UAIS Installation Problems

1. I/O Interface Port Labeling
2. High Voltage Standing Wave Ratios(VSWR) with VHF Antennas
3. NMEA/IEC Version Hardware and Software Incompatibilities
4. ECDIS - UAIS Control Issues

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I/O Interface Port Labeling Is Not Common Between Manufacturers

	Pilot	MX 423	Debeg 3400	MX 531	FA-100	JHS-180	R4	AIS 100	L3	AIMs MIV
	Plug	Saab(R3)	Sailor 1900				Saab	Seatex	1)	Sailor 1800
		Conn.or Term. C	Connector 2	Connector 2	Junction Box	Conn. Box	R4 display	Conn. Box	L3 display	SK 014
Tx A	1	NMEA9 out (A)	Output (-)	PL OUT (-)	TD4A	Aux1-TxA	TxA	Pilot TD(A)	plug	PP TxA
Tx B	4	NMEA9 out (B)	Output (+)	PL OUT (+)	TD4B	Aux1-TxB	TxB	Pilot TD(B)	incorp.	PP TxB
Rx A	5	NMEA9 in (A)	Input (-)	PL IN (-)	RD4A	Aux1-RxA	RxA	Pilot RD(A)	in	PP RxA
Rx B	6	NMEA9 in (B)	Input (+)	PL IN (+)	RD4B	Aux1-RxB	RxB	Pilot RD(B)	frontpanel	PP RxB
Shield	9 (2)	Gnd	Gnd	Gnd	Gnd ISO	Gnd-ISO	Shield	Pilot C		Gnd

Shield - Should Only Be Connected To Transponder to Prevent Ground Loops

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Courtesy of Andre' Kik - Radio Holland USA

High Voltage Standing Wave Ratios(VSWR) with Most VHF Antennas

- Most Marine VHF Antennas are “Center-Tuned” for 156 MHz.
- UAIS Transmits at 161.975 MHz(AIS 1) and 162.025 Mhz(AIS 2)
- Marine Antenna Manufacturers Have Created New “AIS” VHF Antennas.

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VHF Antennas Designed for UAIS

- Digital Antenna –578-SW, 876-SW, or 974-SW
- Shakespeare – 396-1-AIS
- Comrod – AV6K or AV7
- Morad – 159-HD

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NMEA/IEC Version Hardware and Software Incompatibilities

- Interfacing External GPS, Gyrocompass and Rate-Of-Turn Equipment to a UAIS
- NMEA 0183 and IEC 61162-1/2 Standards History and Relationship
- Validation Fields and USCG Checksum Requirement

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Interfacing External GPS, Gyrocompass and Rate-Of-Turn Equipment to a UAIS

- Existing GPS equipment is designed for earlier versions of NMEA/IEC standards and backward compatibility has been ignored by some UAIS Manufacturers and eliminated by the USCG in some cases
- Existing Gyrocompass and ROT Equipment may not include a NMEA/IEC interface at all and many require adapter units
- IMO MSC. 112(73) GPS compliance testing was delayed causing market confusion and a lack of compliant GPS product

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NMEA 0183 and IEC 61162-1/2

- NMEA 0183 Version History
- NMEA 0183 and IEC Relationship
- Hardware Changes – Current Loop, RS232 and RS422/RS485
- UAIS Transponders Utilize Most Recent Versions

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Mode Indicator Fields and USCG "Checksum" Requirement

- Changes in "$xxRMC" String:

-Mode Indicator Field was added from 0183 Ver. 2.3 and IEC 61162-1 Ed. 2+

- Changes in of "$xxGGA" String from early 0183/61162-1 versions.

- 0183 Ver. 1.5/2.0 and 61161-1 Ed. 1: No Checksum was required.

-Checksums Were Added From 2.1+ and Edition 2+

- USCG T/A Process Forced Software Change to mandate Checksums, Removing Compatibility With Most Existing GPS and All Loran Receivers.

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ECDIS and External Control of UAIS Parameters

- USCG recently advised of a situation where an “Infinite Loop” occurred between an ECDIS and a UAIS Transponder.

- Resulting in over 381,000 UAIS Transmissions from a single UAIS Transponder over a 24 hour period.

- More than 10% of the total UAIS Channel Bandwidth was occupied by a single UAIS

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