

K-no.: K30718

120A Open Loop Current Sensor for industrial application

DC, AC, pulsed and mixed electric current measurement
with a galvanic insulation, analog voltage output, integrated primary busbar

Date 22.06.2026

Customer: Standard type

Customer part no:

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Description

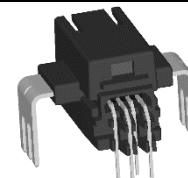
- Open Loop Current Sensor
- Hall-Effect field probe

Characteristics

- Wide frequency bandwidth
- Short response time
- Compact design

Applications

Mainly used for stationary operation in industrial applications



Electrical Data – Ratings

Unit

I_{PN}	Primary nominal current value	120	A
V_{OUT}	Output Voltage @ I_P against V_{REF}	$V_{REF} \pm G \cdot I_P$	V
V_{REF}	External Reference voltage range	0.5 ... 2.65	V
	Internal Reference voltage	2.5 ± 0.02	V
G	Sensitivity	6.67	mV / A

Accuracy & Dynamic performance data

min.

typ.

max.

Unit

$I_{P,max}$	Max. Measuring range	-300	+300	A
X	Accuracy @ I_{PN} for $\vartheta_A = 25^\circ\text{C}$	-1.0	1.0	%
ϵ_G	Sensitivity error @ $\vartheta_A = 25^\circ\text{C}$ (factory adjusted)	-0.5	0.5	%
ϵ_L	Linearity error @ $\vartheta_A = 25^\circ\text{C}$	-0.5	0.5	% of I_{PN}
$V_{OUT(0)} - V_{REF}$	Offset voltage @ $\vartheta_A = 25^\circ\text{C}$, $I_P = 0\text{A}$	-10	10	mV
I_{OM}	Magnetic offset (hysteresis after 3 x I_{PN} calc. to primary)	-0.8	0.8	A
TC_G	sensitivity drift over temperature	-40 to 25°C 25 to 105°C	-540 175	ppm/K ppm/K
TC_0	offset drift over temperature	-40 to 25°C 25 to 105°C	-32 15	mA/K mA/K
t_{r80}	Response time @ 80% of I_{PN} (200 A/ μs)		1.4	μs
t_{r90}	Response time @ 90% of I_{PN} (200 A/ μs)		1.5	μs
f	Frequency bandwidth (-3dB)	200		kHz

General data

min.

typ.

max.

Unit

ϑ_A	Ambient operating temperature	-40	+105	$^\circ\text{C}$
$\vartheta_{Storage}$	Ambient storage temperature acc. VAC M3101	-45	+105	$^\circ\text{C}$
m	Mass		6.0	g
V_{CC}	Supply voltage	4.5	5.5	V
I_{C0}	Current consumption for $I_P = 0\text{A}$		16	mA

REMARK: The temperature of the primary conductor must not exceed 140°C * (hottest point in the middle of the sensor)
for verification: the measured temperature at the kink of the primary conductor should not exceed 125°C *

$S_{clear}^{[1]}$	Clearance distance	8	mm
$S_{creep}^{[1]}$	Creepage distance	8	mm
$U_{sys}^{[1]}$	System voltage	basic insulation	1000 $V_{RMS/DC}$
		reinforced insulation	600 V_{RMS}
$U_{work}^{[1]}$	Working voltage	basic insulation	1600 $V_{RMS/DC}$
		reinforced insulation	800 V_{RMS}
$U_{PD}^{[1]}$	Rated discharge voltage		1131 V_{PEAK}
UL508	max. potential difference according UL 508		600 V_{AC}

^[1] Constructed, manufactured and tested in accordance with IEC 61800-5-1:2007 - Material group 1, Pollution degree 2, OVC III, altitude $\leq 2000\text{m}$

Date	Name	Index	Amendment
22.06.26	Ku	81	Minor Change - Test condition t_{r80} & t_{r90} changed from '(50A/ μs 300A)' to '(200A/ μs)'. – page 1.
20.04.26	Ku	81	Minor Change - additional dimension and pin description – page 2.
Hrg R&D PD CS editor	Bearb: Ku. designer		MC-PM: FS check
			freig.: SB released

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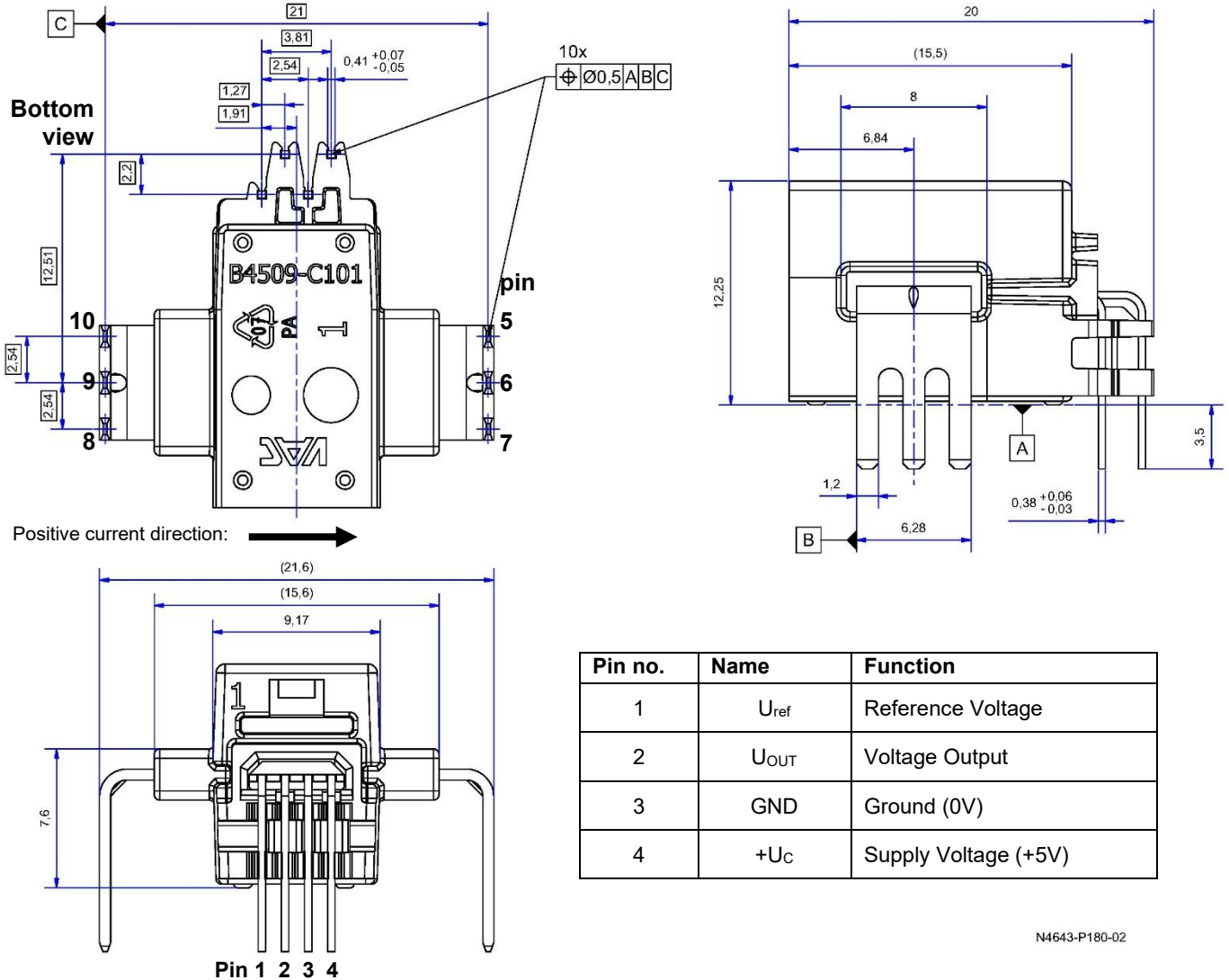
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Mechanical drawing (mm): General tolerance DIN ISO 2768-c



Connection diagram

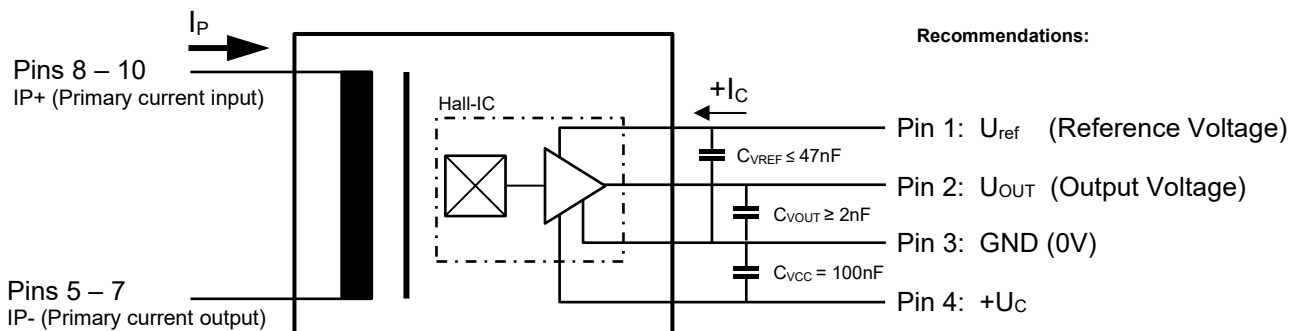


Fig. 6: functional block diagram of the sensor

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Marking

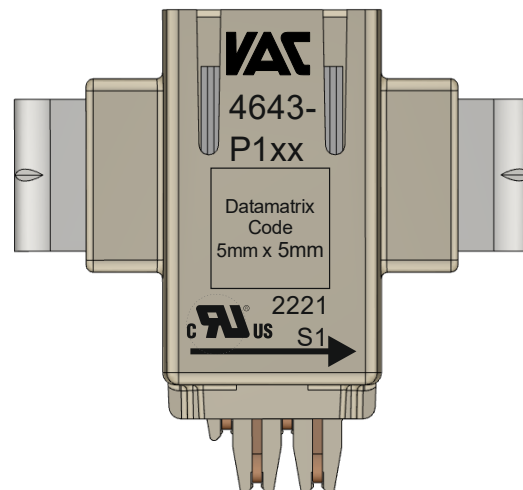
Readable text: Item-number "xxxxxxx"
F = Factory code, e.g. "S4"
DC = Date code (YYWW) e.g. "2138"

Datamatrix code (ECC200):


code size: 5.0mm x 5.0mm
symbol size: 16 x 16 modules
data region: 14 x 14 modules

data content:

1. Item number	IN	4 digits
2. Reserved 1 (std=1)	R1	1 digit
3. Factory Code	FC	2 digits
4. Reserved 2	R2	4 digits
5. Serial no. (hex)	SN	5 digits



Format: "IN,R1,FC,R2,SN" example: P1801S42403C8FB3

- For a factory code of only 1 digit an underscore character "_" is added

Routine Test

(Measurement after temperature balance of the samples at room temperature; SC = significant characteristic)

G	(100%) M3011/6	Sensitivity ($I_{PN}=120A_{DC}$)	± 0.5	% (SC)
I_{OM} (IPN)	(100%) M3226	Magnetic Offset voltage ($I_{PN}=120A_{DC}$)	1.85	mV
U_P	(100%) M3014	Test voltage (1s) Pin 1,3,5 to primary opening	2.2	kV_{rms}
U_{PDE}	(AQL 1/S4)	Partial discharge voltage (extinction)	1.2	kV_{rms}
$U_{PD(rms)} \cdot 1.875$		*acc. table 24	1.5	kV_{rms}

Type Test (Preconditioning acc. VAC M3236)

(Pins to primary opening)

$\dot{U}_W$	M3064	HV transient test (1.2 μs / 50 μs , 5 pulses $\rightarrow$ polarity +, 5 pulses $\rightarrow$ polarity -)	8.0	kV
U_P	M3014	Test voltage (5s)	3.6	kV_{rms}
U_{PDE}	M3024	Partial discharge voltage (extinction)	1.2	kV_{rms}
$U_{PD(rms)} \cdot 1.875$		*acc. table 24	1.5	kV_{rms}

* IEC61800-5-1:2007

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Explanation to parameters used in this datasheet

Accuracy

X: The sum of all errors at 25°C at nominal primary current I_{PN}
 ϵ_S : Sensitivity error after factory adjustment.

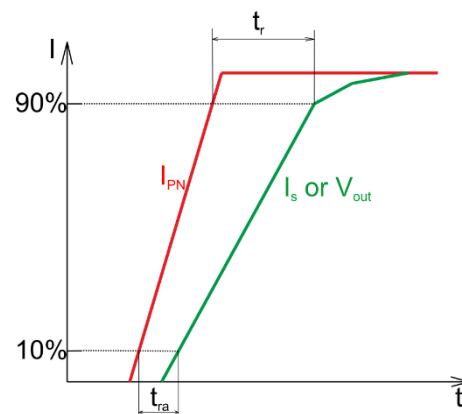
 ϵ_L : Linearity error where I_P is any input DC and $V_{OUT}(I_P)$ the corresponding output term.

Offset, hysteresis and drift

 I_{SO} : Offset current

 I_{SOH} : magnetic offset variation after overloading with a DC of threefold the rated value

Dynamic properties

 t_{ra} Reaction time, measured as a delay time between a rectangular primary current and the output current I_S at $I_P = 0.1 \cdot I_{PN}$
 $t_{80/90}$: Response time, measured as a delay time between a rectangular primary current and the output current I_S at $I_P = 0.8 \cdot I_{PN}$ (respectively $0.9 \cdot I_{PN}$)


Voltage ratings (according to IEC 61800-5-1:2007)

 U_{PD} Rated discharge voltage (recurring peak voltage separated by the insulation)

 U_{sys} System voltage: RMS value of rated voltage

 U_{AC} Working voltage: RMS voltage which occurs by design in a circuit or across an insulation

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