

UNIC DF Training

User Interface, LDU-20 Panel

WIN GD

LDU-20 Layout

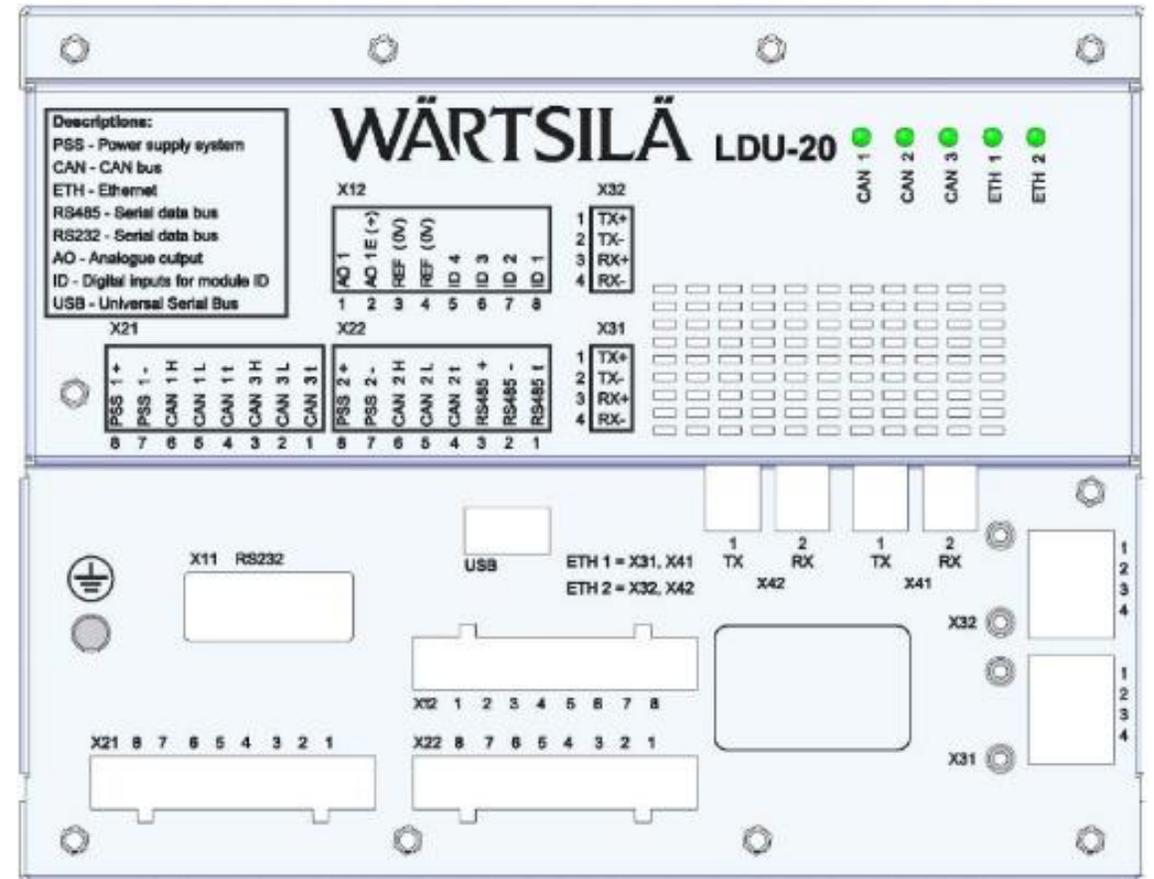
Layout of “Local Display User-interface” panel, LDU

- Colour display 640x480 pixels
- One rotating button, 16 steps for one revolution, can also be pressed
- 10 multi-function buttons
- Two Power / Status LEDs



LDU-20 Layout

- CAN-bus 3 channels
- Ethernet 2 channels
- USB 1.1 1 channel (for USB drives)
- RS-485 serial port 1 channel
- RS-232 serial port 1 channel
- Digital input 4 inputs
- Analogue output 1 output



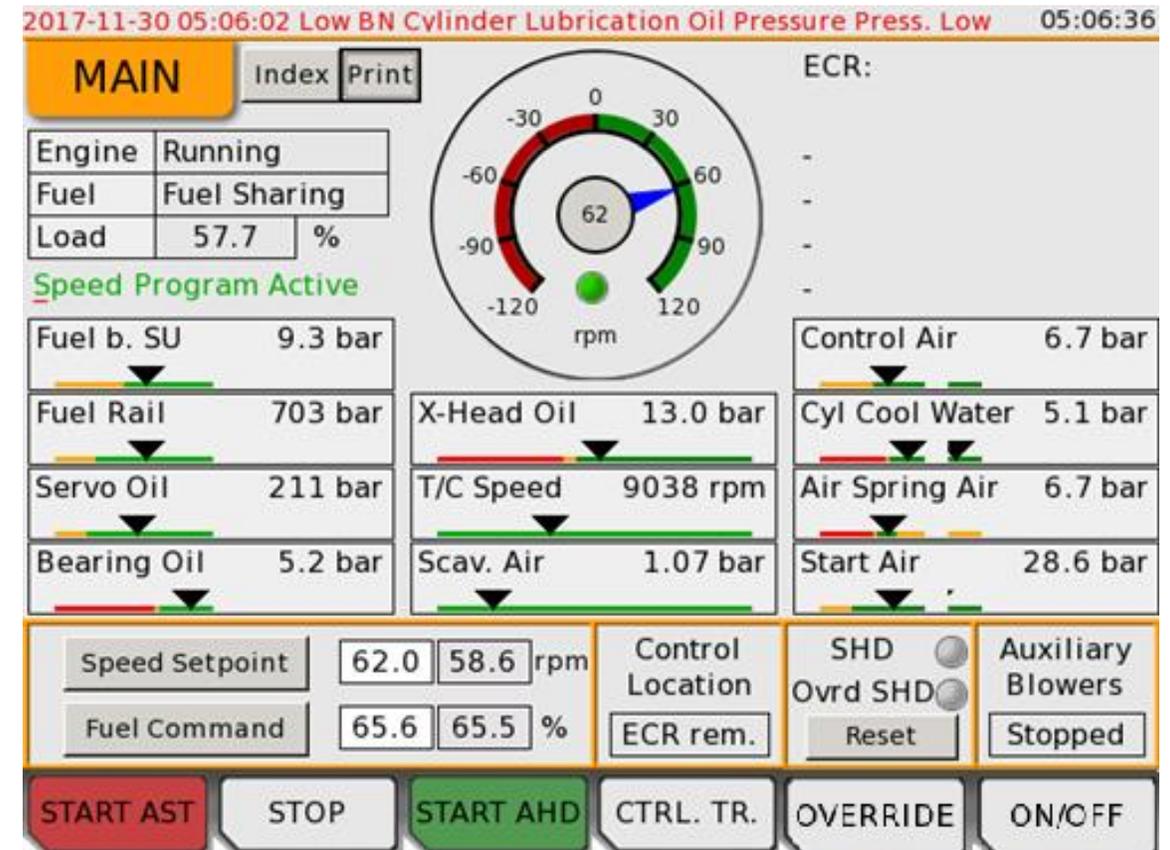
LDU-20 Layout



Main Page

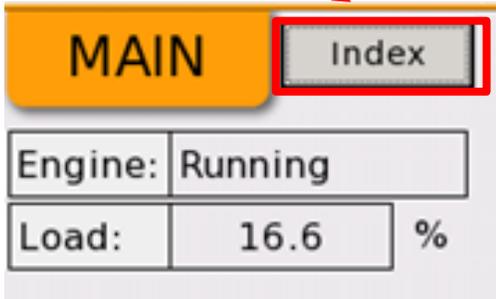
The main page contains the overview over the main data like:

- Engine speed and sense of rotation
- Various pressures
- Engine status
- Engine speed / fuel command
- Control location
- Shutdown reset and override
- Aux. Blower On/Off
- Function of multi-function buttons



Index

Click on Main Page



2017-09-13 10:05:28 Fuel Ini. Cut Off Cyl #5 14:36:58

PAGE INDEX ECR: In Control

Return to MAIN page by pressing 

Main Page	Control Locations	Fuel Mode Control
CA Sensor Status	Fuel Sharing	Perf. Data Gas
Cyl. Balancing Diesel	Fuel System	Pilot Fuel Injection
Cyl. Balancing Gas	Gas Adm. Valves	Pilot Fuel Pressure
Cyl. Lubrication	Gas Pressure	Scavenge Air - EWG
Cyl. Lub. Auto Trans.	GAV Man. Valve Test	Software Info
Dyn. Comb. Ctrl.	GVU Valve Test	Software Tools
Exhaust Valves	Knock Control	System Status
Exhaust Ventilation	Main Fuel Injection	Temperatures
Failure Simulation	Perf. Data Diesel	User Parameters

START AST STOP START AHD CTRL. TR.

Control Location

2015-09-18 10:24:49 Gas Interlock - Both Gas Pr. Sensors Fail 10:28:42

CONTROL LOC. ECR: In Control

Local ECR manual ECR remote Bridge

ACTIVE

Speed Control Mode

Confirm now

PCS Communication Line 1	Ok
PCS Communication Line 2	Ok

START AST STOP START AHD CTRL. TR. INDEX

Fuel Mode Control

Gas Mode Available

- Fuel Cmd Mode Inactive
- MDO Fuel in Use
- No Heavy sea Mode
- No external Gas Trip
- No Gas Interlock
- No Astern / Stop
- Load/Speed in Range
 - Speed 29~100 rpm
 - Load 10~80%

2017-11-30 05:06:02 Low BN Cylinder Lubrication Oil Pressure Press. Low 05:06:47

FUEL MODE CONTROL

Index Print ECR:

Engine Speed	61	rpm	Fuel Rail Pr. Low	<input type="radio"/>
Engine Load	59.3	%	Fuel Rail Pr. Very Low	<input type="radio"/>
Gas Concentr.	0.1	% LEL	Diesel Mode	Available
			Gas Mode	Not Available

-

Diesel Mode	Transfer Mode	Gas Mode
<ul style="list-style-type: none"><input checked="" type="radio"/> GFS Ready<input checked="" type="radio"/> Start transfer prep.<ul style="list-style-type: none"><input type="radio"/> GVU Prepare for Gas<input type="radio"/> Ready for Gas Release<input type="radio"/> GVU Prepare for Gas Fail<input checked="" type="radio"/> Release Gas Command<input checked="" type="radio"/> Transfer prep. complete <p>Fail Reset</p>		MDO Fuel in use <input checked="" type="radio"/>

Diesel Gas

START AST STOP START AHD CTRL. TR. DIESEL GAS

CA Sensor Status

2015-09-18 10:00:01 YE3505C - Knock Measurement Fail Cyl #5 10:31:46

CA SENSOR STATUS

Reset Status Recovery

● TDC						
● BDC						
● A	● C	● C	● C	● C	● C	
● B	● D	● D	● D	● D	● D	
CCM-D1	CCM-D2	CCM-D3	CCM-D4	CCM-D5	CCM-D6	
A	MCM					
● Cyl 1	● Cyl 2	● Cyl 3	● Cyl 4	● Cyl 5	● Cyl 6	
B	CCM-G1	CCM-G2	CCM-G3	CCM-G4	CCM-G5	CCM-G6
● TDC						
● BDC						
● A	● A	● A	● A	● A	● A	
● B	● B	● B	● B	● B	● B	

TDC & BDC are flywheel pickup signals A, B, C & D are gearwheel pickup signals

START AST STOP START AHD CTRL. TR. INDEX

Cylinder Balancing

2015-09-21 11:06:27 CV7242C - Start Air Valve Open/Short Cyl#2 13:00:40

CYL. BAL. GAS Index

Barometric Press. 1.1 bar
 Engine Speed 60 rpm
 Scavenge Air Temp. 50.4 °C
 Engine Load 19.8 %
 Ambient Temp. 50.6 °C
 Compr. Balancing On Firing Balancing On

	Compr. Pr. bar	ExhV. Offset deg	Firing Pr. bar	Gas Dem. Offset %	Fir. Pr. Status
Cyl. #1	86.62	-0.5	143.19	0.0	Normal
Cyl. #2	85.73	0.4	141.37	0.0	Normal
Cyl. #3	89.73	0.0	141.00	0.0	Normal
Cyl. #4	87.00	-0.5	141.69	0.0	Normal
Cyl. #5	88.29	1.1	137.94	0.0	Normal
Cyl. #6	86.07	-0.3	138.91	0.0	Normal
Avg.	87.17	0.0	140.69	0.0	

START AST STOP START AHD CTRL. TR. INDEX

2015-10-22 12:05:57 CV7242C - Start Air Valve Open/Short Cyl#2 13:17:20

CYL. BAL. DIESEL Index

Barometric Press. 1081 mbar
 Engine Speed 60 rpm
 Scavenge Air Temp. 50.3 °C
 Engine Load 19.7 %
 Ambient Temp. 50.6 °C
 Compr. Balancing On Firing Balancing On Firing Control On

	Compr. Pr. bar	ExhV. Offset deg	Firing Pr. bar	Inj. Beg. Offset deg
Cyl. #1	109.2	-1.9	151.9	0.7
Cyl. #2	103.6	0.8	150.2	0.2
Cyl. #3	106.5	0.2	151.0	0.2
Cyl. #4	110.0	-2.0	152.9	0.3
Cyl. #5	102.0	1.8	150.6	-0.7
Cyl. #6	102.0	1.3	151.9	-0.6
Avg.	105.6	0.0	151.6	0.0

START AST STOP START AHD CTRL. TR.

Cylinder Lubrication

- The feed rate can be adjusted for each cylinder individually
- Fuel Mode and oil type indication
- Manual lubrication to a specific cylinder
- Selecting cyl. #100, manual lubrication applied to all cylinders
- Feed rates can be adjusted between 0.4 and 1.2 g/kwh with LFR bush and "Low" pump volume setting. To Achieve a feed rate more than 1.2g/kwh, bush for flexLub pump need to be changed from LFR to HFR depending on CMCR and set "High" pump vol. on LDU.
- Green indication shows the unit lubricating at that moment

14:32:47

CYL. LUBRICATION

Index
ECR:

Man. Lub. Cyl.#	0	Man. Lub.	Speed	70	rpm	<input checked="" type="checkbox"/> Dynamic Load
Num. of Inj.	100		Load	51.8	%	Feed rate increase <input type="text" value="1"/> %
Servo Oil Press.	209	bar	Fuel Mode	Diesel	Oil Type	Correct
Aux. Elect. SO Pump	<input type="checkbox"/> On / <input type="checkbox"/> Off		Used Fuel	HFO	Cyl. Oil	High BN
Oper. Mode	<input type="radio"/> Dry Run <input type="radio"/> Pre-Lub <input type="radio"/> Speed-Depend. <input checked="" type="radio"/> Load-Depend.					

Cyl. #	Fuel Share %	HighBNLowBN Gas			Act. g/kWh	Actuator	Press. meas.	
		g/kWh	g/kWh	g/kWh			bar	Status
Cyl. #1	<input checked="" type="checkbox"/>	1.40	1.40	1.40	1.47	OK	6	OK
Cyl. #2	<input checked="" type="checkbox"/>	1.40	1.40	1.40	1.47	OK	22	OK
Cyl. #3	<input checked="" type="checkbox"/>	1.40	1.40	1.40	1.47	OK	12	OK
Cyl. #4	<input type="checkbox"/>	1.40	1.40	1.40	1.47	OK	19	OK
Cyl. #5	<input type="checkbox"/>	1.40	1.40	1.40	1.47	OK	22	OK
Cyl. #6	<input checked="" type="checkbox"/>	1.40	1.40	1.40	1.47	OK	17	OK
Cyl. #7	<input checked="" type="checkbox"/>	1.40	1.40	1.40	1.47	OK	4	OK

START AST
STOP
START AHD
CTRL. TR.
High BN
HFO

Cylinder Lubrication Auto Transfer

- At fuel sharing, the cylinder oil type between HighBN and LowBN changes automatically.
- Cylinder oil transfer is depending on fuel sharing ratio and type of fuel in use.

2017-09-13 10:05:28 Fuel Inj. Cut Off Cyl #5 14:32:20

Lub. Auto Transfer Index Print ECR: In Control

Active Mode		No iCAT Functionality		Transfer Mode		HighBN	
Commissioning		Eng. Stand Still		Ctrl. Air Press. >		5000 mbar	
Actuate Valve		Valve Pos. ---		Ctrl. Air Press.		--- bar	
Cyl.	#1	#2	#3	#4	#5	Inst. Air Press.	0.0 bar
LowBN	●	●	●	●	●	LowBN Oil Press.	0 mbar
HighBN	●	●	●	●	●	HighBN Oil Press.	0 mbar
Fuel Mode		High Sulf.		Low Sulf.		HFO Sulfur Content 0.0 %	
Diesel		HighBN		LowBN		MDO Sulfur Content 0.0 %	
Gas		LowBN		LowBN			
FS Ratio < 10.0		LowBN		LowBN			
FS Ratio > 10.0		HighBN		LowBN			
FSRatio		100.0 %					
FSRatio Hyst.		5.0 %					
						Disabled	
						Disabled	

START AST
STOP
START AHD
CTRL. TR.
High BN
HFO

DCC

Dynamic Combustion Control

10:39:56

Dyn. Comb. Control Index ECR:

Dynamic Combustion Control	Not Active	
EWG Position Feedback	0.8	%
Average Cylinder Firing Pressure	111.0	bar
Trigger Pressure Limit	120.0	bar

Ratio Diesel Gas %

100.0	0.0	%
-------	-----	---

START AST STOP START AHD CTRL. TR. INDEX

00:32:37

DYN. COMB. CONTROL Index ECR:

Dynamic Combustion Control	In Use	
EWG Position Feedback	0.3	%

Engine Load 100.0 %

Exit Load Level 91.8 %

Maximum Diesel Ratio Reached

Estimated ratio Diesel Gas %

5.6	94.4	%
-----	------	---

START AST STOP START AHD CTRL. TR. PRINT INDEX

Exhaust Valves

- Manual exhaust valve operation will only work if air spring pressure is available and servo oil pressure provided by servo oil service pump
- To open the exhaust valve for testing or venting servo oil system, the cursor has to be moved on the respective text field and the rotating button pressed to enter editing mode.
- Value "On" manually open, "Off" to set it back to automatic mode equal to closing at standstill

2015-09-21 11:06:27 CV7242C - Start Air Valve Open/Short Cyl#2 13:04:33

EXHAUST VALVES ECR:

Servo Oil 160 bar Air Spring Air 6.5 bar

	Status			Dead Times ms		Closing Offset deg
	Valve	Meas.	Man.	Open	Close	
Cyl. #1	Ok	Ok	Off ▾	30	70	-0.4
Cyl. #2	Ok	Ok	Off ▾	30	70	0.0
Cyl. #3	Ok	Ok	Off ▾	30	70	0.0
Cyl. #4	Ok	Ok	Off ▾	30	70	0.0
Cyl. #5	Ok	Ok	Off ▾	30	70	0.7
Cyl. #6	Ok	Ok	Off ▾	30	70	0.0

START AST STOP START AHD CTRL. TR. INDEX

Exhaust Gas Ventilation

2015-09-21 13:34:31 Gas Interlock - Exh. Venting Sequence Active 13:35:20

EXH. VENTILATION ECR:

Ventilation Request	Manual	Preconditions	
Ventilation Passed	No	CA Status Known	Yes
Ventilation Cancelled	No	CA Position for Ventil.	OK
Emergency Vent. Req.	No	Ventilation Possible	Yes

Exhaust Ventilation Sequence			
<input type="radio"/>	Start Aux. Blowers	Aux. Blowers	Running
<input checked="" type="radio"/>	Aux. Elect. SO Pump Start	Servo Oil Pressure	OK
		Exh. Valve Opened	No

Manual Ventilation Request Cancel Exhaust Ventilation

START AST STOP START AHD CTRL. TR. INDEX

Fuel Sharing (Optional)

- Fuel Sharing Mode can be requested from LDU and RCS
- Fuel sharing Ratio(Liquide/Gas ratio) can be set in RCS
 - FS demand limit between 5% ~ 50%
- **Fuel sharing mode available**
 - Fuel Cmd Mode Inactive
 - No heavy sea mode
 - No external Gas Trip
 - No Astern/Stop
 - Load/speed in range
 - Speed 10~124 rpm
 - Load 50~80 % (Diesel to FS)
50~100% (Gas to FS)

2017-11-30 05:06:02 Low BN Cylinder Lubrication Oil Pressure Press. Low 05:07:16

FUEL SHARING Index Print ECR:

Engine Speed	61	rpm	Fuel Sharing Mode	In Use
Engine Load	55.8	%	Ext. Sharing Ratio	50.0 %
Fuel Mode State	Fuel Sharing Operation			

Diesel Mode	Sharing Mode	Gas Mode
<ul style="list-style-type: none"> <input checked="" type="radio"/> GFS Ready <input checked="" type="radio"/> Start transfer prep. <ul style="list-style-type: none"> <input type="radio"/> GVU Prepare for Gas <input type="radio"/> Ready for Gas Release <input type="radio"/> GVU Prepare for Gas Fail <input checked="" type="radio"/> Release Gas Command <input checked="" type="radio"/> Transfer prep. complete <p>Fail Reset</p>	<p>Request</p> <p>D: 50.0 % G: 50.0 %</p>	<p>MDO Fuel in use <input checked="" type="radio"/></p>

START AST STOP START AHD CTRL. TR. DIESEL GAS

Fuel System

00:32:58

FUEL SYSTEM ECR:

Engine Speed	69	rpm	<input type="radio"/> Heavy Sea Mode
Engine Load	99.7	%	

Fuel b. SU	7.9 bar	Fuel Pr. Mode	Gas Mode
Fuel Rail	801 bar	Fuel Pressure Setpoint	800 bar
		Fuel Pressure Meas. #1	803 bar
		Fuel Pressure Meas. #2	801 bar

Engine Standstill Shutdown Active

Control Pos. Fuel Pump #1	16.8	%
Control Pos. Fuel Pump #2	16.8	%

START AST STOP START AHD CTRL. TR. PRINT INDEX

Gas Admission Valves

10:46:53

GAS ADM. VALVES ECR:

Engine Speed rpm

Engine Load %

	Adm. Begin deg	Duration ms	GAV 1		GAV 2	
			Act.	Feedb.	Act.	Feedb.
Cyl. #1	228.4	22.2	OK	OK	OK	OK
Cyl. #2	228.4	22.8	OK	OK	OK	OK
Cyl. #3	228.4	21.7	OK	OK	OK	OK
Cyl. #4	228.4	21.6	OK	OK	OK	OK
Cyl. #5	228.4	21.7	OK	OK	OK	OK
Cyl. #6	228.4	22.0	OK	OK	OK	OK

START AST STOP START AHD CTRL. TR. INDEX

Gas Pressure

00:33:08

GAS PRESSURE Index ECR:

Engine Speed	69	rpm	Gas Pressure Setpoint	11.39	bar
Engine Load	99.8	%	Gas Pressure Actual	11.33	bar
			Gas Pressure Command	60	%
			Sealing Oil Pressure	18	bar
			Gas Feed System Press	0.00	bar

Gas Pressure Control Mode

- Degassing
- Flushing
- GVU purging by inert gas
- Engine purging by inert gas
- Gas leak test
- Manual valve checks
- Gas/Transfer mode

- Degassing Fail
- Flushing Fail
- Inerting Fail
- Seal Oil Pr. Fail

Fail Reset

START AST STOP START AHD CTRL. TR. PRINT Leak Test

GAV Manual Valve Test

10:42:50

GAV MAN. VALVE TEST

ECR:

Servo Oil Pressure	220	bar
GAV Sealing Oil Valve	Close	
Sealing Oil Pressure	0.0	bar

Test Conditions	Not Ready
Test	Not Active

Manual Test Request

Shutoff Valve

Fuel Side

Exh Side

Cyl1 Cyl2 Cyl3 Cyl4 Cyl5

START AST STOP START AHD CTRL. TR. INDEX

GVU Valve Test

2017-03-21 03:27:59 Gas Interlock - Emerq. Exh. Venting needed 10:37:51

GVU & VALVE TEST

Test Conditions	Not OK
Test	Not Active

On / Off Test Mode

GVU Press. Viv Cmd %

GVU Shut-off

GVU Vent

OP CL

Shut-off

GUV Prepare GUV Prepare Fail
 Ready for Gas Release Gas

ECR:

Gas Press. Engine Inlet	<input type="text" value="0.00"/>	bar
Gas Press. Fuel Side	<input type="text" value="0.00"/>	bar
Gas Press. Exh. Side	<input type="text" value="0.00"/>	bar

Eng. Maint. Switch GUV Inert
 GUV Maint. Switch

START AST STOP START AHD CTRL. TR. INDEX

Knock Control

2015-09-21 11:06:27 CV7242C - Start Air Valve Open/Short Cyl#2 13:11:14

KNOCK CONTROL ECR:

Engine Speed 61 rpm
Engine Load 20.0 %

	Knock status
Cyl. #1	No Knocking
Cyl. #2	No Knocking
Cyl. #3	No Knocking
Cyl. #4	No Knocking
Cyl. #5	No Knocking
Cyl. #6	No Knocking

START AST STOP START AHD CTRL. TR. INDEX

Main Fuel Injection

- Select and adjust the value by turning the rotating button
- Injection beginning offset can be adjusted individually
 - Injection beginning offset can be adjusted by +/- 1.5°
 - positive angles mean later (retarded) injection
 - negative angles lead to earlier (advanced) injection
- Injection cut-off
- Adjusting of amount of injected fuel on individual cylinders (80 – 110 %)

2015-09-21 11:06:27 CV7242C - Start Air Valve Open/Short Cyl#2 13:11:47

MAIN FUEL INJECTION ECR:

Engine Speed	60	rpm	Fuel Command	16.4	%
Engine Load	20.1	%	Average Inj. Begin Offset	0.00	deg

	Inj. Begin Offset deg	Inj. Begin Angle deg	Inj. Quant. Corr. %	Inj. Cutoff Auto/Cutoff
Cyl. #1	0.00	0.00	103.0	Auto
Cyl. #2	0.00	0.00	104.0	Auto
Cyl. #3	0.00	0.00	102.0	Auto
Cyl. #4	0.00	0.00	100.0	Auto
Cyl. #5	0.00	0.00	100.0	Auto
Cyl. #6	0.00	0.00	100.0	Auto

START AST STOP START AHD CTRL. TR. INDEX

Performance Data DIESEL

10:44:48

PERF. DATA DIESEL
ECR:

Engine Speed	74	rpm	Scavenge Air Pressure	3.75	bar					
Engine Speed	100.5	%	Exhaust Waste Gate Pos.	0.8	%					
Fuel Command	99.4	%	Fuel Rail Pressure	596	bar					
Engine Load	99.5	%	Fuel Rail Pr. Setpoint	600	bar					
VIT A	0.40	deg	Active Nozzles	3	FQS	0.00	deg			
VIT B	0.08	deg	Inj. Begin Standard Value	0.00	deg					
VIT C	0.00	deg	Fuel Injection Timing	0.49	deg					
VIT D	0.48	deg	Injector	1	-1.0	2	-1.0	3	-1.0	deg
			Duration	1	29.3	2	29.3	3	29.3	ms
Servo Oil Pressure	219	bar	Exh. Valve Opening	118.5	deg					
Servo Oil Pr. Setp.	219	bar	Exh. Valve Closing	259.3	deg					

START AST
STOP
START AHD
CTRL. TR.
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Performance Data GAS

2017-11-30 05:06:02 Low BN Cylinder Lubrication Oil Pressure Press. Low 05:08:12

PERF. DATA GAS

ECR:

Engine Speed	61	rpm	Scavenge Air Pressure	0.96	bar
Engine Speed	87.7	%	Exhaust Waste Gate Pos.	56.2	%
Fuel Command	60.5	%	Gas Rail Pressure	4.75	bar
Engine Load	55.2	%	Gas Delta Pressure	-3.79	bar
GAV Opening	223.22	deg	PF Rail Pressure	995	bar
GAV Duration	17.428	ms	PF Rail Pr. Setpoint	1000	bar
			PFI Timing	-9.40	deg
			PF Inj.	1 -9.40 2 -9.40	deg
			PFI Dur.	1 1.600 2 1.600	ms
Servo Oil Pressure	208	bar	Exh. Valve Opening	119.5	deg
Servo Oil Pr. Setp.	208	bar	Exh. Valve Closing	242.4	deg

START AST

STOP

START AHD

CTRL. TR.

PRINT

INDEX

Pilot Fuel Inj/Pilot Fuel Pressure

2015-09-21 11:06:27 CV7242C - Start Air Valve Open/Short Cyl#2 13:14:02

PILOT FUEL PRESS. ECR:

Engine Speed 61 rpm
 Engine Load 20.4 %

Pilot Fuel Press. Setpoint 1000 bar
 Pilot Fuel Pr. Sensor #1 1004 bar
 Pilot Fuel Pr. Sensor #2 1006 bar
 Pilot Fuel Pump Cmd. 12.3 %
 Pilot Fuel Inlet Pressure 6.1 bar
 Pilot Fuel Inlet Temp. 49.8 °C

Pump Control Mode Selector
 Auto / Manual

Pump Control Status

- Auto
- Manual
- Stopped
- Running

Pressure Control Status
 OK

Manual Start / Stop Of Pilot Fuel Pump
 Start / Stop

START AST STOP START AHD CTRL. TR. INDEX

2017-11-30 05:06:02 Low BN Cylinder Lubrication Oil Pressure Press. Low 05:08:56

PILOT FUEL INJ. ECR:

Engine Speed 60 rpm PFI 1 Act. PFI 2 Act.
 Engine Load 54.4 % Pressure Control Status OK

	PFI Begin deg	Offset deg	PFI Duration ms	PFI 1	PFI 2
Cyl. #1	-9.30	0.00	1.600	Ok	Ok
Cyl. #2	-9.30	0.00	1.600	Ok	Ok
Cyl. #3	-9.30	0.00	1.600	Ok	Ok
Cyl. #4	-9.30	0.00	1.600	Ok	Ok
Cyl. #5	-9.30	0.00	1.600	Ok	Ok

START AST STOP START AHD CTRL. TR. PRINT INDEX

Scavenge Air – Exhaust Waste Gate (EWG)

00:34:27

SCAVENGE AIR - EWG

ECR:

Engine Speed	69	rpm	TC Inlet Temperature	21.8	C
Engine Load	100.0	%	Scav. Air Press. Actual	3.44	bar
T/C Speed #1	12751 rpm		Scav. Air Press. Sensor#1	3.4	bar
			Scav. Air Press. Sensor#2	3.4	bar
EWG Control Mode			Waste Gate Command	0.0	%
Closed Loop Gas			Waste Gate Position	0.3	%
Deposit Cleaning Command			Aux. Blower#1 Operation	Auto	
Manual Control Mode			Aux. Blower#2 Operation	Auto	
Manual Open/Close Cmd.			Not Available		
Activate Manual Command			50.3	%	

START AST STOP START AHD CTRL. TR. PRINT INDEX

Temperatures

2015-09-21 11:06:27 CV7242C - Start Air Valve Open/Short Cyl#2 13:16:44

TEMPERATURES

ECR:

Ambient Temp. 50.6 °C

Engine Speed 61 rpm

Scavenge Air Temp. #1 50.4 °C

Engine Load 20.4 %

Scavenge Air Temp. #2 50.4 °C

	Liner Wall Temp. °C		Exh. Gas Temp. After Cylinder °C
	Aft Side	Fore Side	
Cyl. #1	52.0	52.0	14.0
Cyl. #2	49.7	49.7	30.2
Cyl. #3	43.7	43.7	9.0
Cyl. #4	40.3	39.3	20.8
Cyl. #5	36.3	36.3	14.6
Cyl. #6	36.1	36.1	19.8

START AST

STOP

START AHD

CTRL. TR.

INDEX

User Parameters

- VIT can be switched on/off
- FQS adjustment in degree +/- 3.0° for manual firing pressure control
- Fuel Electric Heating On/Off

00:34:56

USER PARAMETERS

Index Print ECR:

Engine Speed	68	rpm	Engine State	Running
Engine Load	100.0	%	Fuel Mode	Gas - DCC

VIT	On	Turn off for running in new liners & pist. rings
FQS	0.00	deg
Heavy Sea Mode	Off	
Fuel Electrical Heating	Off	
Slowturning Failure	<input type="radio"/>	Reset

Aux. Blower
#1 <input type="radio"/> Stopped
#2 <input type="radio"/> Stopped

START AST STOP START AHD CTRL. TR. SLOWTURN AIR RUN

Software Info

2017-09-13 10:05:28 Fuel Inj. Cut Off Cyl #5 14:38:10

SOFTWARE INFO ECR: In Control 13 / 9 / 2017
(dd / mm / yyyy)

Engine Type	W5X72DF	
Manufacturer Number	KAA006204	
DB Number	25693	
Software Version	1 4 0	
Software IMO Number	LN-BE9802	
Application CRC	23409	
IMO TIER II Diesel CRC	25933	Ok
IMO TIER II D. CRC Length	544	
IMO TIER III Gas CRC	59283	Ok
IMO TIER III G. CRC Length	2206	
IMO TIER II Fuel Sharing CRC	55886	Error
IMO TIER II FS. CRC Length	1680	

START AST **STOP** **START AHD** **CTRL. TR.** **INDEX**

Failure Simulation

2015-09-21 11:06:27 CV7242C - Start Air Valve Open/Short Cyl#2 13:05:49

FAILURE SIMULATION ECR:

Test Conditions

- Engine Standstill
- Turning Gear Engaged

Failure Test Mode off

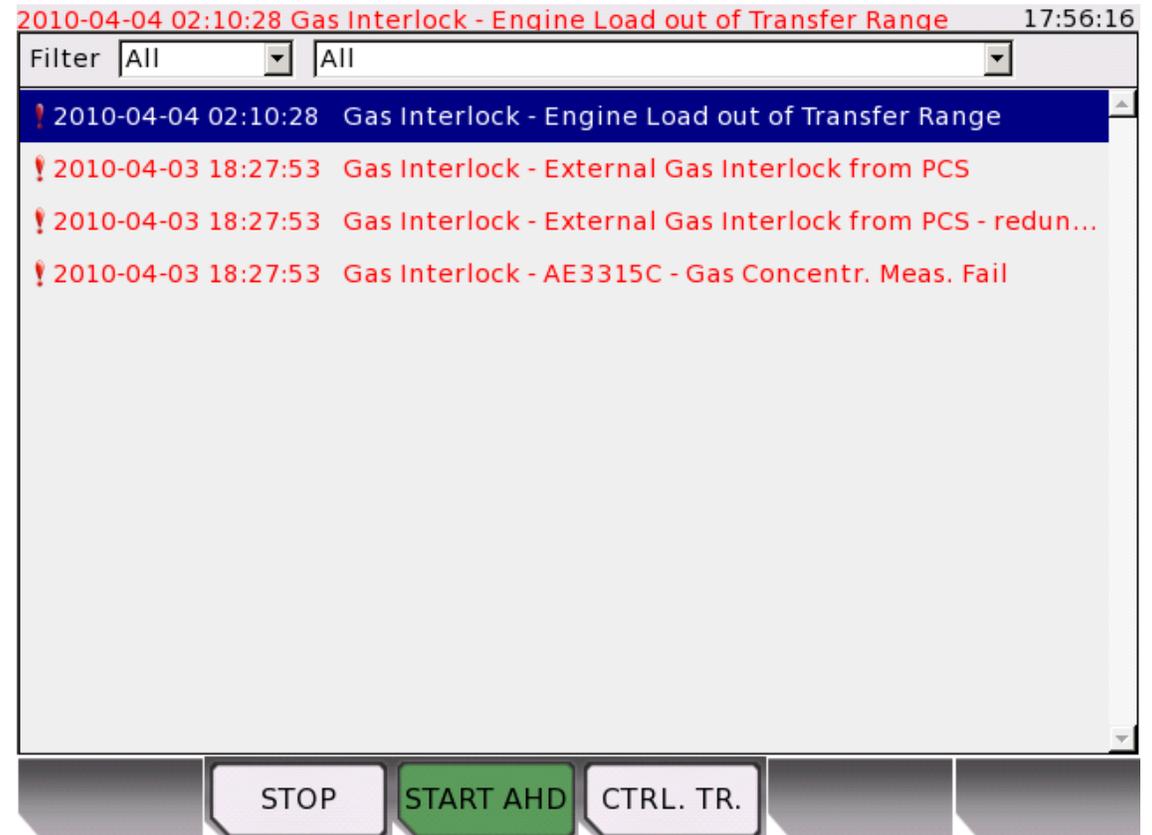
Failure ID To Simulate 0

See Modbus to AMS signal list for reference

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Failure Logs

- The last, still pending alarm is displayed on top of the screen
- The Failure Log screen shows all pending alarms
- Alarms can be filtered by type and category



System Status

- The LDUs contain a complete backup of all application and configuration files for all modules
- Starting up a CCM module, all files are compared with the backup files in the LDU
- If version different, it is marked with red colour in the status list
- To synchronise press “Download”
 - “Yes” starts the download
 - “No” cancels the process

2015-09-21 11:06:27 CV7242C - Start Air Valve Open/Short Cyl#2 13:15:52

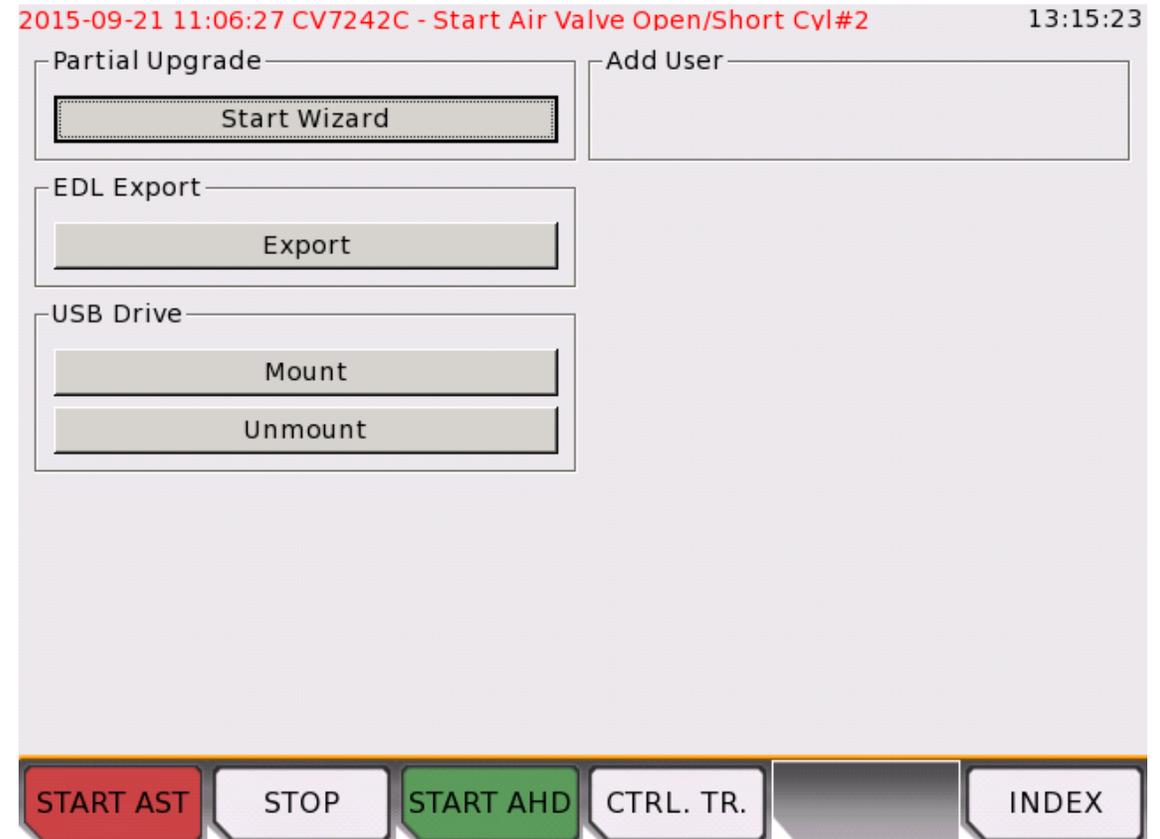
	LDU	System
Modules	<input type="checkbox"/>	
⊕ Main 11	<input type="checkbox"/>	Operational
⊕ CCM20 D2	<input type="checkbox"/>	Operational
⊕ CCM20 D3	<input type="checkbox"/>	Operational
⊕ CCM20 G3	<input type="checkbox"/>	Operational
⊕ CCM20 D5	<input type="checkbox"/>	Operational
⊕ CCM20 G5	<input type="checkbox"/>	Operational
⊕ CCM20 G6	<input type="checkbox"/>	Operational
⊕ CCM20 G7	<input type="checkbox"/>	None
⊕ CCM20 D1	<input type="checkbox"/>	Operational
⊕ CCM20 G1	<input type="checkbox"/>	Operational
⊕ CCM20 G2	<input type="checkbox"/>	Operational
⊕ CCM20 D4	<input type="checkbox"/>	Operational
⊕ CCM20 G4	<input type="checkbox"/>	Operational
⊕ CCM20 D6	<input type="checkbox"/>	Operational
⊕ CCM20 D7	<input type="checkbox"/>	None
⊕ IOM10 1	<input type="checkbox"/>	Operational
⊕ LDU LOCAL	<input type="checkbox"/>	Operational
⊕ LDU ECR	<input type="checkbox"/>	Operational

Refresh Download

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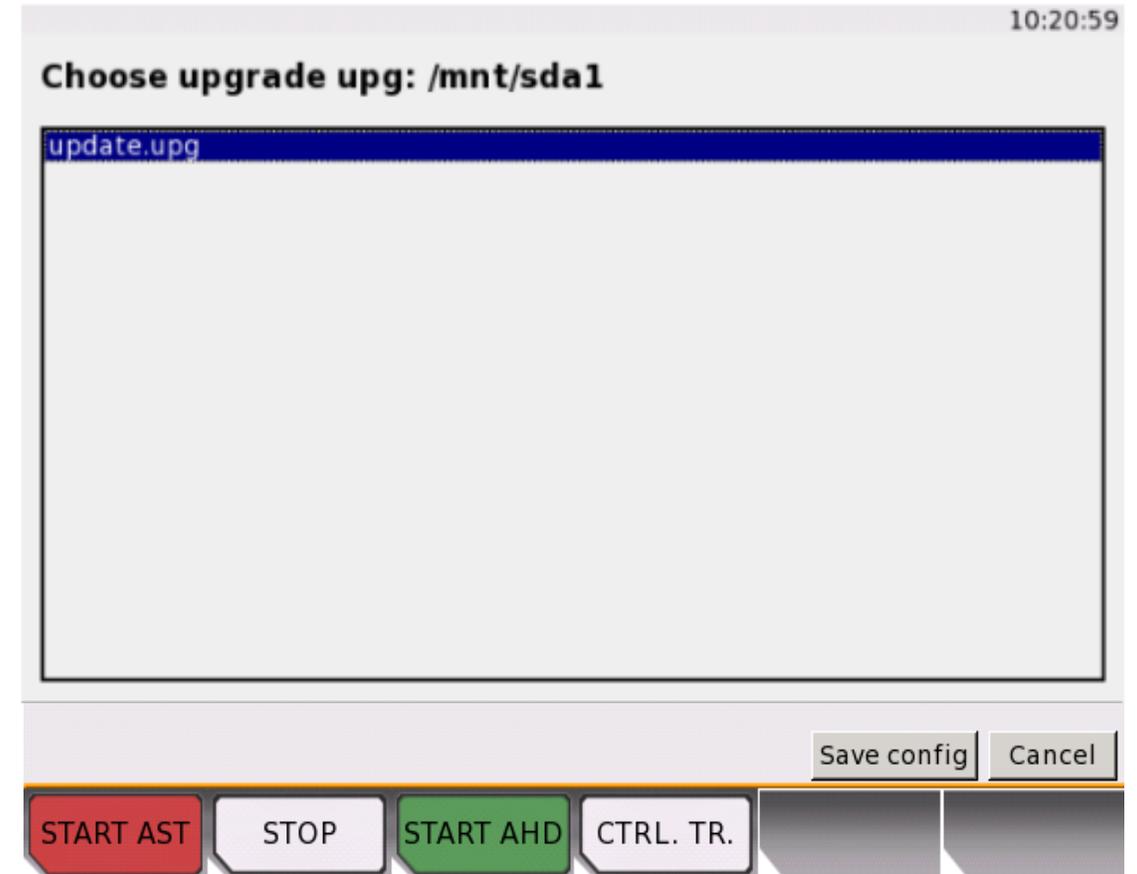
Software Tools

- Although operators on board have no access to “Expert Parameters”, necessary adjustments can be done via “Partial Upgrade Wizard”
- An “update.upg” file supplied on a USB drive by WinGD
- Selecting “Start Wizard” displays another screen that shows the available upgrade packages and guides through the upgrade process
- The complete system log can be saved on an external USB drive
- Pushing the “Export” button, the file EDLExport YYYYMMDD_hhmmss.wxml will be saved on the USB drive
- It can be sent to WinGD for troubleshooting



Partial Upgrade Wizard

- Shows the available upgrade packages on the USB drive
- Follow the instructions through the upgrade process



Display Settings

The system settings contains 3 subpages for adjusting LDU-20 settings

User specific settings of display appearance

- Brightness
- Screensaver
- Dimmer

2014-4-7 12:56:49.518 CV7232C, ALM, FUEL PUMP SETPOINT #2 13:01:58

Display

Luminance	100 %
Turn off display	10 min

Screensaver

Enabled Test screensaver

Logo	wartsila_logo_screensaver.png
Timeout	5 min
Luminance	50 %

Dimmer

Enabled

Timeout	5 min
Luminance	80 %

Save config Cancel

START AST STOP START AHD CTRL. TR.

Ethernet

- Settings for Ethernet communication have to be set for local and ECR panel
- Configure TCP/IP address for each Ethernet port with these settings:

LDU Local: eth0 = 10.1.1.171
 eth1 = 10.1.2.14

LDU ECR: eth0 = 10.1.1.173
 eth1 = 10.1.2.14

- Common settings:

Enabled: both must be enabled

eth0 = plug X31

eth1 = plug X32

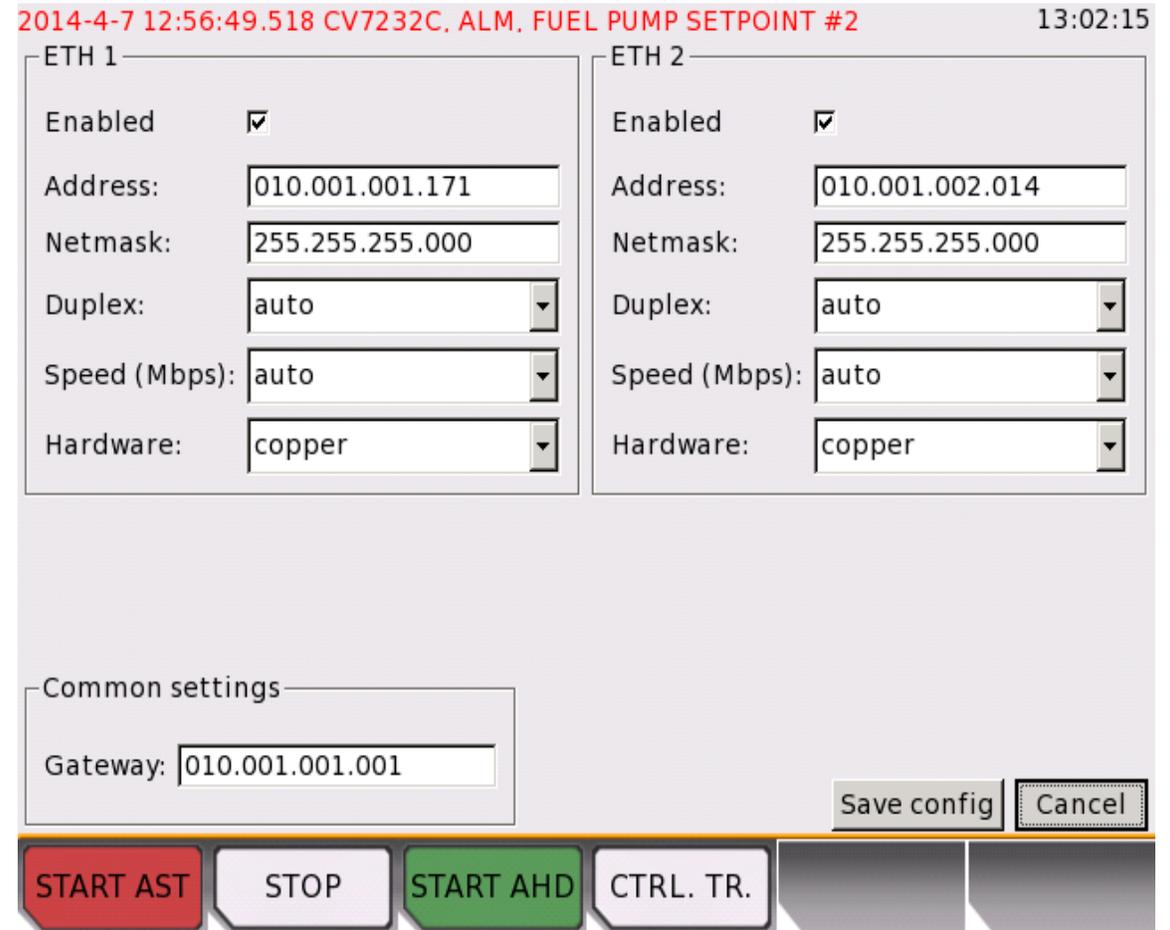
Netmask: 255.255.255.000

Duplex: auto

Speed: auto

Hardware: copper

Gateway: 010.001.001.001



2014-4-7 12:56:49.518 CV7232C, ALM, FUEL PUMP SETPOINT #2 13:02:15

ETH 1

Enabled

Address: 010.001.001.171

Netmask: 255.255.255.000

Duplex: auto

Speed (Mbps): auto

Hardware: copper

ETH 2

Enabled

Address: 010.001.002.014

Netmask: 255.255.255.000

Duplex: auto

Speed (Mbps): auto

Hardware: copper

Common settings

Gateway: 010.001.001.001

Save config Cancel

START AST STOP START AHD CTRL. TR.

Date & Time

- Date and time can be adjusted
- It is recommended not to change the local time at changing the time zone to avoid overwriting data
- UTC time zone is preferred

2014-4-7 12:56:49.518 CV7232C, ALM, FUEL PUMP SETPOINT #2 13:02:31

Date And Time

Local	2014-04-07 13:02:32
UTC	2014-04-07 13:02:32

Timezone and Time format

Timezone:

Date Format

Time Format

Time Synchronization Mode

Protocol Set Date

Set Time

Save config Cancel

START AST STOP START AHD CTRL. TR.