

INTERSCALE C + EMBEDDEDNUC™

SMALL FORM FACTOR CASES FOR VARIOUS BOARD STANDARDS

12-05-2016

INTRODUCTION

Ilja Stotz (iesy GmbH & Co. KG)

- Key Account Manager DACH
- 44 years, married, 2 children
- Working in the embedded market since 2005
- Strong experience with embedded systems
- Office in Munich
- Contact me at sto@iesy.com



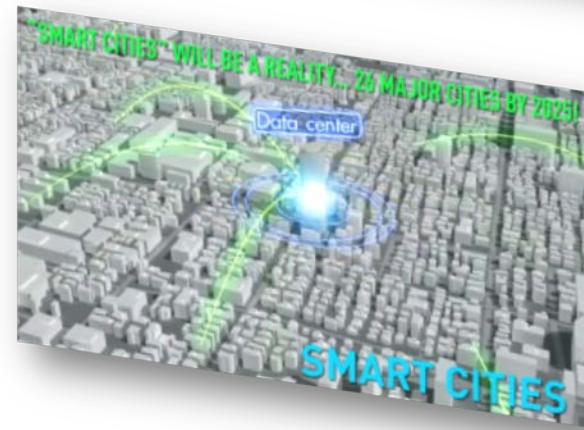
iesy is a systems supplier for embedded systems

INFORMATION & COMMUNICATION TECHNOLOGY

A look ahead: **Connected World in 2020**

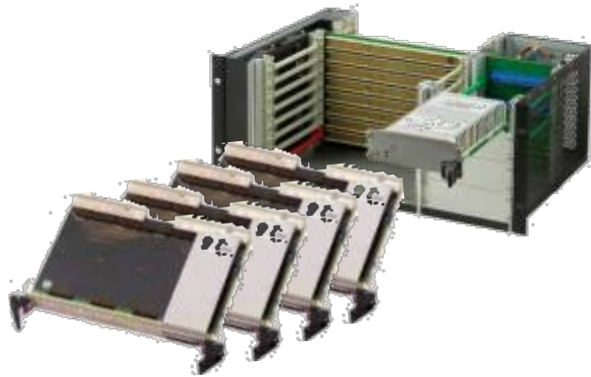
- **Internet of Things (IoT)** 80 billion devices connected
- 5 billion **Internet users**
- 5 connected devices for **every user**
- 10 connected devices for **every household**

According to some estimates,
the **Internet of Things**
will add
\$10-\$15 Trillion to global GDP
in the next 20 years



Schroff innovation protecting IoT solutions behind the scenes

MARKET TRENDS AND LIMITATIONS



Small Form Factor

19" Passive backplanes to active motherboards
(except in Telcom/Datacom)

Fanless (Conduction Cooled) Solutions

No noise, increased MTBF, better EMC and IP, ability
to provide decentralized solutions.

Miniaturization

Processing power is increased, many
computing functions are now
included on the processor chip
based on "Intel standards".



Standard-ATX



Micro-ATX



Mini-ITX



Nano-ITX



Pico-ITX



eNUC

Many opportunities within the growing SFF market

REQUIREMENTS FROM THE MARKET

- Stability of the box/housing
- Easy access to the PCB/electronic, but high access protection and security required
- Standard boxes available from stock but flexible dimensions for projects
- Cooling of the PCB and the hot spots
- EMC tested product
- Accessory product portfolio
- Services for the design engineers

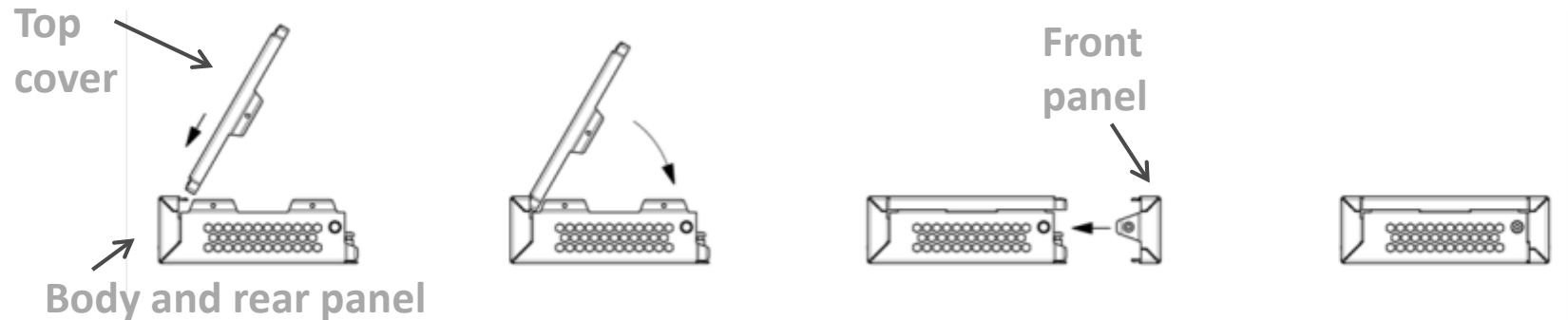
Interscale are ideal for a variety of IoT applications

INTERSCALE „C“ A HOUSING FOR IOT APPLICATIONS

C = CONDUCTION COOLED

Interscale M + C for embeddedNUC™

- **Stability of the box / housing**

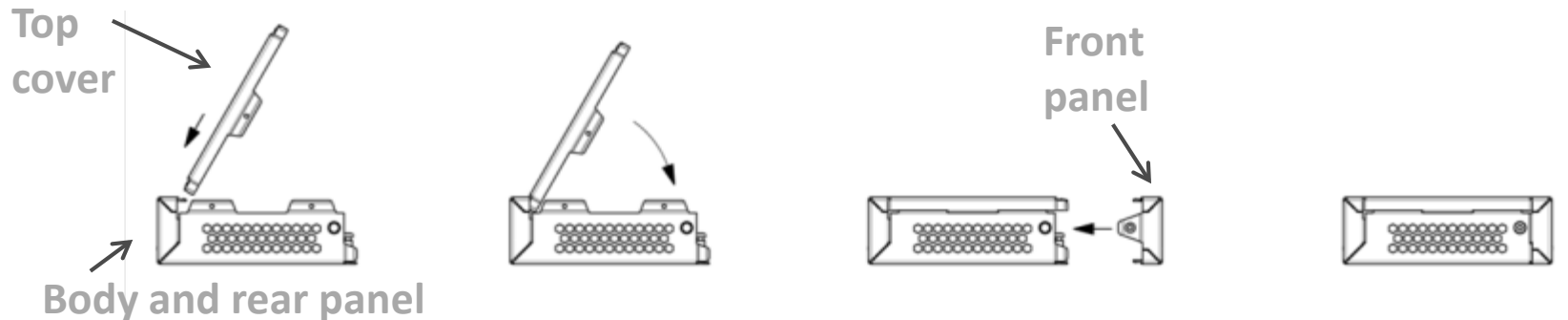


- The U-shaped body and the integrated rear panel support the stability of the housing
- The fingers which supports the EMC shielding stiffen the housing when the body and the top cover are assembled

Interscale are ideal for a variety of IoT applications

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- **Easy access to the PCB / Electronic, but high access protection and security required**

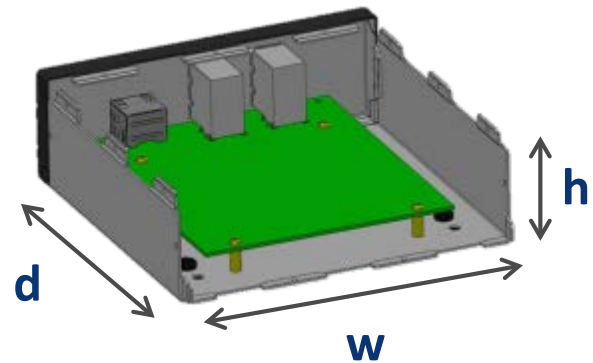


- Two screws are responsible for the access protection and the security of the housing
- The design principal with only two screws make it easy to assemble PCBs inside the box.
- This concept reduces the assembly time of the PCB by app. 4 to 5 min. in comparison to other solutions

Interscale cases are ideal for a variety of IoT applications

Interscale M + C for embeddedNUC™

- **Standard boxes available from stock but flexible dimensions for projects**
- The standard embeddedNUC™ boxes are available from stock
- The box can be easily modified. All dimensions (height, depth and width) can be changed in 1 mm increments.

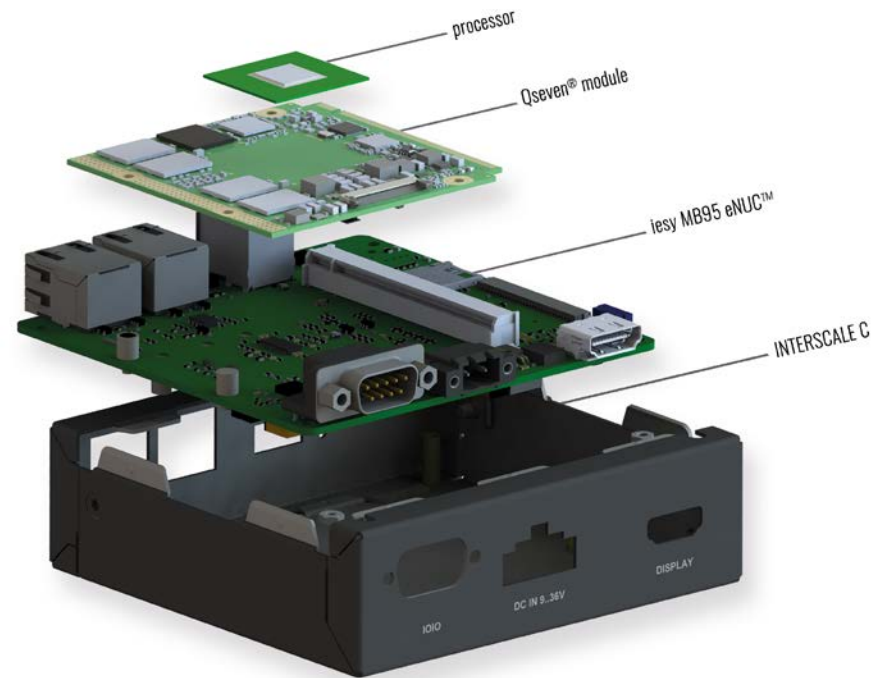


Interscale cases are ideal for a variety of IoT applications

Interscale M + C for embeddedNUC™

Details about embeddedNUC™

- Small form factor (app. 10 cm x 10 cm)
- SGET standard since 2014
- Modular approach from processor to housing
- Maximum flexibility for various interfaces on front and back side
- Suitable for Qseven, SMARC and COM Express compact



embeddedNUC™ + Interscale for your IoT application

Interscale M + C for embeddedNUC™

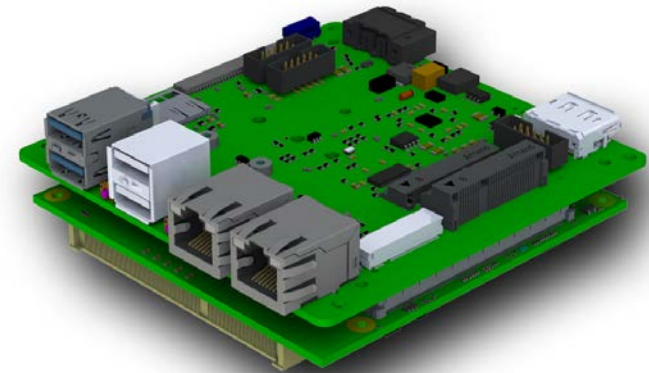
MB95

- Qseven-ready
- Offering wide range of processors (AMD, Intel, NXP i.MX6)
- Suitable for most applications
- Long-term availability



MB115

- COM Express compact-ready
- Suitable for Intel® Core™ i3 / i5 / i7
- Made for high-performance needs
- Differs from SGET standard (but we are working on standardizing it)



embeddedNUC™ + Interscale for your IoT application

Interscale M + C for embeddedNUC™

Conforms to SDT.03 embeddedNUC™ Standard

Versions available:



1.) embeddedNUC™ **convection cooled**
(perforated side panels, up max. 8 W
heat dissipation)

34 x 112 x 107 mm

Order no: 14820-701

2.) embeddedNUC™ **conduction cooled**
(closed side panels, > 10 to 12 W
heat dissipation), cooling fins 5 mm,
for FHC = 20 mm,
44 x 112 x 107 mm

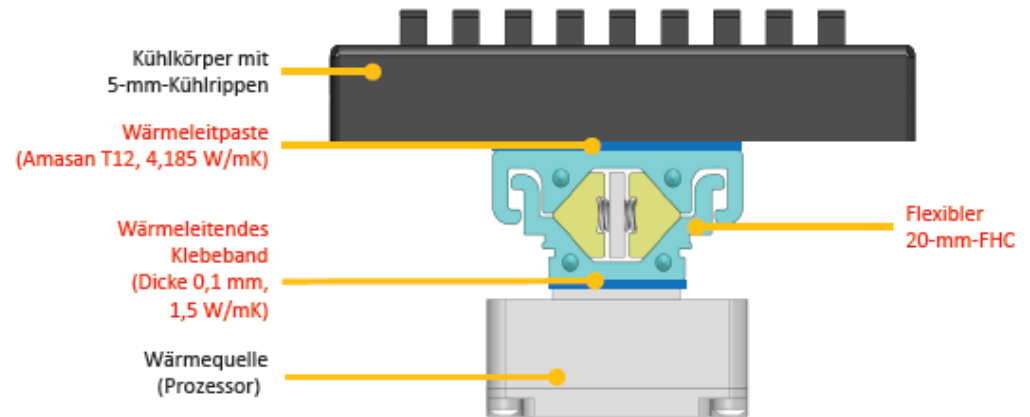
Order no: 14830-002 Standard Pentair
14891-237 Bundle for Distr.



Modification possible

Interscale M + C for embeddedNUC™

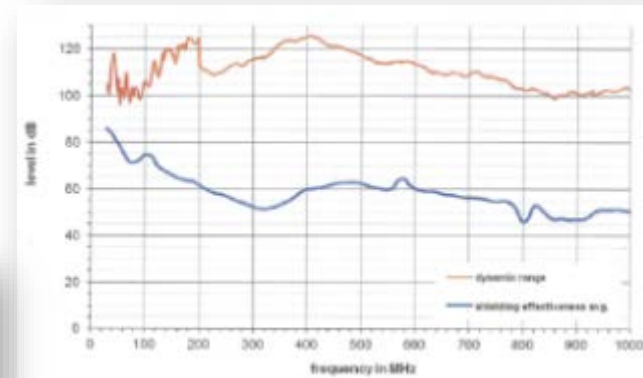
- **Cooling of the PCB and the hot spots**
- The FHC (flexible heat conductor) make it easy to transfer the heat to the outside of the conduction cooled box



Interscale cases are ideal for a variety of IoT applications

Interscale M + C for embeddedNUC™

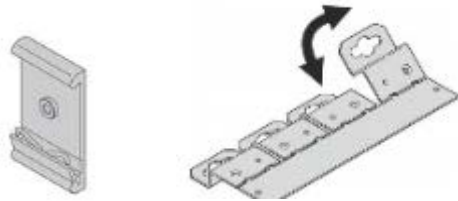
- **EMC shielding / other test reports**
- The box is EMC tested (Univeristy of Karlsruhe, EMC Lab) ~ 30dB (A) at 2 GHz
- EMC test reports will be available from week 20/2016
- Air Flow and Acoustic Noise
- Deflection
- Ingress Protection



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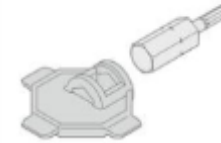
- **Accessory range**



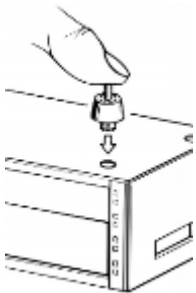
Din-rail adapter or wall mount bracket



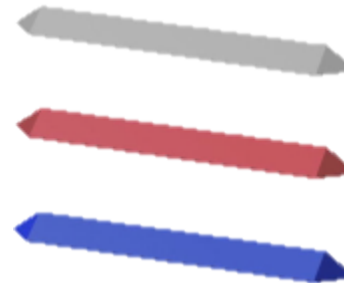
PCB fixing



Assembly tool



Plastic feet or rubber feet



Design elements

Interscale cases are ideal for a variety of IoT applications

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- **Services for the design engineers**
- Download of whitepapers, test reports (EMC, shock and vibration, etc.) for free under...
<http://schroff.pentair.com/en/schroff/interscale-c-for-mini-itx--with-10-mm-fins-14830-005>
- 3D CAD files can be downloaded in 32 native CAD formats plus PDF for free from Traceparts
[http://www.tracepartsonline.net/\(S\(tom3nyioz5pwma2xthp2fxde\)\)/PartDetails.aspx?Class=SCHROFF&clsid=/F_SCHROFF/&ManID=SCHROFF&PartFamilyID=30-03022016-127811&PartID=30-03022016-127811&sk_Reference=14830002&SrchrsltId=1&SrchrsltType=2](http://www.tracepartsonline.net/(S(tom3nyioz5pwma2xthp2fxde))/PartDetails.aspx?Class=SCHROFF&clsid=/F_SCHROFF/&ManID=SCHROFF&PartFamilyID=30-03022016-127811&PartID=30-03022016-127811&sk_Reference=14830002&SrchrsltId=1&SrchrsltType=2)
- A configurator make it easy to modify your application
http://www.schroff.biz/interscalem_configurator/index.html

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