

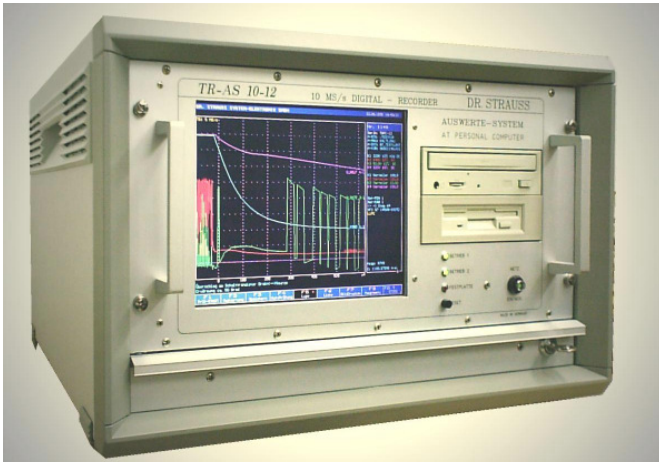
Multichannel Transient Recorder Measuring Systems

TR-AS® 10-12 / 100-10 / 100-12 / 200-12

DR. STRAUSS

Impulse Measurement
Calibration - Diagnosis
www.strauss-mess.de

10 / 25 / 40 / 60 / 100 MS/s sampling rate and 12 Bit Resolution



Desktop-Housing DERA 6

Measuring rack mount with
10.4" or 12" TFT -Colordisplay
PC 1,2 GHz, 256 MB RAM, WindowsXP®, 30 GB
harddisc, CD-RW etc.
Keyboard with trackball in drawer
suitable shielding for high EMC

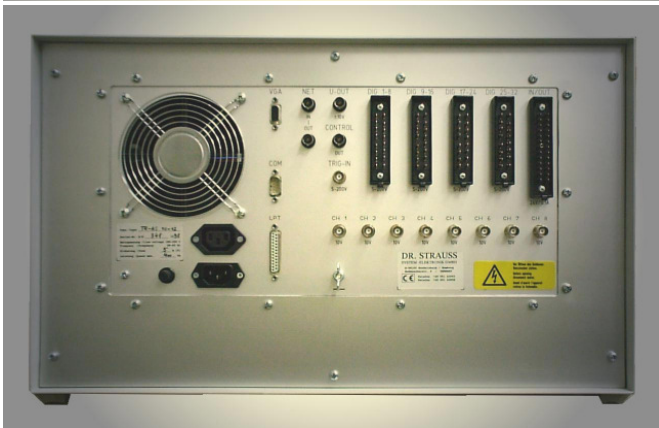
Dimensions: approx. 55x55x40 cm (BxDxH)

Weight: approx. 25 kg

Environmental: Ambient Temp +5...+40 °C, Humidity
10...90%, non condensating

Rear view: TR-AS® 10-12/8-32

8 analogue channels with BNC-input
optional: Isolating amplifier with 2 or 7kV isolation a.c.
32 digital channels with 2 kV optical isolation,
multicontact connectors
Connection for Calibrator control, Printer, COM,
Network, external SVGA-monitor
Mains filter, efficient Fan
Technical data and design subject to change without
notice. Alternative design on request.



Applications:

**Complex and precise impulse measuring
with simultan multi-channel system**

High-power testfield

Switchgear test

Monitoring recorder

Protection relay test

Quality control

**Measurements in development and
testfield, ...**

DKD-Calibration

The measuring systems can be calibrated in our DKD
Calibration Laboratory accredited by the PTB. The
Calibration Laboratory issues DKD-Calibration
Certificates which documents the traceability to
National Standards.

Digital Recorder	TR-AS® 10/25/40-12
Analog-Digital-Converter	
Resolution	12 Bit / 0.025 %
Linearity	1/2 (2) LSB
Filter-Frequency	5 MHz / 500 / 50 kHz
Sampling Rate (simultan, realtime)	0.5 kS/s - 10 MS/s
Sampling Rate (simultan, realtime)	25 / 40 MS/s optional
No. of Timebase	2 to 8 selectable
Timebase Recording Mode	A-B-C-...H-Sequence
Record Length (standard/optional)	64K / 256K / 1M Data
Analogue Input	1 - 8
Measuring range via attenuator 160:1	10 - 1600 V
Bandwidth	d.c. - 5 MHz
Input impedance	1 MOhm / 30 pF
Direct input	100 mV - 10 V, BNC
Input setting factor 0.8-sequence automatically controlled	0.1-0.125-...-6.4-8-10V 23 Stages
Digital Input	4 - 32
Input range LOW / HIGH	0 V / 5 to 250 V
Trigger	pre-/posttrigger
channels single, OR-connected	yes
internal level	pos. and neg. level
internal dynamic (deviation)	pos. and neg. dU/dt
external	5 - 250 V, BNC

Tubular Impulse Current Measuring Shunt ICMS



The Impulse Current Measuring Shunts ICMS are new designed tubular shunt types with best performance response behaviour. They show no overshoot or oscillations and need no compensation box to optimize the transient behaviour as known from e.g. cage shunts.

Tubular shunts type ICMS are therefore ideal for current measurements during transformer tests. The resistance material of the inner tube show high energy absorption capability and very low temperature coefficient and therefore negligible non-linearity effect for impulses of different magnitude. This is very important for

comparison of shapes e.g. of 50% and 100% test level during transformer tests.

The Impulse Current Measuring Shunts ICMS are designed for measurements of impulse currents with shape 8/20 μ s according to IEC 60060-1. For impulse currents with any shape the maximal action integral or the maximal voltage drop must not be exceeded.

Typ	Type		ICMS 20	ICMS 10	ICMS 2.5	ICMS 1
Nenn-Impulsstrom 8/20	rated Impulse current 8/20	A	20 000	10 000	2 500	1 000
Widerstandswert \pm 10%	Resistance \pm 10%	Ω	0.025	0.05	0.2	0.5
Empfindlichkeit	Sensitivity	V / kA	25	50	200	500
Arbeitsbereich mit TR-AS® digital recorder	Working Area with TR-AS® digital recorder	A	\geq 200	\geq 100	\geq 25	\geq 10
Anstiegszeit Tr	Rise time Tr	ns	<30	<10	<10	<10
Antwortzeit Ta	Response time Ta	ns	<20	<10	<10	<10
Minimale Pausezeit	repetition rate	s	60			
Spannungsabfall max.	Voltage drop max.	V	1000			
Temperaturkoeffizient	temperature coefficient	1 / K	$<100 \cdot 10^{-6}$			
Messanschluß	Measuring socket		N-type			
Abmessungen ca.	Dimensions approx.	mm	330 x 250 x 50			
Anschluß	Connection	mm	12.5 \emptyset			

The characteristic impedance of the measuring cable connected to the Impulse Current Measuring Resistor ICMS is recommended to 75 Ω . To avoid reflections on the measuring cable a terminating resistor TERM 75 matching the impedance Z of the measuring cable must be connected to the far end at the input of the measuring system. Triaxial cable only is recommended.

The influence of the terminating resistor with value Z connected in parallel to the measuring shunt Rm with respect to the resulting resistance value R is negligible, it can be calculated to $R = R_m \cdot Z / (R_m + Z)$.

Isolation Amplifier Systems ISO-VER 12 / 2.2

for applications in the high power test field together with TR-AS® multichannel transient recorders



ISO-VER 2.2

2 or 4 kv a.c.isolation
1 to 8 channels
input 1 to 1000 V
1 MOhm / 30 pF
output \pm 1 V
bandwidth 100 kHz
accuracy 1%

A floating current input from mA to kA can be realized using a suitable measuring shunt at the input.



On-Site Switchgear Test System

Multichannel-System based on TR-AS® 10-12 with 3 analogue and 24 digital inputs for measurement of make and break times.

The picture shows revision checks of elder 110 kV compressed air switchgear. The measuring system is placed inside a transportation car and connected to the interrupter under test which must be switched free from h.v. during the measurement.

The triggering of the system follows automatically with help of the releasing coil current, measuring data will be evaluated by hand or automatically and then stored on to harddisk to generate a test record.