

Datasheet - TEC Assembly TEA-1145



Support / First steps

Meerstetter Engineering provides technical support for all products and helps you to integrate a product into your solution. Most of your questions should be solved by reading the provided [user manuals](#) of the corresponding product or the [FAQ](#) (frequently asked questions).

For further help or if you have any other questions, please do not hesitate to contact us. We are happy to help you. You can contact us by email support@meerstetter.ch.

Meerstetter's product family compatibility

The Meerstetter LDD and TEC-Family have been developed to work along with each other. They share the same platform bus, communication protocol and hardware architecture. See table for an overview over the LDD- and TEC-Families.

LDD-Family		
LDD-1321	0-1.5 A / 0-14 V	CW, Add on TEC Controller available
LDD-1301	0-20 A / 0.5-45 V	1 ms - CW
LDD-1303	0-20 A / 1-120 V	1 ms - CW
LDD-1137	0-75 A / 0-70 V	0.5 μ s - CW, modulated, QCW and pulsed modes
LDD-1124-SV	0-1.5 A / 0-15 V	1 μ s - CW, modulated, QCW and pulsed modes
LDD-1121-SV	0-15 A / 0-15 V	1 μ s - CW, modulated, QCW and pulsed modes
LDD-1125-HV	0-30 A / 0-27 V	1 μ s - CW, modulated, QCW and pulsed modes
TEC-Family		
TEC-1092	± 1.2 A / ± 9.6 V	Micro, single channel
TEC-1091	± 4 A / ± 21 V	Small, single channel, fits with TEA-1145
TEC-1089-SV	± 10 A / ± 21 V	Medium, single channel
TEC-1162	± 5 A / ± 56 V	Medium-high, single channel
TEC-1090-HV	± 16 A / ± 30 V	Large, single channel
TEC-1163	± 25 A / ± 56 V	Extra-large, single channel
TEC-1161-4A	2 x (± 4 A / ± 21 V)	Small, dual channel
TEC-1161-10A	2 x (± 10 A / ± 21 V)	Medium, dual channel
TEC-1122-SV	2 x (± 10 A / ± 21 V)	Medium, dual channel
TEC-1166	2 x (± 5 A / ± 56 V)	Medium-high, dual channel
TEC-1123-HV	2 x (± 16 A / ± 30 V)	Large, dual channel
TEC-1167	2 x (± 25 A / ± 56 V)	Extra-large, dual channel
SKT-1165	± 4 A / ± 21 V	Starter Kit ready to play set up which includes the TEA-1145

TEC Assembly



Description:

The TEA-1145 Thermoelectric Cooling Assembly: Precision cooling made easy. Designed for simplicity, the TEA-1145 is compact and easy to use. Integrate it into your setup and enjoy hassle-free operation and maintenance.

Using thermoelectric principles, this unit can pump out 108 W of cooling power with a 0K temperature difference between the hot and cold sides, providing fast and efficient cooling different tasks. It also maintains a substantial 78 °C temperature differential across the Peltier element when not actively cooling, ready to tackle your thermal challenges.

The TEA-1145 offers flexibility with its range of input options, supporting voltages up to 34.3V and currents up to 6 A. This adaptability allows seamless integration into different systems, giving you the freedom to achieve optimum cooling performance.

The TEA-1145 is equipped with built-in temperature sensors for both the object and the sink, giving you complete control over your cooling process.

Compatibility:

Find the matching TEC Controllers on our website:

- 1 Channel: [TEC-1091](#)
- 2 Channel: [TEC-1161-4A](#)

Features

Peltier Characteristics:

- Heat pumping capacity (Q_{\max}): 108 W
- Temperature difference (dT_{\max}): 78 °C

Input Characteristics:

- Voltage (U_{\max}): up to 34.3 V
- Current (I_{\max}): up to 6 A

Main Features:

- Small, simple, and compact design
- Easy and quick system integration
- Integrated object- and sink-temperature sensors
- Integrated fan with protective cover
- Clear anodized cold plate
- REACH and RoHS compliant

Please Note:

The TEA-1145 is an integral part of the Starter Kit [SKT-1165](#). All values apply accordingly.

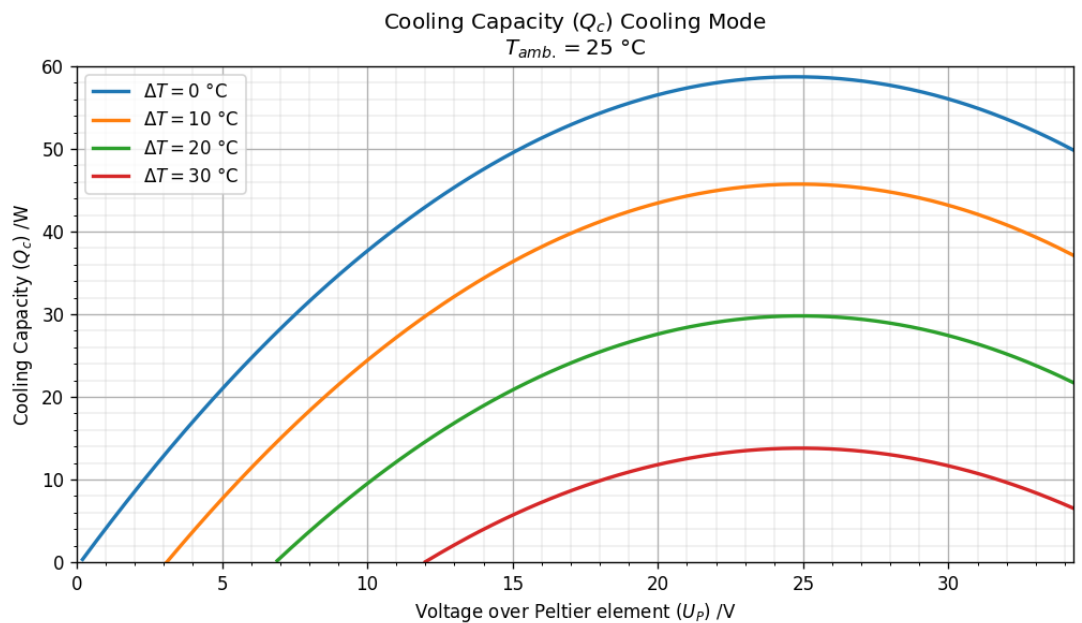
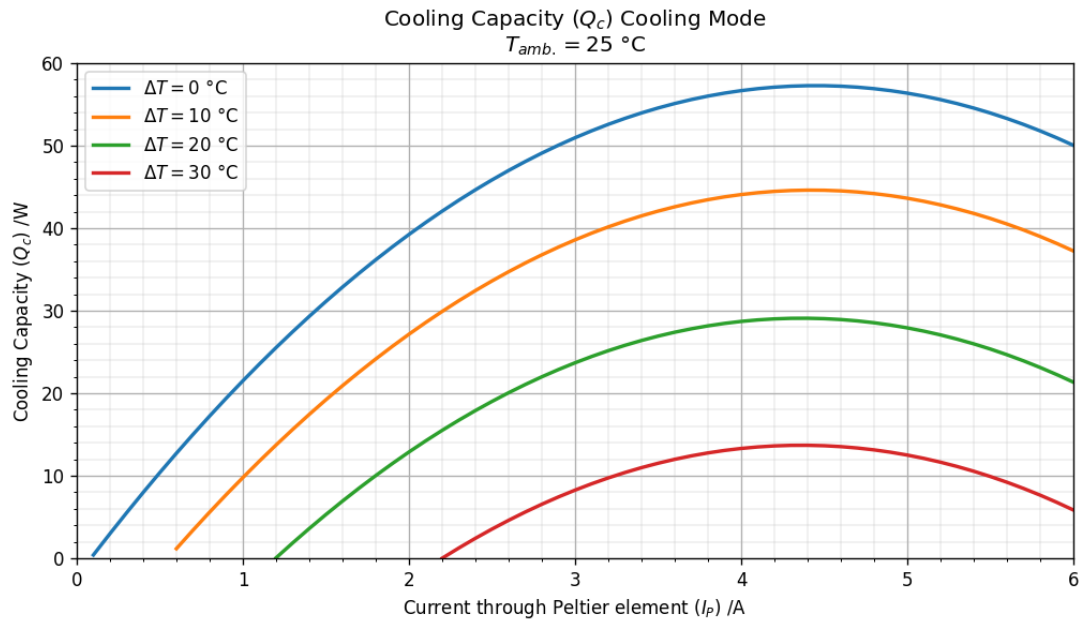
General Characteristics

Absolute Maximum Ratings	
Supply voltage (DC)	34.3 V
Supply current (DC)	6 A

Operating Ratings	
Temperature	-10 – 80 °C
Humidity	5 – 95 %, non-condensing

Cooling Capacity

Unless otherwise noted: $D_{Fan} = 100\%$ (max. Speed)



The temperature difference dT refers to the difference between the object temperature $T_{obj.}$ and the ambient temperature $T_{amb.}$. Due to the fitting, the two graphs may show slight deviations.

Electrical Characteristics

Unless otherwise noted: $T_A = 25\text{ °C}$

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Peltier element (TE72001-241-060BS) from data sheet on our website:						
U	Supply voltage	$Q = 0, I = I_{\max}, T = 50\text{ °C}$		24	34.3	V
I	Supply current	$Q = 0, dT = dT_{\max}, T = 50\text{ °C}$		4	6	A
dT	Heat pumping capacity	$Q = 0, I = I_{\max}, T = 50\text{ °C}$		78		°C
Q	Temperature difference	$I = I_{\max}, dT = 0, T = 50\text{ °C}$		108		W
Fan (9GA0824P4J001) from data sheet on our website. Depending on the supplier, fan may vary:						
U	Supply voltage		21.6	24	26.4	V
I ₁₀₀	Supply current	D = 100 %		0.28		A
I ₂₅	Supply current	D = 25 %		0.06		A
n ₁₀₀	Speed	D = 100 %	6660	7400	8140	min ⁻¹
n ₂₅	Speed	D = 25 %	1960	2800	3640	min ⁻¹
n ₀	Speed	D = 0 %		0		min ⁻¹
Object-temperature sensor (NTCLE305E4103SB) from data sheet on our website:						
B _{25/85}	B _{25/85} -value		3964.1	3984	4003.9	K
R ₂₅	Resistance	T = 25 °C	9780.7	10k	10219	Ω
R ₋₂₀	Resistance	T = -20 °C	93465	96761	100058	Ω
R ₇₀	Resistance	T = 70 °C	1717.7	1747.7	1777.6	Ω
Sink-temperature sensor (NTCALUG01A103F161) from data sheet on our website:						
B _{25/85}	B _{25/85} -value		3964.1	3984	4003.9	K

Peltier Connector Specifications X11

Used on the TEA assembly:

Description	Color	Female Crimp	Female Housing	Position
TEC (+)	Red	Molex	Molex	1
TEC (-)	Black	1053001100	1053071202	2

Matching receptacle (PCB connectors):

Description	Color	Male Crimp	Male Housing	Position
TEC (+)	Red	-	Molex	1
TEC (-)	Black		1053131202	2

Object-temperature sensor Connector Specifications X21

Used on the TEA assembly:

Description	Color	Female Crimp	Female Housing	Position
Object-NTC	-	Molex	Molex	1
	-	08-50-0102	22-01-3027	2

Matching receptacle (PCB connectors):

Description	Color	Male Crimp	Male Housing	Position
Object-NTC	-	-	Molex	1
	-		0022053021	2

Sink-temperature sensor Connector Specifications X22

Used on the TEA assembly:

Description	Color	Female Crimp	Female Housing	Position
Sink-NTC	-	Molex	Molex	1
	-	08-50-0102	22-01-3027	2

Matching receptacle (PCB connectors):

Description	Color	Male Crimp	Male Housing	Position
Sink-NTC	-	-	Molex	1
	-		0022053021	2

Fan Connector Specifications X31

Used on the TEA assembly:

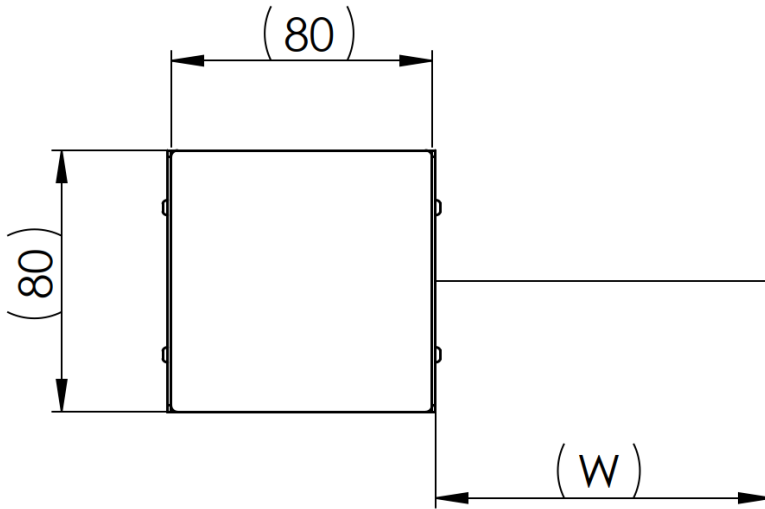
Description	Color	Female Crimp	Female Housing	Position
FAN (-)	Black	Molex 08-50-0102	Molex 22-01-3047	1
FAN (+)	Red			2
FAN (Tacho)	Yellow			3
FAN (PWM)	Blue/Brown			4

Matching receptacle (PCB connectors):

Description	Color	Male Crimp	Male Housing	Position
FAN (-)	Black	-	Molex 470531000	1
FAN (+)	Red			2
FAN (Tacho)	Yellow			3
FAN (PWM)	Blue/Brown			4

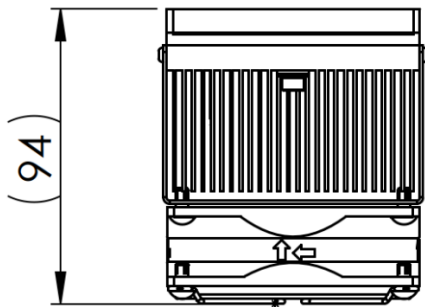
Dimensions

Top View

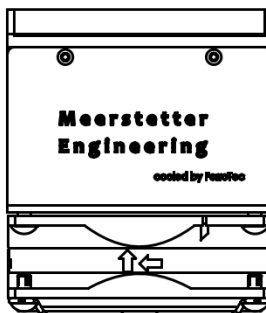


$W = 150 \text{ mm} \pm 15 \text{ mm}$


Side View



Front View



The 3D models and more detailed drawings of the cold plate and fan bracket are available on our website. So, you can customise your parts to suit your needs.

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Annex A. Change history

Date of change	Doc/Version	Changed/Approved	Change / Reason
13 September 2023	A	NZ/RK	<ul style="list-style-type: none">• Initial Creation
13 December 2023	B	LS/MR	<ul style="list-style-type: none">• Add front page
10 June 2024	C	NZ/RK	<ul style="list-style-type: none">• Added curves for the cooling capacity