

ANNEX II TECHNICAL SPECIFICATIONS

Tender for delivery of offers for

- Group I: GPS sensor - Procurement No. G-1.1**
- Group II.: Industrial monitor - Procurement No. G-1.2**
- Group III.: IMU unit - Procurement No. G-1.3**
- Group IV.: Wind Sensor - Procurement No. G-1.4**
- Group V.: Trackball - Procurement No. G-1.5**

Description of the procurement subject and the technical specifications are provided for each group separately.

Any possible references to a brand or to a particular type should be read “as equivalent”.

Technical specification – G-1.1 GPS sensor (positioning and heading receiver)

Receiver Specifications:

Receiver Type: Vector GNSS L1/L2 RTK Receiver or equivalent

Signals Received: GPS, GLONASS, BeiDou and Atlas

Channels: 540

GPS Sensitivity: -142 dBm

Update Rate: 10 Hz standard, 20 Hz optional

Rate of Turn: 100°/s maximum

Differential options: SBAS, Atlas L-band and Athena RTK

Positioning and Heading Accuracy:

Single Point: vertical 2.5 m

SBAS (WAAS): vertical 0.6 m

L-Band: vertical 0.16 m

RTK: horizontal 10 mm

Heading Accuracy: 0.05° rms @ 2.0 m antenna separation

Pitch/Roll Accuracy (RMS): 1°

Communications:

Serial Ports: 2 full-duplex RS232, 1 half-duplex RS422 port

Baud Rates: 4800 – 115200

Dana I/O Protocol: NMEA 0183

Input Voltage: 8-36 VDC

Operational Temperature: -30°C to + 70°C (-22°F to + 158°F)

EMC: CE (IEC 60945 Emissions and Immunity)

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GNSS antenna:

GNSS signals, including GPS, GLONASS, BeiDou, and Galileo

GNSS Reception: GPS L1/L2/L5, GLONASS G1/G2, BeiDou B1/B2/B3, SBAS, L-band, and Galileo E1/E5a and b
 GNSS Frequency: 1.165 to 1.278 GHz / 1.525 to 1.615 GHz
 LNA Gain: 30 dB
 LNA noise: 2.0 dB, typical
 L-Band Frequency: 1.525 - 1.585 GHz
 L-Band LNA Gain: 30 dB
 Input Voltage: 3.3-15 VDC

Technical specification – G-1.2 Industrial monitor

LED Backlight Technology, TFT Active-matrix
 17.0 inch viewable image size, Aspect Ratio 5:4
 Native Resolution: 1280 x 1024
 Contrast Ratio: 1000:1 (typical)
 Light Intensity Standard: 350 cd/m² (typical)
 Viewable Angle @ CR>10: +/- 80° (Down/Left/Right), 60° (Up) (typ)
 Max Colors: 16.7 million
 CPU: 1 x Intel Celeron or equivalent P4505, 1.86GHz, 2MB Cache, FSB 800MHz
 Memory: 1 x Single Channel, 204-pin, DDR3 1066/800MHz, 2GB
 Storage: 2 x 2.5" SSD SATA, 150 GB
 OS Option: Windows 10 IoT Enterprise or equivalent 2016 LTSB (64bit)
 Multi-power Supply: 115&230VAC - 50/60Hz + 24 VDC
 User controls: Buzzer (through glass)
 Operating: Temperature -15 deg. C to +55 deg. C
 IP-Rating: Protection: IP66 front

Input/Output Connectors:

Connector	Rear
Ethernet GBLan	2 x RJ-45
Keyboard	1 x PS/2 (purple)
Mouse	1 x PS/2 (green)
COM RS-232	1 x DB9M non-isolated
COM RS-422/485	1 x DB9M non-isolated
USB1.1 (<10m)	1 x USB Type A
USB2.0 (<5m)	3 x USB Type A
DVI or RGB OUT	1 x 29P DVI-I or as RGB with adapter
RGB OUT	1 x 15p HD D-SUB
AC Power IN	1 x Std IEC inlet
DC Power IN	1 x 2-pin Terminal Block 5.08
Line OUT	1 x 3.5mm mini jack (Lime)
Mic IN	1 x 3.5mm mini jack (Pink)

Accessories: HT 00262 OPT-A1: 4 x RS-422/RS-485 isolated, USB ext. module
 Sunlight Readable / High Bright (includes Optical Bonding) model
 Color Calibrated models (ECDIS)
 EMC CE-marked for industrial environment EN 61000-1-1/2/3/4 and IEC/EN 60945

Technical specifications – G-1.3 MRU unit – Inertial system

Roll, Pitch: 0.1°
Heading: <0.5 ° (External GNSS)
Heave: 5 cm or 5%: +
Odometer aiding: +
DGPS corrections: -
Navigation: Navigation with external GNSS receiver
Post-Processing: -

Accuracy (RMS)
Roll, Pitch: 0.1°
Heading: <0.5 ° GPS (under regular acceleration, or automotive motion)
Velocity: 0.1 m/s
Position: 2 m

Interfaces
Output rate: 200 Hz
Main Serial Interface: RS-232, RS-422

Sensors:

	Accelerometers	Gyroscopes
Range	± 16 g	± 450 °/s
Gain stability	1000 ppm	500 ppm
Non-linearity	1500 ppm	50 ppm
Bias stability	± 5 mg	± 0.2 °/s
Random walk/ Noise density	57 µg/√Hz	0.15 °/√hr
Bias in-run instability*	14 µg	7 °/h
VRE	50 µg/g ² RMS	1 °/h/g ² RMS
Alignment error	< 0.05 °	< 0.05 °
Bandwidth	390 Hz	133 Hz

* Allan Variance, @ 25 °C

Electrical Input voltage: A/E/N: 5 - 36 V
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Development kit with analysis software and magnetic calibration tool with library

Cables need for product functioning and connection

Technical specifications – G-1.4 Wind sensor

Power supply: 24 V DC

Power consumption: with maximum heating

Interface: RS-485 bus (I/O)

Wind speed:

Range - 0 to 116 KTS (0 to 60 m/s)

Resolution - 0.1 Knots

Accuracy - 0 to 68 KTS: ± 0.6 KTS or ± 3 %,

Wind direction:

Range - 0 to 360° continuously

Resolution – 1°

Accuracy - ± 3 % in relation to wind direction

Update interval: 1 second

Protection: IP66

Temperature: class approved for -25 to +55 °C

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Technical specifications – G-1.5 Trackball with integrated scroll wheel

Specifications:

Certificate of Conformity: Fully compliant with IEC60945

Sealing: IP68 or equivalent waterproof

Carrier plate: Stainless steel

Ball diameter: 50,8 mm (2")

Ball material: polyester

Dimensions: 116 x 130 x 50 mm

Weight: not more than 0,6 kg

Lifetime trackballs: ≥ 2 million ball revolutions

Lifetime scroll wheel: 1 million operations

Lifetime switches: 3 million operations

Tracking force: nom. 50 grams

Output: PS/2 & USB Combo or equivalent

Cable: 1 shielded, straight at least 1,6 m long ended by a USB type A plug or equivalent

Operating temperature: 0°C to +60°C

Storage temperature: -25°C to +80°C

CE:

Compliant to EMC Directive 89/336/EEC for Electromagnetic Compatibility.

No special device driver needed, use of standard available drivers of an operating system.

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