Data-Recording-Device
Regulating-Measuring-System RMS-1-B
to control one pump

Technical Data

Power Supply	230 V, 50 Hz, 1,5 A, 24 V DC
Dimensions (L x W x H) Weight	400 x 270 x 290 mm approx. 15 kg
Operation Temperature	-10°C up to +50°C [+14°F up to +122°F]
Housing	corrosion-resistant aluminium housing protection class IP 64
Display	touch-screen Display 5,7" LCD colour QVGA with integrated function buttons, protection class IP 65 (front)
Plug Connections	industrial models with codification, spring contacts
Monitor Configuration Languages	in series german / english (further languages on request!)
Operation / Inputs	structured and easy understandable buildup, numeric and alpha-numeric input via touch-screen
Display / Measuring Values	as a digital numerical value, as a analog bar graph,as a trend line
Error Indications	error indications / malfunctions will be shown on screen

Application:
Data acquisition and recording (pressure and flow) at pumping of cement, fly ash and bentonite suspensions at anchoring, fillings, injections, sleeve pipe injections

Pump Control
- Pumping and Measuring ON/OFF
- Break ON/OFF
- EMERGENCY-STOP with actuation LED (pump shut-off)
- SUSPENSION / FLUSHING
- PUMPING / CIRCULATION
- DELIVERY RATE (infinitely variable adjustment)
- HAND / AUTOMATIC (automatic shut-off at achieving the adjusted target quantity)
- Pressure shut-off

Flow Measuring
- via inductive flow meter DMM (signal 4-20 mA)
- via stroke counting

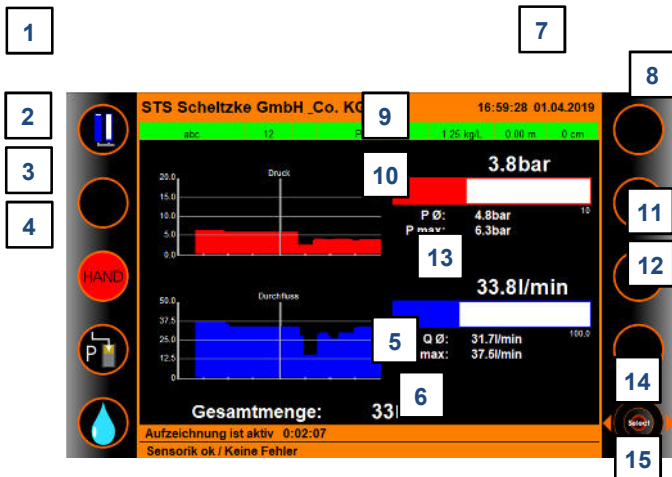Pressure Measuring
- via electronic pressure sensor (signal 4-20 mA)

Pump Screen RMS-1-B

1. Status **water** / suspension
2. Status **pumping** / Circulation
3. Status **manual** / automatic (target quantity)
4. Status recording active
5. current date and time
6. control pad display screen
7. current jobs and level information
8. current pressure trend
9. current flow trend
10. current pressure display
11. current quantity display (bar graph)
12. current total quantity
13. information display 1: recording status
    information display 2: sensor status

Settings / operation modes RMS-1-B

Pressure Control
When reaching the defined switch-off pressure (P_{max}) the pump shuts down. The pump starts again if the pressure is below the defined switch-on pressure (P_{min}).

Definition of required quantity
The required quantity is defined in liters (V_{rest}). After reaching the required quantity the pump shuts down. To start the pump again a new stage has to be entered and the pump has to be started again.

Injection options
Depth injection with position, level, subsequent compression, phase and depth. Sleeve pipe injection with position, level, subsequent compression, phase, lance, length, number of stages

Definite Allocation
Each position and stage is defined by an explicit numeric and alphanumeric description

Job Site Data
Entry of all job site data

Data Evaluation: NINJA (New INJection Analysis)

The program NINJA serves the logging, analysis, control, recording, presentation and archiving of injection data, which was recorded by our data recording system RMS-1-B and RMS-2-B and saved in ASCII format.

The project management allows the administration of several projects (job sites and sections) with different machines and RMS devices. Injection position protocols and daily logs can be generated automatically and printed out comfortably. Injection protocols are saved in the graphic format PNG, can be printed parallel and provided to the construction management. The daily logs and position protocols have a tabular format in A4 upright.

Individual adjustments of the protocols (language, layout, company logo, site data and scale) are possible. Furthermore comments to each position and stage are also printed out. Additionally a comfortable viewer with zoom function is available for the injection protocols.

Our NINJA program has no dongle or expiry date (copy protection)! Our customers get to copy our programs on several computers without additional license fees.

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