

For Diesel, Gas, Dual-Fuel Engines & CHP

DIGITAL CONTROLS

System Solutions from one supplier

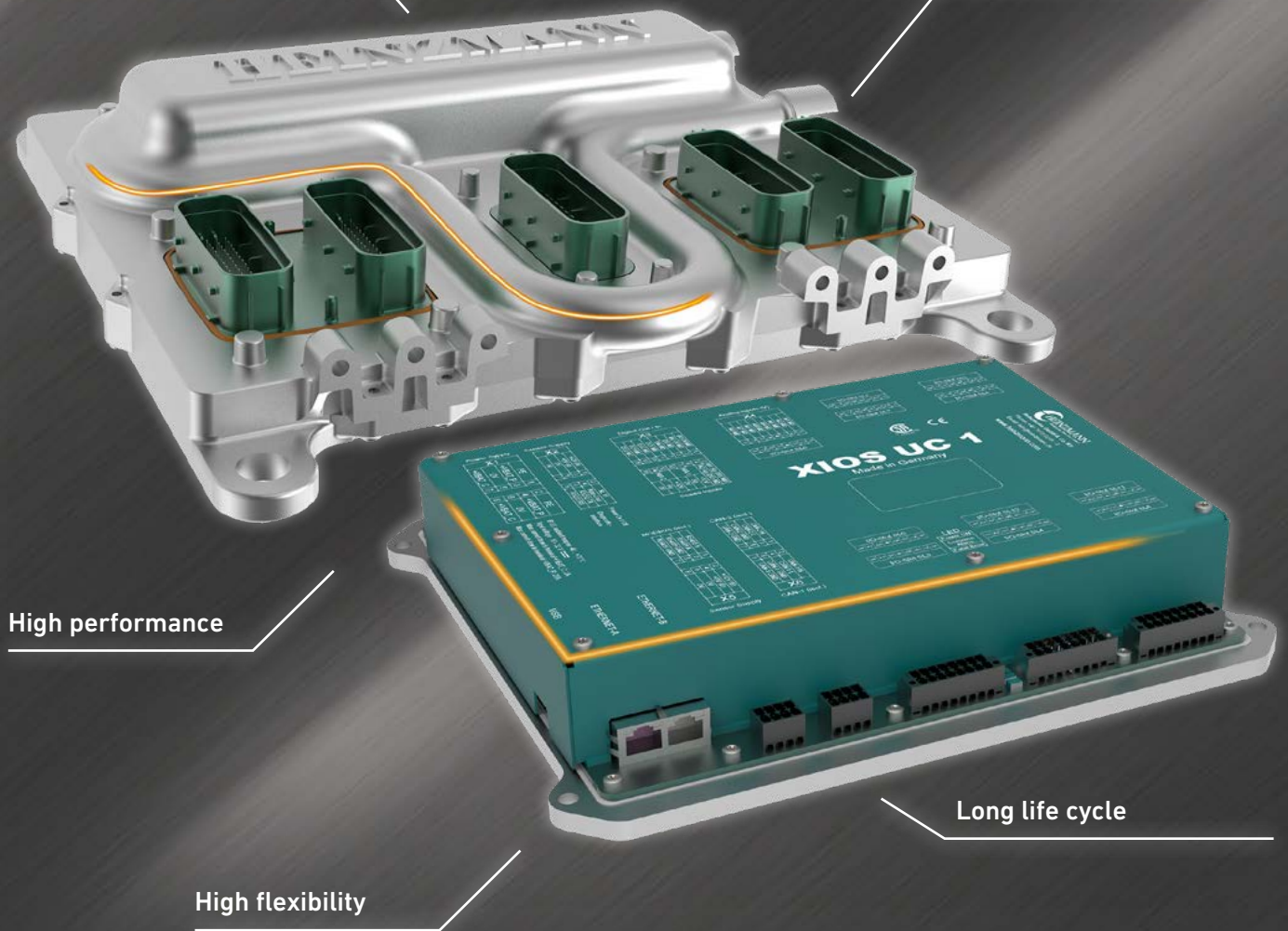
One configuration
software for all systems

Proven reliability

High performance

Long life cycle

High flexibility



HEINZMANN DIGITAL CONTROLS

Comprehensive range

HEINZMANN offers one of the most extensive ranges of digital controls for all types of combustion engines, turbines, generators and CHPs. Their reliability, durability and performance have helped them to gain an outstanding reputation on the market.

Our customers include renowned engine manufacturers. HEINZMANN controls can be precisely configured to meet the needs of a wide range of applications. When combined with the corresponding HEINZMANN actuators, the control units presented here form the ideal governor system for diesel, gas, dual-fuel engines and CHPs as well as gas, steam and water turbines.

HEINZMANN's digital controls are highly valued on account of their flexibility, which means they can meet all customer requirements and prerequisites. Our digital control systems are known for their durability and tried-and-tested reliability. Alongside our standard products, we can also offer bespoke solutions that are tailored to specific applications.

DIGITAL CONTROLS

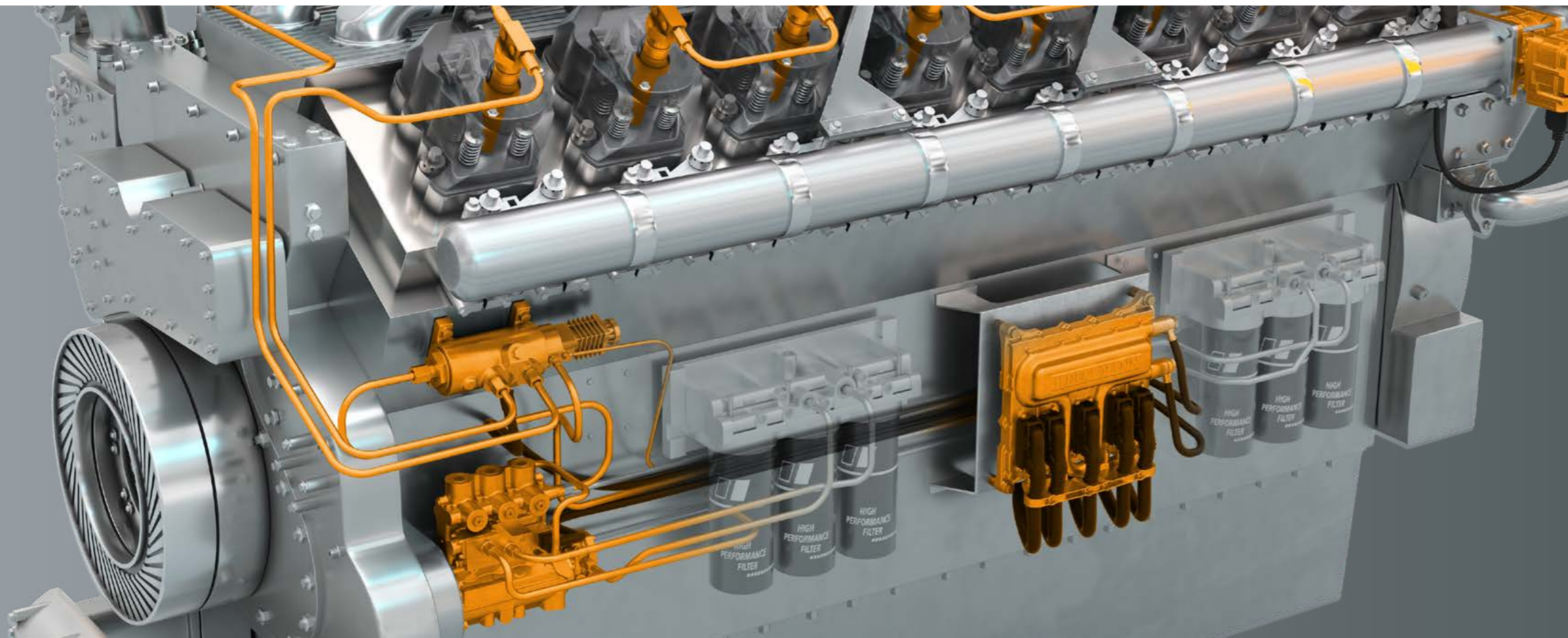
- ▶ Electronic Fuel Injection Controls
- ▶ Digital Governors
- ▶ Actuators with integrated Controller
- ▶ Dual-Fuel Controls
- ▶ Generator Controls
- ▶ Gas Engine Controls
- ▶ CHP Controls

SYSTEM SOLUTIONS

Alongside the control unit as the core of every control solution HEINZMANN delivers all system components consisting of actuators or injectors and a wide range of sensors and pick-ups. Thus HEINZMANN control systems cover engines of any power range, combining a control unit with an adequate actuator or injector. The controls differ in controllable engine power range and number and type of inputs and outputs.

The conventional solutions are available with rotary, linear or electro-hydraulic actuators, providing a position feedback for accurate actuator control.

All systems perform external communication via CAN protocol. Most of the control units are available in different degrees of protection for direct mounting or switch cabinet installation. They guarantee economical and individual solutions for OEMs, packagers and retrofit customers.



- ▶ All engine types: diesel, gas, dual-fuel and alternative fuel engines as well as gensets and CHPs
- ▶ All turbine types: gas, water and steam
- ▶ Governing, control & monitoring: speed, load, ignition, knock, emission and electric power generation
- ▶ Application range: power generation, locomotive, marine, industrial vehicles

ELECTRONIC FUEL INJECTION CONTROLS

DARDANOS solenoid valve control systems combine their main function – speed control – with other performance characteristics that benefit the engine, including optimised fuel efficiency, higher engine power and lower pollutant emissions. The EFI control units are used as part of common rail or E-PPN injection systems in diesel engines. For gas engines, they are combined with electrically driven injection valves or gas injectors. Components for diesel and gas injection are used as part of the electronic injection control system in dual-fuel engines.

DARDANOS MVC series

The DARDANOS range includes universal EFI control units for engines with electronically controlled injection systems. These solenoid valve control systems are primarily used to control the speed. They help to optimise fuel consumption and this, in turn, results in less environmentally harmful emissions. They can also be used for basic monitoring functions, thereby increasing the operational reliability and availability of engines.

DARDANOS MVC 01-24

The DARDANOS MVC 01-24 is a solenoid valve control system for industrial diesel, gas and dual-fuel engines with a maximum of 24 cylinders. It enables up to seven precise injections per cylinder and stroke and a large number of I/Os enables optimum engine operation and monitoring. It can be used with any control system based on solenoid valves and combined with MEGASOL injection valves for gas injection systems. Additionally, up to 3 actuators can be actuated directly, for instance to control the air volume (throttle valve, turbocharger bypass, wastegates). It can be expanded as a redundant system for use in ship engines.



DARDANOS MVC 01-24

- ▶ EFI control up to 24 cylinders

DIGITAL GOVERNORS

HEINZMANN digital control units for conventional injection are universally applicable for diesel engines, gas engines and other prime movers. In addition to their basic purpose of speed control, these governors are capable of performing a multitude of other tasks and functions. Combined with HEINZMANN's powerful and proven actuators they offer reliable systems for engine control and management.

Modular universal controls – XIOS

With XIOS, HEINZMANN presents an entirely new generation of controller and monitoring units. Unlike conventional controllers, the application-specific configurable modular XIOS package offers a previously unmatched breadth of functions and features. XIOS is based on advanced control technology: to relieve the CPU, a logic chip (FPGA) developed by HEINZMANN takes control of all I/O functionality, leaving more computing power for PLC functions or processor intensive regulation tasks. Specific adaption to application is achieved by a variety of plug on modules tailored for different tasks. The result is a scalable, very flexible and cost effective control unit, which features various and numerous I/Os. Additional factors are custom configuration and multifunction. XIOS controls and monitors manifold different types of engines, such as diesel, gas and dual-fuel engines plus generators and turbines.



XIOS UC 1

- ▶ Multifunctional and modular universal engine controller and expanded I/O system

Digital Governors for HEINZMANN Actuators StG 90 / StG 180

Our large StG 90/180 actuators, previously controlled by our digital control devices PRIAMOS DC 1-03 or DC 1-04, will now be controlled by the XIOS - 4Q Driver combination in new projects. Existing PRIAMOS control devices can be replaced with appropriate retrofit kits.

The 4Q Driver can also be used independently as a positioner interface for HEINZMANN actuators with speed controllers from other manufacturers. Additionally, it can replace the Woodward actuator EM 80, particularly when used in combination with the StG 180 actuator.



XIOS

4Q Driver

- ▶ Speed / Position control units for large speed engines and turbines

HELENOS DC 2-02

The HELENOS DC 2-02 is HEINZMANN's digital control system designed for medium-speed engines and turbines. It serves as the core control component for application-specific systems in marine, locomotive, and turbine applications. It supports external communication via various CAN protocols and Modbus.



DC 2-02

- ▶ Speed control series for medium speed engines and turbines

PANDAROS DC 6

The PANDAROS DC 6 is HEINZMANN's small but powerful digital control for high-speed engines. It drives HEINZMANN actuators rated up to 40 Nm torque. External communication via variable CAN protocols is available.



DC 6

- ▶ High-speed engine control series for small engines

PANDAROS DC 6.200

The DC 6.200 is HEINZMANN's low current version of digital PANDAROS controls. With assisting actuator systems of hydraulic type for instance torques up to 20 Nm are possible. DC 6.200 hardware is well adapted for small actuator currents and therefore it comprises an appropriate software version.



DC 6.200

- ▶ Low current high-speed engine control for small engines

ORION series

HEINZMANN digital control units of the ORION series are highly efficient and flexible but still cost-effective speed control units with first-rate control performance on small and medium-sized combustion engines. They are universally applicable for diesel engines, gas engines and other prime movers. In addition to their basic purpose of speed control, these governors are capable of performing a multitude of other tasks and functions. Combined with HEINZMANN's powerful and proven actuators they offer reliable systems for engine control and management.

ORION DC 9

The ORION DC 9 is HEINZMANN's compact yet powerful digital control system for high-speed engines. It drives HEINZMANN actuators with a torque rating of up to 40 Nm. While it shares similarities with the PANDAROS DC 6, the DC 9 offers reduced input, output, and associated functionality.

As a replacement for HEINZMANN analogue speed governors with actuators up to 40 Nm, the ORION DC 9 is an excellent option, providing additional features.



DC 9

- ▶ Speed control series for small and medium-sized engines

ORION DC 10

The ORION DC 10 control unit with protection degree IP66 is meant for direct engine mounting. Small in size, extremely enduring with tailor-made functionality but economically advantageous, it is ideal for speed control of small combustion engines.



DC 10

- ▶ Speed control for direct mounting at small combustion engines



Viking35

VIKING35

The Viking35 ECU of the HEINZMANN subsidiary REGULATEURS EUROPA, along with its Viking Vision user interface, provides the core platform for combined engine management.

For more information please refer to the REGULATEURS EUROPA product catalogue or go to www.regulateurseuropa.com.

ACTUATORS WITH INTEGRATED CONTROLLER

The range of actuators with integrated controllers combines the functionality of HEINZMANN actuators with actuator drivers or speed governors. This design provides flexibility in mounting positions and allows for interchangeability with other proprietary units.

HEINZMANN offers a wide selection of these actuators, with the following options available:

- With integrated positioning software or speed governor software
- With different position/speed setpoint signals
- With or without CAN protocol
- With different rotation angles
- With different torques
- With different connection plugs
- With or without internally gearbox
- With or without integrated throttle valve



► Direct mounted actuators with integrated controller

DUAL-FUEL CONTROLS

ARTEMIS

ARTEMIS Dual-Fuel Control Systems are based on HEINZMANN's proven gas engine components and ensure a perfect gas-air mixture quality and high conversion ratios. The gas valve controlled variant as well as the gas mixer based systems are suitable for stationary applications and heavy-duty vehicles.

MVC 01-24

The MVC 01-24 is a solenoid valve control system for dual-fuel engines with a maximum of 24 cylinders. The cylinder-specific version based on a gas injection valve consists of an EFI control system, gas injection valves, pressure and temperature sensor.



MVC EFI control

► EFI Control for gas admission valve based system

XIOS^{DualFuel}

The XIOS^{DualFuel} is a modular and multi-functional governor for dual-fuel engines. The highly efficient control system provides control strategies for the diesel and gas side, sophisticated safety and monitoring strategies, a control system for the gas path and unrestricted diesel operation at all times.



XIOS^{DualFuel}

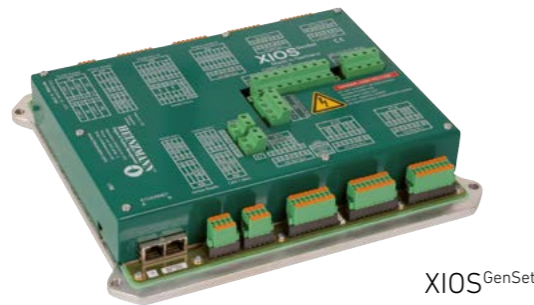
► XIOS^{DualFuel} control for gas mixer based system

GENERATOR CONTROLS

XIOS^{GenSet}

The novel XIOS^{GenSet} controller is an all-rounder for any generator system application: it combines all relevant benefits of a combustion engine speed governor with a generator control.

Only one central controller is needed for control and monitoring of the entire genset system.



XIOS^{GenSet}

- ▶ All in one engine & generator control

CONTROLS FOR GAS ENGINES

HEINZMANN offers a comprehensive range for management of industrial gas engines, whether as modular components or as integrated engine management systems. Offering highly flexible configuration and absolute operational reliability, the systems are suitable for gas engines of all types, from all manufacturers and in all performance classes. HEINZMANN provides with the optimum control technology for the application-specific requirements of each individual gas engine.

XIOS^{Gas}

The newly developed and extensively tested XIOS^{Gas} for gas engines combines all the advantages of HEINZMANN control systems: Speed control, mixture control, ignition control and knock control as well as extensive engine management functions, can be found in a central control unit. This can be combined with a wide selection of hard components and is therefore suitable for any type of application.



XIOS^{Gas}

- ▶ Modular and multi-functional governor for gas engines

KRONOS air-fuel ratio control systems

The KRONOS product systems comprise different solutions for air-fuel ration control as well as speed load control. One is sure to find a solution to meet their requirements, independent of engine size, specific application, operational demands and emission requirements.

KRONOS 20 electronically controlled system

KRONOS 20 is an electronically controlled AFR trim control system that allows speed/load dependent lambda values to be set within a certain range, thereby improving the engine behaviour under all operating conditions. In closed loop lambda is maintained by the engine output signal. Variations in ambient conditions (such as gas quality and pressure) are fully compensated.



KRONOS 20

- ▶ AFR control unit

KRONOS 30 full authority system

The KRONOS 30 M is a full authority air fuel ratio control system including speed/load control. The modular concept is very flexible and can be extended to accommodate applications with larger variations in gas, engine and ambient parameters. At the core of the system there is ELEKTRA, a high-precise gas metering unit as part of an air fuel ratio control system. It is available in different configurations. With its integrated controller it can be extended to a stand-alone lambda control system for any gas quality.



ELEKTRA

- ▶ Stand-alone lambda control system

KRONOS 40 injection based system

KRONOS 40 is a speed/load control system for gas engines with gas injection valves controlled by solenoid valves. The system can handle cylinder outputs from 100 kW to 1 MW and up to 20 cylinders.



EFI control unit



MEGASOL gas admission valve

- ▶ Direct gas injection with solenoid valve

PHLOX control units IC series

Phlox control units are highly flexible high-energy capacity spark ignition control devices.

Its flexibility and I/O possibilities allow easy integration into any gas engine management system.



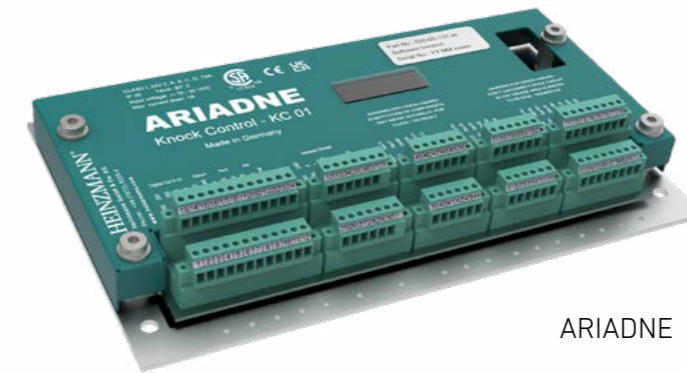
PHLOX II control unit with ignition coils



- ▶ Ignition control versions for 8, 12, 16 or 24 cylinders
- ▶ Advanced spark ignition with FlexSpark Technology

ARIADNE knock control

Used as part of a gas engine management system, ARIADNE can act on ignition AFR and load governing, implementing a real-time knock control. It offers advantages in terms of engine protection, performance and cost.



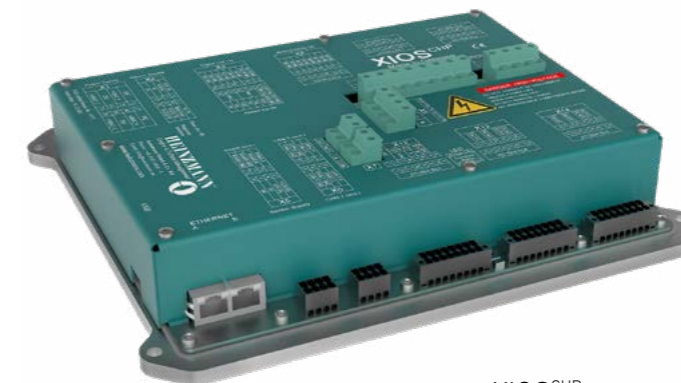
ARIADNE

- ▶ Knock control unit

CHP CONTROLS

XIOS^{CHP}

Engine, generator, CHP and heat management as well as various monitoring functions are integrated in one central control unit, XIOS^{CHP}. This provides reliable usage for heat and electricity power whether in mainsparallel or island operation.



XIOS^{CHP}

- ▶ Central CHP Control for various management and monitoring functions

COMMUNICATION TOOL – DCDESK 6.0

DcDesk 6.0 is HEINZMANN's Windows® based software to be used with our digital controls. It supports system configuration and parameter settings and allows programming control functions. It provides various display and recording functions as for example error logs to assist monitoring and system diagnosis. Upgrading DcDesk to the latest version is easily possible by downloading the appropriate current software version from our website.

In addition to the required dongle with communication software, adapter cables and interfaces are required for most HEINZMANN controllers.

A corresponding low-cost version of DcDesk 6.0 is available for the digital HEINZMANN low-cost controllers.



DcDesk 6.0

POSITIONERS AND ACTUATORS

HEINZMANN provides a wide range of actuators including direct working actuators, actuators with gears and actuators with integrated positioning electronics and brushless motors. HEINZMANN's large range of actuator models covers practically any application and sector. This means that customers find a product tailored to their exact requirements.

For more information please refer to our „Positioners & Actuators“ leaflet or www.heinzmann.com.

Actuator data											Applicable control units and direction of work						
Actuator type	Max. rotation/stroke	Max. torque/force	Torque/force in steady state position	No load response time	Steady state current	Max. current	Ambient temperature	Degree of protection	Weight approx.	4Q Driver	HELENOS DC 2	PANDAROS DC 6	ORION DC 9	ORION DC 10	XIOS	Analogue feedback	Digital feedback
StG 3	72°	3 Nm	1.5 Nm	< 40 ms	3 A	6 A	-20°C ... 150°C	IP6K9K	5.5 kg						4Q	x	
StG 3*	72°	6 Nm	3 Nm	< 40 ms	3 A	6 A	-20°C ... 100°C	IP6K9K	5.5 kg						4Q	x	
StG 2010	36°	2 Nm (spring)	1 Nm	45 ms	3 A	6 A	-25°C ... 90°C	IP65	2.2 kg	4Q	4Q	4Q	4Q			x	
StG 2010	68°	1.4 Nm (spring)	0.7 Nm	60 ms	3 A	6 A	-25°C ... 90°C	IP65	2.2 kg	4Q	4Q	4Q	4Q			x	
StG 2040	36°	7.4 Nm (spring)	3.7 Nm	50 ms	4 A	8 A	-25°C ... 90°C -40°C ... 90°C	IP65	6.5 kg	4Q	4Q	4Q	4Q		4Q	x	
StG 2040	68°	5.6 Nm	3.4 Nm	70 ms	4 A	8 A	-25°C ... 90°C -40°C ... 90°C	IP65	6.5 kg	4Q	4Q	4Q	4Q		4Q	x	
StG 2080	36°	11 Nm (spring)	5.5 Nm	60 ms	4 A	8 A	-25°C ... 90°C -40°C ... 90°C	IP65	8.6 kg	4Q	4Q	4Q	4Q		4Q	x	
StG 2080	68°	8.4 Nm (spring)	4.2 Nm	85 ms	4 A	8 A	-25°C ... 90°C -40°C ... 90°C	IP65	8.6 kg	4Q	4Q	4Q	4Q		4Q	x	
StG 2005 DP	32°	0.8 Nm	0.4 Nm	50 ms	3 A	6 A	-25°C ... 90°C	IP55	2.4 kg		4Q	4Q	4Q				x
StG 2040 DP	36°	5.6 Nm	2.8 Nm	50 ms	3 A	6 A	-25°C ... 90°C -40°C ... 90°C	IP55	4.2 kg		4Q	4Q	4Q				x
StG 2120	68°	13 Nm	4.3 Nm	<100 ms	2.3 A	7 A	-20°C ... 60°C	IP55	17.8 kg	4Q	4Q				4Q	x	
StG 6-01	36°	4 Nm	1.4 Nm	75 ms	1.7 A	5 A	-25°C ... 90°C	IP55	3.5 kg	4Q	4Q	4Q	4Q		4Q	x	
StG 6-02V	36°	6 Nm	2 Nm	50 ms	1.7 A	5 A	-25°C ... 90°C	IP55	3.5 kg	4Q	4Q	4Q	4Q		4Q	x	
StG 10	36°	10 Nm	3.3 Nm	60 ms	1.7 A	5 A	-25°C ... 90°C -40°C ... 90°C	IP55	4.3 kg	4Q	4Q	4Q	4Q		4Q	x	
StG 16	42°	15 Nm	5 Nm	120 ms	1.7 A	5 A	-25°C ... 90°C	IP55	12.3 kg	4Q	4Q	4Q	4Q		4Q	x	
StG 30	42°	31.5 Nm	10.7 Nm	190 ms	1.7 A	5 A	-25°C ... 90°C	IP55	12.3 kg	4Q	4Q	4Q	4Q		4Q	x	
StG 30.90	90°	31.5 Nm	10.7 Nm	235 ms	1.7 A	5 A	-25°C ... 90°C	IP55	24.5 kg	4Q	4Q	4Q	4Q		4Q	x	
StG 40	42°	44 Nm	14.5 Nm	190 ms	2.3 A	7 A	-25°C ... 90°C	IP55	12.3 kg	4Q	4Q				4Q	x	
StG 40.90	90°	44 Nm	14.5 Nm	275 ms	2.3 A	7 A	-25°C ... 90°C	IP55	24.5 kg	4Q	4Q				4Q	x	
StG 90	42°	90 Nm	30 Nm	320 ms	2.3 A	7 A	-25°C ... 90°C	IP65	32 kg	4Q						x	
StG 180	42°	180 Nm	60 Nm	320 ms	4.4 A	13 A	-25°C ... 90°C -40°C ... 90°C	IP 55	39 kg	4Q						x	
StG 2040-PD	68°	6.6 Nm	3.3 Nm	< 150 ms	3.5 A	7 A	-25°C ... 90°C	IP65	6.5 kg	integrated position control							
StG 2080-PD	68°	7.8 Nm	4.6 Nm	< 90 ms	3.5 A	7 A	-25°C ... 90°C	IP65	8.6 kg								
StG 30.90-PD	90°	31.5 Nm	10.7 Nm	< 240 ms	1.7 A	5 A	-20°C ... 60°C	IP55	24.5 kg								
StG 40.90-PD	90°	40 Nm	14.5 Nm	< 280 ms	2.3 A	6.3 A	-20°C ... 60°C	IP55	24.5 kg								
StG 3-PD	72°	3 Nm	1.5 Nm	< 40 ms	3 A	6 A	-20°C ... 100°C	IP6K9K	5.5 kg								
StG 3*-PD	72°	6 Nm	3 Nm	< 40 ms	3 A	6 A	-20°C ... 100°C	IP6K9K	5.5 kg								
StG EC 40	82°	> 40 Nm	> 20 Nm	< 220 ms (40°) 355 ms (82°)	5 A		-40°C ... 80°C	IP66	19 kg								
StG EC 250	82°	> 250 Nm	> 125 Nm	< 250 ms (40°) 400 ms (82°)	external power supply		-40°C ... 80°C	IP66	37 kg								
Linear output																	
LA 25	19.5 mm	25 N	20 N	< 100 ms	2 A	2.8 A	-40°C ... 90°C	IP65	0.7 kg				2Q	2Q			x
LA 30	15.5 mm	30 N	24 N	< 100 ms	2 A	2.8 A	-40°C ... 90°C	IP65	0.7 kg				2Q	2Q			x
LA 35	12.5 mm	35 N	28 N	< 100 ms	2 A	2.8 A	-40°C ... 90°C	IP65	0.7 kg				2Q	2Q			x

HEINZMANN DIGITAL CONTROL SYSTEMS

All from one source

HEINZMANN's digital control systems are acknowledged for their high flexibility, which meets all customer needs and requirements. They are known for their long life cycle and proven reliability and can be used for any size, type or make of machine. All digital control units in the HEINZMANN range offer excellent governing performance.

Our strength is customised solutions tailored to your particular application, which we offer besides our standard system solutions. This includes solutions for electronic fuel injection as well as for conventional injection. They are used for marine, locomotives, power management and industrial vehicles.

HEINZMANN develops, produces and distributes all system components like controls, actuators, injectors and sensors.

With the HEINZMANN DcDesk configuration and visualisation software the user can configure and adjust the entire range of our digital controls. This grants optimal adaption to multiple applications. Thus our customers benefit from a wide range of complete solutions from one supplier.



Actuator – StG 16



Actuator – StG 180

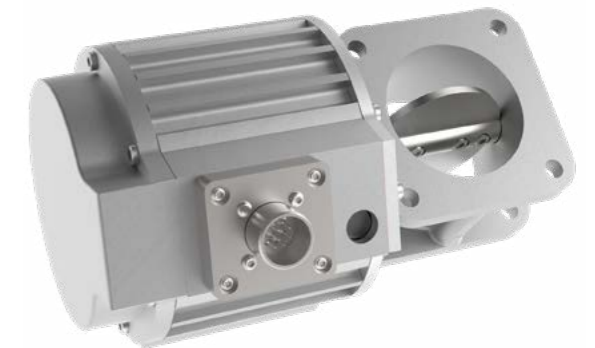
COMPLETE SYSTEM SOLUTIONS & OPTIMISED AIR PATH MANAGEMENT

HEINZMANN provides tailored solutions for combustion engines in a large number of areas: precision fuel injection systems, air path management components, safety and monitoring systems and control platforms for tasks with any level of complexity.

- ▶ Modular ECUs
- ▶ Digital Controls
- ▶ Actuators
- ▶ Sensors
- ▶ Configuration and visualisation software
- ▶ Wastegate valves
- ▶ Turbocharger bypass
- ▶ Exhaust gas recirculation
- ▶ Engine Monitoring



TRITON OMD – Oil Mist Detection



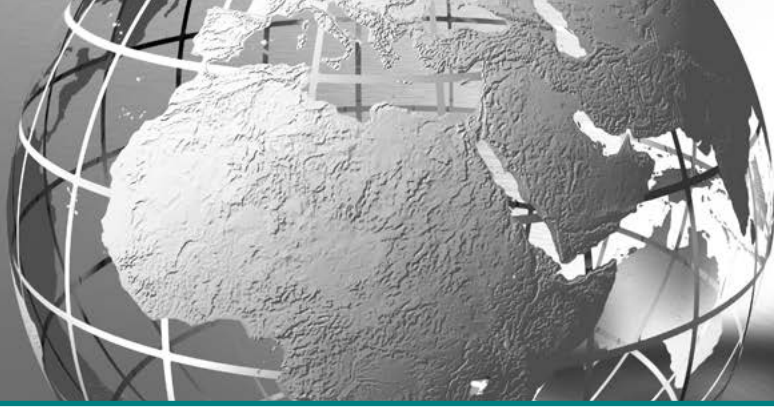
Turbocharger Bypass



Turbine Control – Si-TEC

TURBINE CONTROLS

For more information please go to www.heinzmann-turbine-controls.com and www.heinzmann.com.au



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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