



# M12 D-coded 10/100M transformer receptacles



## GENERAL INFORMATION

No. of contacts	4 poles
Contact resistance	10 mOhm Max.
Working temperature range	-40°C - +85°C
Termination technology	SMT
Reflow processing temperature	245°C Max.
Total insertion force	10N Max. according to IEC 61076-2-101
Total withdrawal force	15N Max. according to IEC 61076-2-101
Mating cycles	100 mating cycles, according to IEC 61076-2-101
Shock and vibration proof	according to IEC 61076-2-101
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)

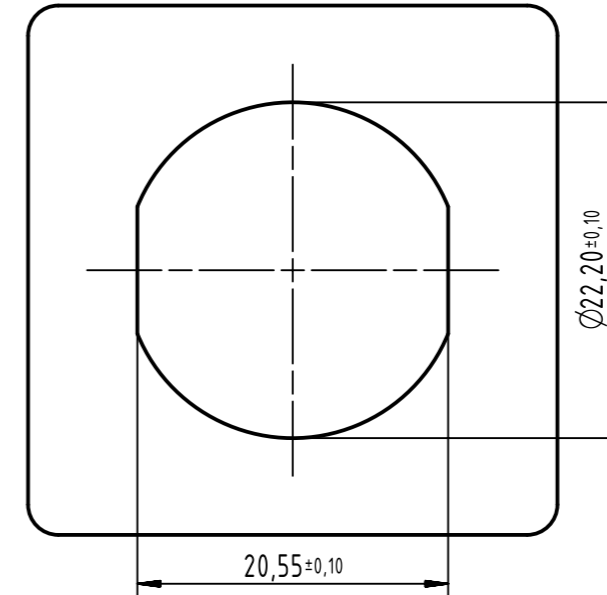
## CONTACT MATERIAL

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

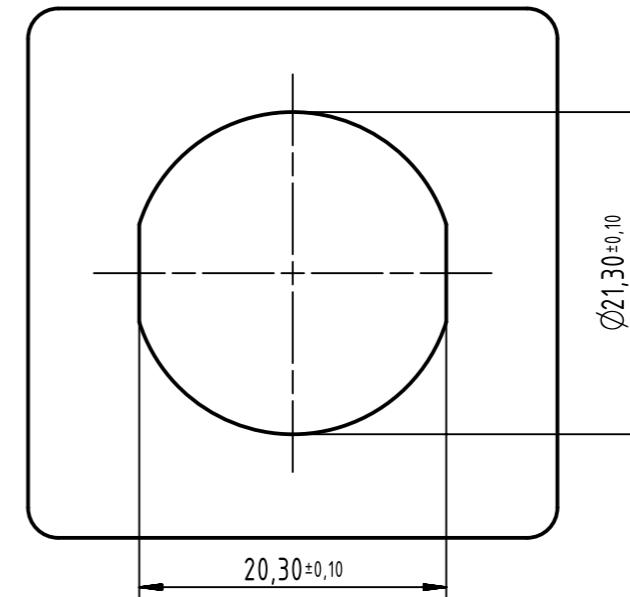
## SHIELDING MATERIAL

Shielding material	Copper alloy
Plating	Tin

## Recommended Panel cut out



Front mounting use  
Detail see drawing 21033012006



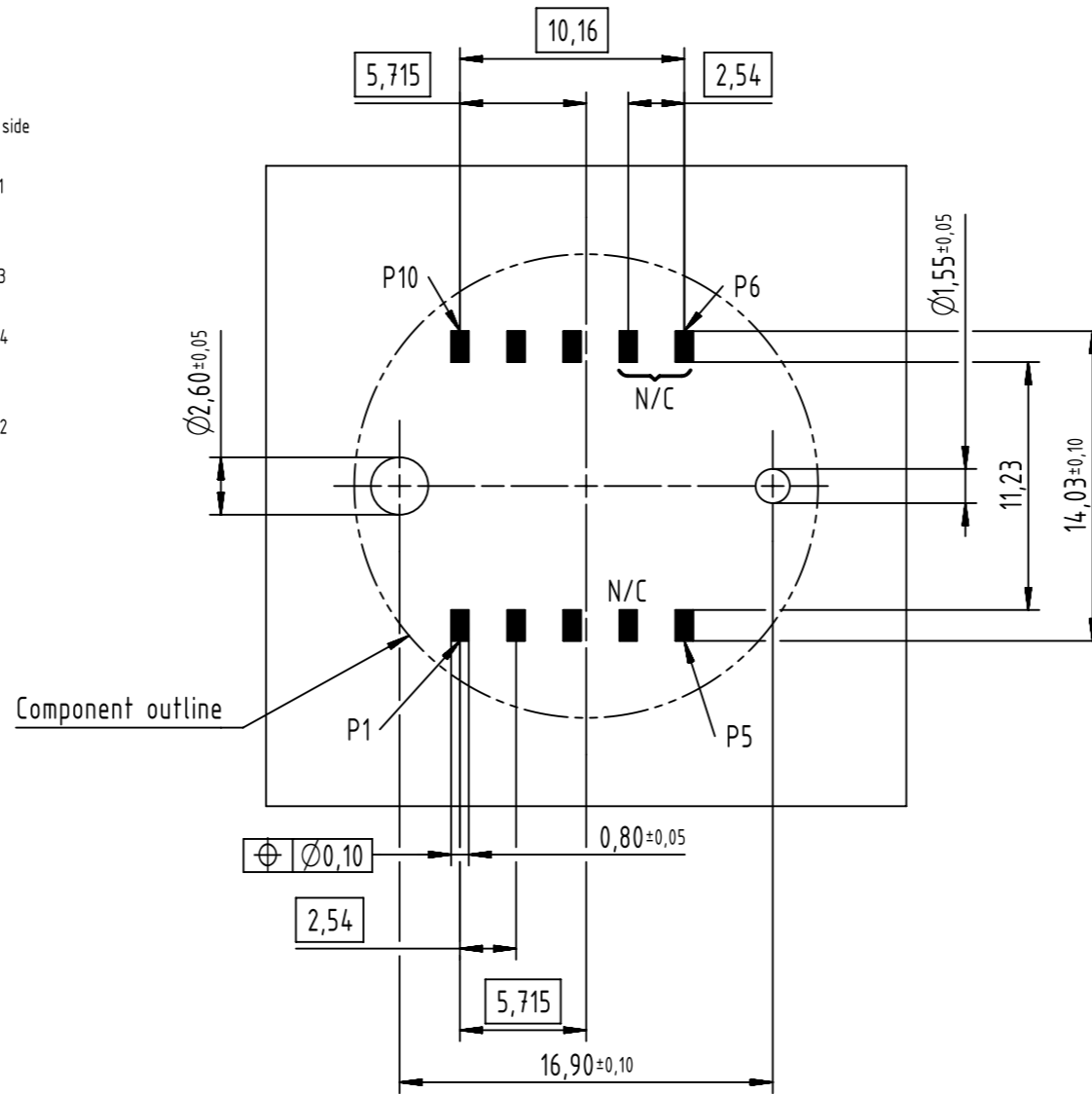
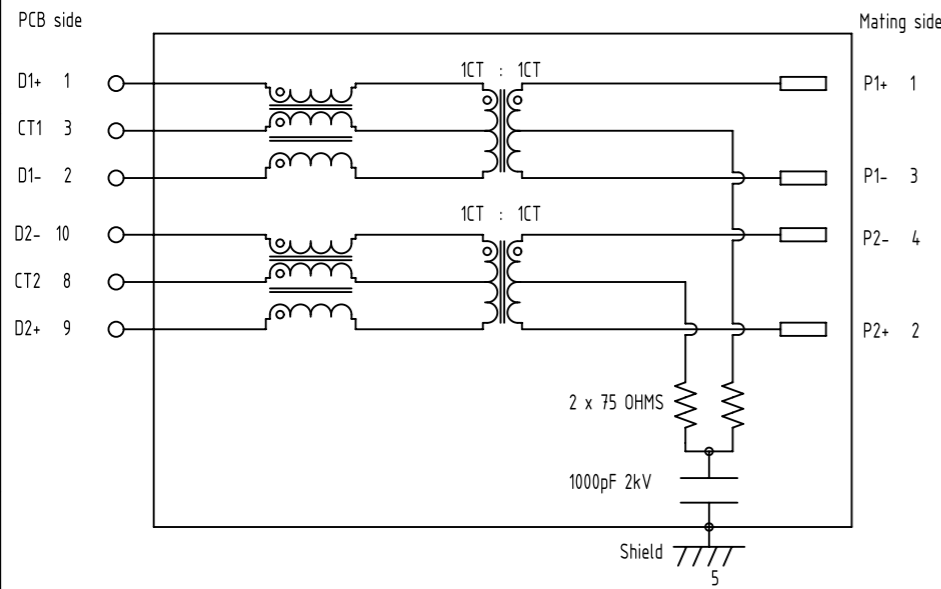
Rear mounting use  
Detail see drawing 21033012007

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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 D-coded straight, SMT				Doc-Key / ECM-Nr. 100720894/UGD/001/B 500000119897	
		Type	Number	Rev.	Page		
		DS	21033810101	B	1/4		

# Schematic

# Recommended PCB Layout

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



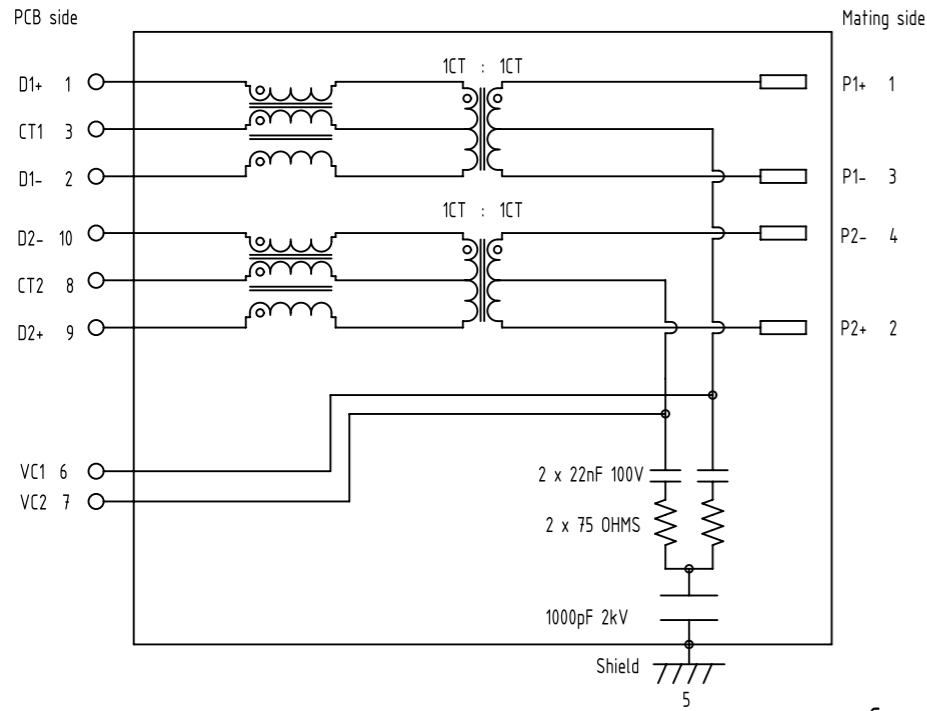
Parameter	Specification/ Limit Values	
Turn Ratio (+/- 2%)	1CT : 1CT	
Working voltage	57V	
OCL	min 350µH @ 100KHz , 100mV with 8mA bias current	
Isolation (Input- Output)	1.5kV VAC RMS , for 60sec. min	
Insertion Loss	f ≤ 0.3MHz	0.3MHz < f ≤ 100MHz
	-3dB max	-0.6-0.002*f <sup>1.25</sup>
Return Loss	f ≤ 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

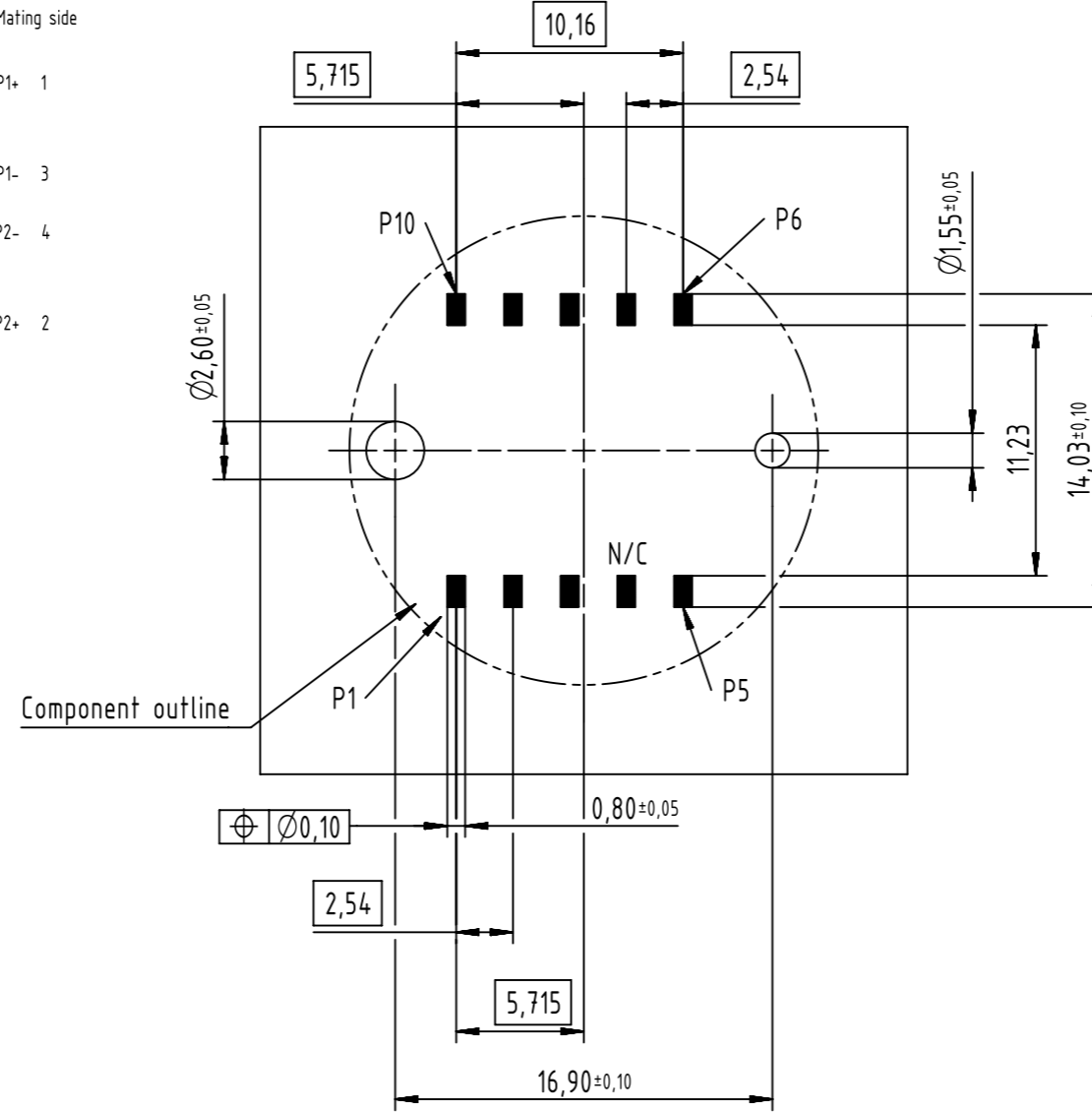
For D-coded without PoE version only  
 N/C: leave pins open, not connect to GND or VCC

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	HARTING Electronics GmbH D-32339 Espelkamp	Title M12 transformer receptacles D-coded straight,SMT	Type DS	Number 21033810101	Doc-Key / ECM-Nr. 100720894/UGD/001/B 500000119897	Rev. B Page 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 ≤ 0.3MHz	0.3MHz < f ≤ 100MHz
	-3dB max	-0.6-0.002*f <sup>1.25</sup>
Return Loss	f ≤ 10MHz	10MHz < f ≤ 100MHz
	-19dB min	-19+10*log (f/10)
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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 D-coded with PoE+ version only  
 N/C: leave pins open, not connect to GND or VCC

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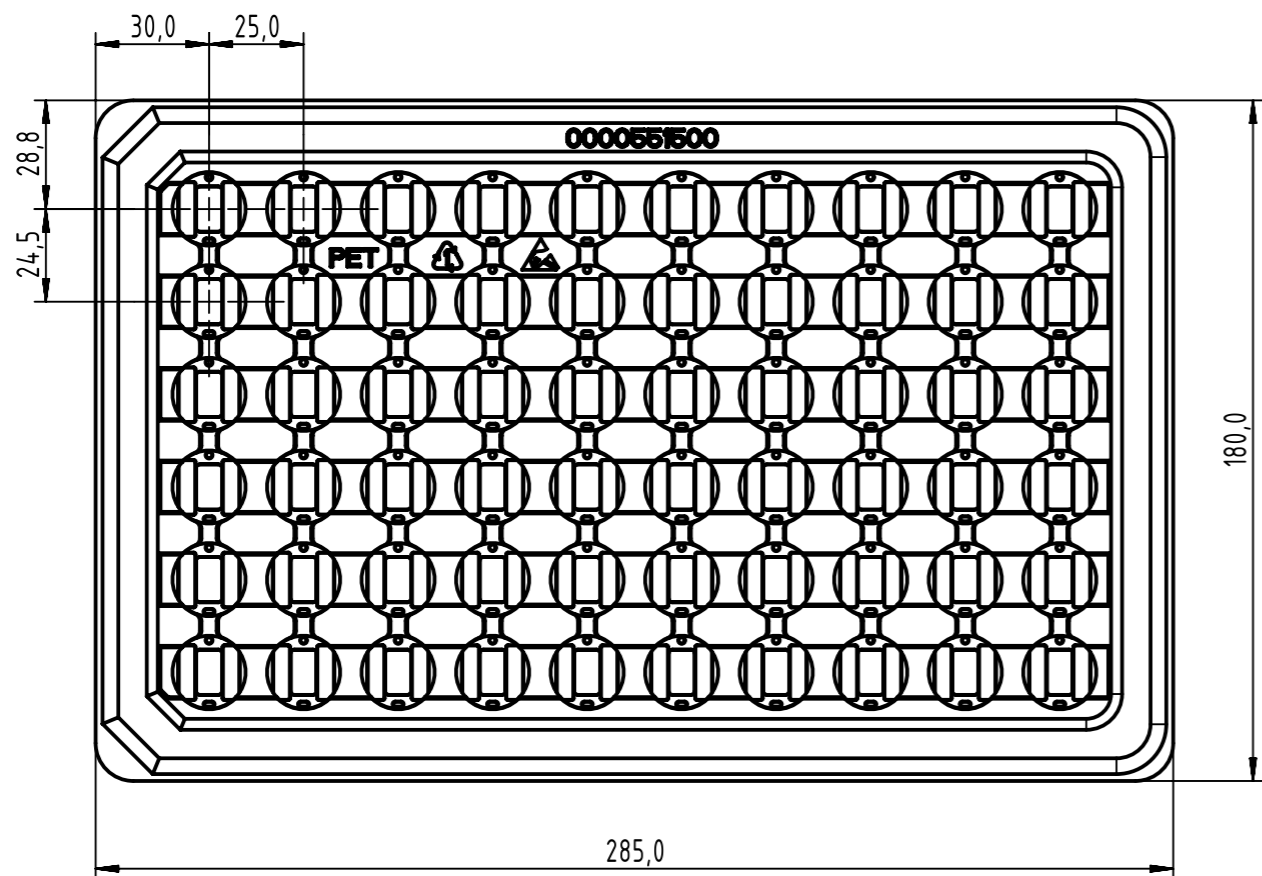
**TAPE LAYOUT & PACKAGING**

RECOMMENDATION FOR SOLDER PROCESSING

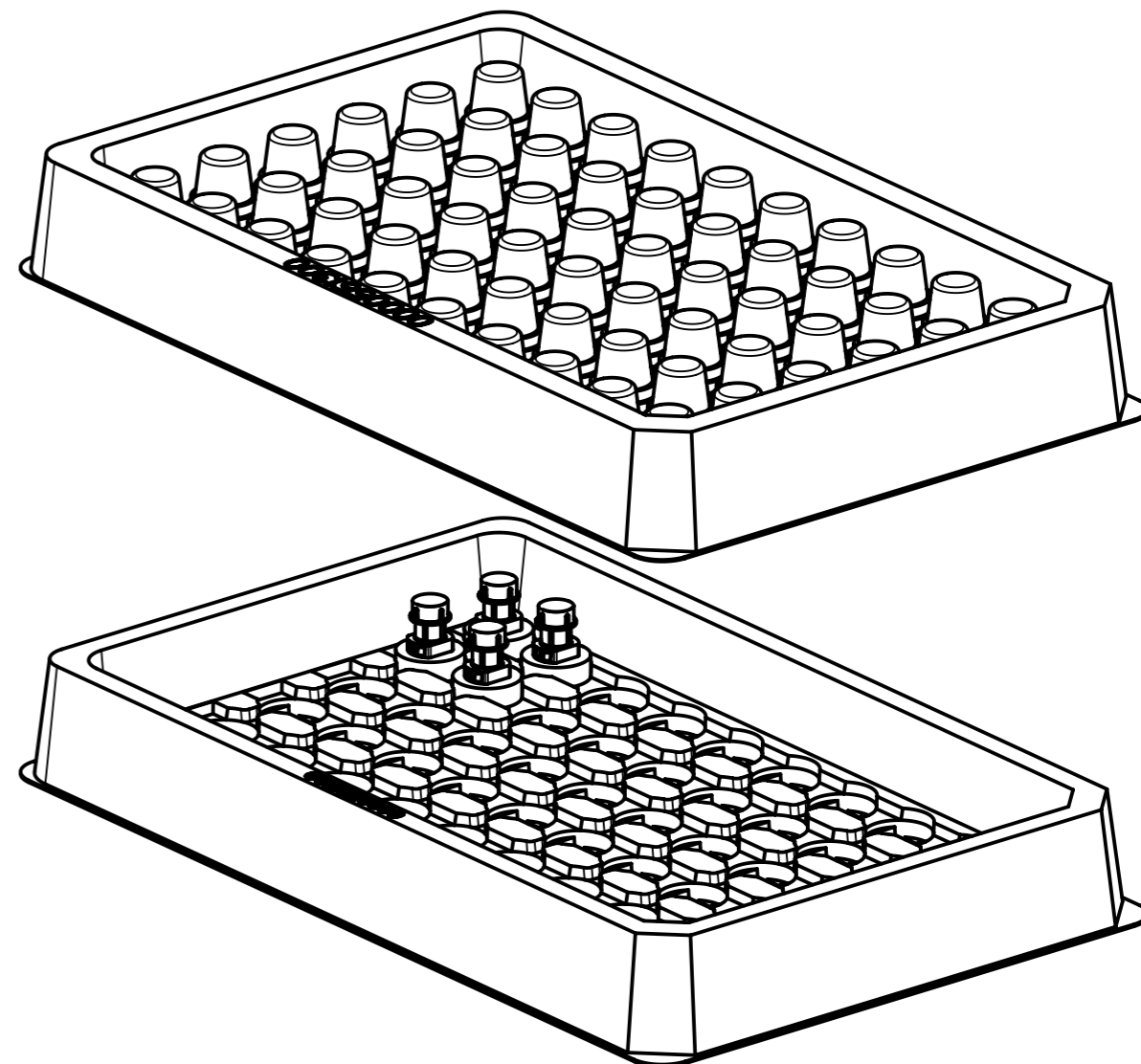
1. Solder paste recommendation  
The M12 transformer receptacles connector are solderable with established lead free SAC/SnNi solder but also leaded solder
2. PCB pad plating  
The M12 transformer receptacles connector are solderable on lead-free pad surfaces like HAL, NiAu, Immersion Sn.
3. Stencil 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 0,114mm<sup>3</sup>, 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 <sup>3</sup>

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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