

# ES Industry Current Sensors

## Utilisation

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

## Technical data

Molex HE14 connector JST connector Cables			ES100	ES300	ES500
			ES100C - ES100F	ES300C ES300S ES300F	ES500C ES500S ES500F
Nominal primary current		A r.m.s.	100	300	500
Measuring range	@ ±15V (±5%)	A peak	±150	±500	±800
Measuring range	@ ±24V (±5%)	A peak	±150	±500	±800
Not measurable overload	10ms/hour	A peak	300 (1ms/hour)	3000	5000
Max. measuring resistance	@ I <sub>p</sub> max & ±15V (±5%)	Ω	48	20	7
Max. measuring resistance	@ I <sub>p</sub> max & ±24V (±5%)	Ω	105	54	60
Min. measuring resistance	@ I <sub>PN</sub> & ±15V (±5%)	Ω	10	0	0
Min. measuring resistance	@ I <sub>PN</sub> & ±24V (±5%)	Ω	82	45	0
Turn number			1000	2000	5000
Secondary current at I <sub>PN</sub>		mA	100	150	100
Accuracy at I <sub>PN</sub>	@ +25°C	%	≤±0.5	≤±0.5	≤±0.5
Accuracy at I <sub>PN</sub>	-5 ... +70°C	%	≤±1	≤±1	≤±1
Accuracy at I <sub>PN</sub>	-20 ... +70°C	%	≤±2.5	≤±1.5	≤±1
Offset current	@ +25°C	mA	≤±0.4	≤±0.25	≤±0.25
Linearity		%	≤0.1	≤0.1	≤0.1
Thermal drift coefficient	-5 ... +70°C	µA/°C	≤10	≤15	≤5
Thermal drift coefficient	-20 ... +70°C	µA/°C	≤80	≤40	≤16
Delay time		µs	≤1	≤1	≤1
di/dt correctly followed		A / µs	≤50	≤50	≤100
Bandwidth	-1dB	kHz	≤100	≤100	≤100
Max. no-load consumption current	@ ±24V (±5%)	mA	≤12	≤12	≤12
Secondary resistance	@ +70°C	Ω	≤30	≤33	≤76
Dielectric strength Primary/Secondary	50 Hz, 1 min	kV	3	3	3
Supply voltage	±5%	V dc	±12 ... ±24	±12 ... ±24	±12 ... ±24
Voltage drop		V	≤2.5	≤1	≤1
Mass		kg	0.050	0.115	0.210
Operating temperature		°C	-20 ... +70	-20 ... +70	-20 ... +70
Storage temperature		°C	-25 ... +85	-25 ... +85	-25 ... +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 HE14 connector (ref.: 22-11-10 31)
- JST connector (ref.: B3P-VH)
- 3 x 200 mm cables (cross section 0.38 mm<sup>2</sup>)

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## Technical data

			ES1000		ES2000
					
	Molex HE14 connector JST connector Cables		ES1000C ES1000S ES1000F	ES1000-9678 ES1000-9679 ES1000-9680	ES2000C ES2000S ES2000F
Nominal primary current		A r.m.s.	1000	1000	2000
Measuring range	@ ±15V (±5%)	A peak	±1500	±1500	-
Measuring range	@ ±24V (±5%)	A peak	±1500	±1500	±3000
Not measurable overload	10ms/hour	A peak	10000	10000	20000
Max. measuring resistance	@ I <sub>p</sub> max & ±15V (±5%)	Ω	4	7	-
Max. measuring resistance	@ I <sub>p</sub> max & ±24V (±5%)	Ω	33	30	11
Min. measuring resistance	@ I <sub>PN</sub> & ±15V (±5%)	Ω	0	0	0
Min. measuring resistance	@ I <sub>PN</sub> & ±24V (±5%)	Ω	0	0	0
Turn number			5000	4000	5000
Secondary current at I <sub>PN</sub>		mA	200	250	400
Accuracy at I <sub>PN</sub>	@ +25°C	%	≤±0.5	≤±0.5	≤±0.5
Accuracy at I <sub>PN</sub>	-5 ... +70°C	%	≤±1	≤±1	≤±1
Accuracy at I <sub>PN</sub>	-20 ... +70°C	%	≤±1	≤±1	≤±1
Offset current	@ +25°C	mA	≤±0.25	≤±0.25	≤±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	-1dB	kHz	≤100	≤100	≤100
Max. no-load consumption current	@ ±24V (±5%)	mA	≤12	≤12	≤25
Secondary resistance	@ +70°C	Ω	≤40	≤28	≤25
Dielectric strength Primary/Secondary	50 Hz, 1 min	kV	3	3	4
Supply voltage	±5%	V dc	±12 ... ±24	±12 ... ±24	±15 ... ±24
Voltage drop		V	≤1	≤1	≤1
Mass		kg	0.460	0.460	1.5
Operating temperature		°C	-20 ... +70	-20 ... +70	-20 ... +70
Storage temperature		°C	-25 ... +85	-25 ... +85	-25 ... +85

## Accessories and options

### Female Molex connector

- ABB order code: **FPTN 440 032 R0003** 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

- ABB order code: **FPTN 440 032 R0002** including 10 socket housings and 30 crimp socket contacts
- JST order code: socket housing: VHR-3N; crimp socket contacts: SVH-21T-1.1.

For other options, please contact us.

## Conformity

EN50178

EN61000-6-2



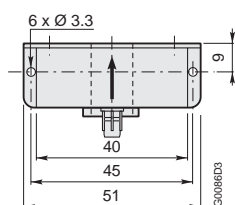
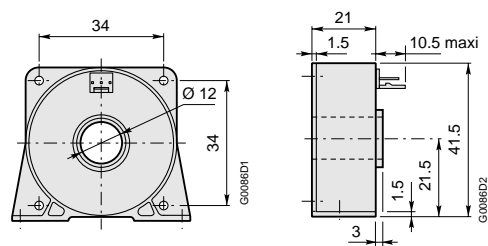
: ES sensors with cables.  
File number: E166814 Vol 1



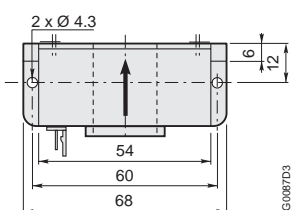
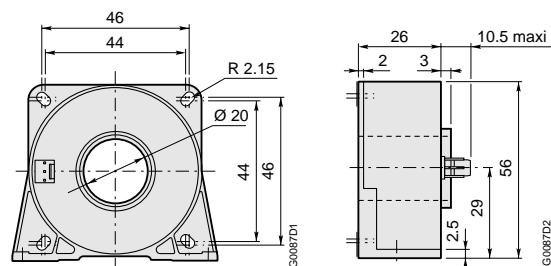
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File number: E166814 Vol 2

# ES Industry Current Sensors

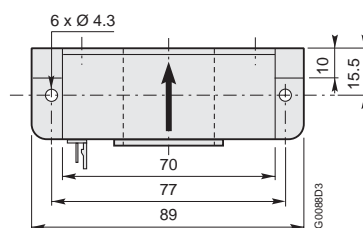
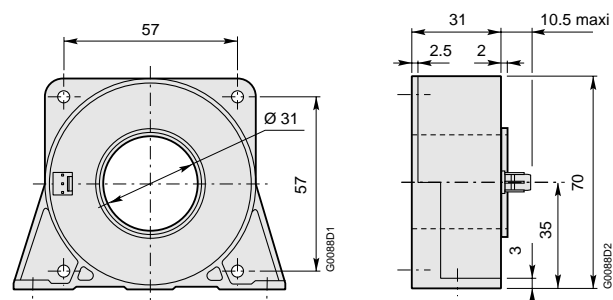
## Dimensions (in mm)



ES100C / ES100F



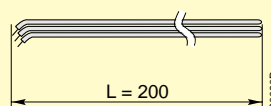
ES300C / ES300S / ES300F



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

## Standard ES100... sensor secondary connection

G0082D Molex connector  
(with 2.54 mm pitch)

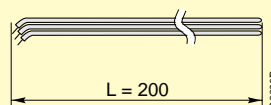


Cable : - Red ..... +V<sub>A</sub>  
- Green ..... M  
- Black ..... -V<sub>A</sub>

## Standard ES300... and ES500... sensor secondary connection

G0082D Molex connector  
(with 2.54 mm pitch)

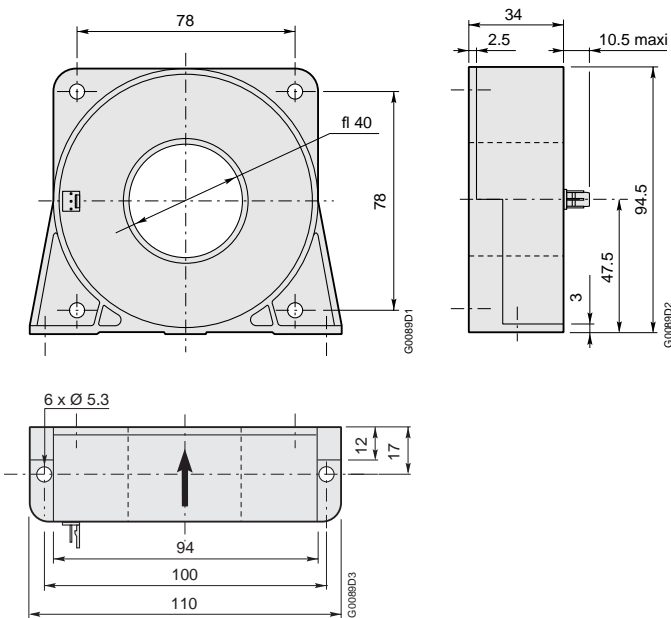
G0081D JST connector  
(with 3.81 mm pitch)



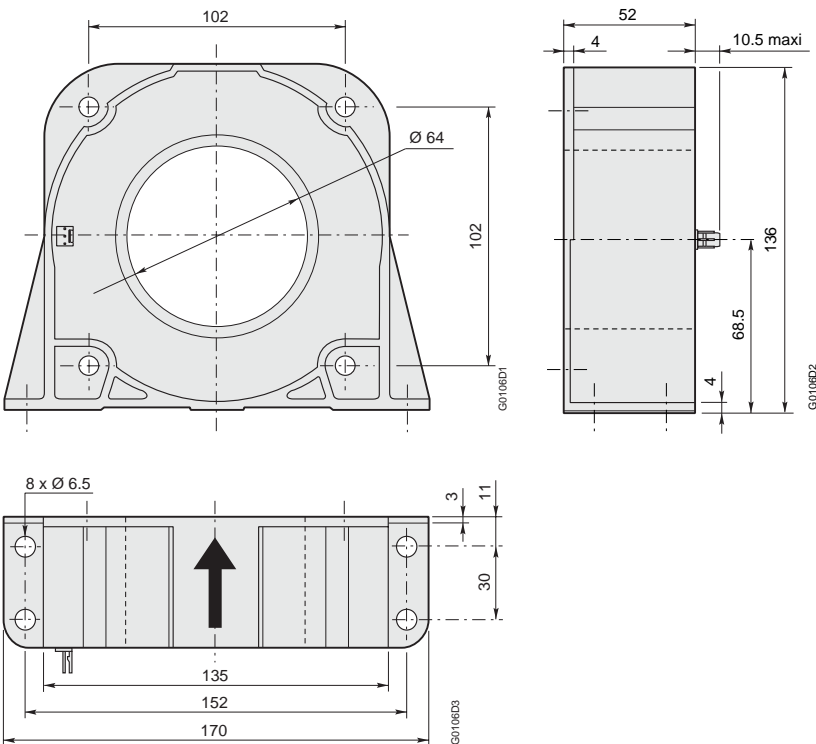
Cable : - Red ..... +V<sub>A</sub>  
- Green ..... M  
- Black ..... -V<sub>A</sub>

# ES Industry Current Sensors

## Dimensions (in mm)



**ES1000C / ES1000S / ES1000F**  
**ES1000-9678 / ES1000-9679 / ES1000-9680**

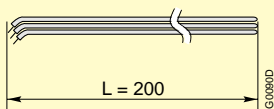


**ES2000C / ES2000S / ES2000F**

### Standard ES1000... and ES2000... sensor secondary connection

G0092D Molex connector  
(with 2.54 mm pitch)

G0091D JST connector  
(with 3.81 mm pitch)



Cable : - Red ..... +V<sub>A</sub>  
- Green ..... M  
- Black ..... -V<sub>A</sub>