TECHNICAL DOCUMENTATION

Summation current transformers, type KSU/SUSK

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Frequency	50/60 Hz (16 2/3 to 400 Hz on request)
Nominal Voltage	≤ 720 V AC ≤ 1200 V AC for ASK 165.5, 205.5
Isolation Class	E
Test Voltage	3000 V, 1 min, 50 Hz (Nominal Voltage ≤ 720 V) 6000 V, 1 min, 50 Hz (Nominal Voltage ≤ 1200 V)
Thermal Continuous Thermal Current	Icth = 1.0 × In Icth = 1.2 × In for ASK 165.5, 205.5
Rated Short-Time Thermal Current	Ith = 40 × In, 1 sec (max. 100 kA) for WSK, KSU, SUSK
Rated Dynamic Current	Idyn = 2.5 × Ith
Instrument Security Factor	FS 5 to 15 (see product label for specific value)
Operating Temperature	-5°C to 50°C
Storage Temperature	-25°C to 70°C
Standard References	IEC / DIN EN 61869/1+2 DIN 42600/1+2

Current transformers overview

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Primary nominal current	KSU 2	KSU 3	SUSK 3	SUSK 4	SUSK 5	SUSK 6	SUSK 7	SUSK 8									Primary nominal current
A																	A
1	✓	✓	✓	✓	✓	✓	✓	✓									1
2.5																	2.5
5	✓	✓	✓	✓	✓	✓	✓	✓									5
10																	10
15																	15
20																	20
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3200																	3200
4000																	4000
5000																	5000
6000																	6000
7500																	7500
Primary conductor in mm																	Primary conductor in mm
Round conductor in mm																	Round conductor in mm
Transform. width in mm	57	57	65	65	65	65	65	65									Transform. width in mm

* For the current transformers above, click-on mountings are available for fitment onto 35mm DIN-rails (DIN 50022).

Guidance when ordering summation current transformers

Summation current transformers are suitable for the summation of several synchronized alternating currents with similar phases but with differing load phase shifts. It is also possible to have the summation of currents with varied nominal voltages of similar phase positions. These measurements cannot be used for tariff applications, as the existing voltage differences are recorded as errors.

With the counter connection of the main transformer to the summation current transformer, it is possible to receive secondary currents which are proportional to the differences of the primary input currents.

The built-in technical know-how enables the summation current transformers to add secondary currents of varying nominal transmissions from the main transformer.

The secondary connections of each main transformer are connected to the allocated primary inputs of the summation current transformers.

The number of windings of individual partially wound primary circuits of the summation current transformer is proportionally aligned to the ratio of the primary nominal current of the corresponding main transformer, and to the sum of the nominal currents of all the summation current transformers being connected to the main transformer.

For the visual display of the current, a measuring unit can be used with a measuring range similar to the secondary nominal current of the summation current transformers.

It is irrelevant for the main transformers with similar nominal transmission ratios, to which primary circuit of the summation current transformer the connection is made.

With main transformers of different nominal transmission ratios, care must be taken to adhere to the assigned connection to the terminals of the summation current transformers.
Is the current flow in the main transformer interrupted, the secondary circuit of the main transformer must neither be short-circuited nor be connected to the summation current transformer, or to the main transformer.

Summation current transformers with unallocated primary circuits must remain open for a later connection to an additional main transformer. The secondary output current of the summation current transformer is in this instance lower than the secondary nominal current of the summation current transformer by a quantity equal to the ratio of the primary nominal current of this "missing" main transformer and the sum of all the primary nominal currents of the main transformer.

The nominal secondary current of a main transformer must be equal to the nominal primary current of the input allocation of the summation current transformer.

Guidance when ordering summation current transformers

Please find below an example for the correct selection of measuring components for summation current transformers.

Example:

Actual situation:	3 transmission ratios	1000 / 5 VA
		800 / 5 VA
		600 / 5 VA
	Overall current	2400 / 5 VA

Burden:
– 1 current meter
– 1 power recorder

Looking for: 1 summation current transformer and the VA power of an individual main transformer

Required active performance of the summation current transformer:

Current meter	1.5 VA
Performance recorder	7.0 VA
Measurement conductor loss	1.5 VA
consumption Po summation ct	4.0 VA
Interim result	14.0 VA

The individual transformer must provide it's VA share from this 14.0 VA corresponding to its ratio to the "total transmission".

Consideration must also be given to the respective power loss between the main transformer and the summation transformer plus other possible losses.

1. Main transformer 1000 / 5 $\frac{1000}{2400} \times 14.0 = 5.83$ VA + additional possible losses

2. Main transformer 800 / 5A $\frac{800}{2400} \times 14.0 = 4.67$ VA + additional possible losses

3. Main transformer 600 / 5A $\frac{600}{2400} \times 14.0 = 3.50$ VA + additional possible losses

The VA values of the main transformers are to be rounded up to the corresponding VA values in our charts.

The ratio of the primary current of a main transformer to the sum of the primary currents of all main current transformers the ratio must not exceed 1:8.

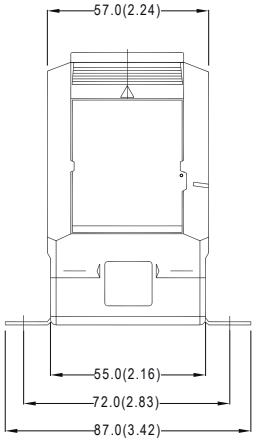
Important indication to the power measuring

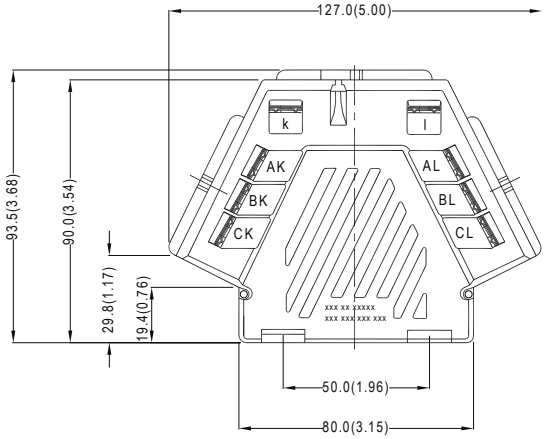
Too many rising deviation can prevent the measuring transformer acting as a current transformer from fulfilling its protective function with regard to the connected measuring units, as in normal operation its functions is well below its saturation limit, and in the event of over currents, the saturation limit is reached considerably later and takes the function almost as a protection current transformer.

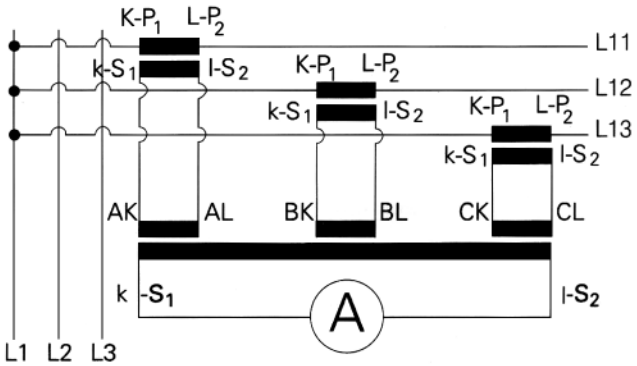
If there is too much of a decrease, the measuring transformer, as a result of the continuous excess demands will reach the saturation limit too soon and indirectly function as a switch, rendering a measuring impossible.

Summation current transformer KSU 2

Secondary current			5A		1A	
			Accuracy class		Accuracy class	
	Primary current	Burden	1	0.5	1	0.5
Type	A	VA	Art.-no.	Art.-no.	Art.-no.	Art.-no.
2	1+1	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		20	✓		✓	
		25	✓		✓	
2	5+5	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		20	✓		✓	





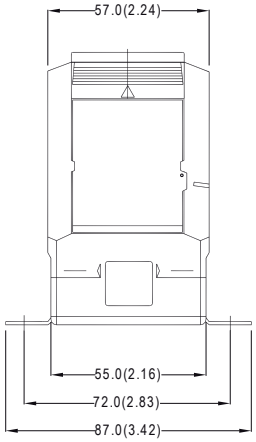


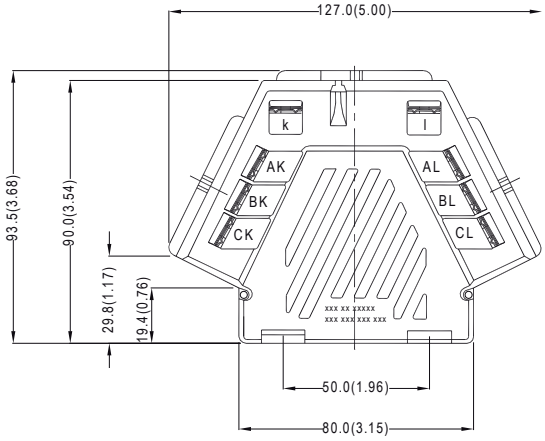
Connection example for different ratios		
AK-AL	=	1000/5
BK-BL	=	800/5
CK-CL	=	600/5

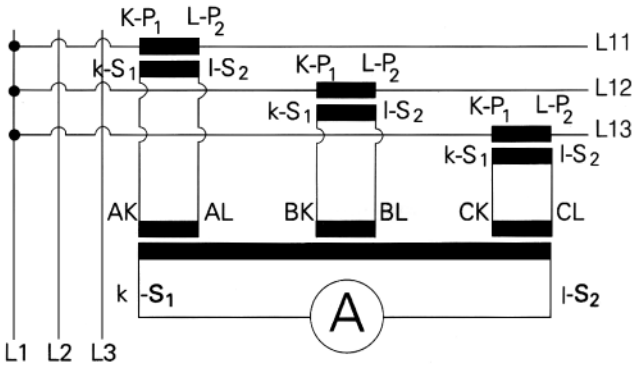
Weight	0.300-1.100kg (0.66-2.43lbs)
Security factor	FS 5
DIN rail mounting	Not available
Sealed shutter Primary	Type: 59041 (x2)

Summation current transformer KSU 3

Secondary current			5A		1A	
			Accuracy class		Accuracy class	
	Primary current	Burden	1	0.5	1	0.5
Type	A	VA	Art.-no.	Art.-no.	Art.-no.	Art.-no.
3	1+1+1	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
3	5+5+5	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓





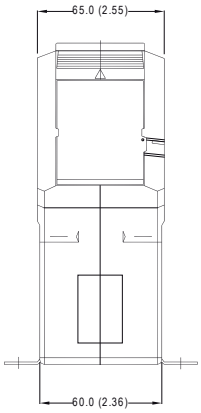


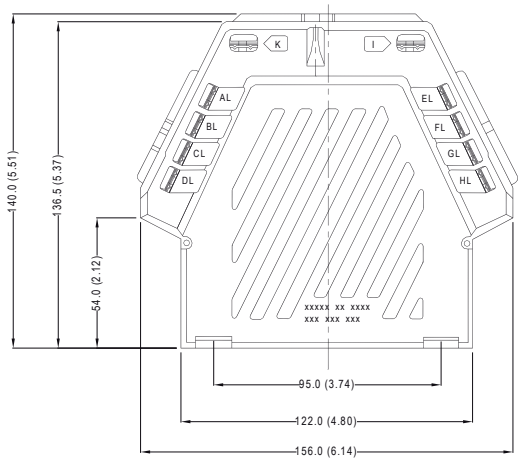
Connection example for different ratios		
AK-AL	=	1000/5
BK-BL	=	800/5
CK-CL	=	600/5

Weight	0.300-0.750kg (0.66-1.65lbs)
Security factor	FS 5
DIN rail mounting	Not available
Sealed shutter Primary	Type: 59041 (x2)

Summation current transformer SUSK 3

Secondary current			5A		1A	
Type	Primary current A	Burden VA	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.
3	1+1+1	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		30	✓	✓		
3	5+5+5	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		30	✓		✓	

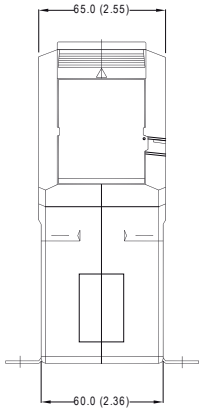


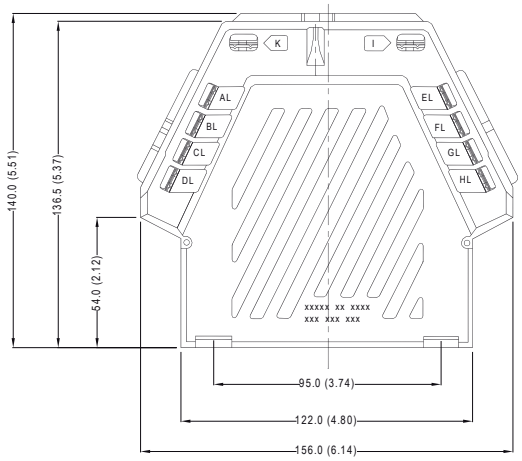


Weight	0.480-1.130kg (1.06-2.49lbs)
Security factor	FS 5
DIN rail mounting	Not available
Sealed shutter Primary	Type: 59041 (x2)
Sealed shutter Primary	Type: 59042

Summation current transformer SUSK 4

Secondary current			5A		1A	
Type	Primary current A	Burden VA	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.
4	1+1+1+1	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		25	✓	✓		
		30	✓	✓		
4	5+5+5+5	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		25	✓		✓	
		30	✓		✓	

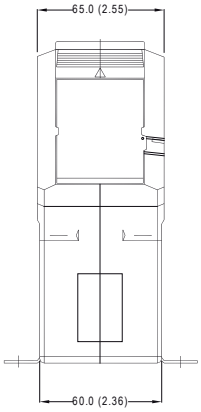


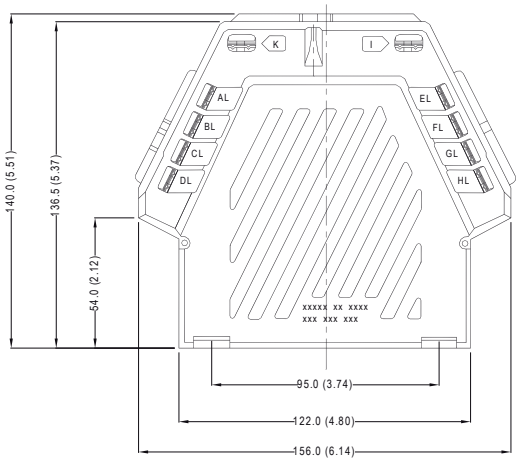


Weight	0.500-1.210kg (1.10-2.67lbs)
Security factor	FS 5
DIN rail mounting	Not available
Sealed shutter Primary	Type: 59041 (x2)
Sealed shutter Primary	Type: 59042

Summation current transformer SUSK 5

Secondary current			5A		1A	
Type	Primary current A	Burden VA	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.
5	1+1+1+1+1	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		30	✓	✓		
5	5+5+5+5+5	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		30	✓		✓	

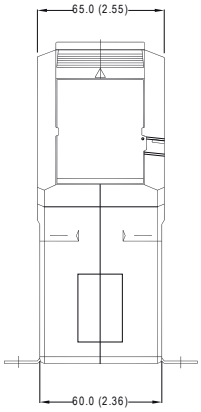


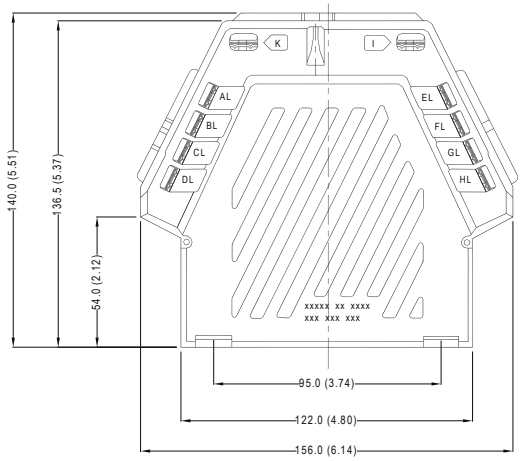


Weight	0.500-1.240kg (1.10-2.73lbs)
Security factor	FS 5
DIN rail mounting	Not available
Sealed shutter Primary	Type: 59041 (x2)
Sealed shutter Primary	Type: 59042

Summation current transformer SUSK 6

Secondary current			5A		1A	
Type	Primary current A	Burden VA	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.
6	1+1+1+1+1+1	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		30	✓	✓		
6	5+5+5+5+5+5	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		30	✓		✓	

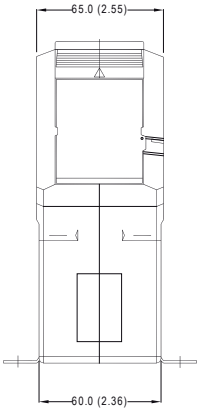


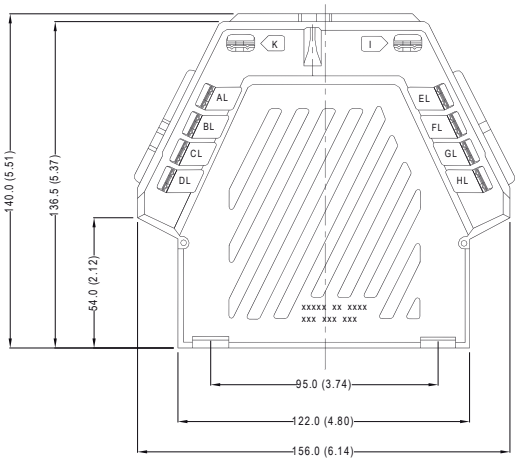


Weight	0.500-1.250kg (1.10-2.76lbs)
Security factor	FS 5
DIN rail mounting	Not available
Sealed shutter Primary	Type: 59041 (x2)
Sealed shutter Primary	Type: 59042

Summation current transformer SUSK 7

Secondary current			5A		1A	
Type	Primary current A	Burden VA	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.
7	1+1+1+1+1+1+1	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		30	✓	✓		
7	5+5+5+5+5+5+5	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		30	✓		✓	

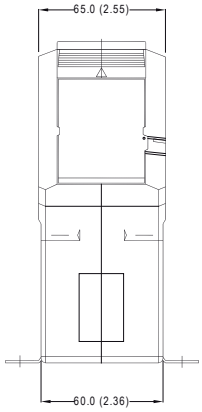


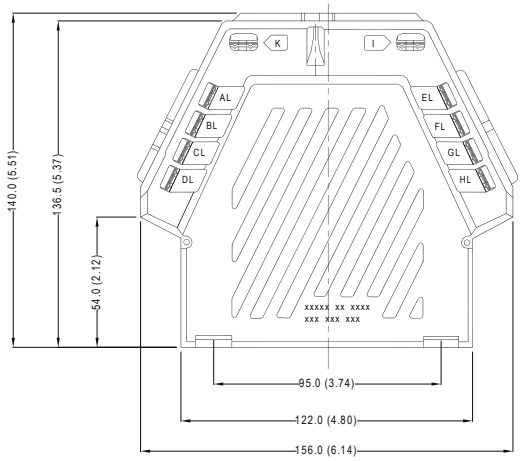


Weight	0.500-1.200kg (1.10-2.65lbs)
Security factor	FS 5
DIN rail mounting	Not available
Sealed shutter Primary	Type: 59041 (x2)
Sealed shutter Primary	Type: 59042

Summation current transformer SUSK 8

Secondary current			5A		1A	
Type	Primary current A	Burden VA	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.	Accuracy class 1 Art.-no.	Accuracy class 0.5 Art.-no.
8	1+1+1+1+1+1+1+1	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		30	✓	✓		
8	5+5+5+5+5+5+5+5	5	✓	✓	✓	✓
		10	✓	✓	✓	✓
		15	✓	✓	✓	✓
		30	✓		✓	





Weight	0.710-1.280kg (1.57-2.82lbs)
Security factor	FS 5
DIN rail mounting	Not available
Sealed shutter Primary	Type: 59041 (x2)
Sealed shutter Primary	Type: 59042

Test certificate
On request, we can provide you with a test certificate for a specific current transformer along with the CT. Please inform us when placing your order.

Sealed shutter
On request, we can supply a transparent plastic cover. The cover seals the connections on the CT in a way that leaves the type label visible. Please check availability on each individual data sheet.

Excitation curve
On request, we can provide you with an excitation curve for a specific current transformer along with the CT. Please inform us when placing your order.

Optional frequency
Frequency range for a standard CT is 50-60Hz. On request, we can provide you with a frequency range from 16 2/3 – 400Hz. Please inform us when placing your order.

Cast resin
Cast resin is standard for all CT's with a nominal current >4,000A. On request, all CT's with a nominal current <4,000A can be produced with cast resin. Please inform us when placing your order. The min. and max. weight specification for each type refers to standard versions. The specification is different if cast resin is ordered for CT's <4,000A.

Mounting
Foot angle for screw mounting and busbar mounting screws with isolating protection caps are supplied along with the CT. DIN-rail mounting for tubes, plug-ins and protection transformers is available on request for certain CT types. Please check availability on each individual data sheet.