

How to understand MAGNETEC's Datasheet

The objective of this document is to help to understand MAGNETEC's **core** and **component** datasheets on the examples MB-667-01_01 and M-116-03_05 as being EMC core and choke and on the example M-757 and MB-375 as being CT core and component.

Here are example datasheets: the upper left side is for the EMC core and the upper right side is for the EMC choke and the lower left side is for the CT core and the upper right side the CT component. Note: The datasheets may not be the latest ones.

EMC core						(CT core:		
FORM Identifier: F 108 Revision: 04 Page: 1/1		ct specification ctive components		GNETEC GmbH Industriestrasse 7 i3505 Langenselbold	FORM Identifier: F 108 Revision: 04 Page: 1/1		t specification ive components	Inc	ANETEC GmbH dustriestrasse 7 505 Langenselbold
					1 0.001				
Client: MAGNET		agnetec P/N: M-116	Magnete	12100					
Client's P/N: /		S Index: 03	PS Revi	00	Client: MAGNE		tec P/N: M-757	Magnetec A/N:	10000
Subject: EMC War	dler		Type:	E	Client's P/N: /	PS Ind	ex: 01	PS Revision:	01
1. Mechanical Outline					Subject: CT Wat	dler		Type:	
Nominal core dimensions:					1. Mechanical Outline				
160 x 130 x 30 Finished product dimensions: 0D ≤ 153,0 ID ≥ 123,0 H ≤ 34,0 [dimensions] = mm 2. Core data (nominal values) Core material:		EC M-17833	= 3,24 cm ²	H	Nominal core dimensions: 17,5 x 12,5 x 6 Finished product dimensio $OD \leq 19,6$ $ID \geq 10,1$ $H \leq 8,6$ [dimensions] = mm 2. Core data (nominal value) Core material	es)			
Permeability level	~30 000		H peak 12 mA/cm		Permeability level:		∮ frequency @ H pea 0 Hz 4 mA/cm		
3 Increation unburn									
3. Inspection values	Measured value	Measurement limits	Frequency	leff x N [mA x turn]	3. Inspection values				
3. Inspection values	Measured value AL [µH]	Measurement limits 20,9 - 45,0	10 kHz	100	3. Inspection values	Measured value	Measurement limits	Frequency	leff x N [mA x turn]
3. Inspection values	Measured value				3. Inspection values	Measured value AL [µH]	Measurement limits 18 - 36	Frequency 50 Hz	leff x N [mA x turn] 13,0
	Measured value AL [µH]	20,9 - 45,0	10 kHz	100					
4. Core finishing Type:	Measured value AL [µH]	20,9 - 45,0	10 kHz	100	4. Core finishing	AL [µH]			
4. Core finishing Type: Marking:	Measured value AL. [µH] AL. [µH] Cased MAGNETEC M-116-0	20,9 - 45,0 10,5 - NA 3 YM (YM = Year/Month),	10 kHz 100 kHz acc. to IEC 60062	100 100		AL [µH] Cased	18 - 36	50 Hz	
4. Core finishing Type:	Measured value AL. [µH] AL. [µH] Cased MAGNETEC M-116-0	20,9 - 45,0 10,5 - NA	10 kHz 100 kHz acc. to IEC 60062	100 100	4. Core finishing Type:	AL [µH] Cased MAGNETEC M-757-01		50 Hz	
4. Core finishing Type: Marking:	Measured value AL. [µH] AL. [µH] Cased MAGNETEC M-116-0	20,9 - 45,0 10,5 - NA 3 YM (YM = Year/Month),	10 kHz 100 kHz acc. to IEC 60062	100 100	4. Core finishing Type: Marking:	AL [µH] Cased MAGNETEC M-757-01	18 - 36 YM (YM = Year/Month), acc. 1	50 Hz	
4. Core finishing Type: Marking: Packaging:	Measured value AL. [µH] AL. [µH] Cased MAGNETEC M-116-0	20,9 - 45,0 10,5 - NA 3 YM (YM = Year/Month),	10 kHz 100 kHz acc. to IEC 60062	100 100	4. Core finishing Type: Marking:	AL [µH] Cased MAGNETEC M-757-01	18 - 36 YM (YM = Year/Month), acc. 1	50 Hz	
4. Core finishing Type: Marking: Packaging: 5. Comments:	Measured value AL. [µH] AL. [µH] Cased MAGNETEC M-116-0	20,9 - 45,0 10,5 - NA 3 YM (YM = Year/Month),	10 kHz 100 kHz acc. to IEC 60062	100 100	4. Core finishing Type: Marking: Packaging:	AL [µH] Cased MAGNETEC M-757-01	18 - 36 YM (YM = Year/Month), acc. 1	50 Hz	
4. Core finishing Type: Marking: Packaging: 5. Comments: 1	Measured value AL [µH] AL [µH] Cased MAGNETEC M-116-0 T pcs. per layer; 5 lay	20,9 - 45,0 10,5 - NA 3 YM (YM = Year/Month),	10 kHz 100 kHz acc. to IEC 60062	100 100 6.1.1 Date 10.06.2005	4. Core finishing Type: Marking: Packaging: 5. Comments:	AL [µH] Cased MAGNETEC M-757-01 110 pcs. per layer; 8 lay	18 - 36 YM (YM = Year/Month), acc. 1	50 Hz	13,0
Interview Alteration 4. Core finishing Type: Marking: Packaging: 5. Comments: Interview 03/01 Movided ca 03/02 New form 03/03 PU = 5 pcs 03/04 Op <= 165.	Measured value AL [µH] AL [µH] Cased MAGNETEC M-116-0 T pcs. per layer; 5 lay	20;9 - 45;0 10;5 - NA 3 YM (YM = Year/Month), es per carton box ; PU =	10 kHz 100 kHz acc. to IEC 60062	100 100 6.1.1 Date	4. Core finishing Type: Marking: Packaging: 5. Comments: 5. Comments:	AL [µH] Cased MAGNETEC M-757-01 110 pcs. per layer; 8 lay	18 - 36 YM (YM = Year/Month), acc. ers per carton box; PU = 88	50 Hz to IEC 62 5.1 0 pcs.	13,0 Date 18.05.2012



vision: 02 ge: 1/1		Product sp for Inductive	ecification Components		Industriestrasse 7 D-63505 Langenselbold	FORM Identifier Revision Page:	: 02		pecification Components	In	BNETEC Gml dustriestrasse 7 505 Langenselb
nt: M	AGNETEC	Magnetec P	/N: MB-667	Ма	gnetec A/N: 12800	Client:	MAGNET	EC Magnetec P/	N: MB-375	Magnetec A/N:	12697
nt's p/n: /	AGNETEC	PS Index:	01		Revision: 01	Client's p	/n: /	PS Index:	01	PS Revision	n: 01
	MC Compone		01	Typ		Subject:	CT Compo	onent		Type:	
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Mechanical outlin) 0				Wiring diagram	1.1 Moone	¥3 i ≤ 30,5	. 10			4
62±0,3	x 6 45±4	rinking 5	50 10 10 10 10 10 10 10 10 10 10 10 10 10	Ν,			12		-01 YM		1
	1	tube					2,25	2,75	+		
Core mate Nominal v	erial: roltage:	NANOPERM® 440 Veff AC	Wire Resistan High voltage s	strength:	<= 1.8 mOhms Up.eff = 2,5 kV	2. Nomin	al values	5,29 4x 10,65x			
Core mate Nominal w Nominal in	erial: voltage: nductance:	NANOPERM® 440 Veff AC 3 x 1,2 mH	High voltage s Operating terr	strength: perature:	Up,eff = 2,5 kV -40 +70 °C	2. Nomin	al values Core materiat	5,29 4x 10,65x	Wire Resistan		65 Ohms
Core mate Nominal w Nominal in Nominal c	erial: roltage: nductance: surrent:	NANOPERM® 440 Veff AC 3 x 1,2 mH 40 A	High voltage s Operating tem Storage tempe	strength: perature: erature::	Up,eff = 2,5 kV -40 +70 °C -40 +85 °C	2. Nomin	al values	• 529 • 529 • Vallocities • Veff AC		trength: 1,5	65 Ohms 5 KV 0 *85 *C
Core mate Nominal w Nominal in Nominal c	erial: voltage: nductance: surrent: inductances:	NANOPERM® 440 Veff AC 3 x 1,2 mH 40 A ~5 µH	High voltage s Operating terr	strength: operature: erature:: ard:	Up,eff = 2,5 kV -40 +70 °C	2. Nomin	al values Core material: Nominal voltage:	• 529 • 529 • ValloSxi • Veff AC	Wire Resistan High voltage s	trength: 1,5 perature: -40	i kV
Core mate Nominal w Nominal in Nominal c Leakage in	erial: voltage: ductance: surrent: inductances: 15:	NANOPERM® 440 Veff AC 3 x 1,2 mH 40 A	High voltage s Operating tem Storage tempo Design standa	strength: operature: erature:: ard:	Up,eff = 2,5 kV -40 +70 °C -40 +85 °C EN 60938-1	2. Nomin	al values Core materiat: Nominal voltage: Nominal inductancer Nominal current: Leakage inductance	4x 1065x1 529 NANOPERM® - Veff AC 1 x 2,9 H Ip eff = 60 A s:	Wire Resistan High voltage s Operating tem Storage tempe Design standa	trength: 1,5 perature: -40 erature:: -40 rd: EN	6 kV 0 +85 °C 0 +85 °C 1 62053-21
Core mate Nominal w Nominal in Nominal c Leakage in No. of turn Comments	erial: voltage: ductance: surrent: inductances: 15:	NANOPERM® 440 Veff AC 3 x 1,2 mH 40 A ~5 µH	High voltage s Operating tem Storage tempo Design standa	strength: operature: erature:: ard:	Up,eff = 2,5 kV -40 +70 °C -40 +85 °C EN 60938-1	2. Nomin	al values Core material: Nominal inductance Nominal current Leakage inductance No. of turns:	4x 1065x1 - 269 4x 1065x1 - Veff AC - Veff AC - 1 x 2,9 H ip eff = 60 A s: N2 = 2500 turns	Wire Resistand High voltages 3 Operating tem, Storage tempe Design standa Wire diameter:	trength: 1,5 perature: -40 erature:: -40 rd: EN : 0,1	6 KV +85 °C +85 °C 62053-21 6 mm
Core mate Nominal w Nominal in Nominal c Leakage in No. of turn Comments	erial: voltage: nductance: surrent: nductances: 16: s: Measured	NANOPERM® 440 Verf AC 3 x 1,2 mH 40 A ~5 μH N1 = N2 = N3 = 7	High voltage s Operating temp Storage temp Design standa Wire diameter Measuring limits	strength: iperature: ard: t Measu	Up,eff = 2,5 kV -40 +70 °C -40 +70 °C -EN 60938-1 3,0 mm uring configurations		al values Core materiat Nominal voltage: Nominal inductances Nominal current Leakage inductance No. of turns: Comments:	4x 1065x1 - 269 4x 1065x1 - Veff AC - Veff AC - 1 x 2,9 H ip eff = 60 A s: N2 = 2500 turns	Wire Resistan High voltage s Operating tem Storage tempe Design standa	trength: 1,5 perature: -40 erature:: -40 rd: EN : 0,1	6 KV +85 °C +85 °C 1 62053-21 6 mm
Core mate Nominal w Nominal ir Nominal c Leakage ii No. of turn Comments spection values	erial: oblage: nductance: surrent: nductances: 16: s: Measured y L1; L2; L3 [mH]	NANOPERM® 440 Verf AC 3 x 1,2 mH 40 A ~5 μH N1 = N2 = N3 = 7	High voltage s Operating tem Storage tempe Design standa Wire diameter Measuring limits 0,76 - 1,69	strength: aperature: ard: : Measu f = 10 kHz	Up.eff = 2,5 kV 40 + 70 °C -40 + 85 °C EN 60938-1 3,0 mm uring configurations Ueff = 0,1 V		al values Core materiat Nominal voltage: Nominal unurent Leakage inductance No. of turms: Comments: tion values	4x 1065x1 - 269 4x 1065x1 - Veff AC - Veff AC - 1 x 2,9 H ip eff = 60 A s: N2 = 2500 turns	Wire Resistand High voltages 3 Operating tem, Storage tempe Design standa Wire diameter:	trength: 1,5 perature: -40 erature: -40 rd: EN 2,5 Ohm to reach U	i KV 0 +85 °C 0 +85 °C 1 62053-21 6 mm Jb = 0,3 V,rms.
Core mate Nominal w Nominal ir Nominal o Leakage ir No. of turn Comment Spection values Inductivity Inductivity	erial: voltage: anductances: surrent: is: Measured u L1; L2; L3 [mH] L L1; L2; L3 [mH]	NANOPERM0 440 Veff AC 3 x 1,2 mH 40 A 75 µH N1 = N2 = N3 = 7 Value	High voltage s Operating tem Storage tempy Design standa Wire diameter Measuring limits 0,76 - 1,69 0,6 - NA	strength: perature: ard: t f = 10 kHz f = 10 kHz f = 10 kHz	Up,eff = 2,5 kV -40 +70 °C -40 +70 °C -EN 60938-1 3,0 mm uring configurations		el values Core material: Nominal voltage: Nominal ductance Non at urrent Leakage inductance No. of turns: Comments: tion values Inductivity L 2 [H]		Wire Resistan High voltage s Operating set Storage tempe Design starda Wire diameter. Recommended Rb = 1; Measuring limits 2,5 - 3,3	trength: 1,5 perature: -40 erature: -40 rd: EN 2,5 Ohm to reach U Measuring f = 50 Hz	kV 0 +85 °C 0 +85 °C 1 62053-21 6 mm Jb = 0,3 V,rms
Core mate Nominal w Nominal or No. of turn Comment: pection values Inductivity Wire resis	erial: nductance: urrent: nductances: ns: s: Measured / L1; L2; L3 [mH] / L1; L2; L3 [mH]	NANOPERM® 440 Veff AC 3 x 1,2 mH 40 A 75 µH N1 = N2 = N3 = 7 value ≿ Rcu3 [mOhms]	High voltage s Operating tem Storage tempe Design standa Wire diameter Measuring limits 0,76 - 1,69 0,6 - NA 0 - 1,8	strength: erature: ard: : : f = 10 kHz f = 10 kHz f = 100 kHz f = 100 kHz	Up.eff = 2,5 kV -40 + 70 °C -40 + 85 °C EN 60938-1 3,0 mm uring configurations Ueff = 0,1 V Ueff = 0,1 V		al values Core materiat. Nominal inductance Nominal aurent. Leakage inductance No. of turns: Comments: tormments: Inductivity L2 [H] Inductivity L2 [H]		Wire Resistan High voltage s Operating tem Storage tempe Design standa Wire diameter. Recommended Rb = 1: Measuring limits 2,5 - 3,3 0 - 65	trength: 1,5 perature: -40 erature: -40 rd: EN 2,5 Ohm to reach U Measuring	kV 0 +85 °C 0 +85 °C 1 62053-21 6 mm Jb = 0,3 V,rms 2 configurations
Core mate Nominal w Nominal ir Nominal o Leakage No. of turn Comments upection values Inductivity Wire resis	erial: voltage: anductances: surrent: is: Measured u L1; L2; L3 [mH] L L1; L2; L3 [mH]	NANOPERM® 440 Veff AC 3 x 1,2 mH 40 A 75 µH N1 = N2 = N3 = 7 value ≿ Rcu3 [mOhms]	High voltage s Operating tem Storage tempy Design standa Wire diameter Measuring limits 0,76 - 1,69 0,6 - NA	strength: perature: ard: t f = 10 kHz f = 10 kHz f = 10 kHz	Up.eff = 2,5 kV -40 + 70 °C -40 + 85 °C EN 60938-1 3,0 mm uring configurations Ueff = 0,1 V Ueff = 0,1 V		el values Core material: Nominal voltage: Nominal ductance Non at urrent Leakage inductance No. of turns: Comments: tion values Inductivity L 2 [H]		Wire Resistan High voltage s Operating set Storage tempe Design starda Wire diameter. Recommended Rb = 1; Measuring limits 2,5 - 3,3	trength: 1,5 perature: -40 erature: -40 rd: EN 2,5 Ohm to reach U Measuring f = 50 Hz	kV 0 +85 °C 0 +85 °C 1 62053-21 6 mm Jb = 0,3 V,rms 2 configurations
Core mate Nominal o Nominal o Nominal o Leakage ii No. of turn Comment: pection values Inductivity Inductivity Wire resis HV streng	erial: nductance: urrent: nductances: ns: s: Measured / L1; L2; L3 [mH] / L1; L2; L3 [mH]	NANOPERM® 440 Veff AC 3 x 1,2 mH 40 A 75 µH N1 = N2 = N3 = 7 value ≿ Rcu3 [mOhms]	High voltage s Operating tem Storage tempe Design standa Wire diameter Measuring limits 0,76 - 1,69 0,6 - NA 0 - 1,8	strength: erature: ard: : : f = 10 kHz f = 10 kHz f = 100 kHz f = 100 kHz	Up.eff = 2,5 kV -40 + 70 °C -40 + 85 °C EN 60938-1 3,0 mm uring configurations Ueff = 0,1 V Ueff = 0,1 V	3. Inspec	al values Core material Nominal voltage: Nominal inductance No. of surrent Leakage inductance Comments: Comments: Son values Mine resistance Rcu Wire resistance Rcu N2 turns		Wire Resistan High voltage s Operating tem Storage tempe Design standa Wire diameter. Recommended Rb = 1: Measuring limits 2,5 - 3,3 0 - 65	trength: 1,5 perature: -40 erature: -40 rd: EN 2,5 Ohm to reach U Measuring f = 50 Hz	kV 0 +85 °C 0 +85 °C 1 62053-21 6 mm Jb = 0,3 V,rms 2 configurations
Core mate Nominal v Nominal v Nominal o Leakage is No. of turn Comments spection values Inductivity Inductivity Wire resis HV strengt	erial: nductance: surrent: Measured (L1; L2; L3 [mH] tance Rcu 1; Rcu2 (th between N 1; N: MAGNET	NANOPERM® 440 Veff AC 3 x 1,2 mH 40 A 75 µH N1 = N2 = N3 = 7 value ≿ Rcu3 [mOhms]	High voltage s Operating tem Storage temp Design standa Wire diameter Measuring limits 0,76 - 1,69 0,6 - NA 0 - 1,8 OK - NOK	strength: preature: erature: rd: ; f = 10 kHz f = 10 kHz f = 10 kHz T = 23±3°C Ueff = 2,5 kV	Up.eff = 2,5 kV 40 + 70 °C 40 + 85 °C EN 60938-1 3,0 mm uring configurations Ueff = 0,1 V Ueff = 0,1 V V t = 2 s		al values Core materiat Nominal voltage: Nominal inductance No. of turns: Comments: convalues Inductivity L 2 (H) Wire resistance Rcu N2 turns		Wire Resistan High voltage s Operating tem Storage tempts Design stand Wire diameter. Recommended Rb = 1: Measuring limits 2,5 - 3,3 0 - 65 2475 - 2525	trength: 1,5 perature: 40 rrature: 40 rrature: 40 rature: 40 EN 2,5 Ohm to reach U Measuring f = 50 Hz RT = 25 °C	i kV +85 °C +85 °C 6 c2053-21 6 mm Jb = 0,3 V,ms 0 configurations Ueff = 1V
Core mate Nominal ir Nominal ir No. of turn Comment apection values Inductivity Wire resis HV streng hers Marking: Packagin	rial: oltage: nductance: urrent nductances: 15: Measured L1; L2; L3 [mH] tance Rcu 1; Rcu2 ft between N 1; N MAGNET 9: 6 pcs. pe	NANOPERM@ 440 Veff AC 3 x 1,2 mH 40 A "5 μH N1 = N2 = N3 = 7 value 2; Rou3 [mOhms] 2; N3 / liso<1mA	High voltage s Operating tem Storage temp Design standa Wire diameter 0,76 - 1,69 0,6 - NA 0 - 1,8 OK - NOK 	trength: iperature: erature: ind: f = 10 kHz f = 10 kHz f = 10 kHz f = 10 kHz to IEC 60062 6.	Up.eff = 2,5 kV 40 + 70 °C 40 + 85 °C EN 60938-1 3,0 mm uring configurations Ueff = 0,1 V Ueff = 0,1 V V t = 2 s	3. Inspec	al values Core materiat Nominal voltage: Nominal inductance Nominal current Leakage inductance No. of turns: Comments: Comments: Comments: Mine cesistance Rcu N2 turns Marking: Marking: M		Wire Resistan High voltage to Operating temp Design standa Wire diameter Recommended Rb = 1; Measuring limits 2,5 - 3,3 0 - 65 2475 - 2525 - - M = Year/Month), acc.	trength: 1,5 perature: 40 rd: EN c,5 Ohm to reach U Measuring f = 50 Hz RT = 25 °C to IEC 60062 6.1.	i kV +85 °C +85 °C 6 c2053-21 6 mm Jb = 0,3 V,rms. 0 configurations Ueff = 1V
Core mate Nominal v Nominal v Nominal o Leakage is No. of turn Comments spection values Inductivity Inductivity Wire resis HV strengt	rial: oltage: nductance: urrent nductances: 15: Measured L1; L2; L3 [mH] tance Rcu 1; Rcu2 ft between N 1; N MAGNET 9: 6 pcs. pe	NANOPERM® 440 Veff AC 3 x 1,2 mH 40 A "5 μH N1 = N2 = N3 = 7 value 2; Rou3 [mOhms] 2; N3 / liso<1mA	High voltage s Operating tem Storage temp Design standa Wire diameter 0,76 - 1,69 0,6 - NA 0 - 1,8 OK - NOK 	trength: iperature: erature: ind: f = 10 kHz f = 10 kHz f = 10 kHz f = 10 kHz to IEC 60062 6.	Up.eff = 2,5 kV 40 + 70 °C 40 + 85 °C EN 60938-1 3,0 mm uring configurations Ueff = 0,1 V Ueff = 0,1 V V t = 2 s	3. Inspec	al values Core materiat Nominal voltage: Nominal inductance Nominal current Leakage inductance No. of turns: Comments: Comments: Comments: Mine cesistance Rcu N2 turns Marking: Marking: M		Wire Resistan High voltage to Operating temp Design standa Wire diameter Recommended Rb = 1; Measuring limits 2,5 - 3,3 0 - 65 2475 - 2525 - - M = Year/Month), acc.	trength: 1,5 perature: 40 rd: EN c,5 Ohm to reach U Measuring f = 50 Hz RT = 25 °C to IEC 60062 6.1.	i kV +85 °C +85 °C 6 c2053-21 6 mm Jb = 0,3 V,ms 0 configurations Ueff = 1V
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Core mate Norminal w Norminal in Norminal c Leakage in No. of turn Comment Inductivity Inductivity Inductivity Inductivity Wire reasis HV strengt Packagin Comment	rial: oltage: nductance: urrent nductances: 15: Measured L1; L2; L3 [mH] tance Rcu 1; Rcu2 ft between N 1; N MAGNET 9: 6 pcs. pe	NANOPERM® 440 Veff AC 3 x 1,2 mH 40 A "5 μH N1 = N2 = N3 = 7 value 2; Rou3 [mOhms] 2; N3 / liso<1mA	High voltage s Operating tem Storage temp Design standa Wire diameter 0,76 - 1,69 0,6 - NA 0 - 1,8 OK - NOK 	trength: iperature: erature: ind: f = 10 kHz f = 10 kHz f = 10 kHz f = 10 kHz to IEC 60062 6.	Up.eff = 2,5 kV 40 + 70 °C 40 + 85 °C EN 60938-1 3,0 mm uring configurations Ueff = 0,1 V Ueff = 0,1 V V t = 2 s	3. Inspec	al values Core materiat Nominal unductance Nominal inductance Nominal inductance Nominal current Leakage inductance No of turns: Comments: Minite inductivity L2 [H] Write resistance Rcu N2 turns Marking: Marking: Marking: Comments: V		Wire Resistan High voltage to Operating tem Storage temps Design standa Wire diameter Recommended Rb = 12 Measuring limits 2,5 - 3,3 0 - 65 2475 - 2525 - - M = Year/Month), acc.	trength: 1,5 perature: 40 rd: 40 rd: 60,1 2,5 Ohm to reach U S. 5 Ohm to reach U Measuring f = 50 Hz RT = 25 °C to IEC 60062 6.1, pcs.	kV +85 °C +85 °C 62053-21 6 mm J⊅ = 0,3 V,ms 2 configurations 2 configurations U leff = 1V
Core mate Nominal v Nominal of Laskage i No. of turn Comment pection values Inductivity Wire reals HV strengt Marking: Packagin Comment ex / Rev. (A)	erial: nductance: nductances: mductances: Is: Measured rL 1; L2; L3 [mH] L1; L2; L3 [mH] L1; L2; L3 [mH] Kance Rou 1; Rou thetween N 1; N: MAGNET IS: IS: IS: IS: IS: IS: IS: IS:	NANOPERM® 440 Veff AC 3 x 1,2 mH 40 A "5 μH N1 = N2 = N3 = 7 value 2; Rou3 [mOhms] 2; N3 / liso<1mA	High voltage s Operating tem Storage temp Design standa Wire diameter 0,76 - 1,69 0,6 - NA 0 - 1,8 OK - NOK 	trength: iperature: erature: ind: f = 10 kHz f = 10 kHz f = 10 kHz f = 10 kHz to IEC 60062 6.	Up.eff = 2,5 kV -40 + 70 °C -40 + 85 °C EN 60938-1 3,0 mm uring configurations Ueff = 0,1 V Ueff = 0,1 V V t = 2 s 1.1	3. Inspec	al values Core material Nominal voltage: Nominal inductance No. of turns: Comments: ton values Inductivity L 2 [H] Wire resistance Rcu N2 turns Marking: M Packaging: 32 Comments: V Rev. Atteration		Wire Resistan High voltage to Operating tem Storage temps Design standa Wire diameter Recommended Rb = 12 Measuring limits 2,5 - 3,3 0 - 65 2475 - 2525 - - M = Year/Month), acc.	trength: 1,5 perature: 40 rd: 40 rd: 60,1 2,5 Ohm to reach U S. 5 Ohm to reach U Measuring f = 50 Hz RT = 25 °C to IEC 60062 6.1, pcs.	1 w + 85 °C + 85 °C 0 + 85 °C 1 82053-21 1 6 mm Jb = 0,3 V,rms. Ueff = 1V 1

MAGNETEC's **core** datasheet consists always of five sections plus a header and a folder section.

Header section:

Client:	MAGNETEC GmbH	Magnetec P/N:	M-116	Magnetec A/N:	12158
Client's P/N:	/	PS Index:	03	PS Revision:	05
Subject:	EMC Wandler			Type:	E

Client, being MAGNETEC for a MAGNETEC part and customer's name for a customer's part.

Magnetec P/N: product name; M-xxxx for cores MB-xxxx for components. Where x stands for a digit: 0,1,...,9.

MAGNETEC A/N: ERP Number. Due to internal traceability reasons.

Client's P/N: client's part number if available and requested for customer's part.

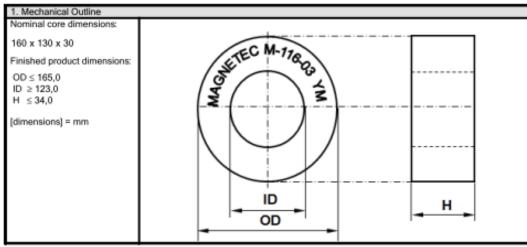
PS Index: identifier, which is increased in case of major change.

PS Revision: identifier, which is increased in case of a new revision of the datasheet, either major or minor changes.

Subject: showing whether the product is an EMC core or component or a CT core or component



Mechanical Outline:



Nominal core dimensions are the informative mechanical dimensions (outer diameter x inner diameter x height) of the round magnetic core (in case of a not round shape core, it is the equivalent round core size)

Finished product dimensions are the final mechanical dimensions archived after fixation of the annealed core, e.g. with a case, with an epoxy coating, epoxy coating and foil bandaging. Note: adhesive tape and foil bandage are excluded here; they are result in slight bigger dimensions, see info on the corresponding datasheets. The finished core dimensions are measured with calliper on 3 different points and worst one of the three measurement is used.

Core data:

	-		
2. Core data (nominal values)		-	
Core material:	NANOPERM®	L _{Fe} = 45,39 cm	A _{Fe} = 3,24 cm ²
Permeability level		@ frequency	@ H peak
	~30 000	10 kHz	3,12 mA/cm

Nominal values (informative parameters only)

Core material and its magnetic path length **Lfe** and magnetic cross section **Afe** are given just for information only.

Permeability level is given as estimated value without tolerance at the given frequency and excitation level H_{peak}. Guaranteed Inductance (AL) values given in section 3 Inspection values.

Inspection values:

Inspection values				
	Measured value	Measurement limits	Frequency	leff x N [mA x turn]
	AL [µH]	20,9 - 45,0	10 kHz	100
	AL [µH]	10,5 - NA	100 kHz	100

The guaranteed parameters are listed. **AL** is the inductance of a core at one turn. **Ieff*N** is the excitation level (called also work-point) at which the AL value is measured; please don't mix it with saturation. For saturation current estimation, we have the abacus tool online http://www.magnetec.de/dimensioning/abacus/abacus.php

The first line means, that the core have a guaranteed AL value window between $20,9\mu$ H to 45μ H at a frequency of 10kHz at a workpoint of 100mA turn.

Where temperature is not given, the test is valid for room temperature, $T=23\pm3^{\circ}C$.



Core finishing:

4. Core finishing	
Type:	Cased
Marking:	MAGNETEC M -116-03 YM (YM = Year/Month), acc. to IEC 60062 6.1.1
Packaging:	1 pcs. per layer; 5 layers per carton box; PU = 5 pcs.

Type defines the type of fixation like cased, glued into cased, impregnated, cut, epoxy coated or foil bandaged cores. In case of epoxy coating, we cannot grant a minimum coating thickness, the coating is not uniform all around the core. Please be aware that the coating at the edge is thinner (edge coverage). In case of thermal stress (e.g. thermal shock), please be aware that epoxy might crack due to its different thermal expansion. Also mechanical stress (vibrations/shocks) might create cracks also. If small cracks may create problems during the lifetime of your product, we recommend you to select cased cores or take foil bandaged version instead. please check the usability in advance in your application. A general recommendation for epoxy coated cores is to add an additional insulation (like foil bandage) before copper winding.

Marking defines how the product is marked, the date code may be given by international norms, e.g. IEC 60062 section 6.1.1, see also the attachment below in this document. The letter size is adjusted according to the core size to have the best readability.

Packing defines how one package unit is built up and how many parts are in one packaging unit (PU).

Comments section shows any further comments, special information for this product.

5. Comments:	
Ø	

Section comments shows any comment for this product.

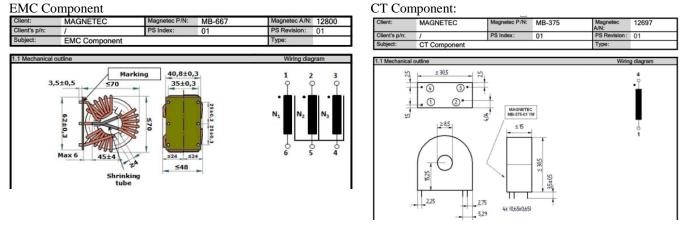
Footer sections give information about the history of indexes and revisions of the product, and signatures about the releasing process of the document.

Index / Rev	ision Alteration						Date
03/01	Moulded c	ase					10.06.2005
03/02	New form						02.03.2007
03/03		;					30.08.2007
03/04			123,0mm, H <= 34	\$,0 mm			25.09.2008
03/05	100kHz lov	ver limit define	d				10.05.2014
Created:	Z. Palánki	Approved (Techn):	F. Zámborszky	Approved (Quality):	J. Gulyás	Released:	T. Trupp
	10.05.2014		23.05.2014		23.05.2014		23.05.2014



MAGNETEC's EMC **choke** or component datasheet consists always of four sections plus a header and a footer section.

Header and Mechanical outline:



The header and mechanical outline is the same for for component and cores, just for the component there is an additional wiring diagram to show how the wires are connected.

Nominal values:

EMC Comp	onent				CT C	omponent:			
2. Nominal values					2. Nomina	al values			
Core mate	rial:	NANOPERM®	Wire Resistance:	<= 1,8 mOhms		Core material:	NANOPERM®	Wire Resistance:	<= 65 Ohms
Nominal vo	oltage:	440 Veff AC	High voltage strength:	Up,eff = 2,5 kV		Nominal voltage:	- Veff AC	High voltage strength:	1,5 kV
Nominal in	ductance:	3 x 1,2 mH	Operating temperature:	-40 +70 °C		Nominal inductance:	1 x 2,9 H	Operating temperature:	-40 +85 °C
Nominal cu	urrent:	40 A	Storage temperature::	-40 +85 °C		Nominal current:	lp eff = 60 A	Storage temperature::	-40 +85 °C
Leakage in	ductances:	~5 μH	Design standard:	EN 60938-1		Leakage inductances:		Design standard:	EN 62053-21
No. of turn	s:	N1 = N2 = N3 = 7	Wire diameter:	3,0 mm		No. of turns:	N2 = 2500 turns	Wire diameter:	0,16 mm
Comments	Comments:					Comments:	I DC peak = 60 A; Recomm	nended Rb = 12,5 Ohm to rea	ich Ub = 0,3 V,rms.

Nominal voltage for EMC choke, it is the voltage at which the choke can be used. This value is important for the clearance and creepage distance. For CT component, this field is not applicable.

Nominal inductance is giving informative the inductance of the component at RT, the guaranteed inductance limits can be found in section 3.

Operating temperature

for EMC choke, it defines the ambient temperatures at which the component can be used. Suitability needs to be tested also in the application by customer, as environment can have an influence. Note: the inductance and DC resistance value of the choke may depend on the temperature, the given datasheet values are valid at RT. for CT component, it is the maximum component temperature at nominal current including self-temperature rise. Suitability needs to be tested also in the application by customer, as environment can have an influence.



Nominal current

for EMC choke, defines the allowed maximum current for the maximum operating temperature (in this example 70°C). The choke may heat up to its maximum allowed temperature, which is defined by the selected plastic materials, generally 130°C. (For the exact value, please consult the UL yellowsheet's RTI values or please contact MAGNETEC's technical sales for confirmation). Regarding derating and forced cooling of CMC, see attachment B. for CT component, it is the current for which the CT is designed for.

Leakage inductance for EMC choke, is the inductance of the component measured with one winding in shortcut. It is a not guaranteed ca. value.

Wire Resistance is the wire resistance at RT, for more details about performed tests see section 3 inspection value.

High voltage strength

is showing the high voltage strength level to be applied between primary and secondary side for CTs which is tested as type test. High voltage strength test can be performed as type test or in serial production. For this case, see info section 3 (inspection values) is showing the high voltage strength level to be applied between the lines for EMC which is tested as type test. High voltage strength test can be performed as type test or in serial production. For this case, see info section 3 (inspection values)



Design standard:

For EMC chokes the standard IEC EN 60938-1 is regulating the necessary clearance and creepage distances. Assumed pollution degree is 2, in case of other pollution degree in the application, customer is asked to do the recalculation.

For CT Components, the standard DIN EN 62053-21 is valid for dc tolerant metering devices with accuracy class 1 and 2.

Inspection values:

EMC Component:

3. Inspec	tion values			
	Measured value	Measuring limits	Measuring c	onfigurations
	Inductivity L1; L2; L3 [mH]	0,76 - 1,69	f = 10 kHz	Ueff = 0,1 V
	Inductivity L1; L2; L3 [mH]	0,6 - NA	f = 100 kHz	Ueff = 0,1 V
	Wire resistance Rcu1; Rcu2; Rcu3 [mOhms]	0 - 1,8	T = 23±3°C	
	HV strength between N1; N2; N3 / liso<1mA	OK - NOK	Ueff = 2,5 kV	t = 2 s
		-		

CT Component:

	3. Inspec	tion values			
nfigurations		Measured value	Measuring limits	Measuring c	onfigurations
Ueff = 0,1 V		Inductivity L 2 [H]	2,5 - 3,3	f = 50 Hz	Ueff = 1V
Ueff = 0,1 V		Wire resistance Rcu 2 [Ohms]	0 - 65	RT = 25 °C	
		N2 turns	2475 - 2525		
t = 2 s			-		
			-		

Inspection values list up the guaranteed values with the corresponding measurement conditions. Where temperature is not given, the test is valid for room temperature, $T=23\pm3^{\circ}C$.

Others:

MAGNETEC MB-667-01 YM (YM = Year/Month), acc. to IEC 60062 6.1.1
6 pcs. per layer, 3 layers per carton box; PU = 18 pcs.

Marking defines how the product is marked, the date code may be given by international norms, e.g. IEC 60062 section 6.1.1, see also the attachment below in this document.

Packing defines how one package unit is built up and how many parts are in one packaging unit (PU).

Footer sections give information about the history of indexes and revisions of the product, and signatures about the releasing process of the document.

Index / Rev.	. Alteration						Date
01/01	First issue						06.07.2016
Created:	Z. Palánki	Approved (Techn):	F. Zámborszky	Approved (Quality):	L. Ferencz	Released:	T. Trupp
	06.07.2016	` '	25.08.2016		25.08.2016		25.08.2016

Disclosing the specification to third parties or using its content without written permission from MAGNETEC is strictly forbidden and every offender is liable to pay the corresponding damages

The objective of this document is to help to understand the datasheet of MAGNETEC and it is only for information, it does not create additional quality items.

For example:

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Attachment A)

IEC 60062 6.1.1 defines the following syntax for the date code:

Year	Code	Year	code	Year	code
2010	А	2020	М	2030	А
2011	В	2021	Ν	2031	В
2012	С	2022	Р	2032	С
2013	D	2023	R	2033	D
2014	E	2024	S	2034	E
2015	F	2025	Т	2035	F
2016	Н	2026	U	2036	Н
2017	J	2027	V	2037	J
2018	К	2028	W	2038	К
2019	L	2029	Х	2039	L

Year of the production: (1. Code numeral)

The code starts each 20th year newly.

Month of production (2. Code numeral)

Month	Code	Month	code
January	1	July	7
February	2	August	8
March	3	September	9
April	4	October	0
May	5	November	Ν
June	6	December	D

Examples:

Date code	Prudction date
B5	2011 May
DD	2013 December



Attachment B for CM) Explaination of the derating and forced cooling

The nom. current is the current when the choke surface temperature is about ca. 120°C due to the the cupper loss heating at the max. ambient temperature (max. ambient temperature as indicated in the component datasheet, typically 60°C). This nom. current is very depending on the max. ambient temperature.

The new nom. current at another ambient temperature T_am_new can be estimated by the derating theory, see fig. 1:

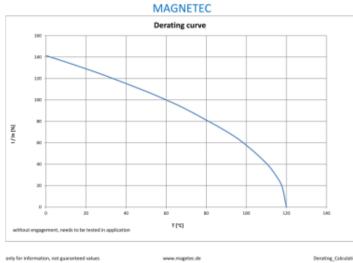


Fig. 1: estimated Inom_new/Inom at different ambient temperatures

For example, the nominal current of MB-007 is is ca. 16A at a max. ambient temperature=60°C (see datasheet in fig. 2). If in the application, operating temperature is only 40°C, the estimated new nom current can be estimated by 115%·16A=ca.18,5A (see fig 1). If the new ambient temperature is instead 80°C instead of 60°C, the new nom. current at 80°C can be estimated by 80%·16A=ca.13A(see fig 1).

If not other identified in the datasheet, this is valid for free convection, if forced cooling is applied, the new nom. current is about 140% of the value with only free convection, e.g. MB-007-02-02 should be able to handle about 16A·140%=ca. 22,5A

These values are without engagement and needs to be tested in the application.

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