Thank you for choosing a NIVELCO instrument.
We are sure that you will be satisfied throughout its use.

NIVOSONAR
SLM-308 Scanner

GENERAL

The **NIVOSONAR SLM-308 Scanner** is a panel mount equipment used in the **NIVOSONAR Two-part Ultrasonic Measurement Systems** for scanning up to 8 identical **S-300 SenSonar Sensors** for the SMM/SMZ-300 Remote Control Unit.

USER'S MANUAL

TECHNICAL DATA

Type	SLM-308
Sensor connection	max. 8, identical S-300 SenSonar sensors
"POLLED SENSOR" output	**LO=** 0...2 V, 1.6 mA, **HI=** 6...8 V, 1.6 mA
Supply voltage	24V, 110V, 230 V AC, 50…60 Hz, -10…+10%
Power consumption	< 35 VA
Power supply for sensors	24 V, max. 600 mA DC
Ambient temperature	0... +50°C
Connecting cables	0.5 - 2.5 mm^2 shielded cable with plug-in terminal
Electrical protection	Class II.
Mechanical protection	Front side: IP40, Rear side: IP20
Weight	1.25 kg

Manufacturer:
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OPERATION

The NIVOSONAR SLM-308 Scanner works as a multiplexer for the Remote Control unit.
All sensors receive the power supply and the "FIRE" signals making them able to emit ultrasonic signals continuously.

The Remote Control Unit can process one sensor at a time, thus only one "PRE" signal is forwarded to the controller at a time.

The complete processing time required for a sensor is between 5 and 12 sec, depending on the measuring frequency.

The control unit can be programmed for manual or automatic scanning (see later).
The scanner has a status indication LED beside each sensors name on its front panel:

- **The illuminated LED indicates the sensor to which the display and the current output corresponds. The display and current output corresponds to the sensor until the LED is illuminated.**

- **The blinking LED indicates the sensor that is currently under processing by the control unit.**

- **In automatic scanning mode, one LED is always illuminated (outputs corresponds to this sensor), while another is blinking (this sensor is under processing).**

Removing the front panel, the tag-number plates can be accessed for labelling each tank.

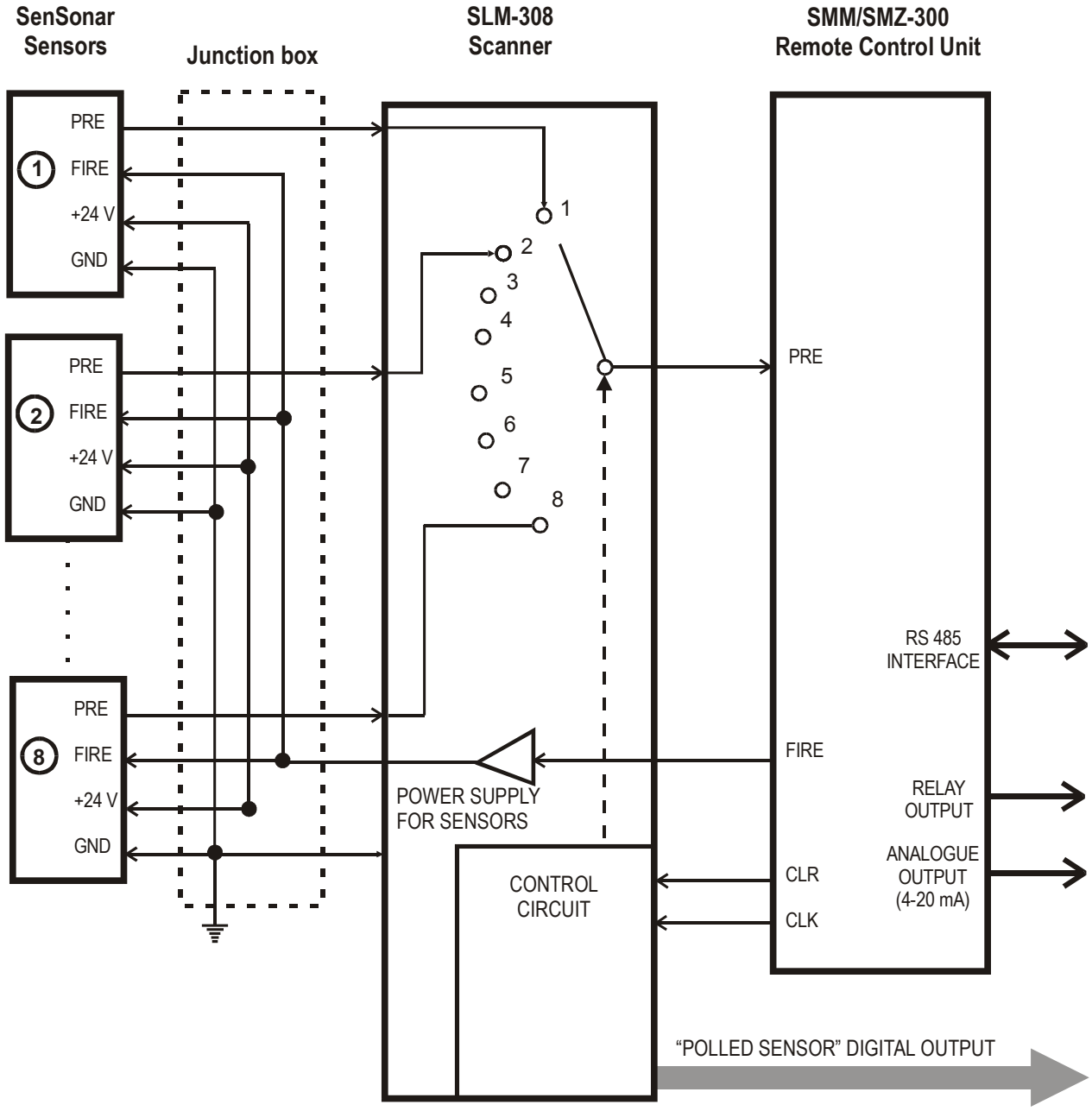
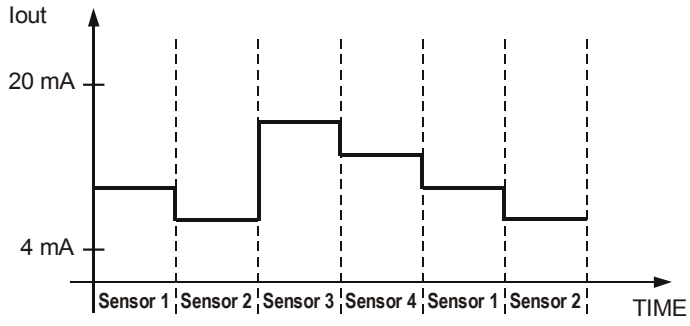


Figure 1. The principle of operation

Using the RS485 interface

Data acquisition:
Measurement values of each sensor can be accessed individually any time.
Measurement values of all the sensors connected to the SLM-308 can be read-out in one telegram.

Remote programming:
The Remote Control Unit can be programmed remotely.



Using the single current output of the Remote Control Unit

To utilise the single current output for the entire measuring system, an additional hardware is needed (ex.: PLC), since the current output will contain measurement values of all sensors, sequentially, see figure below.

In order to de-multiplex the current output signal, the scanner provides an "address" signal, coded on 3 bits at the "POLLED SENSOR" output.
The "POLLED SENSOR" always decodes the sensor for which the current output is valid.

Polled Sensor	D2 (2^2)	D1 (2^1)	D0 (2^0)
Sensor 1	0	0	0
Sensor 2	0	0	1
Sensor 3	0	1	0
Sensor 4	0	1	1
Sensor 5	1	0	0
Sensor 6	1	0	1
Sensor 7	1	1	0
Sensor 8	1	1	1

"POLLED SENSOR" output:
LO (0)= 0...2 V, 1.6 mA
HI (1)= 6...8 V, 1.6 mA

Programming

While programming the Remote Control Unit, the following parameters should be set:

P61: - - - x Number of sensors connected to the SLM-308

Maximum 8 sensors, the factory default value of this parameter is: 0

P62: - - - x Scanning Mode

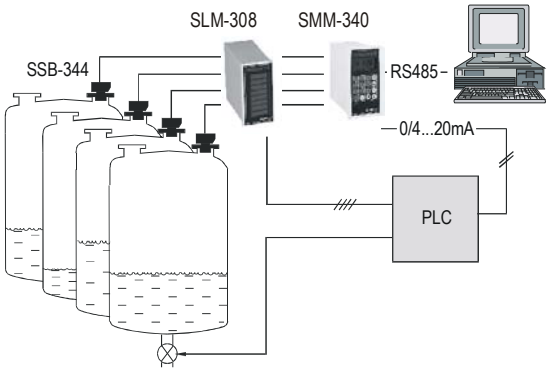
The Scanning Mode of sensors is to be set here.

X	Scanning Mode
0	Manual, with the **[STEP]** key
1	Automatic

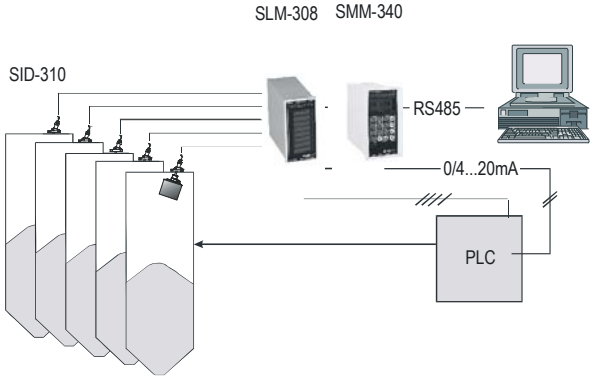
In Manual Scanning Mode only one Sensor (selected manually by the **[STEP]** key of Remote Control Unit) will be processed.

In automatic scanning mode the sensors carry out measurements one after the other with a fixed interval. Measurement time required for a sensor is between 5 and 12 sec, depending on the measuring frequency.

*Note: Even in Automatic Scanning Mode any sensor can also be selected manually with the **[STEP]** key. However after the Remote Control Unit has processed the manually selected sensor, it will continue the scanning automatically.*

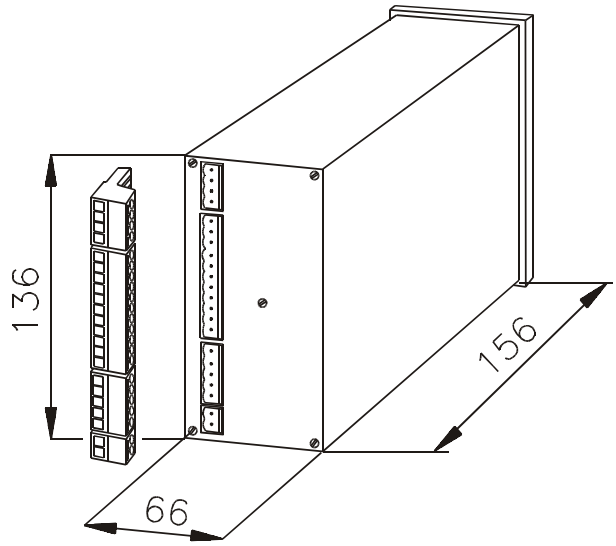


Monitoring the level in several identical H_2SO_4 tanks



Monitoring the level in several identical 40 m high grain silos

DIMENSIONS



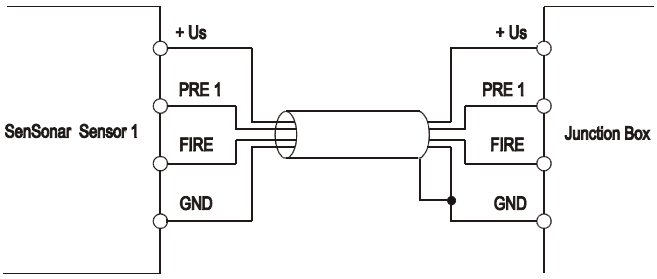
ACCESSORIES

- User's Manual
- 1 x 2-pole mains screw terminal
- 1 x 11-pole screw terminal for sensor signals
- 1 x 5-pole screw terminal for the Remote Control Unit
- 1 x 4-pole screw terminal for "POLLED SENSOR" output

WIRING

The use of a junction box is recommended.

Wiring between Sensors and Junction Box

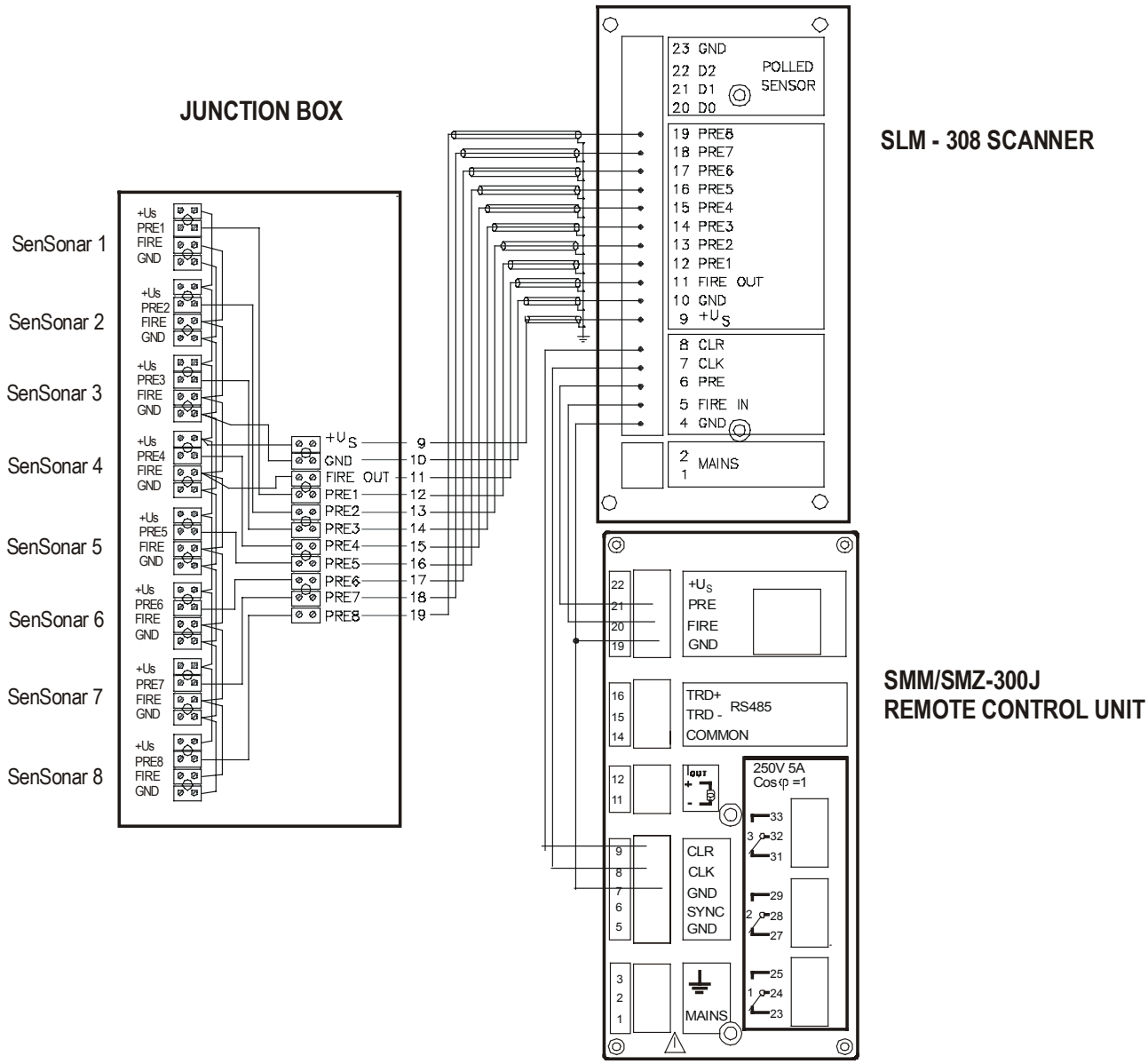


- Use 4-wire shielded cables (except **SID-10-H**) for extending the signal cable of the sensors.
- Connect shielding of signal cable to the "**GND**" wire at the Junction Box side.

Wiring between Scanner and Junction Box

Use individually shielded cables for all "PRE" signals.
The "FIRE", "GND" and "+Us" signals can be led in a common, shielded wire.
The shielding of the above cables should be grounded where the Scanner and the Remote Control Unit are grounded.

The "FIRE", "GND" and "+Us" signals should be distributed in the junction box to as many terminals as the number of connected sensors.



MAINTENANCE AND REPAIRS

The device does not require routine maintenance. In some instances, however, the sensor probe may need occasional cleaning to remove surface deposits.

STORAGE CONDITIONS

Environmental temperature range: -30 to +70°C
Relative humidity:up to 98%

WARRANTY

All Nivelco products are warranted free of defects in materials or workmanship for a period of two years from the date of purchase. Repairs under guarantee are carried out at the Manufacturer's premises. The Purchaser is liable for costs of dismantling and re-installation as well as transport costs.

Nivelco shall not be liable for misapplication, labour claims, direct or consequential damage or expense arising from the installation or use of equipment.

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