

Ignition system for gas fuelled engines

# PHLOX IGNITION SYSTEM

Adjustable ignition energy

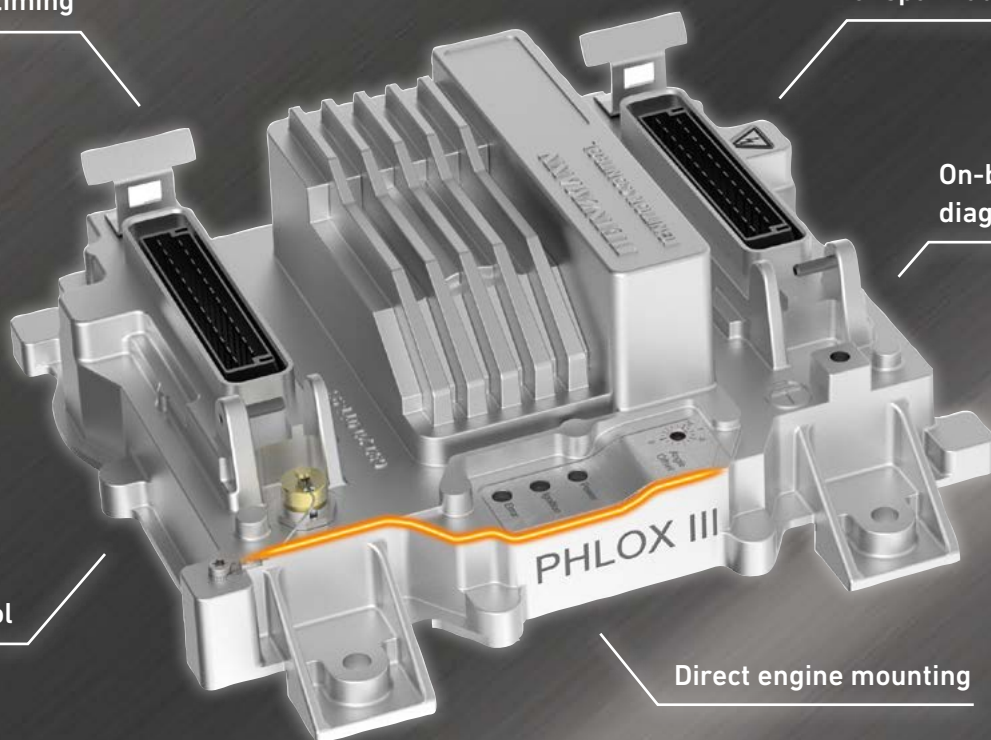
Precise ignition timing

Configurable spark profile allows increase of spark duration

On-board diagnostics

Dongle-free configuration tool

Direct engine mounting



## PHLOX II & III

### IGNITION SYSTEMS

As it triggers the combustion process of the air-fuel mixture, the ignition system has major influences on performances and emissions of gas fuelled engines. Thus, it plays an important role in modern gas engine management systems.

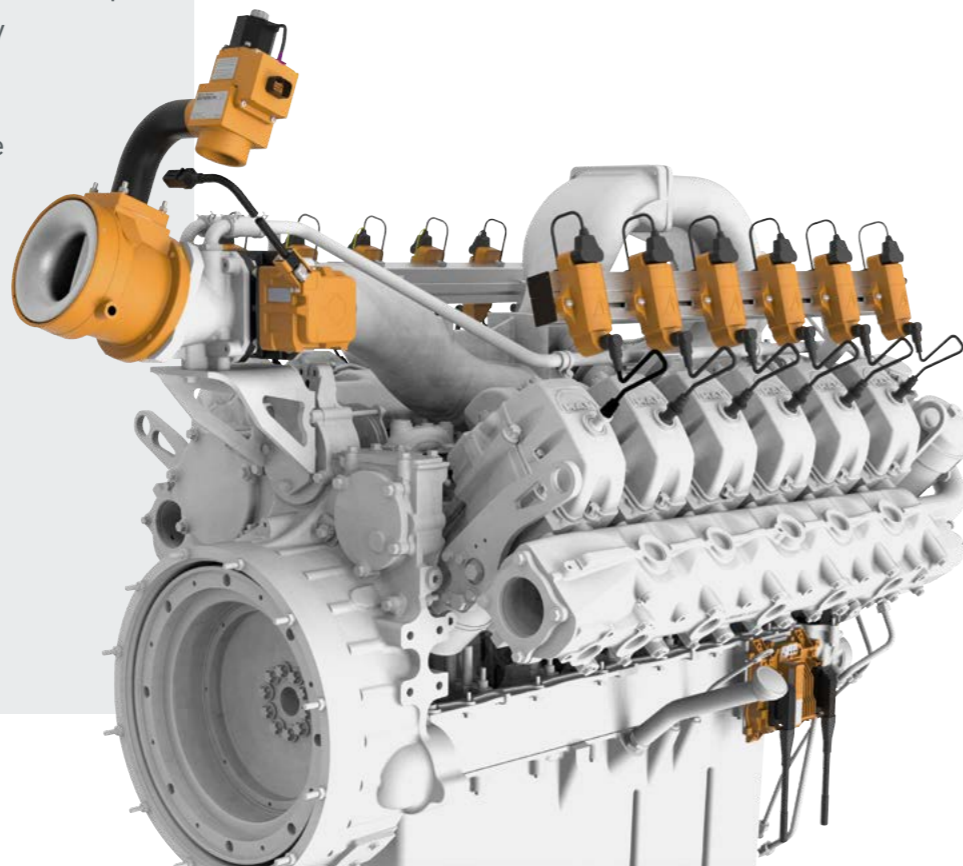
Based on HEINZMANN's many years of experience in the field of gas engine control and monitoring systems, HEINZMANN offers complete solutions tailored for all types of gas engines. All needed components, such as ignition control units, coils, cable harnesses, trigger discs, sensors and spark plugs, are available in an integrated solution. Choosing from a variety of system components HEINZMANN ignition kits meet all customer requirements.

The core of the system is a flexible high-energy capacitive spark ignition control unit designed for up to 16-cylinder engines. In master-slave operation engines with up to 24 cylinders can be controlled. It provides precise ignition timing and high ignition capabilities. Its variable energy levels and on-board diagnostics help increase the spark plugs durability by reducing wear.

PHLOX Ignition Systems guarantee best performance as part of the HEINZMANN gas engine management solution XIOS<sup>GAS</sup> and XIOS<sup>CHP</sup>.

## PHLOX BENEFITS

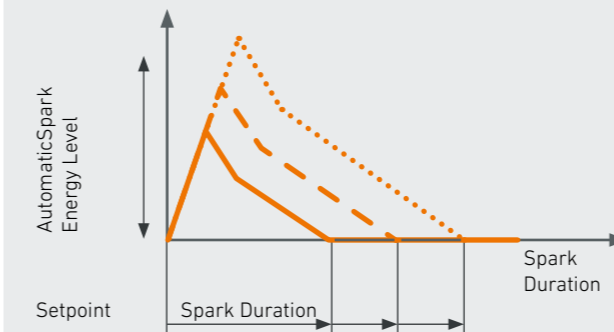
- ▶ Complete system from one source
- ▶ Configurable solution
- ▶ Precise ignition timing
- ▶ High ignition capabilities
- ▶ Hall or inductive pick-ups to cover all engine configurations
- ▶ Variable energy level to reduce spark plug wear
- ▶ On-board diagnostics for safe operation
- ▶ Sparking process diagnostics
- ▶ Wide temperature range
- ▶ Direct engine mounting
- ▶ I/Os and CAN bus available for simple integration
- ▶ Customised cable trees
- ▶ Variety of coils suitable for all applications and fuels



## PHLOX II HIGHLIGHTS

### AUTOSPARK - AUTOMATIC SPARK ENERGY CONTROL

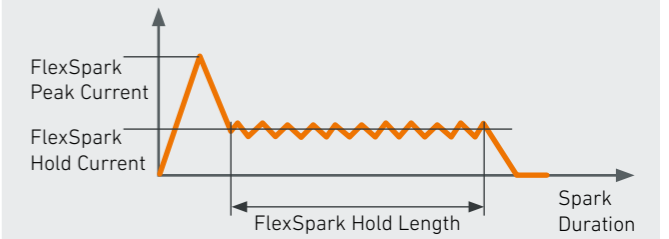
- Automatic adjustment of ignition energy
- Increase of spark plug lifetime



## PHLOX III HIGHLIGHTS

### FLEXSPARK CONFIGURABLE SPARK PROFILE

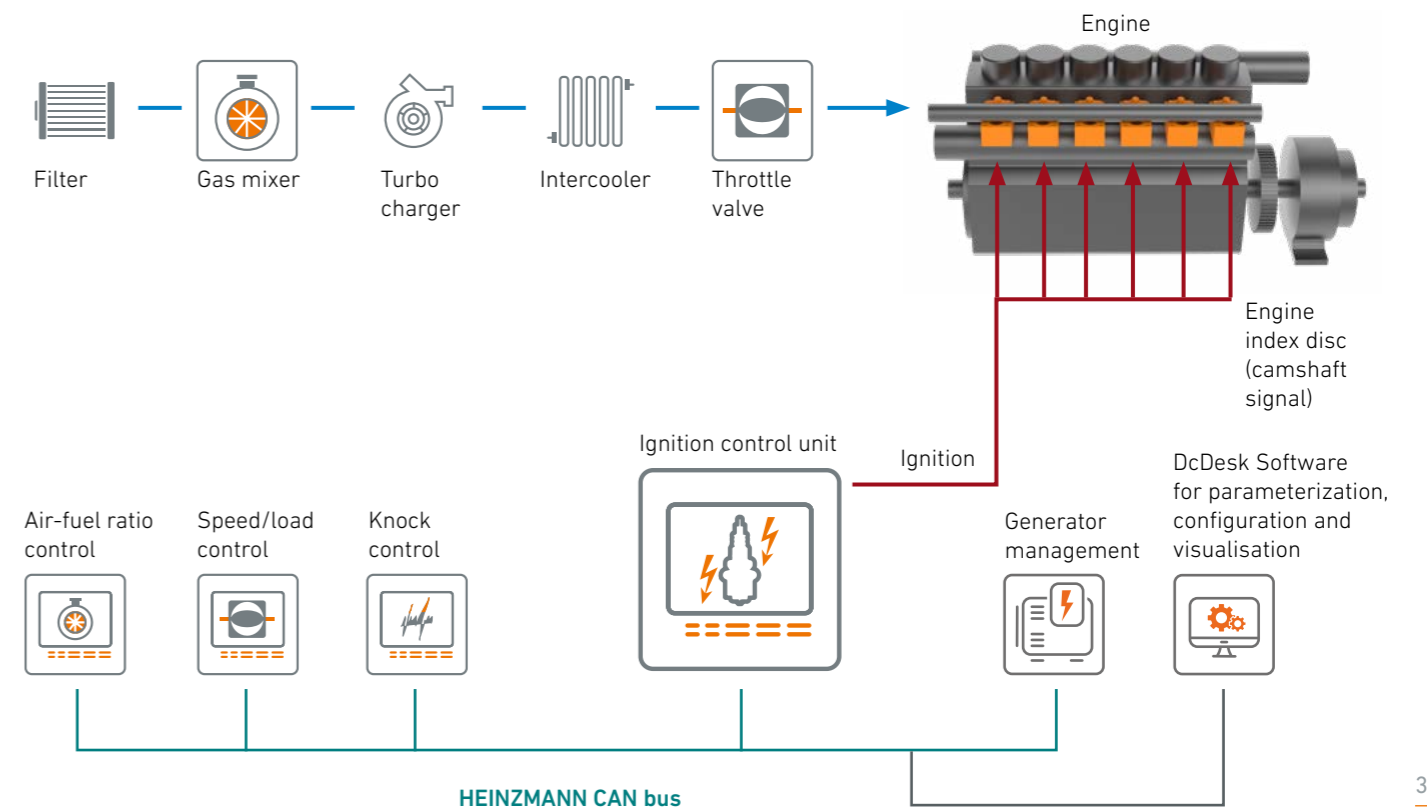
- Adjustable peak & hold current
- Increase of spark duration
- Ignites gas-air mixture even under worst-case conditions



## SYSTEM INTEGRATION

PHLOX Control Units come with a range of I/Os for an easy integration into engine management systems. An analogue input for spark angle offset can be connected to knock control systems such as HEINZMANN ARIADNE.

A CAN bus connection is provided for extended monitoring and control features, allowing for example cylinder individual spark angle control. All common CAN protocols are supported (CANopen, SAE J1939).



## PHLOX CONTROL UNITS IC SERIES

PHLOX Control Units are highly flexible high-energy capacity spark ignition control devices. They are available in 3 versions up to 8, 12 or 16 cylinders.

At the top of the family range and for bigger engines with up to 24 cylinders, HEINZMANN offers the IC24 ignition system, based on 2 PHLOX II IC12 in Master-Slave operation.

For accurate timing control, the units can process up to 2 Hall or inductive pick-ups. They support all usual engine pick-up configurations like single pick-up on camshaft trigger disk or double pick-up

on crankshaft (position) and camshaft (reference). 3 LEDs are provided to visualise the actual status of the ignition unit and to allow quick diagnostics.

A separate connector is available to connect HEINZMANN DcDesk or Configuration Suite to perform detailed configuration, monitoring or diagnostics.

The flexible I/O possibilities allow easy integration into every gas engine management system and guarantee economical and individual solutions for OEMs, packagers and retrofit customers.

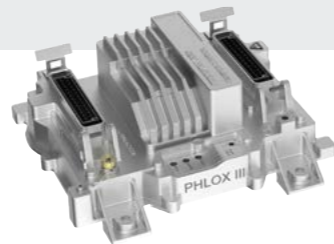
### PHLOX II

To reduce spark plug wear, PHLOX II Control Unit offers 32 levels of ignition energy which is automatically set to the required minimum by the use of the AutoSpark function.



### PHLOX III

Engines operated with higher boost pressures or with the use of biogases and other low calorific gases require higher ignition energies or increased spark durations to avoid a misfiring of the cylinders. Using HEINZMANN's FlexSpark Technology ensures a stable engine operation even in difficult situations and provides the option to increase the engine efficiency.



## TECHNICAL INFORMATIONS CONTROL UNITS

	PHLOX II	PHLOX III
Number of cylinders	Up to 8 (IC-08) Up to 12 (IC-12 or IC-12A or IC12-B)* Up to 16 (IC-16 or IC-16A or IC16-B)*	Up to 8 (IC-08 or IC-08A or IC-08-B)* Up to 12 (IC-12 or IC-12A or IC12-B)* Up to 16 (IC-16 or IC-16A or IC16-B)*
Power supply	24 V (12 - 32 V) DC	24 V (12 - 32 V) DC
Ambient temperature	-40 ... +95°C	-40 ... +70°C
Engine speed	30 ... 3.000 rpm	30 ... 2.200 rpm
Spark duration	200 ... 600 µs	200 ... 1.000 µs
Energy level	25 ... 280 mJ (32 levels)	up to 700 mJ
Pick-ups		2 (Hall or inductive)
Analogue input		1 (0 ... 5 V/4 ... 20 mA)
Digital input/outputs		2 (low/high side)
Communication/protocols		Can 2.0B, SAE J1939, CANopen, Modbus
Configuration tools		HEINZMANN DcDesk, HEINZMANN Configuration Suite
Certificates	CE, CSA, UKCA DNV-GL, BV, LR	CE, UKCA, CSA & ATEX on request

\* A: optional with additional CAN interface. B: optional with additional Modbus interface

## SYSTEM COMPONENTS

### PHLOX PICK-UP SENSORS

HEINZMANN offers inductive sensors and Hall effect sensors with different lengths and threads.

#### Inductive pick-up sensors

The low-cost inductive shaft position sensors are designed for standard engine applications, available in several screw and length dimensions:

#### M12x1x76/M12x1x60

For use as camshaft position sensor by trigger disc or by index-mark (50 or more),



#### M16x1,5 or 5/8"-18UNF

For use as crankshaft or camshaft position sensor by wheel-profile with many marks (50 or more).



#### Hall effect pick-up sensors

The universal differential Hall effect shaft position sensors are designed for standard and/or build-in applications, available in several lengths.

#### M12x1x76

For use as camshaft position sensor at trigger disc or with index-mark (50 or more).



#### M18x1

For use as crankshaft or camshaft position sensor (50 or more).



### PHLOX IGNITION COILS

An optimum accessory for HEINZMANN Ignition Control System PHLOX are the high-performance ignition coils with enhanced power output and separate grounding point. They offer output voltage up to 50 kV in continuous operation and a temperature range up to 125 °C. Thus, they can be used in all applications and with all gas types. They are compatible with other widely-used similar products.



### PHLOX IGNITION RAILS

With HEINZMANN completely wired ignition rails, coils are directly mounted on the rail. Cables are protected inside the rail profile. This ensures a long lifetime and reliable operation. HEINZMANN wiring rails are delivered with all required mounting material for fast and easy installation.



## CABLE HARNESSES

HEINZMANN can provide standard ready-to-use input and output cable harnesses. On demand, these can be tailor-made to fulfil all engine and customer needs.



## SPARK PLUG CONNECTORS

High-quality Teflon made spark plug connectors are high-temperature resistant and ensure high-voltage resistance and best insulation against spark flashover.



90° connector

180° connector



Pick-up mounted on engine

## TRIGGER DISCS

Trigger discs are available in different designs for any application.



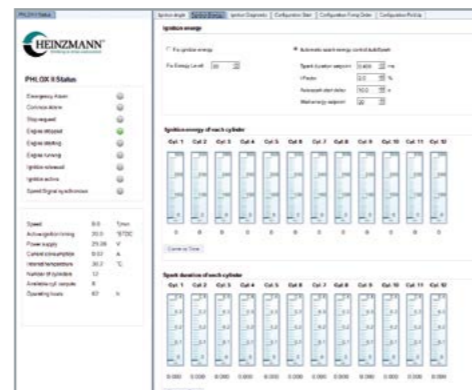
## CONFIGURATION AND VISUALISATION TOOLS

### DcDesk Service Program Package

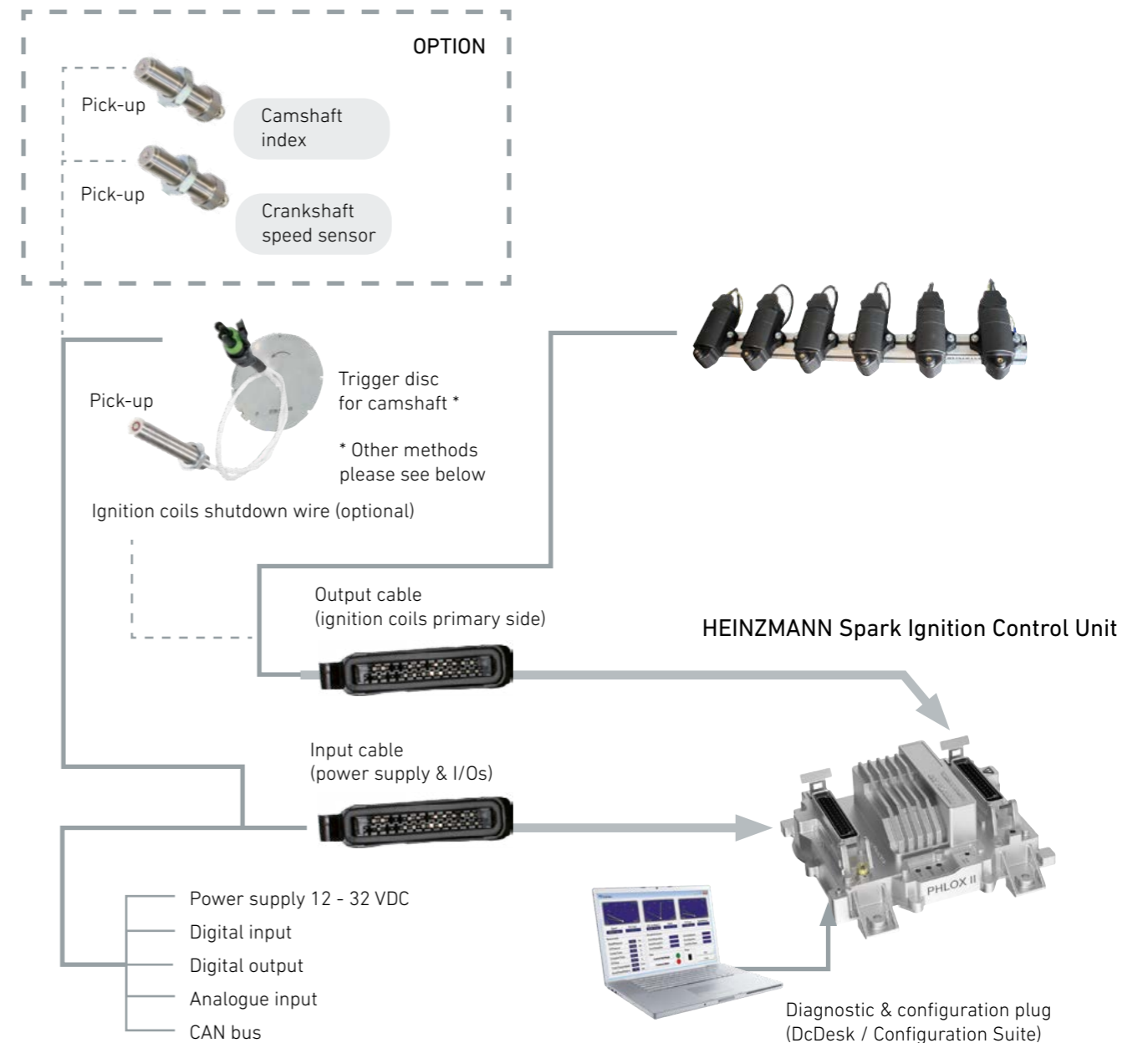
HEINZMANN DcDesk can be used to adjust and view operational data. It offers a number of numerical and graphical features required for testing, configuration, commissioning and servicing. Extensive functionality for recording of operational data enables logging of specific service conditions for their further analysis, processing and reporting.

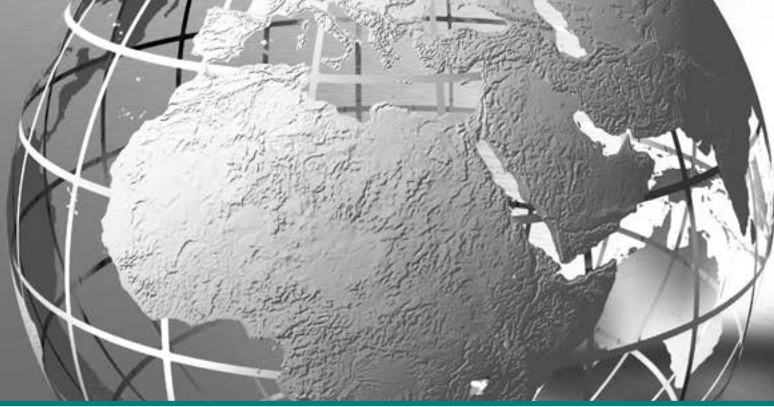
### HEINZMANN Configuration Suite

A new dongle-free service tool based on a graphical user interface which offers access to digital HEINZMANN Control Units. It allows an easy depiction and use of complex contexts as well as the creation of customer and system specific user interfaces.



## PHLOX CONFIGURATION FOR 6-CYLINDER ENGINE





## HEINZMANN GROUP - THINKING IN DRIVE AND CONTROL

HEINZMANN is a globally active family business founded in 1897 with its headquarters in Schönau (Germany), in the Black Forest.

Today, in the field of engine management HEINZMANN is one of the leading suppliers of components and systems for industrial combustion engines, generators and turbines. As a specialist and development partner, HEINZMANN is committed to developing exactly the right solution for increasing efficiency and reducing emissions.

In the Electric Drives division, HEINZMANN also demonstrates innovative strength and development expertise in engine technologies of the future. The company has established itself as a reliable partner and system provider for electric drive systems.

Our collaborative interaction with more than 40 globally active subsidiaries and sales companies characterizes the spirit within the HEINZMANN group of companies and makes us a reliable partner.

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