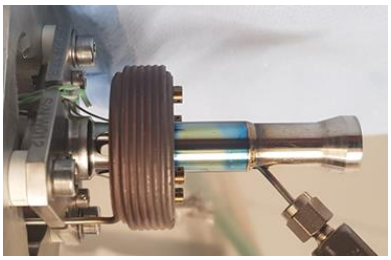
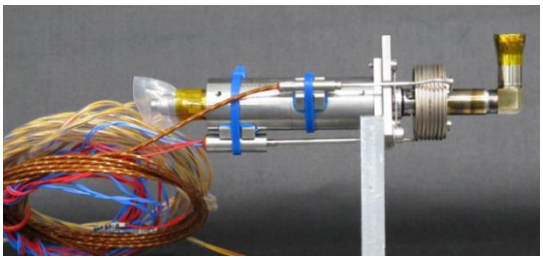
MHT-1N Monopropellant Hydrazine Thruster





This high performance European 1 N class hydrazine monopropellant thruster has been developed and extensively proven by **Nammo Space**.

The MHT-1N has class leading performance with a minimum Isp of 228 seconds at its maximum thrust of 1.38 N.

This 1 N thruster can meet stringent customer requirements including demanding minimum iBit and constantly changing variable duty cycles. The **MHT-1N** demonstrates excellent iBit repeatability when presented with challenging off-nominal inlet conditions.

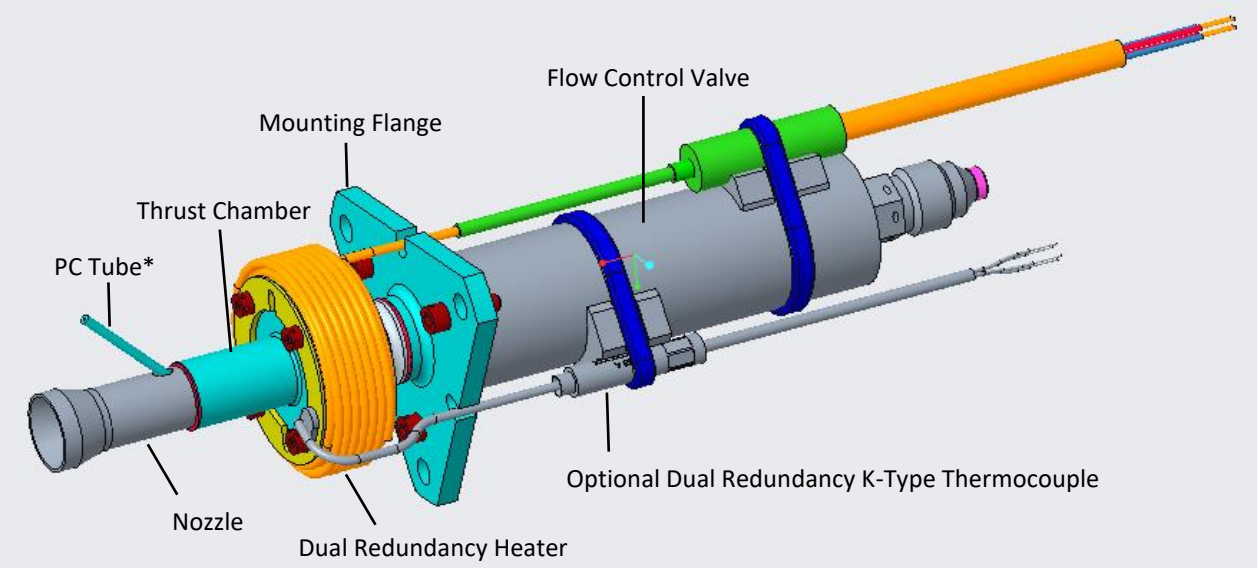
The MHT-1N features a unique catalyst management capability that has been developed to help mitigate against the effects of catalyst degradation through life.

The thruster has been designed to enable rapid thermal conditioning of the catalyst bed, which is essential for extended life capability.

The thruster had its first flight on the SSTL Telesat LEO-1 satellite in January 2018.

The MHT-1N has been Qualified for ESA NeoSat telecoms platforms, with further qualification campaigns taking place in 2021.

The thruster can be delivered typically in 12 months of order.



*PC tube is trimmed back and sealed before delivery of flight units.

MHT-1N Monopropellant Hydrazine Thruster

Nominal Thrust	1.295 N (0.29 lbf) @ 24 bara (348 psia)
Maximum Thrust	1.38 N (0.31 lbf) @ 24 bara (348 psia)
Specific Impulse	> 228 s @ 1.38 N (0.31 lbf)
Thrust Repeatability	±5% thruster to thruster
Shortest On Time (Ton)	15 ms [demonstrated]
Mass	< 0.45 kg (1 lb)
Inlet Filtration	25 µm absolute
Flow Control Valve	Dual in-line, series redundant solenoid valve
Valve Power	3.5 W-4.1 W @ 28 Vdc and 20°C [per coil]
Pull-In Voltage	<12 Vdc nom measured
Drop-Out Voltage	>1.5 Vdc
Valve Opening Response	<10 ms at 20°C
Valve Closing Response	<10 ms at 20°C
Catalyst Bed Heater Power	5.5 W-6 W per element at 28 Vdc
Valve/TCA Joint	Bolted with EPDM seal
Qualification Data	
Hydrazine Throughput	19.19 kg Hydrazine – (ESA Qualification) >42 kg Hydrazine (Demonstrated)
Total Impulse	36,849 Ns (ESA Qualification)
Pulse Capability	87,818 (ESA Qualification)
Number of Cold Starts	2 (ESA qualification catalyst bed between 5°C and 10°C)
Hot Propellant Testing	36,775 pulses with propellant temperature between 60°C to 67°C
Pad Pressure Venting	Pad pressure venting demonstrated (blowdown mode)
Helium Ingestion Test	Helium Ingestion tested, with satisfactory performance.
Spacecraft Passivation	46 grams of GHe successfully vented through the thruster in blowdown mode
Technology Readiness Level	TRL9 [Telesat LEO-1]

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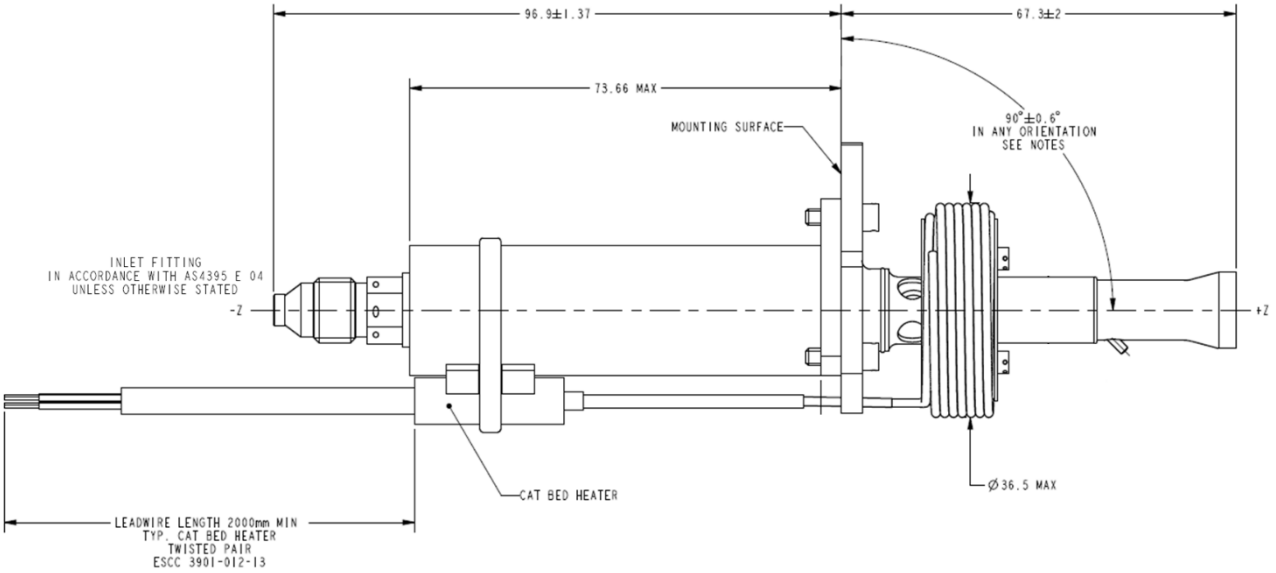
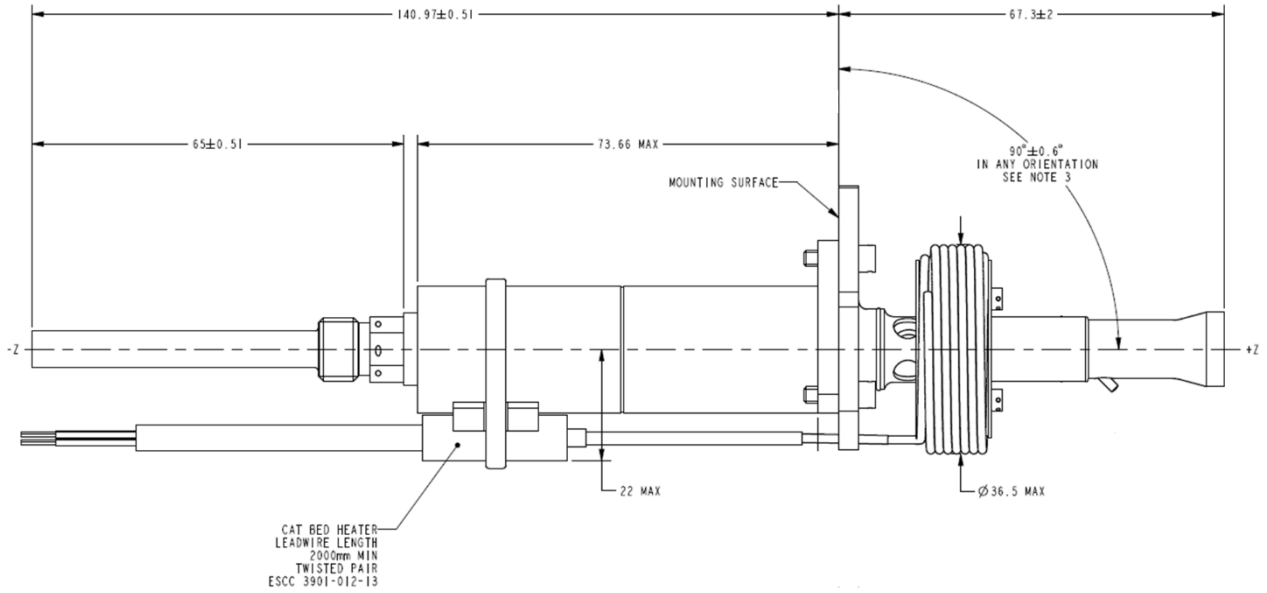
MHT-1N Monopropellant Hydrazine Thruster

The MHT-1N thruster is customizable and can be delivered with a straight through thrust nozzle, as seen here, or with the nozzle outlet at right angles to the component axis.





The MHT-1N thruster can also be delivered with either threaded or stub tube interfaces, as shown above. The inlet interfaces can also be straight or a right angles.

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