



M12 X-coded 1G transformer receptacles



GENERAL INFORMATION

No. of contacts	8 poles
Contact resistance	< 5 mOhm
Working temperature range	-40°C - +85°C
Termination technology	SMT
Reflow processing temperature	245°C Max.
Total insertion force	30N Max. according to IEC 61076-2-109
Total withdrawal force	30N Max. according to IEC 61076-2-109
Mating cycles	100 mating cycles, according to IEC 61076-2-109
Shock and vibration proof	according to IEC 61076-2-109
RoHS - compliant	Yes
Lead free	Yes
PSL level acc. ECA/IPC/JEDEC J-STD-075	R7

INSULATION MATERIAL

Material	LCP (liquid crystalline polymer)
Color	Black
UL classification	UL94-V0
Material group acc. IEC 60664-1	IIIa (175 ≤ CTI < 400)

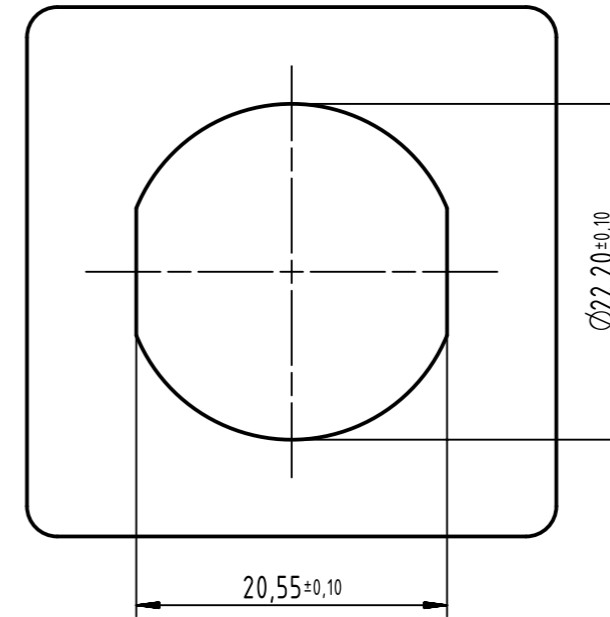
CONTACT MATERIAL

Contact material	Copper alloy
Plating termination zone	Tin
Plating contact sliding side	Gold

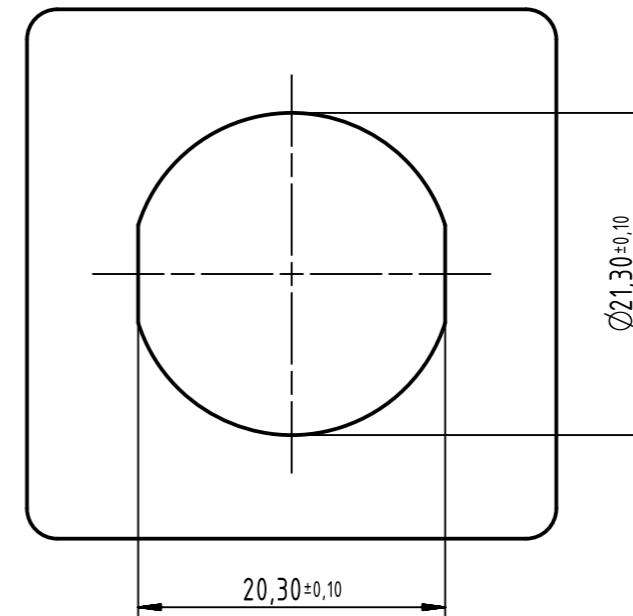
SHIELDING MATERIAL

Shielding material	Copper alloy
Plating	Tin

Recommended Panel cut out



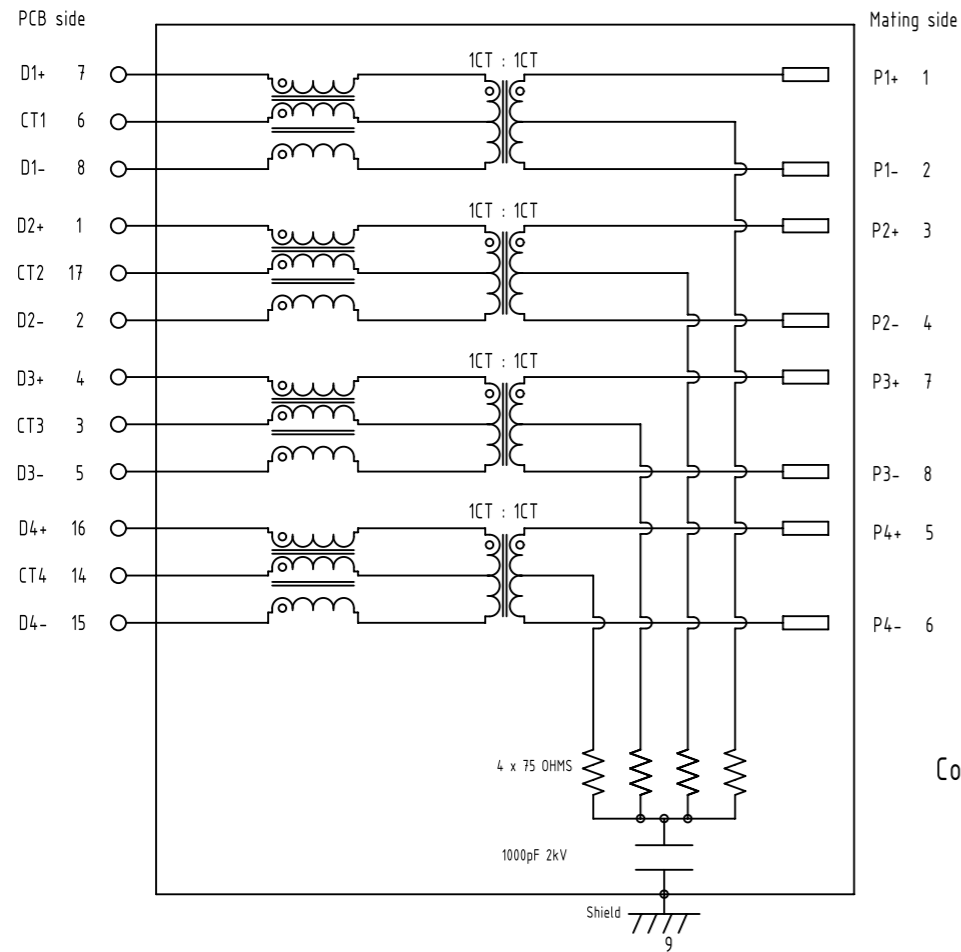
Front mounting use
Detail see drawing 21033012006



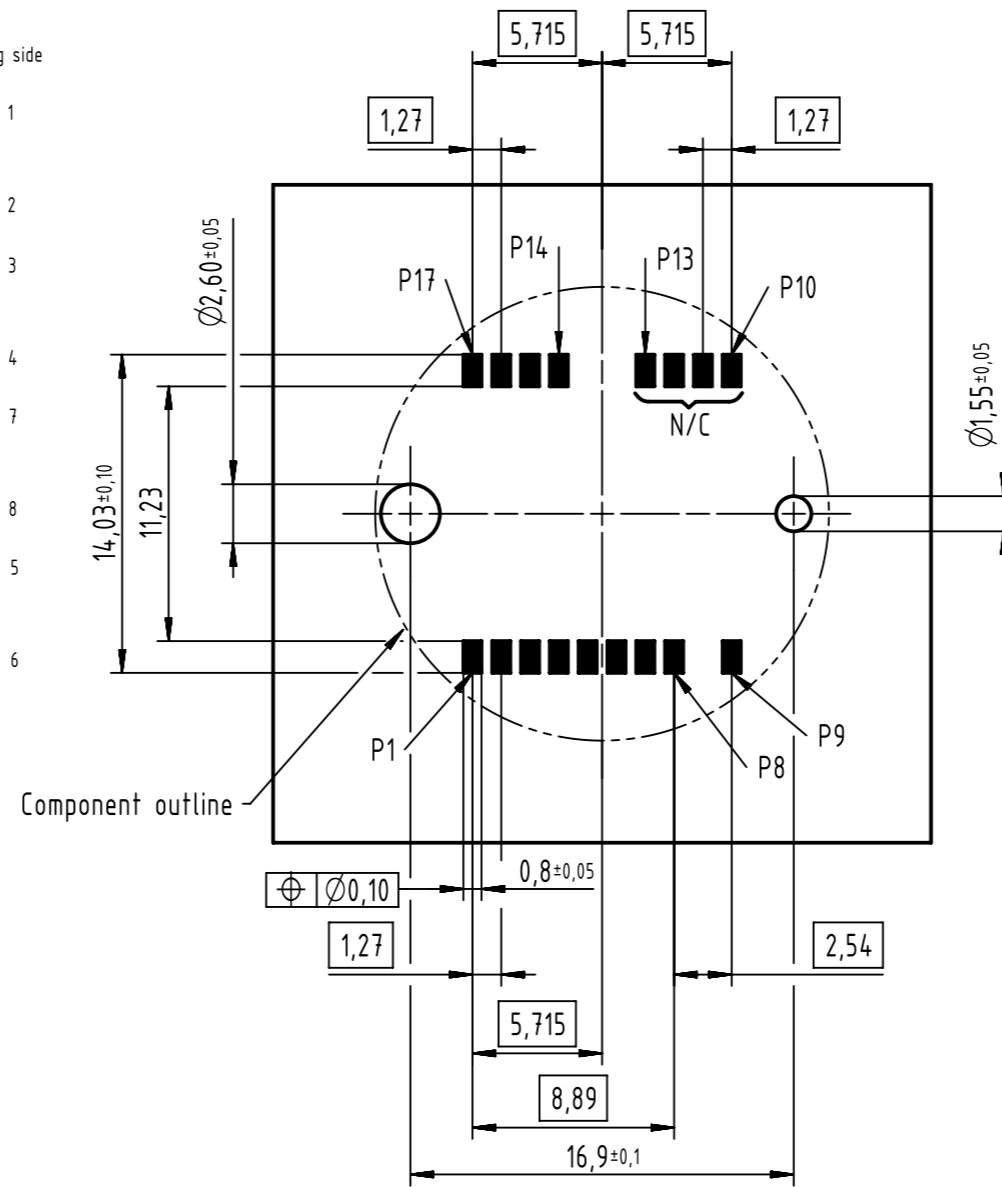
Rear mounting use
Detail see drawing 21033012007

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	Department EC PD - CN	CHENSK	CHENSK	HOFFMANN	2017-06-02	Final Release
HARTING Electronics GmbH D-32339 Espelkamp		Title M12 transformer receptacles X-coded 1G straight,SMT			Doc-Key / ECM-Nr. 100723278/UGD/001/B 500000119897	
		Type DS	Number 21033810102		Rev. B	Page 1/4

Schematic



Recommended PCB layout



Electrical Characteristics @+25°C unless otherwise noted
 Meets IEEE802.3 specification
 RoHS compliant

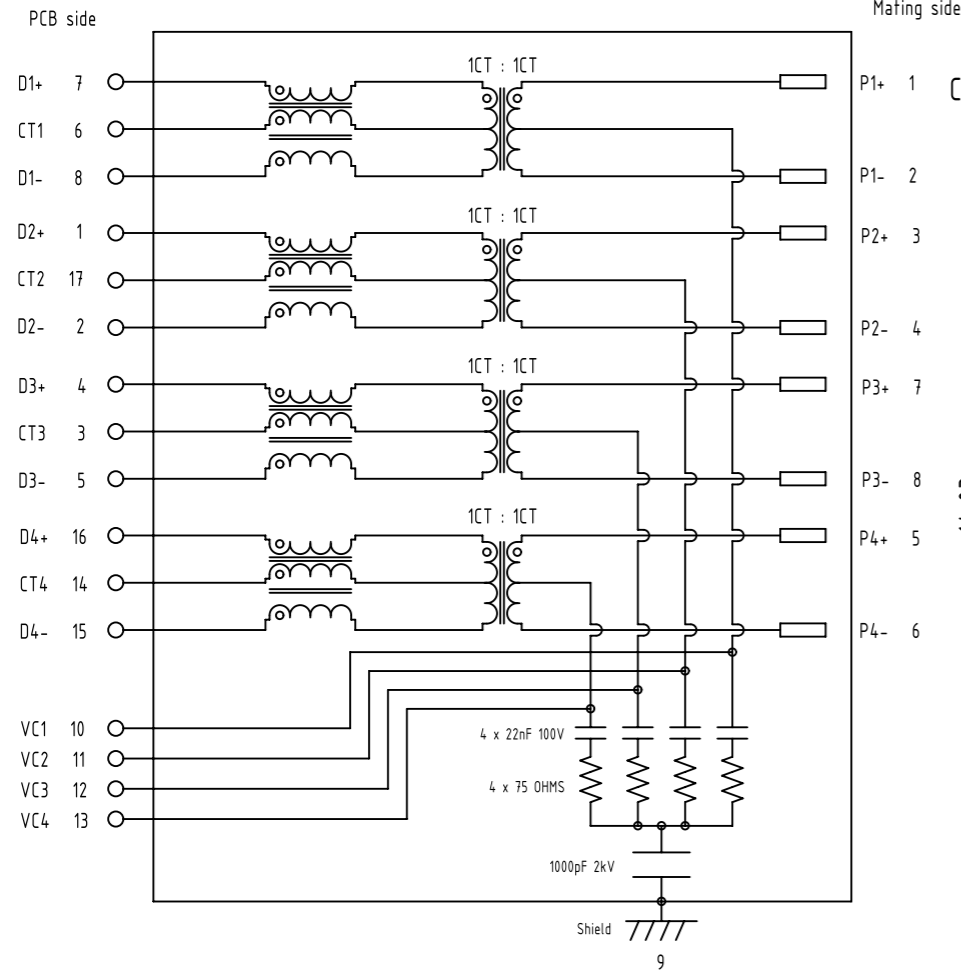
Parameter	Specification/ Limit Values	
Turn Ratio (+/- 2%)	1CT : 1CT	
Working voltage	57V	
OCL	min 350µH @ 100KHz , 100mV with 8mA bias current	
Isolation (Input- Output)	1.5kV VAC RMS , for 60sec. min	
Insertion Loss	f ≤ 0.3MHz	0.3MHz < f ≤ 100MHz
	-3dB max	-0.6-0.002*f ^{1.25}
Return Loss	f ≤ 10MHz	10MHz < f ≤ 100MHz
	-19dB min	-19+10*log (f/10)
Crosstalk	f ≤ 10MHz	10MHz < f ≤ 100Mhz
	-40dB min	-40+10*log(f/10)
CMRR	f ≤ 10Mhz	10MHz < f ≤ 100Mhz
	-37dB min	-37+14*log (f/10)
CDMR	f ≤ 10Mhz	10MHz < f ≤ 100Mhz
	-40dB min	-40+17*log (f/10)

NOTE: f is the frequency in MHz

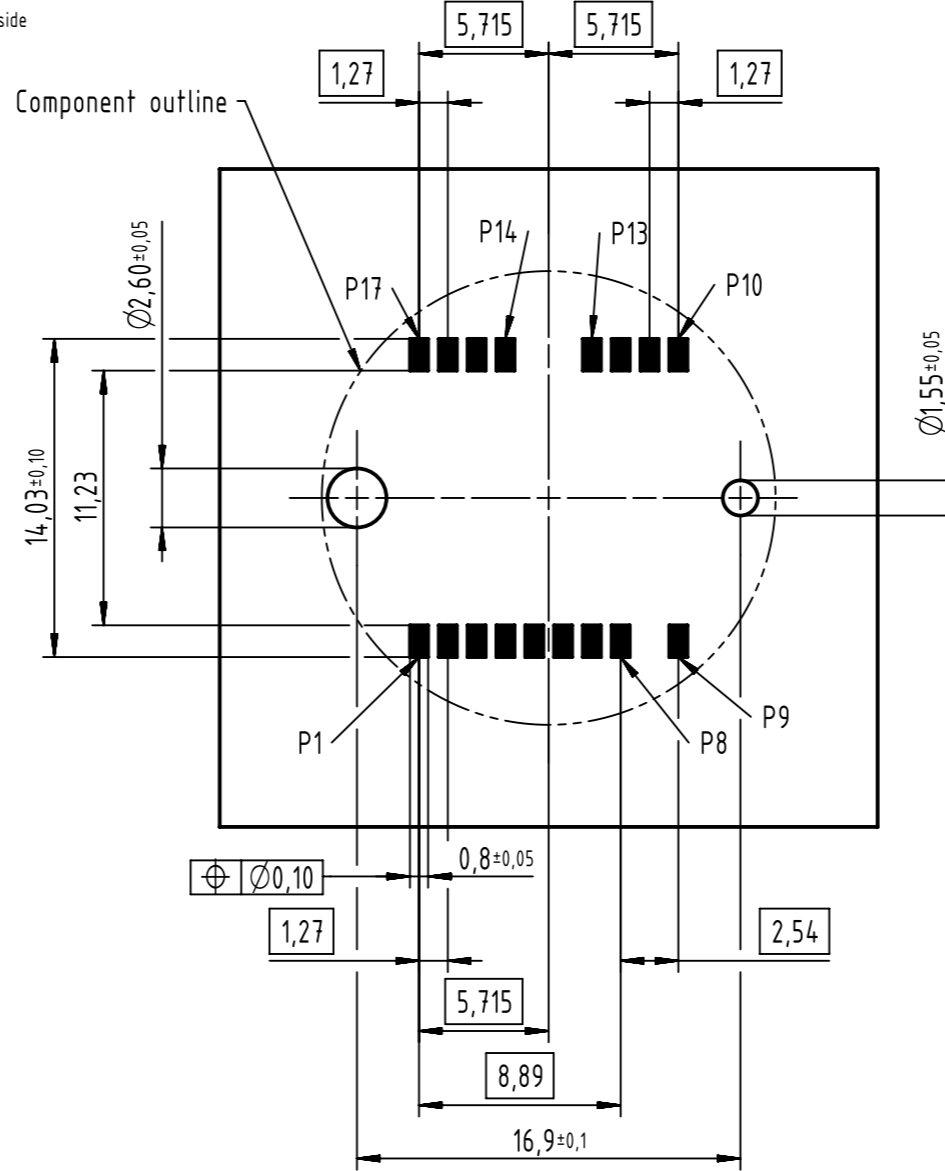
For X-coded 1G without PoE version only
 N/C: leave pins open,not connect to GND or VCC

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		Type	Number	Rev.	Page	
		DS	21033810102	B	2/4	

Schematic



Recommended PCB layout



Electrical Characteristics @+25°C unless otherwise noted
 Meets IEEE802.3 specification
 RoHS compliant

Parameter	Specification/ Limit Values	
Turn Ratio (+/- 2%)	1CT : 1CT	
Working voltage	57V	
Current Capacity Pins 1-8/ VC1-VC4	750mA DC	
OCL	min 350µH @ 100KHz , 100mV with 8mA bias current	
Isolation (Input- Output)	1.5kV VAC RMS , for 60sec. min	
Insertion Loss	$f \leq 0.3\text{MHz}$	$0.3\text{MHz} < f \leq 100\text{MHz}$
	-3dB max	$-0.6-0.002 \cdot f^{1.25}$
Return Loss	$f \leq 10\text{MHz}$	$10\text{MHz} < f \leq 100\text{MHz}$
	-19dB min	$-19+10 \cdot \log(f/10)$
Crosstalk	$f \leq 10\text{MHz}$	$10\text{MHz} < f \leq 100\text{MHz}$
	-40dB min	$-40+10 \cdot \log(f/10)$
CMRR	$f \leq 10\text{MHz}$	$10\text{MHz} < f \leq 100\text{MHz}$
	-37dB min	$-37+14 \cdot \log(f/10)$
CDMR	$f \leq 10\text{MHz}$	$10\text{MHz} < f \leq 100\text{MHz}$
	-40dB min	$-40+17 \cdot \log(f/10)$

NOTE: f is the frequency in MHz

For X-coded 1G with PoE+ version only

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HARTING Electronics GmbH D-32339 Espelkamp	Type DS	Number 21033810102		Rev. B	Page 3/4	

TAPE LAYOUT & PACKAGING

RECOMMENDATION FOR SOLDER PROCESSING

1. Solder paste recommendation

The M12 transformer receptacles connector are solderable with established lead free SAC/SnNi solder but also leaded solder

2. PCB pad plating

The M12 transformer receptacles connector are solderable on lead-free pad surfaces like HAL,NiAu,Immersion Sn.

3. Stencil recommendation

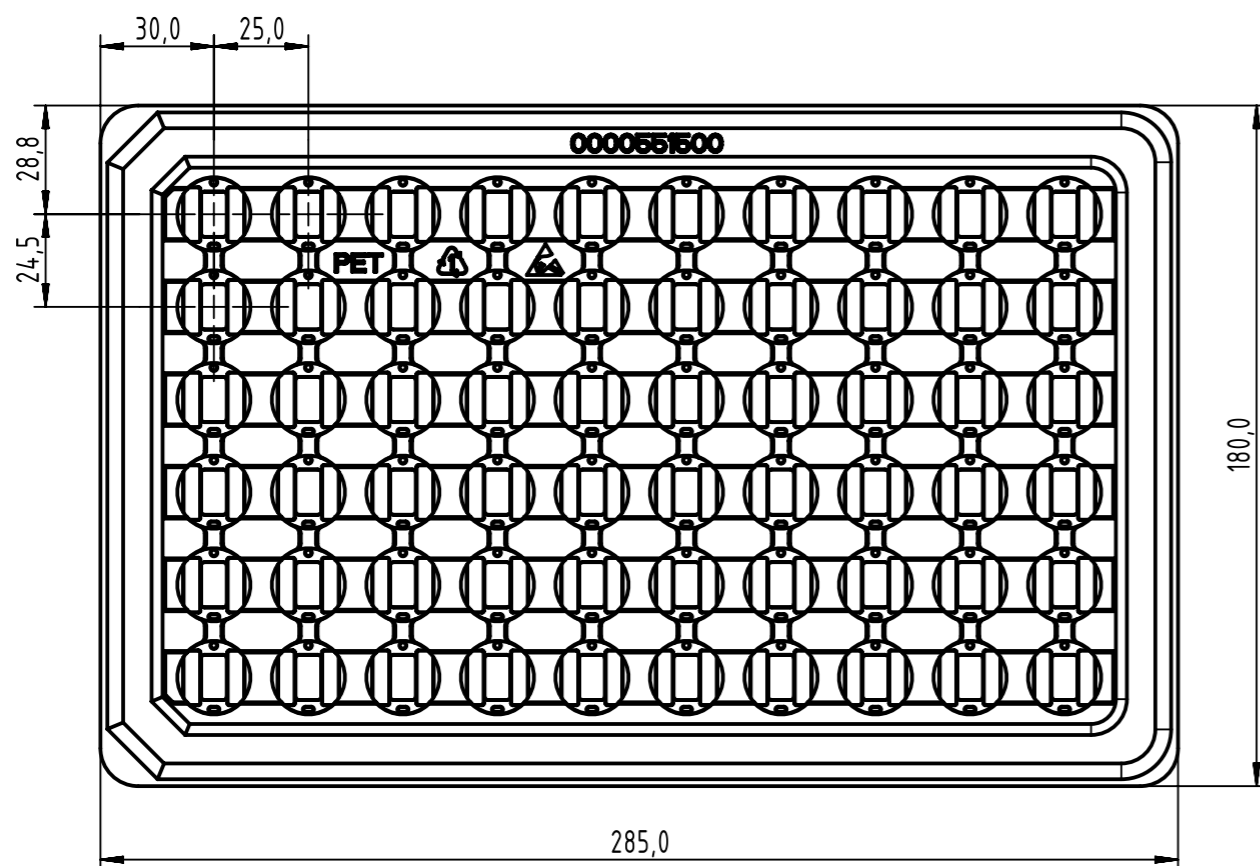
The size of the solder stencil apertures is depending on the thickness of the stencil.

In general, the thinner stencils will need larger apertures to result in the required volume of solder paste.

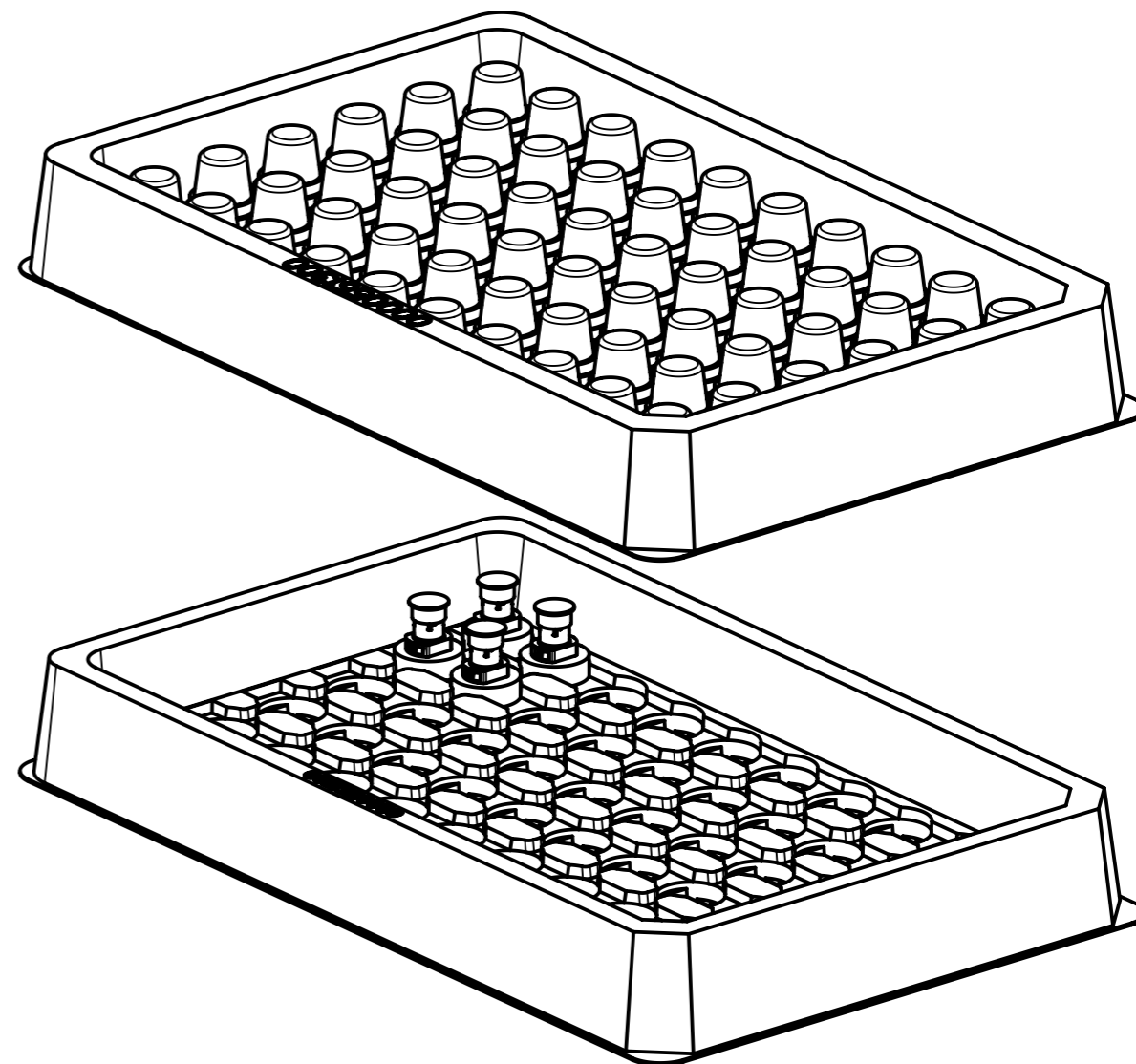
The minimum required solder paste volume for the signal pins is 0,114mm³,For example, this can be achieved with the following stencil data :

Single pin			
Stencil thickness	PCB pad size	proposal stencil aperture size	calculated solder paste volume
120 µm	1,4 x 0,8 mm	1,32 x 0,72 mm	0,114 mm ³

HARD TRAY LAYOUT & PACKAGING



APPLICATION INFORMATION



	All rights reserved Department EC PD - CN HARTING Electronics GmbH D-32339 Espelkamp	All Dimensions in mm Original Size DIN A3	Scale 1:1	Free size tol.	Ref. Sub.
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		Type DS	Number 21033810102		Rev. B Page 4/4