

**Instruction Manual
ARS - Totaliser Model
260 / 260-EC-01**



Type 260-A



Type 260-EC-01

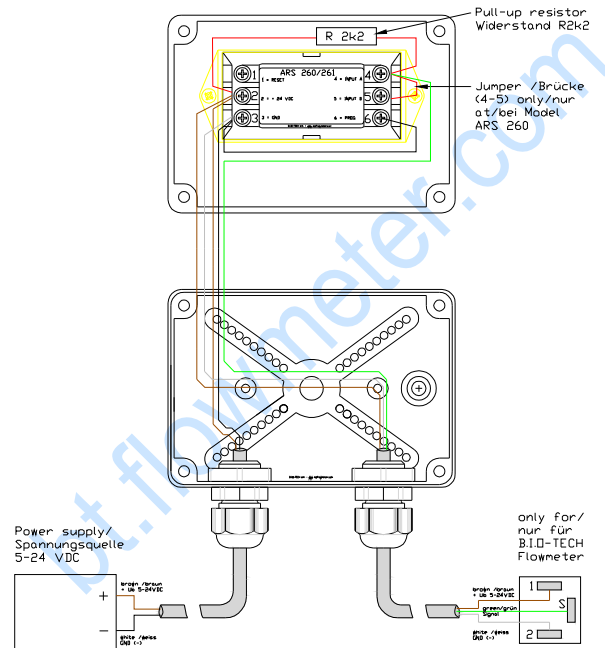
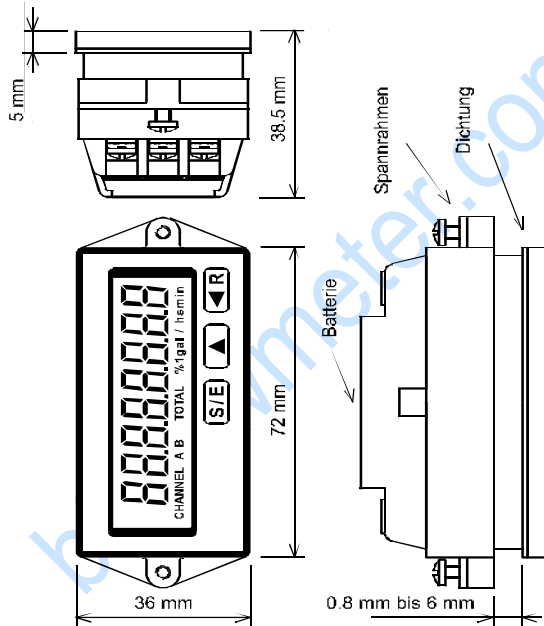
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1. Safety Instructions

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





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 counter inputs. Use counter input A (“High” active) for rate meter with pulse sequences up to 10 kHz; use input B (“Low” active or “High” active) for pulse counter with pulse sequences up to 30 Hz or 10 kHz.

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, and
4. If necessary, program a suitable scaling factor.

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. The input B is programmable as “HIGH SPEED” - or “SLOW SPEED” - input. Further 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.



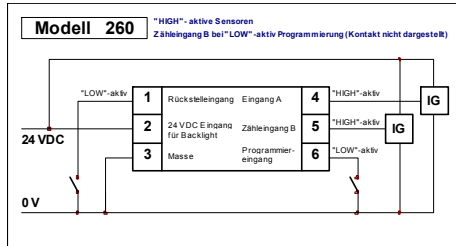
After pressing the S/E key:

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.



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



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 <R>:



Press ^ 10 times:

Press <R> twice:



Press ^ 5 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 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.

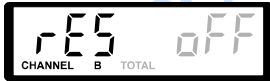
Set the scaling factor as described under Scaling Factor, Channel A.

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 mm²

min. lead section

2 x 0.2 mm²

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

Counter Input A (Rate meter)

| | | |
|----------------------|------------|---------------|
| Pulse shape | | any |
| “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 |

Counter Input B (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 |

The world of flow
Active edge



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 Art.-Nr.: 82202233

Technische Änderungen vorbehalten Stand 7.2011

We reserve the right to make technical changes without notice.

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