

System Platforms	Backplanes	Enclosures & Components	Cabinets	Rotary Switches
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ELMA

Your Solution
Partner



System
Platforms

Backplanes

Enclosures &
Components

Cabinets

Rotary
Switches

Ruggedized MicroTCA

By Justin Moll, Director of Marketing, Elma Bustronic
Marketing Manager, Elma Electronic Inc.

- xTCA Relationships & CRs
- Expected changes on the way
- Compliance and testing requirements
- Deployed and R&D solutions

System Platforms	Backplanes	Enclosures & Components	Cabinets	Rotary Switches
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Flexibility:

Elma tailors solutions to individual applications to ensure fast and cost-effective results.

Experience:

Extensive practical experience in packaging electronic systems is used to minimise the time taken to develop new customised solutions without compromising system performance or reliability.

Compatibility:

Because the two key electromechanical components – enclosures and backplanes – are made in-house, Elma guarantees compatibility, consistency and reliability.

Global resources:

With manufacturing in Europe and the US, customers benefit from local service, backed by global resources.



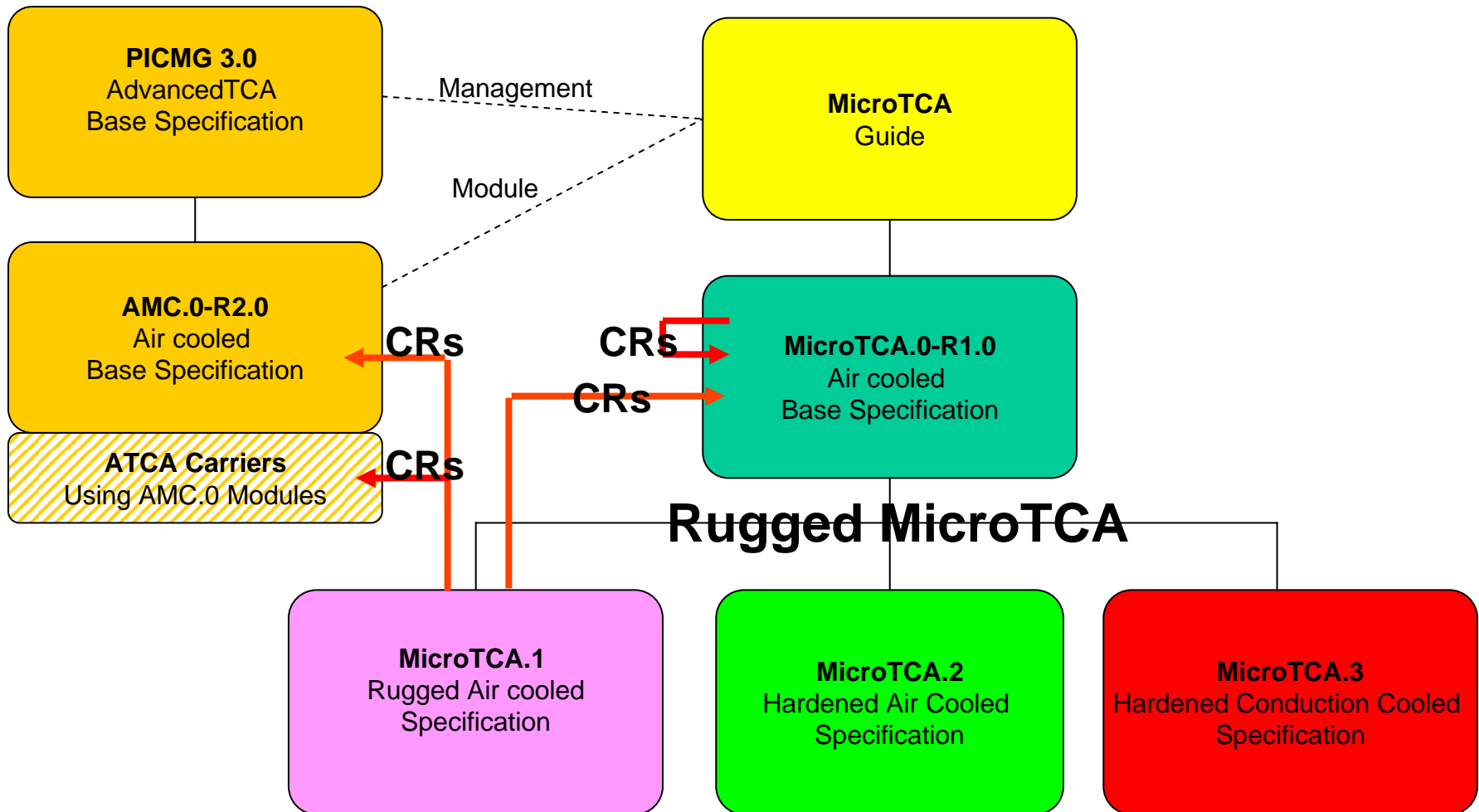
Enclosures & Components

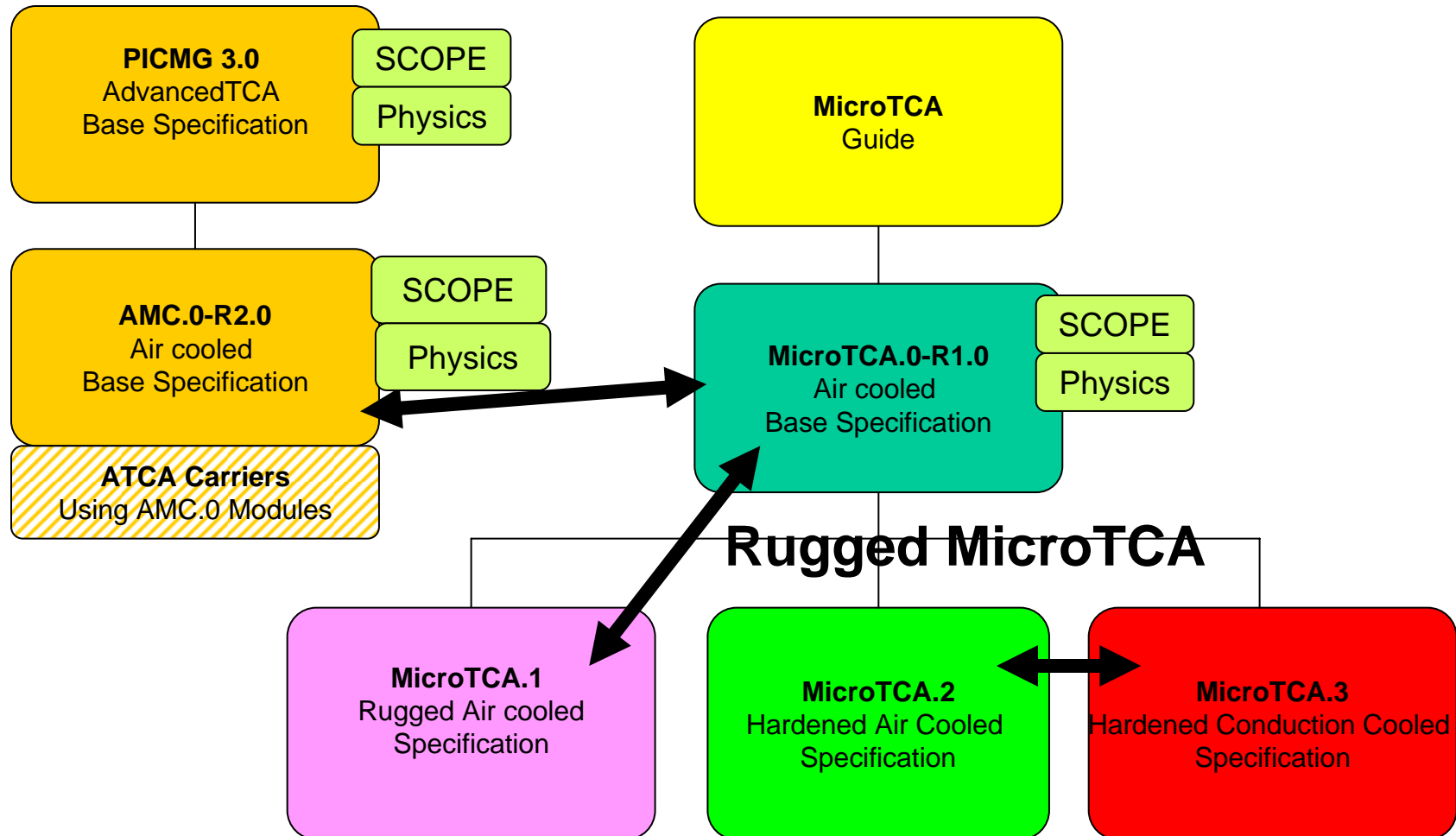
Backplanes

System Platforms

Cabinets

Switches, Knobs & LEDs





System Platforms	Backplanes	Enclosures & Components	Cabinets	Rotary Switches
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<p>MicroTCA.1 (ballot) Forced Air Cooled Modules Industrial based</p>	<p>MicroTCA.2 (not started) Forced Air Cooled Modules VITA 47 based</p>	<p>MicroTCA.3 (started) Conduction Cooled Modules- non-liquid VITA 47 based</p>
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General Industrial centric (includes telco*)

[MIL] centric

*Some referenced values are based on VITA 47

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Compliance Requirements:

Two higher levels of mechanical severity (XR1 & XR2)
(Note: was of little interest to telco)

Two extended levels of thermal severity (XT1 & XT1L)
(Note: was of interest to telco)

Testing required

**According to MicroTCA.1 Section 10 defined Test Setups
for
Section 2 Mechanical
Section 5 Thermal
Section 7 Connector**

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**AMC.0 and MicroTCA.0 does not define Test Set-ups.
Result: Test results are difficult to compare**

**MTCA.1 defines Test Set-ups.
Result: Test results are easy to compare.**

**The CR intention for MTCA.0 is to adopt/refers to the MTCA.1
Test Set-ups.**

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**Two higher levels of mechanical severity (XR1 & XR2)
Resulting in improvements for AMC.0 and MicroTCA.0 mechanics**

AMC.0 improvements

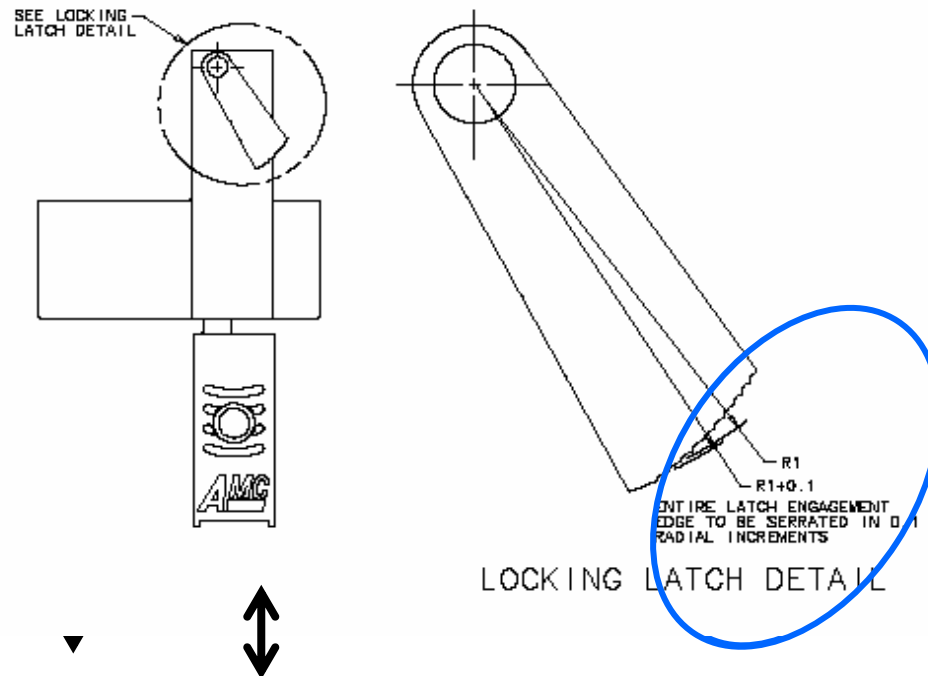
- (CR) Serrated Module Latch detail**
- (CR) Carrier Latch engagement post detail**

MicroTCA.0 improvements

- (CR) Subrack Latch engagement post detail**
- (CR) Subrack Latch guidance detail (added from AMC.0)**
- (CR) Subrack depth reduced to permit alternative MicroTCA.1 retention**

AMC.0 Serrated Latch Detail

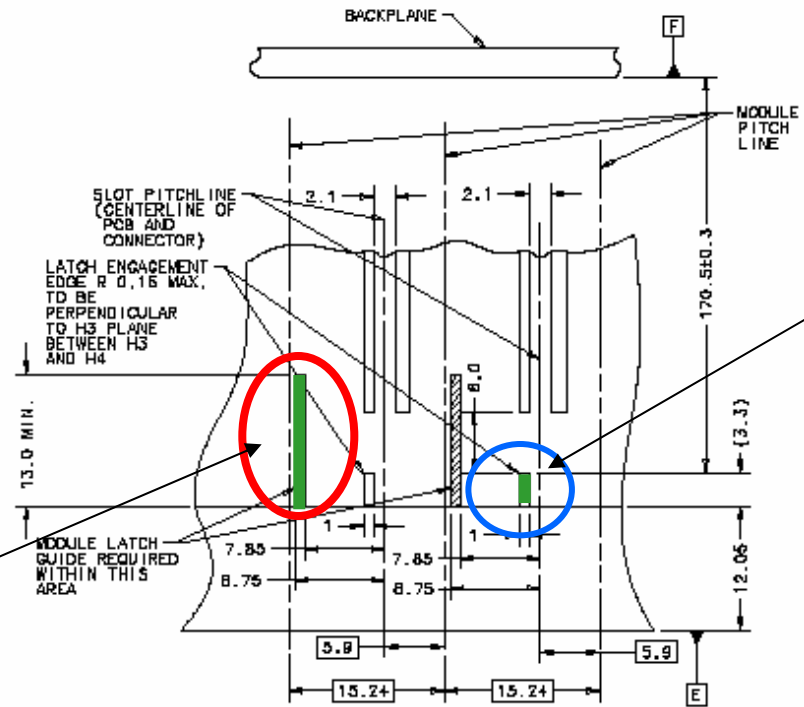
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**Push Button
type**

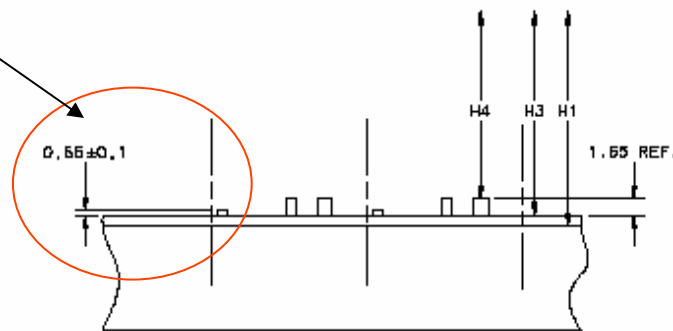
MicroTCA.0 Latch Guidance Detail per AMC.0

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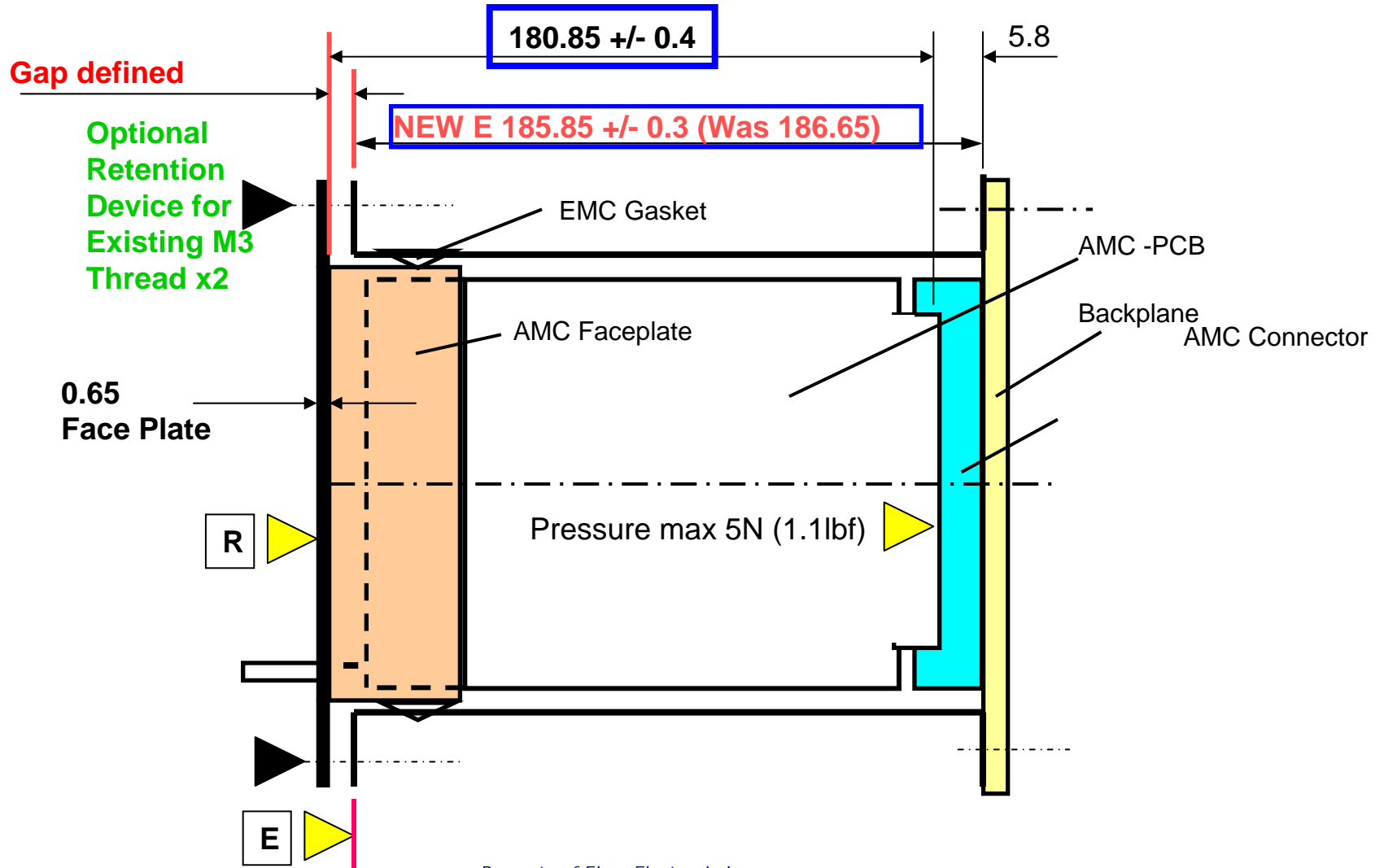
Post detail
MTCA.0 & AMC.0

Guidance detail
MTCA.0



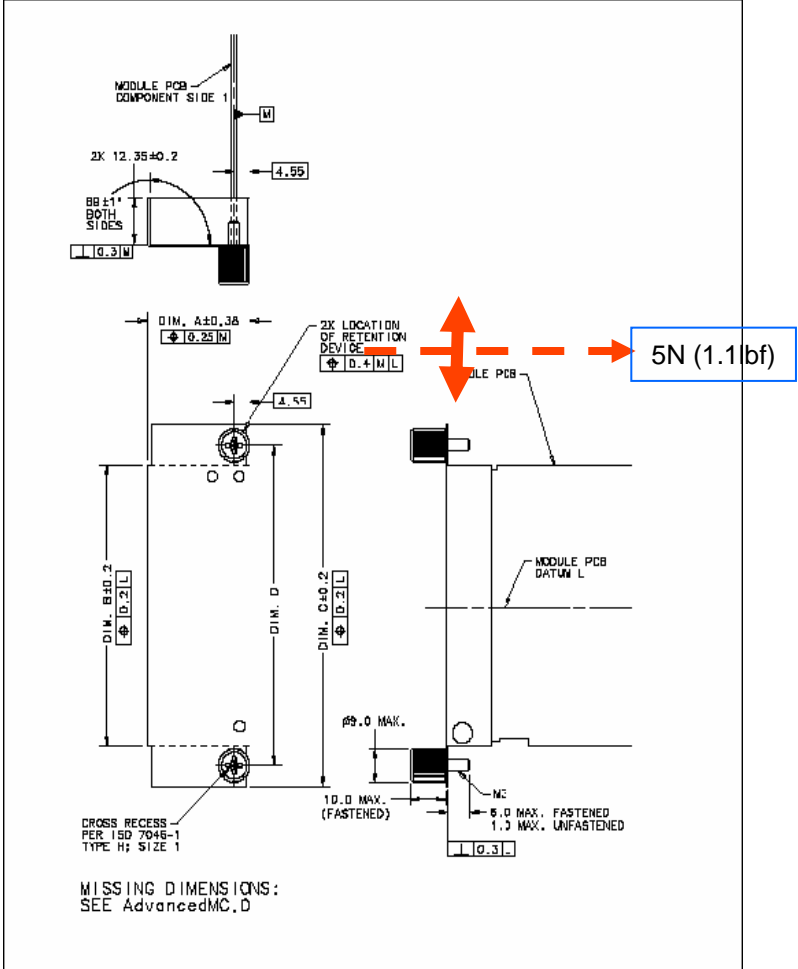
MicroTCA.0/ MicroTCA.1 Revised Subrack / Module Interface

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Optional MTCA.0/MTCA.1 Module Retention XR1 –
Mandatory MTCA.1 XR2



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Thermal Compliance Requires:

Two higher levels of thermal operating severity (**XT1 & XT1L**) over **MicroTCA.0**

Module	Watts	Single tier Module air entry							
Type <i>SM/FS</i>	Power dis. level	-40°C	-5°C	+5°C	+25°C ETSI	+28°C NEBS	+40°C	+55°C	+70°C
CFM	xx W	RR	RR	RR	RR	RR	RR	RR	RR
Temp. rise		RR	RR	RR	RR	RR	RR	RR	RR
		MicroTCA.0 – AMC.0							
		MicroTCA.1-XT1L							
		MicroTCA-XT1							

RR=Reporting Required

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Pitch Change

- AMC.0 defined
- MicroTCA.0 no
- MicroTCA.1 no
- MicroTCA.2 (4-tongue MCH?)
- MicroTCA.3 (4-tongue MCH?)

Mix of Single Width and Double Width Modules

- MicroTCA.1-XR1 yes
- MicroTCA.1-XR2 no
- MicroTCA.2 unlikely
- MicroTCA.3 unlikely (where would cold plate go?)



Deployment

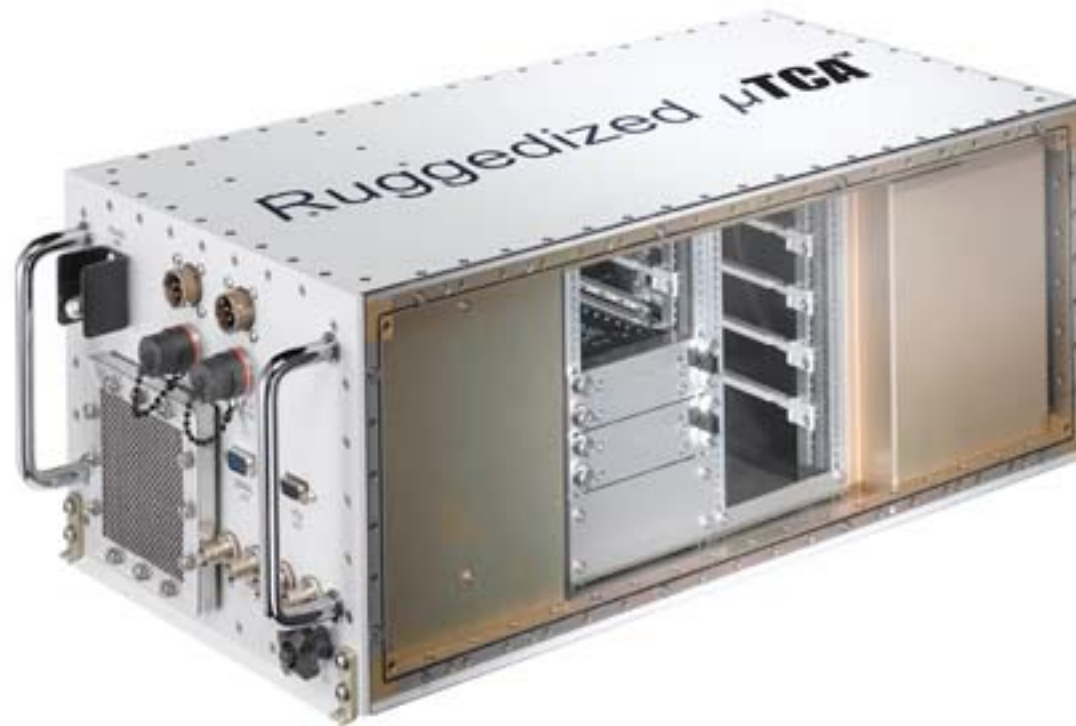


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R&D and Deployed Solutions

MicroTCA.1 Cocooned Inside an ATR Box MicroTCA.2 XR2 requires Face Plate retention

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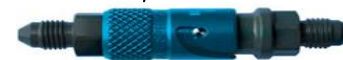
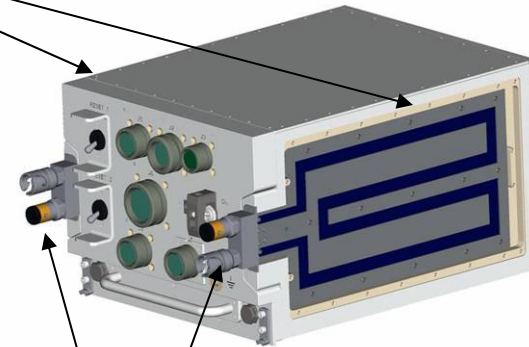
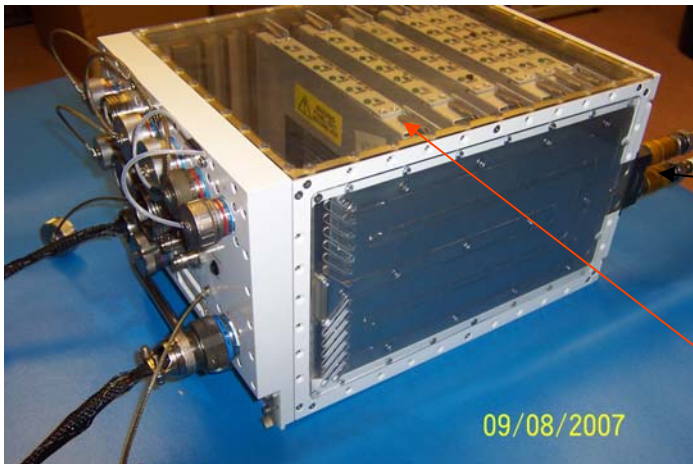


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Dual Wall Liquid Cooling

- Inner wall – can be air cooled only
- Outer wall – optional liquid cooled attachment

MicroTCA.2 not shown



Fluid couplers

140 W per slot

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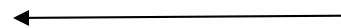
- **MicroTCA – for Industrial Applications**
- **Industrial applications typically covered by IndustrialPCs**
- **INCA - Industrial Network Computing Architecture**
- **Lean-TCA**
- **Slim-TCA**
- **Other MicroTCA-like applications**



Ruggedized MicroTCA – Rackmount

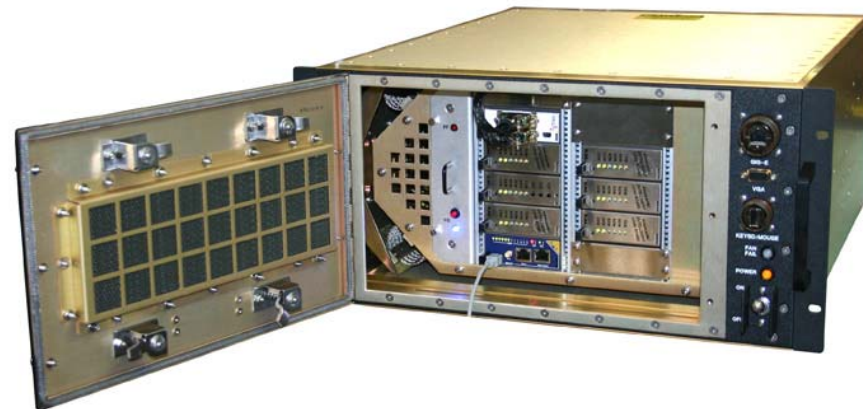
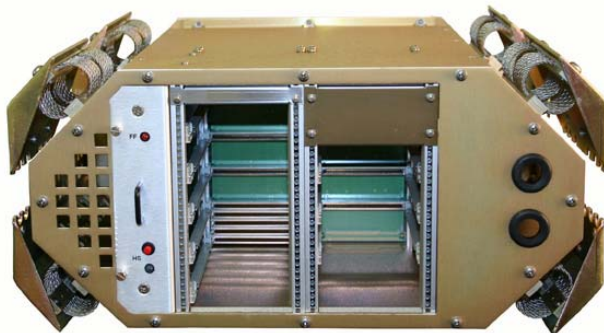
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Benign environment ruggedized



Secured to shock-mounted trays.

Extreme environment ruggedized



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MicroTCA.1 is in ballot and MicroTCA.3 work has been started

Changes are likely coming to latch interface

Chassis depth likely to slightly change

MicroTCA is reaching a wider audience with low-cost and Slim solutions

Deployment is happening in various applications, including ruggedized versions of MicroTCA