IRELAND SERVICE TRAINING

ECI-100 & Engine Interfacing

15th January 2020

VERSION – ECI-100 & Engine Interfacing - 13012020

ECI-100
Universal Engine & Control Interface
(July 2018)

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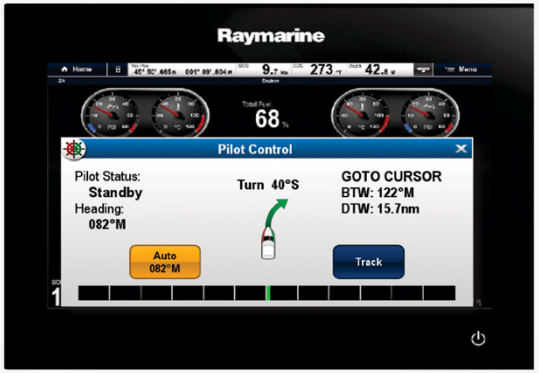
ECI-100 Key Features

- Used as Drive by Wire Engine Gateway (Volvo etc.)
- Supports NMEA2000 & J1939 to display Engine data
- Converts J1939 to NMEA2000
- Opto. Isolates STNG/NMEA2000 and engine CAN BUS networks
- Fuel flow Rate Management
- Power isolated Engine and Seatalk NG bus
- Diagnostic sign-of-life LEDs for each port
- Compact unit for mounting in tight locations
- Compatible with Raymarine's latest MFDs:
  - aSeries
  - cSeries
  - eSeries
  - gS Series

  Running LightHouse v8 or later



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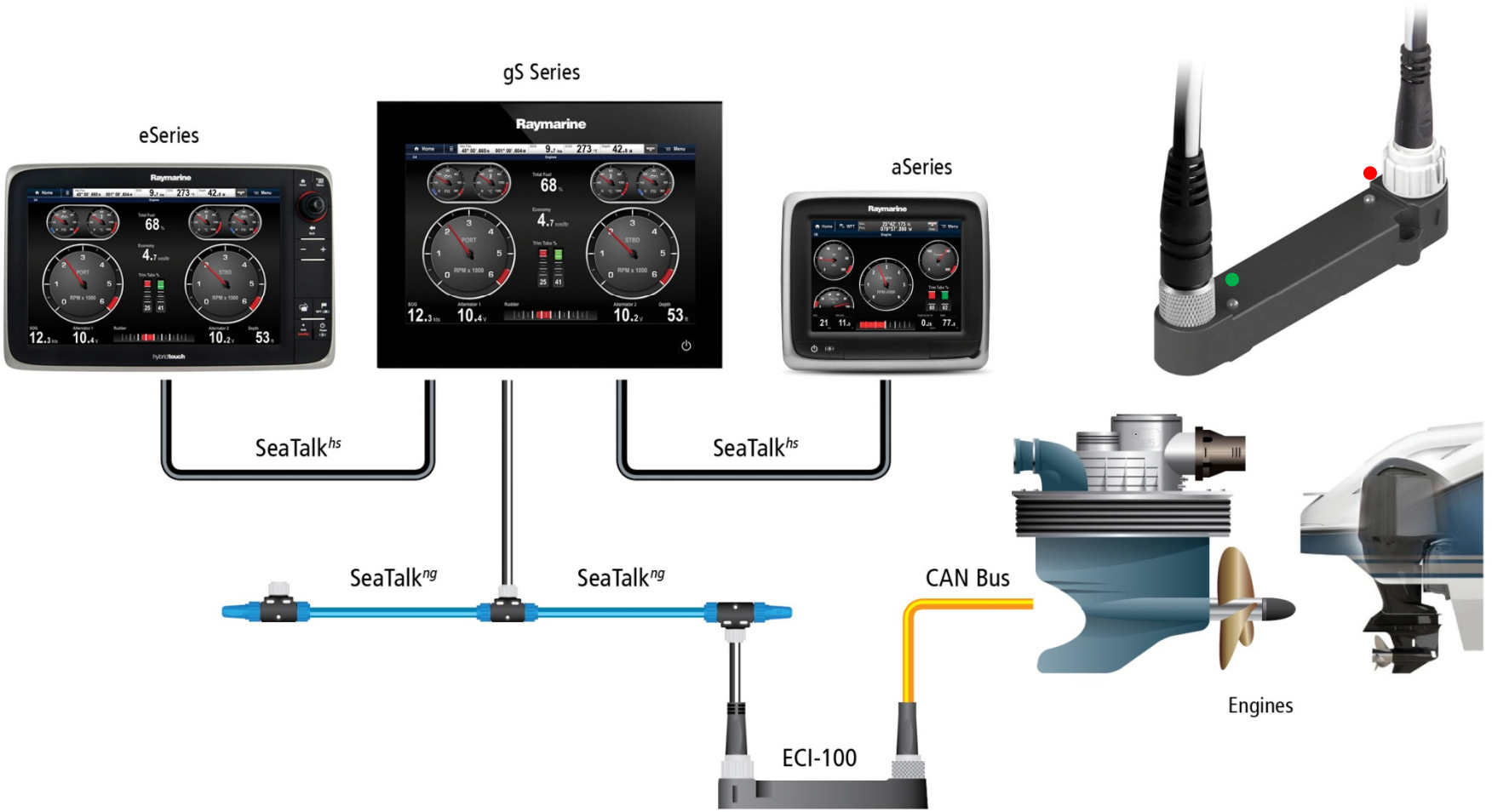
ECI-100 System Diagram



ECI-100 Engine and Control Interface (ECI) System Diagram

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ECI-100 – Product Specification

Power specification

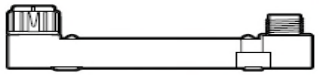
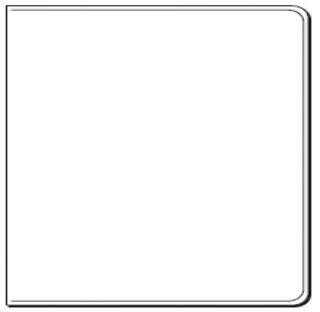
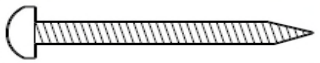
	SeaTalkng	Engine CAN bus (DeviceNet)
Nominal supply voltage	12 V dc	12 to 24 V dc
Operating voltage range	10.8 V to 16 V dc	10.8 V dc to 31.2 V dc

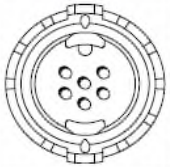
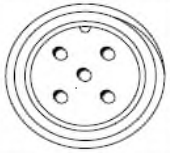
	SeaTalkng	Engine CAN bus (DeviceNet)
Current	12 mA	• 12V — 12.5 mA • 24V — 11 mA
Load Equivalency Number (LEN)	1	N/A

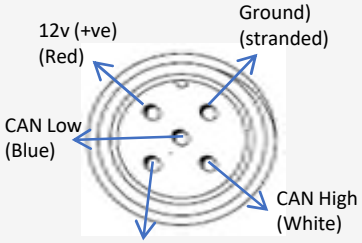
CAN Address - 205

Parts supplied

The following items are supplied with your product.

Item	Description	Quantity
	ECI–100 (Engine & Control Interface)	1
	DeviceNet connector dust cap	1
	400 mm (1.3 ft) SeaTalkng spur cable (A06038)	1
	Document pack	1
	Mounting screws	2

Connector	Connector	Connects to:	Suitable cables
	SeaTalkng	SeaTalkng using the supplied spur cable.	SeaTalkng spur cables. Refer to Chapter 9 Spares and accessories.
	DeviceNet	Engine CAN bus.	Engine specific DeviceNet adaptor cable. Refer to Chapter 9 Spares and accessories.



DeviceNet Plug

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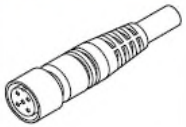
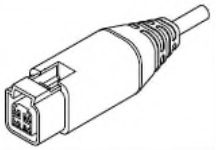
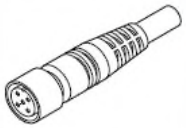
ECI-100 & Cables – Ordering information

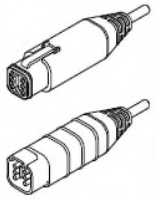
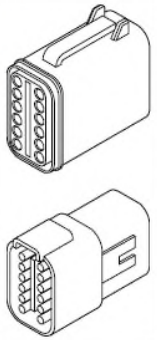
E70227 - ECI-100 Engine & Control Interface

Optional engine specific cable kits simplify installation

E70240 – Volvo EVC Link cable (1m)
E70241 – Volvo EVC “Y” loom
E70242 – Yamaha Command Link+ cable
E70305 – Caterpillar Gauge Y cable
E70260 – DeviceNet male to female cable (2m)

Engine specific adaptor cables

Description	Engine connector	ECI connector	Part number
Volvo EVC link cable – 1 m (3.3 ft)			E70240
Yamaha Command Link Plus cable – 1 m (3.3 ft)			E70242

Y-- Cables Description	Engine connectors	Adaptor cable / ECI-100 connector	Part number
Volvo Y-Loom cable – 1 m (3.3 ft) / 500 mm (1.5 ft)			E70241
Caterpiller Y-Loom cable – 1 m (3.3 ft) / 500 mm (1.5 ft)			E70305

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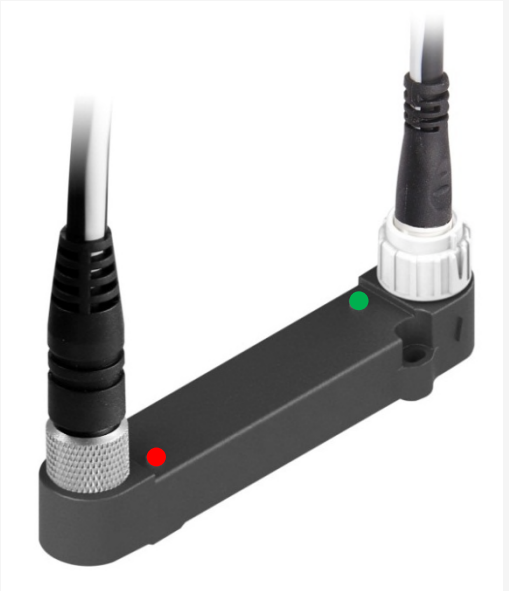
ECI-100 Supported Data

- ECI-100 identifies parameters including:
  - Engine speed
  - Engine oil temperature
  - Engine temperature
  - Engine oil pressure
  - Engine coolant pressure
  - Engine fuel rate
  - Boost pressure
  - Battery potential
  - Trip fuel used (calculated by ECI-100)
  - VIN (not shown on the display)
  - Software number (not shown on the display)
  - Transmission oil pressure
  - Transmission oil temperature
  - Total engine hours
  - Fuel tank level
  - Alternator potential
  - Engine torque
  - Engine percent load
  - Transmission gear



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ECI-100 – Data parameters supported

SUPPORTED J1939 to NMEA2000 BRIDGED DATA PGN's			
J1939	**to**	**NMEA2000 / STNG**	**ENGINE PARAMETER**
61443		127489	% Load
61444		127488	RPM
65203 / 65266		127489	Fuel Rate
65226		127489	Alarms
65253		127489	Engine Hours
65262		127489	Oil & Coolant Temperature
65263		127489	Oil / Coolant / Fuel Delivery Pressure
65270		127488	Boost
65271		127489	Alternator Voltage
65272		127493	Transmission Oil Temp. & Pressure & Gear
65276		127505	Tank Levels

SUPPORTED NMEA2000 to NMEA2000 BRIDGED DATA PGN's			
NMEA2000	**to**	**NMEA2000 / STNG**	**ENGINE PARAMETER**
127488		127488	Engine RPM, Tilt & Boost
127489		127489	Oil Temp & Pressure. Hours, Alternator, Fuel Rate, Coolant Pressure, Fuel Pressure Alarms, Load & Torque
127493		127493	Transmission Oil Temp and Pressure & Alarms & Gear
127497		127497	Trip Fuel Used, Fuel Rate
127505		127505	Tank Levels
65300		127489	Yanmar Proprietary data

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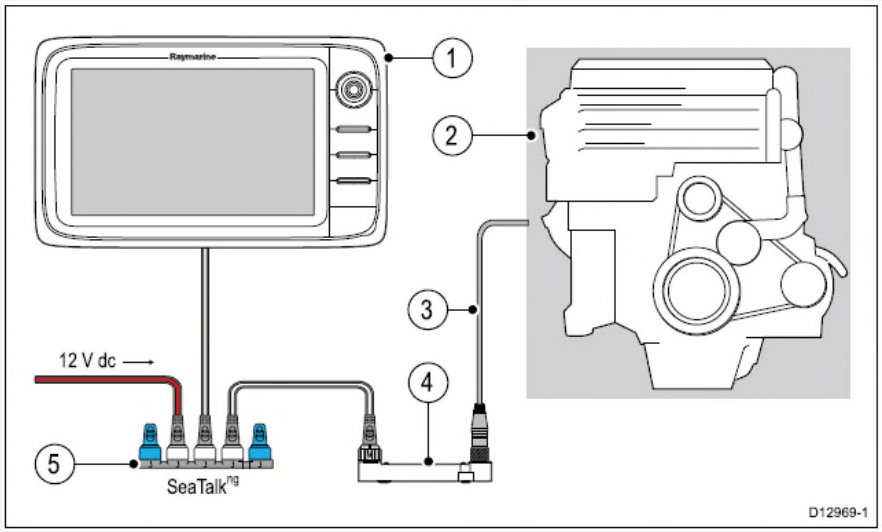
Typical systems

Single ECI-100 for single or multiple engine where one CAN bus is used:

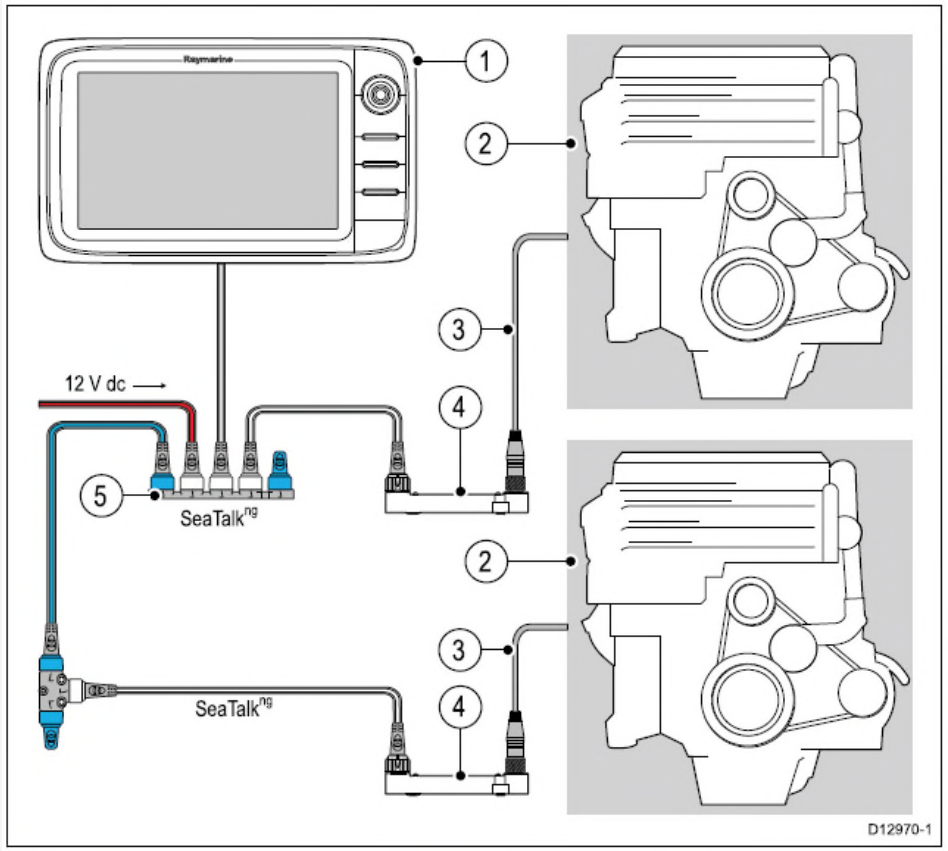
- Volvo EVC
- Yamaha
- Suzuki



Either system can support NMEA2000

ECI-100 for each engine for systems with dedicated CAN bus systems for each Engine:

- CAT / MAN/ MTU (J1939) etc.
- CAT – Connects to 6 pin Display port



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Planning Installation & Important Notes

- Confirm Engine Type & Compatibility
- Confirm number of Engines
- Confirm Engine CAN data type (NMEA2000 or J1930)
- Confirm if Engines run on one bus - (One or multiple ECI-100 required?)
- Confirm Alarms supported & required. (ECI-100 supports proprietary alarms)
- Confirm Engine data supported & required
- Disconnect any other Engine Gateways
- ECI-100 must be powered from both sides (engine/STNG)
- ECI-100 may not be required if Engines run on NMEA2000
- ECI-100 will not be required if other manufacturers Gateway are used
- ECI-100 will only pass through Engine data (Does not bridge GPS data etc.)
- ECI-100 will provide more accurate fuel used and remaining data

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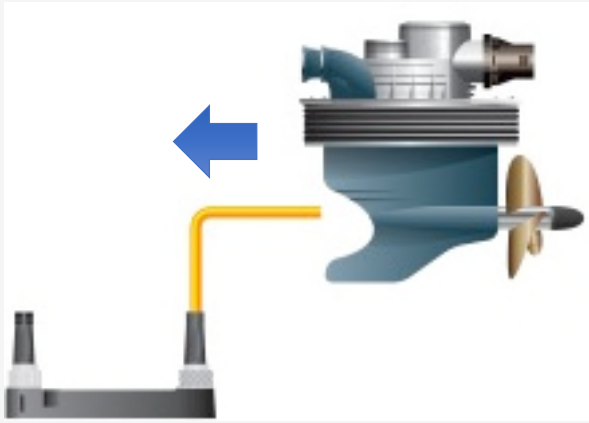
J1939 & NMEA2000 Engine Data PGNs Received by ECI-100

Engine Parameter	Received from engine bus		Transmitted (ECI-100 to SeaTalk^{ng}® bus)
	J1939	NMEA 2000	NMEA 2000
Engine Speed	61444	127488	127488
Engine Hours (run time)	65253	127489	127489
Engine Oil Temperature	65262	127489	127489
Engine Coolant Temperature	65262	127489	127489
Engine Oil Pressure	65263	127489	127489
Engine Coolant Pressure	65263	127489	127489
Engine Fuel Delivery Pressure	65263	127489	127489

Engine Parameter	Received from engine bus		Transmitted (ECI-100 to SeaTalk^{ng}® bus)
	J1939	NMEA 2000	NMEA 2000
Engine Fuel Rate	65266	127489	127489
Engine Boost Pressure	65270	127488	127488
Battery Voltage (Alternator potential)	65271	127489 / 127508	127489 / 127508
Transmis-sion Oil Pressure	65272	127493	127493
Transmis-sion Oil Tem-perature	65272	127493	127493
Fuel Tank Level	65276	127505	127505
Vehicle Direc-tion/Speed	65256	127250	127250
Power Trim Position	65373	127488	127488
Throttle Position Sensor		127489	127489
Engine Percent Load	61443	127489	127489
Transmis-sion Gear	61445	127493	127493

Engine Parameter	Received from engine bus		Transmitted (ECI-100 to SeaTalk^{ng}® bus)
	J1939	NMEA 2000	NMEA 2000
Rudder Position		127245	127245
Speed		128259	128259
Depth		128267	128267
Water Temperature		130310	130310
COG/SOG		129026 / 129029	129026 / 129029



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ECI-100 – Engine Alarms support

- NMEA2000 standard engine alarms.
- J1939 Engines use proprietary Alarms & may not be supported - unless tested by Raymarine!

SUPPORTED NMEA2000 & J1939 ALARMS			
	NMEA2000 ALARMS SUPPORTED:		J1939 ALARMS SUPPORTED:
	Over Temperature,		High Coolant Temperature Warning
	Over Temperature		Engine Oil Temperature High
	Low Oil Pressure,		Low Oil Pressure Warning
	Low Oil Level,		Low Oil Level Warning
	Low Fuel Pressure,		Low Fuel Pressure Warning
	Low System Voltage		System Voltage Below Normal
	Low System Voltage		Battery Voltage Below Normal
	Low Coolant Level,		Low Coolant Level Warning
	High Boost Pressure,		Very High Boost Pressure
	Rev Limit Exceeded,		Engine Over speed Warning
	Over Temperature,		High Transmission Oil Temperature Warning
	Low Oil Pressure,		Low Transmission Oil Pressure Warning
	Water in Fuel		Water in Fuel Indicator
	Charge Indicator		Charging System Error
	Low Fuel Pressure		Rail Pressure Low
	Throttle Position Sensor		Accelerator Pedal Position Failure (Throttle 1)
	Sub or Secondary Throttle		Accelerator Pedal Position Failure (Throttle 2)
	Check Engine		High Fuel Temperature
	Preheat Indicator		
	EGR System		TRANSMISSION ALARMS:
	Engine Emergency Stop Mode		Check Transmission
	Warning Level 1		Over Temperature
	Warning Level 2		Low Oil Pressure
	Power Reduction		Low Oil Level
	Maintenance Needed		Sail Drive
	Engine Comm. Error		
	Neutral Start Protect		
	Engine Shutting Down		

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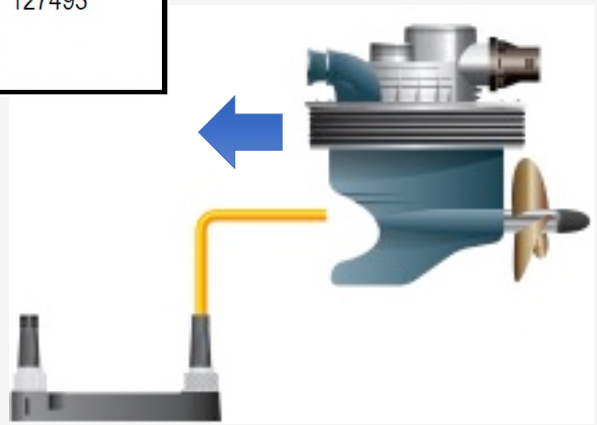
J1939 & NMEA2000 Engine Alarm PGNs Received

Alarms

Engine Parameter	Received from engine bus		Transmitted (ECI-100 to SeaTalkng® bus)
	J1939	NMEA 2000	NMEA 2000
High Coolant Temperature	65226	127489	127489
Low Oil Pressure	65226	127489	127489
Low Oil Level	65226	127489	127489
Low Battery Voltage	65226	127489	127489
Low Coolant Level	65226	127489	127489
Water in Fuel		127489	127489
Check engine		127489	127489

Engine Parameter	Received from engine bus		Transmitted (ECI-100 to SeaTalkng® bus)
	J1939	NMEA 2000	NMEA 2000
Low Fuel Pressure	65226	127489	127489
Engine over speed (Over Revving)	65226	127489	127489
High Boost Pressure	65226	127489	127489
High Trans-mission Oil Temperature	65226	127493	127493
Low Trans-mission Oil Pressure	65226	127493	127493



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Appendix B NMEA 2000 PGN support

PGN	Description	Transmit	Receive
59392	ISO Acknowledgment	•	•
59904	ISO Request	•	•
60928	ISO Address Claim	•	•
126208	NMEA - Request group function	•	•
126464	Receive/Transmit PGN's group function	•	•
126992	System Time	•	•
126996	Product Information	•	•
127237	Heading/Track Control		•
127245	Rudder		•
127250	Vessel Heading	•	•
127488	Engine Parameters, Rapid Update		•
127489	Engine Parameters, Dynamic		•
127493	Transmission Parameters, Dynamic		•
127496	Trip Parameters, Vessel		•
127497	Trip Parameters, Engine		•
127498	Engine Parameters, Static		•
127505	Fluid Level		•
128259	Speed	•	•
128267	Water Depth	•	•
128275	Distance Log	•	•
129025	Position, Rapid Update	•	•
129026	COG & SOG, Rapid Update	•	•
129029	GNSS Position Data	•	•
129033	Time & Date	•	•
129038	AIS Class A Position Report		•
129039	AIS Class B Position Report		•
129040	AIS Class B Extended Position Report		•
129041	AIS Aids to Navigation (AtoN) Report		•
129044	Datum	•	•
129283	Cross Track Error	•	•
129284	Navigation Data	•	•
129291	Set & Drift, Rapid Update	•	•
129301	Time to/from Mark		•
129539	GNSS DOPs		•
129540	GNSS Sats in View	•	•
129545	GNSS RAIM Output		•
129550	GNSS Differential Correction Receiver Interface		•
129551	GNSS Differential Correction Receiver Signal		•
129793	AIS UTC and Date Report		•
129794	AIS Class A Static and Voyage Related Data		•
129801	AIS Addressed Safety Related Message		•

NMEA2000 PGN supported by MFD (Axiom)

PGN	Description	Transmit	Receive
129802	AIS Safety Related Broadcast Message		•
129809	AIS Class B "CS" Static Report, Part A		•
129810	AIS Class B		•
130306	Wind Data	•	•
130310	Environmental Parameters	•	•
130311	Environmental Parameters		•
130576	Small Craft Status		•
130577	Direction Data	•	•
130578	Vessel Speed Components		•

Raymarine® provides field programmability of the Device and System Instances within PGN 60928 which can be commanded via use of PGN 126208 as required by the latest **NMEA 2000** standard.

Engine & Fuel PGN – Data Content

127488

- Engine Instance
- Eng. Speed
- Eng. Boost pressure
- Eng. Tilt / Trim

127489

- Engine Instance
- Eng. Oil pressure
- Eng. Oil temp
- Engine temp
- Alternator Potential
- Fuel rate
- Total Eng. Hours
- Engine coolant pressure
- Fuel pressure
- Percent Eng. Torque
- Percent Eng. Load

127496

- Time to Empty
- Distance to Empty
- Estimated fuel remaining
- Trip run time

127497

- Engine instance
- Trip fuel used
- Fuel rate average
- Fuel rate economy
- Instantaneous fuel economy

127498

- Engine instance
- Rated Engine speed
- VIN
- Software ID

127505

- Fuel Tank Level

Data type	Data item	Notes
Engine	• ECO Mode • Transmission Oil Temperature • Transmission Oil Pressure • Fuel Pressure • Average Fuel Rate • Instantaneous Fuel Economy • Engine Fuel Rate • Engine Tilt • Engine Hours • Engine Load • Coolant Temperature • Coolant Pressure • Alternator • Oil Pressure • Oil Temperature • Boost Pressure • RPM (Revolutions Per Minute) • RPM Engine Hours	Data items available for up to 5 engines.
Fuel	For tanks 1 to 5: • Fuel Economy • Fuel Rate (Total) • TTE (Time To Empty) • DTE (Distance To Empty) • Est. Fuel Level • Season Fuel • Total Trip Fuel • Trip Fuel • Est. Fuel • Fuel Level For **All tanks**: • Engine economy total • Fuel flow total • Time to empty • Distance to empty • Fuel used (season) • Fuel used (trip) • Est. fuel remaining	Data items available for up to 5 fuel tanks. An 'All tanks' category is also available which combines data from all fuel tanks.

NMEA2000 (Engine & Fuel) Data Items displayed on MFD (Axiom)

PGN Requirements for Fuel Manager (MFD & i70s)

NMEA2000 Engine / Fuel PGN's

127488
- Engine Instance
- Eng. Speed
- Eng. Boost pressure
- Eng. Tilt / Trim

127489
- Engine Instance
- Eng. Oil pressure
- Eng. Oil temp
- Engine temp
- Alternator Potential
- Fuel rate
- Total Eng. Hours
- Engine coolant pressure
- Fuel pressure
- Percent Eng. Torque
- Percent Eng. Load

127496
- Time to Empty
- Distance to Empty
- Estimated fuel remaining
- Trip run time

127497
- Engine instance
- Trip fuel used
- Fuel rate average
- Fuel rate economy
- Instantaneous fuel economy

127498
- Engine instance
- Rated Engine speed
- VIN
- Software ID

127505
- Fuel Tank Level

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Fundamental NMEA2000 Data required:
- **PGN127489 (Must have Fuel Flow Rate)**

If PGN (127496) received from NMEA2000
- Time to Empty
- Distance to Empty
- Estimated fuel remaining
- Trip run time

❖ All Fuel Management data available (No MFD calculation required)
❖ ECI-100 may not be required
❖ Turn Off Fuel Manager on MFD

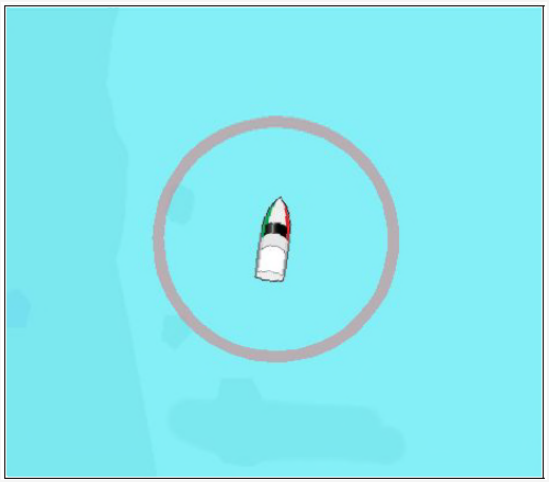
If PGN (127497) received from NMEA2000
- Engine instance
- Trip fuel used
- Fuel rate average
- Fuel rate economy
- Instantaneous fuel economy

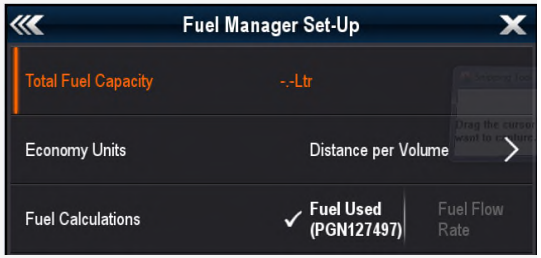
❖ All data available for MFD to calculate
❖ ECI-100 required to accumulate & store Trip Fuel for multiple engines
❖ Set Fuel Manger on MFD to (127497)

If (127489) only received from NMEA2000
- Fuel Rate – etc.

❖ SOG & Fuel Rate must be available
❖ ECI-100 Calculates (PGN 127497) & records Accumulated Fuel TRIP used
❖ Set Fuel Manager on MFD to (Fuel Flow Rate)

ECI-100 – Fuel Rate (Trip recording)





To display Fuel Management Data (TTE, DTE, Economy & Range Ring etc. on MFD:

- Fundamental Data required from NMEA2000:
  - Engine Fuel Flow Rate (127489) & SOG – (ECI will calculate & store Accumulated Fuel Trip)
- If (PGN 127496) received – (Fuel management data)
  - Turn off Fuel Manager on MFD (uses data direct from vessel Fuel system)
- If (PGN 127497) received – (Accumulated (Trip) Fuel Used total)
  - Turn On Full Manager on MFD & Set Fuel Calculations to (127497)
  - ECI-100 used to records & Accumulated Fuel TRIP used for multiple engines
- If (PGN 127489 – Fuel Rate) only received
  - Turn On Full Manager on MFD & Set Fuel Calculations to (Fuel Flow Rate) – MFD must remain on!
  - ECI-100 Calculates (PGN 127497) & records Accumulated Fuel TRIP used

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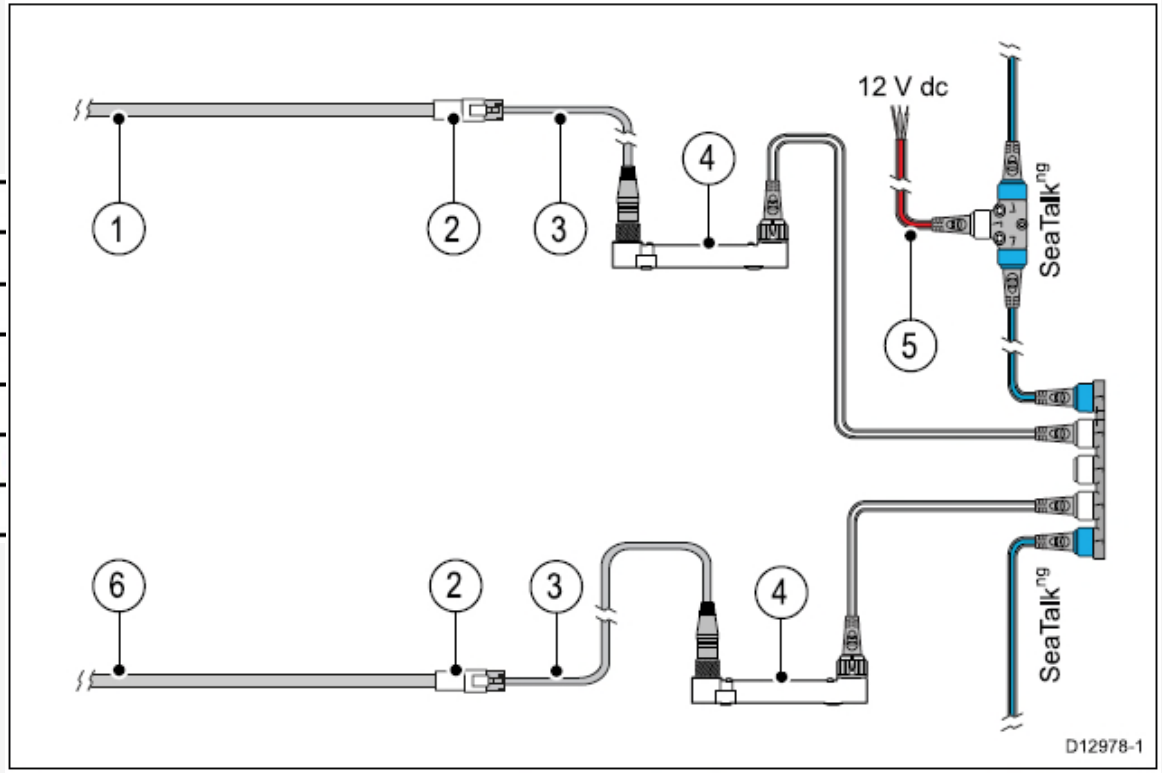
Example – Dedicated CAN bus for each Engine

- Example Engines:
- CAT, MAN, MTU etc

Item	Description
1	Engine 1 CAN bus
2	Trailing lead
3	Engine specific adaptor cable.
4	ECI–100
5	SeaTalk^{ng} network power supply (12 V dc)
6	Engine 2 CAN bus



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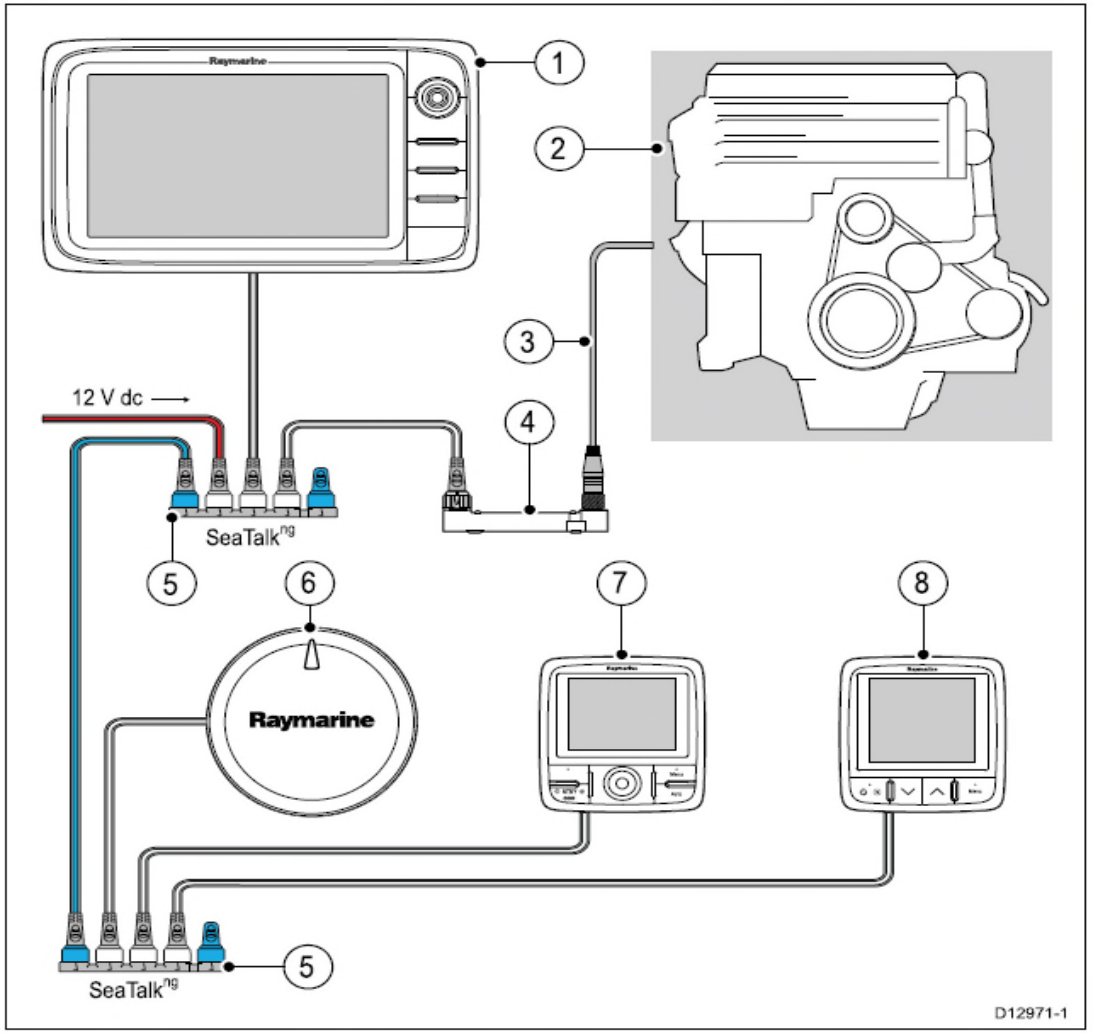
Engine data & Steering Control

- Example - Volvo IPS & Aquamatic Sterndrive (Joystick)
- Requires one ECI-100 & EV-2
- Relevant cable or Y loom



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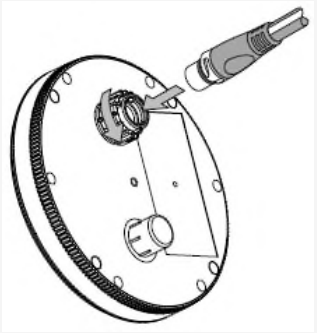
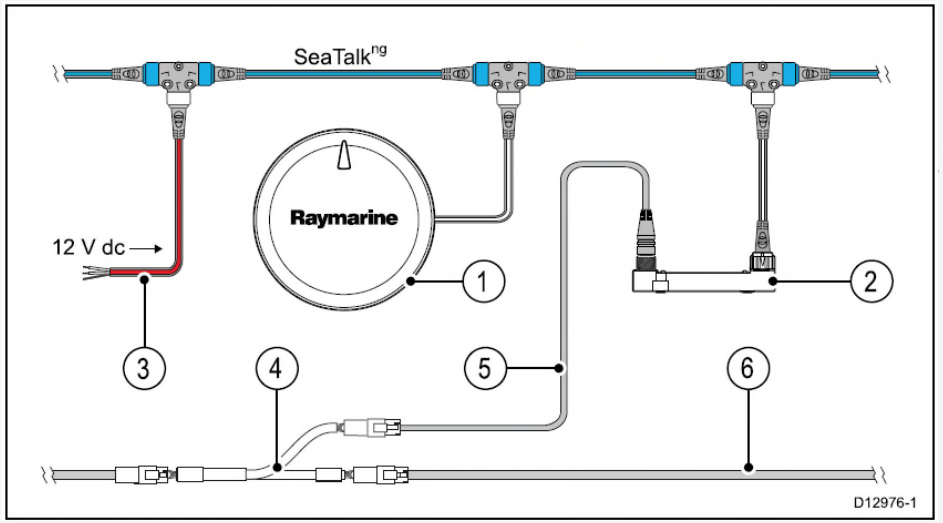
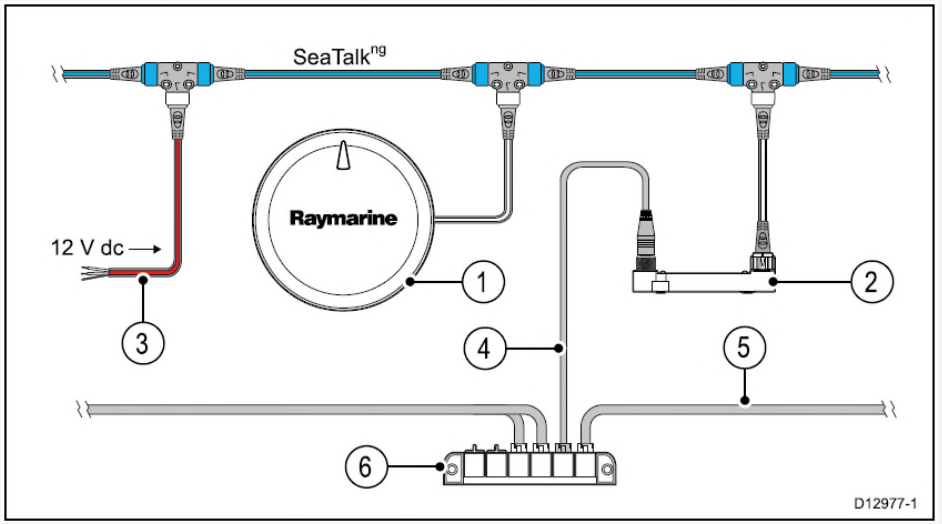
ECI-100 (DBY) Pilot System

Single or Multi Engine CAN bus Connections:

- Volvo & Yamaha use (1) ECI-100
- Connection via “Y” loom (earlier Volvo systems)
- or Preferred via the (yellow) Multi link hub*
- This will allow Pilot Control & Engine Data







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Engine Support

- Compatibility with other J1939 & NMEA2000

  Full Engines support will follow after launch

EVINRUDE E-TEC

YANMAR marine

HONDA MARINE

TOHATSU Outboards

STEYRMOTORS INNOVATION WITH LIGHTNESS

MERCURY

SUZUKI MARINE

Cummins

mtu

MAN

VOLVO PENTA

CATERPILLAR

YAMAHA

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Engine Connection & Compatibility status

Engine	Compatibility Status	ECI-100 Software	Data bus	Cables (Raymarine / Engine)	ECI-100 Requirement	Alarms Supported & Notes.
Volvo (engine data)	Yes/released	v1.01 v1.07 v1.12	EVC	Volvo Link cable - E70240 Use Y cable for EVC C Volvo Y cable – E70241	1 required connected to multilink hub. Or Y cable into EVC loom	Over temperature Low oil pressure Low oil level Low system voltage Low coolant level Water in fuel
Volvo IPS / D4 Aquamatic (Joystick steering) (EVC-C to E)	Yes/released (Evolution DBW supported)	v1.01 v1.07 v1.12	EVC (C, D & E)	Volvo Link cable – E70240 Use Y cable for EVC C Volvo Y cable – E70241	1 required connected to multilink hub. Or Y cable into EVC loom	
Volvo IPS / IO / Inboard EVC-E3	Flybridge Rudd fault! Evo works but needs Reactor Pilot for full Joystick steering!	v1.20	EVC-E3	Volvo Link cable (E70240)	1 required connected to Multilink hub. Min Volvo 10" display required for Alarm support	Most Alarms supported but limp home and station etc not supported!
Yamaha (command link)	Yes/released (Engine data supported)	v1.12	NMEA2000 / J1939	Yamaha Link cable - E70242	1 required to multilink hub	All Alarms supported
Yamaha (command link plus)	Yes/released (Engine data supported)	v1.12	NMEA2000	Yamaha Link cable – E70242	1 required to multilink hub	
Yamaha (helm master)	Yes/released (Evolution DBW)	v1.12	NMEA2000	Yamaha Link cable – E70242	1 required to multilink hub	
Yanmar (engine data)	Yes/released Support for Proprietary Alarms required!	v1.20	NMEA2000	DeviceNet (m to f) (E70260)	1 required into DeviceNet NMEA2000 network only	All standard J1939 Alarms supported Proprietary not!
Yanmar (Pilot control – JC10)	Functions ok. But not supported because delay in entering Auto!	v1.12	J1939 NMEA2000 via Yanmar Interface	DeviceNet (m to f) (E70260) Yanmar Pilot cable & key	Not required	
Honda	Yes/released	v1.12	NMEA2000	DeviceNet(m) to STNG (E06046) Honda cable (06653-ZZ3-760HE)	1 required for each engine unless linked on N2K ECO mode not supported via ECI (V1.12)	All NMEA2000 Alarms supported
Caterpillar	Released Aug 2015	v1.20	J1939	Y cable (E70305) (DeviceNet to 12way Deutsch Y cable)	1 for each engine	All standard NMEA2000 & J1939 Alarms supported
Nanni	Under Test	v1.20	J1939	New power/data cable	1 for each engine	
Evinrude	NMEA2000 Standard Data & Alarms supported but not tested!	v1.20	NMEA2000?	Deutsch to DeviceNet?	?	
Suzuki		v1.20	NMEA2000	DeviceNet(m) to STNG (E06046) Suzuki cable (990CO88136000) (990CO88147000)	ECI-100 not necessary! 1 for each engine unless linked on NMEA2000	All standard NMEA2000 Alarms supported.
MTU (SmartLine)	Not Tested! Standard data & Alarms ok	v1.20	J1939	DeviceNet & MTU Y cable required	1 for each engine	MAN, Interface box converts from J1939
MTU (BVNG)	Not compatible Data request not supported.	?	J1939	Cable required!	1 for each engine	Data requests not supported
Man	Not Tested! Standard data & Alarms supported	v1.20	J1939	Man interface box's required to convert to J1939. (Deutsch/DeviceNet)	1 for each engine	Not all Alarms supported! MAN Alarm Panel may be required.
Cummins / Mercury	Not Tested! Data supported directly!	v1.20	SmartCraft (NMEA2000)	Mercury gateway required converts SmartCraft data to NMEA2000	Vessel View Gateway required. ECI not necessary but can be used	
Steyr	Not Tested	?	J1939			

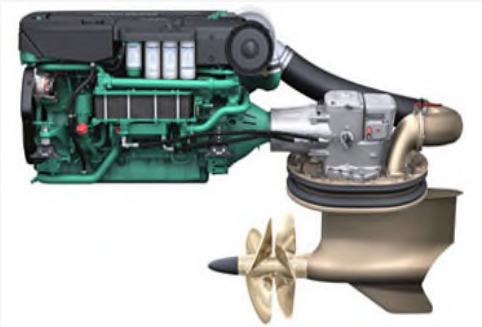
Volvo Engine Compatibility

The ECI-100 is compatible with the following Volvo Penta EVC systems:

- ✓ EVC-C
- ✓ EVC-D
- ✓ EVC-E

Engine data and Autopilot steering interface

- ✓ D3 Aquamatic
- ✓ D4 Aquamatic
- ✓ D6 Aquamatic
- ✓ V6 Aquamatic
- ✓ V8 Aquamatic
- ✓ IPS350
- ✓ IPS400
- ✓ IPS450
- ✓ IPS500
- ✓ IPS550G
- ✓ IPS600
- ✓ IPS800
- ✓ IPS900
- ✓ IPS1050
- ✓ IPS1200



Engine data only (diesel engines which are EVC-equipped as standard)

- ✓ D3
- ✓ D4
- ✓ D6
- ✓ D9
- ✓ D11
- ✓ D12
- ✓ D13

Engine data only (only if the optional EVC system is specified

- ✓ V6 Gasoline Stern Drive
- ✓ V8 Gasoline Stern Drive
- ✓ D1 Sail Drive
- ✓ D2 Sail Drive
- ✓ D3 Sail Drive
- ✓ D4-180 Sail Drive

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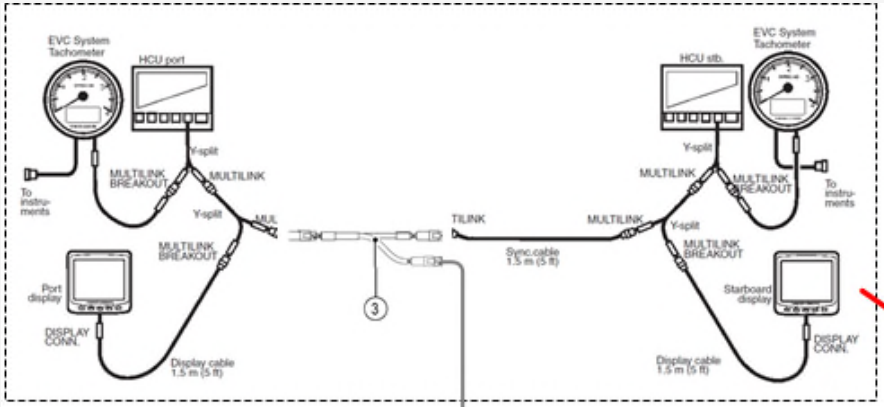
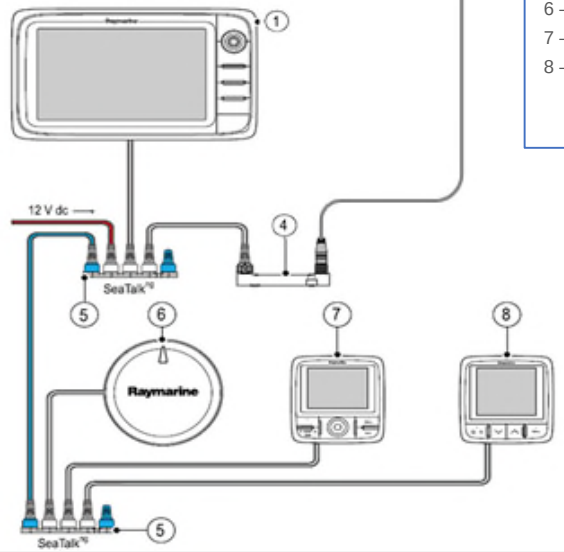
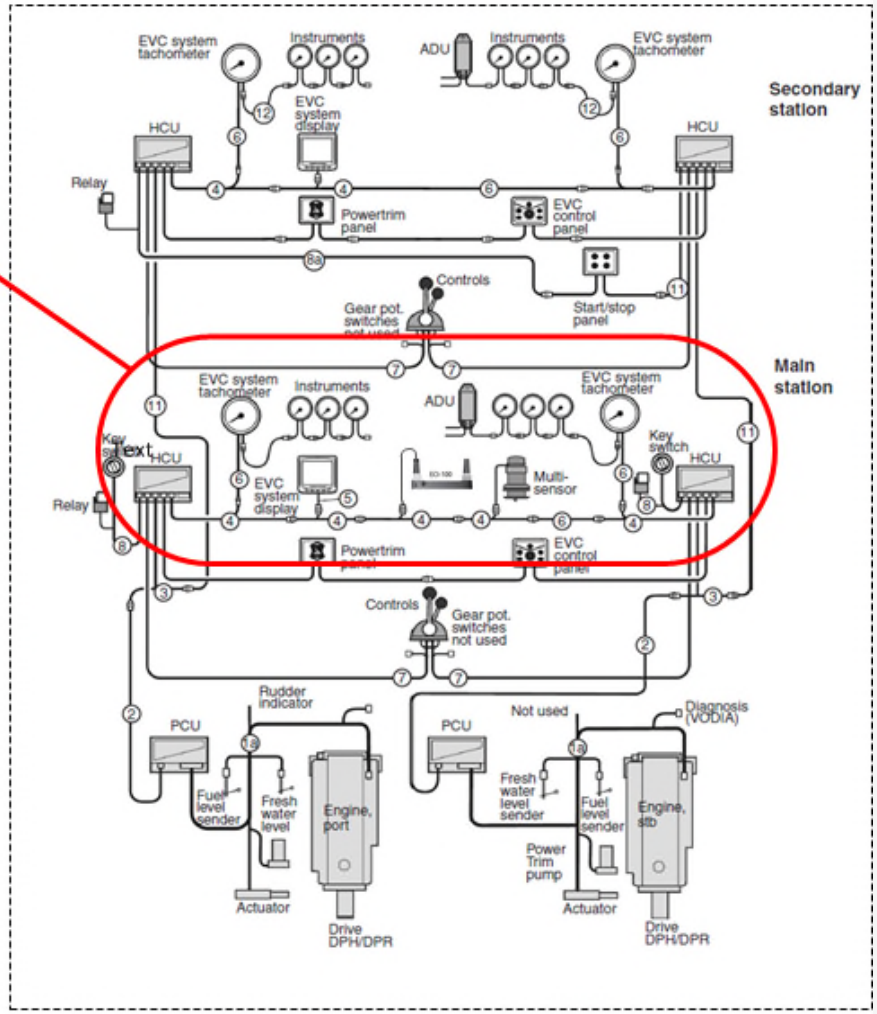
Volvo EVC “C” – D4,6,9,12,16 Engine - Connections



1 – Multifunction Display
2 – Volvo EVC Link cable (E70240)
3 – Volvo Engine Y Loom (E70241)
4 – ECI-100 Engine Interface (E70227)
5 – Seatalk NG Terminated system
6 – EV-2 Pilot Course Computer unit
7 – Autopilot Controller
8 – i70 Instrument





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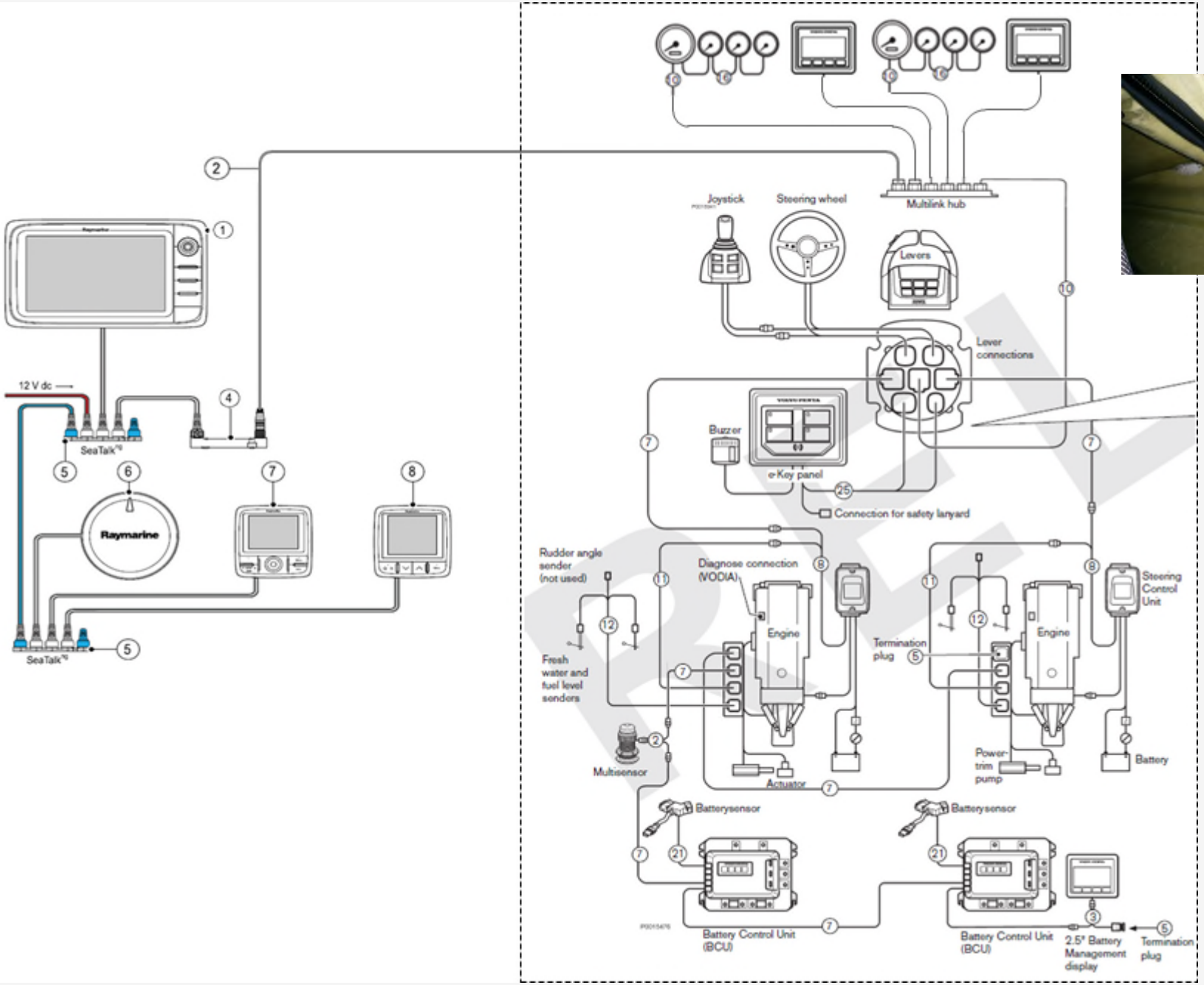
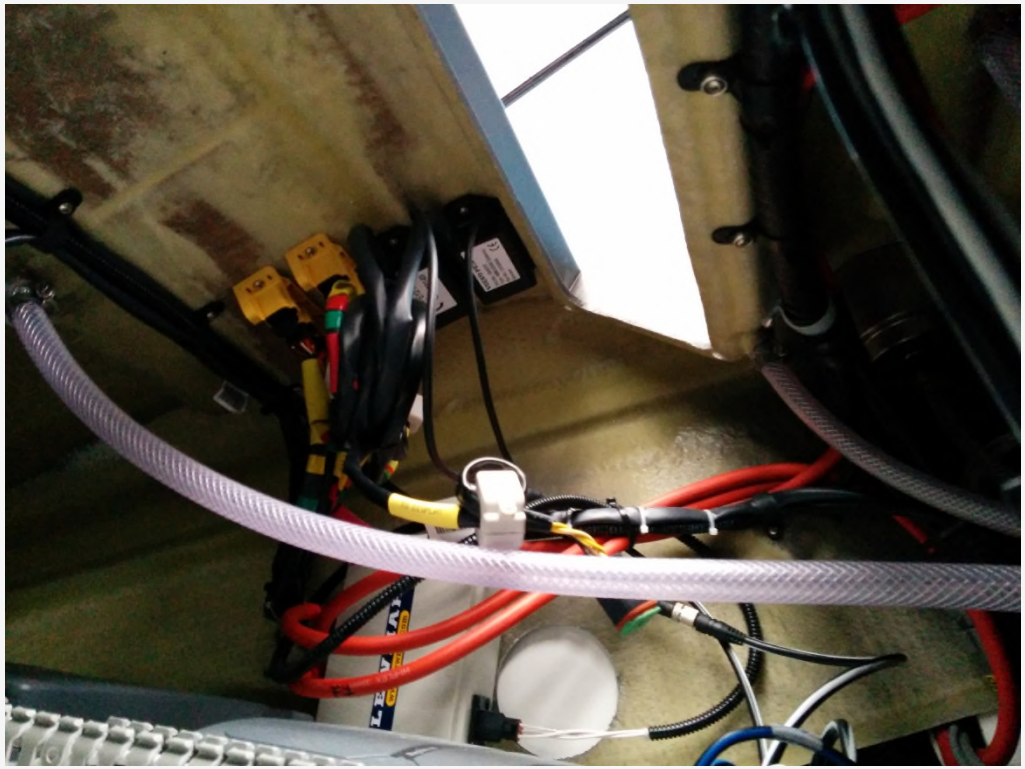
Volvo EVC “D & E” IPS, Aquamatic & Inboard D type Engines



Volvo EVC-E Multilink Hub



NOTE:

- Check that the ECI-100 is connected to the correct part of the EVC system.
- Generally the correct connection will have Volvo cables already connected marked “Multilink” with yellow sleeve.
- Generally the ECI-100 would not be connected directly to an engine or in the engine room!

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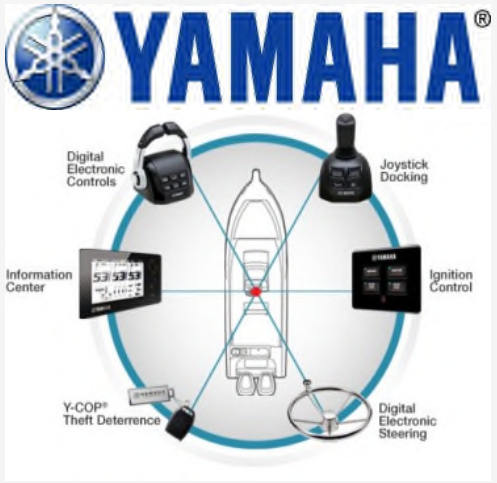
Yamaha Engine support – From software version (v1.12)

ECI-100 is compatible with the following Yamaha Electronic Control systems

- Command-Link – (Engine data) – **New MFD Engine data page (LH3.19)**
- Command-Link Plus – (Engine data)
- Helm Master – (Evolution Pilot DBW Control)



ECI-100 is compatible with the following Yamaha Engines.

- Engine Data only - (when Command-Link or Command-Link Plus electronic engine control system is fitted)
- Evolution DBY Control – (when a Helm Master electronic steering system is fitted)

✓ F50	✓ T50
✓ F60	✓ T60
✓ F75	✓ F90
✓ F115	✓ LF115
✓ F150	✓ LF150
✓ F200	✓ LF200
✓ F225	✓ F250
✓ LF250	✓ F300
✓ F350	✓ Z150
✓ LZ150	✓ VZ150
✓ Z175	✓ Z200
✓ LZ200	✓ VZ225
✓ Z250	✓ LZ250
✓ VZ250	✓ Z300
✓ LZ300	✓ VZ300

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Important: Not all engines have a Command-Link, Command-Link Plus, or Helm-Master system fitted as standard. Please check with your local engine dealer to ensure that you have a compatible system fitted to your boat!

Yamaha Engine Data & Alarms supported

- Engine Speed (RPM)
- Engine Hours
- Engine Coolant Temperature
- Engine Oil Pressure
- Engine Coolant Pressure
- Engine Fuel Rate
- Engine Boost Pressure
- Gear Status
- Battery Voltage
- Transmission Oil Pressure
- Transmission Oil Temperature
- Fuel Level
- Power Trim
- Rudder Angle (only if connected to a Helm-Master System)
- Engine Alarms
  - Over Temperature
  - Low Oil Pressure
  - Low Oil Level
  - Low System Voltage
  - Low Fuel Pressure
  - Water In Fuel

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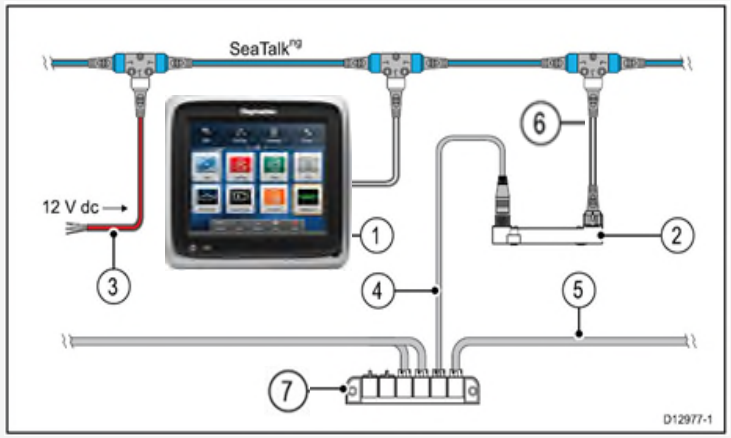
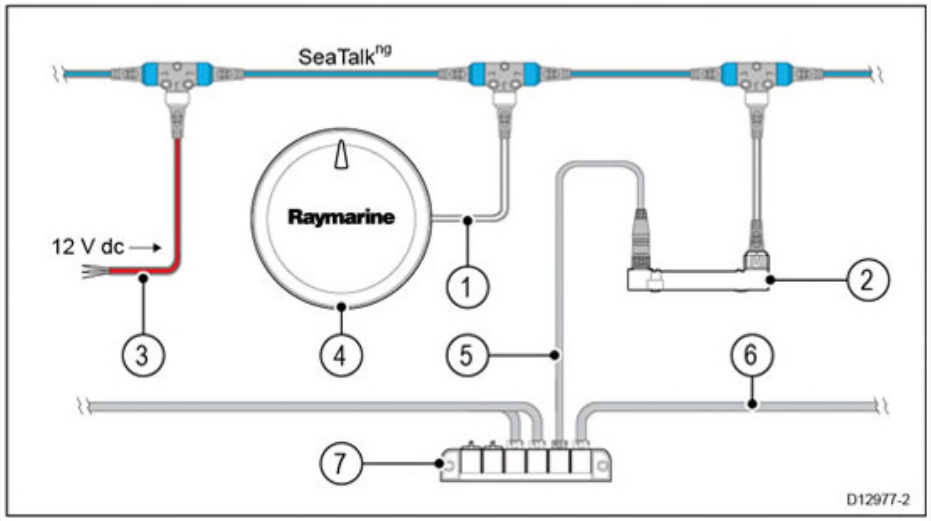
Yamaha Engine Connections via ECI-100

Interface requirements:

- ECI-100 (v1.07 software) - (Only one required for single or multiple outboard engines) - (E70227)
- Raymarine Yamaha Link cable - (E70242)





Yamaha Engine Data only

1 – Multifunction Display
2 – ECI-100 Engine Interface (E70227)
3 – Seatalk NG Power supply (12v)
4 – Raymarine Yamaha Link cable (E70242)
(Connect to Engine Hub spare DEVICE socket)
5 – Yamaha outboard engine system bus
6 – Seatalk NG Spur cable (part of terminated STNG Backbone
7 – Yamaha Command Link or Command Link plus Hub.

(7) Yamaha Command Link Hub

Yamaha Engine Data & Evolution Pilot Control

1 – Seatalk NG Spur cable (part of terminated STNG Backbone)
2 – ECI-100 Engine Interface (E70227)
3 – Seatalk NG Power supply
4 – EV-2 Evolution Autopilot
5 – Raymarine Yamaha Link cable (E70242)
(Connect to Engine Hub spare DEVICE socket)
6 – Yamaha outboard engine system bus
7 – Yamaha Command Link or Command Link plus Hub.

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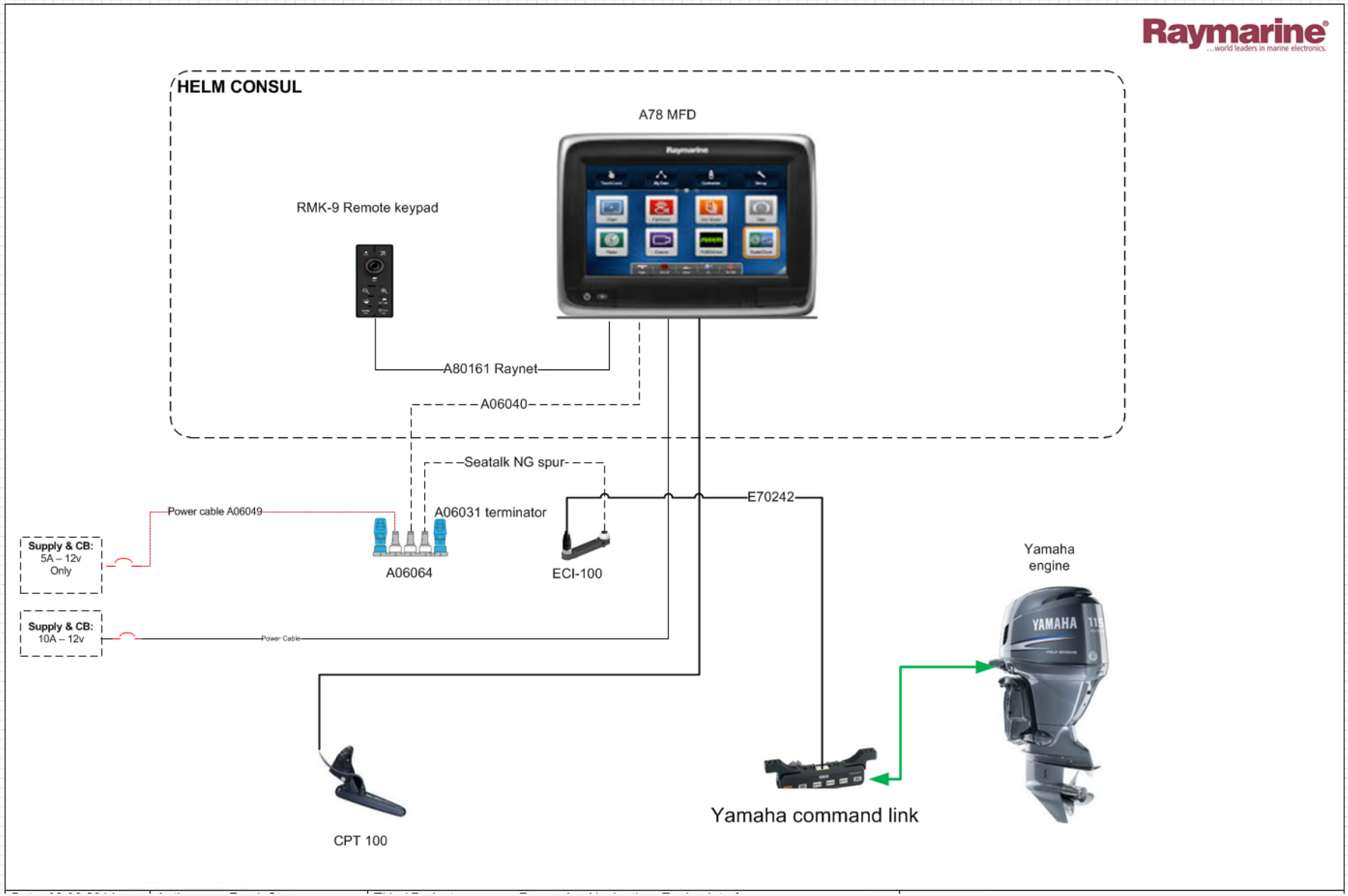
Example Navigation system – including Yamaha Engine data



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Engine data Integration – **YAMAHA** outboard e**ngine data**

FLIR

Raymarine
SIMPLY SUPERIOR

YAMAHA

—

R E70227 +

R E70242 +

R T70134

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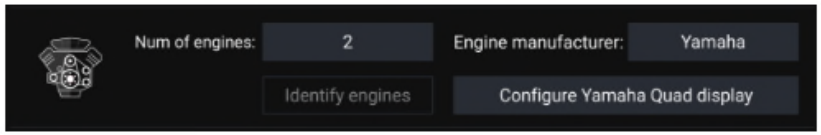
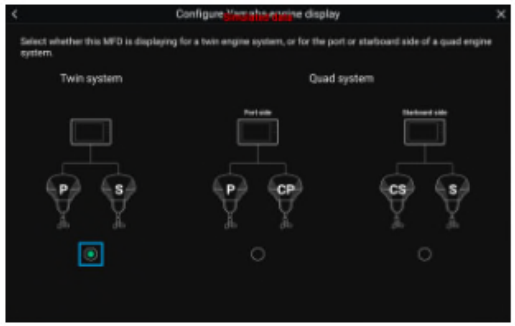
Yamaha Command Link / Command Link Pro

- Lighthouse 3 v3.9 Setup
  - Configure Yamaha Dashboard page in HomeScreen
  - Settings and Boat Details
    - Select Yamaha as engine manufacturer
    - Configure Yamaha display – Twin, Triple, Quad…
    - Select number of Batteries
    - Select number of Tanks





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Yamaha – Command Link / Command Link Plus

Compatible Engines:

- Yamaha F200/300 Inline outboards
- Yamaha 4.2l V6 Offshore
- F350 V8
- F425 V8 5.6l Twin, Triple & Quad.

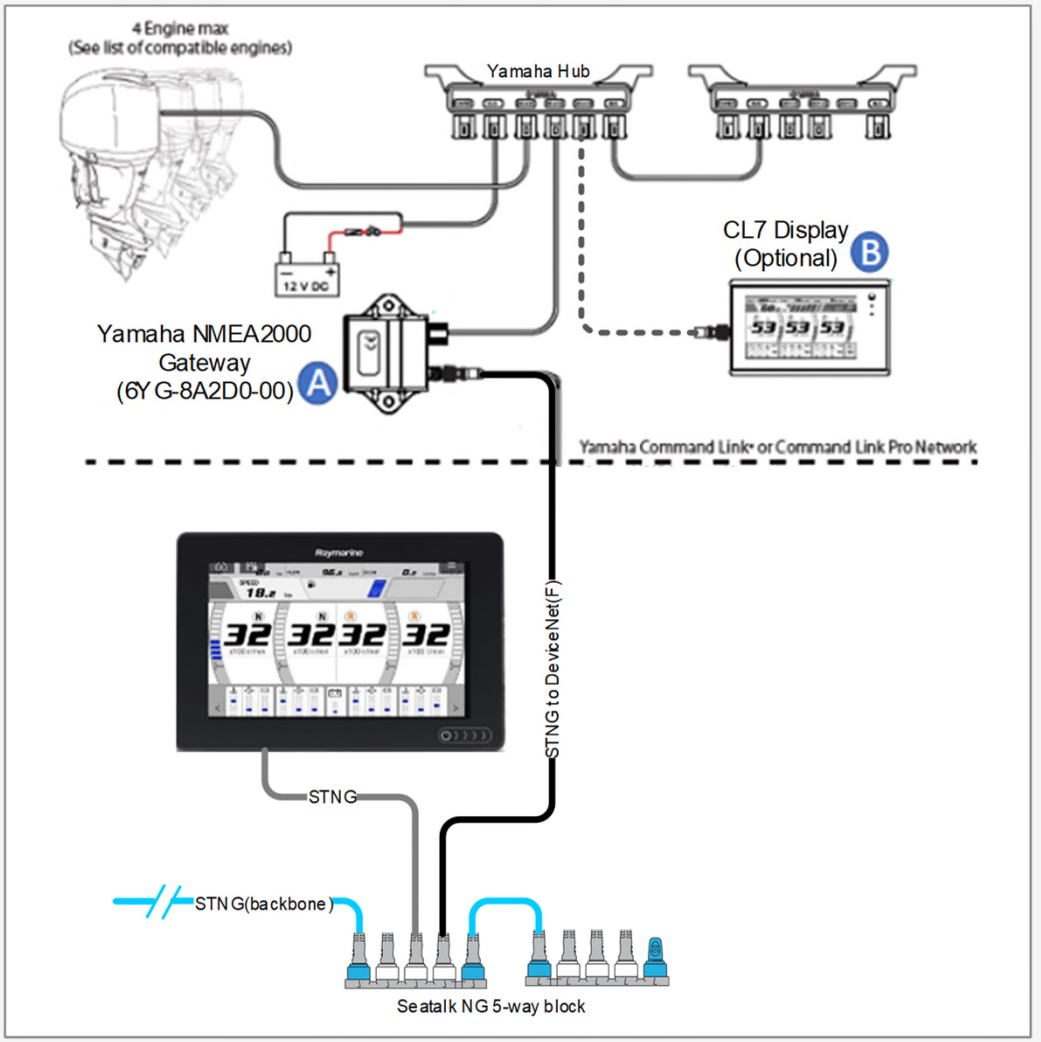
For dedicated Yamaha Engine page on Axiom

Yamaha Command Link / Link Pro:

- Requires Yamaha (6YG-8A2D-00-00) Gateway (A)
- STNG to DeviceNet (F) cables

Optional:

- CL7 Display for Set Point & Joystick steering (B)
  Not required with Axiom Yamaha Page!



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Yamaha – Command Link / Plus - Helm Master

Compatible Engines:

- Yamaha F200/300 Inline outboards
- Yamaha 4.2l V6 Offshore
- F350 V8
- F425 V8 5.6l Twin, Triple & Quad.

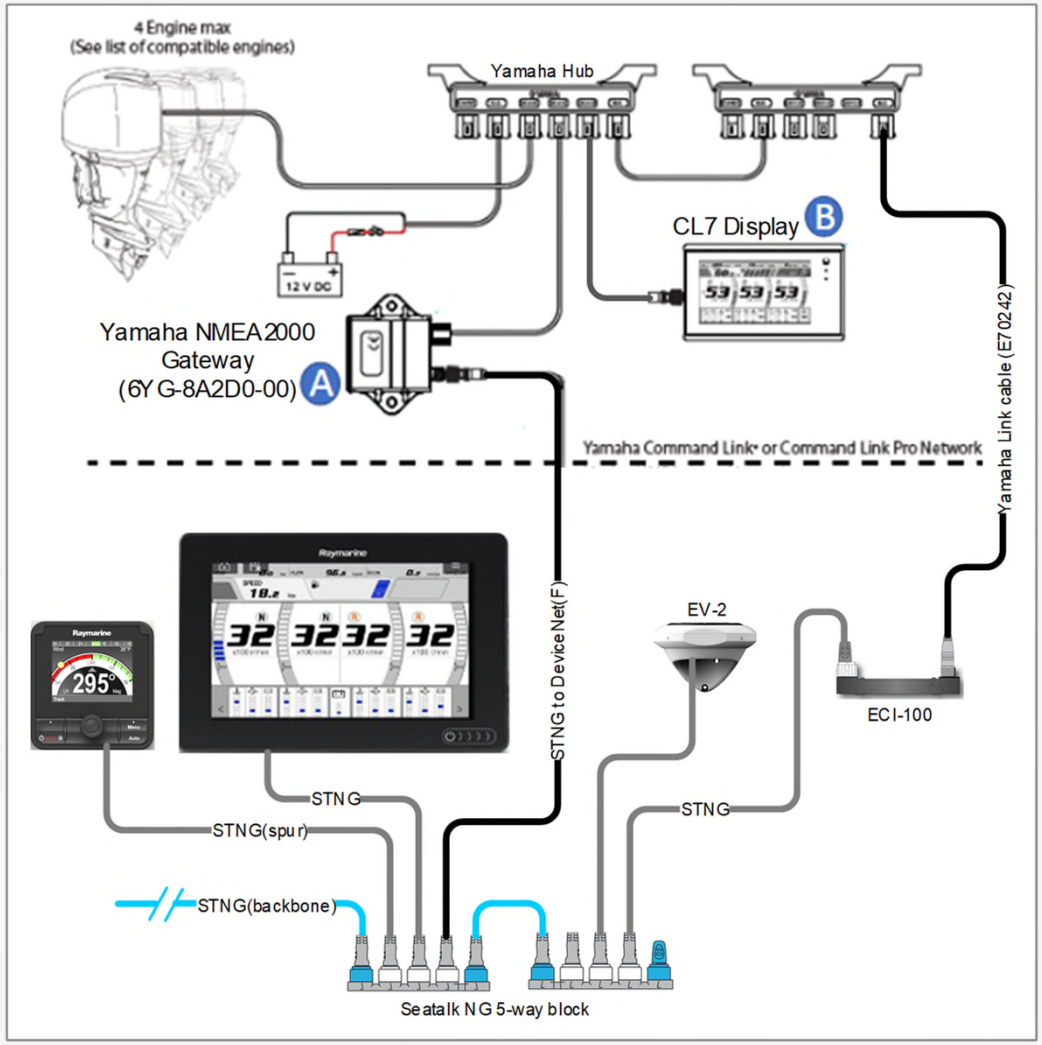
For Dedicated Yamaha Page on Axiom

Yamaha Helm Master Steering:

- Requires Yamaha (6YG-8A2D-00-00) Gateway A
- STNG to DeviceNet (F) cables
- CL7 Display for Set Point & Joystick steering. B

Autopilot:

- EV2, ECI-100
- p70Rs (optional)



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Yamaha Command Link Pro

- Available Q1 2019 with LH3 v3.9
- Dedicated Yamaha Page in Home Page selection.

- Supports 1 to Quad Engine installs

- Eliminates need to fit Yamaha CL7 7” display
  - Requires NMEA2000 Gateway ($325)
    - 6YG-8A2D00
  - IMPORTANT: Set point functions (Fish Point, Drift Point and Stay Point) require CL7.

Quad

Single

Dual

Triple

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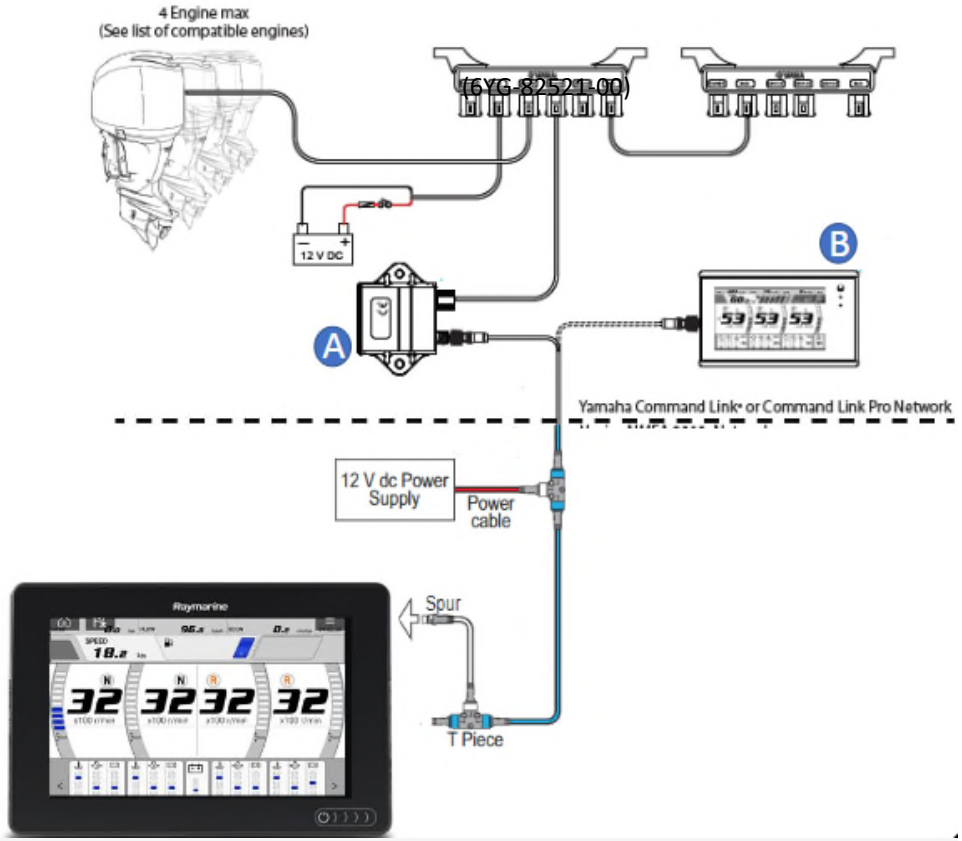
Yamaha Command Link / Command Link Pro

- Compatibility: Yamaha In-Line F200 outboards and 4.2L V6 Offshore, all V8 F350 models and new F425 (V8 5.6L) in twin, triple or quad configurations.

- Eliminates need to fit Yamaha CL7 7" display
  - Requires NMEA2000 Gateway ($325)
    - P/N: 6YG-8A2D-00-00 A
  - IMPORTANT: Helm Master functions (Fish Point, Drift Point and Stay Point) and joystick functionality require CL7 B



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Yanmar Engine support

Yanmar Electronic Engine systems for the display of Engine Data on Raymarine MFD and Instruments:

ECI-100 is compatible with the following

Also compatible with Yanmar DBW steering systems - (ECI-100) not required!

(BY Engines are NMEA2000 – JH Engines are J1939)

Engine data only			
✓	4JH45	✓	4JH57
✓	4JH80	✓	4JH110
✓	4JH45C	✓	4JH57C
✓	4JH80C	✓	4BY3-150
✓	4BY3-180	✓	4BY3-220
✓	6BY3-260	✓	8LV320
✓	8LV370	✓	6LY3-UTP
✓	6LY3-STP	✓	6LY3-ETP
✓	4BY3-150Z	✓	4BY3-180Z
✓	4BY3-220Z	✓	6BY3-260Z
✓	8LV320Z	✓	8LV370Z

Engines Not Compatible:
3JH5E
4JH4-TE
4JH5E
4JH4-HTE

Please check with your local engine dealer to ensure that you have a compatible engine system fitted to your boat!

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Yanmar Engine Data & Alarms supported

- Engine Speed (RPM)
- Engine Hours
- Engine Oil Temperature
- Engine Coolant Temperature
- Engine Oil Pressure
- Engine Coolant Pressure
- Engine Fuel Delivery Pressure
- Engine Fuel Rate
- Engine Boost Pressure
- Battery Voltage
- Transmission Oil Pressure
- Transmission Oil Temperature
- Fuel Level
- Engine Alarms
  - Over Temperature
  - Low Oil Pressure
  - Low Oil Level
  - Low System Voltage
  - Low Coolant Level
  - Water In Fuel

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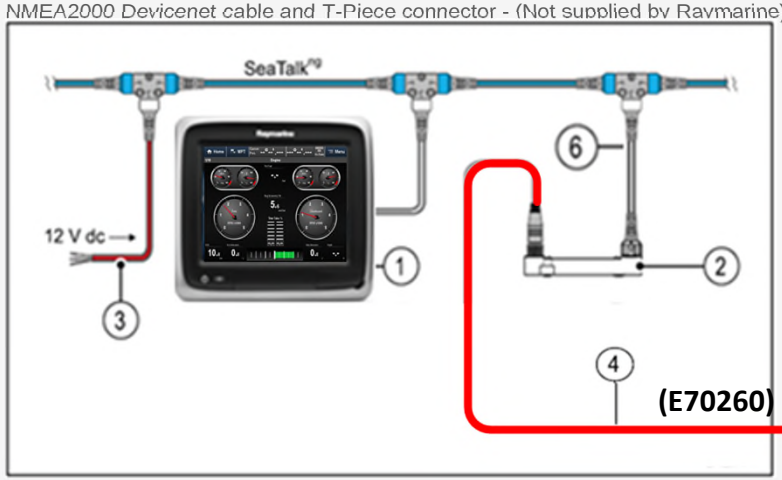
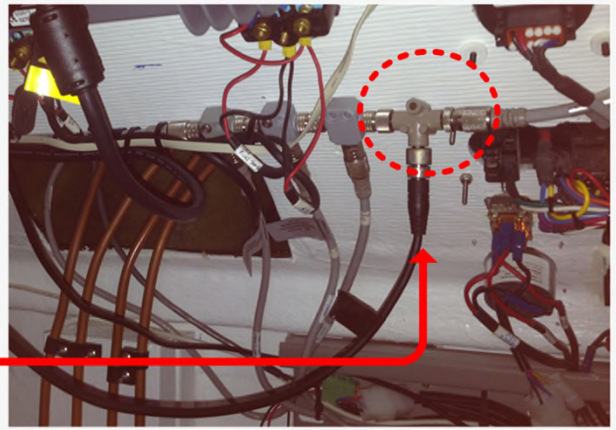
Yanmar Engine (Data) Connections via ECI-100

Interface requirements:

- Yanmar DeviceNet bus not isolated so ECI-100 (v1.20) required.
- Only one ECI-100 required for single or multiple outboard engines) - (E70227)
- An NMEA2000 Devicenet cable and T-Piece connector - (Not supplied by Raymarine)





Connection Requirements:

- Extend the Yanmar NMEA2000 engine bus by simply connecting into the engine bus an additional NMEA2000 T-piece. (as above).
- Connect the NMEA2000 DeviceNet cable (4) (Fem to Male - E70260) to the spare T-Piece drop connector.
- Connect the other end of the NMEA2000 DeviceNet cable (4) to the ECI-100 (2) DeviceNet socket.
- Connect the ECI-100 (2) Seatalk NG socket via a Spur cable to the Raymarine Seatalk NG terminated Backbone (6).

Yanmar DBW Pilot Connections:

- ECI-100 not required for Pilot - Directly connects to Yanmar Pilot interface
- Yanmar Autopilot cable required –(164000-23100).
- Yanmar ID Key for Autopilot – (164000-16100).
- 20 second delay before Pilot can be engaged into Auto!

Software Updates:

- Software (v1.20) August 2016 – Enhanced Alarm data bridging. Oil Pressure bridged & High Fuel Temperature Alarm for Yanmar Engines
- Future Software (v1.21) – High Fuel Pressure Alarm supported for Yanmar.

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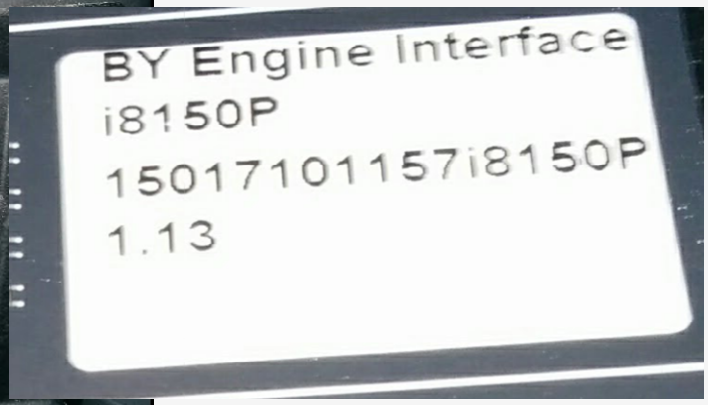
Yanmar Engine – Interface box & Jumper Fuses

Jumper Fuse for Port & Starboard engines
(Single engine labelled (P) Port)

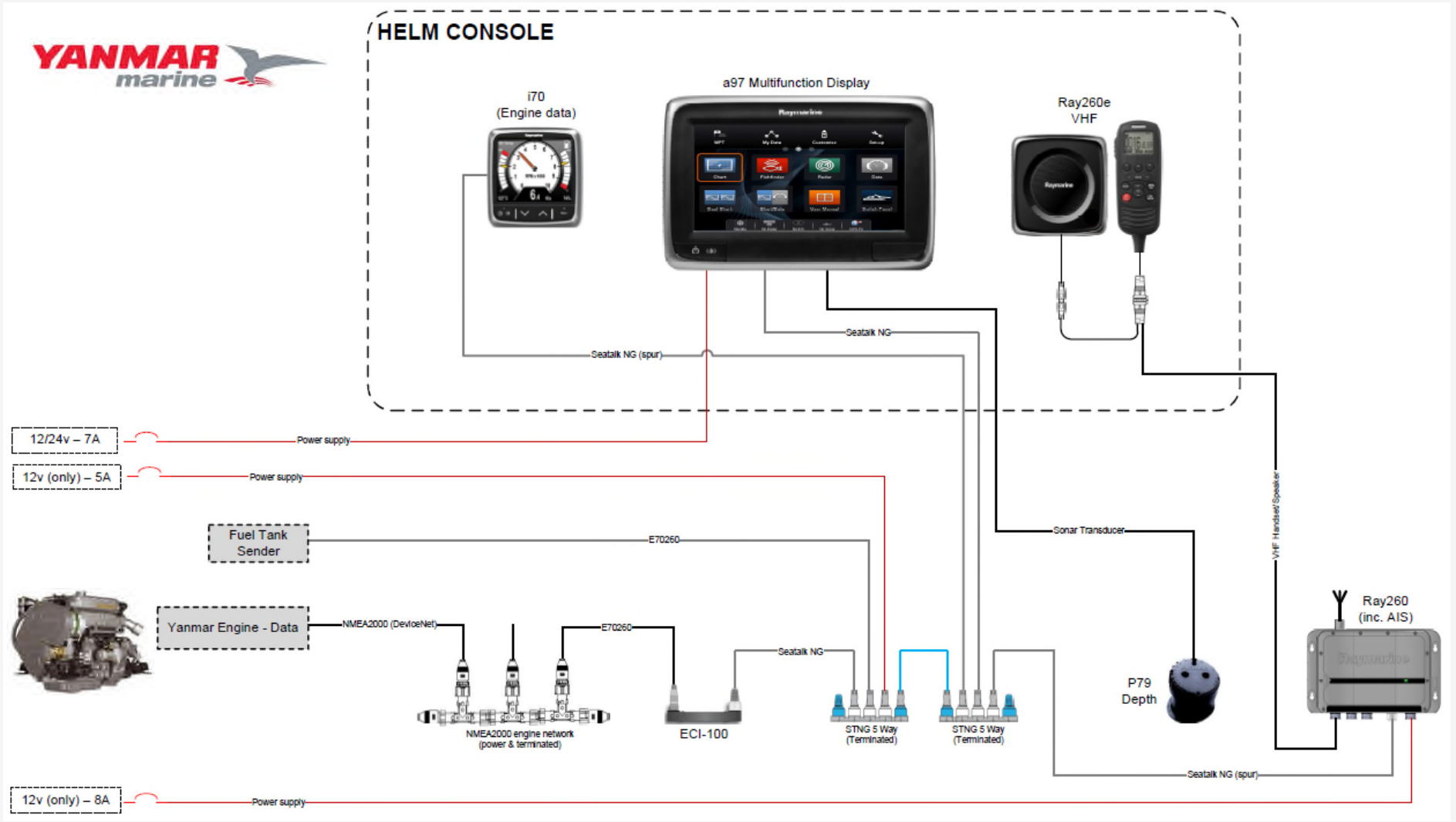


Yanmar (Seastar) Engine Interface box

Note:

Box labelled (P) for Port engine!

Example Navigation system – including Yanmar Engine data



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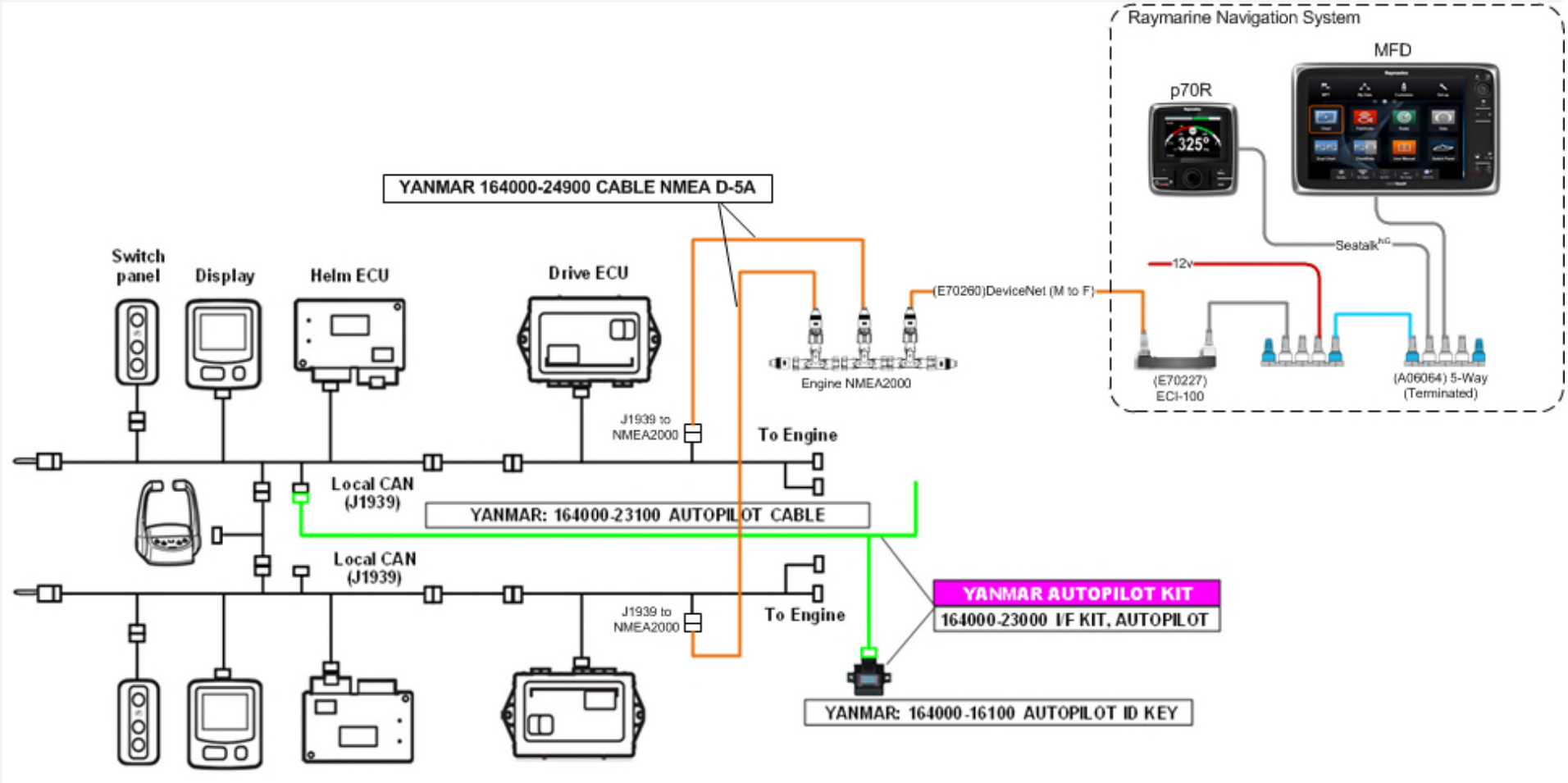
Twin Yanmar 8LV Stern Drive – Data only option



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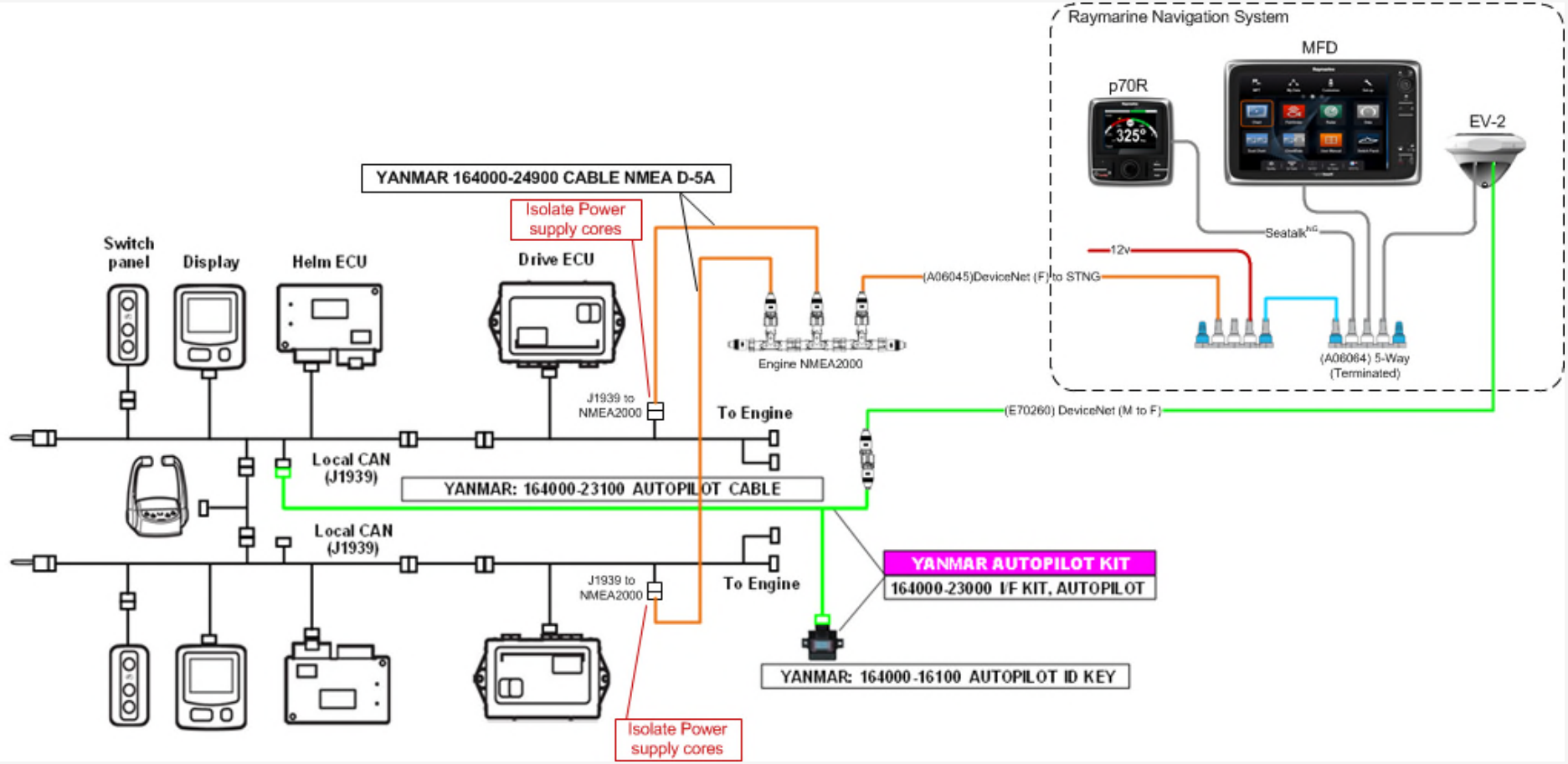
Twin Yanmar 8LV Stern Drive – Data & Pilot option 1



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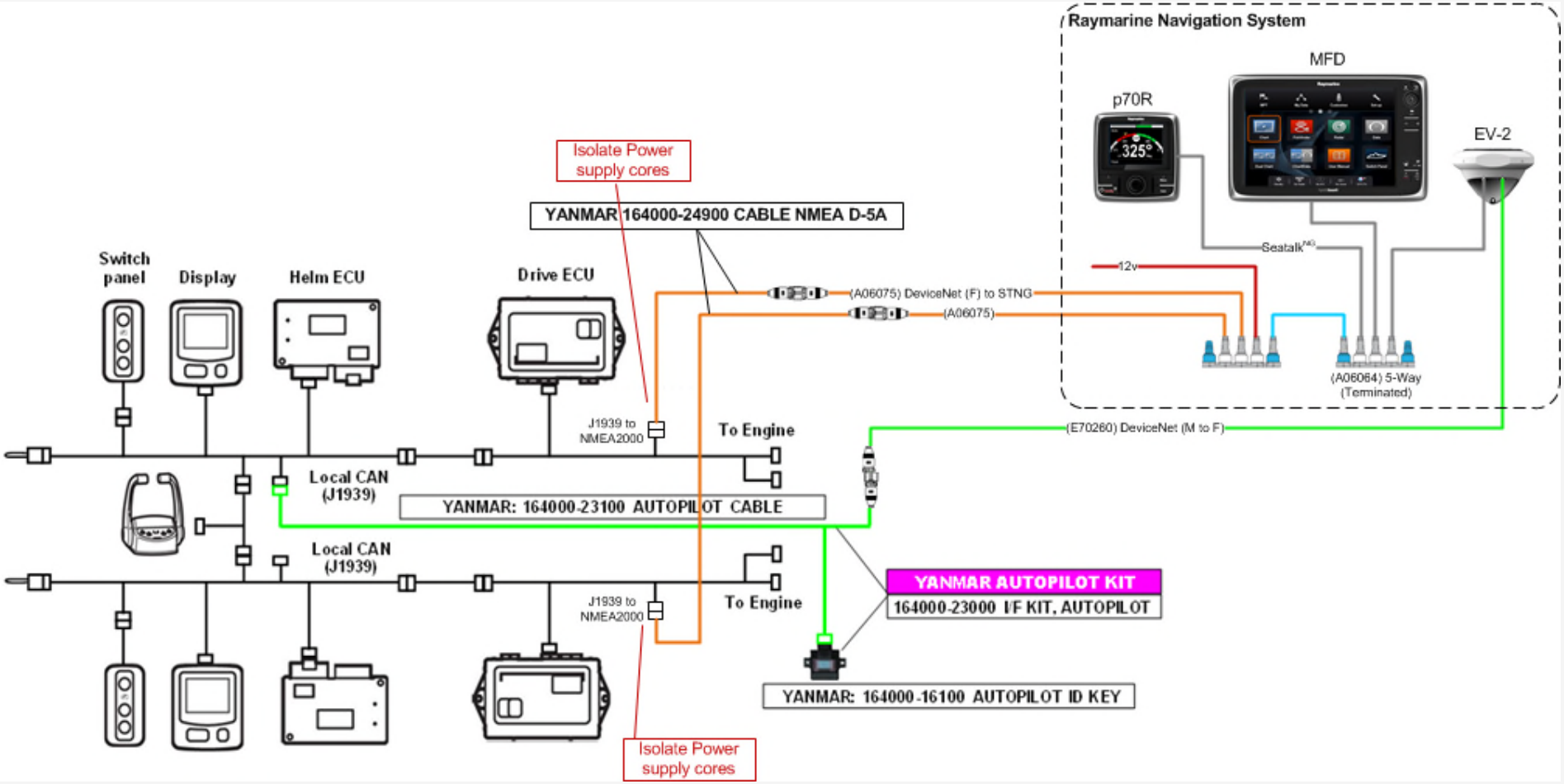
Twin Yanmar 8LV Stern Drive – Data & Pilot option 2



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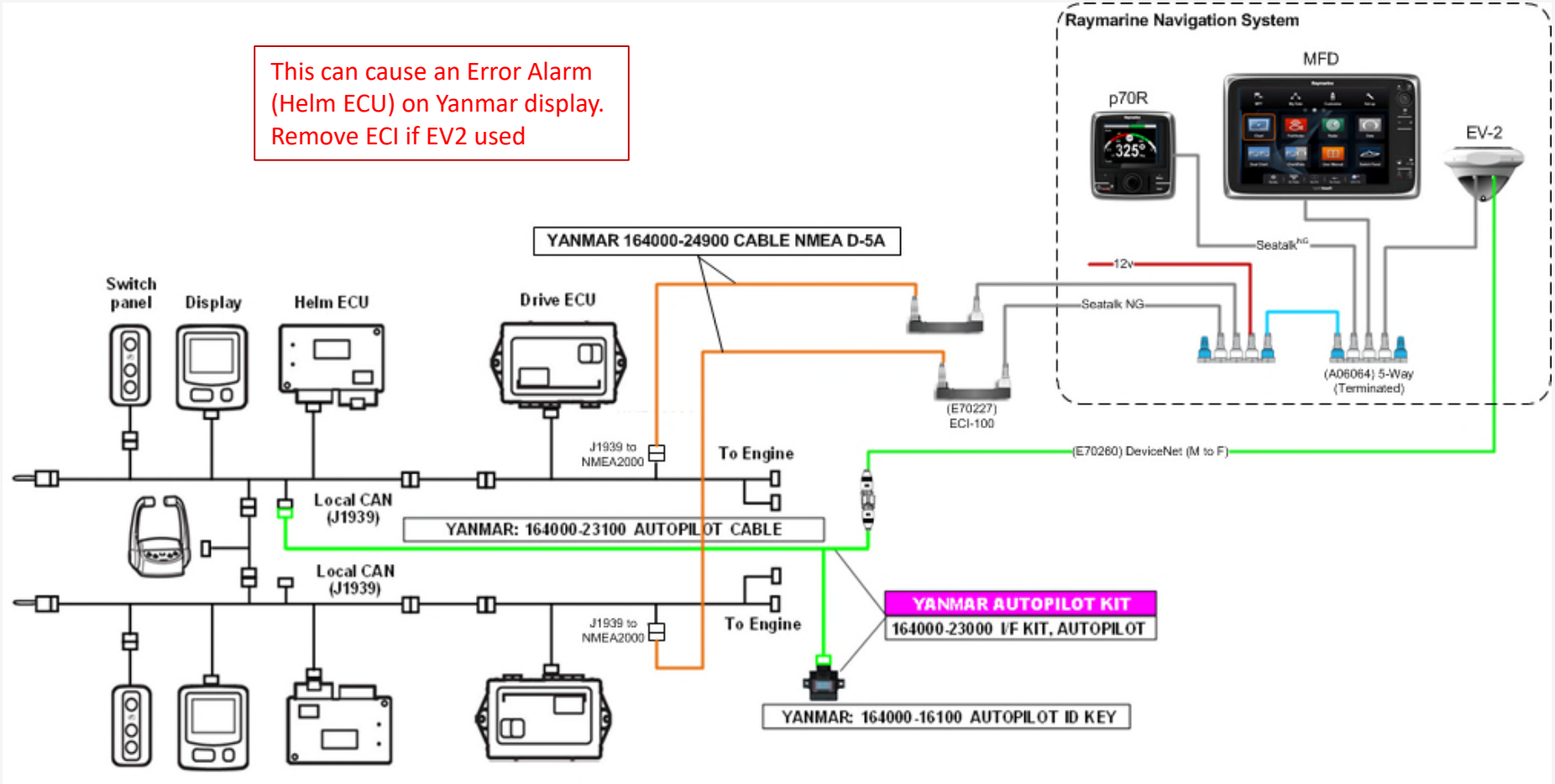
Twin Yanmar 8LV Stern Drive – Data & Pilot option 3



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Honda Engine Data PGN's supported

PGN List	PGN Title/Name	Rx on Devicenet	Tx on ST^{ng}
127488	Engine Parameter, Rapid Update* • Engine Speed • Engine Boost Pressure • Engine Tilt/Trim	Yes	Yes
127489	Engine Parameter, Dynamic* • Engine Oil Pressure • Engine Oil Temp • Engine Coolant Temp • Alternator potential • Engine Fuel Rate • Total Engine Hours • Engine Coolant pressure • Engine Fuel Delivery Pressure • Check Engine • Over Temperature • Low Oil Pressure • Low Oil Level • Water in Fuel • Charge Indicator • Preheat Indicator • Low Fuel Pressure • Low System Voltage • Low Coolant Level • High Boost Pressure • Rev Limit exceeded • Engine Emergency Stop Mode • % Engine Load	Yes	Yes
127493	Transmission Parameters, Dynamic* • Gear Position <Neutral> • Transmission Oil Pressure • Transmission Oil Temperature • Over Temperature • Low Oil Pressure	Yes	Yes
127497	Trip Parameters, Engine • Trip fuel used • Fuel Rate, Average	No	Yes – calculated using Fuel Rate

Important Note – Listed data/PGNs may not necessarily be transmitted from the connected engine/s

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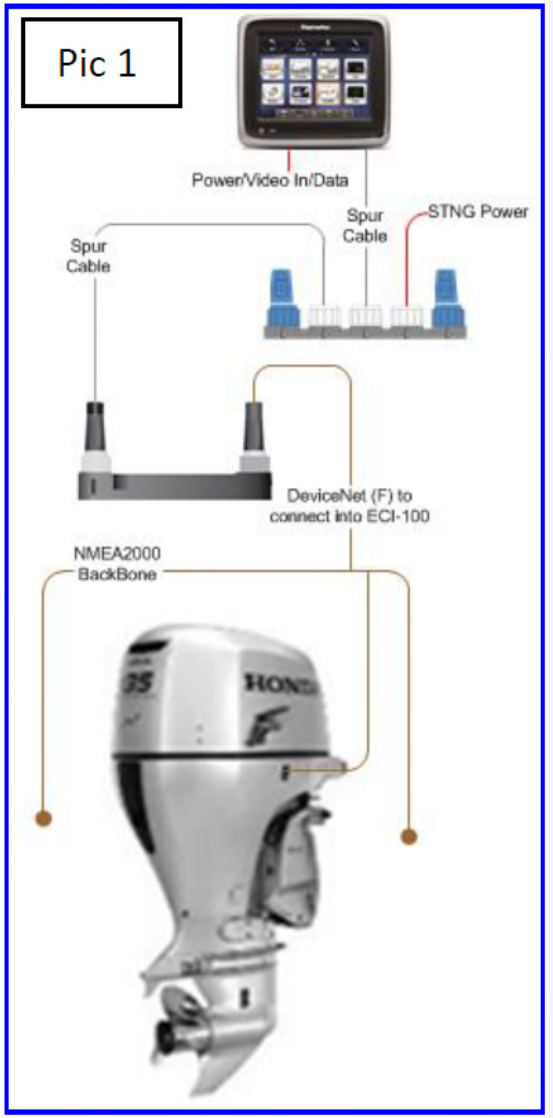
Honda Engines – Connected to a single engine

- For a single engine one ECI-100 is required.
- A DeviceNet (F) to Honda engine loom cable is required.
  (Honda part – PN 06653 – ZZ3-760HE). Connect under engine hood.
- Connect into the Terminated Seatalk NG backbone. As diagram
- Engine Instancing not required but Engine must be running at 200+ RPM to obtain engine data



Honda ECO Mode:

ECI-100 (v1.12) – Currently does not support Honda ECO mode on MFD.

(If Econ mode required - Connection must be made directly via NMEA2000 without ECI-100).

i70/i70s Instruments support Honda ECO mode from software (v3.07).

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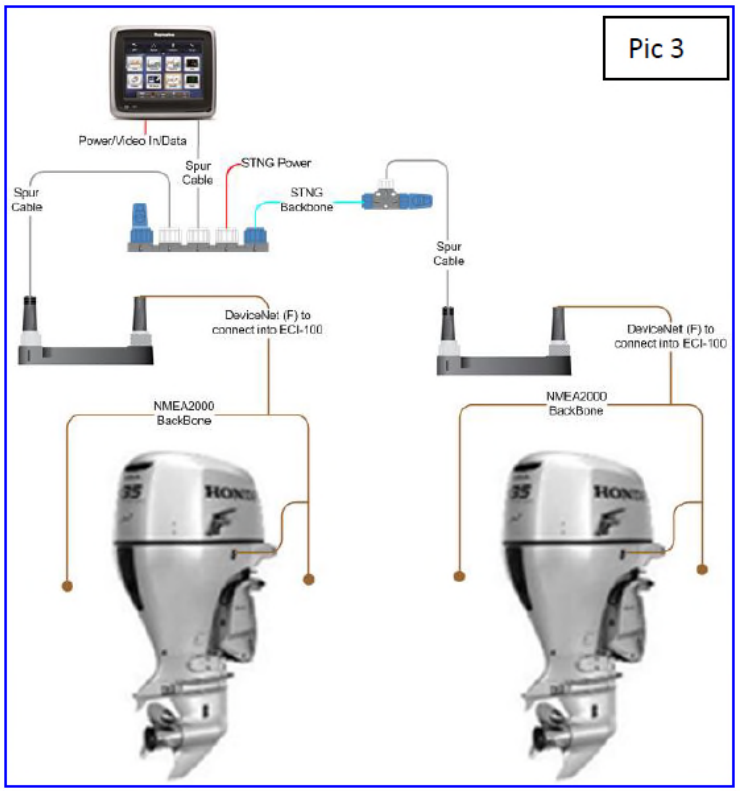
may require US Government authorization for export purposes. Diversion contrary to

Honda Engines – Connected to multiple engines

- For multiple engines with separate NMEA2000 backbones, one ECI-100 is required for each engine.
- A DeviceNet (F) to Honda engine loom cable is required for each engine
  (Honda part – PN 06653 – ZZ3-760HE)
- Connect each ECI-100 into the single Terminated Seatalk NG backbone. As diagram.
- We do not recommend changing the individual engine networks to a single NMEA2000 network!
- Engine Instancing will need to be undertaken. This can be achieved by using the Engine Identity Set up on an a, c, e or gS Series MFD. – You can not use the ECI-100 alone to configure these engines.
- Engine must be running at 200+ RPM to Instance and obtain engine data.



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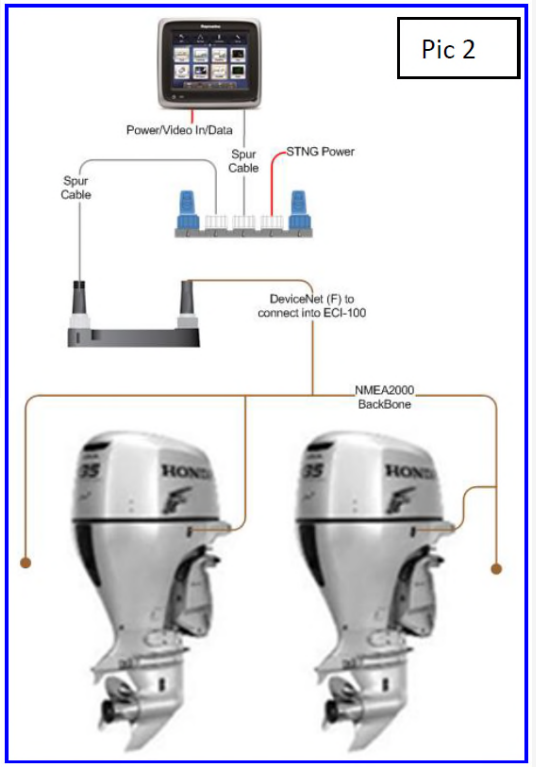
Honda Engines – multiple engines on same backbone



Two or more Engines on the <u>SAME</u> NMEA2000 Backbone:

If you have two or more engines and they are all connected on one single Honda NMEA2000 backbone, then you can use a single ECI-100 to link between ST^{ng} and the Honda NMEA2000 Backbone.

- See **Pic 2** for a connection overview

With this installation, you will need to perform the ECI-100 Engine Instancing Sequence:

1. When the ECI-100 is powered on for the first time ever, it is in a "Instancing mode"
2. You need to power the PORT most engine on first, and this gets assigned an instance of 0.
3. Then, moving towards the starboard engine, power each of the other engines on in turn, and each will get assigned an increasing instance number (1, 2, 3 etc…). E.g. Port, then Middle and finally Starboard.
4. The ECI-100 will only accept an engine when it sees the RPM is Greater than 200. So simply turning on an electronic ignition switch is not enough, each engine has to be cranked in turn. Remember, the ECI-100 will not pass <u>ANY</u> engine data until each engine has been cranked. (If you get the instancing wrong, you will need to use an a,c,e,gS Series MFD to re-instance the engines using the wizard)

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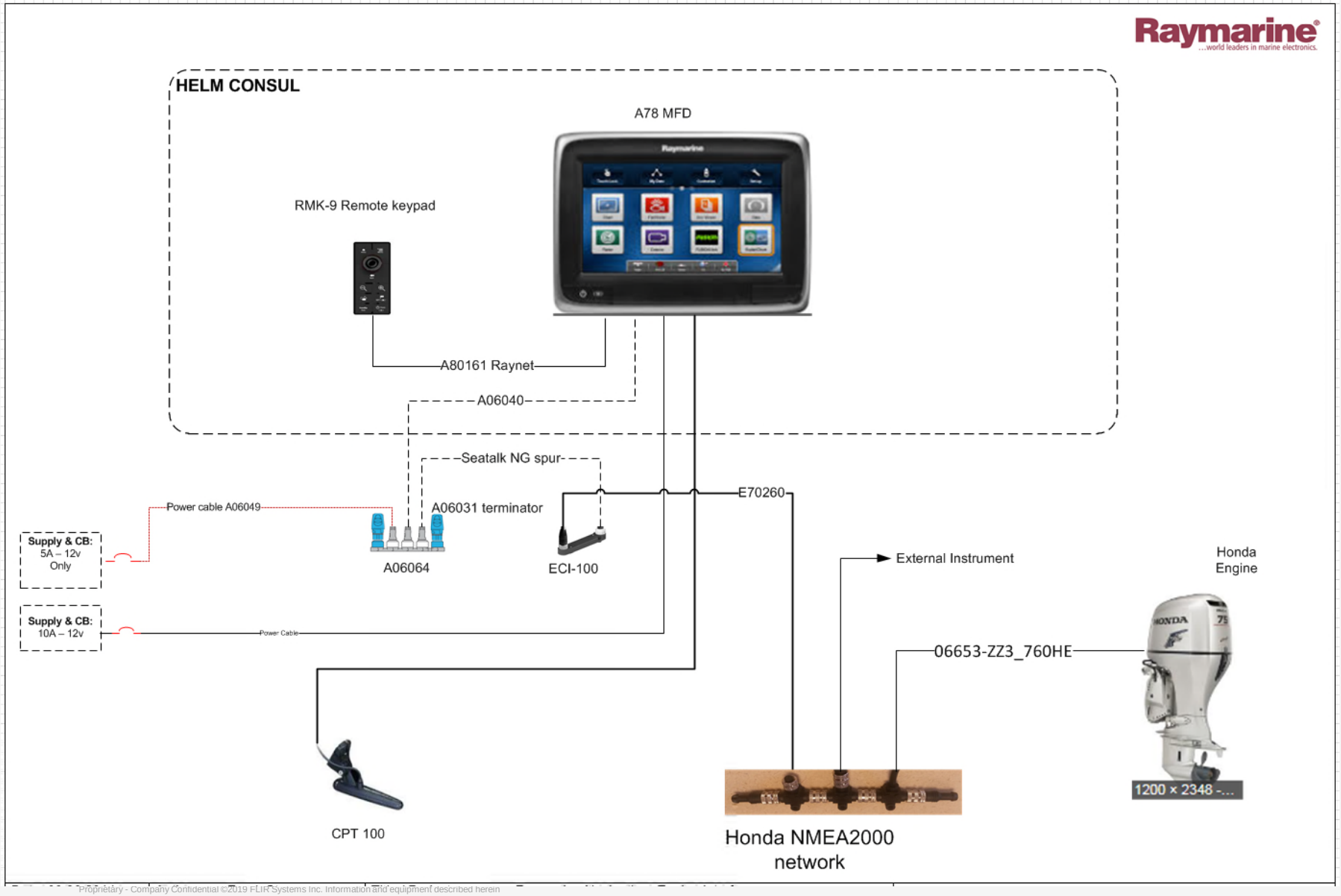
Example Navigation system – including Honda Engine data



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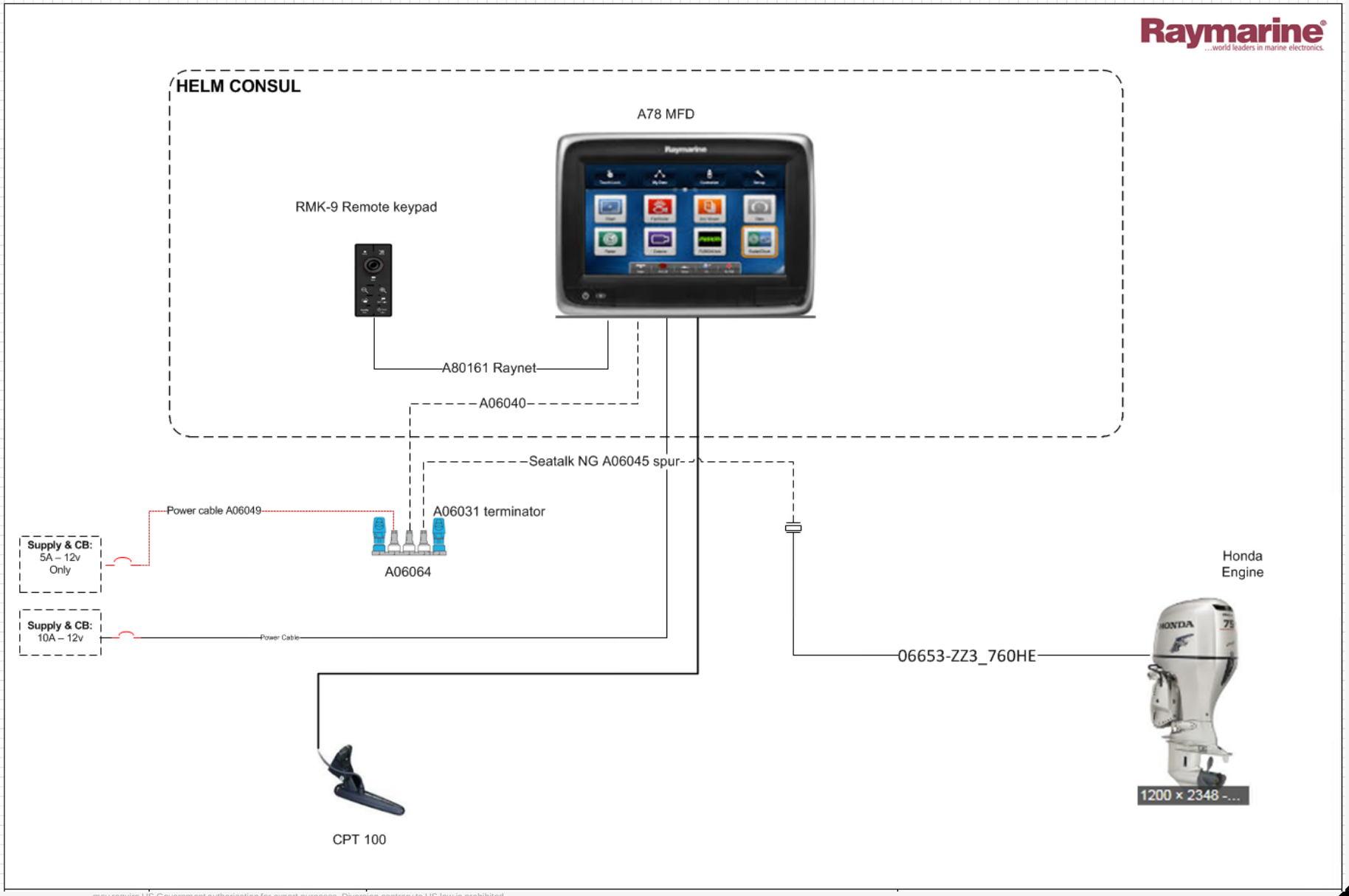
Example Navigation system – including Honda Engine data



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Engine data Integration – HONDA outboard e**ngine data**

HONDA MARINE

Raymarine SIMPLY SUPERIOR

—

Prod nr: 06328-ZZ3-760HE 6m
Prod nr: 06328-ZZ3-730HE 3m
NOTE! Cable part no can be different in different markets.

+ R T70134 +

R E06045

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Caterpillar Engines -

- J1939 data protocol.
- ECI-100 software (v1.20) update required. (TU620 - Aug 2015)
- CAT Engine Y Link cable – (E70305) required

(An ECI-100 connects between engine gauge and CAT Deutsch cable).

- Requires an ECI-100 & Link cable for each Engine.

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Caterpillar Engine data support

Compatible CAT Engines:

- All CAT Engine installations that include the engine displays, colour MPD, MPD or mini MPD
  - The colour MPD (Marine Power Display) is compatible with all currently available CAT electronically controlled marine engines from the C7 to the 3500C Series.
  - The MPD display is compatible with CAT 3126B to 3500B Series.
- Only CAT Systems with individual MPD's dedicated for each Engine can be supported.
- Engine systems without a dedicated MPD is not supported
- The CAT Messenger Display is not compatible or supported.

Compatible CAT Engine MPD's

Color MPD

Marine Power Display (MPD)

Mini MPD

Not compatible MPD

(CAT Messenger)

Remove Deutsch connector & connect to Y cable and ECI as below.

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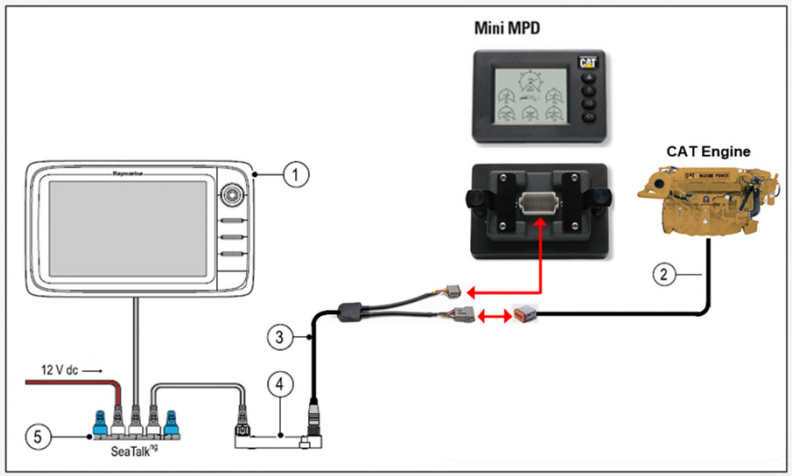
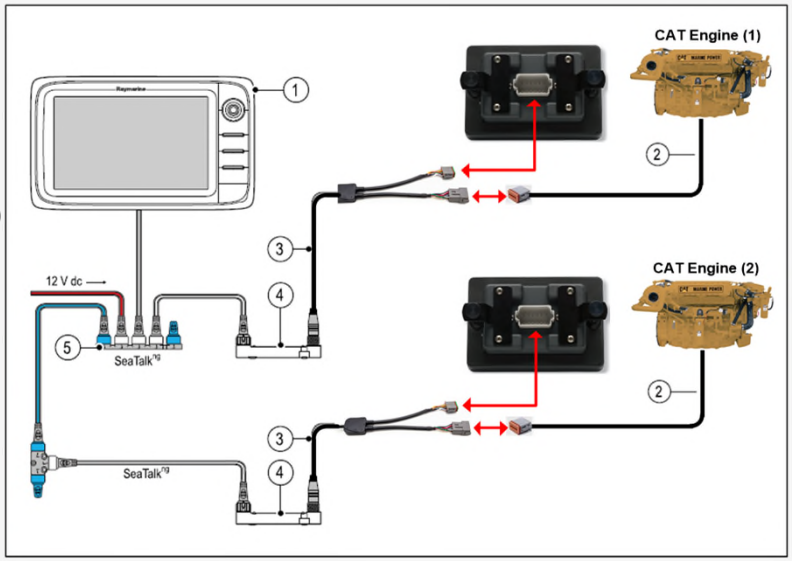
Caterpillar Engine data support

- Connect the “Y” cable between the Deutsch 12 way CAT Display socket and the 12 way Deutsch cable connector previously removed.
- Connect the other end of the Link cable to the ECI-100 DeviceNet socket. – (See diagram below)



1 – MFD
2 – CAT Engine loom
3 – CAT Y Cable (E70305)
4 – ECI-100 (E70227)
5 – Seatalk NG 5-way



- Connect the ECI-100 into a Terminated Seatalk NG backbone with appropriate MFD.
- Follow the Engine Identification Set-up procedure outlined in the (a,c,e,eS,gS) MFD manual.

Note: – You cannot use legacy MFD’s to configure multi engine systems with individual ECI’s.

Note: - If the ECI-100 has previously been used on another engine type it will need to be reset or use a new ECI-100. - To reset the ECI a tool is required; contact Raymarine Product Support for further information.

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MTU Engine data support

- MTU Smartline engines
  - J1939 data
  - DeviceNet & MTU “Y” cable required.
  - An ECI-100 is required for each engine
  - MTU engine display (not required on helm)
  - Compatible with all standard J1939 engine Data & Alarms

- MTU BVNG (BlueVision) – Not Compatible!
  - MTU system control unit required (SCU)
  - ECI-100 does not support BVNG data request mechanism (software required)

- Additional Interface box / engine required from MTU – Converts to J1939

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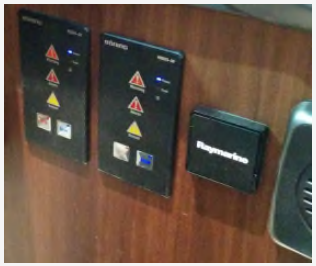
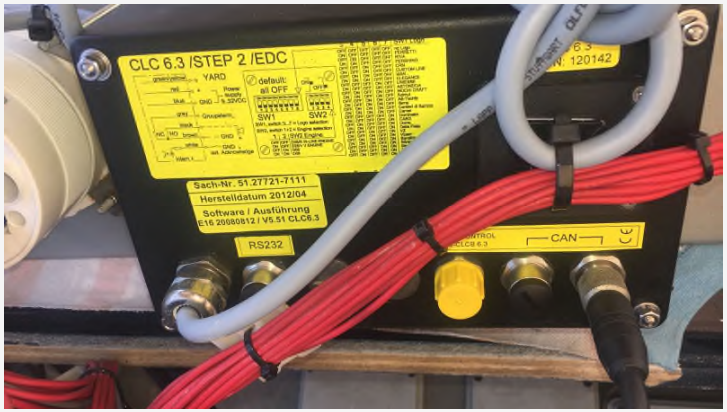
MAN Engine data support

MAN engines

- J1939 data
- Compatible with most standard J1939 Data & Alarms that MAN support
- DeviceNet to DeviceNet cable (E70260) required
- An ECI-100 & cable is required for each engine
- Tee into the J1939 CAN bus.
- MAN CAN bus is only data! (Separately power (12v) to ECI engine side)
- If MAN engine display not used. – (Must have Alarm panel (Boening))
- If Alarm panel used connects ECI-100 between J1939 o/p & 3rd party display



- If MAN Tacho engine Control used tee off via CAN port.



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nanni Engines -

- Not Fully Supported – Details to be Confirmed!
- Standard J1939 data supported. – Engine data Proprietary
- Requires an ECI-100 for each Engine.
- ECI-100 software update not required (v1.20)
- New nanni cable required – currently being tested

  (split cable includes power & data)

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Nanni

- Axiom 7 with Custom Nanni Engine Page in Dashboard (Graphics loaded by Nanni)
- ECI-100 & (adaptor cable accessory supplied by Nanni)
- Solution provide by Nanni as an Electronics Kit
- Anticipate shipments in Q2 2019

ECI-100

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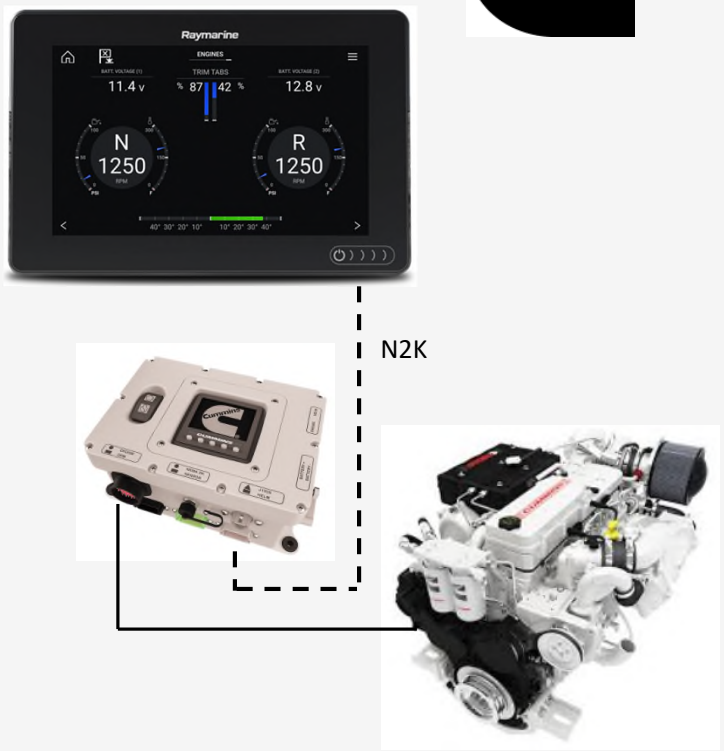
Cummins C Command – (Axiom (v3.5.40)

Connects via STNG/NMEA2000 to the Cummins CIB Premier or Pro.

- Replace Vessel View with Axiom MFD for full engine data and alarm support.
- All the benefits of Raymarine's full navigation system.
- Connect via NMEA2000. No external gateway required.
- LH v3.5: Cummins proprietary Alarm Silence PGN
- Eliminates the need for an above deck ED4 display as part of the system



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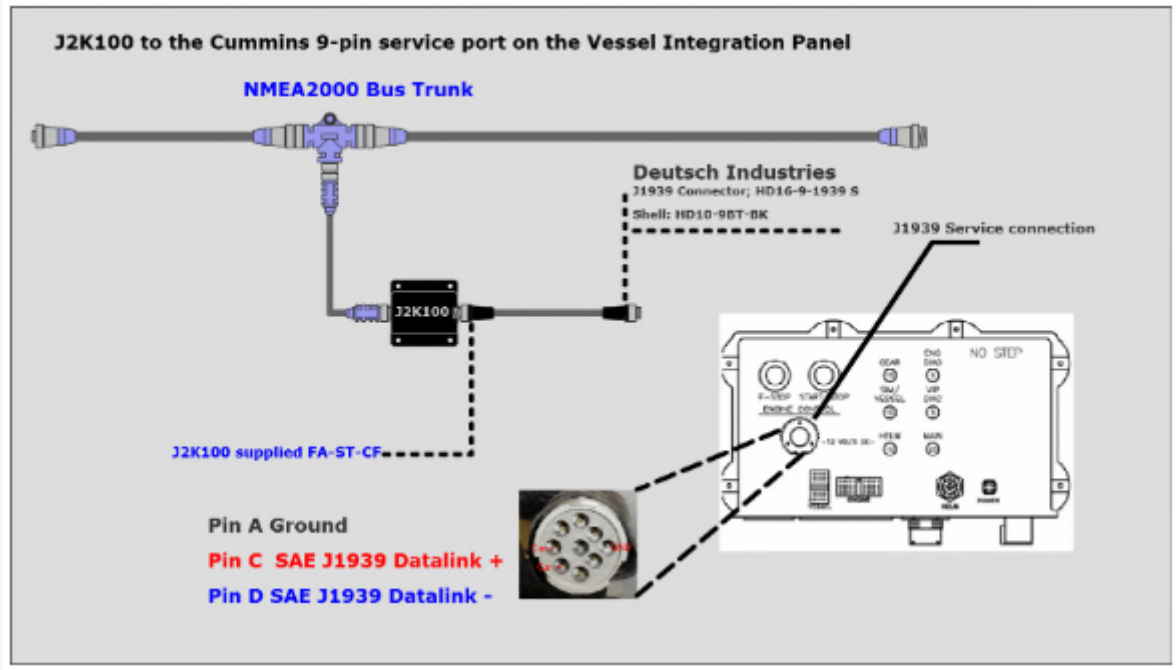
Cummins QSB Engines

Cummins Q-Series Engines

The J2K100 can be connected to any of Cummins Engine Models QSB, QSC, QSL, and QSM via the factory provided J1939 connection. The J1939 connector can be located on the engine harness in proximity to the ECU. The two wire connector is labeled J1939.

The Cummins engine J1939 connector may be occupied by a terminating resistor or use by another device. If the connectior is in use disconnecting the cable may void warranties and/or cause disruption with your engines operation. Consult a Cummins authorized service center for purchase of a proper mating connector. All Cummins Technicians should refer to Cummins Marine Application Bulletin: 0.15.06-12/08/2009 for details.



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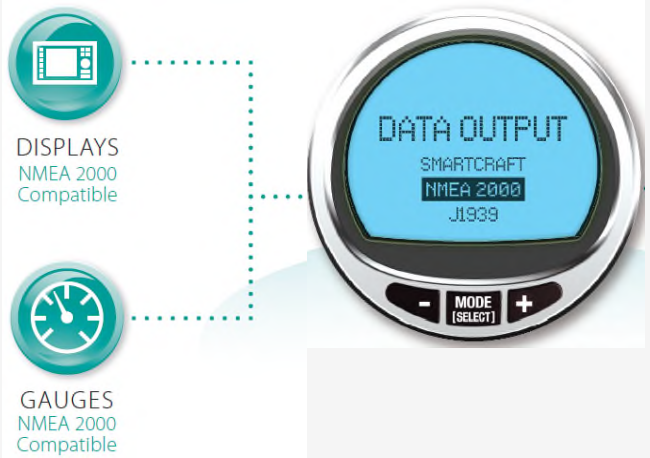
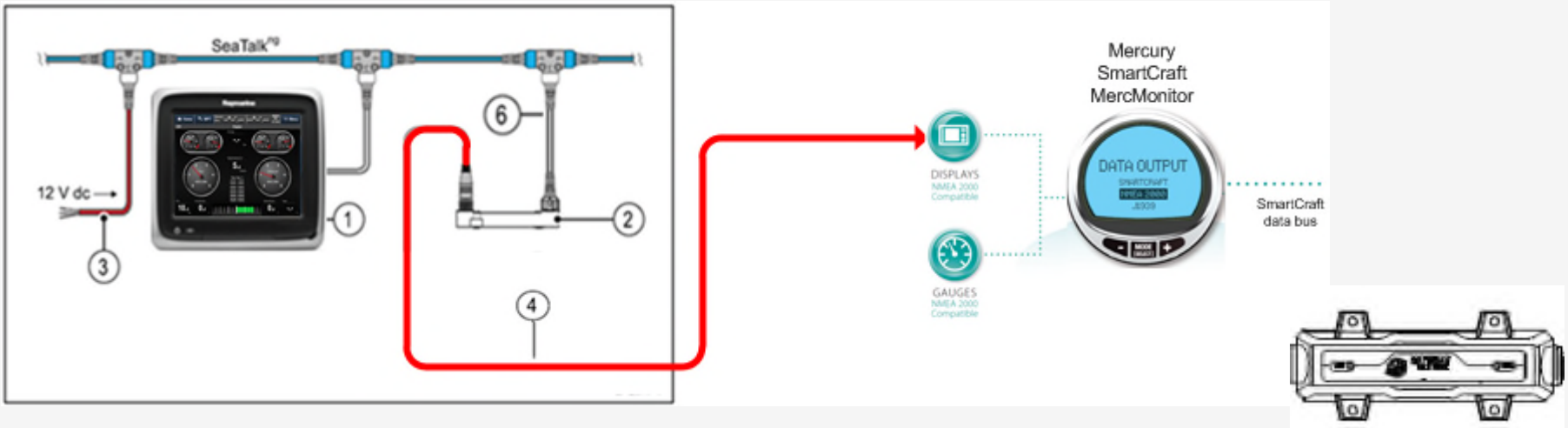
Mercury & Cummins Engines

- Gateway required from Mercury
- Supports Engine Data only
- Can not control Zeus etc. with Evo Pilot!
- Converts SmartCraft data to NMEA2000
  - MercMonitor / Vessel view
  - Mercury NMEA2000 Gateway (p/n: 8M0065208)



Note: Can cause EVO failure. - (ACU v1.13) required



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Mercury Engine data – VesselView Link Gateway (Simrad)

Part # 8M0110639

The Mercury® VesselView® Link interface module integrates SmartCraft® engine data with NSS evo2, NSO evo2 and GO series displays -- providing quick access to RPM, speed, fuel tanks, battery voltage, trim tab data and Mercury Smart Modes, like Eco, Smart Tow®, Troll Control and Cruise Control. VesselView® Link puts all the data you want, where you want it — at your fingertips.

The Mercury® VesselView® Link is also available in a multi engine kit (Part No # 8M0110641).

Key Features

- The VesselView® Link interface displays Mercury Smartcraft® engine information on your Simrad GO, NSS evo2 or NSO evo2 display including — RPM, Speed, Fuel Tanks, Battery Voltage and Trim Tab data
- The VesselView® Link control bar provides quick access to Mercury® Smart Modes — Eco, Smart Tow®, Troll Control and Cruise Control
- The Quick Access control bar provides an integrated view of engine data without dedicating an entire page to Smartcraft® engine data
- Fault warnings and maintenance reminders can be viewed on your compatible Simrad display
- Fully integrate the VesselView® Link view with radar, chartplotter or radar split-screen functionality, and easily adjust panel sizes, as needed
- The VesselView® Link module features a convenient size for beneath-the-helm installation to help preserve dash space
- Requires Simrad GO, NSS evo2, NSO evo2 software update and VesselView® Link installation – software scheduled for June/ July 2016 delivery.

Please contact your local Mercury dealer for purchasing information.

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Mercury Engine data – Outboard Engines

FLIR

Raymarine
SIMPLY SUPERIOR

MERCURY

—

MERCURY
Precision Rigging

Mercury NMEA 2000 Gateway

Gateway Kits	P/N
Multi Engine SmartCraft Gateway (1 - 4 engines)	8M0105243

\+ T70134 + E06045

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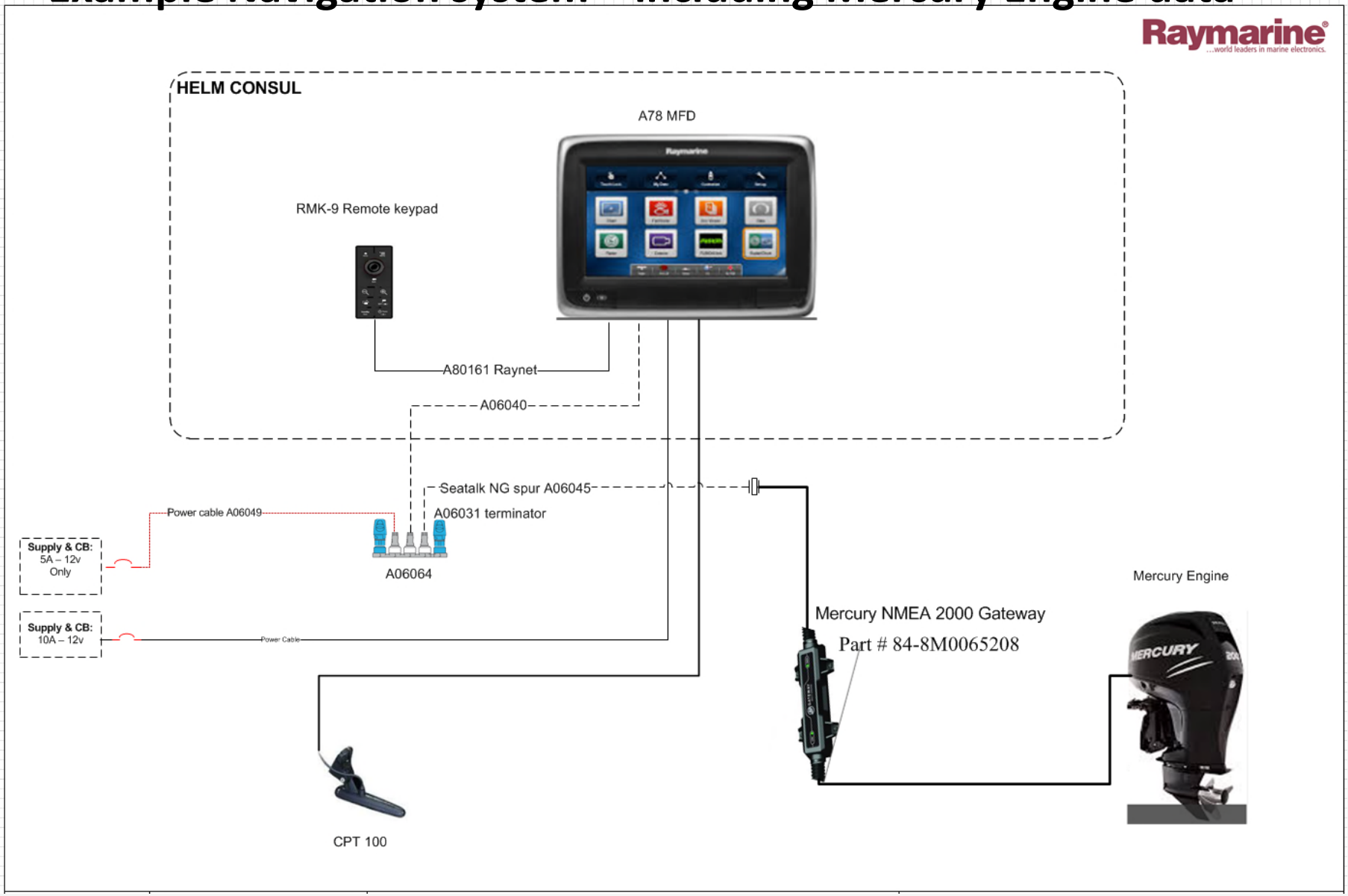
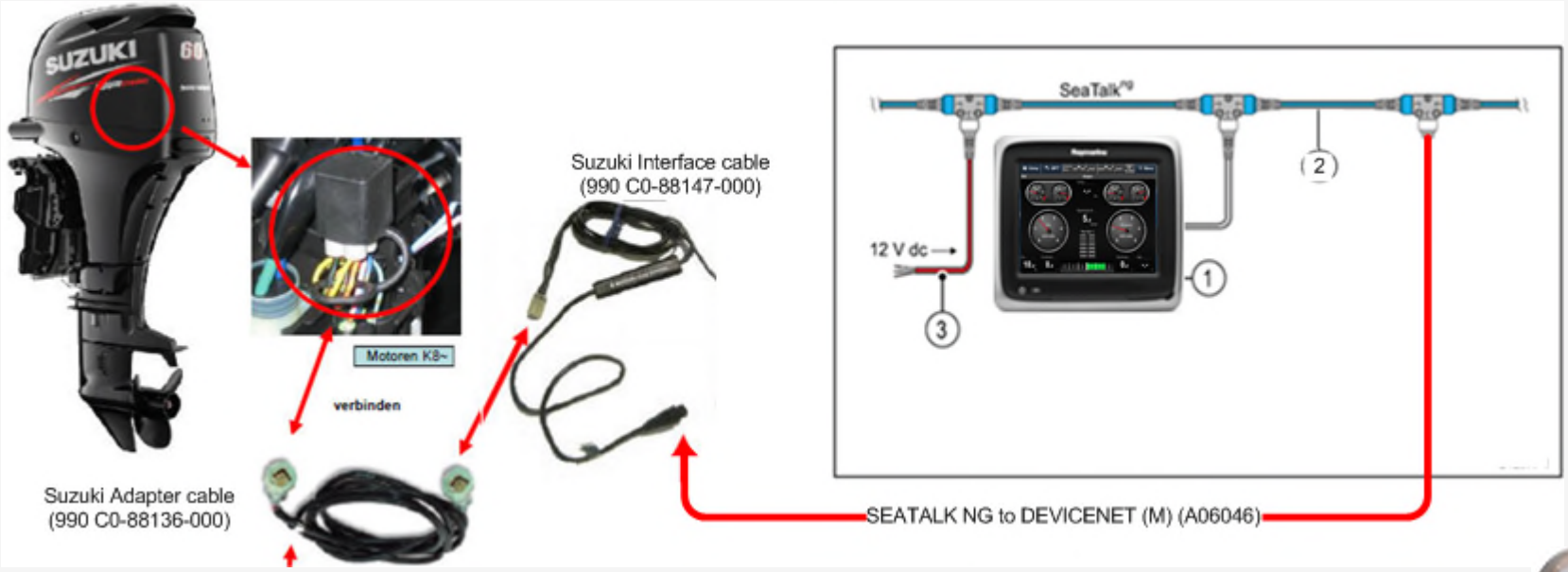
Example Navigation system – including Mercury Engine data



Suzuki Engine Interface
Single Engine directly connected to STNG



2 Engines with Raymarine ECI 100
Same like 1 Engine-Version, plus:
1x Interface 990 CD-88147-000 (T-Piece incl.)
1x T-Piece 990C0-88110-000 (Figure 7)
1x Suzuki Extension Cable 2ft 990C0-88104-000 (longer versions available)
1x ECI-100 (E70227) plus STNG Backbone

2 Engines with Suzuki SMIS
Same like 1 Engine-Version, plus:
1x Interface 990 CD-88147-000 (T-Piece incl.)
1x Suzuki 4” SMIS Multi-Function Gauge 990C0-88161-000 (T-Piece incl.)
Altern. 1x Suzuki 2” SMIS Multi-Function Gauge 990C0-88150-000 (T-Piece incl.)
Suzuki SMIS-

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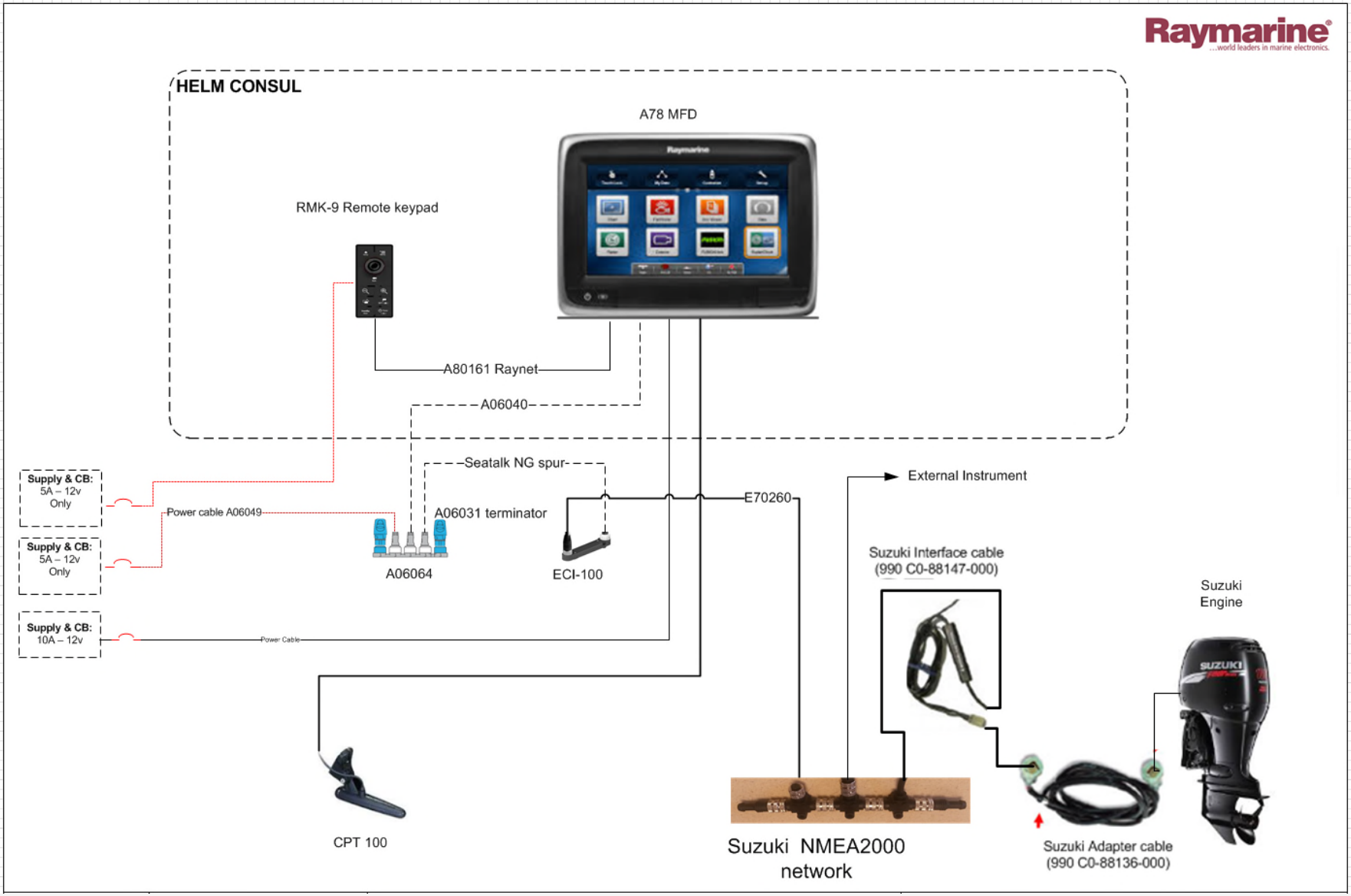
Example Navigation system – including Suzuki Engine data



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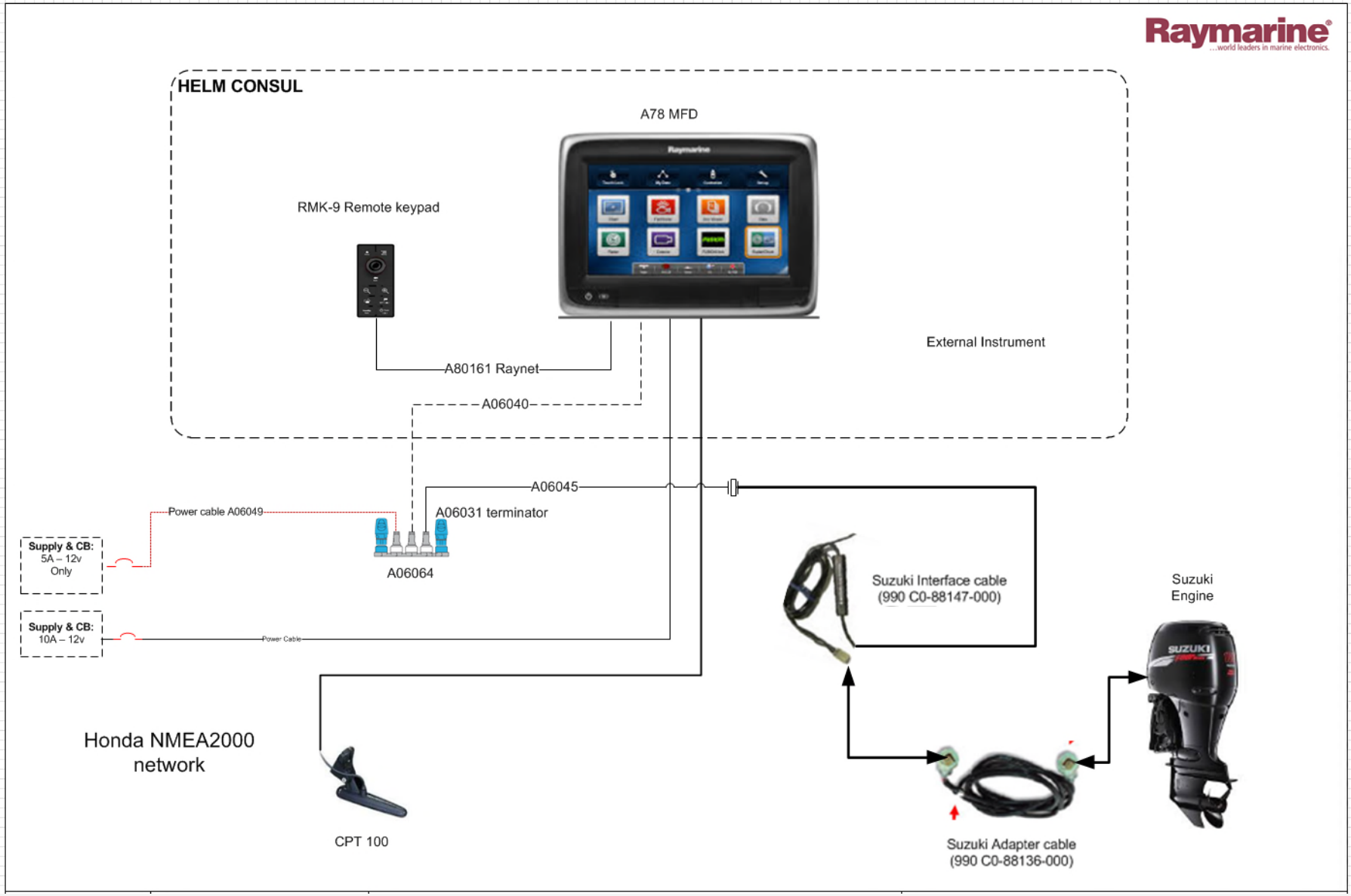
Example Navigation system – including Suzuki Engine data



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Engine data Integration – **SUZUKI** outboard e**ngine data**

FLIR

Raymarine
SIMPLY SUPERIOR

SUZUKI

Way of Life!

—

SUZUKI MULTI-FUNCTION GAUGE

+

R E06045

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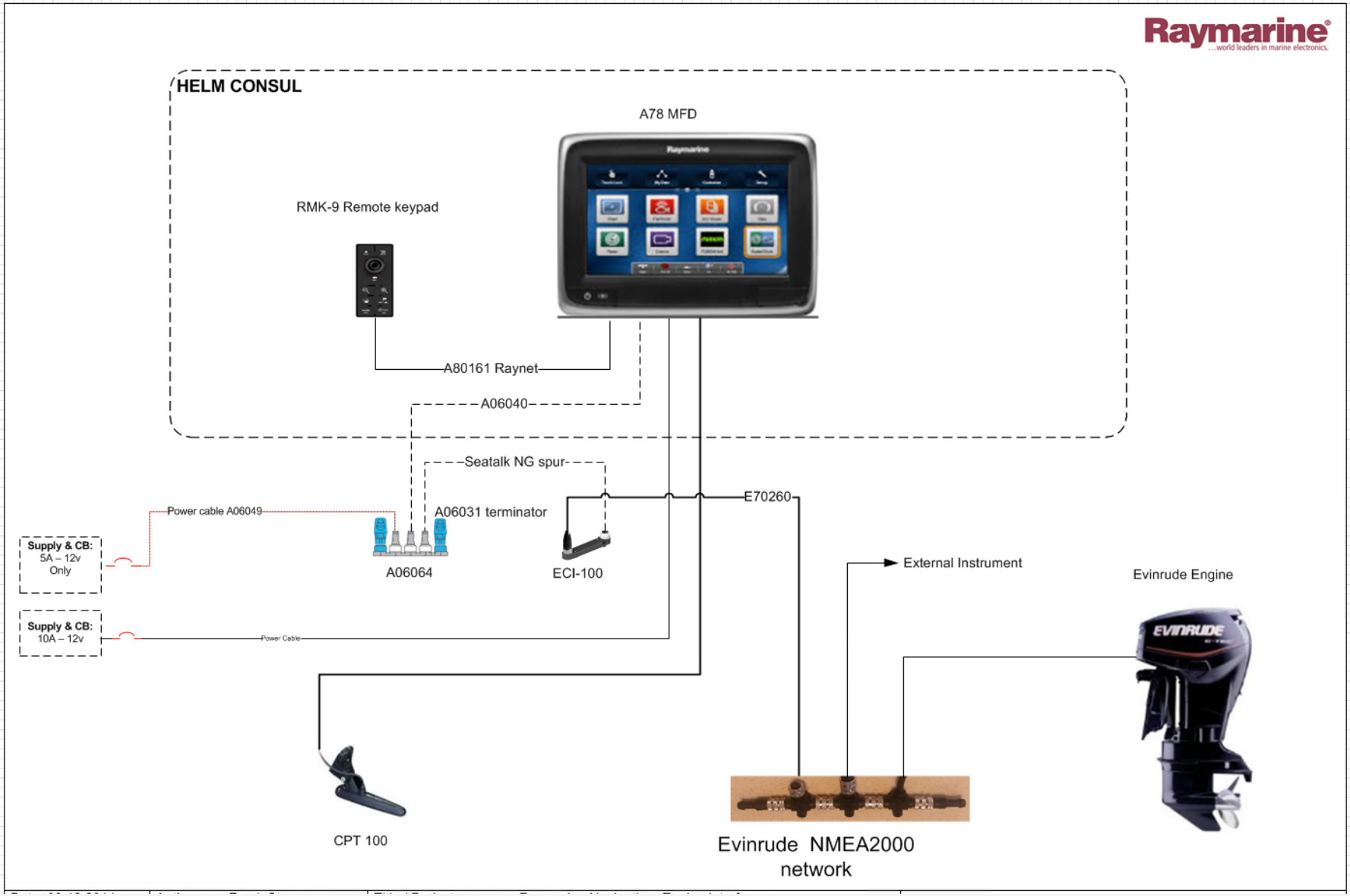
Example Navigation system – including Evinrude Engine data



Engine data Integration – **EVINRUDE** outboard e**ngine data**

FLIR

EVINRUDE® BRP

Raymarine
SIMPLY SUPERIOR

E-TEC G2 + R E06045

E-TEC 40-150 hp

Product nr: 0764164 ENGINE INTERFACE CABLE – 15 ft

+ R T70134 + R E06045

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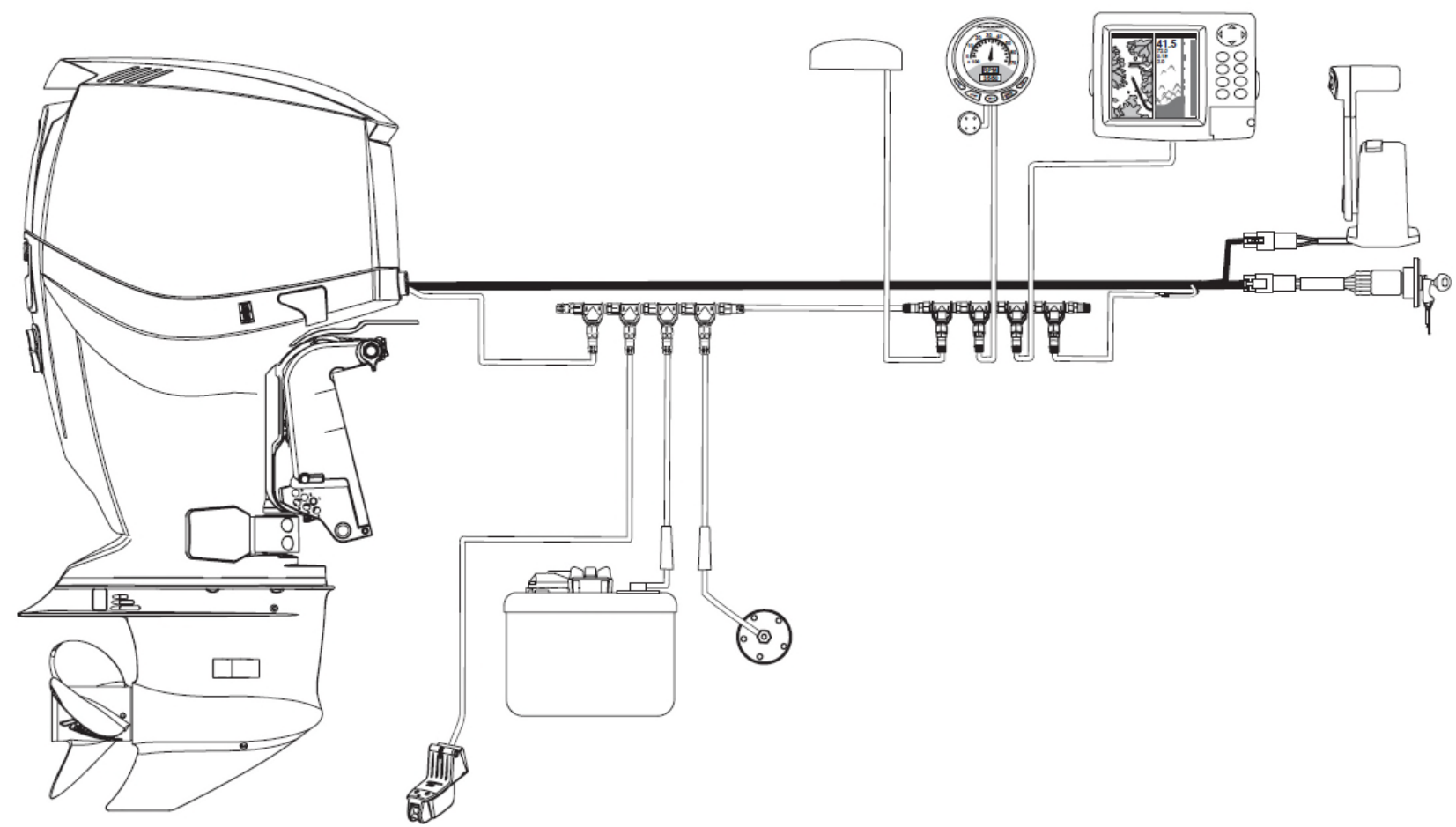
Evinrude E-TEC – (NMEA2000 Integration)



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Evinrude

- Replace ICON Touch 7 with Axiom
  - Standard DeviceNet N2K connection
- N2K and Proprietary PGN support (LH3-7987)
  - Modes: Trim Assist, Pwr Assist, Winterize, Hand/Foot, Settings: Trim Sender Cal., Tilt Limit Cal.
  - Fluid Level Instancing

- Target Q3 2019

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Engine data Integration – TOHATSU outboard **engine data**

TOHATSU
Feel the Wind™

Raymarine
SIMPLY SUPERIOR

—

40-250 hp
990C0-88149-000 + 990C0-88136-000

+

R E06045

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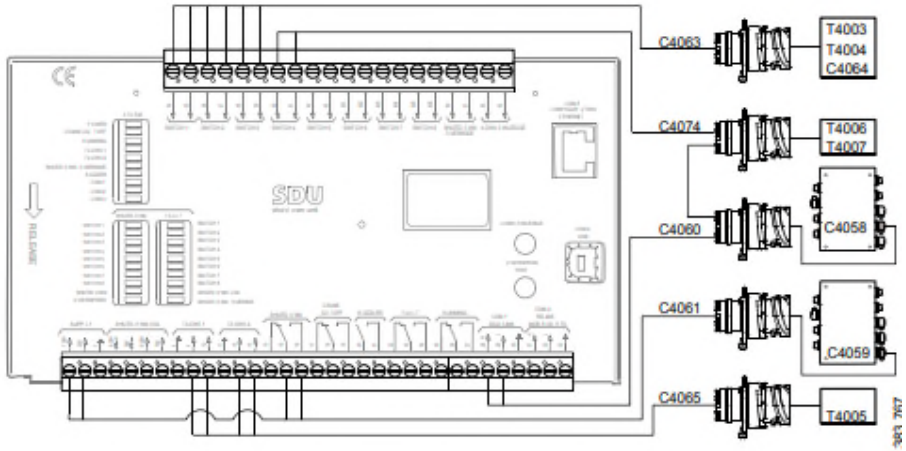
Scania Marine Engines (DI109, DI13, DI16) - untested!

INSTALLATION MANUAL

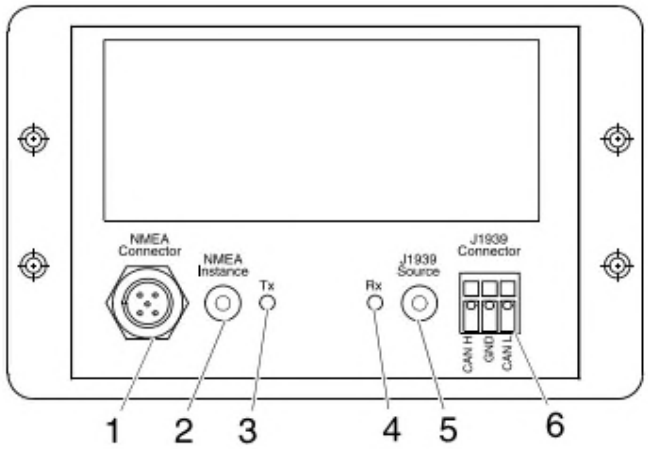
Safety module (SDU), connection

The illustration shows the safety device unit connections.

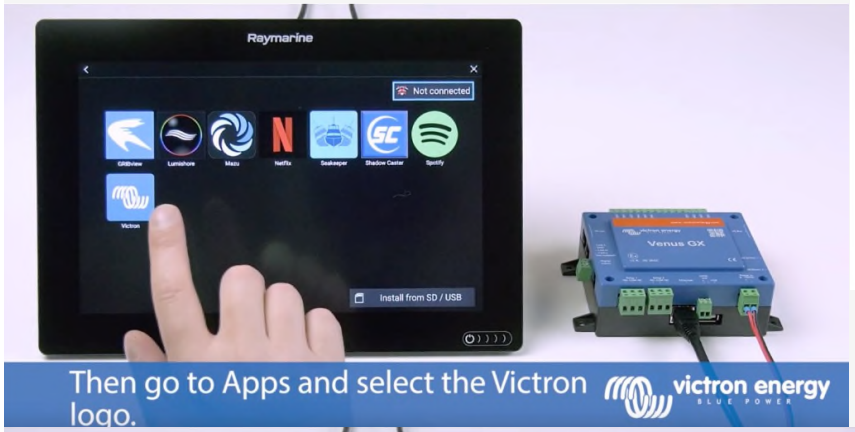


Gateway – overview

	Description
1	Connection to the ship NMEA 2000 network.
2	NMEA Instance rotary control. Set the instance which the gateway transmits to other units. Used if 2 or more gateways are connected to the same NMEA 2000 network. In such a case, make sure that each gateway has a unique instance, e.g. "0" and "1".
3	Blue Tx LED, indicates that data is being received from NMEA 2000 every 2.5 seconds.
4	Green Rx LED, indicates that data is being sent to J1939.
5	J1939 Source rotary control. Set the instance for the NMEA 2000-GPS which the information should be loaded from. If the gateway does not receive any signals from a GPS with the selected instance within 30 seconds, all valid GPS data is transferred automatically.
6	Connection to harness-to-harness connector C4067 junction box. See C4067.



Victron – Integration with Axiom App (v3.11)



3. Wiring

The MFD needs to be connected to the GX device using ethernet. It is **not** possible to connect over Wi-Fi. For the ethernet connection, a RayNet adapter is required.

4. Configuration

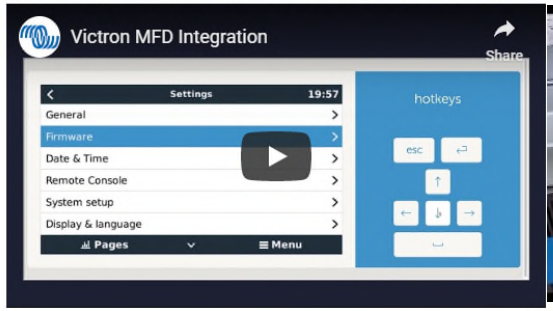
On the Victron GX Device, go to Settings → Services, and there enable MQTT.

Next, go to Settings → System Setup → Scroll to the bottom → Battery measurements. And there set up what batteries you want to see on the MFD; and by what name.

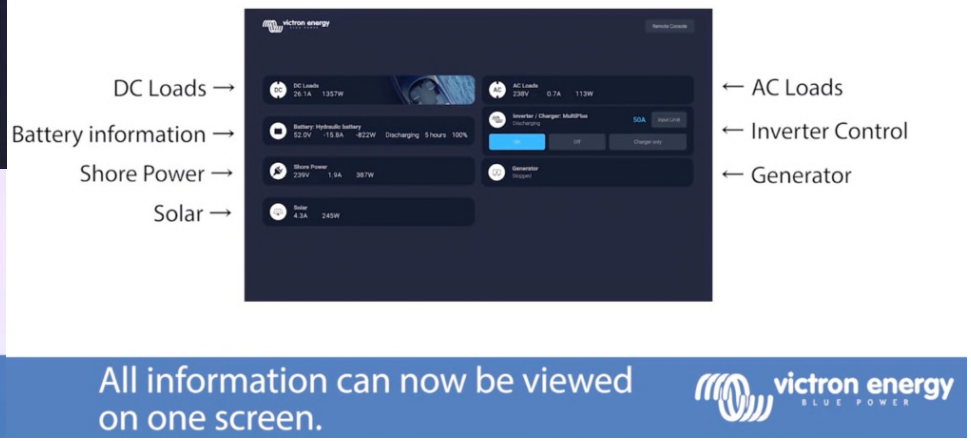
No other settings, such as IP addresses or similar are required, since the Axiom MFDs have an integrated DHCP server.

5. Configuring Multiple Battery Measurements

This video explains how to setup multiple battery measurements, and naming them.



https://www.victronenergy.com/live/venus-os:mfd-raymarine#step_by_step



Engine Instancing - Summary

Notes on Engine set-up (Instancing):

- MFD Setup - Instancing only works with an ECI-100 - (value stored in ECI-100)
- For twin engines networked into single ECI – (Use MFD to Instance. (or start engines in sequence (p0-s1-c2))
- For twin independent engines into two independent ECIs – (Use MFD to assign Instance values to ECI per engine)
- MFD Instancing does not work with a Volvo Gateway or any other Engine interface.
- Without ECI-100 Instancing values must be received correctly for each engine in the NMEA2000/J1939 data PGN.

If Things go wrong:

- Instance values may be out of range. - A good check is to set the MFD number of engines to 5 & view engine page
- Engines displayed reversed. - If engines cranked in wrong sequence – Use MFD to re-instance or reset ECI-100.
- If using 3rd party Gateway. Instance values may be set wrong. – Reconfigure Gateway. – Could use ECI-100 inline.

Engine CAN bus protocol	Number of Engines	Engine CAN bus configuration	Number of ECI-100 units	Start up Engines in sequence?
NMEA2000	1	Single CAN bus	1	Just Crank the one engine
NMEA2000	2+	Single shared CAN bus	1	Start your engines in sequence, from Port through to Starboard. Or use MFD
NMEA2000	2+	Single CAN bus for each engine	1 for each engine CAN bus	Use the a,c,e,gS Instancing Wizard, starting each one in sequence. Cannot use legacy MFD to configure this system.
J1939	1	Single CAN bus	1	Just Crank the one engine
J1939	2+	Single shared CAN bus	1	Start your engines in sequence, from Port through to Starboard Or use MFD
J1939	2+	Single CAN bus for each engine	1 for each engine CAN bus	Use the a,c,e,gS Instancing Wizard, starting each one in sequence. Cannot use legacy MFD to configure this system.

Note: If engines are cranked in wrong sequence, you cannot reverse the instancing without an a,c,e,gS MFD or a ECI-100 reset.

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MFD Engine Identification set-up (LH2)

Set-up Engine Identification:

- ECI-100 will initially not show any data
- MFD must have v8.0 or later.
- Sequentially turn on each Engine from Port to Starboard
- If Engines in wrong order – Turn Engines off - Run Engine Wizard:
  - Select - Number of Engines (max 5)
  - Select - Identify Engines
  - Follow Instructions – Sequentially turning on Engines from – (Port – Center – Starboard)
- If Engine Identity is wrong on legacy MFD or i70 – ECI-100 will have to be reset (Com Tool)

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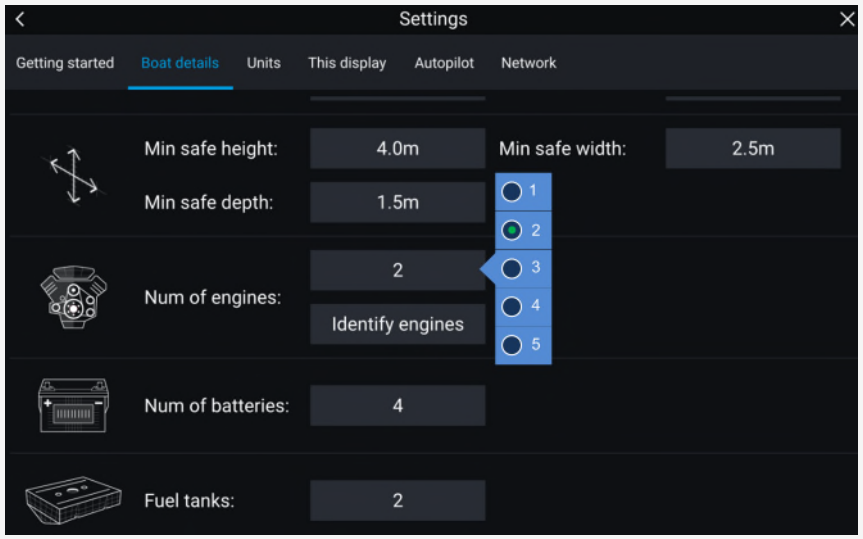
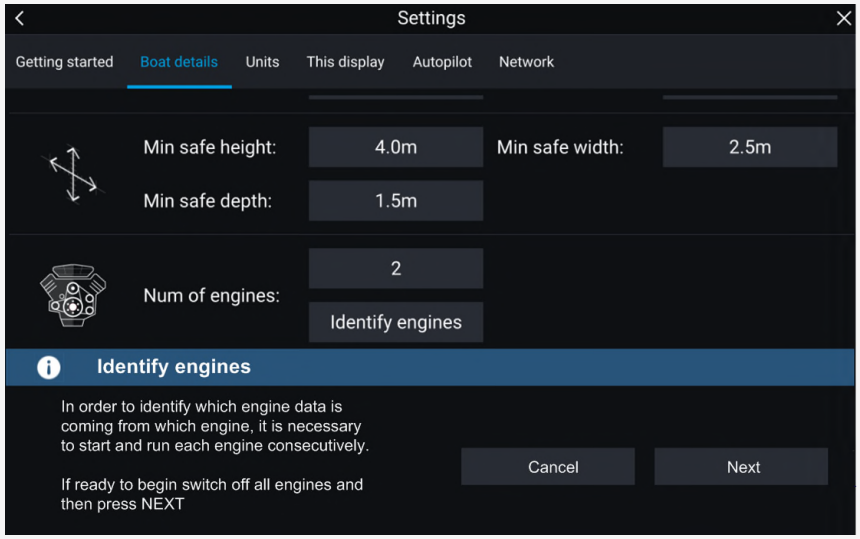
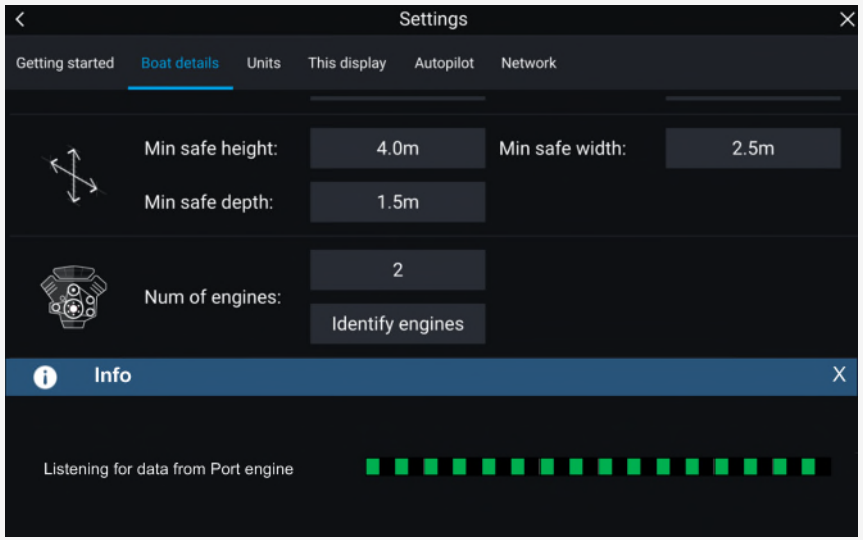
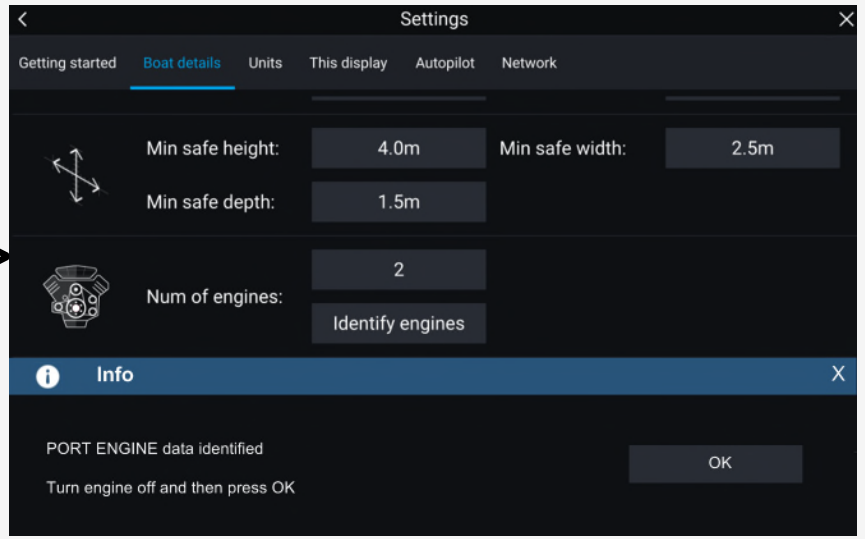
Axiom (LH3) Set-up – Engine set-up and Identity









Repeat for second Engine

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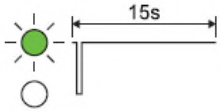
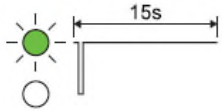
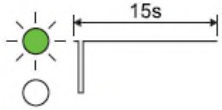
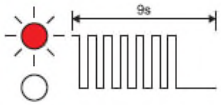
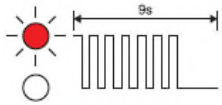
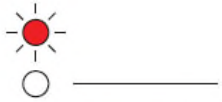
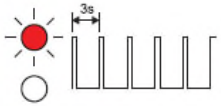
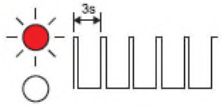
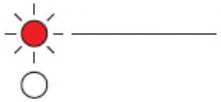
ECI-100 – Status LED indication

LED color	SeaTalkng LED code	Engine CAN bus LED code	State	User action
Red			Powering up	None (normal power up takes approximately 6 seconds.)
Green			Normal operation	None
Green			DeviceNet powered on, SeaTalkng powered off	Power up SeaTalkng network.
Red			Network connected but no traffic (no message received in more than 5 seconds.	
Red			SeaTalkng powered on, DeviceNet Off.	
Red			General error (Device connected wrong way round	Swap over SeaTalkng and DeviceNet connections
Red			Software download in progress (longer than 6 seconds.)	Wait for download to complete — Multifunction display will indicate when software download is completed.

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ECI-100 – Software Status

ECI-100 - Software History					
Application Code	Boot Code	Comment	Release Date	Tech Note	Start Serial Number
V1.05	V1.0	• First Production release for ECI-100 • Volvo compatibility only. - Engine & Pilot (EVC-C, D, E)	Nov 2013	n/a	1130001

V1.12	V1.0	• Corrects a STNG communication error which can cause the Pilot to drop to Standby and alarm Drive Stopped or No Pilot.
		• The ECI-100 is now compatible with the following Engine Manufacturers & Steering systems for Engine Data only:
		  ○ Yanmar (Engine Data only)
		  ○ Yamaha Command-Link & Command-Link Plus
		• The ECI-100 now compatible with the following Engine manufacturers for Evolution Pilot Control:
		  ○ Yamaha (Helm Master)
		• Honda Engines using NMEA2000 now supported
			June 2014	TU572	0640001

V1.20	V1.0	• The ECI-100 is now compatible with all Caterpillar Engine installations that include the engine displays, colour MPD, MPD or mini MPD. (See details below). • Oil pressure implemented for Yanmar Engines. • High Fuel Temperature alarm now supported for Yanmar Engines. • Increased support for J1939 & NMEA2000 alarms for Yanmar & general Engines.	August 2015	TU620	0850001

Pending Software Release???

- Corrects loss of Rudder data on flybridge station (EVC E-3)
- Transmits STW & SOG data back to Engine
- Changes for Yanmar Alarms

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ECI-100 – Software Status & Updating

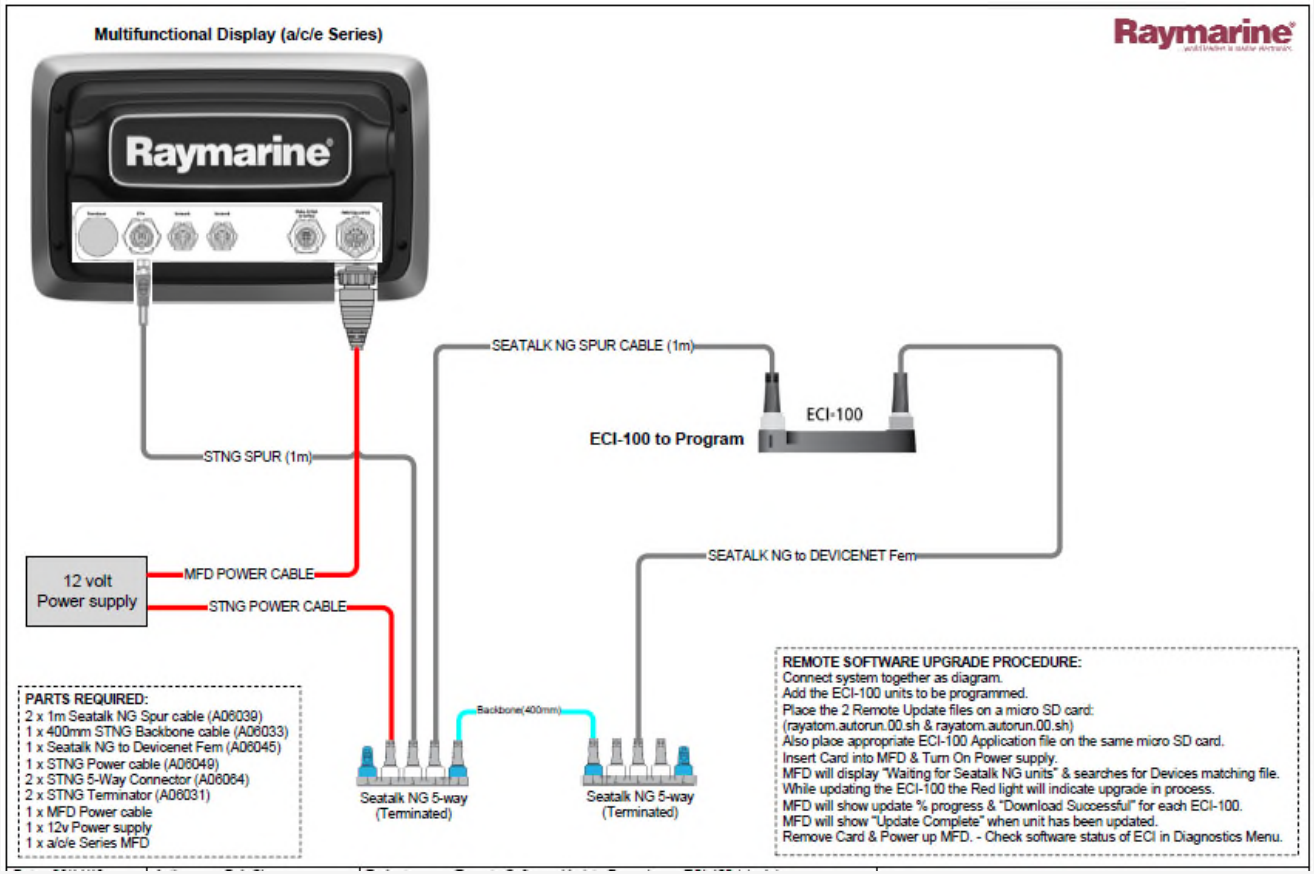
ECI-100 – Production Software level (v1.20) – August 2015

Upgrade Software via MFD Remote (bench device update procedure below)

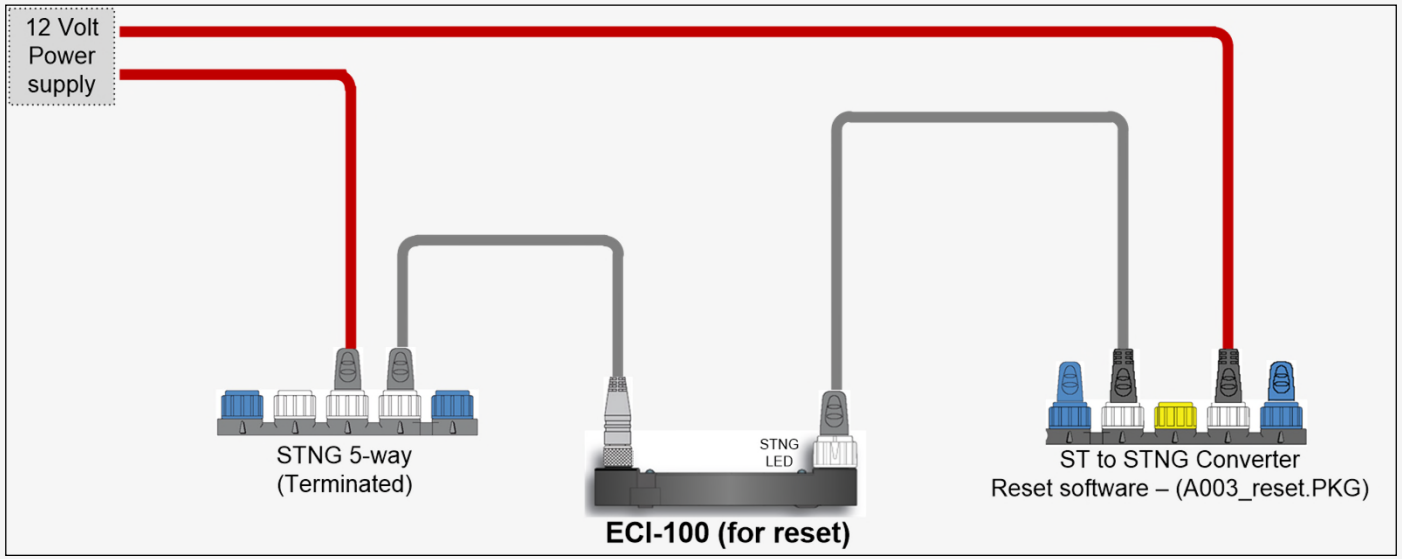
Can be upgraded on-board within a STNG system – make sure both sides of ECI are powered (Engine On)

IMPORTANT – It is important to reset the ECI-100 if you are swapping between engine types! (e.g. Volvo to Yamaha)

Note - Updating the software does not reset the device!



ECI-100 Reset Instructions



IMPORTANT – It is important to reset the ECI-100 if you are swapping between engine types! (e.g. Volvo to Yamaha)

Instructions:

1. Program the (STNG to ST Converter) with Reset Software (A003_reset.PKG) via an MFD.
2. Connect as circuit above.
3. Apply Power. Ensure Converter Flashes Green LED every 0.5 seconds and ECI-100 LED's are Red
4. Wait 11 Seconds.
5. Ensure Converter blips Green LED (1 second on, 50 milliseconds off)
6. Reset is complete.
7. Remove Power

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