rising or falling flank at the Function input is required.

4.5 Zero-shift

Using PAR-01 it is possible to add a stored value to the display-value. This off-set or zero-shift can be positive or negative.

4.6 Function input

This input can be programmed with different functions using PAR-08.

Function 1
“ZERO-SET” to be used for the adjustment of the absolute value. Programmaing a 1 or a 2 determines whether a rising or falling flank should be used.

Function 2
Signal “lock programming mode” for parameters and / or presets.
The programming mode can only be accessed when the input is high.
PAR-08 = 3 or 4.

4.7 SSI-error

Using PAR-13 you can check the SSI-communication. With PAR-13 set to 1 the SSI-data will be displayed, regardless of the validity.
If set to 0, the data will be checked. If an unvalid value is detected, the SSI-data will be read once more. In case this second reading is unvalid as well, ERROR-01 will be displayed.

4.8 Store function

Depending on the programming of PAR-05 the displayed value is not changing for as long as the store input is active. The store input has no function when PAR-04 = 1xx.

5 OUTPUTS

5.1 Output programmed as cam

Output 1 : Preset 1 and 2 (see table 1)
Output 2 : Preset 3 and 4 (see table 2)

Table 1

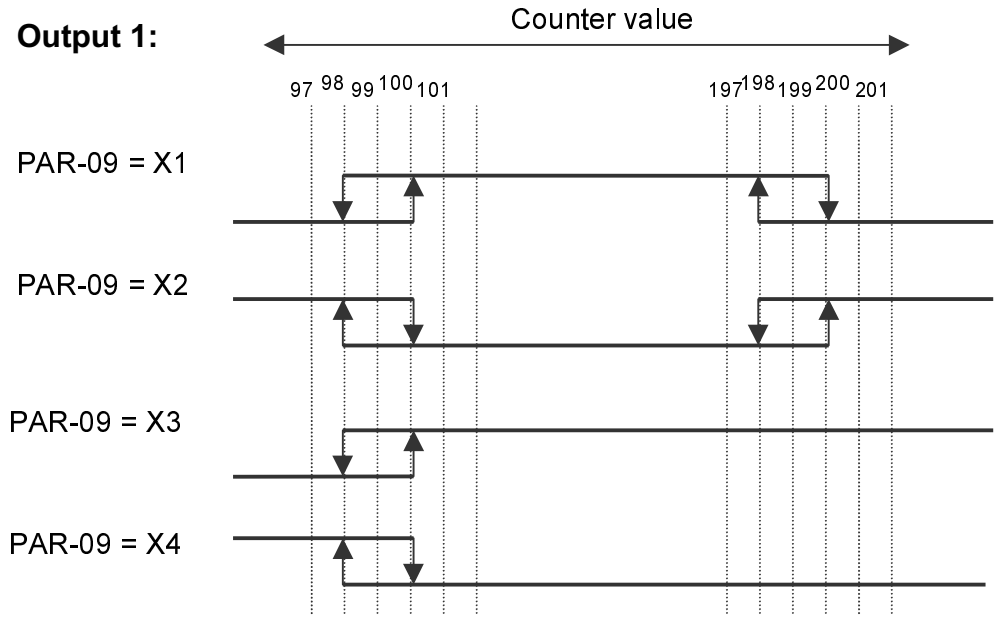
PAR-09	OUTPUT 1 HIGH IN CASE:
X1	counter >= preset 1 and < preset 2
X2	counter < preset 1 and >= preset 2
X3	counter >= preset 1
X4	counter < preset 1

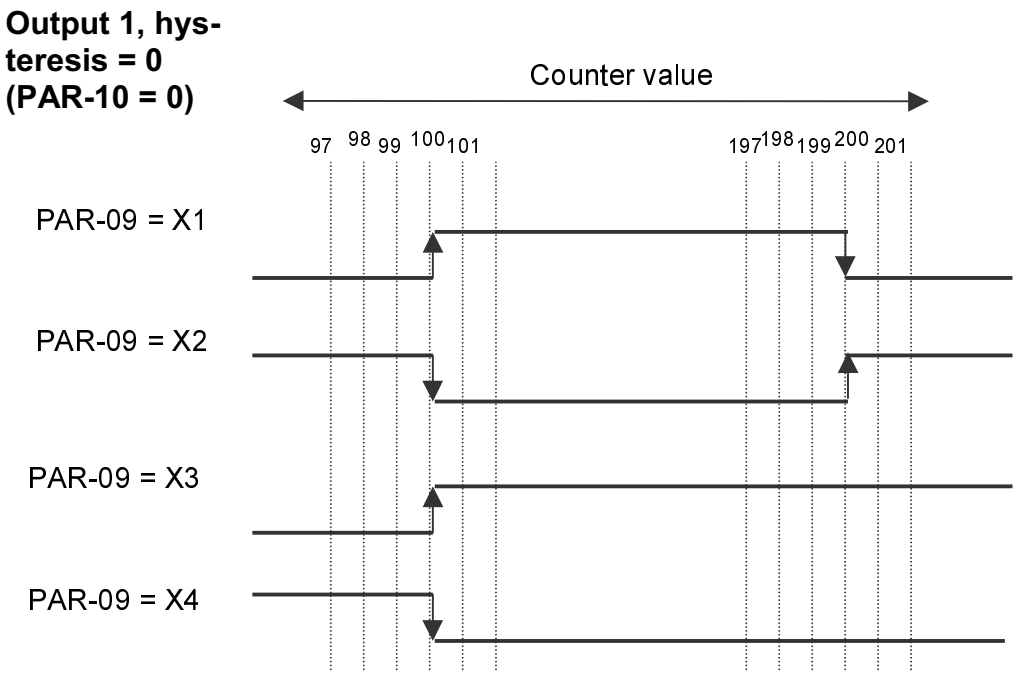
Table 2

PAR-09	OUTPUT 2 HIGH IN CASE:
1x	counter >= preset 3 and < preset 4
2x	counter < preset 3 and >= preset 4
3x	counter >= preset 3
4x	counter < preset 3

5.1.1 Example

Preset 1 = 100 (start)
Preset 2 = 200 (end)
PAR-10 = 2 (hysteresis)





5.2 Output programmed as pulse

Output 1 : Preset 1 (see table 3)
Output 2 : Preset 3 (see table 4)

Table 3

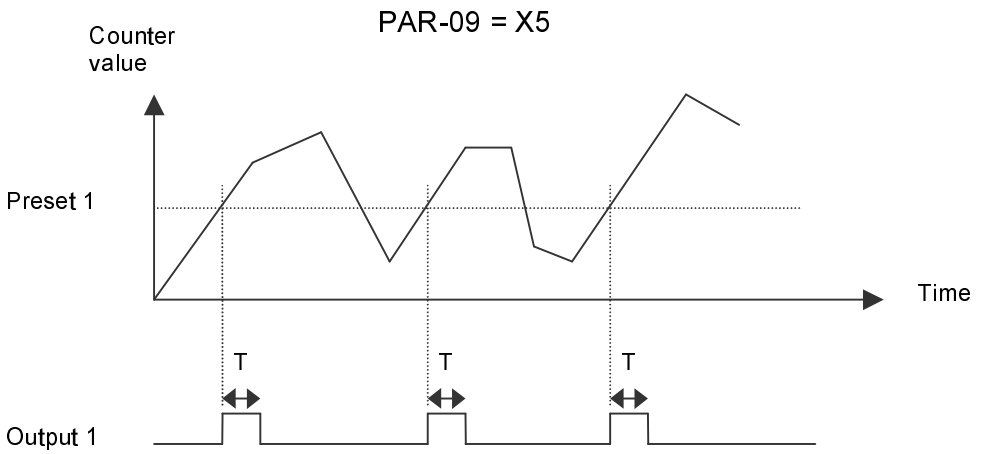
PAR-09	OUTPUT 1 WILL GENERATE A PULS IN CASE:
X5	counter becomes >= preset 1
X6	counter becomes <= preset 1
X7	counter becomes >= preset 1 or counter becomes <= preset 1

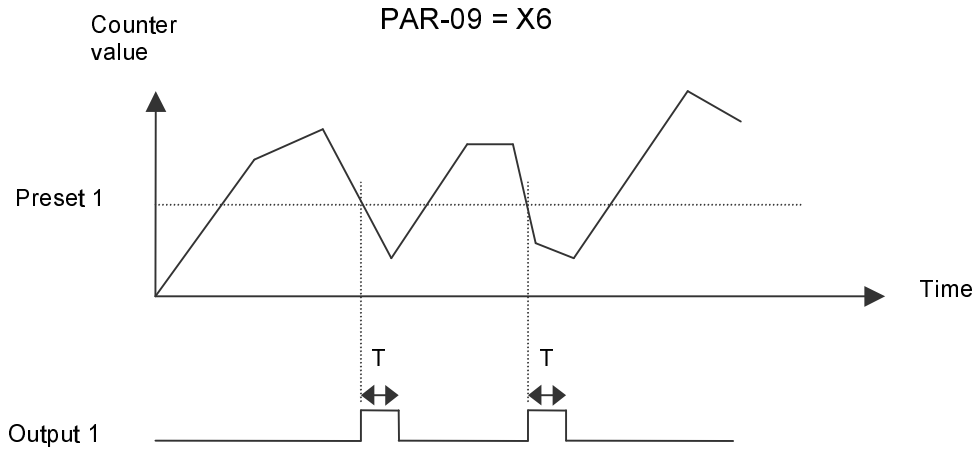
Table 4

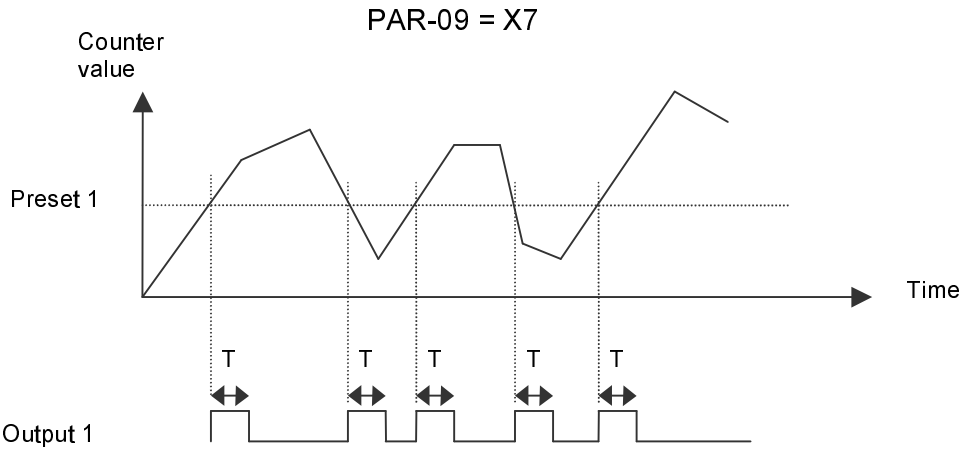
PAR-09	OUTPUT 2 WILL GENERATE A PULS IN CASE:
5X	counter becomes >= preset 3
6X	counter becomes <= preset 3
7X	counter becomes >= preset 3 or counter becomes <= preset 3

5.2.1 Example

Only after the duration of the pulse a new pulse can be triggered. The duration is programmed in PAR-11.







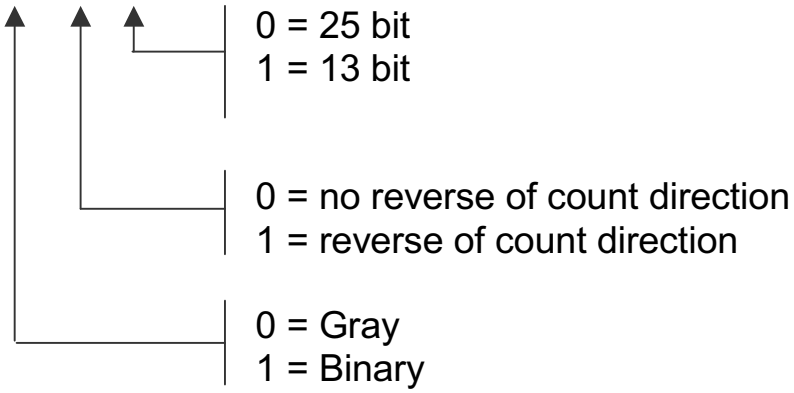
APPENDIX A: PARAMETERS

PAR-01 ZERO-SHIFT

XXXXXXXX -9999999 … +99999999

PAR-02 SSI-DETECTION AND DIRECTION

XXX X X X

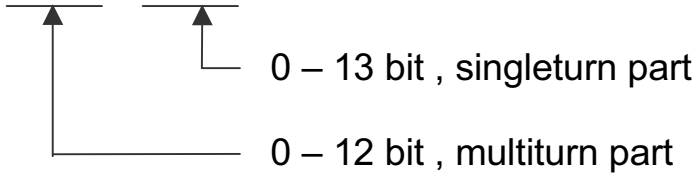


PAR-03 MULTIPLICATOR

XXXXXXX 0.000001 – 9.999999
(input 0 = x1)

PAR-04 NUMBER OF BITS

XXXX X X . X X



PAR-05 STORE

X 0 = no function
1 = high active
2 = low active

APPENDIX A: PARAMETERS

PAR-06 DECIMAL POINT

X

0 = no decimal point
1 = X.X
2 = X.XX
3 = X.XXX
4 = X.XXXX
5 = X.XXXXX
6 = X.XXXXXX

PAR-07 ADJUSTMENT VALUE

XXXXXXXX -9999999….+99999999

PAR-08 FUNCTION INPUT

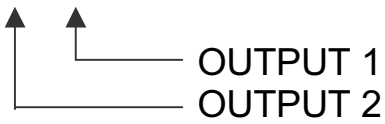
X

0 = no function
1 = ZERO SET, rising edge
2 = ZERO-SET, falling edge
3 = lock programming mode parameters if function-input = low
4 = lock programming mode parameters and presets if function-input = low

PAR-09 OUTPUT 1 AND 2

XX

X X



0 = no function
1 = cam 
2 = cam 
3 = counter value >= preset
4 = counter value < preset
5 = pulse if counter value becomes >= preset
6 = pulse if counter value becomes <= preset
7 = both the functions 5 and 6

APPENDIX A: PARAMETERS

PAR-10 HYSTERESIS OUTPUT 1 AND 2 (IF PAR-09 = 1..4)

XXXXXXX 0 – 9999999
(input 0 = no hysteresis)

PAR-11 DURATION PULSE OUTPUT 1 AND 2 (IF PAR-09 = 5..7)

XXX 0.01 – 1.99 seconds
(input in 0,01 second)

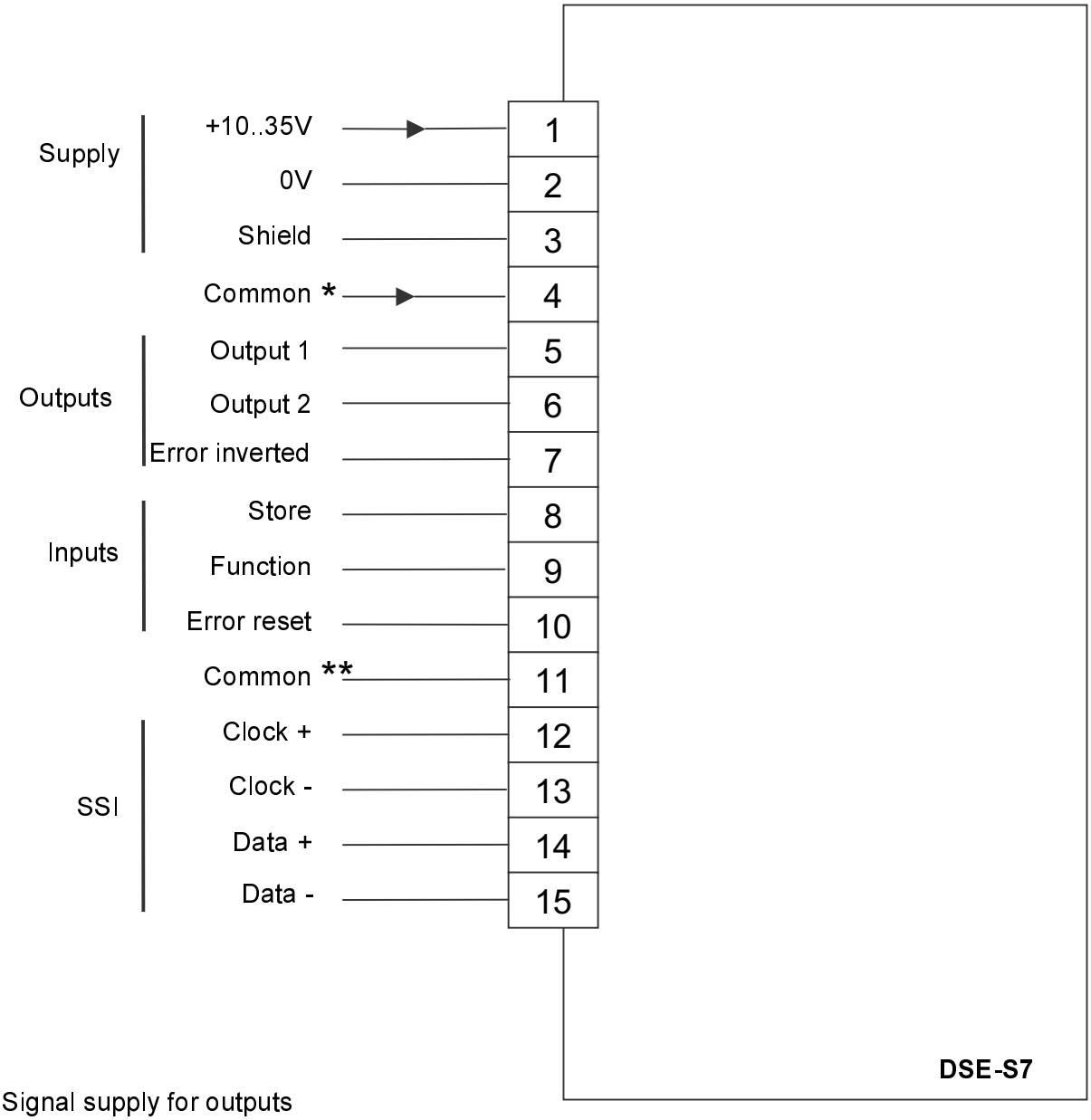
PAR-12 ADJUSTMENT TYPE

X 0 = no function
1 = through PAR-07
2 = ZERO-SET

PAR-13 SSI-ERROR DETECTION

X 0 = active
1 = inactive

APPENDIX B: CONNECTIONS



* Signal supply for outputs

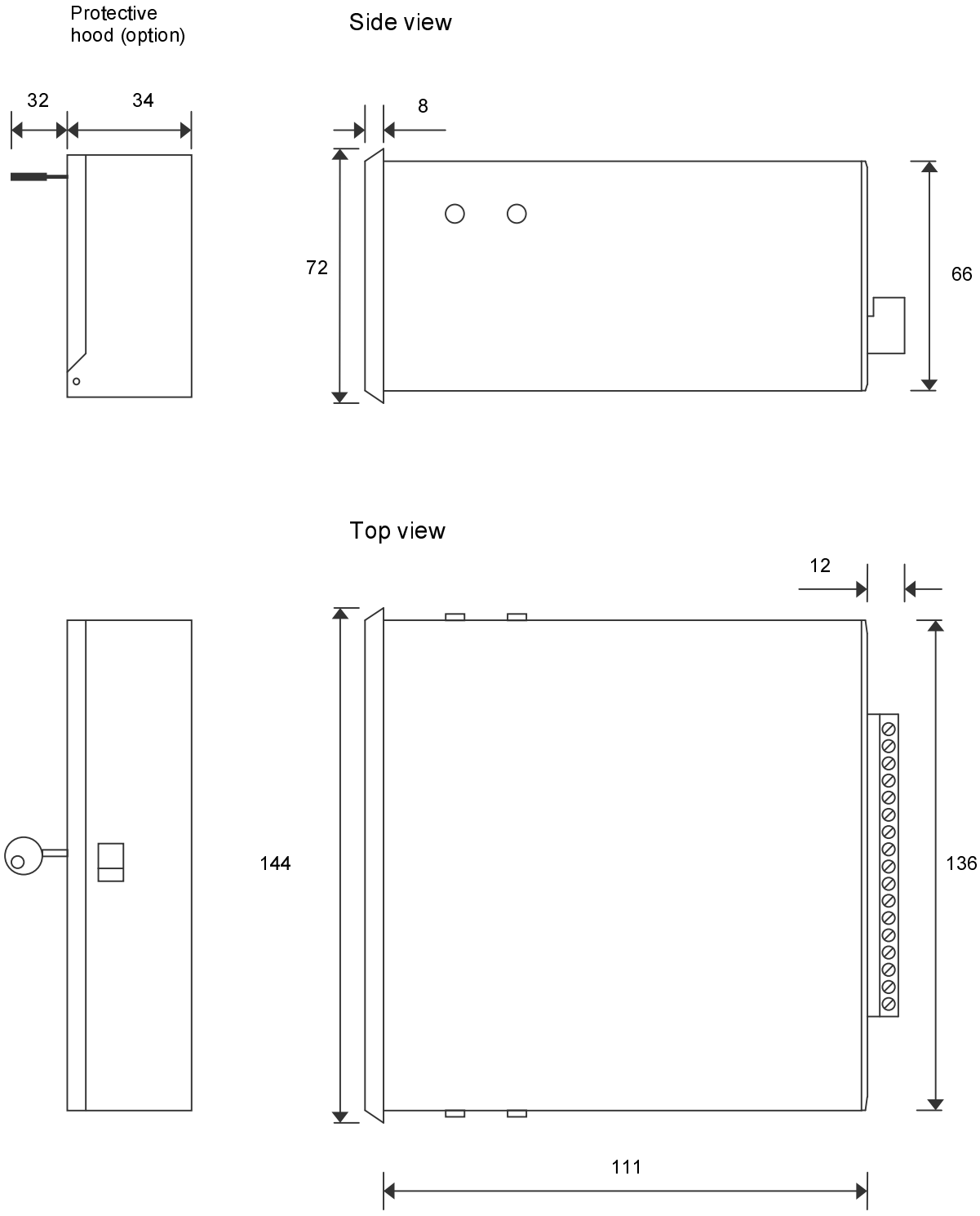
** 0V for inputs

APPENDIX C: TECHNICAL DATA

- Supply voltage	10…35V DC (power failure protection not active)
current consumption	< 150mA (without load)
- SSI	
data input	opto-coupler acc. RS422
clock output	driver acc. RS422
clock frequency	125 kHz
- Inputs	optically isolated low: 0…+5V high: +10V…+35V
input resistance	appr. 1,8K Ohm at 24V
- Outputs	optically isolated, NPN transistor, open emitter with PTC
Imax	50mA
Supply voltage	35V max.
Output voltage	supply voltage -3.50V (at 50mA) -2V (at 20mA)
- Count range	99999999…-9999999
- Cycle time	1,66 ms
- Data memeory	EEPROM
- Display	8 digit 7-segment LED
height	14 mm
- Temperature range	0…50°C
- Weight	< 0.5 kg
- Protection	front IP50, using the protection hood IP54 rear IP20

APPENDIX D: SIZES

Sizes in mm.



Distributor: