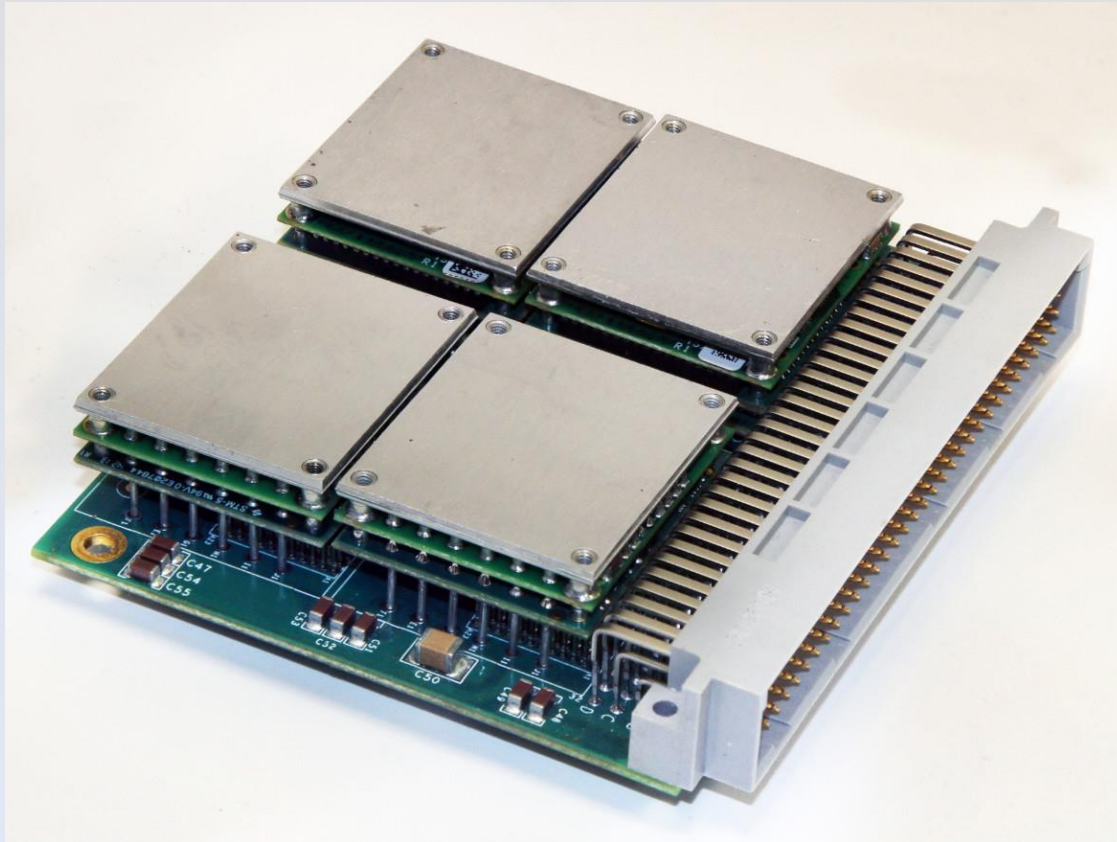


The GOLD Twitter

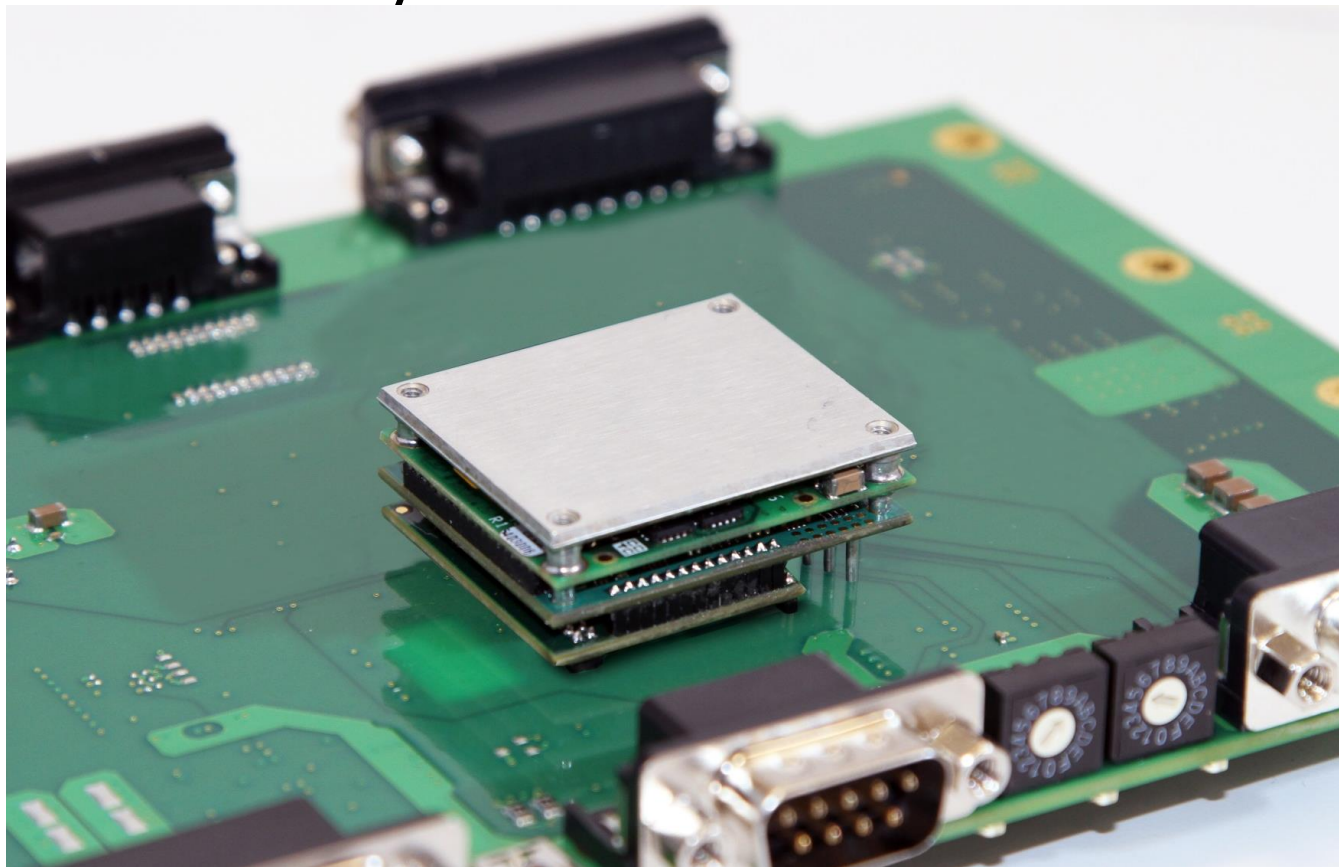
Ultra Hi Current, Ultra Efficient
Ultra Small



The Assembly

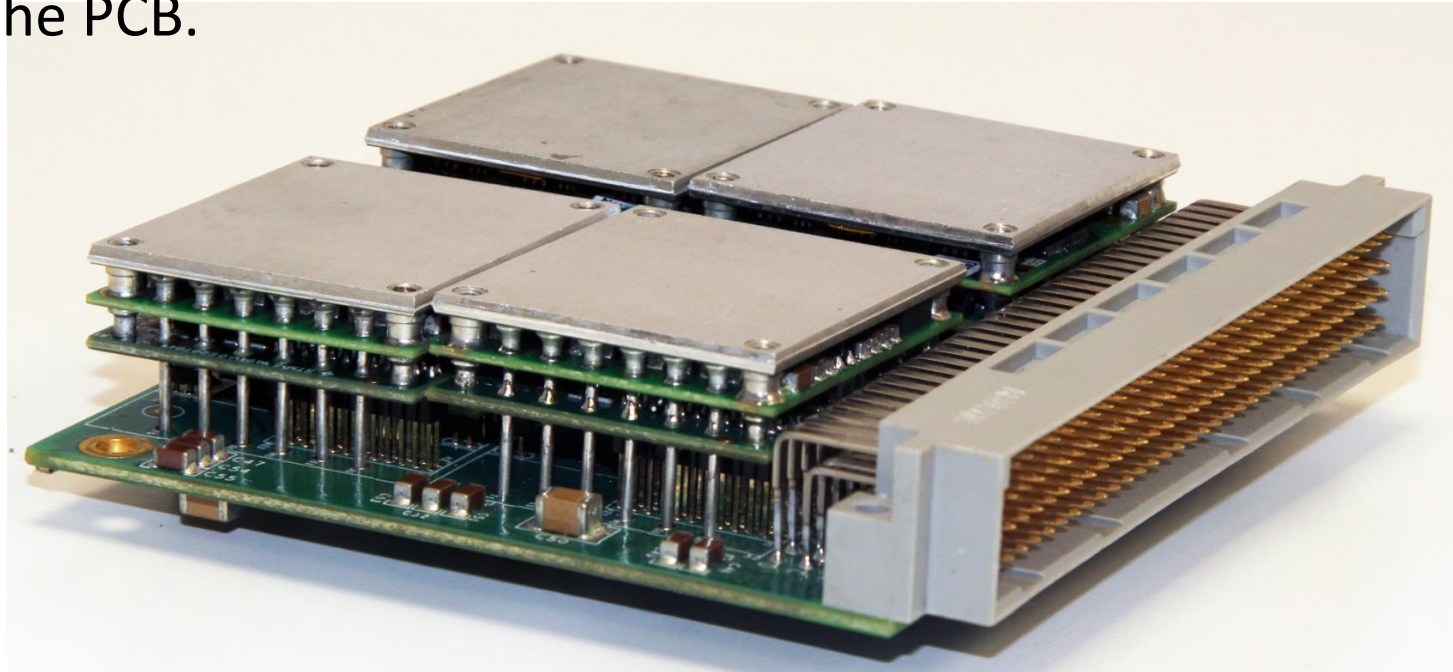
On Board Assembly

The Simplest way is assemble and solder the Gold Twitter directly on the PCB.



On Board Assembly

Even with a multi axis integration the Simplest way is to assemble and solder separately each Gold Twitter directly on the PCB.



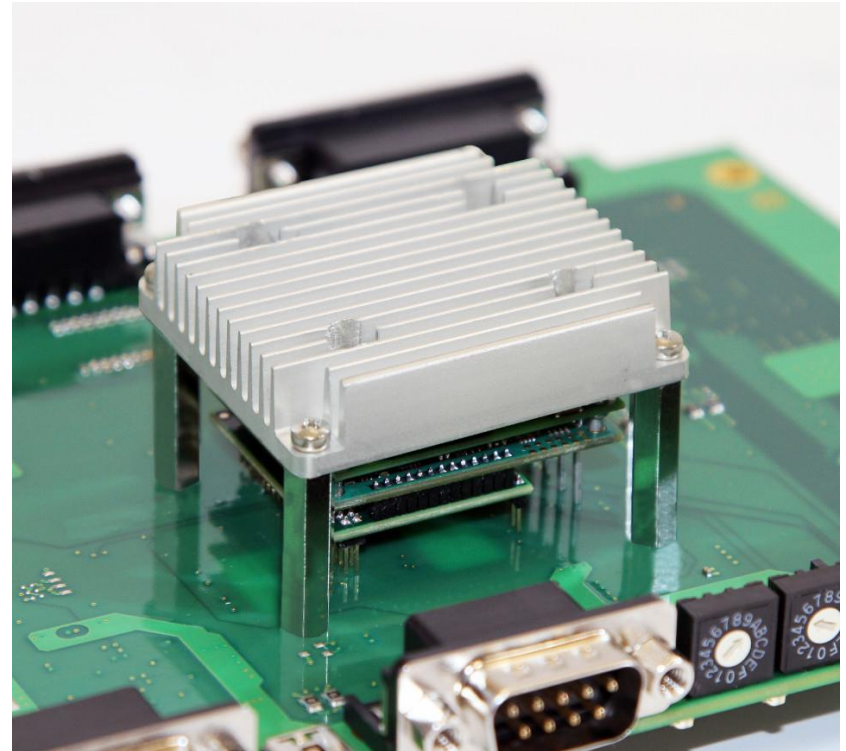
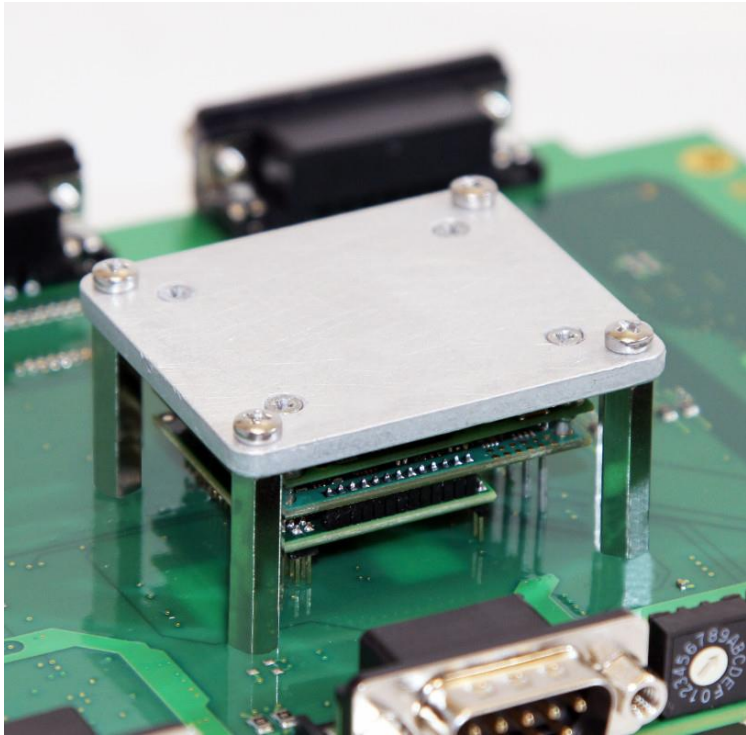
Verify that the power heat dissipation (excluding Control dissipation) of each G-TWI is $\approx 1\text{W}-1.5\text{W}$

Ensure free “Natural Air Convection”

(The air flow must Not be trapped in the surrounding)

On Board Assembly

In cases that additional heat sink is needed (power dissipation >1 W – 1.5W) use the FLAT (for 4W-5W), or the FINs (for 6W-7W)



Ensure free “Natural Air Convection”

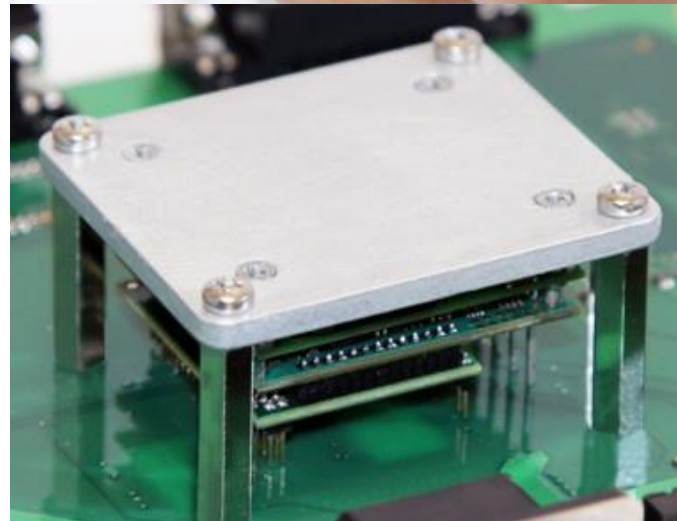
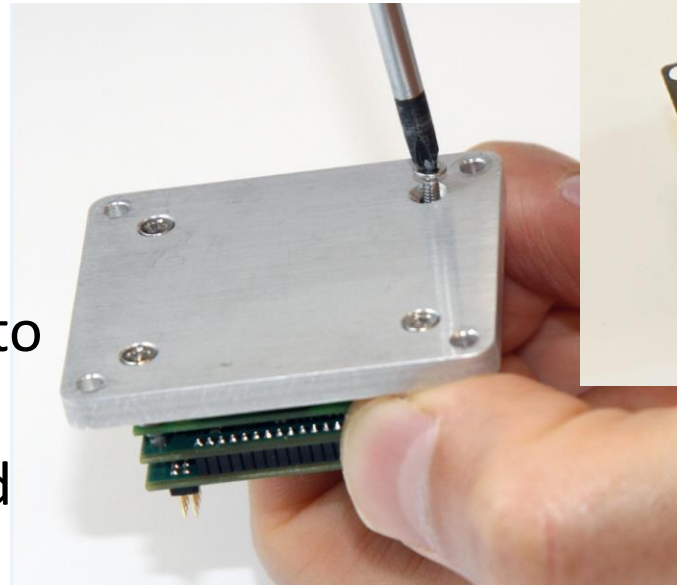
(The air flow must Not be trapped in the surrounding)

FLAT Heat Sink Assembly

1. Mount the thermal foil on the GTWI Heat-sink

2. Screw the FLAT HS to the GTWI Heat-sink by 4xM2/8 flat head screws.

3. Connect the 4 spacers to the FLAT HS by 4xM2.5/8 pan head screws .



FLAT Heat Sink Assembly

4. Connect the 4 spacer to the PCB by 4xM2.5/8 pan head screws .
5. Solder the G-TWI to the PCB.
 - The best way is by selective soldering.
 - If selective soldering is not available than wave soldering should be used.
 - “Hand” soldering should be the last choice.

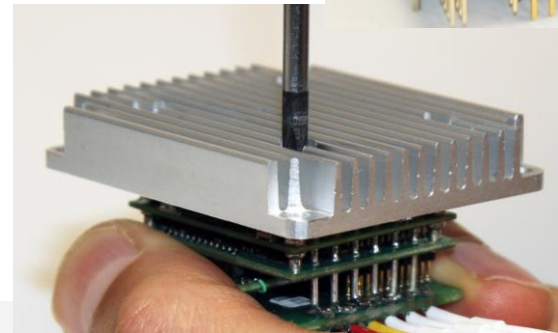
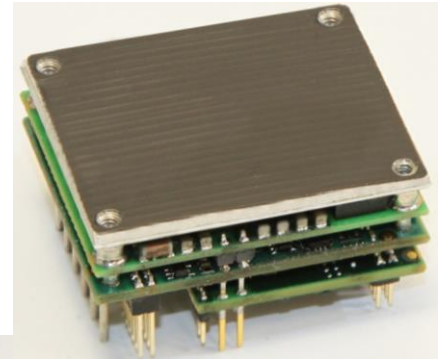
At “Natural Air Convection” with this simple assembly the Continuous power that can be delivered to the motor is 300W-400W

FINs Heat Sink Assembly

Same process as the FLAT Heat-sink

1. Mount the thermal foil on the GTWI Heat-sink
2. Screw the FINs HS to the GTWI Heat-sink by 4xM2/6 pan head screws.
3. Connect the 4 spacers to the FINs HS by 4xM2.5/6 pan head screws
4. Connect the 4 spacer to the PCB by 4xM2.5/8 pan head screws.

At “Natural Air Convection” this simple assembly can deliver Continuous power of 400W -500W



Panel/ Chassis Mounting

When panel mounting is used?

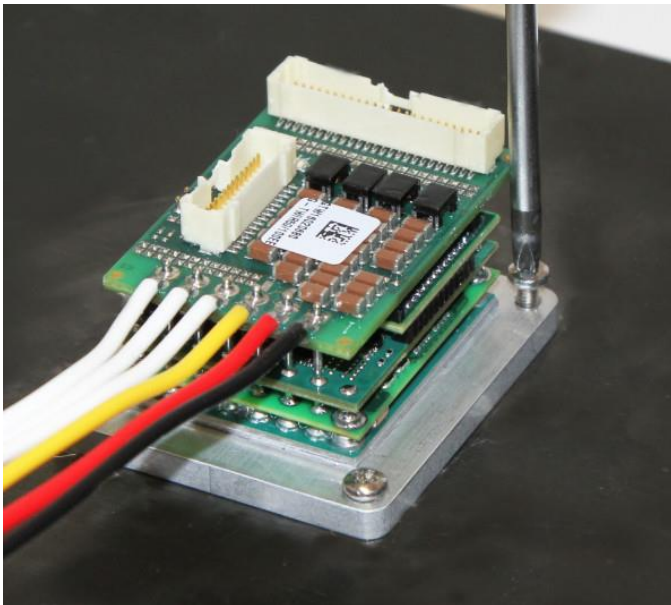
1. Application Design convenience or constrain.

or

2. Increasing Heat Dissipation capability.

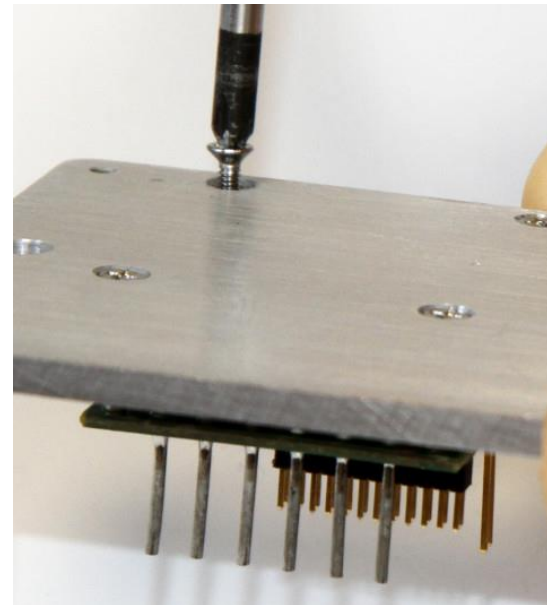
Front Assembly

The screws are tightened from the front



Back assembly

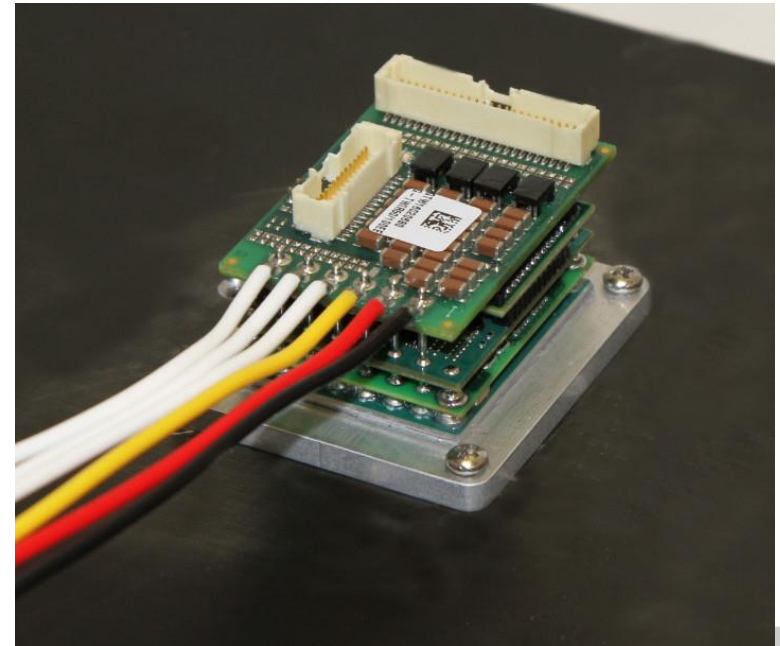
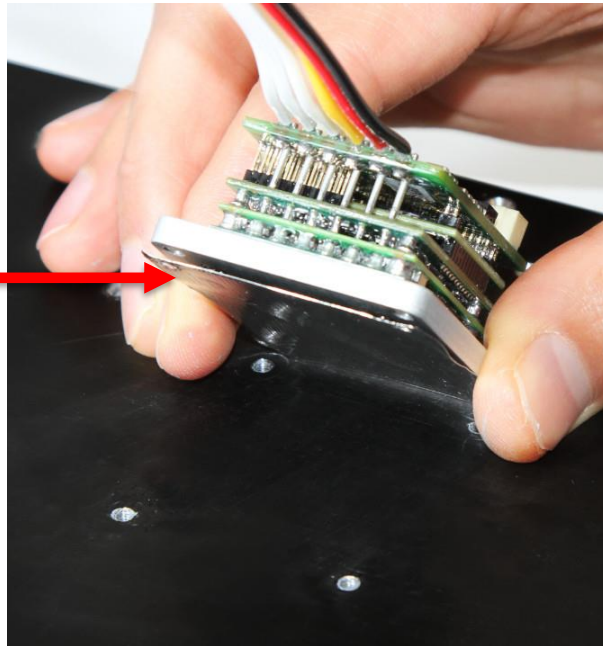
The screws are tightened from the rear of the G-TWI



Front Mounting

For Front mounting the FLAT Heat sink has to be used.

1. Connect to FLAT HS to the G-TWI as described in the “FLAT HS Assembly”
2. Mount the assembly on the panel/ chassis/ heat sink
Application Design convenience or constrain.



Thermal Foil?
Recommended, but
not mandatory
A reasonable surface
is sufficient.

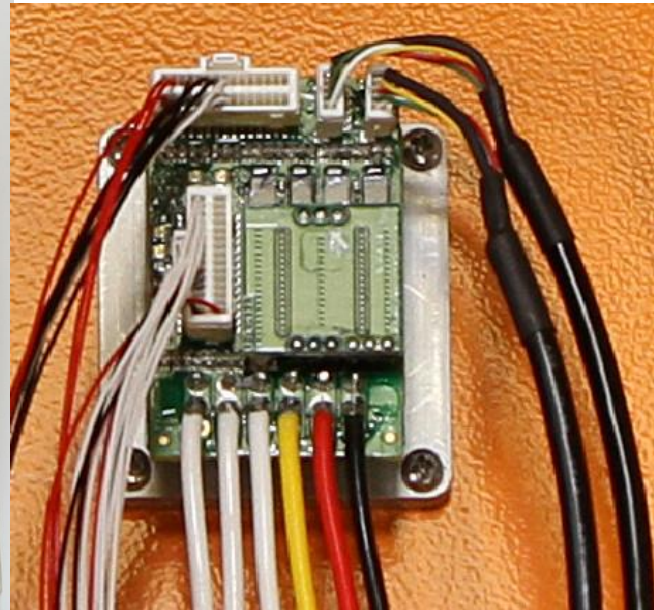
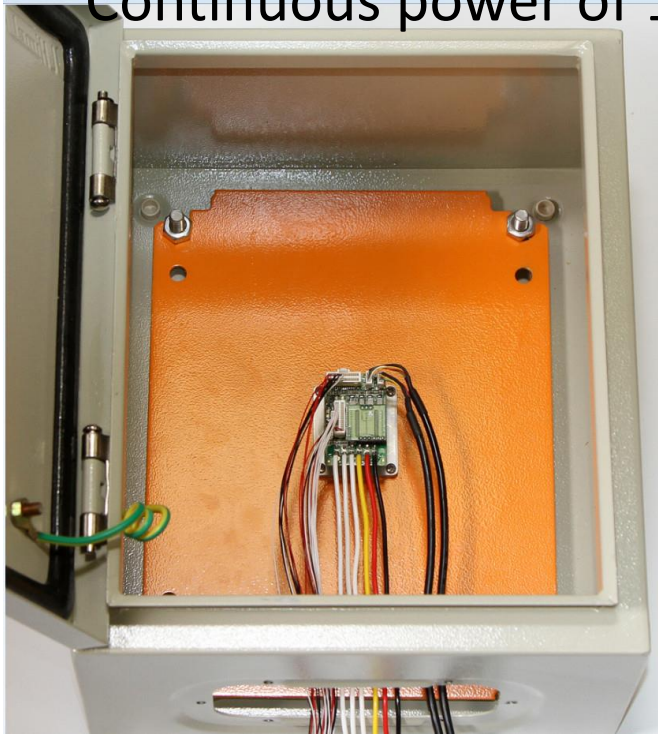
Front Mounting

An example of simple mounting in an electrical cabinet.

The G-TWI + FLAT heat-sink are attached directly to a painted (thermal isolator) cabinet's STD panel.

This trivial structure results $\approx 15\text{W}$ heat dissipation capability.

At "Natural Air Convection" this simple assembly can deliver Continuous power of $1000\text{W} - 1500\text{W}$

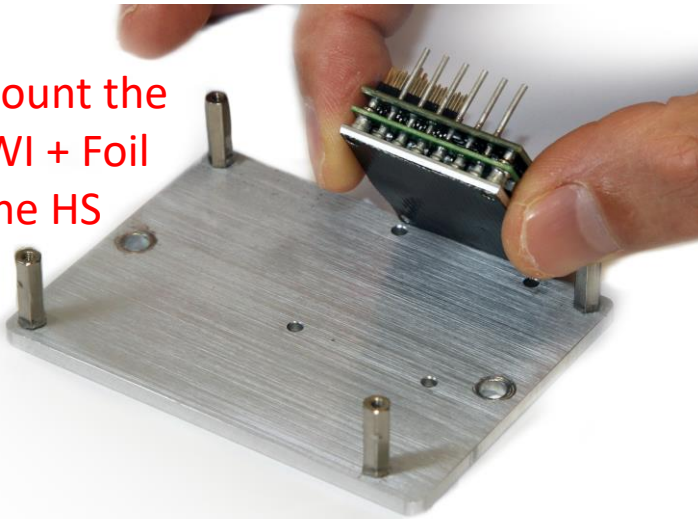


Thermal resistance of $\approx 2.5 - 3^\circ\text{C}/\text{W}$

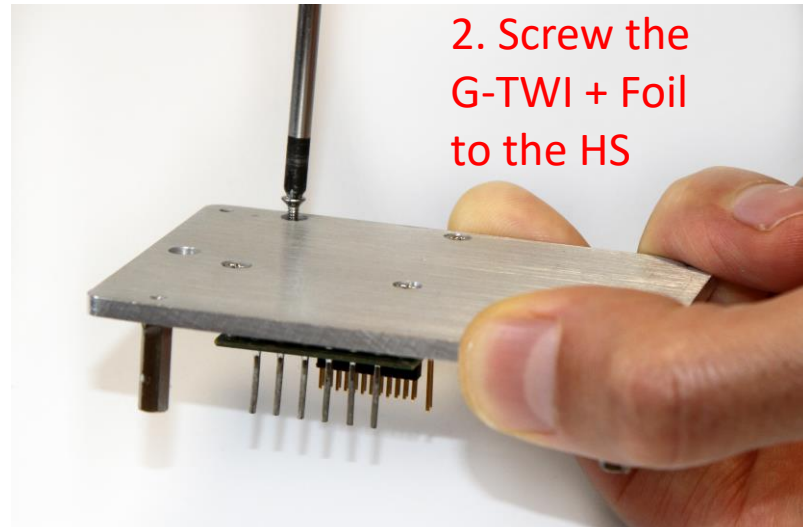
Thermal time constant of ≈ 400 seconds.

Rear/ Back Mounting

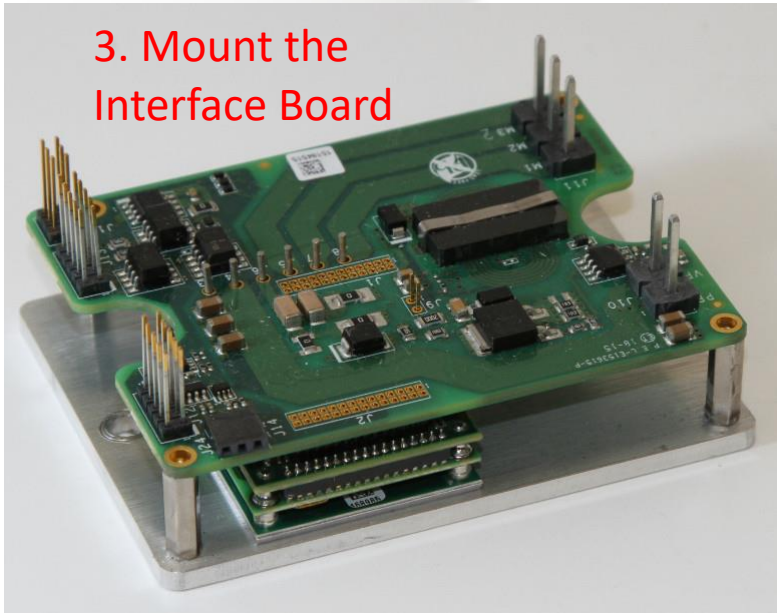
1. Mount the G-TWI + Foil on the HS



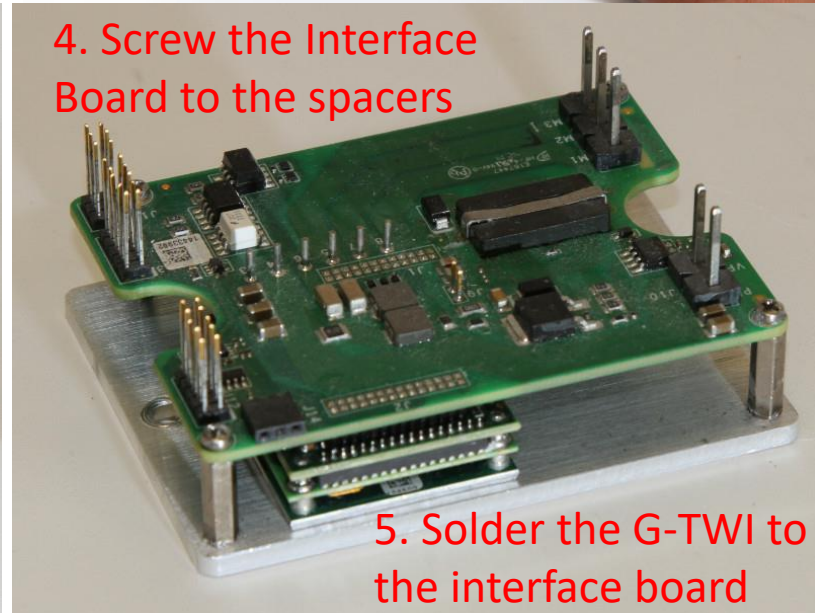
2. Screw the G-TWI + Foil to the HS



3. Mount the Interface Board



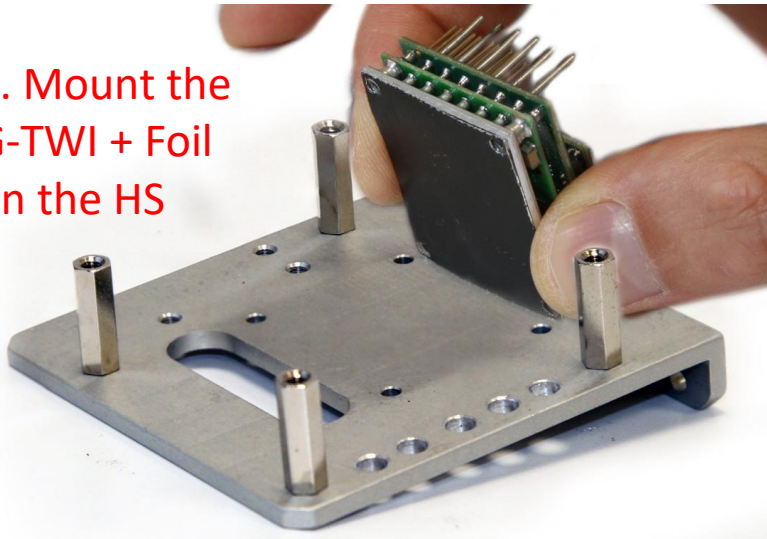
4. Screw the Interface Board to the spacers



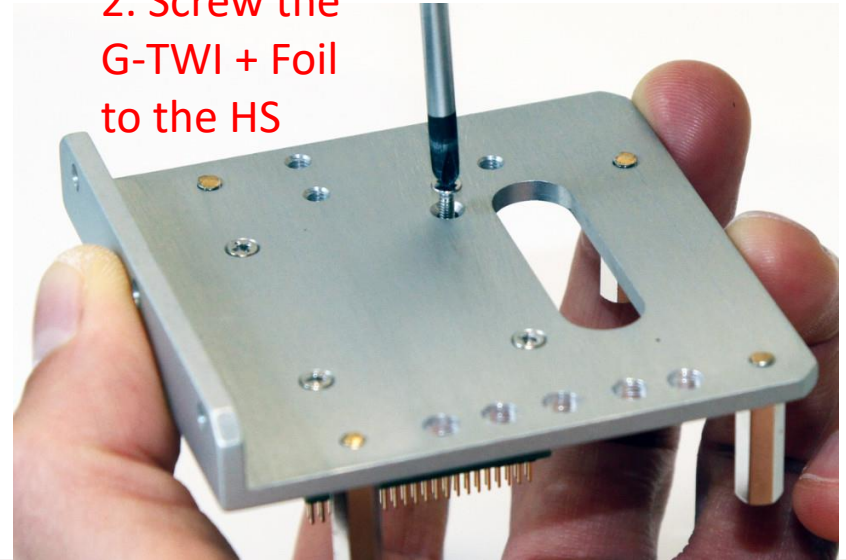
5. Solder the G-TWI to the interface board

Rear/ Back Mounting

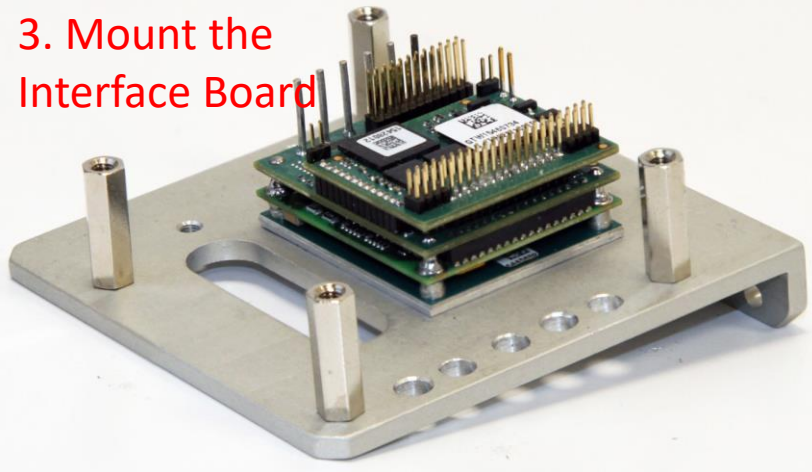
1. Mount the G-TWI + Foil on the HS



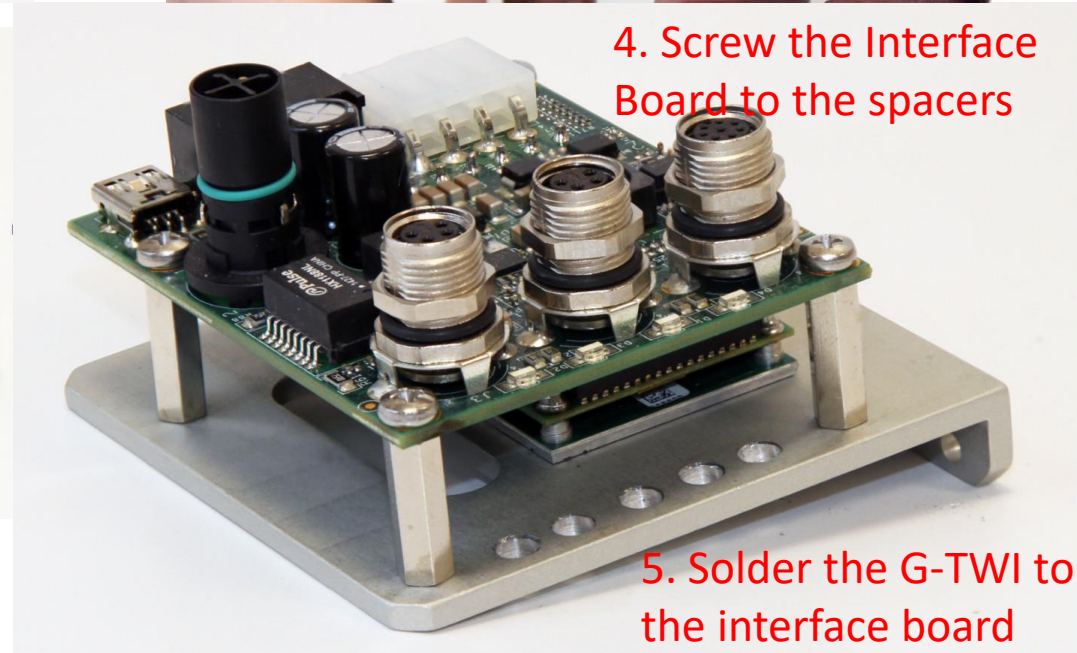
2. Screw the G-TWI + Foil to the HS



3. Mount the Interface Board



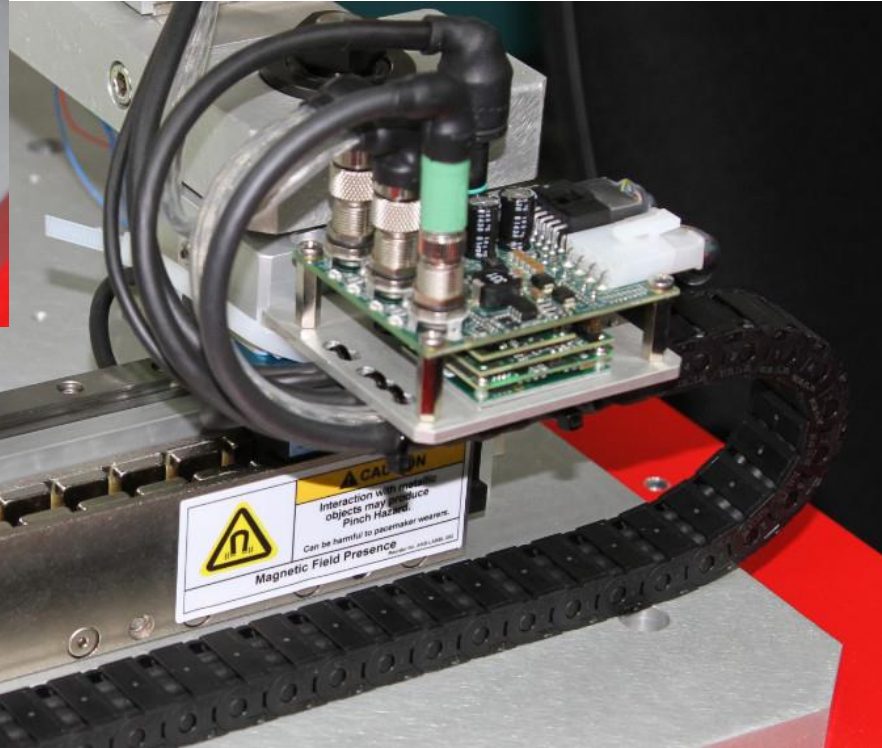
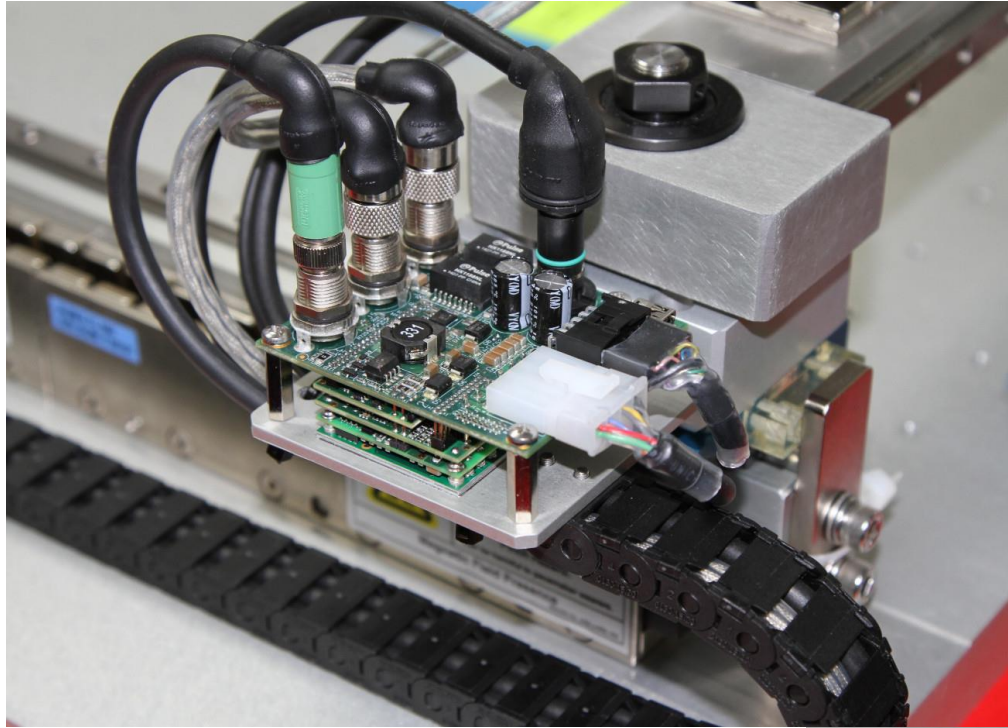
4. Screw the Interface Board to the spacers



5. Solder the G-TWI to the interface board

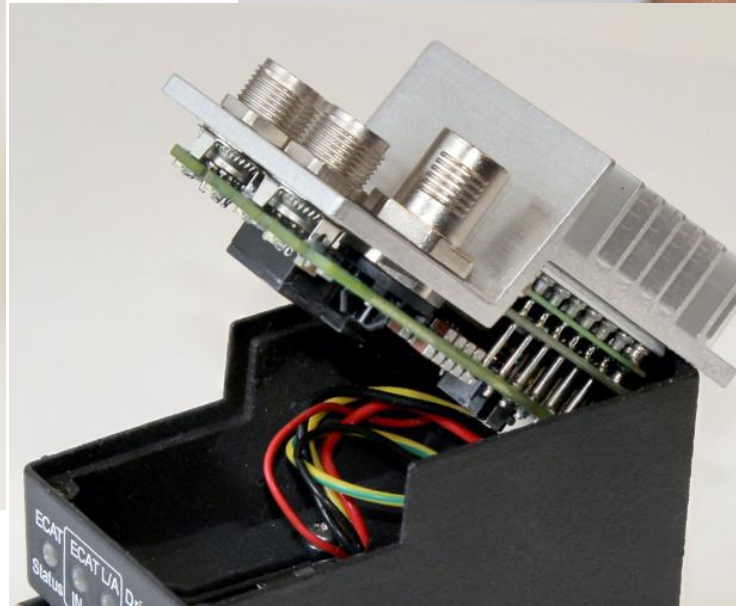
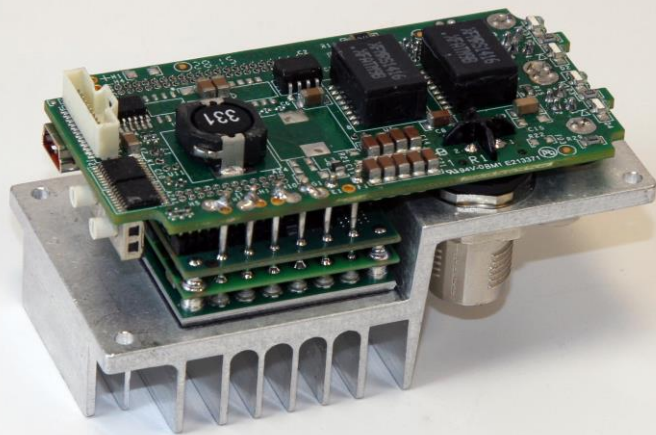
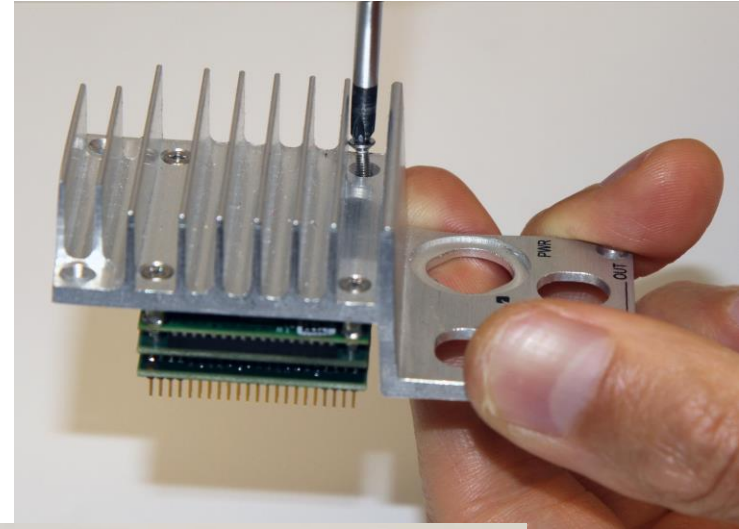
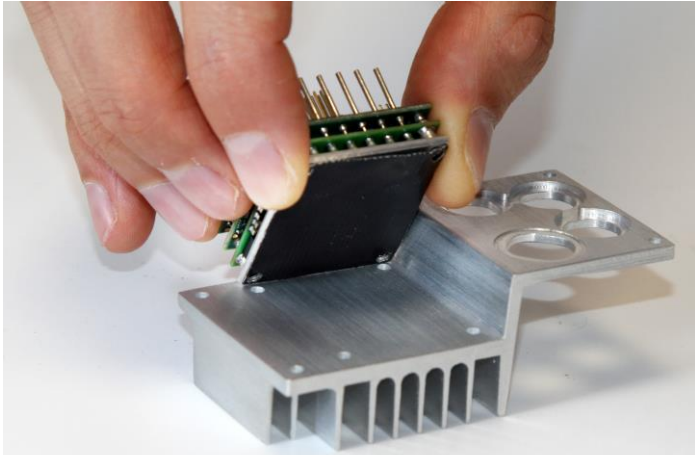
Rear/ Back Mounting

The result is a super compact ultra rugged servo drive unit that is attached to a linear motor

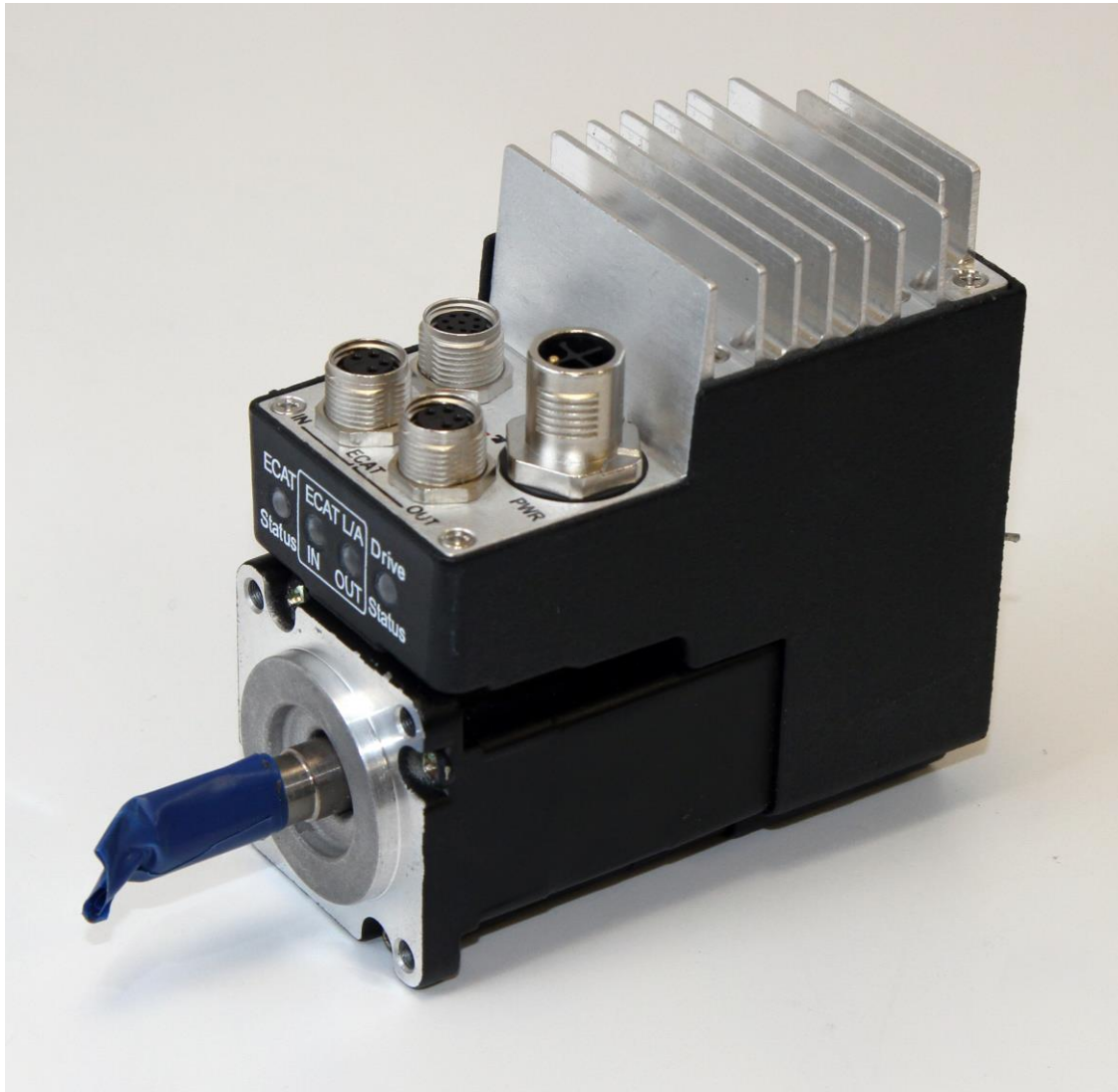


No Natural Air Convection

In a case that the G-TWI is mounted in a “locked air” environment the heat dissipation is done via conduction



No Natural Air Convection



And the result is an ultra compact IP65 Integrated motor.

The DUET is 50W, 40mm motor

Heat Sink/ Chassis Assembly

Mounting Rules:

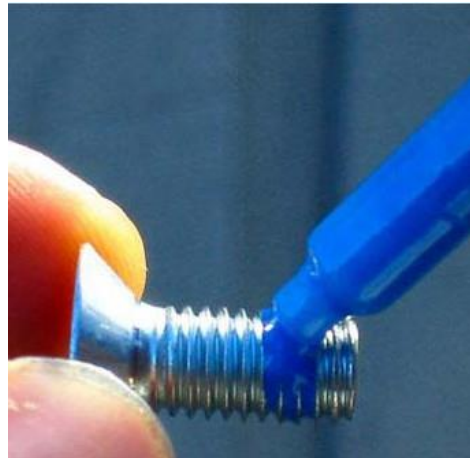
- ❑ For optimum thermal attachment between the G-TWI to another Heat-sink always use the thermal foil (or other high quality thermal paste)
- ❑ The soldering, when assembly is done on a PCB must be done as the last step of the mounting process and only after the mechanical tightening of the bolts/ screw was done.
 - ❑ Soldering first the GTWI to the PCB and then connecting and/ or attaching mechanically the GTWI to the PCB might create excessive mechanical stress on the soldering terminals.

Heat Sink/ Chassis Assembly

Mounting Rules

- ❑ The G-TWI can be mounted anywhere, on the moving parts, in the motor, on the motor, it might be operating in a mechanical vibrations environment.

Thus, Thread Locking Glue should (must?) be used to avoid loosening of the bolts due to the mechanical vibrations



Heat Sink/ Chassis Assembly

Mounting Rules:

- ❑ To ensure the quality & the reliability of the assembly it is highly recommend to tighten the screws with torque limited screw driver.

Screw size	Recommended tightening Torque	Max tightening Torque
2 mm	0.3NM	0.45NM
2.5 mm	0.5NM	0.9NM

Assembly

Mounting Rules:

- The G-TWI is ROHS compliant (Lead free) and must be solder only with ROHS soldering paste.
- Cleaning the PCB after soldering the G-TWI?

The G-TWI is coated with high quality conformal protective coating.

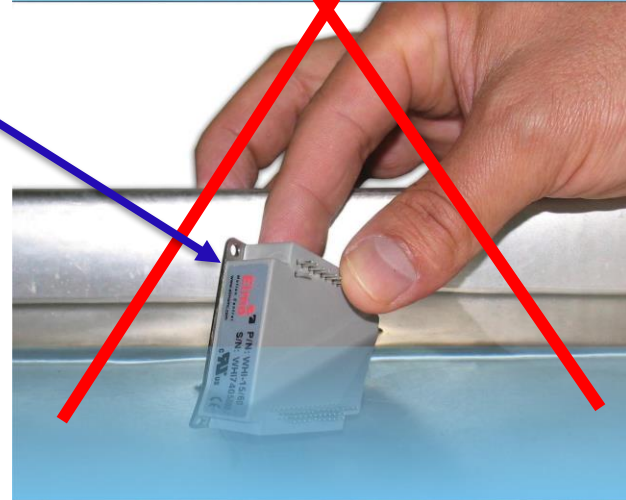
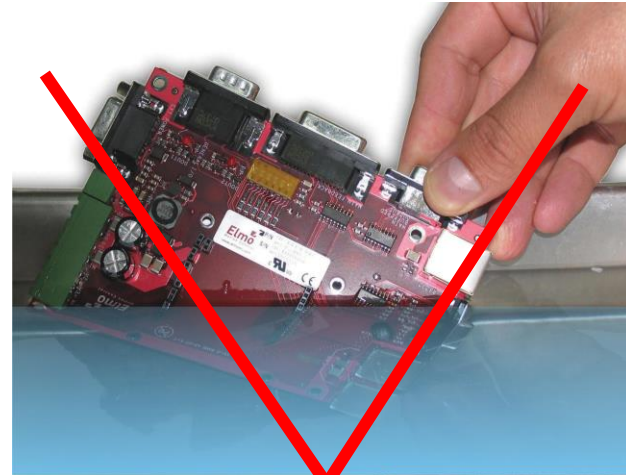
The coating improves the G-TWI's environmental ruggedness, and increases the voltage and the humidity immunity.

Assembly

❑ **Cleaning the PCB with the assembled G-TWI by Immersion in a bath, or spray cleaning of any kind are absolutely forbidden as it will dissolve the protective coating.**

❑ In extreme cases the cleaning liquid, that might be conductive, can be trapped inside the drive and cause destructive shorts on power on.

❑ Use “NO- Clean” soldering paste.



Assembly Accessories

1. FLAT Heat sink kit Part Number: **G-TWIHSFLAT01**

The Kit includes:

Part Number	Description	Units
ACC-FOIL-GTWI	G-TWI FOIL KIT	1
ALH-GTWI02	HEATSINK G-TWI/G-BEE 4MM THICK	1
HMH-22511736	SPACER HEX F/F M2.5 L=11.7MM BRASS NICKEL	4
HMH-22514636	SPACER HEX F/F M2.5 L=14.6MM BRASS NICKEL	4
HMS-20080E20	SCREW PHILIPS FLAT HEAD M2 L=8 DIN965	4
HMS-25080A20	SCREW PHILIPS PAN HEAD M2.5 L=8 DIN7985	8

2. Flat Heat-Sink drawing:



FLAT Heatsink

Assembly Accessories

1. The FINs Heat sink kit Part Number: **G-TWIHSFINS01**
The Kit includes:

Part Number	Description	Units
ACC-FOIL-GTWI	G-TWI FOIL KIT	1
ALH-GTWI03	HEATSINK G-TWI/G-BEE FINS	1
HMH-22511736	SPACER HEX F/F M2.5 L=11.7MM BRASS NICKEL	4
HMH-22514636	SPACER HEX F/F M2.5 L=14.6MM BRASS NICKEL	4
HMS-20006A20	SCREW PHILIPS PAN HEAD M2 L=6 DIN7985	4
HMS-25060A20	SCREW PHILIPS PAN HEAD M2.5 L=6 DIN7985	8

2. FINs Heat-Sink drawing:



FINs Heat Sink



Inspiring Motion
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