

DLMM

MIL83513

PERFORMANCES

*METALISED
COMPOSITE*

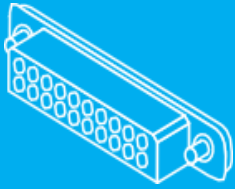
ULTRA LIGHT SHIELDED SOLUTION



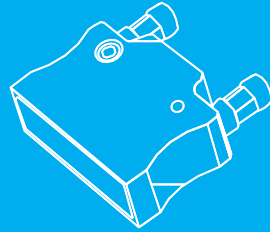
LIGHTER THAN METAL

Weightsaving vs standard μ D

Combined with reduced footprint



CONNECTOR
▼ 50%



BACKSHELL
▼ 40%

SUPERIOR SHIELDING & PERFORMANCE

EMI protection equivalent to metal connectors

With Flange

MIL-DTL-83513G performances



CORROSION RESISTANCE

96 hours salt spray

No alteration of Ultem shell

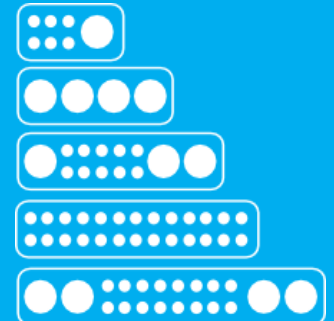


FLEXIBLE LEADTIME

As of now, 3 weeks for:



EMPTY SHELL



LAYOUT EXAMPLE

All other 2 row configurations are available in 8 weeks.

Metalised Composite

What is it?

1. Insulator

- Ultem – Glass Fiber Reinforced
- Not bound to corrosion
- Mechanical resistance and stability

2. Copper layer

- 10μ
- Shielding effectiveness
- Performant conductivity

3. Nickel layer

- 20μ
- Protection of shielding effectiveness against corrosion
- Shell ruggedization



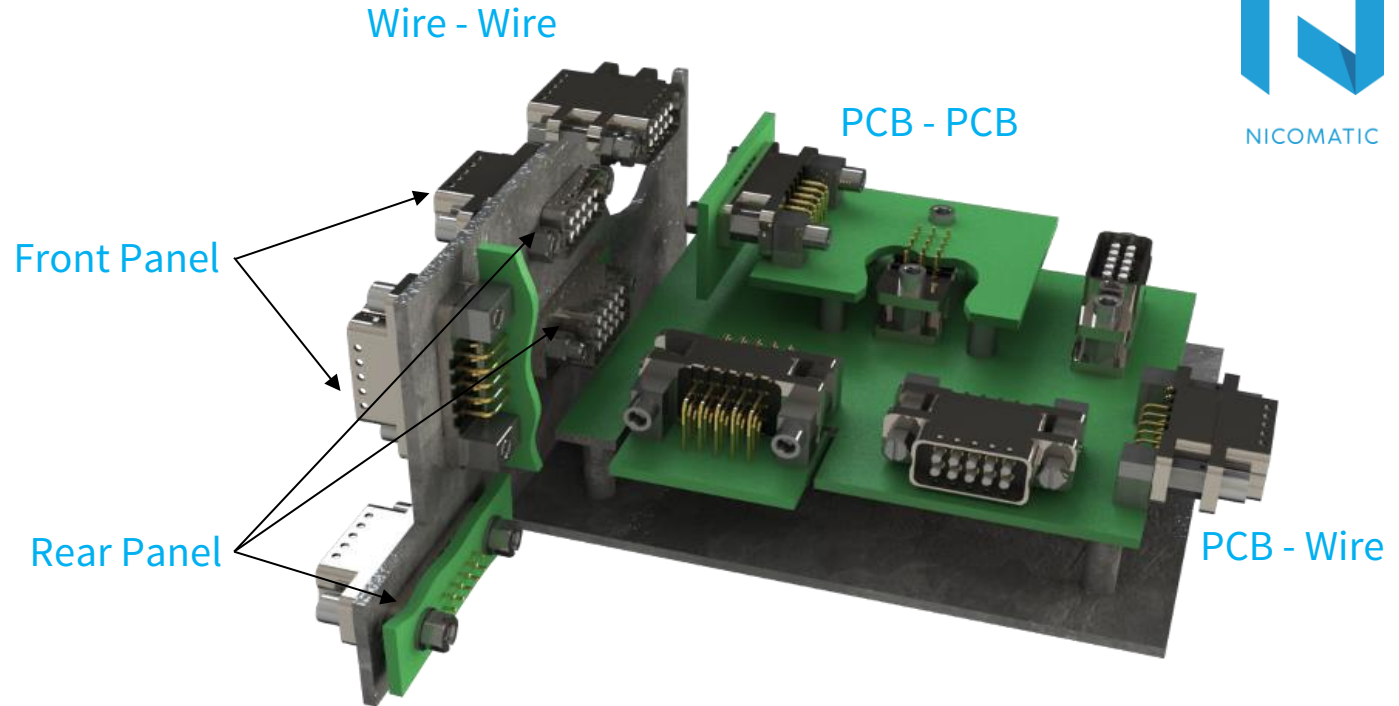
METALISED
COMPOSITE



ULTEM
INSULATOR **1**

COPPER
LAYER **2**

NICKEL
LAYER **3**



Versatility - Mixed layout {Signal/High Power/Coax}

Modularity - 4 to 32 Signals - 1 to 8 HP/Coax

Configurability - Wire – Straight PCB – 90° PCB – Panel Mount

Shielding - Metalised Composite – Flanged shell

Ultra Light - Ultem based shell

Typical usage cases – Adapted Mix {Weight-Shielding-Robustness}



Plastic – Rear Panel Mount

Rear Panel Mount: vs CMM only Front Mount –
PCB/Cable to Cable connections

Affordable solution: vs metallic connector

Reasonable Robustness: when no need for
metallic robustness

Shielded connector: no need to shield the full
equipment – PCB to PCB/Cable connections

No need for metallic robustness: connector
protected by the box

Cost effective: the relevant performances for an
adapted usage

Shielded – Inside The Box

Light & Shielded – Panel Mount

Light weight: reduce equipment weight vs metallic
connector

Shielded connector: panel/shell continuity –
PCB/Cable to Cable connections

Reasonable robustness: rugged body armor
compared to plastic alone

Shielded connector: metallic braid continuity

Light weight: reduce harness weight

No need for excessive robustness: no panel mount

Light & Shielded – Cable to cable junction

DLMM Available Configurations



NICOMATIC

S T O C K E D	Family	Configurations	Gender	Part Number	Contact Type	Fixing
	2 rows <u>with flange</u>	Shell Size 10LF (xx=18mm) Shell Size 16LF (xx=24mm) Shell Size 22LF (xx=30mm) Shell Size 26LF (xx=34mm) Shell Size 32LF (xx=40mm) Mixed layout is possible in those sizes (ex: "4 HP" or "5 HP + 2 LF" or "8HF" etc...) <u>Maximum Shell Size is 32LF (xx=40mm)</u>	Male	<u>C18775-...</u> (ex: C18775-VnnD52)	PCB Straight (Y / YL / D)	Type D51#/D64# Type D55##/D65### (rear panel) <u>(EXCEPT D53/D61)</u>
					PCB 90° (V / VL / D)	Type D52#/D68# Type D56##/D74### (rear panel)
			Femelle	<u>C18776-...</u> (ex: C18776-SPnnD53)	Cable (SP / CP / EP)	Type D53/D61/D63/DXX
N O N - S T O C K E D	Family	Configurations	Gender	Part Number	Contact Type	Fixing
	2 rows <u>with flange</u>	Shell Size not included above <u>Maximum Shell Size is 32LF (xx=40mm)</u> 04 LF min 32 LF max or 01 HP/HF min 08 HP/HF max or Mixed equivalent to 32LF/08HP max	Male	<u>C18775-...</u> (ex: C18775-VnnD52)	PCB Straight (Y / YL / D)	Type D51#/D64# Type D55##/D65### (rear panel) <u>(EXCEPT D53/D61)</u>
					PCB 90° (V / VL / D)	Type D52#/D68# Type D56##/D74### (rear panel)
					SMT straight (T) (only LF contact configuration possible)	Type D51/D64 Type D55x/D65x (rear panel) <u>(EXCEPT D53/D61)</u>
					SMT 90° (R) (only LF contact configuration possible)	Type D52/D68 Type D56x/D74x (rear panel)
			Female	<u>C18776-...</u> (ex: C18776-SPnnD53)	Cable (SP / CP / EP) <u>(P SHAPE ONLY)</u>	Type D53/D61/D63/DXX Type D51/D64 (front panel) Type D55x/D65x (rear panel)
					PCB Straight (Y / YL / D)	Type D51#/D64# Type D55##/D65### (rear panel) <u>(EXCEPT D53/D61)</u>
					PCB 90° (V / D)	Type D52#/D68# Type D56##/D74### (rear panel)
					Cable (SP / CP / EP) <u>(P SHAPE ONLY)</u>	Type D53/D61/D63/DXX Type D51/D64 (front panel) Type D55x/D65x (rear panel)
	Backshell	Mono-backshell 2 rows Maximum Backshell Size is 32 LF (xx=40mm)	Male/Female	<u>C19043-M2-...</u> (ex: C19043-M2-M2-28-P-3-C)	N/A	N/A
CUSTOM	Any other request: 1 row, 3 rows, 4 rows, Longer Size, ...					

Electrical Features – as per MIL83513G



NICOMATIC

Performance	Results
Electrical features	
<p>Dielectric withstanding voltage sea level EIA-364-20C <i>(Between all adjacent contacts & between the shell and each peripheral contact)</i></p>	<p>Signal (LF) contacts: Withstanding voltage: 600 VRMS Rated Voltage: 200 VRMS</p> <p>Power (HP) Withstanding voltage: 800 VRMS Rated Voltage: 267 VRM</p>
<p>Dielectric withstanding voltage high altitude (70 000 ft) EIA-364-20C <i>(Between all adjacent contacts & between the shell and each peripheral contact)</i></p>	<p>Signal (LF) contacts: Withstanding voltage: 150 VRMS Rated Voltage: 50 VRMS</p> <p>Power (HP) Withstanding voltage: 150 VRMS Rated Voltage: 50 VRM</p>
<p>Insulation resistance EIA 364-21C</p> <p>Contact resistance EIA 364-06C</p>	<p>Signal (LF) & (HP) contacts: EIA 364-21C Insulation resistance: > 5 GΩ @ 500V</p> <p>Signal (LF) contacts: Contact resistance @ 3A: 7.63 mΩ max</p> <p>Power (HP) & Coax (HF) contacts: Contact resistance @ 3A: 1.17 mΩ max</p>
<p>Magnetic permeability ASTM A342/A342M</p> <p>Derating (Current carrying capacity) IEC 60512-5-2 Test 5b</p>	<p>Relative magnetic permeability < 2.0 μ</p> <p>Connector with only signal (LF) contacts: Max temperature elevation at 3A @ 25°C: 67°C Max temperature elevation at 2.5A @ 85°C: 28°C</p> <p>Connector with only High Power (HP) contacts: Max temperature elevation at 20A @ 25°C: 61°C Max temperature elevation at 20A @ 85°C: 29°C</p>
High Frequency contacts performances	Please refer to the High Frequency (HF) contacts page

Mechanical Features – as per MIL83513G



Mechanical features		
<p>Contact engagement and separation forces <i>EIA 364-37B</i></p>	<p>Signal (LF) contacts: Engagement Force: 1.7 N max Separation Force: 0.2 N min</p> <p>Power (HP) & Coax (HF) contacts: Engagement Force: 5 N max Separation Force: 0.5 N min</p>	
<p>Mating and unmating force <i>EIA 364-13D</i></p>	<p>Signal (LF) contacts: Mating Force: 2.781 N max Unmating Force: 0.2 N min</p> <p>Power (HP) & Coax (HF) contacts: Mating Force: 9.733 N max Unmating Force: 1 N min</p>	
<p>Contact replacement <i>EIA 364-29C</i></p>	<p>Contact retention force for Signal (LF) contacts: Initial: > 19.74 After 3 replacements: > 6.83 N</p> <p>Contact retention force for Power (HP) & Coax (HF) contacts: Initial: > 22.27N After 5 replacements: > 22.27N</p>	
<p>Durability <i>MIL-DTL-83513G §4,5,16 & NICOMATIC requirements for HP & HF</i></p>	<p>DMM Connector with only signal (LF) contacts: 500 cycles min</p> <p>DMM Connector with signal (LF) and High Power (HP) contacts: 500 cycles min</p>	
<p>Crimp tensile strenght <i>EIA 364-08 20</i></p>	<p>AWG 28: > 13.4N / AWG 26: > 22.3N AWG 24: > 35.6N / AWG 22: > 53.4N AWG 20: > 142 N / AWG 18: > 200N</p>	<p>AWG 16: > 240N / AWG 14: > 412.4N AWG 12: > 565N</p>

Environmental Features – as per MIL83513G



NICOMATIC

Environmental features	
Vibration <i>EIA 364-28E TEST CONDITION III&IV</i>	DMM Connector with signal (LF) and Power (HP) contacts: MIL-DTL-8313G Test Condition III: [147.1 m/s² (15 gn) peak] <i>It is recommended to use the locking fixing hardware (screws) with the HP and mixed contacts with thread lockfluid</i>
Temperature cycling <i>EIA 364-32D</i>	Temperature cycling severity: -55°C / +125°C
Fluid immersion <i>MIL-DTL-83513G §4,5,18</i>	A. Lubricating oil Aircraft turbine engines, synthetic base: 20 hours B. Coolant-dielectric fluid synthetic silicate ester base lubricant (coolanol 25): 1 hour +/- 1 minute.
Humidity <i>EIA 364-31B - Method IV</i>	Withstanding voltage sea level after Humidity: 360 Vrms. Insulation resistance after Humidity: >1 GΩ <i>Ten cycles, cycle duration: 24 hours (except steps 7a and 7b).</i>
Salt spray (corrosion) <i>364-26B TEST CONDITION A</i>	Duration: 96 hours @35°C / Salt solution concentration: 5%
Thermal vacuum outgassing <i>ASTM E595 (ECSS-Q-ST-70-02C)</i>	Total mass loss : TML < 1% of the original mass Max volatile condensable material: CVCM < 0.1% of the original mass
Resistance to soldering heat <i>EIA 364-29C</i>	Bath solder T°: 250°C - 10 s
Marking performance <i>MIL-STD-202, method 215</i>	Solvent 1: Isopropyl alcohol, Kerosene (Petroleum ether), Ethylbenzene. Solvent 2: Bloact EC-7R Solvent 3: Ethanolamine, 1-methoxy-2- propanol, Water.

Light & Shielded DLMM

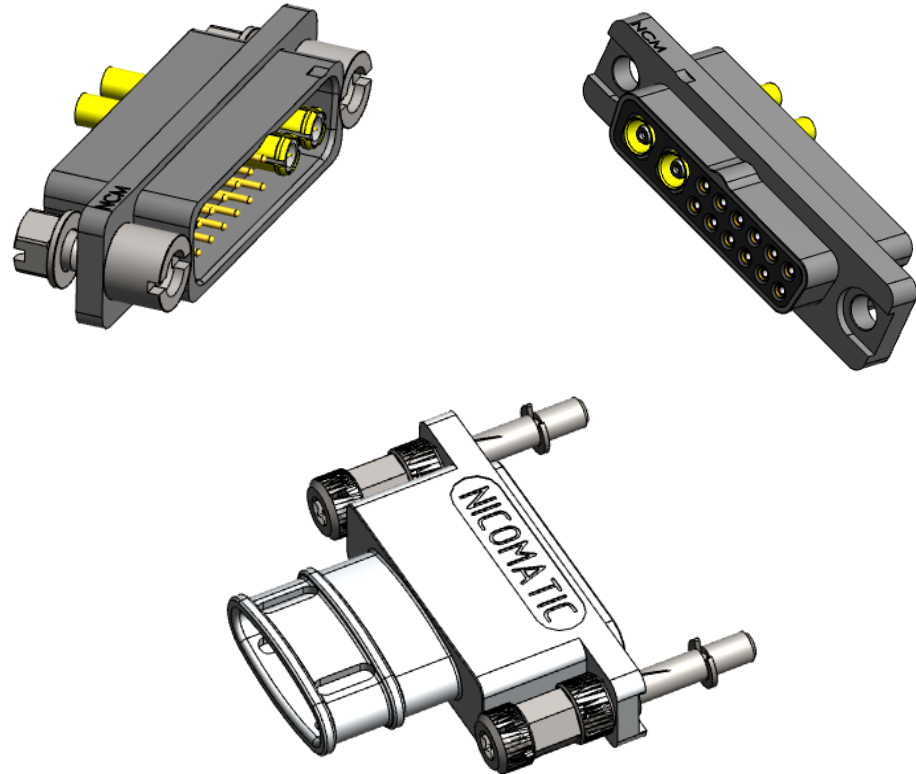
CUSTOMER SITUATION

- Need EMI shielding
- DMM optimized cost
- Light weight

NICOMATIC SOLUTION

- DLMM as an **alternative between CMM** (no shielding) **and DMM** (no need for metal robustness)
- **Shielding effectiveness** and **cost effective**
- **Mixed** Configuration (LF+HF)

Unmanned Aerial Vehicle



Cable to Cable with Backshell

Mixed: 12 LF + 2 HF

Light & Shielded

DLMM



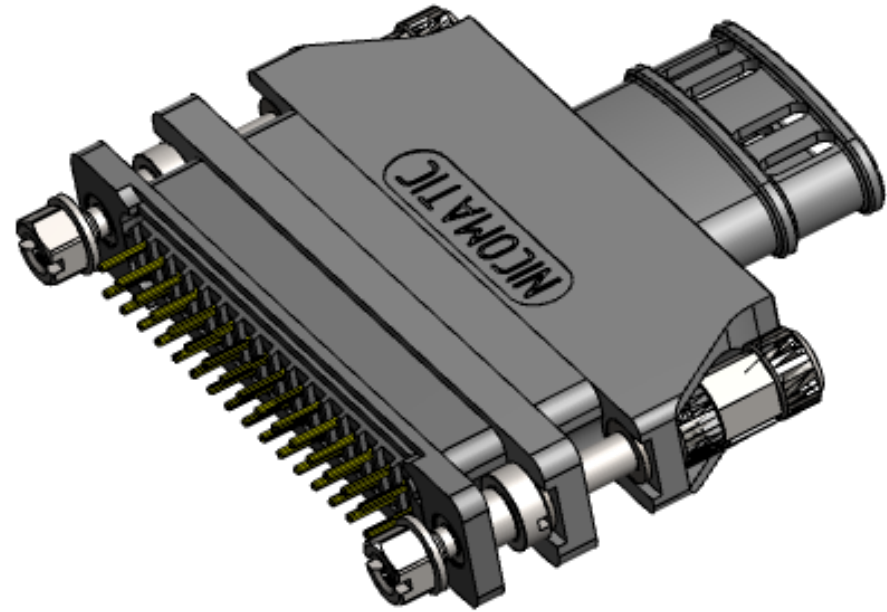
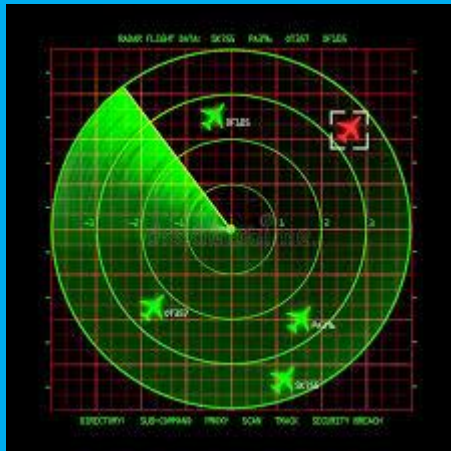
CUSTOMER SITUATION

- Need compact solution
- Need EMI shielding **inside the box**
- Light weight
- Cost effective

NICOMATIC SOLUTION

- **Light weight** and **shielded** connector for connecting a cable from a 38999 to a PCB
- DLMM **smaller, lighter, lower cost and shorter lead time** than Micro-D

Radar Switching Matrix



PCB to Cable with Backshell

2 versions: 10 and 32 LF

Light & Shielded DLMM

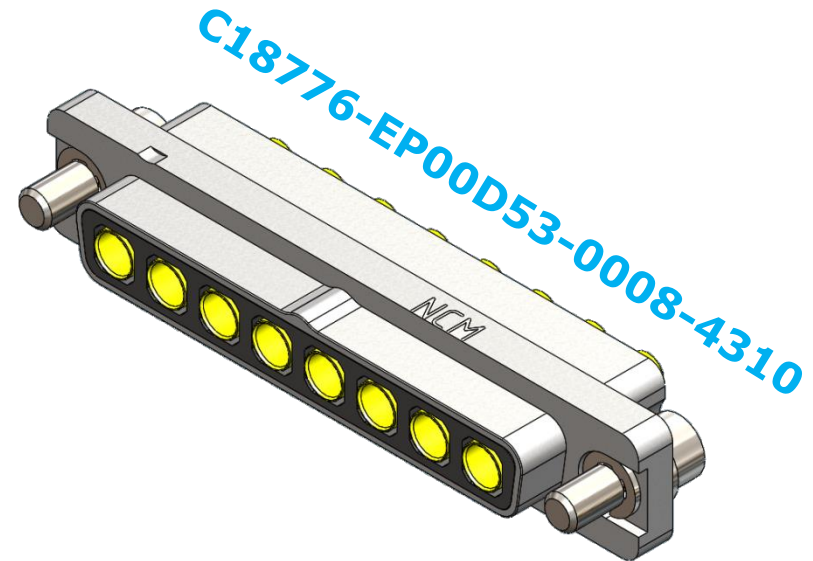
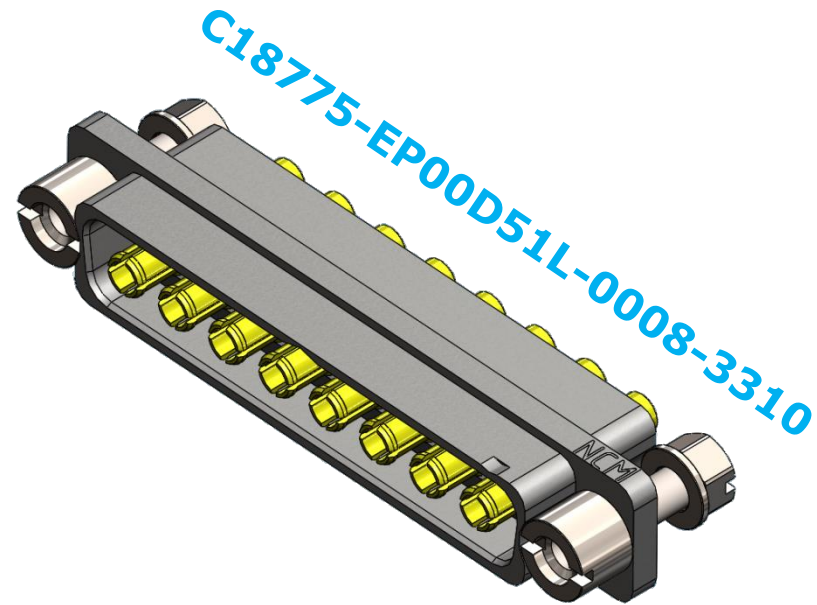
CUSTOMER SITUATION

- Compact & Light design
- High Power requirements
- Compromise Performances/Price

NICOMATIC SOLUTION

- **Light weight** solution
- Solution **available in DMM and DLMM** (easy replacement)
- **Performant Shielding and Robustness** at interesting price

Anti-Tank Missile



Cable to Cable Solution
High Power

Light & Shielded DLMM

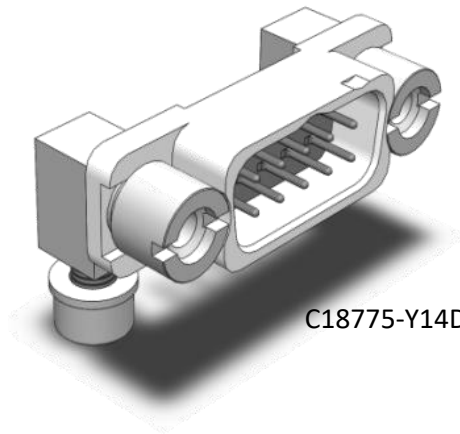
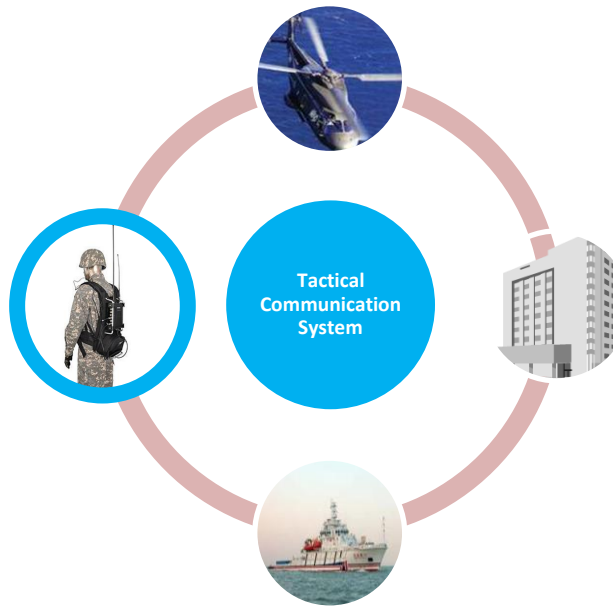
CUSTOMER SITUATION

- Global communication system, with also soldier's equipment
- Weight concern
- Competitive price

NICOMATIC SOLUTION

- Light shielded metalized composite
- Robust MIL connector

Communication system



C18775-Y14D51



C18776-SP14D53

PCB to Cable
14 LF

Light & Shielded *DLMM harness*

CUSTOMER SITUATION

- Extra light UAV solution
- USB2 & USB3 data
- High density

NICOMATIC SOLUTION

- **Extra light** (~40%) shielding harness
- **Metalized composite** connector and braid

Surveillance UAV





THANK
YOU