

## 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.

If the current flow in the main transformer is 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
		<u>600 / 5 VA</u>
	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 P <sub>o</sub> summation ct	<u>4.0 VA</u>
Interim result	14.0 VA

The individual transformer must provide its 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 / 5A  $\frac{1000}{2400} \times 14.0 = 5.83 \text{ VA} + \text{additional possible losses}$
2. Main transformer 800 / 5A  $\frac{800}{2400} \times 14.0 = 4.67 \text{ VA} + \text{additional possible losses}$
3. Main transformer 600 / 5A  $\frac{600}{2400} \times 14.0 = 3.50 \text{ VA} + \text{additional possible losses}$

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.**

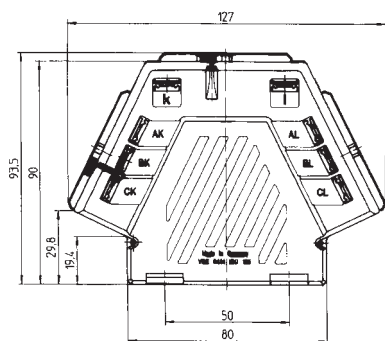
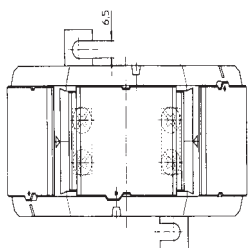
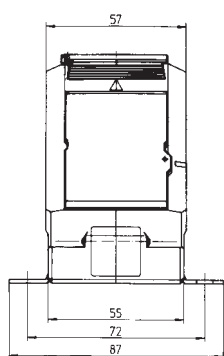
### Important indication to the power measuring

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.

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## Summation current transformer



Type	Secondary current		5A		1A	
	Primary current A	Burden VA	Accuracy class		Accuracy class	
			1	0.5	1	0.5
			Art.-no.	Art.-no.	Art.-no.	Art.-no.
2	1+1	5	41114	41111	41314	41311
		10	41115	41112	41315	41312
		15	41116	41113	41316	41313
		20	41117		41317	
		25	41118		41318	
3	1+1+1	5	41130	41127	41330	41327
		10	41131	41128	41331	41328
		15	41132	41129	41332	41329
		30	41133		41333	
2	5+5	5	41014	41011	41214	41211
		10	41015	41012	41215	41212
		15	41016	41013	41216	41213
		20	41017		41217	
		25	41018		41218	
3	5+5+5	5	41030	41027	41230	41227
		10	41031	41028	41231	41228
		15	41032	41029	41232	41229
		30	41033		41233	

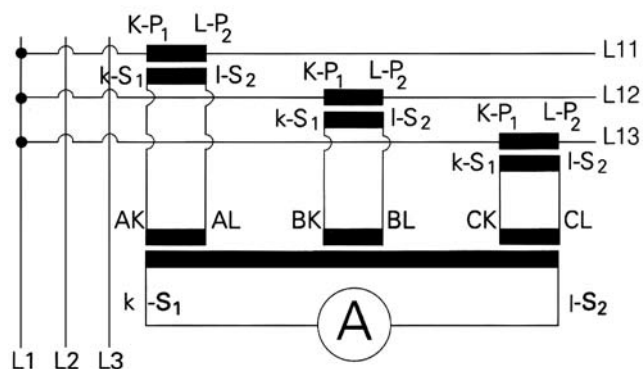
Connection example for different ratios:

AK-AL = 1000/5

BK-BL = 800/5

CK-CL = 600/5

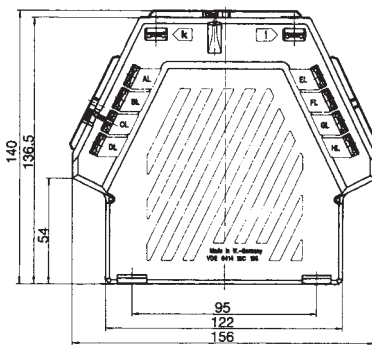
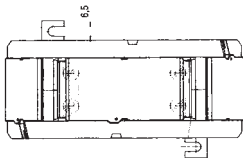
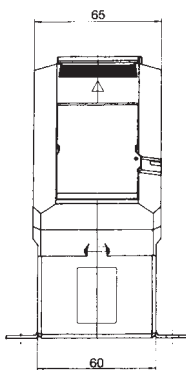
Connection diagram



Primary conductor	—
Round conductor	—
Transformer width	127 mm
Transformer depth	57 mm
Snap-on mounting	—
Sealed shutter	<b>Art.-no. 59041</b>
2 pieces primary	see page 205

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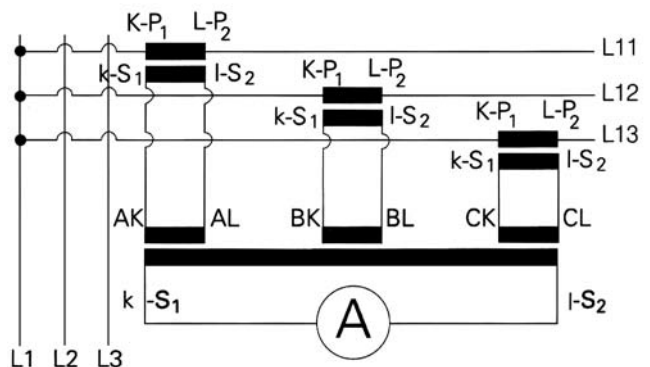
## Summation current transformer



Type	Primary current A	Burden VA	5A		1A	
			Accuracy class		Accuracy class	
			1	0.5	1	0.5
			Art.-no.	Art.-no.	Art.-no.	Art.-no.
3	5+5+5	5	40015	40011	40215	40211
		10	40016	40012	40216	40212
		15	40017	40014	40217	40214
		30	40018		40218	
4	5+5+5+5	5	40026	40023	40226	40223
		10	40027	40024	40227	40224
		15	40028	40025	40228	40225
		25	40029		40229	
		30	40030		40230	
5	5+5+5+5+5	5	40037	40034	40237	40234
		10	40038	40035	40238	40235
		15	40039	40036	40239	40236
		30	40040		40240	
6	5+5+5+5+5+5	5	40048	40045	40248	40245
		10	40049	40046	40249	40246
		15	40050	40047	40250	40247
		30	40051		40251	
7	5+5+5+5+5+5+5	5	40060	40057	40260	40257
		10	40061	40058	40261	40258
		15	40062	40059	40262	40259
		30	40063		40263	
8	5+5+5+5+5+5+5+5	5	40071	40068	40271	40268
		10	40072	40069	40272	40269
		15	40073	40070	40273	40270
		30	40074		40274	

Primary current 1 A, see page 116

Connection diagram

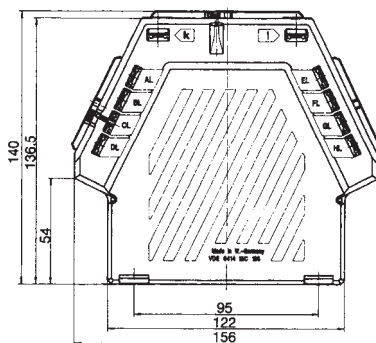
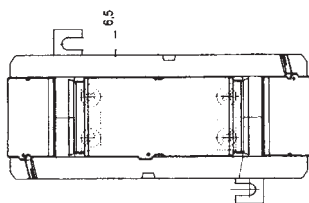
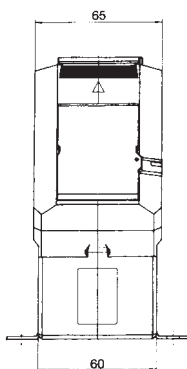


Primary conductor	—
Round conductor	—
Transformer width	156 mm
Transformer depth	65 mm
Snap-on mounting	—
Sealed shutter secondary no.	Art.-no. 59041 (primary) Art.-no. 59042 (secondary) see page 205
Current transformer for tariff applications	see page 195



# SUSK 3...8

## Summation current transformer



Typ	Primary current A	Burden VA	5A		1A	
			Accuracy class		Accuracy class	
			1	0.5	1	0.5
			Art.-no.	Art.-no.	Art.-no.	Art.-no.
3	1+1+1	5	40115	40111	40315	40311
		10	40116	40112	40316	40312
		15	40117	40114	40317	40314
		30	40118	40318		
4	1+1+1+1	5	40126	40123	40326	40323
		10	40127	40124	40327	40324
		15	40128	40125	40328	40325
		25	40129	40329		
		30	40130	40330		
5	1+1+1+1+1	5	40137	40134	40337	40334
		10	40138	40135	40338	40335
		15	40139	40136	40339	40336
		30	40140	40340		
6	1+1+1+1+1+1	5	40148	40145	40348	40345
		10	40149	40146	40349	40346
		15	40150	40147	40350	40347
		30	40151	40351		
7	1+1+1+1+1+1+1	5	40160	40157	40360	40357
		10	40161	40158	40361	40358
		15	40162	40159	40362	40359
		30	40163	40363		
8	1+1+1+1+1+1+1+1	5	40171	40168	40371	40368
		10	40172	40169	40372	40369
		15	40173	40170	40373	40370
		30	40174	40374		

Primary current 5 A, see page 115

Connection example for different ratios :

- AK-AL = 1000/5
- BK-BL = 800/5
- CK-CL = 600/5
- DK-DL = 400/5
- EK-EL = 400/5
- FK-FL = 300/5
- GK-GL = 300/5
- HK-HL = 300/5

Primary conductor	—
Round conductor	—
Transformer width	156 mm
Transformer depth	65 mm
Snap-on mounting	—
Sealed shutter secondary no.	<b>Art.-no. 59041</b> (primary) <b>Art.-no. 59042</b> (secondary) see page 205
Current transformer for tariff applications	see page 195