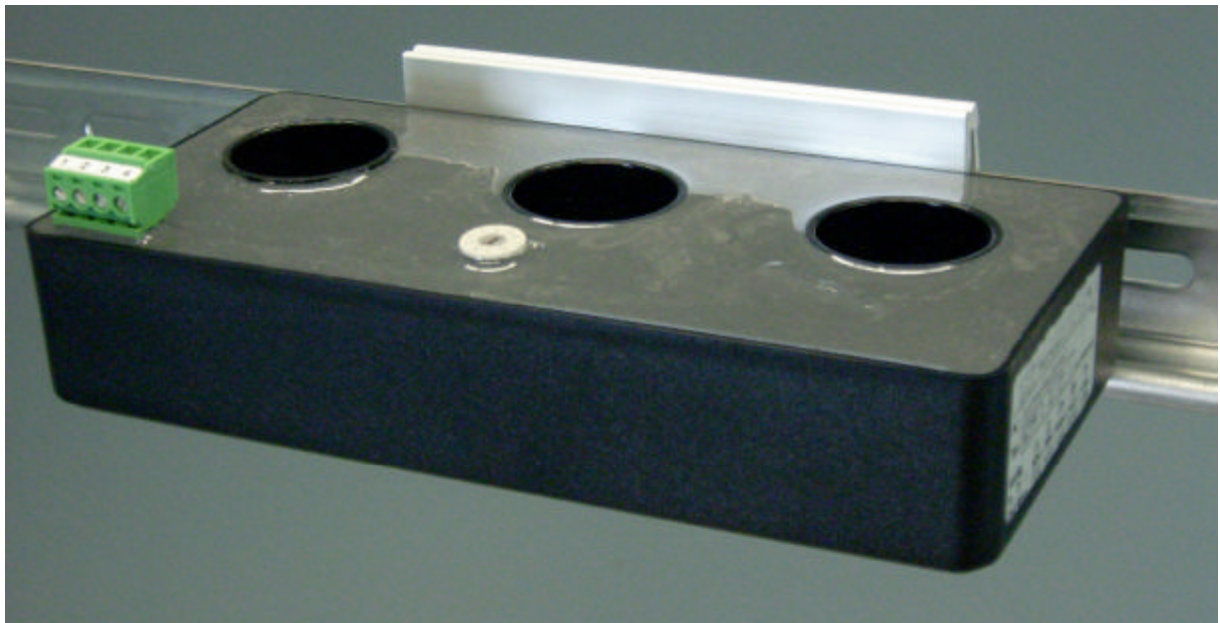


HC 300

Three-phase summing current transformer

Configurable current transformer for AC current measurement in 3-phase networks up to max. 3 x 75 A, standard DIN rail mounting.



- galvanically isolated measurement of AC currents in 3-phase networks at 50/60 Hz
- simple clip-on mounting to 'top-hat' DIN rail TS35
- large diameter (24 mm) hole for one or more primary conductors per phase
- any assignment of the currents to be measured is possible – the rectified output signals are summed for subsequent rms measurement
- **rotary switch permits selection of 5 different measuring ranges with the following primary/secondary current ratios:**

3x 15A
1500:1

3x 30A
3000:1

3x 45A
4500:1

3x 60A
6000:1

3x 75A
7500:1

- overload and open-circuit proof
- several transformer outputs can be connected in parallel
- no separate power supply required

Technical data / Notes on connection

Current measurement:	
Primary current range:	1 x 1 A ... 3 x 75 A (see configuration table)
Saturation current:	≥ 175 A rms per phase
Overload:	< 1 minute at max. current, depending on measuring range (see table)
Nominal error:	< 1,5% of full-scale value for all measuring ranges
Low-range error:	> 10% (absolute) with small currents (less than 5% of full-scale value)
Output:	0...30 mA rms (42 mA peak value), not limited
Output voltage limiting:	7,5 V (peak value)
Type of output current signal:	Summing of rectified and down-scaled sinusoidal individual currents, taking the phase relation into account by means of subsequent 'true rms' measurement
Evaluation:	

The output supplies a signal current that is proportional to the sum of the measured primary currents.

For this, the phase currents can be measured independently (individually connected) or as a sum (simultaneously connected).

Hereby, it must be noted that the summed current value (positive sign) takes the phase relations into account. Therefore, the sum of all currents in symmetric 3-phase networks (without neutral point) is not '0', but $2 \times I_{PP}$.

In case individual and summed 3-phase currents are to be measured alternately, please note that individual currents are not subjected to linking, which results in a different transformer ratio:

Summed 3-phase currents

3x 30 A results in 42,4 mA(rms) summed current (2000:1), but

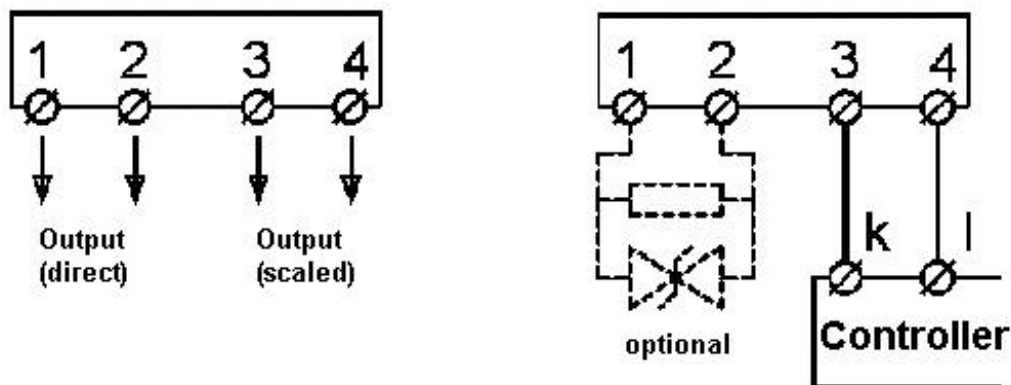
Individual 3-phase currents

3x 30 A results in 42,4 mA(rms) summed current (2000:1). The scale factor has to be divided by 3. Instead of "Tr.Rat" 2000 you have to use 667, then you will get 30A for one phase

Saturation current

At about 175 A per phase, the transformer starts going into saturation, i.e. its transfer characteristic becomes non-linear. If small currents are to be measured immediately after the transformer has been in saturation, it takes about 400 ms before the transfer characteristic is linear again.

Electrical connections



Terminal assignment

- 1 - Output 1 (+) rectified summed current (possible connection of an
- 2 - Output 1 (-) external load or voltage limiting)
- 3 - Output 2 (+) rectified and scaled summed current
- 4 - Output 2 (-)

The conductors with the load currents to be measured must be passed through the transformer only once. If the load current is insufficient for the full measuring range, the conductor can be looped through the transformer two or more times. With every loop, the measured current is multiplied accordingly (x2, x3, x4, etc.).

This increases the measurement resolution, which also reduces the measurement error in the lower scale range.

The data given in the table below refer to single conductors through the transformer. In case of multiple conductor loops, the parameters must be converted accordingly.

Configuration options / measuring ranges

	Primary curr. range AC rms	Max. cont. current AC rms	Measuring range limit (7,5 V / 170Ω load)	Scaling I _{prim} : I _{sec}	Terminals	Switch position	HC100 value (KS800)	Tr.Rat value (KSvario)
1	3x 15 A	3x 40 A	about 3x 16 A	1000:1	3 - 4	⑧	30	1050
2	3x 30 A	3x 70 A	about 3x 31 A	2000:1	3 - 4	⑨	59	2000
3	3x 45 A	3x 100 A	about 3x 46 A	3000:1	3 - 4	②	85	2900
4	3x 60 A	3x 140 A	about 3x 60 A	4000:1	3 - 4	⑤	115	3850
5	3x 75 A	3x 175 A	about 3x 75 A	5000:1	3 - 4	⑦	143	4750

Notes

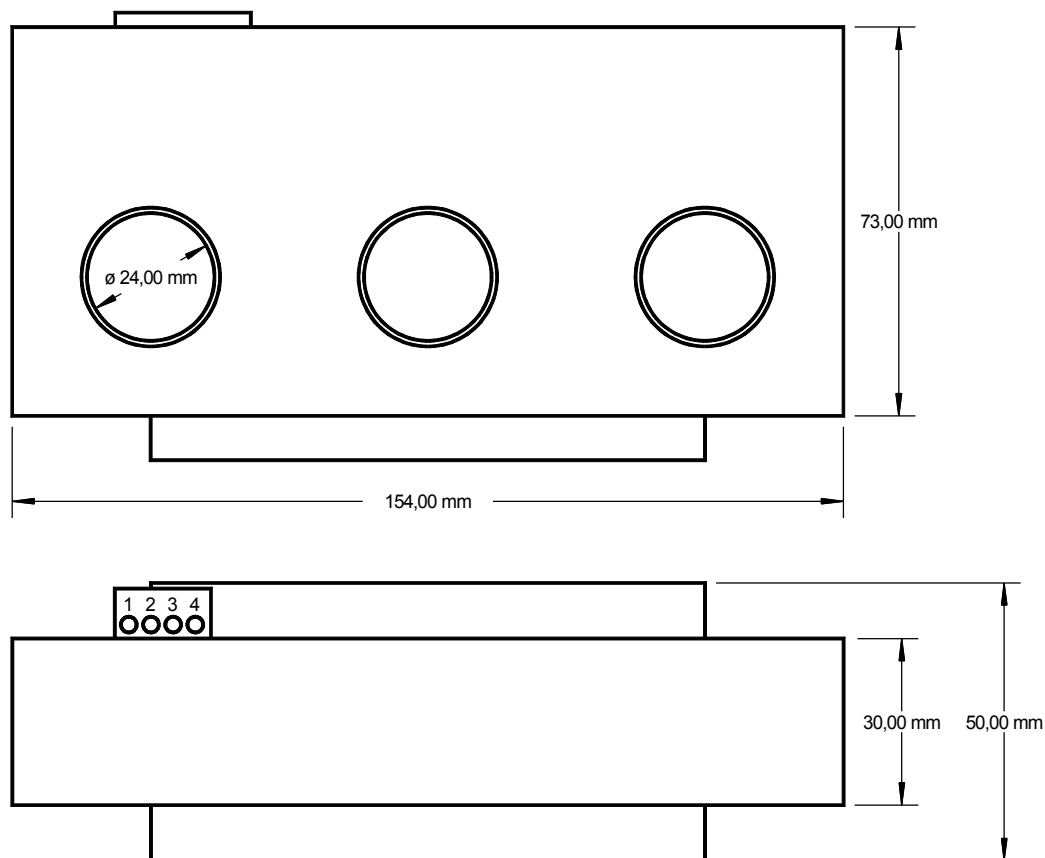
The configuration data have been specified in case the sum of the three phase currents is displayed after evaluation by the controller.

The output voltage limit value of 7,5 V (peak value) in the various measuring ranges indicates the point at which the specified error of 1,5% (of full-scale value) is exceeded.

Although measurements are still possible above the peak value, exceeding the measuring range by 10% results in an rms output value that is 15% too low, for example.

The specified max. continuous current may be exceeded for brief periods (inrush current, short circuit current). If the max. current is exceeded for a longer period, this can lead to thermal damage of the transformer.

Dimensions



Ordering information

Description	Order no.	Features
HC 300	KSVC-109-31031	Three-phase summing current transformer with adjustable ranges



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