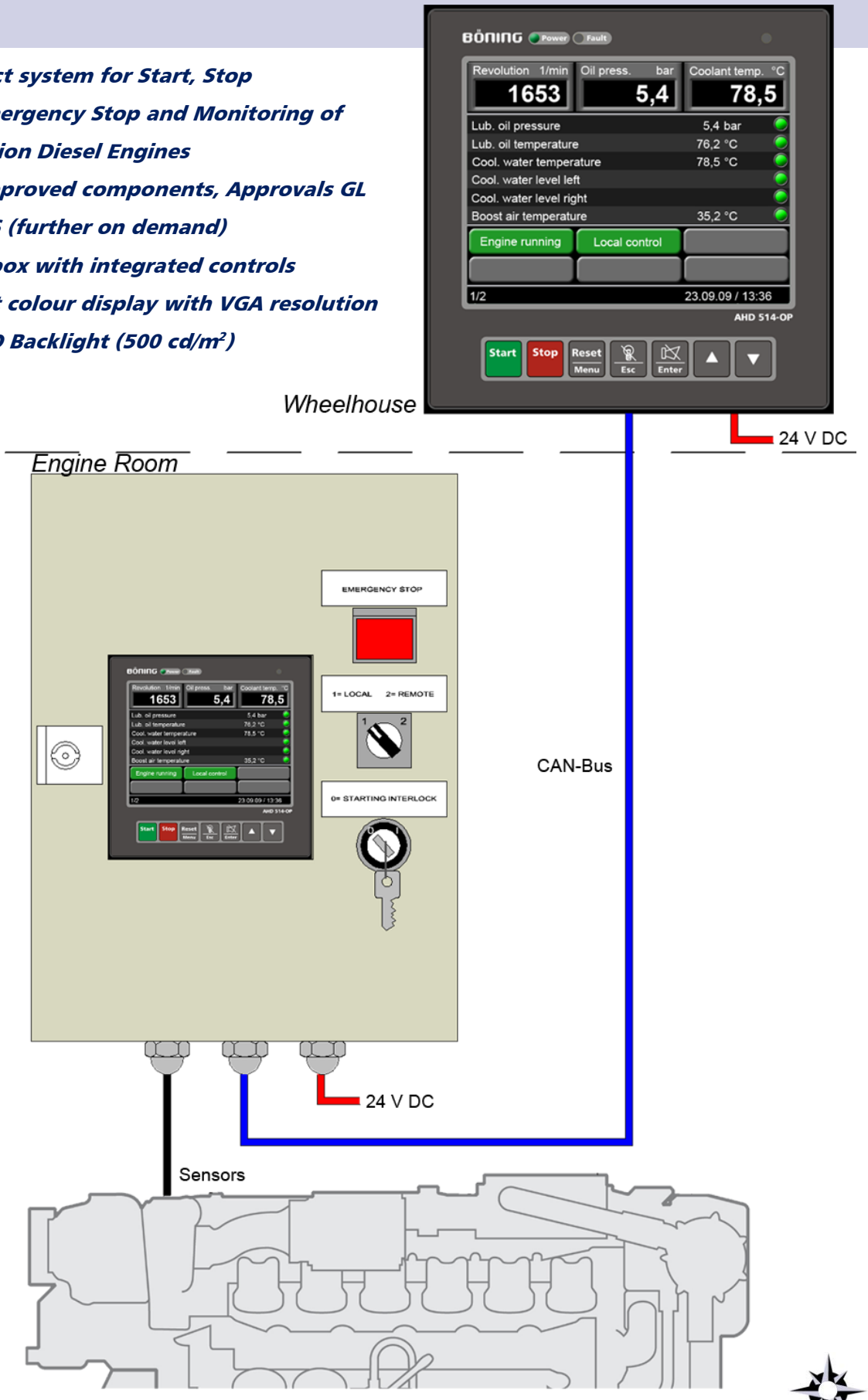
# AHD 514-CS4
# Monitoring System for Diesel Engines with Switchbox

***Compact system for Start, Stop incl. Emergency Stop and Monitoring of Propulsion Diesel Engines***

***Type approved components, Approvals GL and LRS (further on demand)***

***Switchbox with integrated controls***

***Brilliant colour display with VGA resolution and LED Backlight (500 cd/m²)***




BÖNING Automationstechnologie

The monitoring system for Diesel engines is designed as a compact system for start, stop and monitoring (incl. emergency stop release) of propulsion Diesel engines on board of ships.

The system components are type approved according to rules and regulations of leading classification societies.

All required in- and outputs and corresponding monitoring and control functions for applications with propulsion engines are integrated in the components of the system.

When designing the components, a high value was set on easy connection and maintenance and service. Connection is available as far as possible directly at terminal lists of system components and reduces by that significantly the demand of material and installation with resulting reduction of costs.

The configuration of the complete system is created by means of an included PC-Software, which allows setting of required parameter with different authorization levels.

### Local control switchbox in engine room:

For local control of the system close-by the Diesel engine in the engine room, the following system components are internally installed and readily wired in a common control switchbox:

### AHD 514-S Safety System with combined Emergency Stop System:

Compact microprocessor-controlled unit with profile module housing for console, panel or switchbox installation on profile rails TS32/TS35.
All safety functions, predetermined by classification societies for monitoring systems for Diesel engines are available.
Two separated 24 V DC power supplies for emergency stop circuit and safety system. Emergency stop function independently from safety function.
Separate processing of emergency stop inputs and stop criteria. An initiated emergency stop is routed directly to the emergency stop output. On breakdown of safety system or its power supply, the own power supply ensures the emergency stop function.
The acquisition of safety relevant (redundant) sensors is in turn carried out independently from alarm system AHD 514.
The safety relevant sensors activate the stop circuit n case of alarm. The emergency stop system is provided with 2 independent and wire-breakage monitored circuits.
Data transmission via CAN-Bus over alarm system AHD 514 to operation unit AHD 514-OP in front door of switchbox (local operation unit) and to operation unit AHD 514-OP in wheelhouse (remote operation unit).

### AHD 514 Start/Stop-System with combined Alarm System:

Compact microprocessor-controlled unit with profile module housing for console, panel or switchbox installation on profile rails TS32/TS35.
AHD 514 controls start and stop of the Diesel engine and assumes control of all required monitoring functions incl. automatic stop at overspeed.
Integrated alarm and event log memory for logging of up to 10000 alarms and events. Recall of data via PC-Software.

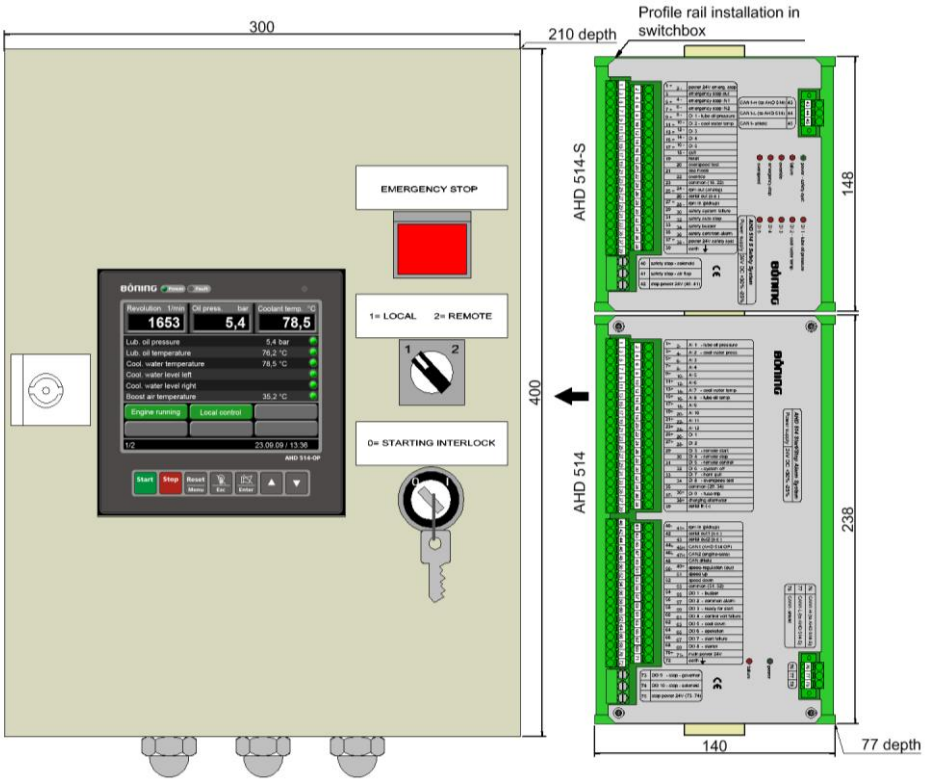
### AHD 514-OP Display and Operation Unit:

Built-in module with 5,7“ colour display for presentation of operation resp. alarm data and keyboard with push buttons for start and stop of Diesel engine as well as further menu-based operation. Installation in front door of switchbox (local operation unit).
Communication with Start/Stop-Alarm System AHD 514, Safety and Emergency Stop System AHD 514-S and Remote Operation Unit AHD 514-OP via CAN-Bus.

Additional operating elements in front door of switchbox:

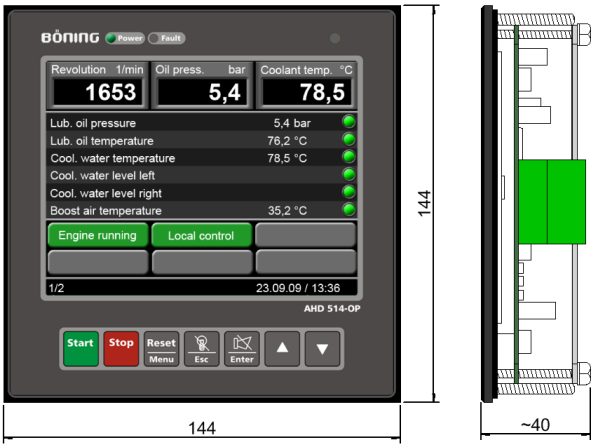
- Emergency stop push button, wire-breakage monitored, for local initiation of Diesel engine emergency stop.
- Selector switch for selection of operation unit: „Local – Engine Room; Remote – Wheelhouse“.
- Key switch for blocking of start procedure.

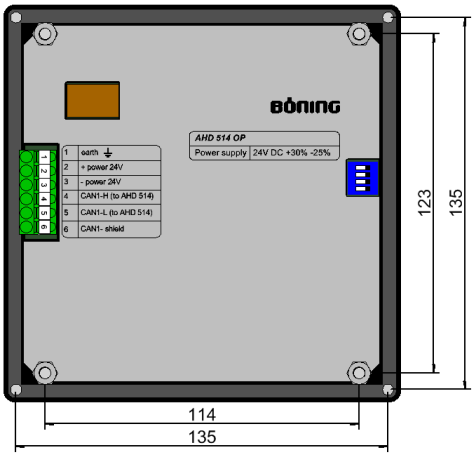
## Control Switchbox with Modules, Dimension




Optional Remote Operation Unit Wheelhouse:

AHD 514-OP Display and Operation Unit:
Built-in module with 5,7" colour display for presentation of operation resp. alarm data and keyboard with push buttons for start and stop of Diesel engine as well as further menu-based operation. Installation in wheelhouse control console (remote operation unit). Communication with Start/Stop-Alarm System AHD 514, Safety and Emergency Stop System AHD 514-S and Local Operation Unit AHD 514-OP in engine room via CAN-Bus.



### Technical Data AHD 514

| | |
|---|---|
| Dimension W x H x D: | 238 mm x 140 mm x 77 mm |
| Weight: | appr. 0,70 kg |
| Operating temperature: | -25°C … +70°C |
| Storage temperature: | -35°C … +85°C |
| Degree of protection: | IP 20 |
| Power supply: | 18 … 32 V DC |
| Current consumption: | max. 1,0 A (24 V DC) |
| Inputs: | 6 x analog (4 – 20 mA) / binary,<br>6 x analog (PT100/PT1000) / binary,<br>Analog inputs configurable<br>1 x Speed input, galv. isolated<br>2 x binary, wire-breakage monitored<br>8 x binary ( Control inputs)<br>2 x binary (Safety monitoring) |
| Outputs: | 8 x Relay 6 A, potential free (Control outputs, Starter relays)<br>2 x Transistor, 8 A, wire-breakage monitored , short-circuit proof for engine stop<br>1 x Analog output (4 –20 mA / 1–5 V / 2–10 V)<br>2 x LED- indication |
| Interface: | 2 x CAN Bus (Communication)<br>1 x RS232 (9-pole Sub-D, Fault diagnostics / log read out, Firmware-Update)<br>1 x serial Input (Optocoupler)<br>2 x serial Output (Optocoupler) |
| Installation: | Profile module housing, installation on profile rail TS 32/TS 35 |

### Technical Data AHD 514-S

| | |
|---|---|
| Dimension W x H x D: | 148 mm x 140 mm x 77 mm |
| Weight: | appr. 0,50 kg |
| Operating temperature: | -25°C … +70°C |
| Storage temperature: | -35°C … +85°C |
| Degree of protection: | IP 20 |
| Power supply: | 18 … 32 V DC Safety System<br>18 … 32 V DC Emerg. Stop System |
| Current consumption: | max. 0,5 A (24 V DC) |
| Inputs: | 2 x binary, wire-breakage monitored (Emergency Stop)<br>5 x binary, wire-breakage monitored (Stop criteria)<br>5 x binary ( Control inputs)<br>1 x Speed input, galv. isolated |
| Outputs: | 4 x Relay 6 A, potential free<br>( i.e.. for Horn, Common Alarm )<br>2 x Transistor, 8 A, wire-breakage monitored , short-circuit proof (Solenoid, Air Flaps; Stop from Safety System)<br>1 x Transistor, 8 A, wire-breakage monitored , short-circuit proof (Stop from Emerg. Stop System)<br>1 x Current output 4-20mA (for external speed indication)<br>10 x LED- indication |
| Interfaces: | 1 x CAN Bus (Communication)<br>1 x serial Output (Optocoupler) |
| Installation: | Profile module housing, installation on profile rail TS 32/TS 35 |

### Technical Data AHD 514-OP

| | |
|---|---|
| Dimension W x H x D: | 144 mm x 144 mm x 50 mm |
| Panel cut-out, W x H: | 131 mm x 131 mm |
| Weight: | appr. 1,0 kg |
| Operating temperature: | -10°C … +60°C |
| Storage temperature: | -30°C … +85°C |
| Degree of protection: | IP 67 (front side)<br>IP 20 (rear side) |
| Power supply: | 18 … 32 V DC |
| Current consumption: | max. 1,0 A (24 V DC) |
| Display: | 5.7" LCD Colour display |
| Visible display area: | 116,16 mm x 87,12 mm |
| Luminous intensity: | 500 cd/m² |
| Display resolution: | 640 (H) x 480 (V) Pixels |
| Colour depth: | 262144 Colours |
| Interfaces: | 1 x CAN Bus (Communication) |
| Installation: | Built-in unit |

### Technical Data Control Switchbox

| | |
|---|---|
| Dimension W x H x D: (without components) | 300 mm x 400 mm x 210 mm |
| Weight: | appr. 8,36 kg |
| Degree of protection: | IP 66 |
| Surface: | Immersion prime coated, externally powder-coated in RAL 7035 |
| Design: | single door, with mounting plate |

### Approvals for Components of Complete System

| | |
|---|---|
| Classification society: | Germanischer Lloyd<br>Lloyd´s Register<br>In progress :<br>Bureau Veritas<br>Det Norske Veritas<br>American Bureau of Shipping<br>Russian Maritime Register of Shipping<br>Registro Italiano Navale |