

<b><i>Instruction Manual</i></b>	<b>ARS - Rate Meter + Pulse Counter</b>
<b>Model AZ260</b>	

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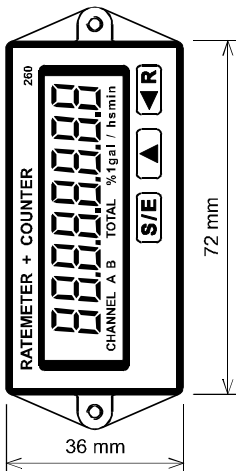
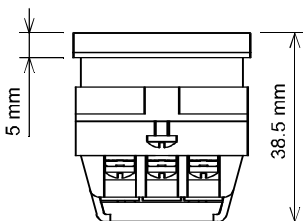
### **1. Safety Instructions**

This instrument has been manufactured in accordance with the applicable state of the art and meets all safety regulations as shipped from the factory. Installation and startup must be performed by qualified electricians only! Operate instrument only when properly installed!

If safe operation can no longer be ensured, disable the instrument and secure it against unauthorized operation. Prevent injury to people or damage to property due to failure or malfunction of the equipment through additional safety measures such as limit switches, protective equipment, etc. .

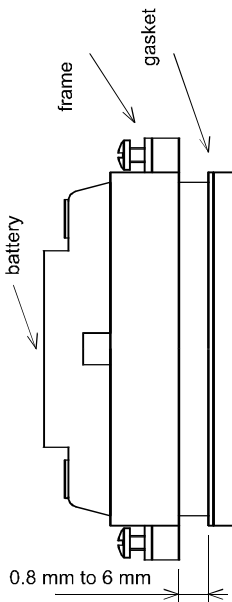
Read the Instruction Manual carefully before startup!

## 2. Product Identification - Dimensions



Model Design

260 - A



### **3. Function Description**

This instrument can be used as a rate meter **and** as a pulse counter.

The instrument has been pre-programmed in the factory and must be adapted to your process for both the rate meter function and pulse counting (see Section 5 – Programming).

The instrument is ready for operation when the programming input is not wired. You can switch between Rate meter and Pulse Counter displays using the **S/E** key during operation at any time.

The instrument has two counting inputs. Both inputs INA and INB ("Low" or "High" active) are designed for pulse sequences up to 30 Hz or up to 10 kHz and you can they program any.

**Note** that you have to program both channels at the same pulse sequence if the two inputs are working in parallel connection with a common pulse source.

The backlighting is activated and load on the internal battery is reduced by applying an external supply voltage of 24 VDC.

All stored data is lost when the battery is replaced. The message "260\_ xx" (xx for software version number) appears after the new battery is installed. The instrument is ready to operate after the **S/E** key is depressed, which activates the factory programming.

## Rate Meter

The rate meter operates by the principle of period length measurement with **ARS (Auto Range System)**.

You can adapt the display to your operation using the programming sequence:

1. Input the physical unit of the rate meter (time basis)
2. Select accuracy
3. Set sensor pulse constant,
4. Program a suitable scaling factor and
5. Program the pulse sequency.

**ARS** helps minimize display process-related fluctuations depending on the selected accuracy, rounds off the displayed value, and sets the decimal point automatically. Measurement starts with the active edge at the counter input A. After the measurement time (1 sec) has elapsed, the measurement is completed with the next active edge, and the value is displayed in CHANNEL A. If no active edge appears within the „time out“ period you have programmed, the rate meter is reset to zero. At frequencies > 1 Hz the average is calculated.

When the allowable count frequency is exceeded, the value zero appears in the display; if the possible display range (99999999) is exceeded, the display „E“ appears.

Display as delivered:



## Pulse Counter

The pulses entering at the input B are added and displayed in CHANNEL B. You can scale the display using an appropriate scaling factor. You can also set a fixed decimal point and program the pulse counter so that you can reset it either through the regular electrical reset on the back or through the red **R** key on the front.



After pressing the **S/E** key:

### **4. Installation – Battery replacement**

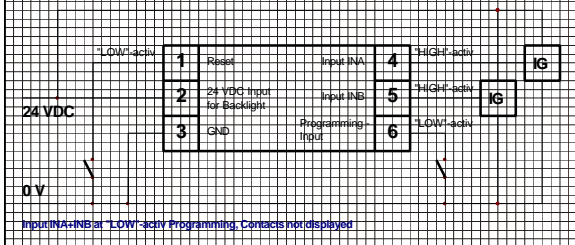
After unpacking the instrument, remove the light-colored frame from the back of the housing by simultaneously bending both long sides of the frame slightly apart to disengage them from the locking holes.

Then slide the housing through the cutout prepared in the front panel, attach the frame onto the back of the housing, slide it all the way against the back of the front panel, and carefully attach it with the two side screws to the front panel.

In this way, you can compensate for different front panel thicknesses. Class IP 65 front protection is achieved through the seal integrated in the housing.

See the wiring diagram below for the electric wiring.

## Modell 260



The battery is accessible from the back of the instrument. There is a vertical notch under the middle of the nameplate. Cut through the nameplate there. Then slide out the two-part battery cover to one side along the guide grooves, and replace the battery observing the correct polarity. The instrument should **not** be connected to 24 VDC at this time!

### **5. Programming**

The instrument can only be programmed by setting the programming input PROG to 0 V. Please note that this causes the pulse counter to be reset internally.

After having set the programming input PROG to 0 V, the following is displayed:



This display identifies the rate meter (Channel A); it cannot be changed.

By repeatedly pressing the **S/E** key, you can cycle through the individual menu items. The following figures correspond to the factory settings of the instrument:



Physical unit,  
Channel A



Accuracy,  
Channel A



Sensor pulse constant,  
Channel A



Scaling factor,  
Channel A



Time-out period, Channel A



Count frequency, Channel A



This display identifies the pulse counter (Channel B); it cannot be changed.



Count frequency, Channel B



Scaling factor, Channel B



Decimal point, Channel B



Reset-key enabled,  
Channel B

You can make changes within each menu point as follows:

1. Press the **<R** key:  
The parameter to be changed is activated, i.e., it begins to flash.
2. Press **^** repeatedly if necessary:  
Set the desired parameter.
3. Press **S/E**:  
The parameter just set is confirmed and displayed steadily.
4. Press **S/E** again:  
You reach the next menu item.

See the possible settings allowed in each menu from the following figures.

Flashing display elements are shown in a lighter color.

## Physical unit, Channel A – Rate Meter

Selecting the physical unit:



Physical unit: 1/min



Physical unit: 1/h



Physical unit: l/s



Physical unit: l/min



Physical unit: l/h



Physical unit: gal/s



Physical unit: gal/min



Physical unit: gal/h



Physical unit: 1/s

## Accuracy, Channel A – Rate Meter

Setting measurement accuracy. See also page 13.



Accuracy 1%



Accuracy 10%



Accuracy 0.1%

### Sensor Pulse Constant, Channel A – Rate Meter

You can set the pulse constant of the sensor in the range of 1 to 99999.

The sensor pulse constant provides the number of pulses per unit.

Example: Set a sensor constant of 500 pulses per revolution



Press  $\wedge$  9 times:



Press  $\wedge$  5 times:



Press  $\leftarrow$ R:



Press  $\leftarrow$ R 2 times:



Press S/E:



## Scaling factor, Channel A - Rate Meter

You may set the scaling factor (**SF**) in the range of 0.0001 to 99.9999 as explained for setting the pulse constant. The scaling factor is used when converting one physical unit to another (e.g., diameter to perimeter, liters to gallons).

## Time-out Period, Channel A - Rate Meter

You can set the desired timeout period (**time out**) after which the display is reset to zero if the operating frequency is so low (or zero) that the measuring time would be intolerably long.

The **timeout** period can be set in the range of 1s to 99s.

Example: Set timeout period to 10s



Press <R>:



Press ^ 5 times:



Press <R>:



Press ^:



Press S/E:



## Count Frequency, Channel A – Rate Meter



maximum frequency 10 kHz



maximum frequency 30 Hz

### Count Frequency, Channel B – Pulse Counter



maximum frequency 10 kHz



maximum frequency 30 Hz

### Scaling Factor, Channel B – Pulse Counter

You can set the **Scaling Factor** in the range of 0.0001 to 99.9999.

Set the scaling factor as described under Scaling Factor, Channel A.

### Decimal point, Channel B – Pulse Counter



## Reset Key enabled, Channel B – Pulse Counter



Reset key enabled



Reset key disabled

If you have not enabled the reset key, the string „TOTAL,, is displayed.

Having completed the programming, disconnect the programming input PROG from 0 V.

Please note that only the parameters confirmed with **S/E** are accepted.

## 6. Technical Data

### Displays

Special LC display with dimension line, 8 digits, 10 mm digit height, pre-decimal point zero suppressed.

Display Capacity:	Rate meter	99999999
	Automatic decimal point	
	Pulse counter	99999999
	Programmable decimal point	

### Accuracy

Period measurement accuracy:

Programmable to 0.1%, 1%, or 10% (corresponds to a minimum resolution of 4, 3, or 2 digits, respectively).

### Power Supply

internal lithium battery	3.6 V / 1.2 Ah
Average battery life	5 years

### LED – Display backlighting

The LED display backlighting must be operated with external voltage connected to 24 VDC and 0 V screw terminals.

External Voltage: 24 VDC max. residual ripple 5%  
absolute limits 19 to 30 VDC

### **Electromagnetic Compatibility (EMC)**

Interference emission EN 55011 Group 1 Class B  
Interference strength EN 50082-2

### **EN 61010-1 Measuring Insulation Voltage**

100 Veff, Contamination Class 2, Surge Category III

### **DIN VDE 0411 Protection Class**

Protection Class II

### **Electrical Connection**

Terminal screw connection, P Phillips screws, size 1  
max. lead section 2 x 1.5 mm<sup>2</sup>  
min. lead section 2 x 0.2 mm<sup>2</sup>

### **IEC 529 Protection Class**

IP 65 front

### **Temperature / Humidity range**

Operating temperature range - 10°C to + 50°C  
Storage temperature range - 20°C to + 70°C  
Temperature / Humidity 90% relative humidity @ 38°C

### **IEC 68-2-6 Vibration Strength**

Variable frequency range 10 to 500 Hz  
0.35 mm or 5 g amplitude  
10 Frequency cycles per axis

### **Dimensions**

Frontal dimensions 36 mm x 72 mm  
Total depth 38.5 mm

## Fastening

Front panel mount via frame	
Front panel thickness	0.8 mm to 6 mm
Front panel cutout DIN 43700	
	33 +0.6 mm x 68 + 0.6 mm

## Weight

approx. 95 g

## Housing Material / Combustibility

PC plastic

Combustibility V0 under UL Standard 94

## Inputs

### Input INA (Rate Meter) and Input INB (Pulse Counter)

Pulse shape	any
Programmed as "HIGH - SPEED" input	"High" active
Signal level	L <= 1 VDC      H >= 5 VDC
Max. voltage amplitude	± 30 VDC
Input resistance	approx. 39 kOhm
Max. frequency (pulse duty factor 1:1)	10 kHz
min. pulse time	50 µs
min. pulse pause	50 µs
Active edge	High/Low
Programmed as "SLOW – SPEED" input	"Low" - active
Signal level	L <= 0 VDC      H >= 5 VDC or open
Max. voltage amplitude	± 30 VDC
Input resistance	approx. 1 MOhm
Max. frequency (pulse duty factor 1:1)	30 Hz
min. pulse time	16 ms
min. pulse pause	16 ms
Active edge	Low/High

## **Reset Input R (Pulse Counter)**

Pulse shape		any
Signal level	L <= 0 VDC	H >= 5 VDC or open
Max. voltage amplitude		± 30 VDC
Input resistance		approx. 1 MOhm
Static response		„Low“ - active
min. pulse time		65 ms

## **Programming Input PROG**

Static response		„Low“ active
Input open		Operating mode
Input connected to „0 V“		Programming mode

## **7. Spare Parts**

Lithium battery SL-761/S

Order No.: 1110761100

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