

## Digital Tensile Force Indication Instrument Series: SA 310



The instruments for installation series **SA 310** are precise analogue amplifier destined for all Tensometric tensile-force-measuring components.

A digital display indicates with big, red digits the measured values.

The instruments are destined for installation in machines, panels test-areas etc.

Due to the great variety for service-voltages and output-signals it can be fitted into most of existing measuring-concepts.

### SA 310 DMS - S

by means of the switch at the front-page, it can be switched-over between operation " normal " and " peak-value-indication "

By that, p.e.: it is possible to control continuously the peak of the warp in weaving-machines

### Measuring range:

depends on the connected measuring head

### Control-system:

with the built-in analogue amplifier the instrument is suited for taking-up the actual - value of the tensile forces as well for high-dynamic automatic control-systems

### Connections:

easy connection via plug at the rear of the instrument  
Tensometric components easy can be put-in

for utilization	- of Tensometric strain-gage-sensors,	series 11xx,
	- of Tensometric capacitive sensors,	series 1xx
	- of Tensometric sensor with amplifier,	series 3xx
	- of Tensometric amplifier KVM 10	

instrument is able to supply the corresponding service-voltage

at the additional output-socket at the front-page of the instrument,  
reorder or other control-instruments can be connected

### Calibration:

easy adjustment of the calibration in combination with a sensor.  
Adjustment of the zero - ( tare ) and amplifier ( calibration ) of the meas. signal is executed by the recessed potentiometer at the front-page of the instrument.

### Damping:

an infinitely adjusted damping allows a smooth indication,  
even with fluctuating tensile forces.  
The damped measuring-signal is available as an output-signal  
at the rear of the instrument

### Over-load indication:

The built-in lamp signalized an overload of the connected sensor.

**Technical data series : SA 310:**

<i>Indication:</i>	3 ½ - digits, LED -digital-display		
<i>max. Indication:</i>	1000		
<i>Height:</i>	9,4 mm		
<i>Indication-frequency:</i>	2,5 Hz		
<i>Adjusting:</i>	damping the indication- and output-signal electrical zero ( Offset ) adjusting the amplifier infinitely ( calibration )		
<i>Amplifier :</i>	analogue amplifier		
<i>Limit. frequency ( -3 dB ) :</i>	300 Hz		
<i>Measuring error:</i>	< 0,1 % v.E.		
<i>Output:</i>	rear:	1. output	0 - 10 V
		2. output	0 - 10 V damped
		at a 5 pol. output-socket	
	Options:	- current 0 - 20 mA, 4 - 20 mA max. load 500 Ω	
		- galvanically separate output 0 - 10 V ( ISO )	
		- MIN - MAX alarm via optokoppler - output Threshold for the marginal-value must be external defined per tension 0 - 10 V and supplied to the instrument.	
	front-page :	1. output	0 - 10 V ( not SA 310 S )
		at a 2 pol. output-socket	
<i>Aux. tension for connected amplifier:</i>	± 15V		
<i>Service-voltage:</i>	230 V AC, 45 - 60 Hz, 8 VA Option: 110 V AC, 45 - 60 Hz 5 V DC, 12 V DC, ± 15 V DC		
<i>Housing:</i>	DIN - Format 96 x 48mm, depth : 164 mm		
<i>Mounting:</i>	with DIN fixing screws		
<i>Protection DIN 40050:</i>	IP 30		
<i>Ambient temperature:</i>	operation - range: 5°C up to + 60°C, storage-r ange : -40°C up to +80°C		
<i>Weight:</i>	approx. 540 g.		
<i>Included in delivery:</i>	instrument, for each socket - one plug, mounting-clips, instr. manual		

**Information to order the instrument :**

<b>Connection :</b>	<b>Type of instrument :</b>
for connection of capacitive Tensometric sensors series 1**:	SA 310 - N
for connection of Tensometric sensors with built-in amplifier, series 3** , series 13** and KMV – amplifier:	SA 310 - E
for connection of Tensometric strain-gage-sensors series 11**:	SA 310 DMS
for connection of Tensometric strain-gage-sensors series 11** with switch for "peak-value-indication" -> "actual-value-indication":	SA 310 DMS - S