

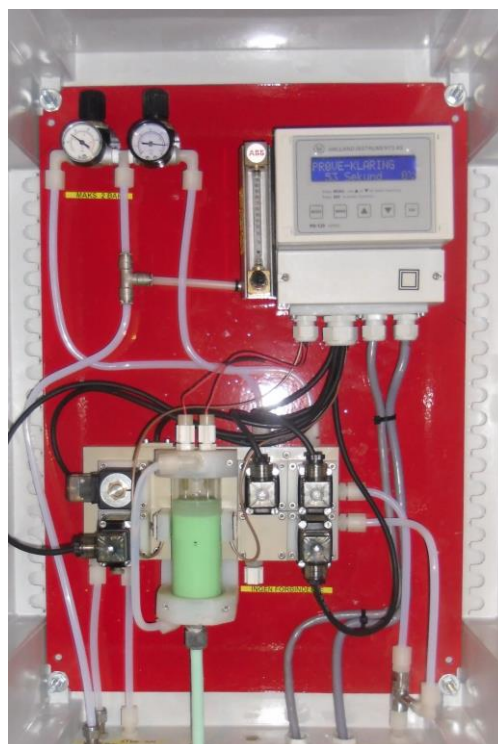


## ASRM-1300 Automatic sedimentation rate measuring station

### Technical data

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ASRM-1300 after one year of operation in the cobalt process stage in a hydrochloric matte leaching nickel plant. The cell is kept clean by automatic cleaning with a reagent.



# HALLAND INSTRUMENTS AS

## ASRM-1300

ASRM-1300 is an automatic on-line sedimentation rate meter. The ASRM-1300 measures the time required for the sample to become clear or translucent, down to a fixed but adjusted distance beneath the surface. The instrument gives you a unique possibility for process optimizing, because it measures the response to changes in settling properties so rapidly and accurately. This is truly an early warning system for any oncoming process difficulties. The instrument is a complete-working unit for sampling, measuring and washing of the cell. It has 4-20 mA output, an input for remote start and stop and a Modbus RTU computer interface. Since the cycle time is very short, the measurement can be used as a continuous measurement. The sample is usually taken from a launder, tank or pipe, before the thickener if any, but after the addition of flocculent.



### Automatic cleaning of the measuring cell

The measuring cell must to be kept clean. Between the measurements the cell is sprayed with water, besides the use of water alone, this instrument can automatically clean the cell with the aid of a chemical solution, for instance an acid.

### Automatic cleaning of the suction circuit; the vacuum pump and the vacuum valve

During spraying of the cell, the suction circuit is filled up with water. This water is sucked out of the suction circuit during sampling. This ensures that the suction circuit is always kept clean and open.

### Function

The instrument sucks a sample from the process, to a measuring cell (cylinder), where the required time for settling is measured. Then the sample is then returned to the process. The instrument then sucks up 4 ml of a suitable detergent, for instance acid, from a detergent container. The frequency of washing with detergent is programmable. The dose is measured, and the instrument gives a warning if no detergent (acid) is available. The dose can be adjusted. The measuring cylinder sprayed with this solution from a powerful spray nozzle, and afterwards the measuring cylinder is sprayed with water from the same nozzle. Then the cycle repeats itself.



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## Some typical applications

- Chemical processes with pH control that are difficult to control with pH alone. The automatic sedimentation rate measurement is used to correct the pH and keep it in the window that has the best precipitation properties. For instance, zinc neutral leaching and cobalt purification stage in nickel or cobalt plants.
- Sedimentation processes for the control of the addition of flocculants before thickeners.
- Precipitation processes for the control of the addition of flocculants before filtering.

## Advantages and earnings

- Speed, this unique instrument measures the sedimentation rate before the solution comes to the thickeners/clarifiers. The measurement can be used for automatic control of the addition of flocculent.
- Automatic washing ensures clean measuring cell and stable readings.
- ASRM-1300 can use a wide selection of chemicals in addition to water spraying for cleaning of the cell.
- It is easy to install the instrument; normally no encroachment in the process equipment is required for taking the sample. The instrument can for instance take the sample from a tank or a launder.
- Vacuum pump without moving parts – it is never worn out.
- Reliable for sampling. Suction circuit; vacuum-pump, valve and connections are cleaned automatically.
- Uncomplicated mechanical design, with few parts, gives reliable operation and little maintenance. It is designed in such a way that it is easy to carry out the maintenance. No special skills are needed for the calibration and maintenance of the instrument.
- It is very easy to change the times, for instance for emptying, spraying and measuring, and to set the measurement range etc.
- The built-in Modbus RTU interface makes it very straightforward to communicate with a process control computer or PLC.
- It is possible to start and stop the analyzer via the Modbus line.

## Proven technology

The instrument has been in operation for more than 10 years in zinc plants.

Is designed for measuring of the sedimentation rate of slurries with high temperatures

The instrument can be used to measure the pH in solutions with temperatures over 100 degrees centigrade. It can be used to measure the pH of slurries with particle sizes up to 5mm in diameter. The instrument can be used to measure the pH of most chemical solutions.



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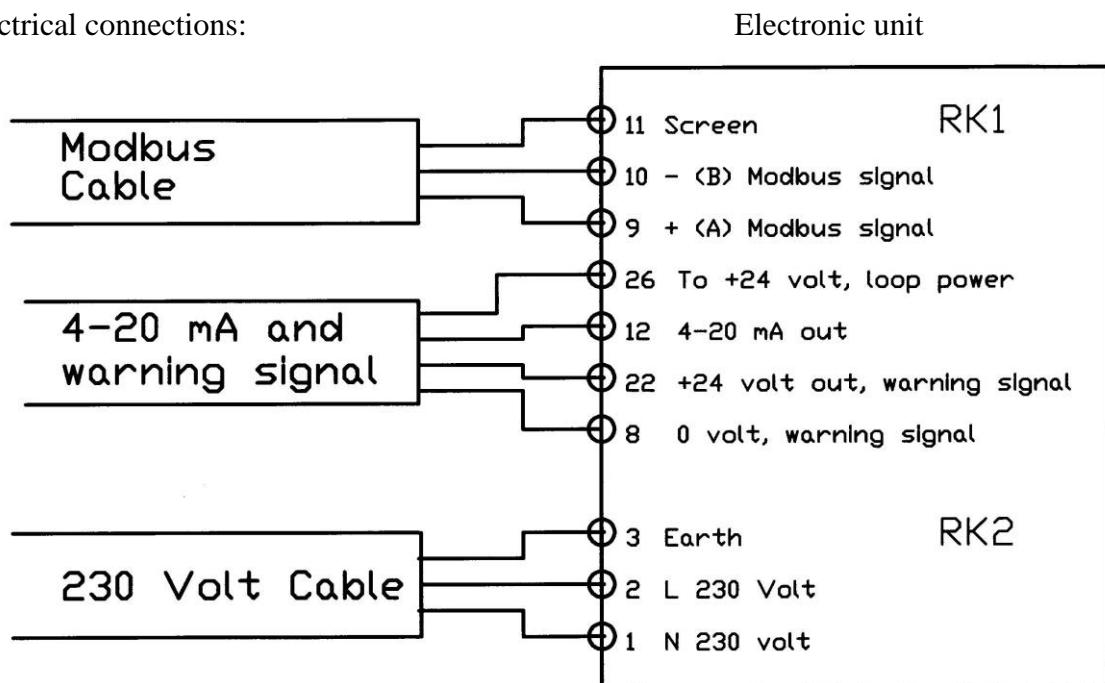
## Maintenance

The instrument is design for easy maintenance. No special skills are needed for the maintenance of the instrument.

## Installation

It is easy to install the instrument. Normally no encroachment in the process equipment is needed for taking the sample. The cabinet should be mounted in normal working height for easy access. Mount the instrument close to and over tank, basin or launder. Can be mounted maximum 6 meters over the sampling point, the length of the suction tube should anyway be no more than 10 meters.

## Electrical connections:



The 4-20 mA signal and the warning signal can use the same cable. If the Modbus line is used, then it is not necessary to connect the warning signal and the 4-20 mA signal, since the measurement and the operating status, including step number in operation, are available over the Modbus line. If the Modbus line is not used this input can be used for remote start stop with a 24 VDC signal. 0 VDC to terminal 9 and 24 VDC to terminal 11.

Electronic unit





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## Specifications

Water pressure.....	3-6 bar.
Water consumption (typ.).....	5 litres per hour.
Air pressure.....	1-6 bar.
Air consumption (typ.).....	35 l <sub>n</sub> per hour.
Detergent consumption, adjustable .....	4-10 ml/wash
The acid washing frequency is programmable	
Suction height .....	6 meter water column.
(From vessel, duct etc to cabinet)	
Measuring range, seconds...programmable.....	0-1000 s.
Power supply.....	110 or 230 volt AC.
Power consumption,peak.....	35 Watt.
Internal tubing.....	PVDF.
Electronic enclosure.....	IP 65.
Cabinet (GRP with glass window).....	IP 65.
Outer dimensions.....	747x536x300 mm.
Weight ca.....	25 kg.

## *Outputs:*

4-20 mA loop powered, maximum load 950  $\Omega$  at 24V dc, linearity and offset error max 0.1 %.  
Alarm signal: 24 VDC, 0.5 A. RS485 (Modbus RTU) computer interface (1 start bit, 8 data bits, 2 stop bits, 9600 baud). All outputs are galvanic isolated from the measuring circuits and from each other.