



iNAT-M300/xLD-DA (x = T, R, S)

MEMS Based Inertial Navigation System with integrated INS/GNSS/ODO/xxx Sensor Data Fusion and accessible Memory Stick

The **iNAT-M300/xLD** is a member of the advanced iNAT series (iMAR Navigation and Timing) and one of the smallest powerful MEMS based INS/GNSS inertial navigation, measurement, surveying, tracking and control systems on the market for applications on the ground, at sea and in the air. It provides all kinematic measurements like acceleration, angular rate, attitude, true heading, velocity and position of the target vehicle in real-time with an data update rate of up to 500 Hz.

- robust, compact, light weight system, ~850 grams
- based on high grade MEMS Gyro / Accel technology and up to all-frequency / all-constellation GNSS with RTK support and optional dual-antenna heading support
- integrated accurate GNSS engine, up to RTK all frequencies / all constellations (3 grades of GNSS engines available: /TLD, /SLD, /RLD)
- Options for high/low range angular rate (-HRR/-LRR) and high range acceleration (-HRA) available
- odometer / wheel sensor / CAN aiding capability
- output of angular rate, acceleration, attitude, true heading, CoG, velocity and position in realtime with up to 500 Hz outut rate (adjustable)
- several processing modes: Standard mode with 1 m position accuracy and RTK mode with 0.02 m position accuracy; PPP support
- interfaces: UART RS232 & RS422 / CAN / Ethernet / USB for realtime data output and RS232 for DGPS/RTK correction input; odometer / VMS
- up to 128 GByte internal memory ("black-box")
- additionally accessible USB Memory stick / IP67 for fast post-mission data access
- easy to use, easy to configure; powerful GUI

Depending on the use's application, environmental conditions and required realtime accuracy, the integrated sensor data fusion includes IMU, GNSS, VMS or any other external sensor providing position and/or velocity, standard deviation and time stamp.

In urban canyons often the number of observable satellites is quite limited and affected by multipath and therefore the iNAT-M300/TLD supports an all GNSS constellation sensor data fusion. The 42+ state extended Kalman filter processing provides a significant better and more robust position and velocity result compared to standard solutions.

For land vehicles additionally an odometer aiding capability is available as an option, the scale factor of the wheel sensor, the radar data, the CAN data or any other is estimated automatically. The <u>iNAT-M300/TLD</u> provides system performance and system reliability which is required in standard tasks of navigation, guidance and control, mapping, vehicle motion dynamic stesting, trajectory surveying and platform control tasks for cars, trucks, naval vessels, civil and military aircrafts etc.



The **iNAT-M300/RLD** provides the same features, but containing a cheaper commercial grade multi-constellation RTK GNSS engine with less robust GNSS solution.



The iNAT-M300 is delivered with the configuration software <u>iXCOM-CMD</u>. Furthermore all output data can be displayed and stored online on the user's notebook, tablet or process computer. It also allows powerful playback capabilities and provides data export in many formats (csv, xml, GoogleEarth, iPosCAL, InertialExplorer, Graf-Nav). With <u>iREF-GNSS</u>, iMAR also provides a GNSS reference station to provide RTK corrections for centimeter level accuracy on demand.

A powerful postproc software <u>iPosCAL-SURV</u> for batch processing is available to allow post-mission processing including a multi station GNSS correction data solution and a direct visualisation of the results in Google Earth[™].



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Technical Data iNAT-M300/TLD-DA and iNAT-M300/xLD (typical, rms):

	Rate	Acceleration	Attit./Heading	Position	Velocity	<u>Height</u>
Range ¹ :	± 500 °/s	± 8 g	unlimited	unlimited	515 m/s	unlimited
Bias Stability (AV) ¹ :	< 2.5 °/h < 5 °/h	< 0.1 mg			(without	
Bias (filtered ²): Bias day-to-day ³ , ¹ :	< 0.2 °/s	< 1 mg < 2 mg			export control)	
Angles (Attitide, Hdg.):		U	0 1º / 0 3º 0 05º /	0.15° RP/Y	,	S, w/o with RTK) ⁵
(ingles (/ ((((de, i log.)).			0.15° / 0.35° 0.1° /	0.2° RP/Y		iNSS outage, w/o with RTK) ⁵
			0.1 deg heading for		`	0, 1, ,
Position (horizontal plane	a) ⁴ ·					
	·····			+/- 0.02 m CE	P (INS/GNSS R	RTK post-proc) ⁵
					P (INS/GNSS w	
					P (INS/GNSS)	
/alaaituu						during GNSS RTK outage) ⁶
Velocity: Noise:	0.15 ° /√hr	23 µg/√Hz	0.02 °	< 0.01 m		S/ KIK GNSS)
	< 0.000'1 °/s	∠3 μg/γ ⊓∠ < 20 μg	0.02 °	< 0.001 m	< 0.01 m/s < 0.001 m/s	
	< 0.2 %	< 0.5 %	0.001	< 0.001 m	< 0.001 11/3	
,	< 0.2 %	< 0.1 %				
	< 0.1 %	< 0.07 %				
	< 0.5 mrad	< 0.5 mrad				
NS / GNSS / ODO proc.:	integrated a	dvanced 42+ state IN	S/GNSS/+ extended K	alman filter data	a fusion; extende	ed motion detector
Internal GNSS Engine:						ngle & dual antenna available)
						S engine (single or dual antenna
				tellation RTK G	NSS engine (sin	gle & dual antenna available)
Data Processing Rate:		z; PPS timing accurat	by better 10 hs			
Data Output Bata		roto integer divisor	of EOO Lity oll data ava	ilable in real time		a littor 1 ma
•	output data		of 500 Hz; all data ava			
Data Output Rate: Synchronisation:	output data PPS_OUT(RS422 level, latency	< 1 µs); 2x EVENT_IN	(RS422 or TTL	level, latency <	3 ms)
•	output data PPS_OUT(USB, 2 x CA	RS422 level, latency AN, 4 x UART RS232/	< 1 µs); 2x EVENT_IN /422, Ethernet 100 Mbi	(RS422 or TTL t/s, NMEA183, A	level, latency < ARINC825, TCP	3 ms) P/IP, UDP, NTRIP
Synchronisation:	output data PPS_OUT (USB, 2 x CA caster with F	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can	< 1 µs); 2x EVENT_IN /422, Ethernet 100 Mbi	(RS422 or TTL it/s, NMEA183, A rence station); it	level, latency < ARINC825, TCP ntegrated real-til	3 ms) /IP, UDP, NTRIP me-clock (RTC) w/o battery
Synchronisation: Output (options):	OUTPUT data PPS_OUT (USB, 2 x CA caster with F NTP Time S DGPS/RTK	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can Server; furthermore ac correction data from 1	< 1 µs); 2x EVENT_IN /422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if available	(RS422 or TTL t/s, NMEA183, / rence station); in al protected USE	level, latency < ARINC825, TCP ntegrated real-til	3 ms) /IP, UDP, NTRIP me-clock (RTC) w/o battery
Synchronisation: Output (options): Inputs:	output data PPS_OUT (USB, 2 x CA caster with I NTP Time S DGPS/RTK odometer (A	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can Server; furthermore ac correction data from I a or A/B at RS422 level	< 1 µs); 2x EVENT_IN /422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if availablel) as an option	(RS422 or TTL t/s, NMEA183, / rence station); ii al protected USE le (RS232);	level, latency < ARINC825, TCP ntegrated real-til 8 stick for storing	3 ms) /IP, UDP, NTRIP me-clock (RTC) w/o battery
Synchronisation: Output (options): Inputs: Data Latency:	output data PPS_OUT (USB, 2 x CA caster with I NTP Time S DGPS/RTK odometer (A < 1 ms (sam	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can Server; furthermore ac correction data from 1 A or A/B at RS422 level apling accuracy better	< 1 µs); 2x EVENT_IN /422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if availabl el) as an option 1 µs, time-stamped ad	(RS422 or TTL t/s, NMEA183, / rence station); in al protected USE le (RS232); ccording to PPS	level, latency < ARINC825, TCP ntegrated real-til s stick for storing ; jitter < 1 ms)	3 ms) P/IP, UDP, NTRIP me-clock (RTC) w/o battery g of mission data
Synchronisation: Output (options): Inputs: Data Latency: Connectors:	output data PPS_OUT (USB, 2 x CA caster with I NTP Time S DGPS/RTK odometer (A < 1 ms (sam MIL-C-3899	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can Server; furthermore ac correction data from 1 A or A/B at RS422 level apling accuracy better 9 III (data) [all typical	< 1 µs); 2x EVENT_IN (422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if availabl el) as an option 1 µs, time-stamped ac platings availabe], SM	(RS422 or TTL t/s, NMEA183, A rence station); in al protected USE le (RS232); ccording to PPS A (antenna), M1	level, latency < ARINC825, TCP ntegrated real-tii 3 stick for storing ; jitter < 1 ms) 2 (Ethernet); op	3 ms) P/IP, UDP, NTRIP me-clock (RTC) w/o battery g of mission data
Synchronisation: Output (options): Inputs: Data Latency: Connectors: Integrated Data Storage:	utput data PPS_OUT (USB, 2 x CA caster with I NTP Time S DGPS/RTK odometer (A < 1 ms (sam MIL-C-3899 32 GByte (o	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can Server; furthermore ac correction data from I a or A/B at RS422 level apling accuracy better 9 III (data) [all typical ption: 128 GByte); las	< 1 µs); 2x EVENT_IN /422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if availabl el) as an option 1 µs, time-stamped ac platings availabe], SM sts for several days con	(RS422 or TTL t/s, NMEA183, A rence station); in al protected USE le (RS232); ccording to PPS A (antenna), M1 ntinuous data sa	level, latency < ARINC825, TCP ntegrated real-tii 3 stick for storing ; jitter < 1 ms) 2 (Ethernet); op impling as "black	3 ms) P/IP, UDP, NTRIP me-clock (RTC) w/o battery g of mission data htion: LEMO connectors k-box"
Synchronisation: Output (options): Inputs: Data Latency: Connectors:	output data PPS_OUT (USB, 2 x CA caster with I NTP Time S DGPS/RTK odometer (A < 1 ms (sam MIL-C-3899) 32 GByte (o MS Window	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can Server; furthermore ac correction data from 1 or A/B at RS422 level apling accuracy better 9 III (data) [all typical ption: 128 GByte); las s or LINUX or MacOS	< 1 µs); 2x EVENT_IN (422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if available el) as an option 1 µs, time-stamped ac platings availabe], SM sts for several days con 6 based GUI / HMI soft	(RS422 or TTL t/s, NMEA183, / rence station); in al protected USE le (RS232); ccording to PPS A (antenna), M1 ntinuous data sa ware <u>iXCOM-Ct</u>	level, latency < ARINC825, TCP ntegrated real-tii 3 stick for storing ; jitter < 1 ms) 2 (Ethernet); op impling as "blaci	3 ms) P/IP, UDP, NTRIP me-clock (RTC) w/o battery g of mission data htion: LEMO connectors k-box"
Synchronisation: Output (options): Inputs: Data Latency: Connectors: Integrated Data Storage: Graphical User Interface:	output data PPS_OUT (USB, 2 x CA caster with I NTP Time S DGPS/RTK odometer (A < 1 ms (sam MIL-C-3899 32 GByte (o MS Window visualization	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can Server; furthermore ac correction data from 1 or A/B at RS422 level apling accuracy better 9 III (data) [all typical ption: 128 GByte); las s or LINUX or MacOS a, operation, data reco	< 1 µs); 2x EVENT_IN (422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if available el) as an option 1 µs, time-stamped ac platings availabe], SM sts for several days con 6 based GUI / HMI soft ording, data converting	(RS422 or TTL t/s, NMEA183, / rence station); in al protected USE le (RS232); ccording to PPS A (antenna), M1 ttinuous data sa ware <u>iXCOM-Ct</u> and playback of	level, latency < ARINC825, TCP ntegrated real-tii 3 stick for storing ; jitter < 1 ms) 2 (Ethernet); op impling as "blaci MD for configura peration	3 ms) P/IP, UDP, NTRIP me-clock (RTC) w/o battery g of mission data otion: LEMO connectors k-box" ation,
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Synchronisation: Output (options): Inputs: Data Latency: Connectors: Integrated Data Storage: Graphical User Interface: Power Supply:	output data PPS_OUT (USB, 2 x CA caster with H NTP Time S DGPS/RTK odometer (A < 1 ms (sarr MIL-C-3899 32 GByte (o MS Window visualization 934 V DC, approx. 8.5 -40+71 °C	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can Server; furthermore ac correction data from 1 A or A/B at RS422 level apling accuracy better 9 III (data) [all typical ption: 128 GByte); las s or LINUX or MacOS , operation, data reco , two independent and 10 W (dep. on optic (outer case temperal	< 1 µs); 2x EVENT_IN (422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if available el) as an option 1 µs, time-stamped ac platings availabe], SM sts for several days con 6 based GUI / HMI soft ording, data converting d isolated inputs availa ons); < 14 W for < 1 se ture) operating, -408	(RS422 or TTL t/s, NMEA183, / rence station); in al protected USE le (RS232); ccording to PPS A (antenna), M1 ntinuous data sa ware <u>iXCOM-C1</u> and playback of ble; reverse and c after power-or 5 °C storage; 45	level, latency < ARINC825, TCP integrated real-til 3 stick for storing 2 (Ethernet); op impling as "black MD for configura peration 1 overvoltage pro 0 0000 hrs (AUC,	3 ms) P/IP, UDP, NTRIP me-clock (RTC) w/o battery g of mission data btion: LEMO connectors k-box" ation, otection; Airborne Uninhabited Cargo, 25
Synchronisation: Dutput (options): nputs: Data Latency: Connectors: ntegrated Data Storage: Graphical User Interface: Power Supply: Femperature; MTBF: Shock, Vibration, Altitude	output data PPS_OUT (USB, 2 x CA caster with H NTP Time S DGPS/RTK odometer (A < 1 ms (sarr MIL-C-3899 32 GByte (o MS Window visualization 934 V DC, approx. 8.5 -40+71 °C : 60 g, 11 ms	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can Server; furthermore ac correction data from 1 A or A/B at RS422 level apling accuracy better 9 III (data) [all typical ption: 128 GByte); las s or LINUX or MacOS , operation, data reco , two independent and 10 W (dep. on optic (outer case temperal , 102'000 Hz 5 g rm	< 1 µs); 2x EVENT_IN (422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if available el) as an option 1 µs, time-stamped ac platings availabe], SM sts for several days con 6 based GUI / HMI soft ording, data converting d isolated inputs availa ons); < 14 W for < 1 se ture) operating, -408 ns (endurance); 1020	(RS422 or TTL t/s, NMEA183, / rence station); in al protected USE le (RS232); ccording to PPS A (antenna), M1 ntinuous data sa ware <u>iXCOM-C1</u> and playback of ble; reverse and c after power-or 5 °C storage; 45	level, latency < ARINC825, TCP integrated real-til 3 stick for storing 2 (Ethernet); op impling as "black MD for configura peration 1 overvoltage pro 0 0000 hrs (AUC,	3 ms) P/IP, UDP, NTRIP me-clock (RTC) w/o battery g of mission data btion: LEMO connectors k-box" ation, otection; Airborne Uninhabited Cargo, 25
Synchronisation: Dutput (options): nputs: Data Latency: Connectors: ntegrated Data Storage: Graphical User Interface: Power Supply: Temperature; MTBF: Shock, Vibration, Altitude g / g ² depenent gyro drift:	output data PPS_OUT (USB, 2 x CA caster with H NTP Time S DGPS/RTK odometer (A < 1 ms (sam MIL-C-3899 32 GByte (o MS Window visualization 934 V DC approx. 8.5 -40+71 °C : 60 g, 11 ms < 32 °/h/g /	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can Server; furthermore ac correction data from 1 A or A/B at RS422 level pling accuracy better 9 III (data) [all typical ption: 128 GByte); las s or LINUX or MacOS , operation, data reco , two independent and 10 W (dep. on optic (outer case temperal , 102'000 Hz 5 g m 1.8 °/h/g² (internally	< 1 µs); 2x EVENT_IN (422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if available el) as an option 1 µs, time-stamped ac platings availabe], SM sts for several days con 6 based GUI / HMI soft ording, data converting d isolated inputs availa ons); < 14 W for < 1 se ture) operating, -408 ns (endurance); 1020 compensated)	(RS422 or TTL t/s, NMEA183, / rence station); in al protected USE le (RS232); ccording to PPS A (antenna), M1 ntinuous data sa ware <u>iXCOM-CI</u> and playback of ble; reverse and ble; reverse and c after power-or 5 °C storage; 45 000 Hz 2 g rms (level, latency < ARINC825, TCP integrated real-til 3 stick for storing 2 (Ethernet); op impling as "black <u>MD</u> for configura peration 1 overvoltage pro 2000 hrs (AUC, (operational); 60	3 ms) P/IP, UDP, NTRIP me-clock (RTC) w/o battery g of mission data otion: LEMO connectors k-box" ation, otection; Airborne Uninhabited Cargo, 25 0'000 ft
Synchronisation: Dutput (options): nputs: Data Latency: Connectors: ntegrated Data Storage: Graphical User Interface: Power Supply: Temperature; MTBF: Shock, Vibration, Altitude g / g ² depenent gyro drift: Qualification:	output data PPS_OUT (USB, 2 x CA caster with F NTP Time S DGPS/RTK odometer (A < 1 ms (sarr MIL-C-3899 32 GByte (o MS Window visualization 934 V DC, approx. 8.5 -40+71 °C : 60 g, 11 ms < 32 °/h/g / designed to	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can Server; furthermore ac correction data from 1 A or A/B at RS422 level pling accuracy better 9 III (data) [all typical ption: 128 GByte); las s or LINUX or MacOS a, operation, data reco two independent and 10 W (dep. on option (outer case temperation); 102'000 Hz 5 g rm 1.8 °/h/g² (internally meet MIL-STD-810G	< 1 µs); 2x EVENT_IN (422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if available (e) as an option 1 µs, time-stamped at platings availabe], SM sts for several days con S based GUI / HMI soft bording, data converting d isolated inputs availa ons); < 14 W for < 1 se ture) operating, -408 ns (endurance); 1020 compensated) , MIL-STD-461G, NIL-	(RS422 or TTL tt/s, NMEA183, / rence station); in al protected USE le (RS232); ccording to PPS A (antenna), M1 ntinuous data sa ware <u>iXCOM-Ct</u> and playback of ble; reverse and c after power-or 5 °C storage; 45 000 Hz 2 g rms (level, latency < ARINC825, TCP integrated real-til 3 stick for storing 2 (Ethernet); op impling as "black <u>MD</u> for configura peration 1 overvoltage pro 2000 hrs (AUC, (operational); 60	3 ms) P/IP, UDP, NTRIP me-clock (RTC) w/o battery g of mission data otion: LEMO connectors k-box" ation, otection; Airborne Uninhabited Cargo, 25 0'000 ft
Synchronisation: Output (options): Inputs: Data Latency: Connectors: Integrated Data Storage: Graphical User Interface: Power Supply: Temperature; MTBF: Shock, Vibration, Altitude g / g ² depenent gyro drift: Qualification: Mass, size; IP:	output data PPS_OUT (USB, 2 x CA caster with I NTP Time S DGPS/RTK odometer (A < 1 ms (sam MIL-C-3899) 32 GByte (o MS Window visualization 934 V DC, approx. 8.5 -40+71 °C = 60 g, 11 ms < 32 °/h/g / designed to approx. 850	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can berver; furthermore ac correction data from 1 or A/B at RS422 level ppling accuracy better 9 III (data) [all typical ption: 128 GByte); las s or LINUX or MacOS a, operation, data reco two independent and 10 W (dep. on optic (outer case temperat 102'000 Hz 5 g rm 1.8 °/h/g² (internally meet MIL-STD-810G grams, ≈102 x 122 >	< 1 µs); 2x EVENT_IN (422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if availabl el) as an option 1 µs, time-stamped ac platings availabe], SM sts for several days con 5 based GUI / HMI soft ording, data converting d isolated inputs availa ons); < 14 W for < 1 se ture) operating, -408 (endurance); 102'(compensated) , MIL-STD-461G, NIL- < 65 mm; IP67 environi	(RS422 or TTL t/s, NMEA183, / rence station); in al protected USE le (RS232); ccording to PPS A (antenna), M1 ntinuous data sa ware <u>iXCOM-Ct</u> and playback of ble; reverse and c after power-or 5 °C storage; 45 000 Hz 2 g rms (STD-704F and p n. protection	level, latency < ARINC825, TCP Integrated real-til 3 stick for storing 2 (Ethernet); op impling as "black MD for configura peration 1 overvoltage pro b 2000 hrs (AUC, (operational); 60 partially DO1600	3 ms) 2/IP, UDP, NTRIP me-clock (RTC) w/o battery g of mission data otion: LEMO connectors k-box" ation, otection; Airborne Uninhabited Cargo, 25 0'000 ft
Synchronisation: Output (options): Inputs: Data Latency: Connectors: Integrated Data Storage: Graphical User Interface: Power Supply: Temperature; MTBF: Shock, Vibration, Altitude g / g ² depenent gyro drift: Qualification: Mass, size; IP:	output data PPS_OUT (USB, 2 x CA caster with H NTP Time S DGPS/RTK odometer (A < 1 ms (sam MIL-C-3899) 32 GByte (o MS Window visualization 934 V DC, approx. 8.5 -40+71 °C 60 g, 11 ms < 32 °/h/g / designed to approx. 850 Airborne, Gi	RS422 level, latency AN, 4 x UART RS232/ RTCM 104 rev 3 (can berver; furthermore ac correction data from 1 or A/B at RS422 level opling accuracy better 9 III (data) [all typical ption: 128 GByte); las s or LINUX or MacOS of operation, data reco two independent and 10 W (dep. on optic (outer case temperal , 102'000 Hz 5 g m 1.8 °/h/g² (internally meet MIL-STD-810G grams, ≈102 x 122 > round (with and witho	< 1 µs); 2x EVENT_IN (422, Ethernet 100 Mbi serve as a GNSS refe ccessible environmenta base station, if available el) as an option 1 µs, time-stamped ac platings availabe], SM sts for several days cor 6 based GUI / HMI soft ording, data converting d isolated inputs availa ons); < 14 W for < 1 se ture) operating, -408 ns (endurance); 102'(compensated) , MIL-STD-461G, NIL- < 65 mm; IP67 environn ut odometer), Sea, Suf	(RS422 or TTL t/s, NMEA183, / rence station); in al protected USE le (RS232); ccording to PPS A (antenna), M1 tinuous data sa ware <u>iXCOM-Ch</u> and playback op ble; reverse and c after power-or 5 °C storage; 45 000 Hz 2 g rms (STD-704F and p m. protection bsea; ZUPT (aut	level, latency < ARINC825, TCP Integrated real-til 3 stick for storing 2 (Ethernet); op impling as "black MD for configura peration I overvoltage pro 2000 hrs (AUC, (operational); 60 boartially DO1600 to or on demand	3 ms) P/IP, UDP, NTRIP me-clock (RTC) w/o battery g of mission data btion: LEMO connectors k-box" ation, btection; Airborne Uninhabited Cargo, 25 0'000 ft G d), open interface to feed in
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¹ Option: iNAT-M300/xLD-LRR/HRR for low range and high range rate tasks:	±120 °/s (0.15 °/sqrt(hr)), ±2000 °/s (0.3 °/sqrt(hr)) [factory set, can also be combined with –DA option]
Option: iNAT-M300/xLD-HRA for high range acceleration tasks:	±40 g °/s (100 µg/sqrt(Hz), 3 mg bias day-to-day) [factory set, can also be combined with -LRR or -HRR]
Option: iNAT-M300/xLD-HRS for high range speed tasks:	> 515 m/s (requires an export license)

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 ² after algorithm converging under sufficient motion excitation with sufficient GPS aiding conditions
³ values without sufficient INS/GNSS data fusion conditions; the bias are estimated / compensated during GNSS aiding under motion automatically (Kalman filter); INAT-M300/TLD provides 20 deg/hr bias stability for several hours duration at const. temperature
⁴ GNSS based altitude deviation is abut 1.5 times of GNSS based horizontal error
⁵ dependent on trajectory and satellite constellation; in challenging environments (e.g. urban canyons) use iNAT-M300/TLD (RTK not available for iNAT-M300/MLD) Hint: Under best GNSS and motion conditions the accuracy is 2 cm CEP with RTK.
⁶ position error in relation to distance travelled (DT) during GNSS outages (requires a vehicle motion sensor / wheel sensor) – after suffic. GNSS