

ES100 ... ES2000 industry current sensors

100 to 2000 A - Closed loop technology

Frame mounting

These sensors are designed to be fixed by the case. They may be either horizontally or vertically mounted. The secondary connection is made with a connector or cable. For ES sensors the primary conductor may be a cable or a bar.



ES100C



ES300C



ES500C



ES1000S



ES2000C

Ordering details

Nominal primary current	Secondary current at I_{PN}	Supply voltage	Secondary connection	Type	Order code
A r.m.s.	mA	V DC			
100	100	$\pm 12 \dots \pm 24$	Molex type 3 pins HE 14	ES100C	1SBT150100R0001
100	100	$\pm 12 \dots \pm 24$	3 wires 200 mm	ES100F	1SBT150100R0002
300	150	$\pm 12 \dots \pm 24$	Molex type 3 pins HE 14	ES300C	1SBT150300R0001
300	150	$\pm 12 \dots \pm 24$	JST 3 pins	ES300S	1SBT150300R0003
300	150	$\pm 12 \dots \pm 24$	3 wires 200 mm	ES300F	1SBT150300R0002
500	100	$\pm 12 \dots \pm 24$	Molex type 3 pins HE 14	ES500C	1SBT150500R0001
500	100	$\pm 12 \dots \pm 24$	JST 3 pins	ES500S	1SBT150500R0003
500	100	$\pm 12 \dots \pm 24$	3 wires 200 mm	ES500F	1SBT150500R0002
500	125	$\pm 12 \dots \pm 24$	Molex type 3 pins HE 14	ES500-9672	1SBT150500R9672
500	125	$\pm 12 \dots \pm 24$	JST 3 pins	ES500-9673	1SBT150500R9673
500	125	$\pm 12 \dots \pm 24$	3 wires 200 mm	ES500-9674	1SBT150500R9674
1000	200	$\pm 15 \dots \pm 24$	Molex type 3 pins HE 14	ES1000C	1SBT151000R0001
1000	200	$\pm 15 \dots \pm 24$	JST 3 pins	ES1000S	1SBT151000R0003
1000	200	$\pm 15 \dots \pm 24$	3 wires 200 mm	ES1000F	1SBT151000R0002
1000	250	$\pm 15 \dots \pm 24$	Molex type 3 pins HE 14	ES1000-9678	1SBT151000R9678
1000	250	$\pm 15 \dots \pm 24$	JST 3 pins	ES1000-9679	1SBT151000R9679
1000	250	$\pm 15 \dots \pm 24$	3 wires 200 mm	ES1000-9680	1SBT151000R9680
2000	400	$\pm 15 \dots \pm 24$	Molex type 3 pins HE 14	ES2000C	1SBT152000R0003
2000	400	$\pm 15 \dots \pm 24$	JST 3 pins	ES2000S	1SBT152000R0002
2000	400	$\pm 15 \dots \pm 24$	3 wires 200 mm	ES2000F	1SBT152000R0001

ES100 ... ES2000 industry current sensors

Technical data

2

Application

Sensors to measure DC, AC or pulsating currents with a galvanic insulation between primary and secondary circuits.



		Molex type HE14 connector	ES100C	ES300C	ES500C	ES500-9672
		JST connector	-	ES300S	ES500S	ES500-9673
		Cables	ES100F	ES300F	ES500F	ES500-9674
		A r.m.s.	100	300	500	500
Nominal primary current		A	±150	+500	+800	+800
Measuring range	@ ±15 V (±5%)	A	±150	+500	+800	+800
Measuring range	@ ±24 V (±5%)	A	±150	+500	+800	+800
Not measurable overload	10 ms/hour	A	300 (1 ms/hour)	3000	5000	5000
Max. measuring resistance	@ I _{PMAX} & ±15 V (±5%)	Ω	50	20	7	13
Max. measuring resistance	@ I _{PMAX} & ±24 V (±5%)	Ω	107	54	60	56
Min. measuring resistance	@ I _{PN} & ±15 V (±5%)	Ω	12	0	0	0
Min. measuring resistance	@ I _{PN} & ±24 V (±5%)	Ω	8.9	45	0	31
Turn number			1000	2000	5000	4000
Secondary current at I _{PN}		mA	100	150	100	125
Accuracy at I _{PN}	@ +25 °C	%	≤±0.5	≤±0.5	≤±0.5	≤±0.5
Accuracy at I _{PN}	-5 ... +70 °C	%	≤±1	≤±1	≤±1	≤±1
Accuracy at I _{PN}	-20 ... +70 °C	%	≤±2.5	≤±1.5	≤±1	≤±1
Offset current	@ +25 °C	mA	≤±0.4	≤±0.25	≤±0.25	≤±0.25
Linearity		%	≤0.1	≤0.1	≤0.1	≤0.1
Thermal drift coefficient	-5 ... +70 °C	µA/°C	≤10	≤15	≤5	≤6.25
Thermal drift coefficient	-20 ... +70 °C	µA/°C	≤80	≤40	≤16	≤20
Delay time		µs	≤1	≤1	≤1	≤1
di/dt correctly followed		A / µs	≤50	≤50	≤100	≤100
Bandwidth	-1 dB	kHz	≤100	≤100	≤100	≤100
Max. no-load consumption current	@ ±24 V (±5%)	mA	≤12	≤12	≤12	≤12
Secondary resistance	@ +70 °C	Ω	≤30	≤33	≤76	≤53
Dielectric strength Primary/Secondary	50 Hz, 1 min	kV	3	3	3	3
Supply voltage	±5%	VDC	±12 ... ±24	±12 ... ±24	±12 ... ±24	±12 ... ±24
Voltage drop		V	≤2.5	≤1	≤1	≤1
Mass		kg	0.050	0.115	0.210	0.210
Operating temperature		°C	-20 ... +70	-20 ... +70	-20 ... +70	-20 ... +70
Storage temperature		°C	-40 ... +85	-40 ... +85	-40 ... +85	-40 ... +85

General data

- Plastic case and insulating resin are self-extinguishing
- Fixing holes in the case moulding for two positions at right angles
- Direction of the current: A primary current flowing in the direction of the arrow results in a positive secondary output current from terminal M.

Primary connection

Hole for primary conductor.
The temperature of the primary conductor in contact with the case must not exceed 100 °C.

Secondary connection

- Molex type HE14 connector
- JST connector (ref.: B3P-VH)
- 3 x 200 mm cables (cross section 0.38 mm²).

ES100 ... ES2000 industry current sensors

Technical data



	Molex type HE14 connector		ES1000C	ES1000-9678	ES2000C
	JST connector		ES1000S	ES1000-9679	ES2000S
	Cables		ES1000F	ES1000-9680	ES2000F
Nominal primary current		A r.m.s.	1000	1000	2000
Measuring range	@ ±15 V (±5%)	A	±1500	±1500	±2200
Measuring range	@ ±24 V (±5%)	A	±1500	±1500	±3000
Not measurable overload	10 ms/hour	A	10000	10000	20000
Max. measuring resistance	@ I _{PMAX} & ±15 V (±5%)	Ω	2	8	5
Max. measuring resistance	@ I _{PMAX} & ±24 V (±5%)	Ω	30	30	11
Min. measuring resistance	@ I _{PN} & ±15 V (±5%)	Ω	0	0	0
Min. measuring resistance	@ I _{PN} & ±24 V (±5%)	Ω	0	0	0
Turn number			5000	4000	5000
Secondary current at I _{PN}		mA	200	250	400
Accuracy at I _{PN}	@ +25 °C	%	≤±0.5	≤±0.5	≤±0.5
Accuracy at I _{PN}	-5 ... +70 °C	%	≤±1	≤±1	≤±1
Accuracy at I _{PN}	-20 ... +70 °C	%	≤±1	≤±1	≤±1
Offset current	@ +25 °C	mA	≤± 0.25	≤± 0.5	≤±0.25
Linearity		%	≤0.1	≤0.1	≤0.1
Thermal drift coefficient	-5 ... +70 °C	μA/°C	≤5	≤6.25	≤10
Thermal drift coefficient	-20 ... +70 °C	μA/°C	≤20	≤20	≤10
Delay time		μs	≤1	≤1	≤1
di/dt correctly followed		A / μs	≤100	≤100	≤100
Bandwidth	-1 dB	kHz	≤100	≤100	≤100
Max. no-load consumption current	@ ±24 V (±5%)	mA	≤15	≤15	≤25
Secondary resistance	@ +70 °C	Ω	≤39	≤24	≤25
Dielectric strength Primary/Secondary	50 Hz, 1 min	kV	3	3	4
Supply voltage	±5%	VDC	±15 ... ±24	±15 ... ±24	±15 ... ±24
Voltage drop		V	≤ 2	≤ 2	≤1
Mass		kg	0.550	0.610	1.5
Operating temperature		°C	-20 ... +70	-20 ... +70	-20 ... +70
Storage temperature		°C	-40 ... +85	-40 ... +85	-40 ... +85

Accessories and options

Female Molex connector

- PETERCEM order code: **FPTN440032R0003** including 10 socket housings and 30 crimp socket contacts
- Molex order code: socket housing: 22-01-1034; crimp socket contacts: 08-70-0057.

Female JST connector

- PETERCEM order code: **FPTN440032R0002** including 10 socket housings and 30 crimp socket contacts
- JST order code: socket housing: VHR-3N; crimp socket contacts: SVH-21T-1.1.

Conformity

- EN 50178
- EN 61000-6-2, EN 61000-6-4



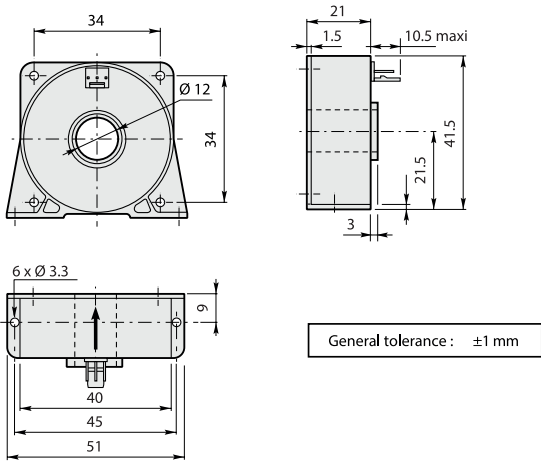
- : ES sensors with cables. File number: E166814 Vol 1
- : ES sensors with connectors. File number: E166814 Vol 2



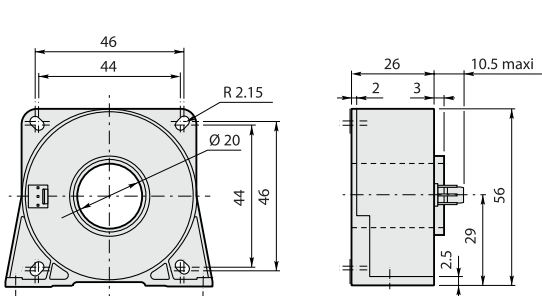
RoHS

ES100 ... ES500 industry current sensors

Dimensions (mm)



ES100C / ES100F

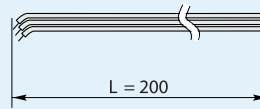


ES300C / ES300S / ES300F

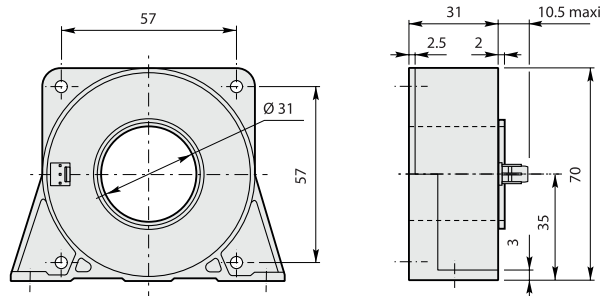
Standard ES100... sensors secondary connection



Molex type connector
(with 2.54 mm pitch)



Cable: - Red +V_A
- Green M
- Black -V_A



ES500C / ES500S / ES500F
ES500-9672 / ES500-9673 / ES500-9674

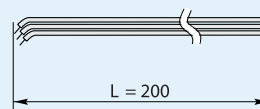
Standard ES300... and ES500... sensors secondary connection



Molex type connector
(with 2.54 mm pitch)



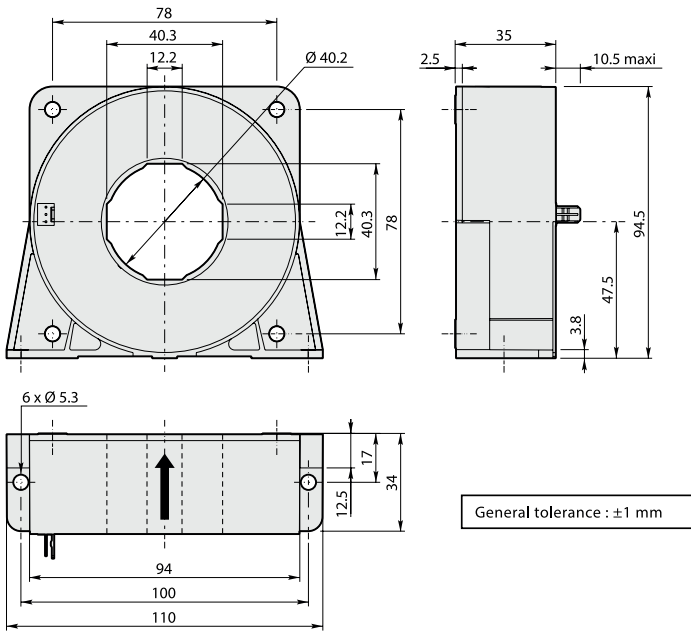
JST connector
(with 3.96 mm pitch)



Cable: - Red +V_A
- Green M
- Black -V_A

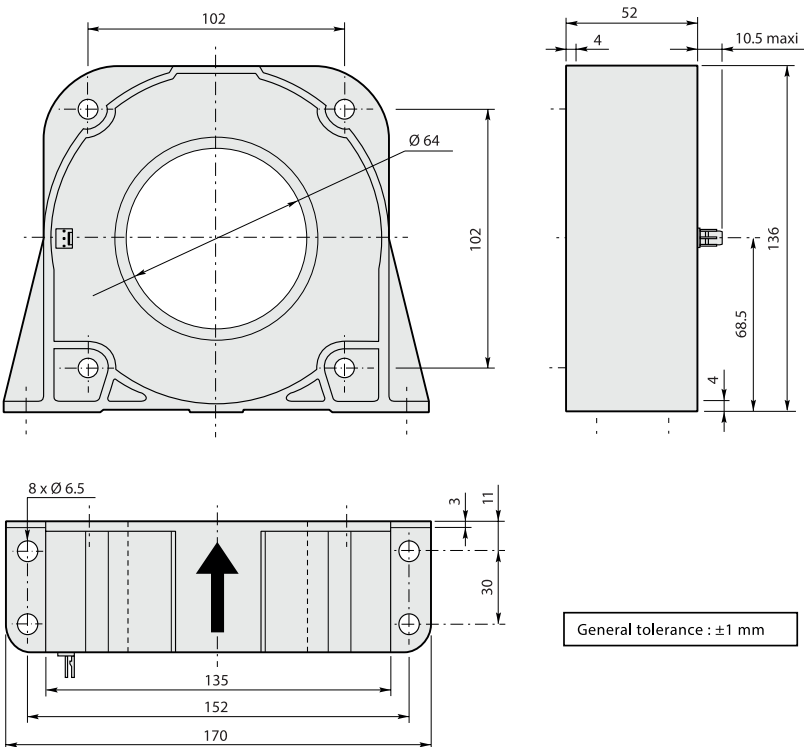
ES1000 ... ES2000, HRS1000-I ... HRS2500-I industry current sensors

Dimensions (mm)



General tolerance : ± 1 mm


ES1000C / ES1000S / ES1000F
 ES1000-9678 / ES1000-9679 / ES1000-9680
 HRS1000-I / HRS1500-I




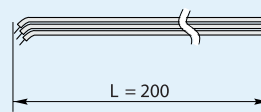
General tolerance : ± 1 mm

ES2000C / ES2000S / ES2000F
 HRS2000-I / HRS2500-I


Standard ES1000... and ES2000... sensors secondary connection


 Molex type connector (with 2.54 mm pitch)

 JST connector (with 3.96 mm pitch)



Cable: - Red $+V_A$
 - Green M
 - Black $-V_A$

 Molex Minifit Jr5566 (with 4.20 mm pitch)

 Phoenix contact type connector (with 3.80 mm pitch)