

# Electronic Fluid Level Control and Monitoring Equipment



Rod-type level probes in conjunction with electronic control units ensure that important process parameters are controlled and monitored safely. Appropriate types of electronic control unit are mandatory because the probes have to be powered with a low probe voltage (pure sinusoidal AC voltage).

The response sensitivity can be set to different levels according to the conductivity of the process fluid.

## Level control

The **ENR 200** is equipped with a relay output (MIN/MAX control contact) that can be configured as a break or make contact, according to the application.

As well as the MIN/MAX control contact, the **ENR 300** has an independent switching contact. This switching contact is used for monitoring a MIN/MAX alarm fluid level.

## Level monitoring

The **ETS 100** electronic level monitoring system is used for monitoring a fluid level as a MIN or MAX switching contact. The contact switches if the required maximum level is exceeded or the level drops below the defined minimum. The contact is reactivated automatically when the level of the process fluid returns to the „permitted“ range. Run-dry protection for heaters and pumps is a very common type of application for this type of system. The heater or the pump is switched off if the level drops below minimum, and reactivated only when the level rises back above the minimum.

The **ETS 200** is capable of monitoring two fluid levels independently of one another.

The **ETS 410** electronic level monitor offers four separate signal inputs and four relay outputs. This means that four independent fill levels can be detected in one container and evaluated, for instance via an SPS. This facilitates a MIN/MAX control function and two alarm states or alternatively four alarm states. Four LEDs show the status of the outputs on the front.

The electrical connection is made using removable, non-interchangeable plug-in terminals. The LEDs indicate when the electronic control units are ready to operate, as well as the switching status of the outputs.

The electronic control units are installed in the control cabinet, where the relatively small dimensions of their housings permit space-saving installation.



# Controlling and Monitoring Fluid Levels

## Selection table of the control and monitoring electronics

	Level probes / switches							
	NS2/MTSu	NS3/MTS2u	NS4/MTS3u	NS5	NT2/MTSt	NT3	NT4	NT5
<b>Monitoring technology</b>								
Level monitoring	ETS 100	ETS 200	-	ETS 410	ETS 100	ETS 200	-	ETS 410
<b>Control technology</b>								
Level control	-	ENR 200	ENR 300	-	-	ENR 200	ENR 300	-

## Technical data

	ETS100	ETS200	ETS410	ENR200	ENR300
No. of level switching points	1	2	4	2	3
Contacts (potential-free)	1 Changeover switch	2 Changeover switches	2 CO + 1 NO + 1 NC	1 Changeover switch	2 Changeover switches
Switching status display	1 LED	2 LED	4 LED	1 LED	2 LED
Voltage	20...230V AC/DC	20...230V AC/DC	18...32V DC	20...230V AC/DC	20...230V AC/DC
Power consumption approx.	2VA	2VA	3VA	2VA	2VA
Output					
Switching voltage	<250V AC	<250V AC	<60V DC	<250V AC	<250V AC
Switching current	≤5A	≤5A	≤2A	≤5A	≤5A
Test function	yes	yes	no	yes	yes

### Input

Switching delay 2 s / 8 s (can be toggled, not on the ETS 410)

Output voltage / current 0,1...6V~/<5 mA~

Trigger sensitivity 0,05...250 kΩ (4 μS...2.10<sup>4</sup> μS) adjustable with 32 stages

### Mechanical construction

Casing material Polyamide PA6.6

Flammability class housing V0 (UL94)

Mounting on 35 mm mounting rail (acc. to EN50022)

Dimensions w=22,5 mm, h=111 mm, d=115 mm

Index of protection IP20 (acc. to EN 60529)

### Climatic stress

Ambient temperature -20...50°C

Transport and storage temp. -40...60°C

Max. humidity <75 % (no dew)