Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test 50/60 Hz/1 min	U_d	kV	4.3	
Impulse withstand voltage 1.2/50 µs	$\hat{U}_W$	kV	8	
Partial discharge extinction rms voltage @ 10 pC	U_e	V	> 930	Primary / Secondary
Clearance (pri. - sec.)	d_{Cl}	mm	> 8	Shortest distance through air
Creepage distance (pri. - sec.)	d_{Cp}	mm	> 8	Shortest path along device body
Clearance (pri. - sec.)		mm	> 8	When mounted on PCB with recommended layout
Case material			V0 according to UL 94	
Comparative tracking index	*CTI*		600	
Application example	-	-	600 V CAT III PD2	Reinforced insulation, non uniform field according to EN 50178, EN 61010
Application example	-	-	1000 V CAT III PD2	Based insulation, non uniform field according to EN 50178, EN 61010
Application example	-	-	600 V CAT III PD2	Simple insulation, non uniform field according to UL 508

Environmental and mechanical characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Ambient operating temperature	T_A	°C	−40		105	
Ambient storage temperature	T_S	°C	−40		105	
Mass	*m*	g		31		

Electrical data HO 40-NP-0100

At T_A = 25 °C, U_C = +5 V, R_L = 10 kΩ unless otherwise noted (see Min, Max, typ. definition paragraph in page 11).

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A		40		
Primary current, measuring range	I_{PM}	A	−100		100	@ $U_C \geq$ 4.6 V
Number of primary turns	N_P			1,2,4		See application information
Primary jumper resistance @ +25 °C	R_P	mΩ		0.09		4 jumpers in parallel
Primary jumper resistance @ +120 °C	R_P	mΩ		0.12		4 jumpers in parallel
Supply voltage [1]	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}	Ω	130	200	300	Series
V_{out} output resistance	R_{out}	Ω		2	5	Series
Allowed capacitive load	C_L	nF	0		6	
OCD output: On resistance	R_{on}	Ω	70	95	150	Open drain, active low Over operating temperature range
OCD output: Hold time	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 [2]
Electrical offset voltage @ I_P = 0 A	V_{OE}	mV	−5		5	$V_{out} - V_{ref}$ @ V_{ref} = 2.5 V
Electrical offset current Referred to primary	I_{OE}	A	−0.25		0.25	
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
Offset drift referred to primary @ I_P = 0 A	TCI_{OE}	mA/K	−3.75		3.75	−40 °C … 105 °C
Theoretical sensitivity	G_{th}	mV/A		20		800 mV @ I_{PN}
Sensitivity error @ I_{PN}	ε_G	%	−0.75		0.75	Factory adjustment, 1 turn configuration, 4 jumpers in parallel
Temperature coefficient of G	TCG	ppm/K	−200		200	−40 °C … 105 °C
Linearity error 0 … I_{PN}	ε_L	% of I_{PN}	−0.75		0.75	
Linearity error 0 … I_{PM}	ε_L	% of I_{PM}	−0.5		0.5	
Magnetic offset current (@ 10 × I_{PN}) referred to primary	I_{OM}	A	−0.8		0.8	One turn
Reaction time @ 10 % of I_{PN}	t_{ra}	μs			2	@ 50 A/μs
Response time @ 90 % of I_{PN}	t_r	μs			2.5	@ 50 A/μs
Frequency bandwidth (−3 dB)	BW	kHz		350		
Output rms voltage noise (spectral density) (100 Hz … 100 kHz)	e_{no}	μV/√Hz			16	
Output voltage noise (DC … 10 kHz) (DC … 100 kHz) (DC … 1 MHz)	V_{no}	mVpp		8 25 46.2		
Over-current detect		A	2.64 × I_{PN}	2.93 × I_{PN}	3.22 × I_{PN}	Peak value ±10 %
Accuracy @ I_{PN}	X	% of I_{PN}	−1.5		1.5	
Accuracy @ I_{PN} @ T_A = +105 °C	X	% of I_{PN}	−3.85		3.85	See formula note [3]
Accuracy @ I_{PN} @ T_A = +85 °C	X	% of I_{PN}	−3.26		3.26	See formula note [3]

Notes: [1] 3.3 V SP version available
[2] 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.
[3] Accuracy @ X_{TA} (% of I_{PN}) $= X + \left(\frac{TCG}{10000} \times (T_A - 25) + \frac{TCI_{OE}}{1000 \times I_P} \times 100 \times (T_A - 25)\right)$.