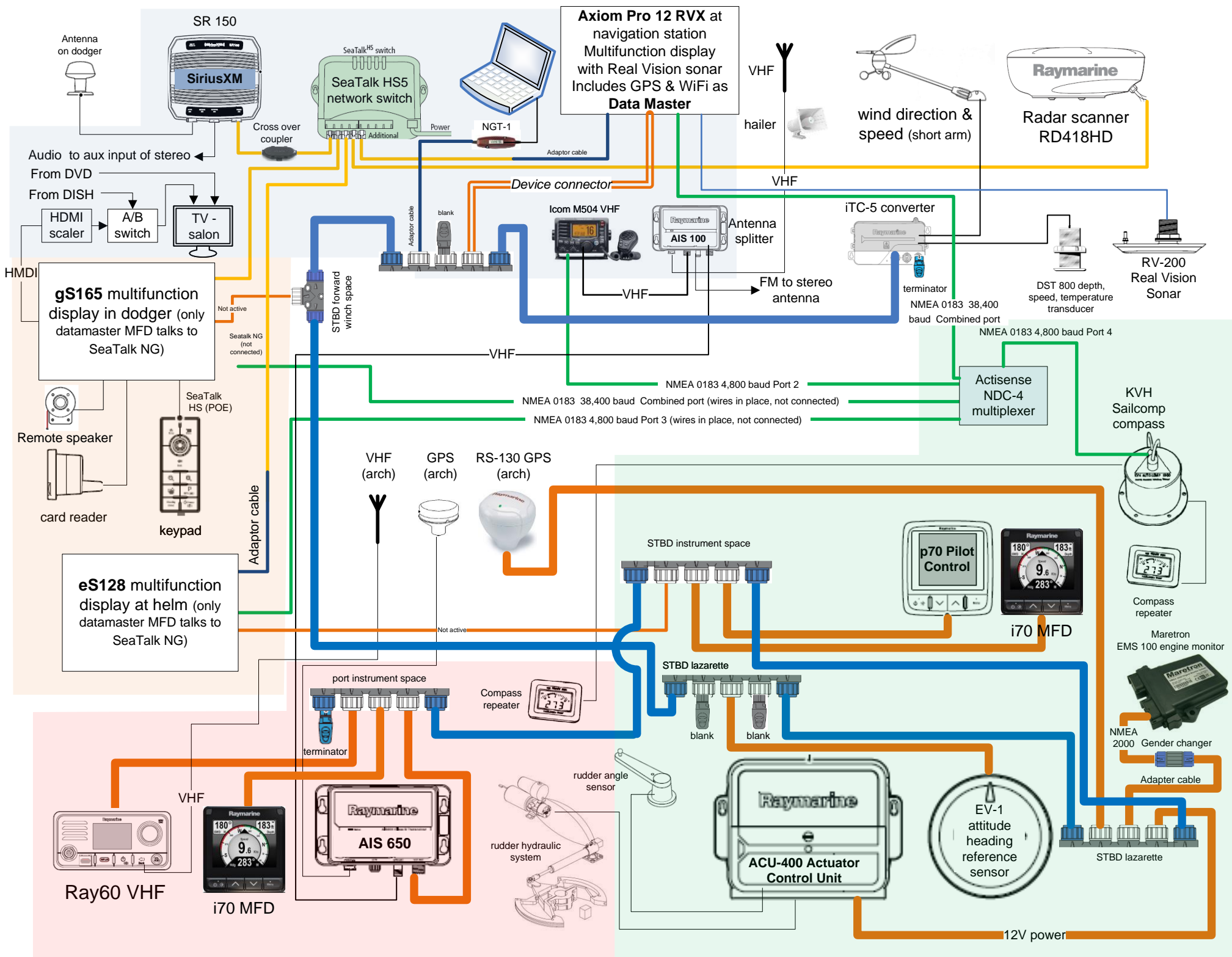
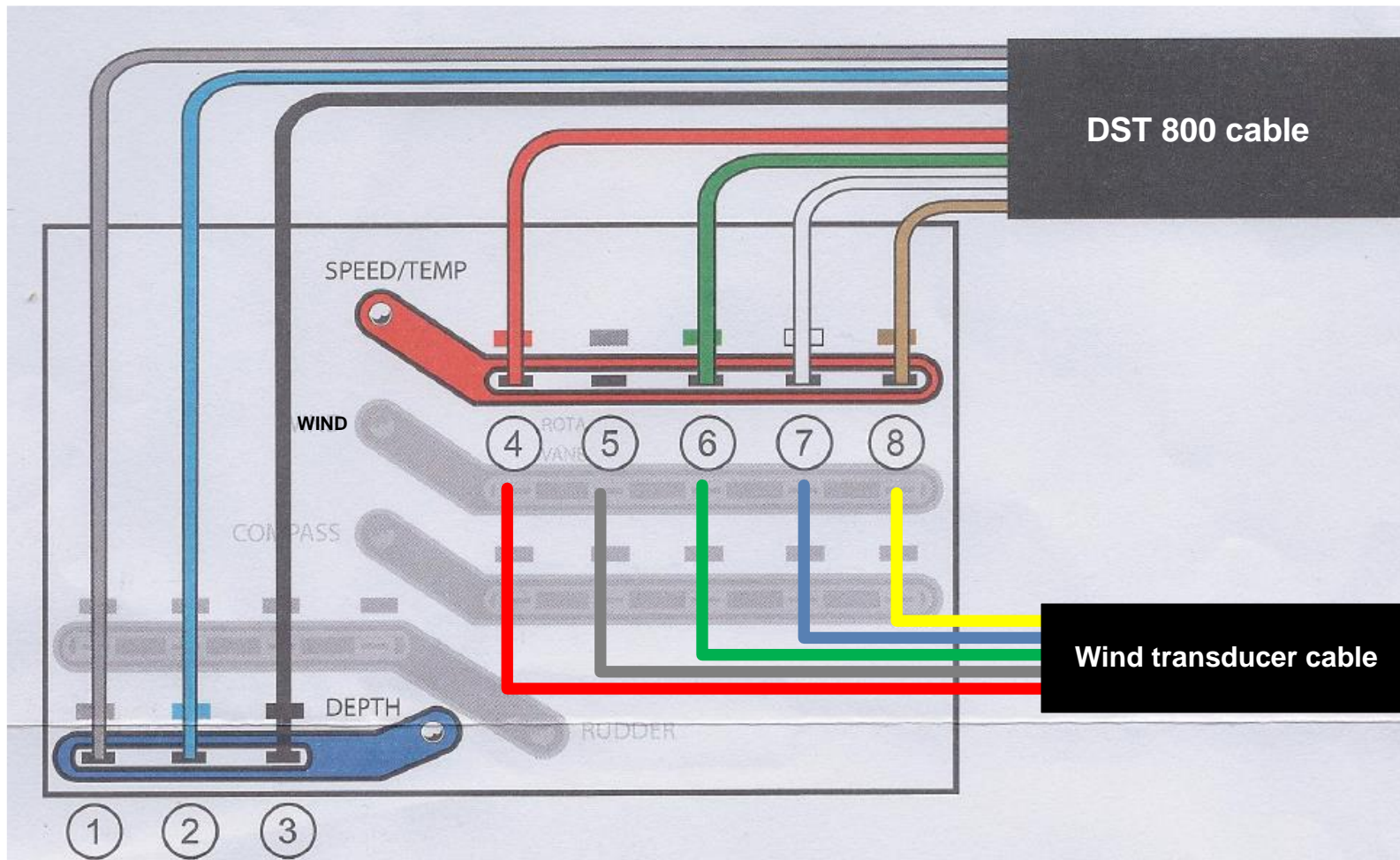


S/V Sunflower navigation system drawings and information

Wednesday, March 8, 2023

Revision number	date	comment
Original – Rev 4	various	Developed over several years, revisions were not tracked
Rev 5	May 1, 2011	Changed to NDC-4 multiplexer, added NMEA output from VHF, added details
Rev 6	September 25, 2014	Added new design for complete upgrade, modified for independent depth system
Rev 7	May 15, 2016	Major revision for the generation 3 Raymarine navigation system.
Rev 8	May 15, 2018	Updated HDMI configuration, changed system so AIS is split with Icom M504 VHF on masthead instead of split with Ray 60 VHF on arch antenna
Rev 9	November 4, 2018	Added wired wind speed/direction transducer and two i70 multifunction instruments at helms
		Replaced depth transducer with DST-800 smart depth/speed/temperature transducer.
		Removed ST60+ instruments and TackTick wind system. eS128 no longer connected to multiplexer
Rev 10	May 26, 2020	Added remote speaker for gS165
Rev 10	May 26, 2020	Removed DSM-300, & B744 transducer. Moved eS128 to Nav Station. Added new Axiom 12 RVX MFD & RV-200 transducer, added NMEA 2000 drop at Nav Station for laptop/Expedition
Rev 11	June 26, 2020	Moved eS128 back to helm & put Axiom 12 at nav station, added NMEA to Axiom & removed gS165 NMEA input from multiplexer.





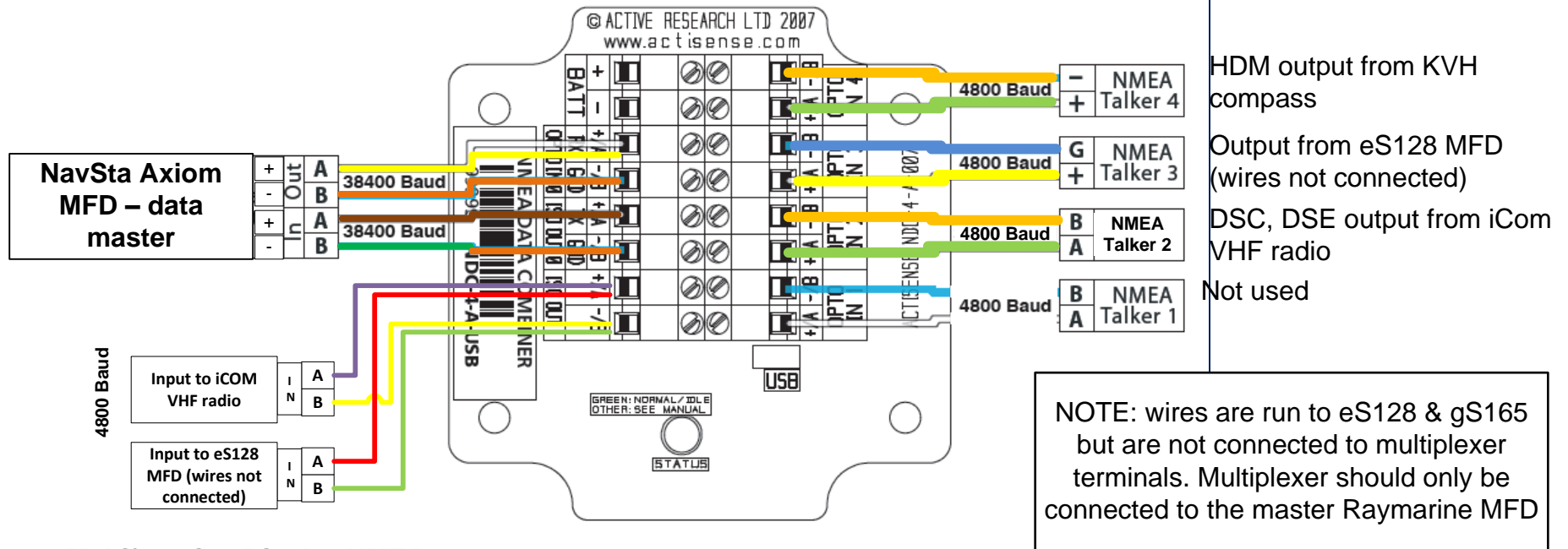
DST-800		
	Color	Signal
1	Screen	0V (shield)
2	Blue	Piezoceramic (+)
3	Black	Piezoceramic (-)
4	Red	Speed V+
5	Do NOT connect	
6	Green	Speed (signal)
7	White	Temperature (signal)
8	Brown	Temperature 0V

Wind transducer		
	Color	Signal
4	Red	Wind V+
5	Screen	Wind 0V (shield)
6	Green	Sine wind direction
7	Blue	Cosine wind direction
8	Yellow	Anemometer (signal)

Only one screen connection is required for the DST-800. This must be connected to the DEPTH terminal on the iTC-5. The screen terminal for SPEED/TEMP must remain disconnected.

Actisense NDC-4 multiplexer

Wednesday, March 8, 2023



Data Master Multifunction Display NMEA 0183 Output

- APB = Heading/Track Controller “Sentence B”
- BWC = bearing and distance to waypoint
- BWR = bearing and distance to waypoint – rhumbline
- DBT = depth below transducer
- DPT = heading deviation and variation
- GGA = GPS fix data
- GLL = geographic position, lat/long
- GSA = GPS DOP & active satellites
- GSV = GPS satellites in view
- MTW = water temp
- MWV = wind speed & angle
- RMB = recommended minimum navigation information
- RMC = recommended minimum specific GNSS data
- RSD = radar system data
- TTM = tracked target message
- VHW = water speed and heading
- VLW = distance traveled through the water
- VTG = course over ground and ground speed
- ZDA – time/date

VHF input:

RMC = minimum specific GNSS (Global Navigation – Satellite System) data (date/time, position, course, speed)

VHF output:

- DSC = Digital Selective Calling information sentence
- DSE = Distress Sentence Expansion

KVH compass output:

- HDM = Heading magnetic

To multiplexer then to data master MFD

NMEA connections

Wednesday, March 8, 2023

KVH SailComp compass NMEA 0183 ouput



(+) Green 

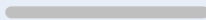

(-) Orange 


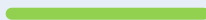
iCom VHF Radio At nav station

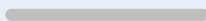

Radio wires

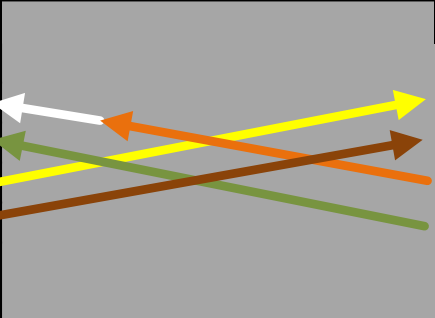
Cable wires

 NMEA IN (+) 

 NMEA IN (-) 

 White NMEA OUT (+) 

 NMEA OUT (-) 

Axiom Pro 12 MFD (at NavSta)				Actisense NDC-4 multiplexer				
wire color	port	in/out	pos/neg		wire color	port	in/out	pos/neg
white	1	input	positive		yellow	combined	input	positive
green		input	negative		brown	port	input	negative
yellow		output	positive		orange	38,400	output	postive
brown		output	negative		green	baud	output	negative
orange/white	2	not used						
orange/green								

Notes on the third generation (2016) navigation system

Wednesday, March 8, 2023

Notes on 2016 (Third Generation) navigation system:

(1) NMEA 0183 cable from gS165 MFD to multiplexer:

gS165	NMEA cable	
White	White	(+) input
Green	Green	(-) input
Yellow	Yellow	(+) output
Brown	Blue	(-) output

(2) NMEA 0183 cable from eS128 MFD to multiplexer

eS128	NMEA cable	
1 – white	Red	(+) input
2- green	Green	(-) input
3- yellow	Yellow	(+) output
4 - brown	Blue	(-) output

(3) The eS128 and gS165 have cables run to them (gS165 is connected, the eS128 is not) but these cables are NOT connected to the Actisense NDC-4 multiplexer. Only the master MFD is connected to the multiplexer

(4) SiriusXM receiver is powered from Navigation Instrument fuse block (Fuse Block 1) with a 5A fuse.

(5) The gS165 is powered from a 15A breaker on the main panel and has a 15A in line fuse in the stbd forward winch space.

(6) The Ray 60 VHF is powered from the same breaker as the ICOM VHF and has a 10 A inline fuse at the unit.

(7) The AIS 650 transceiver and AIS 100 splitter are powered from the navigation instrument distribution in the starboard helm (which is in turn powered from a 10 amp fuse in the navigation instrument fuse panel, which is in turn powered from a 15A breaker.

(8) depth offset for the RV-200 sounder is 4 feet

(9) radar bearing offset is 0 degrees

(10) The autopilot is set of a type 2 hydraulic linear drive