Content

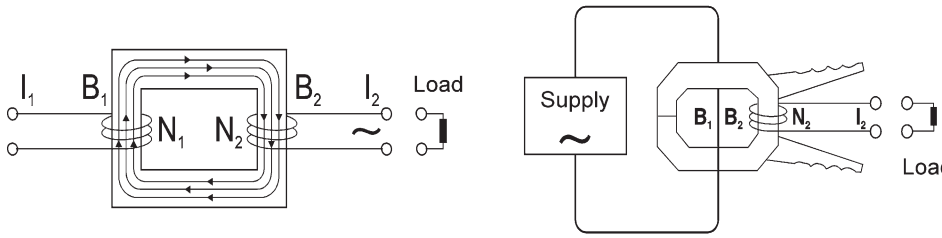
ALMEMO® input connectors and adapter cables
for all sizes see Chapter Input connectors

How Split-Core Type Transformers Work

Current transformers are used to acquire high alternating currents without contact and without interrupting the circuit. In principle, they consist of 2 separate transformator windings (B1 = primary winding with N1 windings, B2 = secondary winding with N2 windings) on one common iron core (closed magnetic circuit).

If an alternating current I1 flows through the winding B1, a current I2 is induced in the winding B2, which depends on the winding ratio N1/N2. In comparison with stationary-installed panel transformers, split-core type transformers must be able to embrace a conductor within a magnetic circuit that is split open.

In practice, the primary winding B1 consists of only one winding that carries the current to be measured. The transformation ratio of a current transformer is: I1 x N1 = I2 x N2



Split-Core Type Transformer for AC Currents FEA 6049

- Perfectly suitable for use in maintenance and monitoring of electrical systems without interrupting their current supply.
- Application oriented design, particularly suitable for measurement in dense wiring.
- Ideal for non-contact control measurements with ALMEMO® hand-held devices, e.g. for fault currents or at devices with low current consumption.

Technical Data

Measuring range:	1A to 150A AC
Accuracy of meas. at 50/60Hz:	40 to 150A: ± 4% 15 to 40A: ± 3% ± 0.2A 5 to 15A: ± 6% ± 0.2A 1 to 5A: ± 10% ± 0.2A
Encompassing capacity:	cable Ø 10mm
Transformation ratio:	100mVDC/1A AC
Output signal:	15VDC
Nominal conditions	23°C ±3K, 1013 mbar, 20 to 75% RH
Electrical safety	EN 61010-2-032 (issue 2/2003)

Admissible voltage	300 V category IV or 600 V category III
Operating frequency	48 to 500 Hz
Operating conditions	-10 to +50°C, 10 to 85% RH
Dimensions	130 x 37 x 25 mm
Weight	approx. 180 grams
Storage temperature	-40 to +80°C
Connecting cable	Cable, 1.5 meters, with safety laboratory connectors, including safety coupling and 1.5-meter ALMEMO® connecting cable with banana plugs

Types (including manufacturer's test certificate) **Order no.**

Single-range split-core type transformer with integrated rectifying for small AC currents incl. ALMEMO® connecting cable (±26VDC) **FEA6049**

DAkkS / DKD or factory calibration KE90xx electrical for sensor (see chapter Calibration certificates)

Split-Core Type Transformer for AC Currents FEA 604 MN

- Perfectly suitable for use in maintenance and monitoring of electrical systems without interrupting their current supply.
- Asymmetric shape of the jaw of tongs, particularly suitable for encompassing cables and rails.
- With polarity indicator for power measurements.
- Ideal for non-contact control measurements with ALMEMO® handheld devices, e.g. at low power systems.

Technical Data

Measuring range: (the higher value corresponds to 120% of the max. nominal value)	0.5A to 200A AC
Accuracy of meas. at 50Hz:	± 3% of meas. val. ±0.5A
Encompassing capacity:	cable Ø 20mm rail 20 x 5mm
Transformation ratio:	100mVDC/1A AC
Output signal:	20VDC
Operating frequency:	40Hz to 10kHz
Safety standards:	IEC 1010-1
Overvoltage protection:	category III

Dimensions:	135 x 50 x 30mm
Weight:	approx. 180g
Nominal conditions:	25°C ±3°C/1013mbar
Operating temperature:	–10 to +55°C
Relative humidity:	0% to 90% at 40°C max.
Storage temperature:	–40 to +70°C
Connecting cable:	Connecting cable Integrated banana sockets, including 1.5-meter ALMEMO connecting cable with banana plugs

Types (including manufacturer's test certificate) **Order no.**

Single-range split-core type transformer with integrated rectifying for small AC currents incl. ALMEMO® connecting cable (±26VDC) **FEA604MN**

DAkkS / DKD or factory calibration KE90xx electrical for sensor (see chapter Calibration certificates)

Split-Core Type Transformer for AC Currents FEA 6044 N

- Perfectly suitable for use in maintenance and monitoring of electrical systems without interrupting their current supply.
- Asymmetric shape of the jaw of tongs, particularly suitable for encompassing cables and rails.
- With polarity indicator for power measurements.
- Ideal for non-contact control measurements with ALMEMO® handheld devices, e.g. at low power systems.

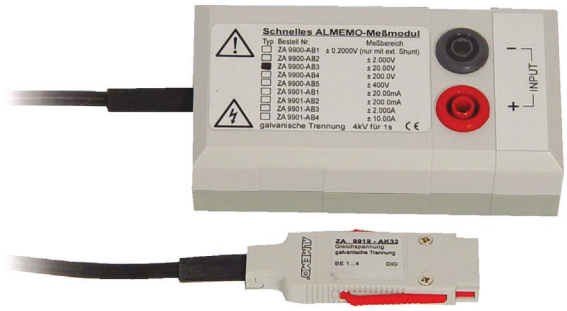
Technical Data

Measuring range: (the higher value corresponds to 120% of the max. nominal value)	2A to 500A AC
Accuracy of meas. at 50Hz:	± 3% of meas. val. ±0.5A
Encompassing capacity:	cable Ø 30mm rail 30 x 63mm
Transformation ratio:	1mVDC/1A AC
Output signal:	0.5VDC
Operating frequency:	40Hz to 1kHz
Safety standards:	IEC 348, IEC 1010-2-032
Overvoltage protection:	no
Dimensions:	215 x 66 x 34mm

Weight:	approx. 420g
Nominal conditions:	25°C ±3°C/1013mbar
Operating temperature:	–10 to +55°C
Relative humidity:	0% to 90% at 40°C max.
Storage temperature:	–40 to +70°C
Connecting cable:	Cable, 1.5 meters, with safety laboratory connectors, including safety coupling and 1.5-meter ALMEMO® connecting cable with banana plugs

Types (including manufacturer's test certificate)	**Order no.**
Single-range split-core type transformer with integrated rectifying for small and medium AC currents incl. ALMEMO® connecting cable (±2.6VDC)	**FEA6044N**
DAkkS / DKD or factory calibration KE90xx electrical for sensor (see chapter Calibration certificates)	

ALMEMO® Measuring Modules for DC Voltage and DC Current ZA 9900 AB / ZA 9901 AB



- Acquisition of the momentary, maximum, minimum and average value, plus transferring data of each measuring point scan to the ALMEMO® device.
- DC voltage or DC current signal are scanned with 1kHz.
- Pure digital data transmission to the measuring instrument.
- Connector sockets electrically isolated and overvoltage-protected.

Technical Data

Accuracy:	0.1% of fin. val. ±2 digits
Sampling rate:	1kHz
Resolution:	12bit, ±2048 digits
Meas. period/transient time:	0.1s
Meas. cycle, maximum:	14h
Electrical isolation:	1kV permanent, 4kV for 1s

Housing:	polystyrene, dimensions L100 x W54 x H31mm
Sockets:	touchproof, Ø 4mm
Operating voltage:	6 … 14V through ALMEMO® device
Current consumption:	< 40mA (connector and module)

Types (incl. touchproof connecting cable) **Order no.**

DC Voltage:

Measuring range	Resolution	Overload	Internal resistance	
±2.000 V*	0.001V	±400 V	800 kΩ	**ZA9900AB2**
±20.00 V	0.01V	±500 V	1 MΩ	**ZA9900AB3**
±200.0 V	0.1V	±500 V	1 MΩ	**ZA9900AB4**
±400 V	1V	±1000 V	4 MΩ	**ZA9900AB5**

DC Current:

Measuring range	Resolution	Overload	Internal resistance	
±20.00 mA	0.01mA	±0.1 A*	10 Ω	**ZA9901AB1**
±200.0 mA	0.1mA	±1 A*	1 Ω	**ZA9901AB2**
±2.000 A	0.001A	±10 A*	0.1 Ω	**ZA9901AB3**
±10.00 A	0.01A	±20 A*	0.01 Ω	**ZA9901AB4**

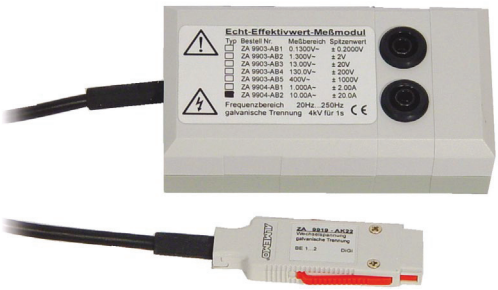
*Without fuse. overload condition only up to 1 minute maximum

DC via external shunt:

±200.0 mV	0.1mV	±40 V	50 kΩ	**ZA9900AB1**

DAkkS / DKD or factory calibration KE90xx electrical for digital measuring module (see chapter Calibration certificates)

True/Effective Measuring Modules for AC Voltages and AC Current ZA 9903 AB / ZA 9904 AB



- Independent, full digital acquisition of the true/effective values of an AC variable.
- Measuring signals with any course of a curve are digitised with 1kHz.
- Pure digital data transmission to the measuring instrument.
- Acquisition of the frequency through a second measuring channel.
- Connector sockets electrically isolated and overvoltage-protected.

Technical Data

TRMS	
Accuracy:	0.1% of fin. val. ± 2 digits
Sampling rate:	1kHz
Resolution:	12 bit, ± 2048 digits for Uss
Frequency range:	20.0 … 250Hz
Meas. period/transient time:	0.5s
Frequency	
Accuracy:	± 0.1Hz
Sampling rate:	1kHZ
Resolution:	0.1Hz
Sensitivity:	10% of final value
Frequency range:	20.0 … 250Hz
Meas. period/transient time:	0.5s

Electrical isolation:	1kV permanent, 4kV for 1s
Housing:	polystyrene, dim. L 100 x W 54 x H 31mm
Sockets:	touchproof, Ø 4mm
Operating voltage:	6 … 14V through ALMEMO® device
Current consumption:	< 40mA (connector and module)

Types (incl. touchproof connecting cable) — Order no.

AC Voltage

Meas. range	Resolution	Peak	Overload	Internal resistance	
$130.0mV_{eff}$ [1]	0.1mV	±0.2V	±400V	0.5MΩ	**ZA9903AB1**
$1.300V_{eff}$	1mV	±2V	±400V	0.8MΩ	**ZA9903AB2**
$13.00V_{eff}$	10mV	±20V	±500V	1MΩ	**ZA9903AB3**
$130.0V_{eff}$	0.1V	±200V	±500V	1MΩ	**ZA9903AB4**
$400V_{eff}$	1V	±1000V	±1000V	4MΩ	**ZA9903AB5**

[1] When using the measuring module for the purposes of current measurement with an external shunt. the shunt must be looped into the neutral conductor (not into the phase).

AC Current

Meas. range	Resolution	Peak	Overload	Internal resistance	
$1.000A_{eff}$	1mA	±2A	±10A [2]	0.10Ω	**ZA9904AB1**
$10.00A_{eff}$	10mA	±20A	±20A [2]	0.01Ω	**ZA9904AB2**

[2] Without fuse, overload condition only up to 1 minute maximum

DAkkS / DKD or factory calibration KE90xx electrical for digital measuring module (see chapter Calibration certificates)