

**Insulation coordination**

Parameter	Symbol	Unit	Value	Comment
RMS voltage for AC insulation test 50/60 Hz/1 min	$U_d$	kV	5.4	
Impulse withstand voltage 1.2/50 $\mu$ s	$\hat{U}_w$	kV	9.6	
Partial discharge test voltage ( $q_m < 10$ pC)	$U_t$	V	1650	Busbar/secondary. According to: IEC 61800-5-1 IEC 62109-1
Clearance (pri. - sec.)	$d_{Cl}$	mm	> 10.5	Shortest distance through air
Creepage distance (pri. - sec.)	$d_{Cp}$	mm	> 10.5	Shortest path along device body
Case material	-	-	V0 according to UL 94	
Comparative tracking index	<i>CTI</i>		600	
Application example	-	-	600 V CAT III PD2	Reinforced insulation according to IEC 61800-5-1
Application example	-	-	1000 V CAT III PD2	Basic insulation, non uniform field according to IEC 61800-5-1
Application example	-	-	600 V CAT III PD2	According to UL 508

**Environmental and mechanical characteristics**

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Ambient operating temperature	$T_A$	$^{\circ}$ C	-40		105	
Ambient storage temperature	$T_S$	$^{\circ}$ C	-40		105	
Mass	$m$	g		101		

**Electrical data HOYS 100-S-0100**

 At  $T_A = 25^\circ\text{C}$ ,  $U_C = +5\text{V}$ ,  $R_L = 10\text{ k}\Omega$  unless otherwise noted (see Min, Max, typ. definition paragraph in page 13).

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal RMS current	$I_{PN}$	A		100		
Primary current, measuring range	$I_{PM}$	A	-250		250	$2.5 \times I_{PN} @ U_C \geq 4.6\text{ V}$
Number of primary turns	$N_P$	-		1		Bus bar
Supply voltage <sup>1)</sup>	$U_C$	V	4.5	5	5.5	
Current consumption	$I_C$	mA		19	25	
Reference voltage (output)	$V_{ref}$	V	2.48	2.5	2.52	Internal reference
Reference voltage (input)	$V_{ref}$	V	0.5		2.65	External reference
Output voltage range @ $I_{PM}$	$V_{out} - V_{ref}$	V	-2		2	Over operating temperature range
$V_{ref}$ output resistance	$R_{ref}$	$\Omega$	130	200	300	Series
$V_{out}$ output resistance	$R_{out}$	$\Omega$		2	5	Series
Allowed capacitive load	$C_L$	nF	0		6	
Overcurrent detection output on resistance	$R_{on}$	$\Omega$	70	95	150	Open drain, active low Over operating temperature range
Overcurrent detection hold	$t_{hold}$	ms	0.7	1	1.4	Additional time after threshold has released
EEPROM control	$V_{out}$	mV	0		50	$V_{out}$ forced to GND when EEPROM in an error state <sup>2)</sup>
Electrical offset voltage @ $I_P = 0\text{ A}$	$V_{OE}$	mV	-5		5	$V_{out} - V_{ref} @ V_{ref} = 2.5\text{ V}$
Electrical offset current Referred to primary	$I_{OE}$	A	-0.625		0.625	
Temperature coefficient of $V_{ref}$	$TCV_{ref}$	ppm/K	-170		170	-40 °C ... 105 °C
Temperature coefficient of $V_{OE}$	$TCV_{OE}$	mV/K	-0.075		0.075	-40 °C ... 105 °C
Temperature coefficient of $I_{OE}$ @ $I_P = 0\text{ A}$	$TCI_{OE}$	mA/K	-9.375		9.375	-40 °C ... 105 °C
Theoretical sensitivity	$G_{th}$	mV/A		8		800 mV @ $I_{PN}$
Sensitivity error @ $I_{PN}$	$\epsilon_G$	%	-0.5		0.5	Factory adjustment
Temperature coefficient of G	$TCG$	ppm/K	-250		250	-40 °C ... 105 °C
Linearity error 0 ... $I_{PN}$	$\epsilon_L$	% of $I_{PN}$	-0.75		0.75	
Linearity error 0 ... $I_{PM}$	$\epsilon_L$	% of $I_{PM}$	-0.5		0.5	
Magnetic offset current (@ $10 \times I_{PN}$ ) referred to primary	$I_{OM}$	A	-1.27		1.27	One turn
Reaction time @ 10 % of $I_{PN}$	$t_{ra}$	$\mu\text{s}$		3	3.5	@ 100 A/ $\mu\text{s}$
Response time @ 90 % of $I_{PN}$	$t_r$	$\mu\text{s}$		3	3.5	@ 100 A/ $\mu\text{s}$
Frequency bandwidth (-3 dB)	$BW$	kHz		180		Small signal
Output RMS noise voltage spectral density 100 Hz ... 100 kHz	$e_{no}$	$\mu\text{V}/\sqrt{\text{Hz}}$		8.3		
Output RMS noise voltage (DC ... 10 kHz) (DC ... 100 kHz) (DC ... 1 MHz)	$V_{no}$	mVpp		4.6 8.6 14.4		
Primary current, detection threshold	$I_{PTH}$	A	$2.64 \times I_{PN}$	$2.93 \times I_{PN}$	$3.22 \times I_{PN}$	Peak value $\pm 10\%$ , overcurrent detection OCD
Accuracy @ $I_{PN}$	X	% of $I_{PN}$	-1.25		1.25	
Accuracy @ $I_{PN}$ @ $T_A = +105^\circ\text{C}$	X	% of $I_{PN}$	-4		4	
Accuracy @ $I_{PN}$ @ $T_A = +85^\circ\text{C}$	X	% of $I_{PN}$	-3.3		3.3	See formula note <sup>3)</sup>

 Notes: <sup>1)</sup> 3.3 V SP version available

<sup>2)</sup> EEPROM in an error state makes the transducer behave like a reverse current saturation. Use of the OCD may help to differentiate the two cases

<sup>3)</sup> Accuracy @  $T_A$  (% of  $I_{PN}$ ) =  $X + \left( \frac{TCG}{10000} \times (T_A - 25) + \frac{TCI_{OE}}{1000 \times I_{PN}} \times 100 \times (T_A - 25) \right)$ .