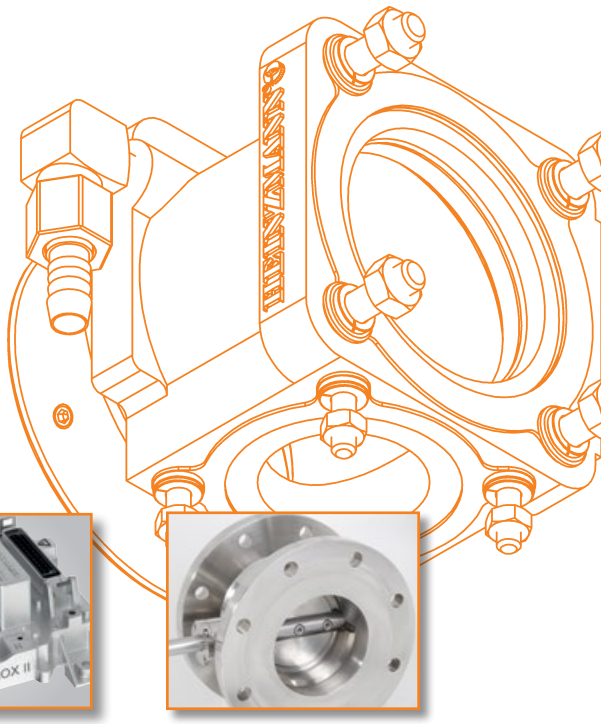
HEINZMANN®

Gas Engine Management

Product Catalogue



Speed/Load Control

Air-Fuel Ratio Control

Ignition Control

Emission Control/ Wastegate

Gas Engine Management

COMPLETE SOLUTIONS

HEINZMANN offers a complete product range for gas engine management, both as modular components and as fully integrated engine management systems. Known for their reliability and durability, these control systems are highly flexible and suitable for any size, type or make of gas engine. With standard products as well as with solutions, tailored to application, HEINZMANN seeks to provide the perfect system for every customer's requirements.

In this catalogue we do not only want to present our products, but also help our customer to find the right solution for each project. This catalogue includes all main parts of gas engine management and supports our customers to define their inquiry very precisely.

HEINZMANN is a long-established supplier of control and management systems for combustion engines and turbines in the industrial field.

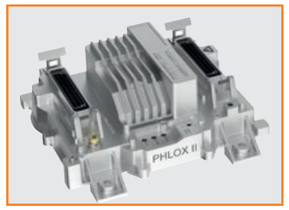
Renowned customers trust in HEINZMANN solutions for original fitting and retrofitting of applications that operate in challenging environments and rely on sophisticated and reliable engine management.

Speed/Load Control

Speed/load control is an essential part of gas engine management. HEINZMANN offers all necessary components.

AFR Control

A steady operation mode is only possible with a homogenous mix of air and gas. HEINZMANN has the solution for all given requirements.



Ignition Control

To achieve reduced emissions and optimum engine performance HEINZMANN helps to optimise the ignition process by a complete ignition control solution.

Wastegate

Wastegate valves are used for load control and turbine protection in turbo-charged engines.

Service & Support

HEINZMANN provides comprehensive service including commissioning of the control system and customer trainings.

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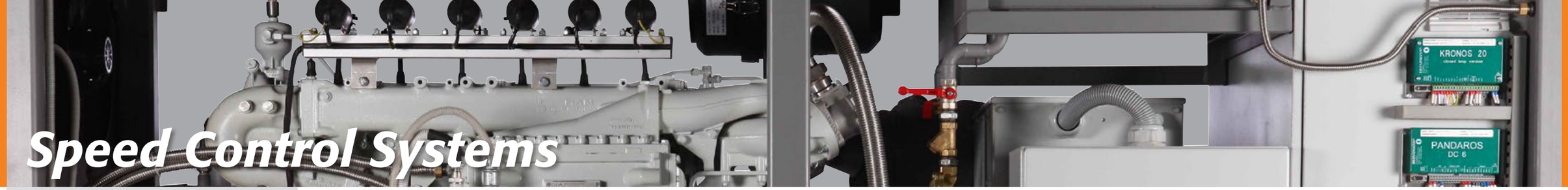


Speed Control Systems

ONE SUPPLIER

An essential part of engine management is a reliable speed/load control system. Load control is one of the main challenges of gas engine management. HEINZMANN offers all components of a complete speed/load control solution.

HEINZMANN develops, produces and distributes all system components like controllers, actuators, throttle valves, speed sensors and connection cables.

With the HEINZMANN DcDesk programming 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.

HEINZMANN provides:

- **Speed/Load Control Units**
- **Actuators**
- **Positioners**
- **Throttle Valves**
- **Throttle Valves with Integrated Actuators**
- **Speed Sensors**
- **Wastegate Valves**

SPEED/LOAD CONTROL UNITS

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 of the HEINZMANN range offer excellent governing performance. 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 these controllers offer reliable systems for engine control and management.

PANDAROS DC 6

ORION DC 9

ACTUATORS

HEINZMANN high-performance actuators feature high torque ratings packed into a lightweight, compact unit and have a high protection degree. Their proven reliability and long life cycle are well known in the market.

StG 2010/2040/2080

StG 2120

StG 6/10

POSITIONERS

HEINZMANN also supplies actuators with integrated positioning electronics. They are based on HEINZMANN standard rotary actuators and deliver precise and fast positioning.

StG 2040/2080–PD

THROTTLE VALVES

HEINZMANN butterfly throttle valves control the quantity of the gas and air mixture. Furthermore, in special applications the throttle valve can be used as a gas valve to control mixture quality.

The wide size range and the sealed design cover a wide power output and operation pressure range. The precise manufactured valves allow optimum engine control and an exceptional lifetime.

DK 50 *DK 100* *DK 140* *DK 200* *DK 300* *DK 400*

INTEGRATED SOLUTIONS

HEINZMANN also supplies integrated solutions like actuators combined with throttle valves. They are available with integrated positioning electronics or integrated governor.

DK 200/StG 2080

WASTEGATE

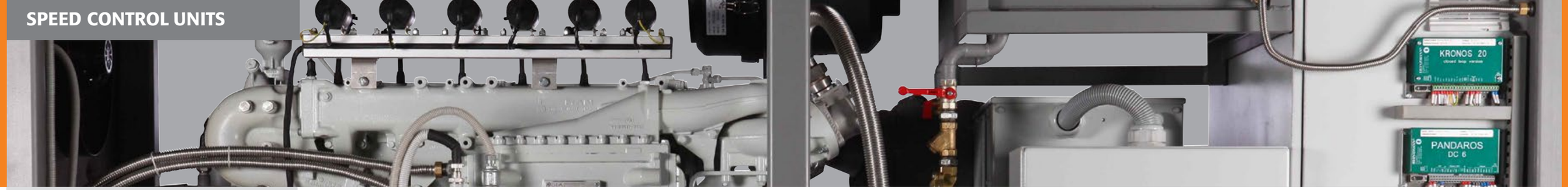
Wastegate valves are used for load control and turbine protection in turbo-charged engines.

Wastegate valve

SPEED SENSORS

HEINZMANN provides a range of high-precision speed sensors. Their full customisability allows for any product specification to be matched.

Sensors



Speed/Load Control Systems

PANDAROS DC 6

Speed control unit

C US

PANDAROS DC 6 is a highly efficient speed governor based on a 16-bit microprocessor for small-sized high-speed engines. Integrated CAN provides external communication.

The control unit is able to drive direct working as well as gear-type actuators which however require the extension module CU-01. Setting torques up to 30 Nm are possible.

In combination with HEINZMANN's small, medium and large range actuators PANDAROS DC 6 control unit provides the ideal solution for small high-speed engines and turbine applications.

The advanced PANDAROS DC 6 hardware is fully compatible with any predecessor. All PANDAROS DC 6 software versions can be used without any change.

DNVGL and CCS certified.

Features

- Extended generator and vehicle applications
- Two separate speed inputs
- Additional analogue inputs for synchronising and isochronous load sharing
- Overspeed protection
- Start fuel limitation regarding engine temperature for optimum fuel quantity during start and run-up phase
- PID mapping of governor's dynamic characteristic according to speed, temperature and load
- Fuel limitation depending on speed, boost pressure, temperature and further parameters for optimal load factor in order to protect the engine
- Speed dependent monitoring of oil pressure with or without engine stop for engine protection
- Communication via CAN
- Easy parameterisation via HEINZMANN DcDesk communication tool
- Governor and sensor monitoring
- Error and operating data logging

Technical Data

Supply voltage	24 VDC, 12 VDC
Operating voltage range	9 ... 33 VDC
Operating temp. range	-40 ... +80 °C
Degree of protection	IP00, IP55 on request
Connections	Spring-cage terminal (IP00)

I/O Specifications

Name	*Terminal*	*Configuration*
CANH	H	CAN High
CANL	L	CAN Low
P2	1	Analogue Input/Output 2, Digital Input/Output 2, PWM Input/Output 2
P1	2	Analogue Input/Output 1, Digital Input/Output 1, PWM Input/Output 1
GND	3, 5, 8, 12, 14	Ground
Temp	4	Pt 1000, NTC (further on demand)
REF 5 V	6	5 V Reference Voltage
SpA or DI3/AI3	7	Digital Input 3, Analogue Input 3
SpD or DI4	9	Digital Input 4
Err	10	Error Output
StP or DI5/PU2	11	Digital Input 5, Pick-up Input 2 (Hall), PWM Input 3
PU1 (IND)	13	Pick-up Input 1 (inductive)
FB-C	15	Actuator Feedback Common (Ground)
FB-M	16	Actuator Feedback Measurement (Input)
FB-R	17	Actuator Feedback Reference (Reference Voltage)
DRV+	18	Actuator Power Supply (+24 V) for Actuators StG 2010-2080 only
DRV–	19	Actuator Ground for Actuators StG 2010-2080 only
–	20	Power Supply Ground
+	21	Power Supply (+24 V)
CU-01		
to DC 6 DRIVE –	n/a	Power Supply Ground from DC 6
to DC 6 DRIVE +	n/a	Power Supply (+24 V) from DC 6
to Actuator Drive –	n/a	Power Supply Ground for Actuators StG 6-40 only
to Actuator Drive +	n/a	Power Supply (+24 V) for Actuators StG 6-40 only

n/a = not available

Part Numbers

Controller	*Product - Name*	*Part Number*
PANDAROS	DC 2010.6-XX *	**622-00-051-00**
PANDAROS	DC 2040.6-XX *	**622-00-051-01**
PANDAROS	DC 2080.6-XX *	**624-00-064-00**
PANDAROS	DC 2120.6-XX *	**624-00-074-00**
PANDAROS	DC 6.6-XX *	**622-00-049-00**
PANDAROS	DC 10.6-XX *	**622-00-049-01**
PANDAROS	DC 16.6-XX *	**624-00-062-00**
PANDAROS	DC 30.6-XX *	**624-00-062-01**
PANDAROS	DC 40.6-XX *	**624-00-069-02**

The product name consists of the respective actuator with the combined controller plus the applied software version
(Software version 19 is the standard version for gas engines.)

***) For specific gas engine speed governor please choose software xx=19, for speed governor please choose software XX=00, for positioner version please choose software XX=06**

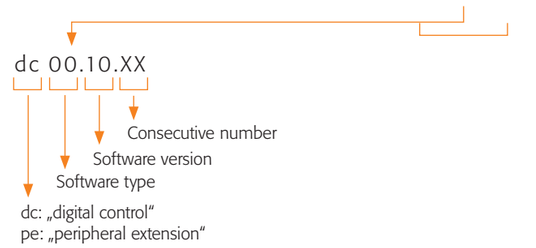
On request, the control units are available with further software versions.

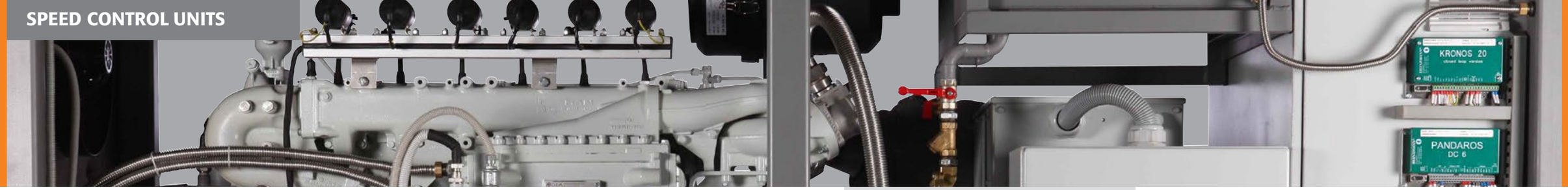
Product Name (System Description)

DC	2040	.6	-19
digital controller	actuator	controller	software

Software Version

DC XX.6-00	Standard Speed Control incl. HEINZMANN CAN	dc 00.00.XX
DC XX.6-00	Standard Speed Control incl. SAE J1939	dc 00.80.XX
DC XX.6-00	Standard Speed Control incl. CANopen	dc 00.90.XX
DC XX.6-06	Positioner Version	pe 00.01.XX
DC XX.6-19	Gas Engine Genset Speed Control	dc 00.10.XX



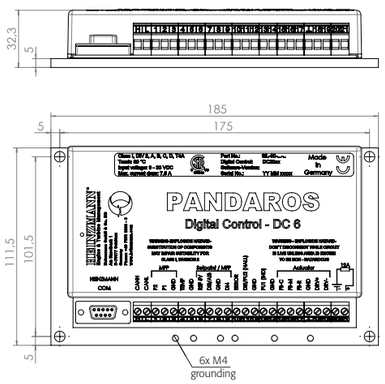


Dimensions

concerning

622-00-051-00 624-00-064-00

622-00-051-01 624-00-074-00



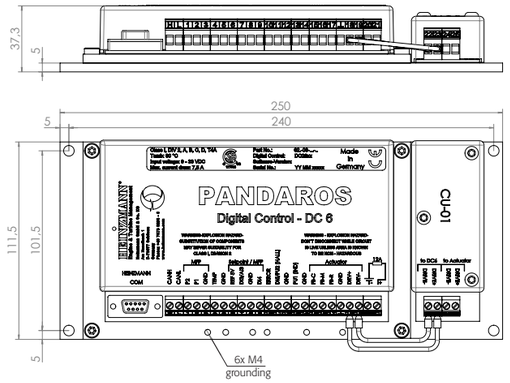
Dimensions

concerning

622-00-049-00 624-00-062-01

622-00-049-01 624-00-069-02

624-00-062-00



Actuator and pick-up cables for PANDAROS DC 6 and ORION DC 9

Actuator and Pick-up Cables for PANDAROS DC 6 and ORION DC 9			
	Actuator cable		*Pick-up cable*
Actuator	*Straight connector*	*Angled connector*	*Straight connector*
StG 6/10	620-81-257-10*	620-81-258-10*	620-81-248-10*
StG 16/30/40	620-81-256-40*	620-81-249-40*	620-81-248-40*
StG 2010	620-81-256-50*	620-81-249-50*	620-81-248-50*
StG 2040/2080	620-81-256-60*	620-81-249-60*	620-81-248-60*

*=00 for L=5 m, *=05 for L=10 m, *=06 for L=15 m

Further lengths on request.

Example

Example of a system with control unit PANDAROS DC 6 and actuator StG 2040

Part Numbers

Product – Type	*Product – Name*	*Additional Information*	*Part Number*
Control unit	DC 2040.6-19		**622-00-051-01**
Actuator	StG 2040.25-SV	(68°) IP55	**512-00-012-03**
Cable for StG 2040/2080	Angled connector, 10 m		**620-81-249-6005**
Lever arm	RH 2040-01		**512-80-001-00**
Pick-up 5/8“	IA 12-76-18 UNF-2A		**600-00-006-02**
Cable for pick-up	Straight connector, 10 m		**620-81-248-6005**

ORION DC 9

Speed control unit

The cost-effective speed control DC 9 was developed for small and medium engines.

The main benefits are the optimal price-performance ratio and the high efficiency as well as the precise feedback system.

ORION DC 9 provides speed governor functions but also positioner abilities.

It is able to drive direct working actuators. Gear-type actuators require the extension module CU-01.

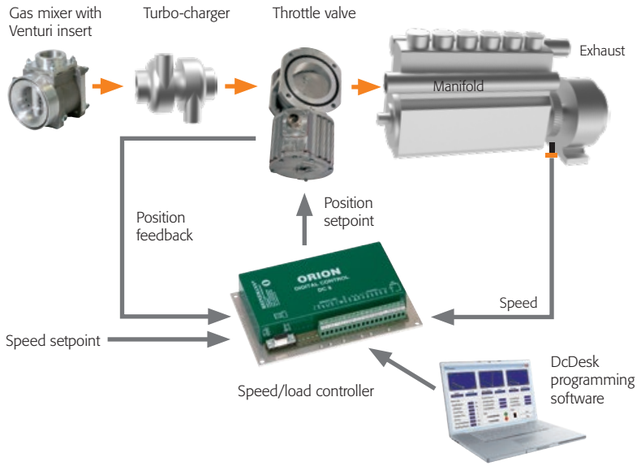
Several error recognition, indication and reporting functions are provided. For major alarm a separate output is applicable. The firmware allows configuration of input/output allocation as well as activation and parameterisation of functions.

ORION DC 9 control allows any mode of operation as running at fixed or variable speed.

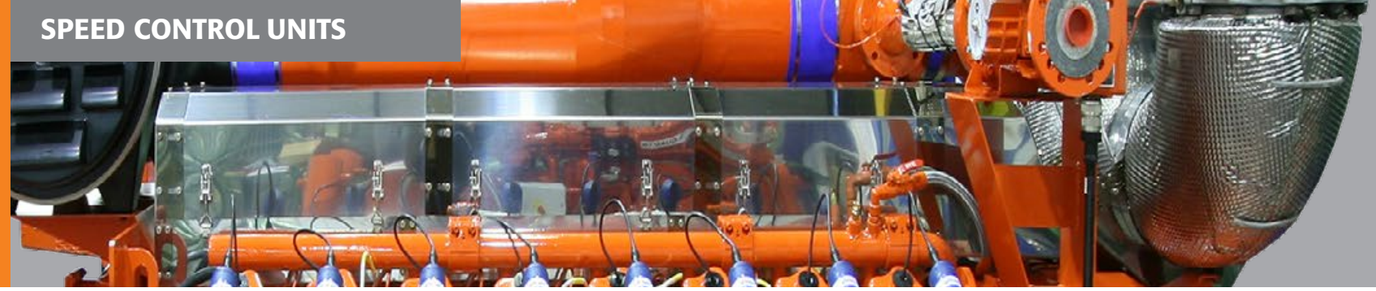
In combination with HEINZMANN's small and medium range actuators ORION DC 9 provides an excellent solution for gas and diesel engines.

Features

- Additional analogue inputs for synchronising and isochronous load sharing
- Two separate speed pick-ups
- Positioner function
- Applicable to HEINZMANN direct acting actuators and combined with coil unit to actuators with gears
- Generator and vehicle application
- Overspeed protection, governor and sensor monitoring
- Fuel limitation depending on speed, boost pressure and further parameters
- PID mapping of governor's dynamic characteristic according to speed and load
- Easy parameterisation via HEINZMANN DcDesk communication tool
- Error and operating data logging



SPEED CONTROL UNITS



Speed/Load Control Systems

I/O Specifications

Name	*Terminal*	*Configuration*
DI4/AI2	4	Analogue Input 2, Digital Input 4
REF 5V	6	5 V Reference Voltage
DI1/AI1	7	Analogue Input 1, Digital Input 1
DI2	9	Digital Input 2
Error	10	Error Output
DI3/PU2	11	Digital Input 3, Pick-up Input 2 (Hall)
PU1 (IND)	13	Pick-up Input 1 (inductive)
GND	3, 5, 8, 12, 14	Ground
FB-C	15	Actuator Feedback Common (Ground)
FB-M	16	Actuator Feedback Measurement (Input)
FB-R	17	Actuator Feedback Reference (Reference Voltage)
DRV+	18	Actuator Power Supply for Actuators StG 2010-2080 only
DRV–	19	Actuator Ground for Actuators StG 2010-2080 only
–	20	Power Supply Ground
+	21	Power Supply (+24 V)

Technical Data

Supply voltage	24 VDC
Operating voltage range	9 ... 33 VDC
Operating temperature range	-40 ... +80 °C
Degree of protection	IP00
Connections	Spring-cage terminal

Part Numbers

Controller	*Product – Name*	*Part Number*
ORION	DC 2010.9-XX *	**621-00-024-00**
ORION	DC 2040.9-XX *	**622-00-059-00**
ORION	DC 2080.9-XX *	**624-00-076-00**

The product name consists of the respective actuator with the combined controller plus the applied software version.

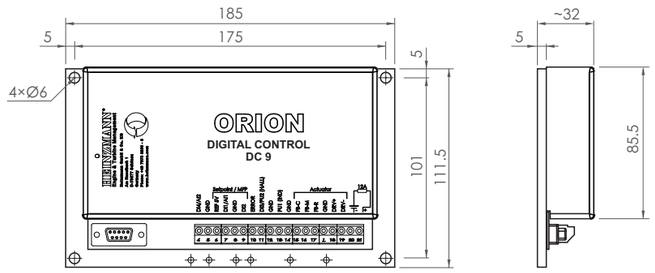
***) for speed governor please choose software XX=00,**
for positioner version please choose software XX=06

Product Name (System Description)

DC	2040	.9	-00
digital controller	actuator	controller	software

Actuator and pick-up cables can be found on page 8.

Dimensions



Example

Example of a system with control unit ORION DC 9 and actuator StG 2040

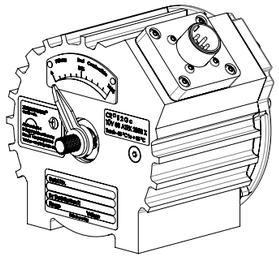
Part Numbers

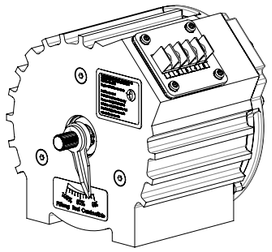
Product – Type	*Product – Name*	*Additional Information*	*Part Number*
Control unit	DC 2040.9-00		**622-00-059-00**
Actuator	StG 2040.25-SV	(68°) IP55	**512-00-012-03**
Cable for StG 2040/2080	Angled connector, 10 m		**620-81-249-6005**
Lever arm	RH 2040-01		**512-80-001-00**
Pick-up 5/8"	IA 12-76-18 UNF-2A		**600-00-006-02**
Cable for pick-up	Straight connector, 10 m		**620-81-248-6005**

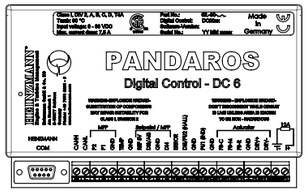
PANDAROS DC 6 vs. ORION DC 9

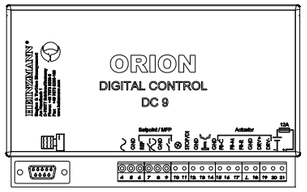
	PANDAROS		*ORION*	
Terminal	*Name*	*Configuration*	*Name*	*Configuration*
H	CANH	CAN High	CANH	not available
L	CANL	CAN Low	CANL	not available
1	P2	Analogue Input/Output 2 Digital Input/Output 2 PWM Input/Output 2	P2	not available
2	P1	Analogue Input/Output 1 Digital Input/Output 1 PWM Input/Output 1	P1	not available
3, 5, 8, 12, 14	GND	Ground	GND	Ground
4	Temp	Pt 1000, NTC (further on demand)	DI4/AI2	Analogue Input 2, Digital Input 4
6	REF 5 V	5 V Reference Voltage	REF 5 V	5 V Reference Voltage
7	SpA or DI3/ AI3	Digital Input 3, Analogue Input 3	DI1/AI1	Analogue Input 1, Digital Input 1
9	SpD or DI4	Digital Input 4	DI2	Digital Input 2
10	Error	Error Output	Error	Error Output
11	StP or DI5/ PU2	Digital Input 5, Pick-up Input 2 (Hall), PWM Input 3	StP or DI5/ PU2	Digital Input 3, Pick-up Input 2 (Hall), PWM Input 1

Actuator wiring PANDAROS DC 6 / ORION DC 9









PANDAROS DC 6 / ORION DC 9						
Terminals						
15	16	17	18	19		
FB-C	FB-M	FB-R	DRV +	DRV –		
5	4	3	2	1	511-00-010-00	StG 2010.10-KV (36°)
					512-00-011-01	StG 2040.10-KV (36°)
					514-00-002-00	StG 2080.10-KV (36°)
E	A	D	C	B	511-00-013-01	StG 2010.21-SV (68°)
					512-00-012-03	StG 2040.25-SV (68°)
					514-00-009-00	StG 2080.21-SV (68°)
E	A	D	C	B	502-00-001-00	StG 6-01
					502-00-001-03	StG 6-02-V
					502-00-015-00	StG 10-01

ACTUATORS

Based on HEINZMANN's more than 100 years' experience in developing and producing high-performance actuators, their proven reliability and long life cycle are well known in the market.

They are driven electrically. Therefore, no mechanical drive is needed. This allows HEINZMANN actuators to be easily fitted to any gas engine. This is another reason why our units are also suitable for retrofit systems.

Our actuators feature high torque ratings packed into a lightweight, compact unit and have a high protection degree. We have a large range of actuator models covering practically any application and sector. This means that customers can find a product tailored to their exact requirements.

Integrated Solutions

HEINZMANN also supplies integrated solutions like actuators with integrated positioning electronics or actuators combined with throttle valves with and without control functionality.

Features

- Strong regulation torque working in both directions equally
- Quick response time
- Low current consumption on change of load
- Extremely low retaining current
- Indifference to slow voltage changes of the supply
- Contactless feedback
- Current limitation in case of blocking to prevent actuator overheating
- Any mounting position possible
- Maintenance-free
- Return spring optional

A complete actuator package consists of:

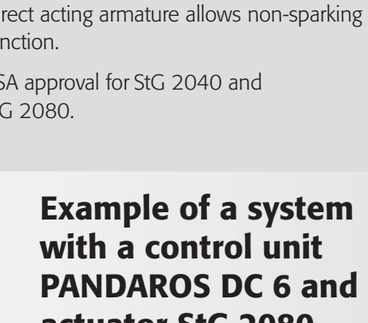
- **Actuator**
- **Lever arm**
- **Cable harness**

Technical Data

Actuator type	*Max. rotation*	*Max. torque*	*Torque in steady state position*	*No load response time*	*Steady state current*	*Max. current*	*Ambient temperature*	*Weight approx.*	*Engine load*
StG 2010	68°	1.4 Nm	0.7 Nm	60 ms	3 A	6 A	-25 ... +90 °C	2.2 kg	30 ... 130 kW
StG 2040	68°	5.6 Nm	3.4 Nm	70 ms	4 A	8 A	-25 ... +90 °C	6.5 kg	130 ... 250 kW
StG 2080	68°	8.4 Nm	4.2 Nm	85 ms	4 A	8 A	-25 ... +90 °C	8.6 kg	25 ... 650 kW
StG 2120	68°	13 Nm	4.3 Nm	100 ms	2.3 A	7 A	-20 ... +90 °C	17.8 kg	250 ... 650 kW
StG 6-01	36°	4 Nm	1.4 Nm	75 ms	1.7 A	5 A	-25 ... +90 °C	3.5 kg	50 ... 180 kW
StG 6-02 V	36°	6 Nm	2 Nm	50 ms	1.7 A	5 A	-25 ... +90 °C	3.5 kg	50 ... 200 kW
StG 10	36°	10 Nm	3.3 Nm	60 ms	1.7 A	5 A	-25 ... +90 °C	4.3 kg	180 ... 650 kW
StG 16	42°	15 Nm	5 Nm	120 ms	1.7 A	5 A	-25 ... +90 °C	12.3 kg	650 ... 1200 kW
StG 30	42°	31.5 Nm	10.7 Nm	190 ms	1.7 A	5 A	-25 ... +90 °C	12.3 kg	1200 ... 3000 kW
StG 40	42°	44 Nm	14.5 Nm	190 ms	2.3 A	7 A	-25 ... +90 °C	12.3 kg	2500 ... 5000 kW

StG 2010 / 2040 / 2080

Actuator



ATEX Ex II 3 G EEx nA II T4

Medium-sized and large engines are the preferential application for these actuators.

The design allows a powerful torque in both directions with very fast response times.

To ensure setting to a zero position, in case of voltage loss or similar, a return spring can be mounted.

A contactless analogue feedback system offers a precise electrical signal of shaft position to any external control device.

Direct acting armature allows non-sparking function.

CSA approval for StG 2040 and StG 2080.

Technical Data

	StG 2010	*StG 2040*	*StG 2080*
Effective rotation at the output shaft	68°	68°	68°
Max. torque at the output shaft	1.4 Nm	5.6 Nm	8.4 Nm
Torque in steady state	0.7 Nm	3.4 Nm	4.2 Nm
Response time 0-100 % without load	60 ms	70 ms	85 ms
Steady state current	3 A	4 A	4 A
Max. current	6 A	8 A	8 A
Ambient temperature in operation	-25 ... +90 °C	-25 ... +90 °C	-25 ... +90 °C
Degree of protection	IP65	IP65	IP65
Engine load	30 ... 130 kW	130 ... 250 kW	250 ... 650 kW

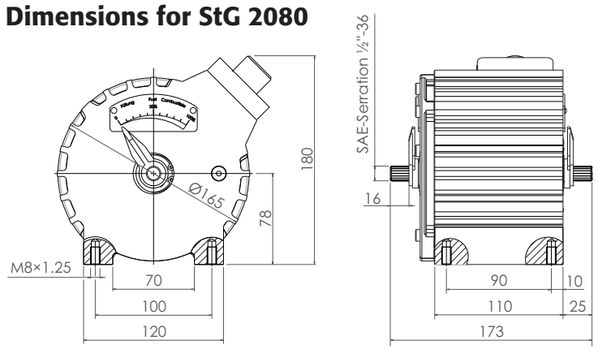
Part Numbers

Actuator	*Part Number*
StG 2010 (68°) IP55	**511-00-013-01**
StG 2040 (68°) IP55	**512-00-012-03**
StG 2080 (68°) IP55	**514-00-009-00**

Lever Arm	*Part Number*
RH 2010-01	**501-80-036-00**
RH 2040-01	**512-80-001-00**
RH 2080-01	**514-80-001-00**

Actuator and pick-up cables can be found on page 8.

Dimensions for StG 2080



Example

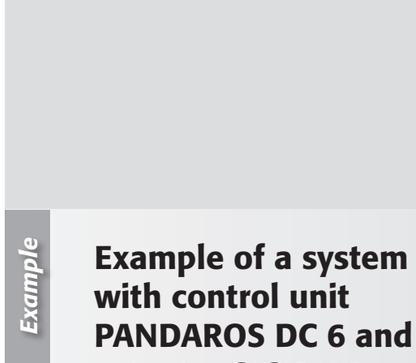
Example of a system with a control unit PANDAROS DC 6 and actuator StG 2080

Part Numbers

Product – Type	*Product – Name*	*Additional Information*	*Part Number*
Control unit	2080.6-19		**624-00-064-00**
Actuator	2080.21-SV	(68°) IP55	**514-00-009-00**
Cable for StG 2040/2080	Angled connector, 10 m		**620-81-249-6005**
RH 2080-01			**514-80-001-00**
Pick-up 5/8"	IA 12-76-18 UNF-2A		**600-00-006-02**
Cable for pick-up	Straight connector, 10 m		**620-81-248-6005**

StG 2120

Actuator



ATEX Ex II 3 G EEx nA II T4
ATEX Ex II 2 G EEx d IIB T5

StG 2120 actuators are suitable for dedicated gas engine and turbine applications. On top of their compact design and high-dynamic performance they meet specific environmental requirements. Using a precise analogue feedback system they work with HEINZMANN digital control and positioner units.

Technical Data

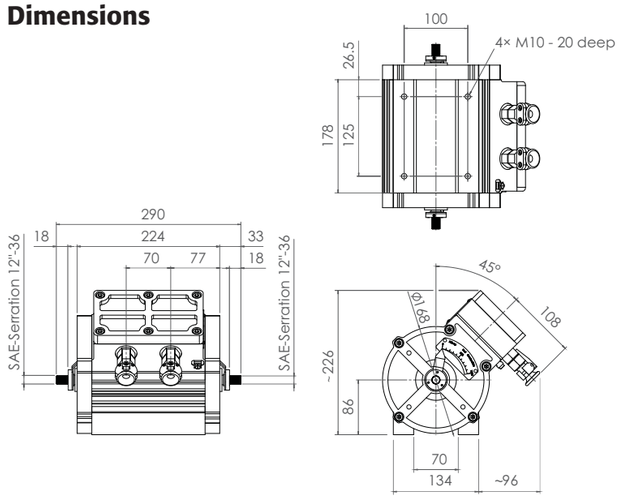
Effective rotation at the output shaft	68°
Max. torque at the output shaft	13 Nm
Torque in steady state	4.3 Nm
Response time 0-100 % without load	< 100 ms
Steady state current	2.3 A
Max. current	7 A
Ambient temperature in operation	-20 ... +60 °C
Degree of protection	IP55
Engine load	250 ... 650 kW

Part Numbers

Actuator	*Part Number*
StG 2120 (68°)	**514-00-012-01**
Lever Arm	*Part Number*
RH 2120-01	**514-80-001-00**

Please note: The StG 2120 will be delivered with an integrated cable harness. The cable length needs to be considered with the order.

Dimensions



Example

Example of a system with control unit PANDAROS DC 6 and actuator StG 2120

Part Numbers

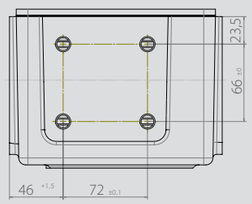
Product – Type	*Product – Name*	*Additional Information*	*Part Number*
Control unit	DC 2120.6-00		**624-00-074-00**
Actuator	StG 2120	(68°) IP55	**514-00-012-01**
Lever arm	RH 2120-01		**514-80-001-00**
Pick-up 5/8“	IA 12-76 -18 UNF-2A		**600-00-006-02**
Cable for pick-up	Straight connector, 10 m		**620-81-248-6005**

StG 16 / 30 / 40

Actuator

ATEX Ex II 2 G EEx d IIB T5

Main application of StG 16, 30 and 40 actuators with analogue feedback is on industrial engines, which require less than respectively 15, 31.5 and 44 Nm torque to move the fuel rack or the fuel metering valves.



Technical Data

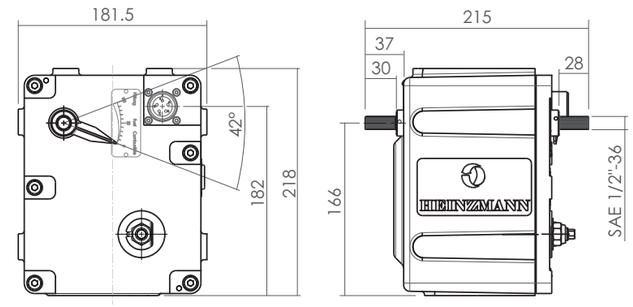
	StG 16	*StG 30*	*StG 40*
Effective rotation at the output shaft	42°	42°	42°
Max. torque at the output shaft	15 Nm	31.5 Nm	44 Nm
Torque in steady state	5 Nm	10.7 Nm	14.5 Nm
Response time 0-100 % without load	120 ms	190 ms	190 ms
Steady state current	1.7 A	1.7 A	2.3 A
Max. current	5 A	5 A	7 A
Ambient temperature in operation	-25 ... +90 °C	-25 ... +90 °C	-25 ... +90 °C
Degree of protection	IP55	IP55	IP55
Engine load	650 ... ≤ 1600 kW	1.200 ... 3.000 kW	2.500 ... ≤ 4000 kW

Part Numbers

Actuator	*Part Number*
StG 16-01	**504-00-013-00**
StG 30-01	**504-00-014-05**
StG 40-10	**504-00-037-00**
Lever Arm	*Part Number*
RH 16/30/40-01	**504-80-010-00**

Actuator and pick-up cables can be found on page 8.

Dimensions

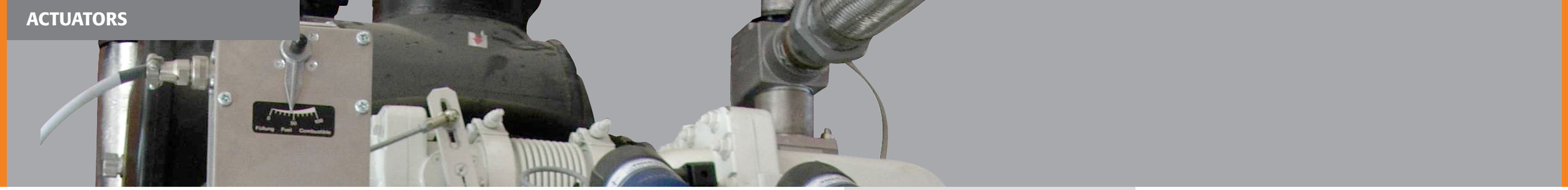


Example

Example of a system with a control unit PANDAROS DC 6 and an actuator StG 16/30/40

Part Numbers

Product – Type	*Product – Name*	*Additional Information*	*Part Number*
Control unit	DC 30.6-19		**624-00-062-01**
Actuator	StG 30-01	(42°) IP55	**504-00-014-05**
Cable for StG 30	Angled connector, 10 m		**620-81-256-4005**
Lever arm	RH 30-01		**504-80-010-00**
Pick-up 5/8“	IA 12-76 -18 UNF-2A		**600-00-006-02**
Cable for pick-up	Straight connector, 10 m		**620-81-248-4005**



StG 6
Actuator

Main application of StG 6 actuators with analogue feedback is on industrial gas engines, which require less than respectively 6 Nm torque to move the fuel rack or the fuel metering valves.

Technical Data

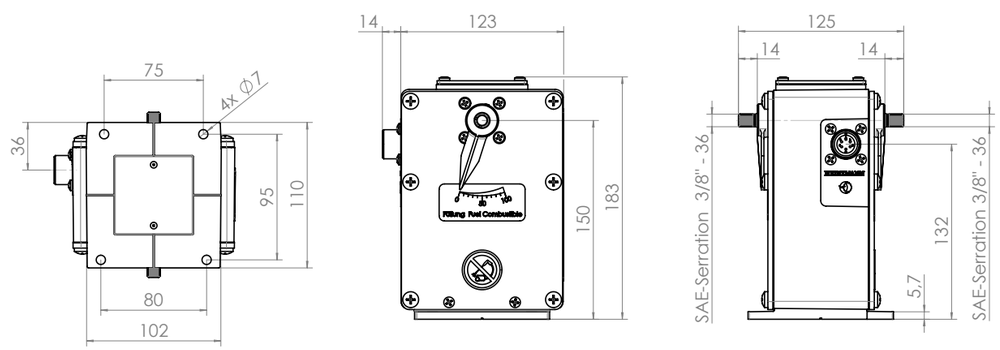
	StG 6-01	*StG 6-02V*
Effective rotation at the output shaft	36°	36°
Max. torque at the output shaft	4 Nm	6 Nm
Torque in steady state	1.4 Nm	2 Nm
Response time 0-100 % without load	70 ms	50 ms
Steady state current	1.7 A	1.7 A
Max. current	5 A	5 A
Ambient temperature in operation	-25 ... +90 °C	-25 ... +90 °C
Degree of protection	IP55	IP55
Engine load	50 ... 180 kW	50 ... 200 kW

Part Numbers

Actuator	*Part Number*
StG 6-01 (36°) basic version	**502-00-001-00**
StG 6-02V (36°) with increased torque	**502-00-001-03**
Lever Arm	*Part Number*
RH 6-01 (also for StG 6-02V)	**502-80-017-00**

Actuator and pick-up cables can be found on page 8.

Dimensions



Example

Example of a system with a control unit PANDAROS DC 6 and actuator StG 6

Part Numbers

Product – Type	*Product – Name*	*Additional Information*	*Part Number*
Control unit	DC 6.6-19		**622-00-049-00**
Actuator	StG 6-02V	(36°) IP55	**502-00-001-03**
Cable for StG 6/10	Angled connector, 10 m		**620-81-258-1005**
Lever arm	RH 6-01		**502-80-017-00**
Pick-up 5/8“	IA 12-76 -18 UNF-2A		**600-00-006-02**
Cable for pick-up	Straight connector, 10 m		**620-81-248-1005**

StG 10
Actuator

Main application of the StG 10 actuator with analogue feedback is on industrial gas engines, which require less than respectively 10 Nm torque to move the fuel rack or the fuel metering valves.

Technical Data

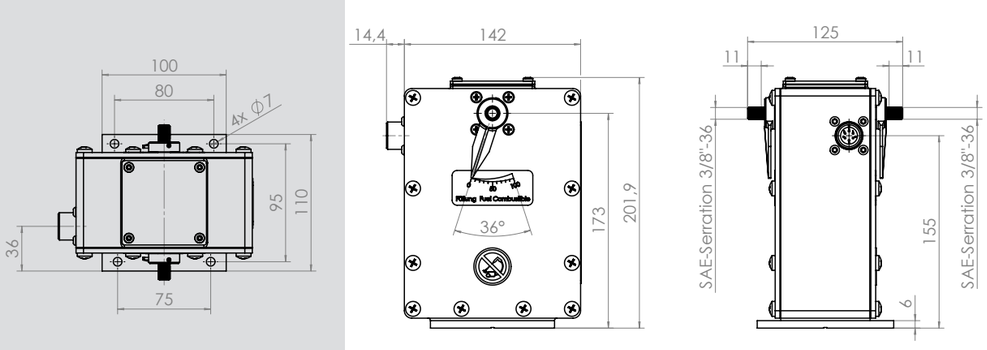
Effective rotation at the output shaft	36°
Max. torque at the output shaft	10 Nm
Torque in steady state	3.3 Nm
Response time 0-100 % without load	60 ms
Steady state current	1.7 A
Max. current	5 A
Ambient temperature in operation	-25 ... +90 °C
Degree of protection	IP55
Engine load	180 ... 650 kW

Part Numbers

Actuator	*Part Number*
StG 10-01	**502-00-015-00**
Lever Arm	*Part Number*
RH 10-01	**502-80-017-00**

Actuator and pick-up cables can be found on page 8.

Dimensions

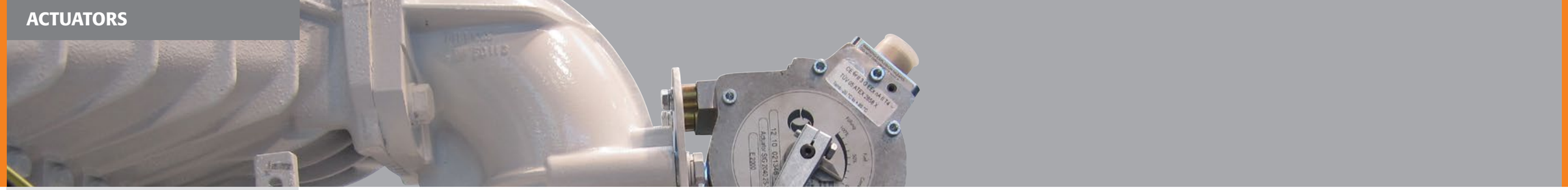


Example

Example of a system with a control unit PANDAROS DC 6 and actuator StG 10

Part Numbers

Product – Type	*Product – Name*	*Additional Information*	*Part Number*
Control unit	DC 10.6-19		**622-00-049-01**
Actuator	StG 10-01	(42°) IP55	**502-00-015-00**
Cable for StG 6/10	Angled connector, 10 m		**620-81-258-1005**
Lever arm	RH 10-01		**502-80-017-00**
Pick-up 5/8“	IA 12-76 -18 UNF-2A		**600-00-006-02**
Cable for pick-up	Straight connector, 10 m		**620-81-248-1005**



StG 3 / 1.5

Actuator

StG 3

Small and medium-sized diesel engines as well as gas engines or turbines are the preferential application for these powerful types of actuators.

A multipolar magnetised permanent magnet is facing a multipolar armature radial. That kind of design allows generating powerful torque in both directions of rotation. Besides that it achieves the least possible axial bearing loads.

The armature is optimised for lowest heat build-up. Additionally, the design enhances heat transfer and allows a wide working temperature range.

Result of the direct acting gearless function is a very fast response time. Optionally a return spring can be mounted on the output shaft to ensure setting to a zero position in case of voltage loss.

A high precision contactless feedback system supplies an electrical analogue signal of shaft position to any external control device.

Application of special materials and long-duration lubricants assure maintenance-free operation and long service life. Mounting of the actuator is possible in any fitting position. The robust and enduring design with IP6K9K degree of protection allows operation under roughest ambient conditions.

StG 3 / 1.5

Features

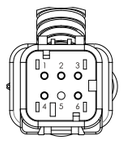
- For small and medium-sized engines
- Quick response time
- Contactless high-precision feedback
- Robust and enduring construction with minimal axial bearing load
- Wide working temperature range up to 150 °C
- Completely maintenance-free
- IP6K9K degree of protection

Application Range

- Small and medium-sized gas and diesel engines
- Gas and steam turbines

Technical Data

Actuating angle	72°
Maximum torque	StG3: 3 Nm StG 1.5: 1.5 Nm
Torque in steady state	StG 3: 1.5 Nm StG 1.5: 0.75 Nm
No load response time (depending on controller)	< 50 ms
Motor operating voltage range	10 … 32 V
Current consumption	max. 6 A
Steady state current	approx. 3.5 A
Power supply position sensor	4.5 … 5.5 VDC
Position feedback (0 … 100 %)	0.5 … 4.5 V
Degree of protection	IP6K9K
Weight	StG 3: approx. 5 kg StG 1.5: approx. 3.8 kg
Ambient temperature	StG 3: -40 ... +150 °C StG 1.5: -25 ... +105 °C
Permissible ambient humidity	< 95 % at 55 °C
Permissible vibration level	± 1 mm at 1 ... 20 Hz, max. 0.24 m/s at 21 ...63 Hz, max. 20g at 64 ... 2000 Hz
Shock	30g, 11 ms, half sine
Connector	AMPSEAL 16 (6 pin)



1	Power supply position sensor
2	GND position sensor
3	Position feedback signal
4	Motor (–)
5	(not connected)
6	Motor (+)

Part Numbers

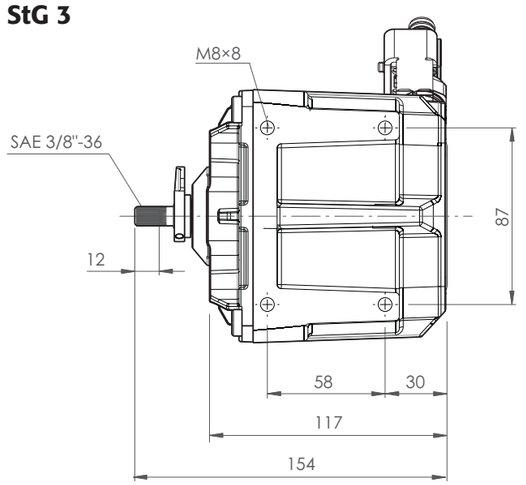
Actuator	*Part Number*
StG 3	**552-00-001-00**
StG 1.5	**551-00-000-00**

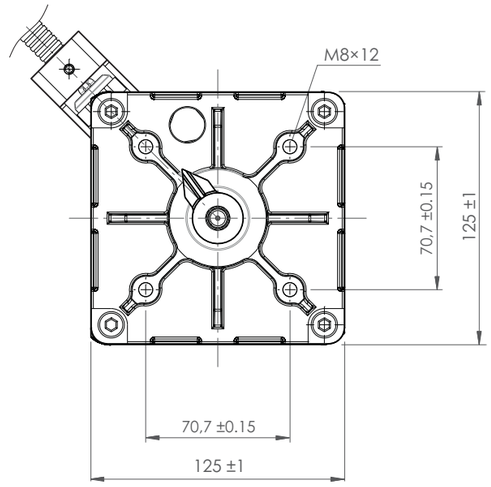
StG 3

StG 1.5

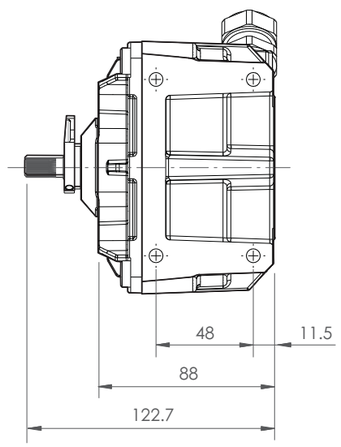
Dimensions

StG 3





StG 1.5



POSITIONERS

The new designed HEINZMANN StG 2040-PD and StG 2080-PD actuators with integrated digital positioner can be used for a wide range of applications.

This positioning system consists of an actuator StG 2040 or StG 2080 and a digital electronic position control. This results in excellent dynamic characteristics and precise positioning in both working directions that makes this system best for gas engine applications.

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.

You can parameterise the StG 2040-PD and StG 2080-PD with HEINZMANN's powerful software package DcDesk.

The design provides a compact solution that is interchangeable with non HEINZMANN products.

Features

- Compact system, lean design
- High reliability
- High torque working in both directions
- Very low current consumption in steady state
- Brushless, for hazardous locations
- Any mounting position permissible
- Maintenance-free due to long duration lubricants

A complete positioner package consists of:

- **Positioner**
- **Lever arm**
- **Cable harness**

Example

Example of a complete positioner system with positioner StG 2040-PD

Part Numbers

Product – Type	*Additional Information*	*Part Number*
StG 2040-PD	(68°) IP55 10-Pd. connector	**512-00-100-08**
Cable for StG 2040-PD		**512-81-301-00**
RH 2040-01		**512-80-001-00**

StG 2040-PD / StG 2080-PD

Positioner

The system consists of an actuator StG 2040 or StG 2080 combined internally with a digital electronic position control that is parameterised by a powerful software package DcDesk.

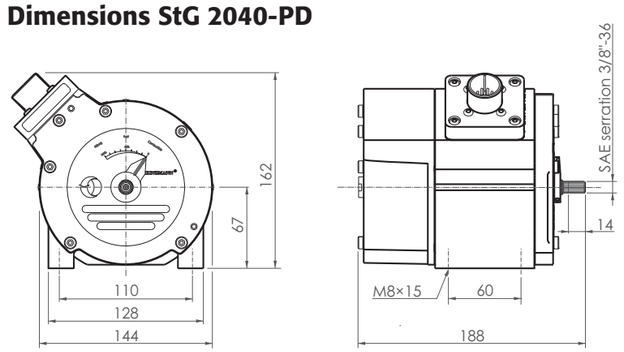
Technical Data

	StG 2040-PD	*StG 2080-PD*
Ambient temperature	-20 ... +90 °C	-20 ... +90 °C
Effective rotation at output shaft	68°	68°
Max. torque	6.6 Nm	7.8 Nm
Max. torque in steady state condition	3.3 Nm	4.6 Nm
Response time	< 150 ms	< 90 ms
Degree of protection	IP65	IP65

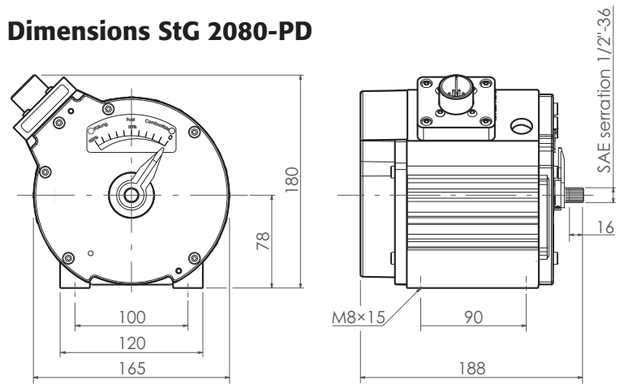
Part Numbers

Positioner	*Part Number*
StG 2040-PD (68°) IP55 10-Pd. connector	**512-00-100-08**
StG 2080-PD (68°) IP55 standard	**514-00-100-09 (replaces 514-00-100-02)**
Cable Harness	*Part Number*
Cable for StG 2040-PD	**512-81-301-00**
Cable for StG 2080-PD	**512-81-301-00**
Lever Arm	*Part Number*
RH 2040-01	**512-80-001-00**
RH 2080-01	**514-80-001-00**

Dimensions StG 2040-PD



Dimensions StG 2080-PD



THROTTLE VALVES

DK 300

ATEX Ex II 2 G c II

HEINZMANN butterfly throttle valves control the quantity of the gas and air mixture.

Furthermore, in special applications the throttle valves can be used as a gas valve to control the mixture.

The valves allow an optimal engine control and an exceptional lifetime.

The size range from DK 50 up to DK 400 and the sealed design covers a wide output power and operation pressure range.

Rotation angle of the throttle valve is 75°. Sense of rotation is optional CW or CCW.

DK 50 / DK 100 / DK 140 / DK 200 / DK 300 / DK 400

Features

- Suitable for naturally aspirated and turbo-charged engines
- Low torque plain bearings are designed for a long durability
- Sealed valve shaft for draw-through as well as blow-through configurations
- Shaft and throttle plate made of stainless steel material
- Standard flange sizes
- Mountable on both sides for required sense of rotation
- Mechanical end stop for fully opened position
- Applicable for a wide range of gases (e.g. natural gas, landfill gas, biogas, propane)
- Maintenance-free

Application Range

	*Gas Engine Output Range in kW **			
	Stoichiometric		*Lean-Burn ***	
Throttle	*min.*	*max.*	*min.*	*max.*
Size 50	35	125	25	85
Size 100	70	250	50	170
Size 140	140	500	100	340
Size 200	330	1200	230	840
Size 300	750	2250	500	1500
Size 400	2250	3400	1500	2200

* *Power for natural aspirated applications. With turbo-charger the output will be 50 to 150 % higher, depending on the boost pressure.*

** *Power at an air to fuel ratio of about 1.6.*

DK 50

DK 100

DK 140

DK 200

DK 300

DK 400

Technical Data

Operating temperature	-20 ... +150 °C
Max. boost pressure	4 bar abs.

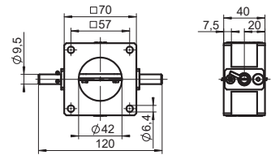
Part Numbers

Throttle Valve	*Part Number*
DK 50-0420	**451-00-042-00**
DK 100-0680	**452-00-068-00**
DK 140-0850	**453-00-085-01**
DK 200-1150	**454-00-115-00**
DK 300-1500	**455-00-150-00**
DK 400-180	**455-00-180-00**
Throttle Lever	*Part Number*
DKH 50-01	**451-80-000-00**
DKH 100-01	**452-80-000-00**
DKH 140-01	**453-80-000-00**
DKH 200-01	**454-80-000-00**
DKH 300-01	**455-80-000-00**

Each throttle valve requires a throttle lever.

Dimensions

Size 50



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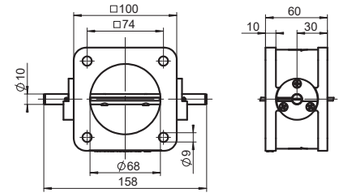

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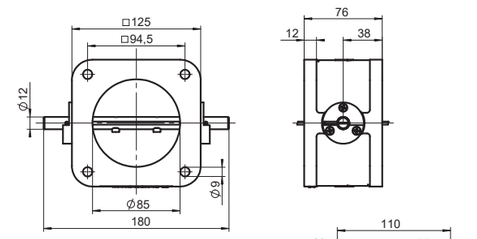

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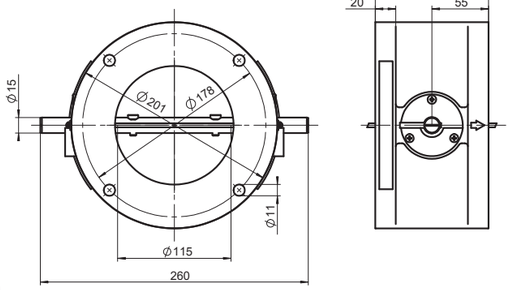
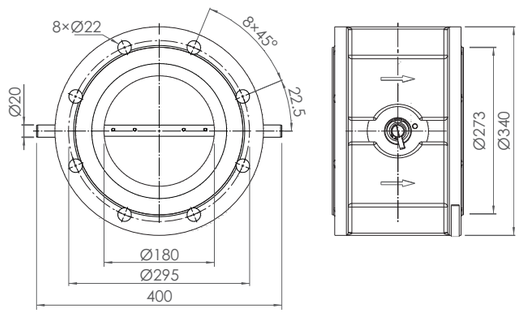


Size 400



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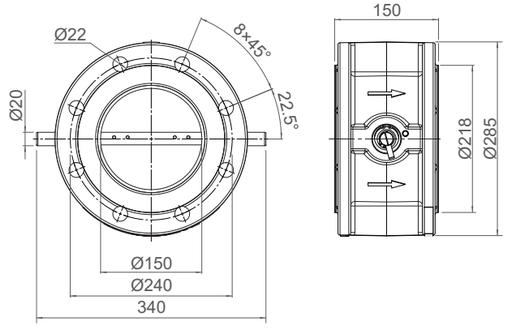


Speed/Load Control Systems

THROTTLE VALVES WITH ACTUATORS

HEINZMANN's throttle valves with actuators are ideal components for engine control.

As a butterfly throttle valve they control engine speed by gas dosing. Furthermore, in special applications they can be used as a gas valve to control the Air-Fuel Ratio (AFR) and the mixture quality. Alternatively they are applicable as turbo-bypass valves.

A multi-polar magnetised permanent magnet is mounted on the actuator shaft. Opposite of it a likewise multipolar armature is fixed. The design allows generating powerful torque in both directions of working equally.

Results of the direct acting gearless function are very fast response times. A contactless feedback system mounted on the actuator shaft offers a precise electrical signal of shaft position. If the actuator is blocked mechanically a current limitation is activated to prevent the actuator from overheating.

The use of special materials and long-duration lubricants assure maintenance-free operation and long service life.

For installation any mounting position is possible.

The wide size range of the valves and the sealed design covers a wide range of output power and operation pressure. The valves are suitable for turbo-charged engines in the same way, allowing optimal engine control and exceptional lifetime.

Versions with non-standard valve diameters are available on request. 68° is the standard rotation, both directions of working are possible.

DK 100 / StG 2010
DK 140 / StG 2040
DK 200 / StG 2080

Features

- Suitable for naturally aspirated and turbo-charged engines
- Strong regulation torque working in both directions equally
- Spring return optional
- Quick response time
- Contactless feedback
- Any mounting position possible
- Placing possible before or after turbo-charger
- Standard flange sizes
- Applicable for a wide range of gases (e.g. natural gas, landfill gas, biogas, propane)
- Maintenance-free

Part Numbers

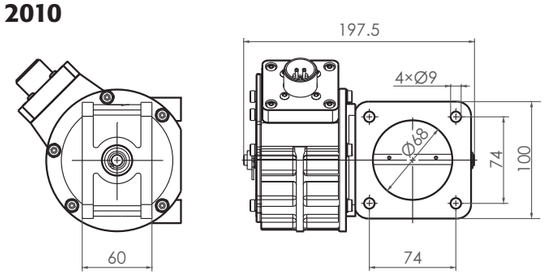
Product – Type	*Product – Name*	*Additional Information*	*Part Number*
DK 100/68 mm	DK-100-0680 / StG 2010-SV-DK	Standard	**452-00-068-16**
	DK-100-0680 / StG 2040-SV-DK	Standard	**452-00-068-15**
	DK-100-0680 / StG 2040-SV-PD-DK	Positioner	**452-00-068-11**
DK 140/85 mm	DK-140-0850 / StG 2040-SV-DK	Standard	**453-00-085-12**
	DK-140-0850 / StG 2040-PD-SVB	Positioner	**453-00-085-15**
	DK-140-0850 / StG 2080-PD-SVB	Positioner	**453-00-085-17**
DK 200	DK-200-1100 / StG 2080-SVB-DK	Standard	**454-00-110-10**
DK 300	DK-300-1600 / StG 2080-SVB-D	Standard	**455-00-160-10**

Technical Data

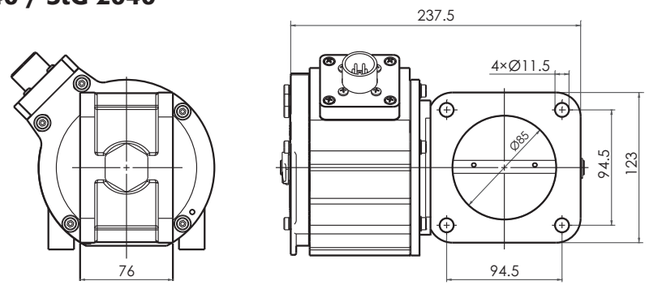
	DK 100 / StG 2010	*DK 140 / StG 2040*	*DK 200 / StG 2080*
Steady state torque	0.7 Nm	3.4 Nm	4.2 Nm
Maximum torque	max. 1.4 Nm	max. 5.6 Nm	max. 8.4 Nm
Rotation	68°		
Diameter	Ø 68 mm	Ø 85 mm	Ø 110 mm
Response time	60 ms	70 ms	85 ms
Engine power range *)	approx. 70 ... 250 kW	approx. 140 ... 500 kW	approx. 350 ... 1200 kW
Boost pressure	max. 4 bar abs.		
Operating temperature	-20 ... +90 °C		

*) Power range for aspirated engines. For turbo-charged engines 50 … 150 % more, depending on boost pressure. Variants on request.

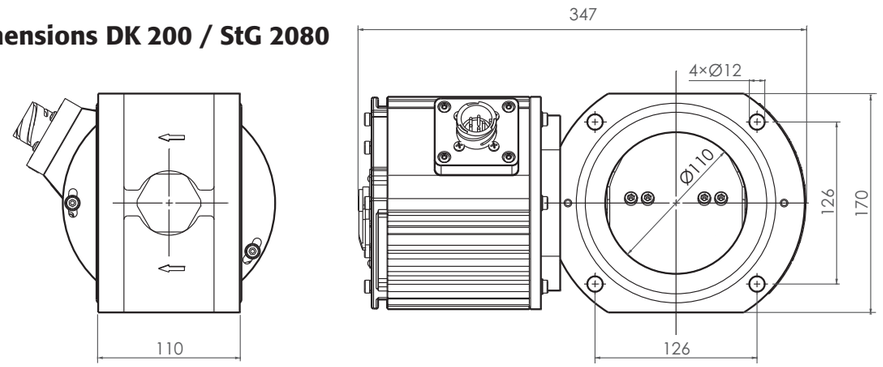
Dimensions DK 100 / StG 2010



Dimensions DK 140 / StG 2040



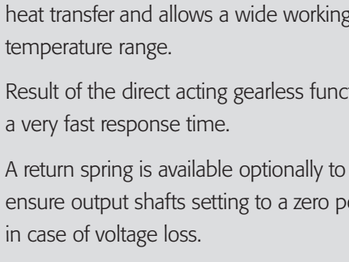
Dimensions DK 200 / StG 2080



Speed/Load Control Systems

DK 100 / StG 3

Throttle valve with actuator



DK 100 / StG 3 is a combination of a throttle valve with an actuator from HEINZMANN. Its preferential application is gas engine control.

Usually it is used to control dosing of the gas mixture.

Furthermore, it can be used as gas valve for air-fuel ratio control. Alternatively in special cases an application as bypass valve for turbo-chargers is possible.

Mainly it is used for stationary engines. The robust and enduring construction with IP6K9K degree of protection allows operation under roughest ambient conditions which allow some mobile application in special cases.

The armature is optimised for minimum heat build-up. Additionally, the design enhances heat transfer and allows a wide working temperature range.

Result of the direct acting gearless function is a very fast response time.

A return spring is available optionally to ensure output shafts setting to a zero position in case of voltage loss.

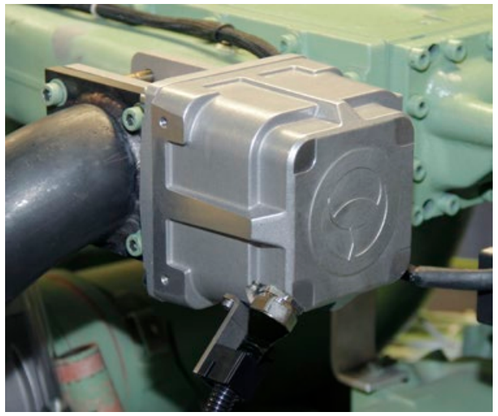
Special materials and long-duration lubricants assure maintenance-free operation and long service life. Mounting of the actuator is possible in any fitting position.

Features

- High-precision feedback
- Quick response time
- Wide working temperature range up to 150 °C
- Robust and enduring construction
- Minimal axial bearing load
- Completely maintenance-free
- IP6K9K
- Standard dimensions of flange
- Any mounting position possible
- Applicable for a wide range of gases (e.g. natural gas, landfill gas, biogas, propane)

Application Range

- Gas engines
- Dual-fuel engines
- Diesel engines
- Gas and steam turbines



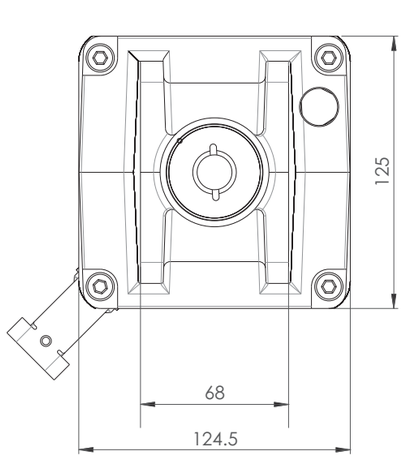
Technical Data

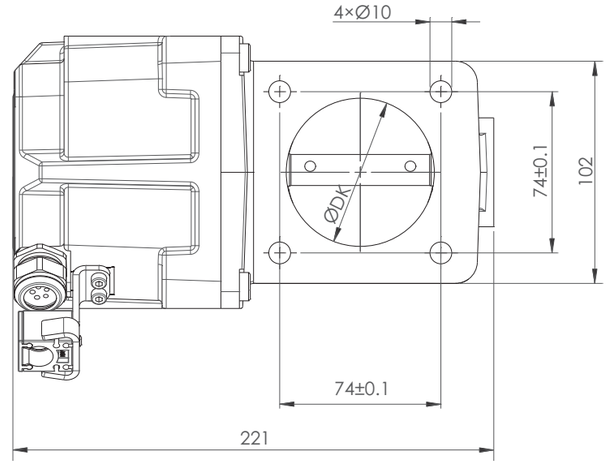
Steady state torque	1.5 Nm		
Maximum torque	3 Nm		
Rotation	72°		
Response time *)	< 60 ms		
Current consumption	max. 6 A		
Steady state current	3 A		
Diameter (ØDK)	Ø 48 mm	Ø 60 mm	Ø 68 mm
Engine power range **)	approx. 50 ... 100 kW	approx. 60 ... 150 kW	approx. 70 ... 250 kW
Boost pressure	max. 4 bar abs.		
Operating temperature	-40 … +150 °C		
Degree of protection	IP6K9K		
Weight	approx. 6.2 kg		

*) Depending on controller

**) Power range for naturally aspirated engines. For turbo-charged engines 50 up to 150 % higher, depending on boost pressure. Variants on request.

Dimensions



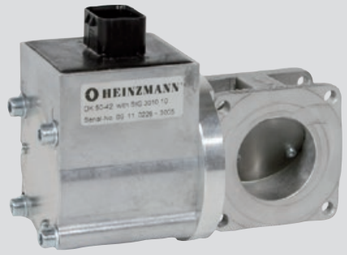


Part Numbers

Product - Name	*Part Number*
DK-100-48/StG 3	**452-00-048-00**
DK-100-60/StG 3	**452-00-060-14**
DK-100-68/StG 3	**452-00-068-03**

Speed/Load Control Systems

THROTTLE VALVE WITH INTEGRATED SPEED CONTROL



DG 3010.10/DK 50 from the ORION series is intended for use on small and medium-sized gas engines. A butterfly throttle valve controls the quantity of the air-fuel mixture and allows optimal engine control. Furthermore, in special applications it can be used as a gas flow valve. The direct acting integrated actuator is working in 4Q-operation. It comes with a well-proven contactless position feedback and integrated return spring. The optimal price-performance ratio and durable, long-lived design are the main benefits of the systems.

Speed governor

The control unit incorporates a complete digital speed governor for speed and load control that offers different fields of applications, e.g. generators with small engines or off-road vehicles. Configuration and parametrisation are managed via PC program or hand held programmer. Additionally, analogue inputs allow extended control features.

DG 3010.10 / DK 50

Features

- Fully integrated solution
- 4Q-operation
- Reduced wiring, easy installation
- High reliability
- Any mounting position permissible
- Suitable for naturally aspirated and turbo-charged engines
- Sealed valve shaft for draw-through or blow-through configuration
- Shaft and throttle plate made of stainless steel material
- Standard flange sizes for easy adaptation, also corresponding to HEINZMANN gas mixer
- Maintenance-free

Monitoring

Common alarm output gives feedback on all detected error conditions:

- Sensor failure
- Application specific alarms
- Actuator overheating combined with current limitation
- Persistent discrepancy between positions setpoint and actual value (e.g. when shaft or throttle plate is blocked)

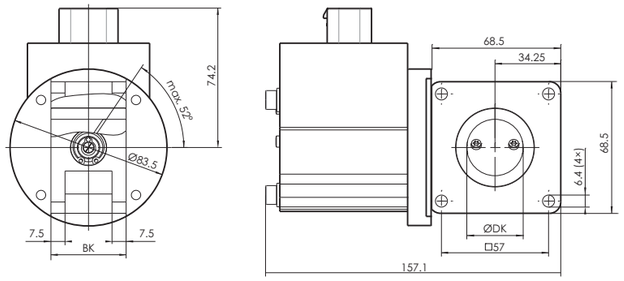
Application Range

- Gas engines
- Dual-fuel engines

Versions

- 30, 42 & 50 mm throttle (approx. 20 - 110 kW stoichiometric)

Dimensions



Part Numbers

Positioner	*Part Number*
DK 50-30/DG 3010-10	**451-00-030-10**
DK 50-42/DG 3010-10	**451-00-042-15**
Speed/Load Control	*Part Number*
DK 50-30/DG 3010-10	**451-00-030-11**
DK 50-42/DG 3010-10	**451-00-042-16**

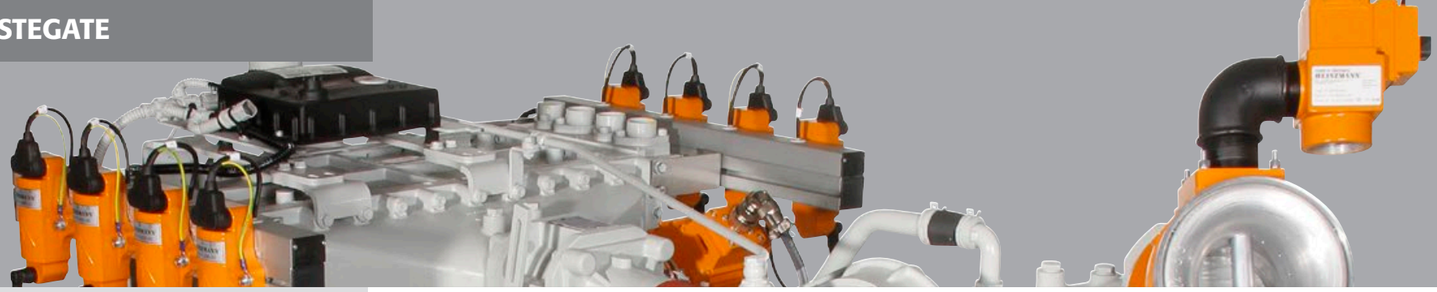
Technical Data

Voltage supply	24 VDC / 3 A
Ambient temperature	-30 ... +90 °C
Throttle valve boost pressure	max. 4 bar abs.
Throttle valve rotation angle	52°
Max. torque	0.6 Nm
Torque steady state	0.36 Nm
Response time	< 100 ms
Degree of protection	IP65
Weight	approx. 1.3 kg

Cable Harness

Pin Assignment			*Cable Harness*				
			Speed Control			*Positioner *)*	
			521-81-036-04	521-81-036-07	521-81-036-08	521-81-036-12	490-81-012-00
			10 m	10 m	10 m	10 m	10 m
Pin	*Function*	*Range*	*Port*	*Port*	*Port*	*Port*	*Port*
1	PWM Input	50 ... 500 Hz	P5				
	Speed Input 2 (Hall)	15 ... 9000 Hz					
	Analogue Input 5	0 ... 5 V					
	Digital Input 5	0/1					
	Temperature Input	NTC/Pt 1000/Pt 200					
2	CAN-Low	125…1000 kb/s	L	L	not available	L	not available
3	CAN-High		H	H	not available	H	not available
4	Battery –	0 V	–				
5	Battery +	18 ... 33 V	+				
6/7	DcDesk Communication	2.4 ... 57.6 kBaud/s	available				not available
8	Analogue Output	0 ... 5 V	P2				
	Analogue Input 2	0 ... 5 V/ 0 ... 10 V					
	Digital Input 2	0/1					
9	Speed Input 1 (Inductive)	15 ... 9000 Hz	PU (open wire)	PU (connector SV 6\16-IA-2K)		not available	P6
	Analogue Input 6	0 ... 5 V					
	Digital Input 6	0/1					
10	Ground	0 V	0 V				
11	Analogue Input 1	0 ... 5 V/4 ... 20 mA	P1				
	Digital Input 1	0/1					
12	+5 V Reference	+5 V, max. 10 mA	5 V				not available
13	Digital Output	Low side, 0.3A	P7/Err				
		(Error)					
14	Ground	0V for pick-up or digital inputs	0 V (open wire)	0 V (connector SV 6\16-IA-2K)		0 V	

*) cables mentioned in the chapter "E-LES SMC" (page 42) can also be used for this device in positioner mode



Speed/Load Control Systems

WASTEGATE VALVES

For high-powered combustion engines turbo-charging is inevitable for enhancing power output and engine efficiency. Therefore, elaborate control elements especially on the hot exhaust gas side of the engine are required to achieve precise and reliable charging control. HEINZMANN offers this equipment, comprising all components for wastegate.

The valves are available with a 68° or 90° rotation angle and are suitable for use in gas engines and diesel engines. Application though considerably depends on fuel type and quality and should be discussed with HEINZMANN in advance. On request a complete system consisting of throttle valve, actuator and connecting rodding can be supplied.

The valves with a 90° rotation angle are provided with a stop in the closed position. Due to this stop, leakage over the closed valve is very small. In addition, the valves can be arranged in a way that excludes jamming caused by differential thermal expansion.

WG 30

WG 50

WG 30 / WG 40 / WG 50 / WG 60 / WG 70 / WG 90 / WG 120 / WG 170 / WG 200

Features

- High temperature and corrosion resistance
- Best sliding on a large temperature range
- Connection to actuator with linkage or shaft and high-temperature coupling possible
- Maintenance-free

Application Range

- Combustion engines with high operating temperature

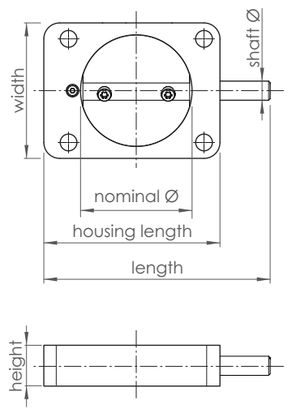
WG 120

WG 200

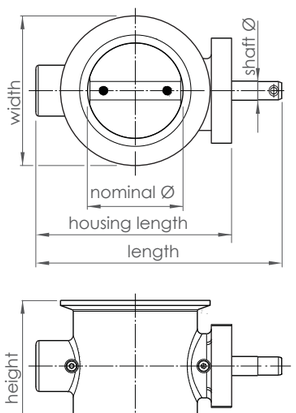
Dimensions & Part Numbers

Description		*Nominal Ø*	*Angle*	*Width / flange Ø*	*Length*	*Height*	*Housing length*	*Shaft Ø*	*Part No.*
WG 30	Cone flange	30 mm	68°	50.5 mm	88.5 mm	52 mm	65.5 mm	8 mm	**484-00-030-00**
WG 30	Flat housing	30 mm	68°	44 mm	86.5 mm	19 mm	66.5 mm	8 mm	**484-00-030-01**
WG 40	Cone flange	40 mm	68°	50.5 mm	88.5 mm	52 mm	65.5 mm	8 mm	**484-00-040-00**
WG 40	Flat housing	40 mm	68°	54 mm	86.5 mm	19 mm	66.5 mm	8 mm	**484-00-040-01**
WG 50	Cone flange	50 mm	68°	94 mm	146.5 mm	82.5 mm	123 mm	12 mm	**486-00-050-00**
WG 50	Flat housing	50 mm	68°	75 mm	142 mm	30 mm	110.5 mm	12 mm	**486-00-050-01**
WG 60	Cone flange	60 mm	68°	94 mm	146.5 mm	82.5 mm	123 mm	12 mm	**486-00-060-00**
WG 60	Flat housing	60 mm	68°	75 mm	142 mm	30 mm	110.5 mm	12 mm	**486-00-060-01**
WG 70	Cone flange	70 mm	68°	94 mm	146.5 mm	82.5 mm	123 mm	12 mm	**486-00-070-00**
WG 70	Flat housing	70 mm	68°	85 mm	142 mm	35 mm	110.5 mm	12 mm	**486-00-070-01**
WG 70	Flat housing	66 mm	90°	105 mm	142 mm	35 mm	120.5 mm	12 mm	**486-00-070-03**
WG 90	Flat housing	90 mm	90°	142 mm	196.6 mm	48 mm	160 mm	20 mm	**486-00-090-00**
WG 120	Housing with flange	120 mm	90°	265 mm	320 mm	150 mm	265 mm	20 mm	**489-00-120-16**
WG 170	Housing with flange	170 mm	90°	320 mm	360 mm	150 mm	320 mm	25 mm	**489-00-170-10**
WG 200	Housing with flange	200 mm	90°	320 mm	400 mm	150 mm	320 mm	25 mm	**489-00-200-10**

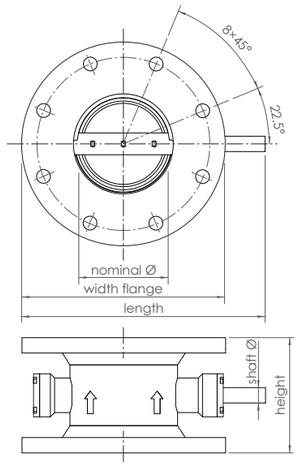
Dimensions Flat Housing



Dimensions Cone Housing



Dimensions WG 120 / WG 200



Technical Data

Operating temperature	-40 ... +550 °C
Max. delta pressure	5 bar abs.

Part numbers lever arm

Shaft Ø	*Part Number*
8 mm	**501-80-034-01**
12 mm	**501-80-034-03**
20 mm	**489-80-003-01**
25 mm	**489-80-004-00**

All valves can be ordered together with appropriate actuators and connection elements.

There are essentially two types of connection:

- **Connecting linkage**

  This method uses levers at actuator and valve an a connecting linkage.

- **Connecting shaft**

  This variant uses a shaft and a high temperature coupling for connection of wastegate and actuator.

Air-Fuel Ratio Control

KRONOS

AFR control systems

The KRONOS product range comprises four systems for Air-Fuel Ratio (AFR) control as well as speed/load control systems. Customers can be sure to find a solution to meet their requirements, independent of engine size, specific application, operational demands and emission requirements.

All KRONOS systems are based on proven mechanical and electronic components, with each system specially designed for a specific range of applications.

Customer specific adaptations to the basic systems guarantee optimised, economical solutions for OEMs, packagers and retrofit customers. Mechanical parts such as throttle valves, gas mixers and gas valves are available in all prevalent sizes and are compatible with products from other manufacturers, ensuring that installation is always as simple as possible.

If required, special customised designs can be provided to meet individual customer requirements.

Our customers are using KRONOS systems for genset, compressor and vehicle applications (busses, trucks). Stationary applications with small and medium-sized high-speed engines mainly operate with gas mixer technology. Stationary plants with large low-speed engines rather use gas admission valves.

KRONOS 10

mechanically controlled

KRONOS 10 is a simple mechanical air-fuel ratio control system consisting of a Venturi based gas/air mixer and a mechanical gas main adjusting screw. It is a good solution for all sizes of engines from 25 kW to 3 MW where precise control of emissions is not required. The mixer and gas regulator screw have no moving parts, ensuring high reliability, long service intervals and minimal maintenance.

LES-GT 50

GM 140

POSITIONER FOR AFR CONTROL

Annular Gap Gas Mixer GMA

Annular gap gas mixers for precise adjustment of the air/gas ratio, suitable for various types of gas (natural gas, biogas, waste dump gas, propane). The Venturi-shaped nozzle design guarantees only minimal pressure losses and a homogenous air/gas mixture over the speed and load range. Suitable for lean-burn engines.

GMA 58-75

Gas Positioner E-LES SMC

Electronically controlled gas positioners with high-resolution stepper motor for precise adjustment of gas dosing, featuring an optimised V-shape design and special coating. Operating with any gas type, quality and suitable for integration into existing AFR control systems on engines up to 1750 kW.

E-LES 30 SMC

KRONOS 20

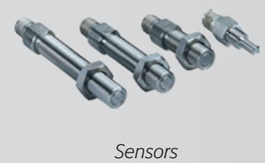
electronically controlled

KRONOS 20 is a progression of KRONOS 10 that represents an electronically controlled AFR trim control system. It allows speed/load dependent lambda values to be set within a certain range, thereby improving the engine behaviour under all operating conditions. The closed-loop version uses engine output signals to automatically correct for variations in gas quality and engine load.

KRONOS 20

GM 140

E-LES 50 SMC



Sensors

KRONOS 30

full authority

The KRONOS 30 is a full authority system. The modular concept is very flexible and can be extended to accommodate applications with larger variations in gas, engine and ambient parameters.

GMCU 110

The application-specific, independent gas mixer configuration permits operation using a variety of gases, including low calorific gas. The system provides outstanding closed-loop accuracy, enabling systems to meet the latest emission reduction requirements.

GM 140

Sensors

KRONOS 40

gas injection

MVC 01-20

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

The design features individual cylinder injection and exhaust gas temperature sensing which makes precise gas metering possible and therefore enables accurate sensing of each cylinder (cylinder balancing) and real-time monitoring of the engine's combustion processes. The basic system is used on injection engines in the lean-burn mode when the gas-air mixture is ignited in a pre-combustion chamber.
By integrating additional HEINZMANN components the system can be built into a complete engine management system.

Sensors

MEGASOL 425 II

Features

- **Air-fuel ratio control**
- **Outstanding flexibility**
- **Savings on fuel**
- **Lower emissions**
- **Misfire detection**
- **Proven reliability**
- **Long operating life**

GAS MIXERS

GM 100

ATEX Ex II 2 G c II

The gas mixer is an indispensable component of the fuel system.

Whilst the throttle valve controls the quantity of the mixture, the mixing unit takes care of the mixture quality.

HEINZMANN mixers provide a very homogeneous air and gas mixture and an optimal air to fuel ratio (AFR) over the entire speed and load range of the engine. HEINZMANN also can supply the remaining components of the fuel system such as main adjusting screw, zero pressure regulator, throttle valve, speed and load control, AFR controls for stoichiometric as well as for lean-burn combustion, adaptors, levers, etc.

GM 30 / GM 50 / GM 100 / GM 140 / GM 200 / GM 300

Features

- Homogenous air-gas mixture
- Mixture ratio remains constant throughout the operating range according to Bernoulli's Law
- Cost-effective and maintenance-free component without moving parts
- Very low pressure drop due to the almost ideal shaped Venturi insert
- Applicable for a wide range of gases (e.g. natural gas, landfill gas, biogas, propane)
- Adaptable matching throttle valve or hose connector
- Suitable for naturally aspirated and turbo-charged engines

Sizes

Type	*Gas Engine Output Range in kW **			
	Stoichiometric		*Lean-burn ***	
	min.	max.	min.	max.
Size 30	20	75	15	50
Size 50	35	125	25	85
Size 100	70	250	50	170
Size 140	140	500	100	340
Size 200	330	1200	230	840
Size 300	750	2250	500	1500

* Power at draw-through carburetion. In blow-through application the output will be 50 to 150 % higher, dependent on the boost pressure.
** Power at an air to fuel ratio of about 1.6

GM 30

GM 50

GM 100

GM 140

GM 200

GM 300

Part Numbers

Product – Name	*Part Number*
Gas Mixer Housing	
GM 50-01	**461-80-000-00**
GM 100-01	**462-80-000-00**
GM 140-01	**463-80-000-02**
GM 200-0100	**464-80-000-00**
GM 200-0116 and 0125	**464-80-000-01**
GM 300-01	**465-80-001-01**
Mounting Plates	
MP 100-Rp 3/4"	**462-19-002-03**
MP 100-Rp1"	**462-19-002-00**
MP 100-Rp1 1/4"	**462-19-002-01**
MP 100-Rp1 1/2"	**462-19-002-02**
MP 140/200-Rp1"	**463-19-025-04**
MP 140/200-Rp1 1/4"	**463-19-025-01**
MP 140/200-Rp1 1/2"	**463-19-025-02**
MP 140/200-Rp2"	**463-19-025-00**
MP 140/200-Rp2 1/2"	**463-19-025-03**
MP 200-Rp3"	**464-19-002-00**
Venturi Insert*	
VE 50-01	**461-XX-XXX-XX**
VE 100-01	**462-XX-XXX-XX**
VE 140-01	**463-XX-XXX-XX**
VE 200-01	**464-XX-XXX-XX**
VE 300-01	**465-XX-XXX-XX**
Gas Mixer Housing incl. Venturi Insert	
GM 30-01 incl. VE-30-10	**461-00-100-XX**
GM 30-01 incl. VE-30-18	**461-00-180-XX**

* Depending on engine type, operating range and gas quality, different sizes are available and will be calculated individually.

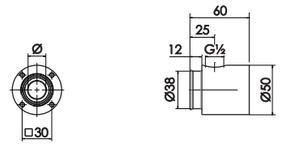
For enquiries, please use the respective order information sheet.

Technical Data

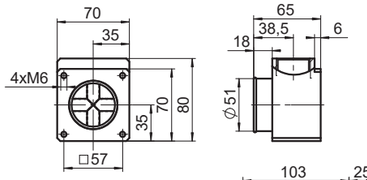
Operating temperature	-20 ... +150 °C
Max. boost pressure	4 bar abs.

Dimensions

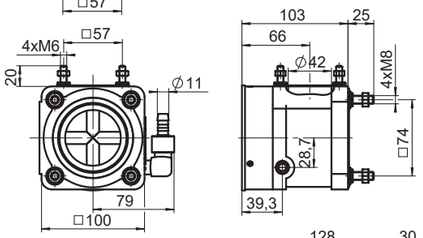
Size 30



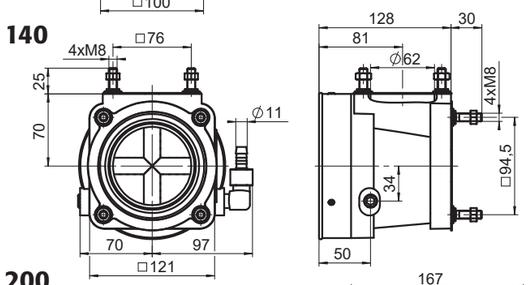
Size 50



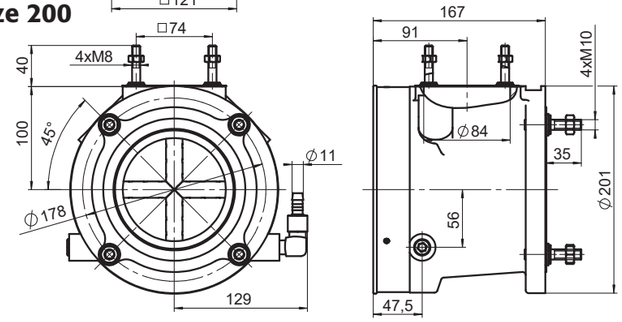
Size 100



Size 140

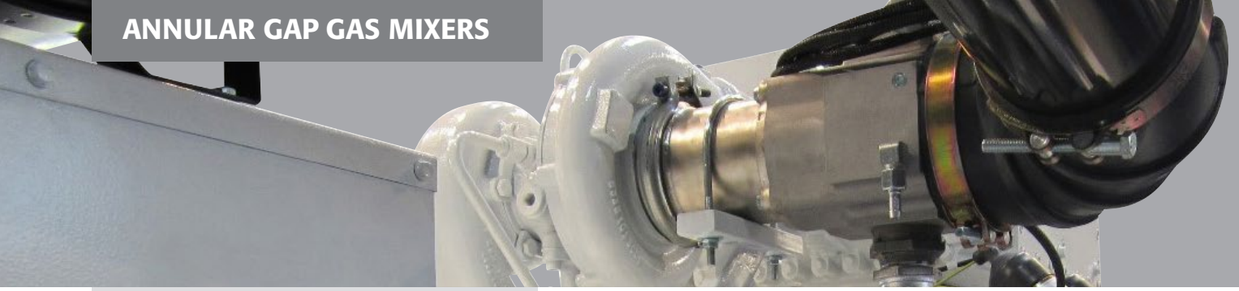


Size 200



Dimensions for size 300 on request

Air-Fuel Ratio Control



ANNULAR GAP GAS MIXERS

GMA 30-49

Gas mixers are essential components in AFR control systems of gas engines. They ensure desired ratio of burnable gas and air regardless of operational conditions.

A variable annular gap enables precise adjustment of mixture ratio for various gas types. A consequence of the Venturi-type gas mixer are only minimal pressure losses and homogenous mixture throughout the whole range of speed and load. This optimises performance and efficiency, reduces emissions for every working point and guarantees reliable starting.

The digital control is CAN compatible with all common protocols and is therefore ideal for integration in a higher-level engine management system.

Application Range

- Gas mixing system for naturally aspirated and turbo-charged engines

GMA 30-49 / GMA 58-75 / GMA 82-100

Features

- Robust and compact design
- Integrated gas mixing and metering unit
- Maintenance-free design
- Low pressure losses thanks to Venturi-shaped nozzle design
- Homogeneous mixture of burnable gas and air thanks to optimised flow conditions in the mixing duct
- Applicable for a wide range of gases (e.g. natural gas, landfill gas, biogas)
- Suitable for use with lambda-1 and lean-burn engines

Part Numbers

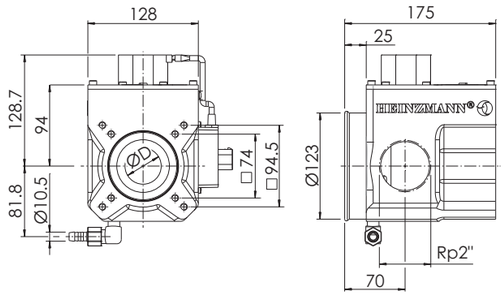
	Product – Type	*Product – Name*	*Additional Information*	*Part Number*
Housing 3	Annular gap gas mixer	GMA 100	Ø 100 mm	**494-00-000-00**
		GMA 92	Ø 92 mm	**494-00-001-00**
		GMA 82	Ø 82 mm	**494-00-002-00**
	Mounting plate for gas inlet	Rp 1 ¼“		**463-19-025-01**
		Rp 1 ½“		**463-19-025-02**
		Rp 2“		**463-19-025-00**
		Rp 2 ½“		**463-19-025-03**
		Rp 3“		**464-19-002-00**
Housing 2	Annular gap gas mixer	GMA 75	Ø 73 mm	**493-00-001-00**
		GMA 65	Ø 65 mm	**493-00-003-00**
		GMA 58	Ø 58 mm	**493-00-002-00**
	Annular gap gas mixer	GMA 49	Ø 49 mm	**492-00-003-00**
Housing 1		GMA 42	Ø 42 mm	**492-00-002-00**
	+ 25 mm Zeppelin	GMA 34	Ø 42 mm	**491-00-002-00**
	+ 30 mm Zeppelin	GMA 30	Ø 42 mm	**491-00-003-00**
	Communication adapter			**620-00-024-06**

	Type	*Part Number*	*Venturi Diameter*
Housing 1	GMA 30	491-00-003-00	Ø42 mm with Zeppelin Ø30 mm
	GMA 34*	491-00-002-00	Ø42 mm with Zeppelin Ø25 mm
	GMA 42*	492-00-002-00	Ø42 mm
	GMA 46	492-00-004-00	Ø46 mm
	GMA 49*	492-00-003-00	Ø49 mm
Housing 2	GMA 58*	493-00-002-00	Ø58 mm
	GMA 65*	493-00-003-00	Ø65 mm
	GMA 75*	493-00-001-00	Ø73 mm
Housing 3	GMA 82	494-00-002-00	Ø82 mm
	GMA 92	494-00-001-00	Ø92 mm
	GMA 100	494-00-000-00	Ø100 mm

* CSA certified

Dimensions

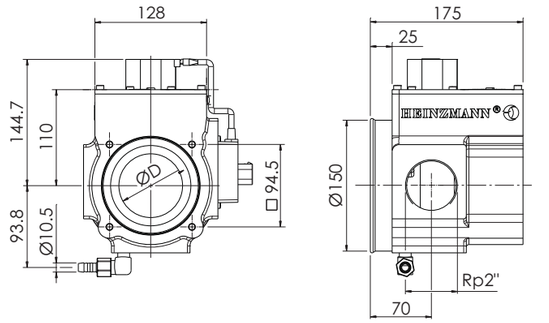
GMA Housing 1



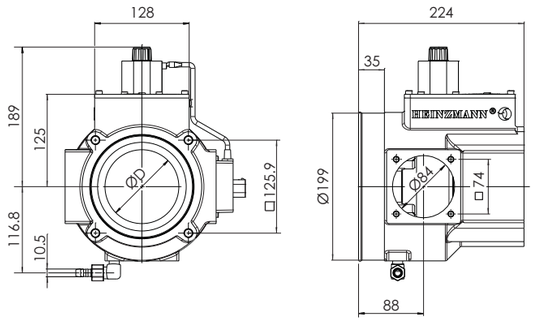
GMA 58-75

GMA 82-100

GMA Housing 2



GMA Housing 3

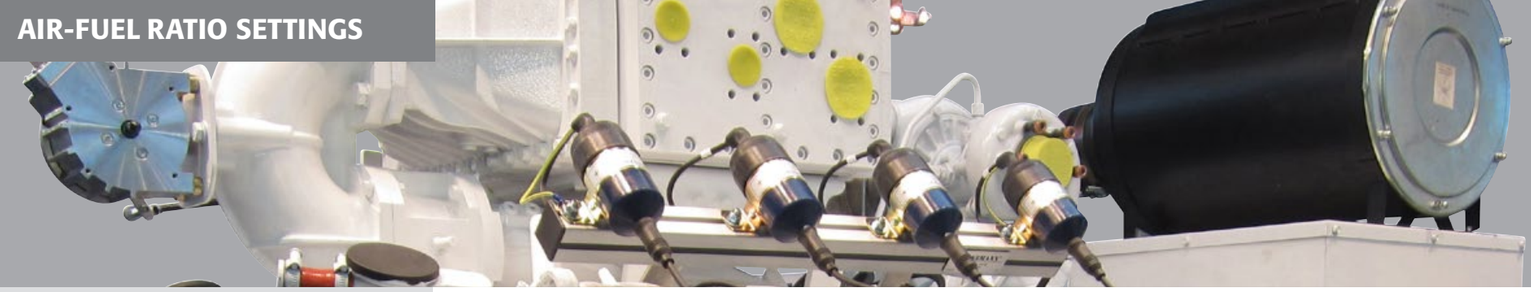


Technical Data

Operating range	110 ... approx. 500 kW
Type of gas	Natural gas, landfill gas, biogas
Operating voltage	24 VDC, max. 2A
Operating voltage range	12 ... 32 VDC
Ambient temperature	-40 ... +105 °C
Degree of protection	IP55

Pin Assignment GMA			*Cable Harness*			
			490-81-001-00	490-81-006-00	490-81-007-00	490-81-012-00
Pin	*Function*	*Range*	*Port*	*Port*	*Port*	*Port*
1	PWM / Digital Input	50 ... 500 Hz / 0/1	not available	not available	P5	P5
2	CAN-Low	125 ... 1000 kb/s	not available	not available	not available	not available
3	CAN-High		not available	not available	not available	not available
4	Battery –	0 V	–	–	–	–
5	Battery +	18 ... 33 V	+	+	+	+
6/7	DcDesk COM	2.4 … 57.6 kBaud/s	not available	not available	not available	not available
8	Analogue Output	0 ... 5 V/4-20 mA	not available	P2	P2	P2
9	Digital Input, Stop/Reference drive	0/1	not available	P6	P6	P6
10	Ground	0 V	0 V	0 V	0 V	0 V
11	Analogue/Digital Input	0 ... 5 V/4 ... 20 mA	P1	P1	not available	P1
12	+5 V Reference	+5 V, max. 10 mA	not available	not available	not available	not available
13	Digital Output, Error	Low side, 0.3 A (Error)	not available	P7	P7	P7
14	Ground	0 V for pick-up or digital inputs	not available	0 V	0 V	0 V

Air-Fuel Ratio Control



KRONOS 10

Mechanical air-fuel ratio control

LES-GT 50

ATEX Ex II 2 G c II

KRONOS 10 is a simple mechanical AFR control system consisting of a Venturi based gas/air mixer and a mechanical gas main adjusting screw. It is a good solution for all sizes of engines from 25 kW to 3 MW where precise control of emissions is not required. The mixer and gas regulator screw have no moving parts, ensuring high reliability, long service intervals and minimal maintenance.

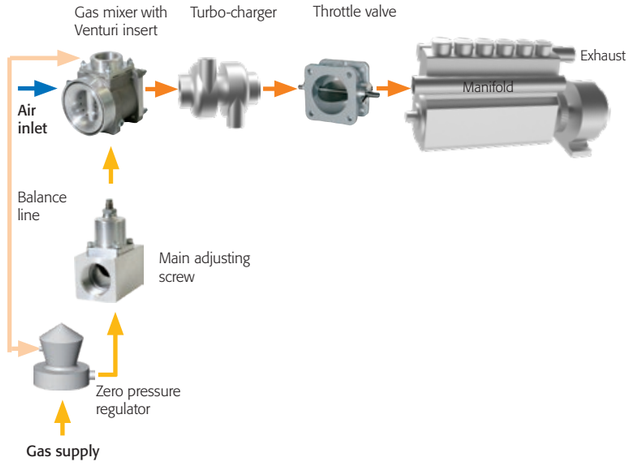
The main advantage of this system is the ability to use different settings for the main adjusting screw and the zero pressure regulator offset, combined with variation of the Venturi insert. It provides improved starting and synchronisation behaviour, whilst still maintaining the desired air-fuel ratio. AFR can be adjusted manually in order to achieve low emissions at various engine loads for a given gas quality.

LES-GT 20

LES-GT 25

Features

- System can be used for all low-pressure and some high-pressure applications
- Reliable gas mixer operation based on physical principles
- Pressure drop across the gas mixer is very low due to the optimally shaped Venturi insert
- Gas mixer can work at gas supply pressures as low as 20 mbar
- Gas mixer contains no moving parts
- Different Venturi inserts and configurations, for a wide range of gas qualities, available
- Highly homogeneous mixture quality ensures even distribution across cylinder
- Main adjusting screws available for all applications
- AFR components are available in anticorrosive versions for use with corrosive gases



LES-GT 40

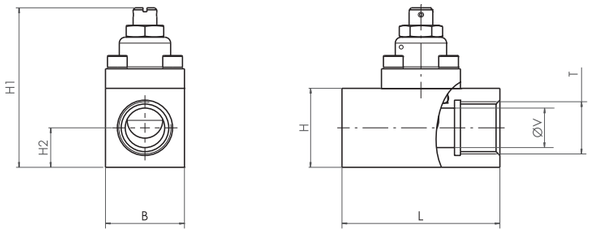
LES-GT 50

LES-GT 20 / 25 / 40 / 50

Part Numbers

Product – Type	*Product – Name*	*Part Number*
Lambda adjusting screw	LES-GT 20	**471-00-001-01**
Lambda adjusting screw	LES-GT 25	**471-00-002-01**
Lambda adjusting screw	LES-GT 40	**471-00-003-03**
Lambda adjusting screw	LES-GT 50	**471-00-004-00**
Lambda adjusting screw	LES-GT 65	**471-00-006-00**

Dimensions LES-GT 20 / 25 / 40 / 50



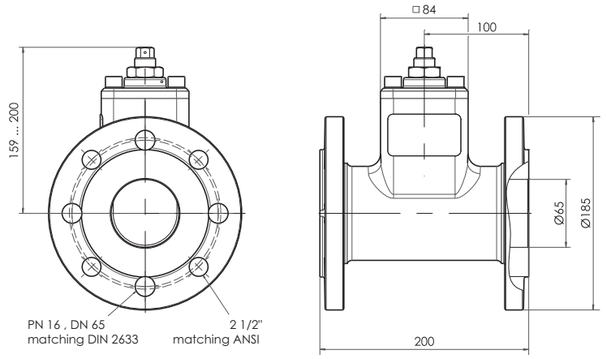
Dimensions

Type	Ø V (mm)	L (mm)	H (mm)	B (mm)	H1 (mm)	H2 (mm)	T (mm)	Weight
LES-GT 20	20	80	40	40	77 … 92	20	B.S.P thread Rp 3/4″	approx. 0.4 kg
LES-GT 25	25	95	50	50	91 … 111	25	B.S.P thread Rp 1″	approx. 0.7 kg
LES-GT 40	40	120	60	60	136 … 171	30	B.S.P thread Rp 1 1/2″	approx. 1.4 kg
LES-GT 50	50	130	80	80	165 … 210	40	B.S.P thread Rp 2″	approx. 2.7 kg

LES-GT 65

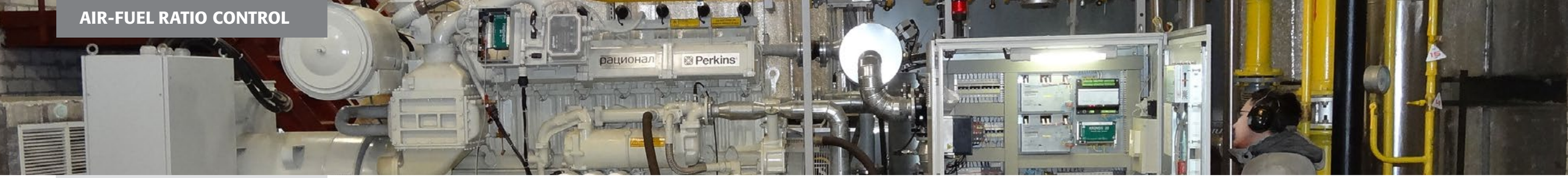
LES-GT 65

Dimensions LES-GT 65



Weight LES-GT 65: approx. 6.4 kg

Air-Fuel Ratio Control



KRONOS 20

Electronic air-fuel ratio control

C US

DNVGL.COM/AF

ATEX II3G Ex nAR II T4

Based on the same Venturi principle as the KRONOS 10, the KRONOS 20 provides an electronically controlled main adjusting screw, a digital control system and all necessary sensors. KRONOS 20 is a very powerful air-fuel ratio control system with an excellent price-performance ratio. Two versions of KRONOS 20 are available:

- Open-loop system configured for fuel and engine characteristics
- Extended closed-loop system with compensation for gas quality variation

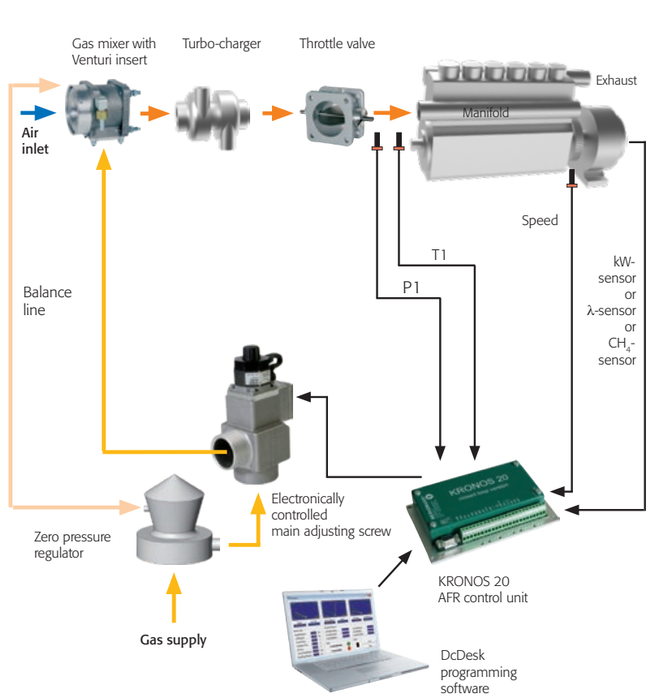
The KRONOS 20 system is equipped with highly sophisticated user-friendly software that allows simple and quick calibration and commissioning by the customer.

The main feature of KRONOS 20 is the option to set precise values for the air-fuel ratio over the entire load and speed range. This provides clear advantages such as:

- Excellent starting and synchronisation of the engine
- Compliance with emission regulations over the entire load and speed range

Features

- Enhanced system with Venturi based electronic trim functionality
- Improved engine starting and speed stability
- Adjustable air-fuel ratio tracking map
- Automatic enrichment for cold starting and temperature dependent leaning function
- Applicable on a wide range of engine models without parameter set changes
- Basic fuel system remains operational even if power fails
- Optional closed-loop control based on gas quality sensor, oxygen sensor or load input
- Optional misfire detection
- CAN communication
- DcDesk menu driven programming



Technical Data

Power supply	24 VDC
Voltage range	10 ... 32 VDC
Current consumption	max. 1 A
Fuse	6 A
Operating temperature	-40 ... +80 °C
Degree of protection	IP00
Weight	approx. 0.5 kg

I/O Specifications

Terminal	*Name*	*Configuration*
H/L	Port H and L	CAN bus
2	P1	Control output for gas valve
1	P2	Control output for gas valve
4	MAT	Temperature input
6	Ref 5 V	Reference voltage for T/P sensor
7	DI3/AI3	Closed loop input
9	DI4	Digital input
10	ERROR	Digital output error
11	DI5/PU2 (HALL)	Digital input
13	PU1 (IND)	Speed input
16	MAP/AI4	Pressure input

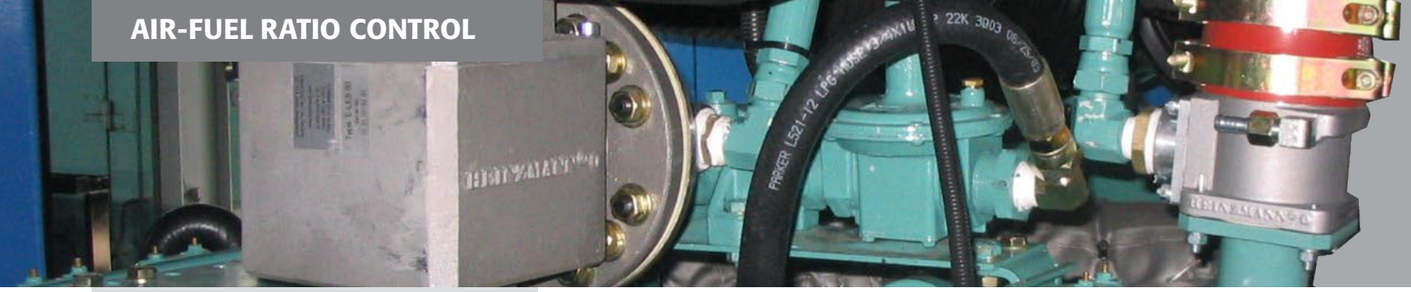
Part Numbers - Control Units

Product – Type	*Product – Name*	*Part Number*
Control unit open loop		**620-00-118-00**
Control unit open loop HS	DIN rail	**620-00-118-02**
Control unit closed loop	Power signal	**620-00-118-01**
Control unit closed loop HS	Power signal; DIN rail	**620-00-118-03**
Control unit closed loop	Lambda sensor; λ=1	**620-00-118-04**
Control unit closed loop	NO_x Sensor	**620-00-118-07**

Part Numbers - E-LES, Cable Harness, Sensors

Product – Name	*Specifications*	*Part Number*
E-LES 30.3-SMC		**472-00-024-00**
E-LES 30.1-SMC	w/only one port for small flow rates	**472-00-024-01**
E-LES 50-SMC		**472-00-021-00**
E-LES 80-SMC		**472-00-022-00**
E-LES 50	CSA certified	**472-00-000-03**
E-LES 80	CSA certified	**472-00-001-03**
Cable harness E-LES SMC, 10 m	Power supply, input PWM, feedback, ref, stop, error	**490-81-007-00**
Combined pressure/ temp. sensor	DST 01-03W	**600-00-082-00**
Cable harness DST 01-03W, 5 m		**600-81-051-03**
Cable harness DST 01-03W, 10 m		**600-81-051-00**
Pick-up 5/8" - 18 UNF	IA 12-76	**600-00-006-02**
Cable harness pick-up, 5 m		**620-81-047-05**
Cable harness pick-up, 10 m		**620-81-047-10**
Lambda sensor LSM 11		**010-80-020-00**
Cable for LSM 11, 5 m		**600-81-054-02**
Cable for LSM 11, 10 m		**600-81-054-01**
Cable for E-LES 50/80	CSA certified	**600-81-044-00**

Air-Fuel Ratio Control



ELECTRONICALLY CONTROLLED MAIN ADJUSTING SCREWS

HEINZMANN's electronically controlled gas valves E-LES are advantageously applied to gas engines. They are situated in the gas line after the zero pressure regulator and are connected to the inlet of the gas mixer. They allow adjusting and trimming the required gas amount very precisely at any operating state.

The reliable, high-resolution stepper motor drives a mandrel with an external thread. With the rotation of the mandrel, a PTFE-coated aluminium piston with a corresponding internal thread moves linearly inside a coated bushing. This bushing shows three exponentially shaped intake openings

Their optimised design allows a linear change of gas flow.

The digital control is CAN compatible with all common protocols and is therefore perfectly suitable for integration into an existing AFR control unit. The position setpoint is assigned by CAN or by an analogue input, which can be configured for numerous input signal specifications.

E-LES 30 SMC

E-LES 50 LC

E-LES 30 SMC / E-LES 50 SMC / E-LES 80 SMC

Technical Data

Power supply	24 VDC
Voltage range	18 ... 32 VDC
Current consumption	max. 1.5 A
Fuse	6 A
Operating temperature	-20 ... +75 °C
Admissible pressure of gas supply	max. 0.1 bar (g)
Admissible concentration of hydrogen sulphide in fuel	max. 0.1 %

Pin Assignment			*Cable Harness*			
			490-81-001-00	490-81-006-00	490-81-007-00	490-81-012-00
Pin	*Function*	*Range*	*Port*	*Port*	*Port*	*Port*
1	PWM / Digital Input	50 ... 500 Hz / 0/1	n/a	n/a	P5	P5
2	CAN-Low	125 ... 1000 kb/s	n/a	n/a	n/a	n/a
3	CAN-High		n/a	n/a	n/a	n/a
4	Battery –	0 V	–	–	–	–
5	Battery +	18 ... 33 V	+	+	+	+
6/7	DcDesk COM	2.4 ... 57.6 kBaud/s	n/a	n/a	n/a	n/a
8	Analogue Output	0 ... 5 V / 4-20 mA	n/a	P2	P2	P2
9	Digital Input, Stop/ Reference drive	0/1	n/a	P6	P6	P6
10	Ground	0 V	0 V	0 V	0 V	0 V
11	Analogue / Digital Input	0 ... 5 V/4 ... 20 mA	P1	P1	n/a	P1
12	+5 V Reference	+5 V, max. 10 mA	n/a	n/a	n/a	n/a
13	Digital Output, Error	Low side, 0.3 A (Error)	n/a	P7	P7	P7
14	Ground	0 V for pick-up or digital inputs	n/a	0 V	0 V	0 V

n/a = not available

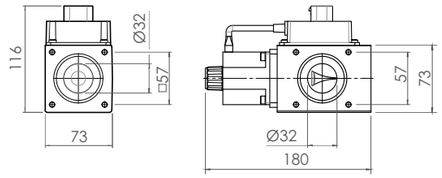
E-LES 80 SMC

TYPE APPROVED PRODUCTS DNV·GL DNVGL.COM/AF

Part Numbers - E-LES SMC

Product – Name	*Specifications*	*Part Number*
E-LES 30.3 SMC		**472-00-024-00**
E-LES 30.1 SMC	w/only one port for small flow rates	**472-00-024-01**
E-LES 50 SMC		**472-00-021-00**
E-LES 80 SMC		**472-00-022-00**
Communication adapter		**620-00-024-06**

Dimensions E-LES 30 SMC



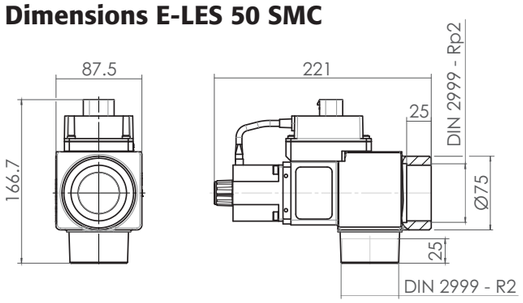
Mounting plates available with ¾", 1", 1¼" and 1½"

Additional Specifications for E-LES 30 SMC

Application range*	5 ... 130 kW
Valve resolution	1.400 steps at 7 revolutions
Positioning time for 0 ... 100 %	2.5 seconds
Weight	approx. 2 kg

Each E-LES 30 SMC requires two additional mounting plates, one for the gas inlet, one for the gas outlet.

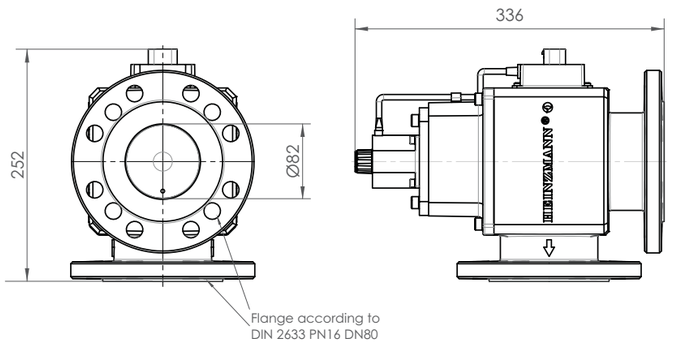
Dimensions E-LES 50 SMC



Additional Specifications for E-LES 50 SMC

Application range*	120 - 500 kW
Valve resolution	2000 steps at 10 revolutions
Positioning time for 0 ... 100 %	4 seconds
Weight	approx. 5 kg

Dimensions E-LES 80 SMC



Additional Specifications for E-LES 80 SMC

Application range*	450 ... 1.750 kW
Valve resolution	3800 steps at 19 revolutions
Positioning time for 0 ... 100 %	8 seconds
Weight	approx. 12 kg

* These values refer to a mechanical efficiency of 37 %, lambda 1.6 and a charge pressure of 2.0 bar and are for guidance only. Assumed lower heating value (LHV) of 36 MJ/Nm³ for natural gas. For proper statement a calculation based on actual engine data is necessary.

KRONOS 30 - ELEKTRA

Full authority control system for AFR

KRONOS 30 is an extremely flexible full-authority AFR control system with an integrated speed governor. It can accommodate variable operational parameters and comprises the ability to adapt to changes in engine and fuel characteristics. Thereby the system is able to compensate for gas quality fluctuations.

A KRONOS 30 systems consists of an ELEKTRA **G**as **M**etering **C**ontrol **U**nit (GMCU) and a gas mixer. The ELEKTRA series provides a range of gas metering units for lambda control with integrated electronic sensors and throttle valve. The applied mixers are Venturi based which ensures optimum gas mixture. The product line comprises a variety of model sizes from GMCU 30 up to GMCU 160.

Instead of other AFR system KRONOS 30 does not require a zero pressure regulator and includes a gas metering unit able to handle pressure changes up to a ratio of 2:1 and a pressure range 40 - 250 mbar.

GMCU 30 / GMCU 42 / GMCU 50 / GMCU 85 / GMCU 110 / GMCU 160

Features

- Module-based gas engine control system including gas flow control and full authority lambda control
- Accurate air-fuel ratio control providing compensation for changes in engine and fuel gas characteristics
- Tolerant to wet biogases and corrosive contaminants
- Acceptance of large load changes during generator operation in island mode
- Ideal for retrofitting and large engine OEM applications
- CAN communication
- Optional gateway unit for standard CAN protocols (CANopen, DeviceNet, SAE J1939)
- DcDesk menu driven programming

GMCU 30/42

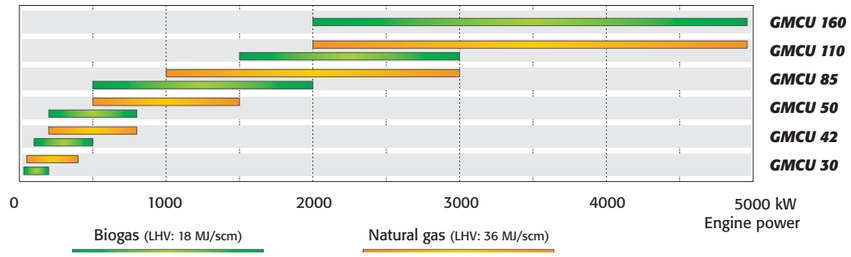
GMCU 50

GMCU 85

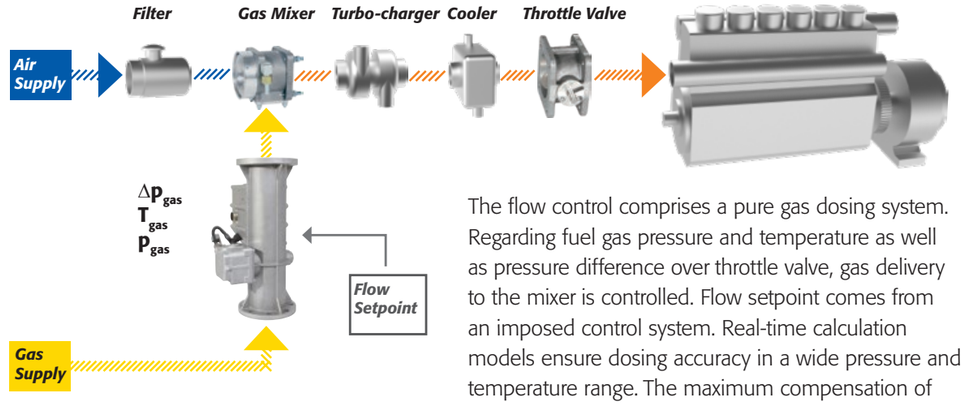
GMCU 110

GMCU 160

Power Range

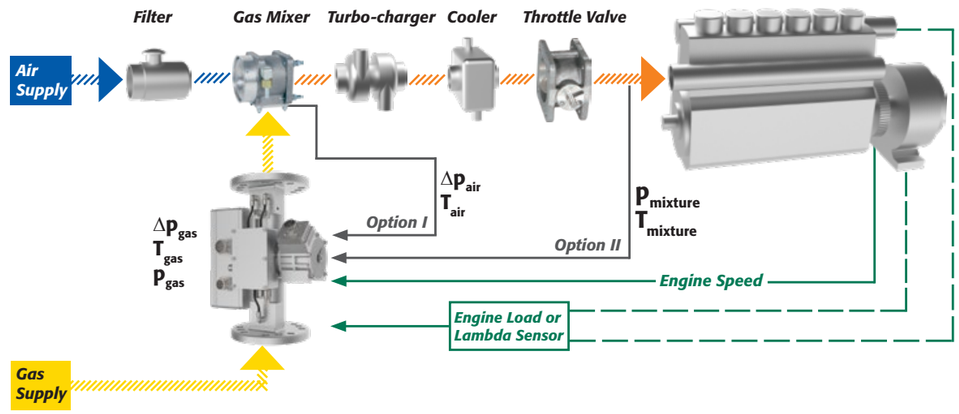


Flow Control

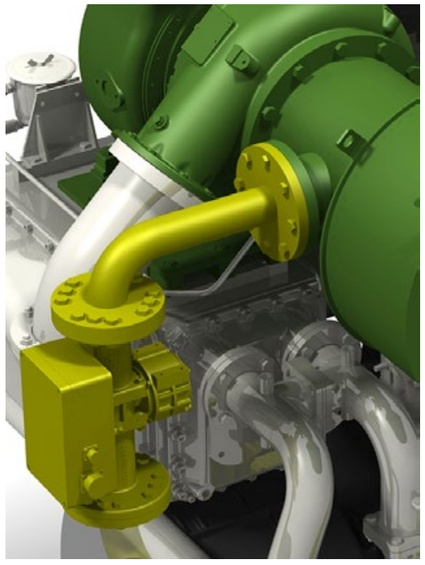


The flow control comprises a pure gas dosing system. Regarding fuel gas pressure and temperature as well as pressure difference over throttle valve, gas delivery to the mixer is controlled. Flow setpoint comes from an imposed control system. Real-time calculation models ensure dosing accuracy in a wide pressure and temperature range. The maximum compensation of input pressure fluctuations allows omission of the zero-pressure regulator.

Lambda Control



With additional information on the air or mixture mass flows the gas dosing system can be extended to a complete lambda control system (LC). In the standard version the flow is obtained by measuring the pressure difference over the calibrated Venturi gas mixer. A setpoint may be derived from engine load or from a lambda sensor.



Technical Data

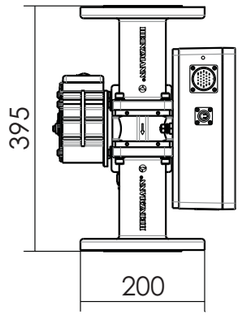
Input voltage range	18 ... 32 V
Max. current	6 A
Ambient temperature	-30 ... +80 °C
Gas inlet pressure	40 ... 250 mbar (relative)
Delta pressure inlet/outlet	40 ... 250 mbar
Flow accuracy	± 5 % for the entire flow range
I/O interface	CAN bus
Serial	2 digital input
	1 digital output
	2 multifunction ports: 0 ... 5 V; 4 ... 20 mA; PWM
	1 temp. input
	1 speed pick-up
Degree of protection	IP55
Weight	GMCU 50: 20 kg
	GMCU 85: 35 kg

Technical Data

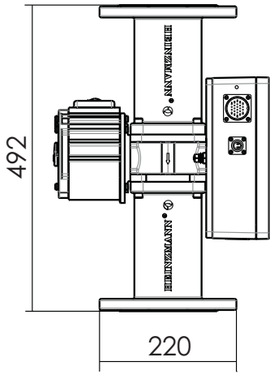
Connector X11	Pin F	Digital input engine stop
	Pin C	Reference voltage 5 V
	Pin H	External analogue set point
	Pin E	Digital output error lamp
	Pins A,K	Additional MF-ports
	Pins R, S, T, U	CAN bus
	Pin Z	0 V (Batt)
	Pin W	+24 V (Batt)
	Pins B, L	0 V (GND)
Connector X12	Pin A	Temperature input
	Pin C	Optional pressure input 1
	Pin J	Reference voltage 5 V
	Pin G	Optional pressure input 2
	Pin I	Reference voltage 5 V
	Pins B, D, H	0 V (GND)
Connector X13	Pin B	Speed sensor input
	Pin A	Speed sensor 0 V

Air-Fuel Ratio Control

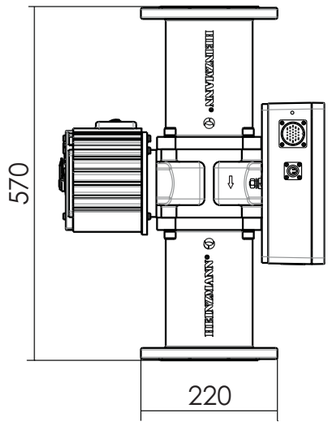
Dimensions



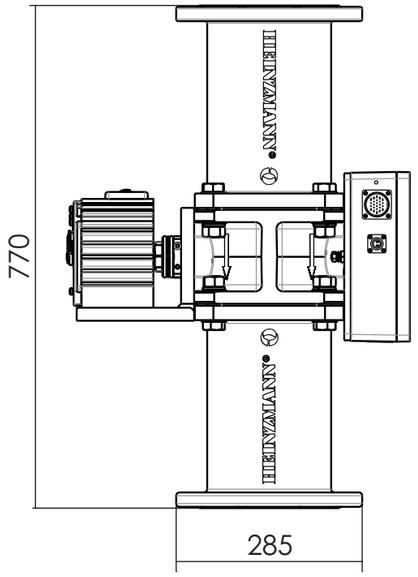
GMCU 50



GMCU 85



GMCU 110



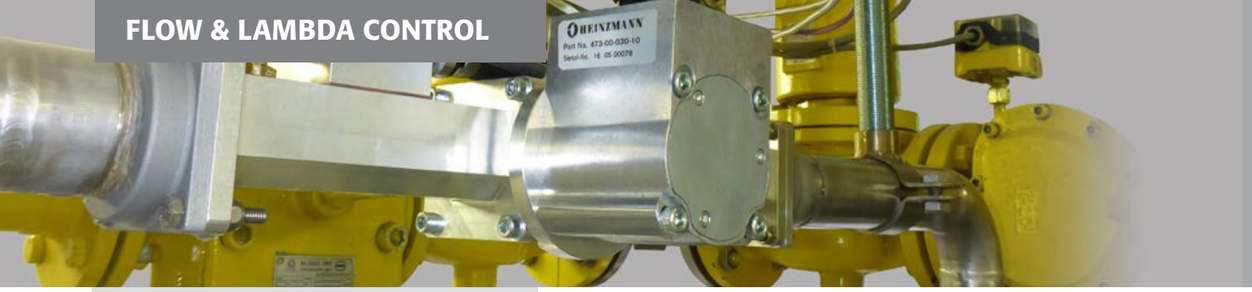
GMCU 160

Part Numbers - GMCU

Product – Name	*Part Number*
GMCU-50-LC	**473-00-005-00**
GMCU-85-LC	**473-00-006-00**
GMCU-110-LC	**473-00-110-00**
GMCU-160-LC	**473-00-160-00**

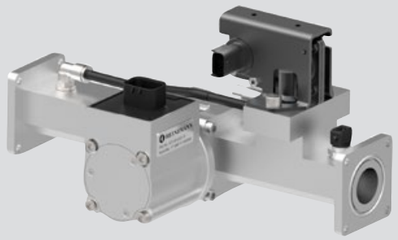
Part Numbers - Accessories

Product – Type	*Specification*	*Part Number*
Wiring harness ELEKTRA X11	Length: 10 m	**620-81-121-00**
Cable for magnetic pick-up X13	Length: 10 m	**600-81-035-00**
Cable for X12	Length: 2 m	**626-81-013-00**
Temperature sensor	DST 01-03W	**600-00-082-00**
Delta pressure pipe set Venturi	Bank 1	**473-81-002-00**
Delta pressure pipe set Venturi	Bank 2	**473-81-002-01**
Pick-up 5/8" - 18 UNF	IA02-76	**600-00-006-01**
Pins for ELEKTRA		**010-61-180-00**



ELEKTRA GMCU 30/42

Gas metering control unit



GMCU 30/42

The lambda control version of ELEKTRA GMCU 30/42 (**G**as **M**etering **C**ontrol **U**nit) has successfully been proved in combined heart and power units for the usage of landfill gas. The performance of the engine there was about 50 kw of electric power.

The GMCU 30/42 is intended for stationary gas engines as a main component of a full authority engine management system. It can be used for gas flow control or lambda control. By receiving a flow setpoint signal via CAN it adjusts the gas flow to the gas mixer. It can be used for all gas qualities from LPG and natural gas to landfill and wood gas.

A high accuracy throttle valve actuator device and precise calibration of the gas metering unit provides outstanding flow control within a wide inlet pressure range. This allows the use of the valve at higher pressure conditions with increased mass flow and eliminates the need for a zero pressure regulator.

Features

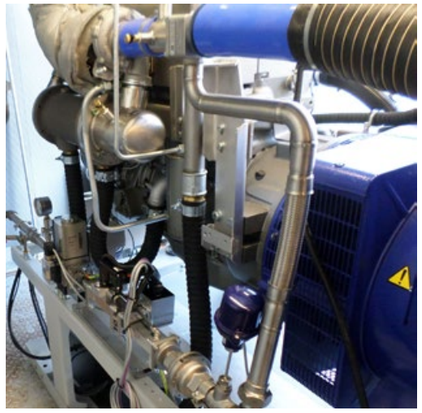
- Designed for integration into an existing AFR control
- Suitable for different gas types and qualities
- Proven reliability
- CAN bus communication
- High accuracy flow control
- Wide input pressure range
- No zero pressure regulator required

Part Numbers - GMCU 30/42

Product – Name	*Part Number*
GMCU 30	**473-00-030-10**
GMCU 42	**473-00-042-10**

Part Numbers - Accessories

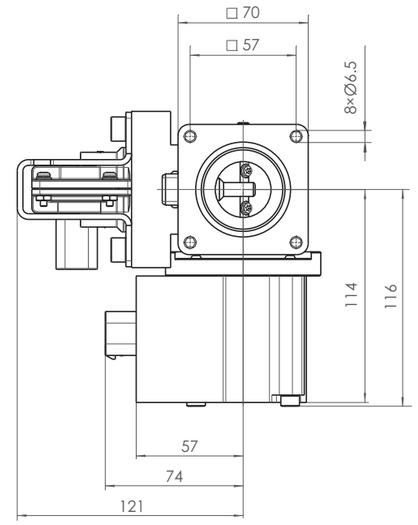
Product – Name	*Product - Name*	*Part Number*
Control unit KRONOS 30 ELEKTRA 30/42		**620-00-202-00**
Cable harness GMCU 30/42		**473-81-017-00**
Pressure sensor	DST 01-03 W	**600-00-082-00**
Cable harness DST 01-03W, 5 m		**600-81-051-03**
Cable harness DST 01-03W, 10 m		**600-81-051-00**
Pick-up 5/8" - 18 UNF	IA02-76	**600-00-006-01**
Cable harness pick-up, 5 m		**620-81-047-05**
Cable harness pick-up, 10 m		**620-81-047-10**

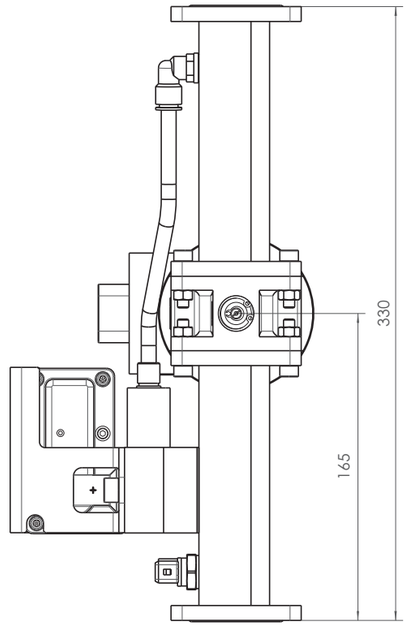


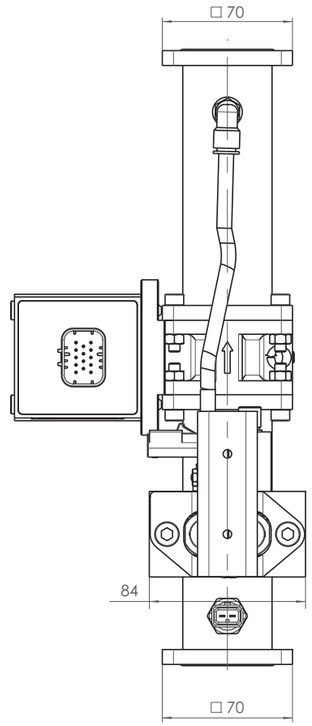
Technical Data

Supply voltage	18 ... 32 VDC, nom. 24 VDC
Current consumption	max. 6 A
Gas inlet pressure	40 ... 250 mbar
Pressure difference input/ output	40 ... 250 mbar
Operating temperature	-30 ... 85 °C
Degree of protection	IP55
I/O interface	HEINZMANN CAN bus serial

Dimensions







Air-Fuel Ratio Control

KRONOS 40

Injection based control system

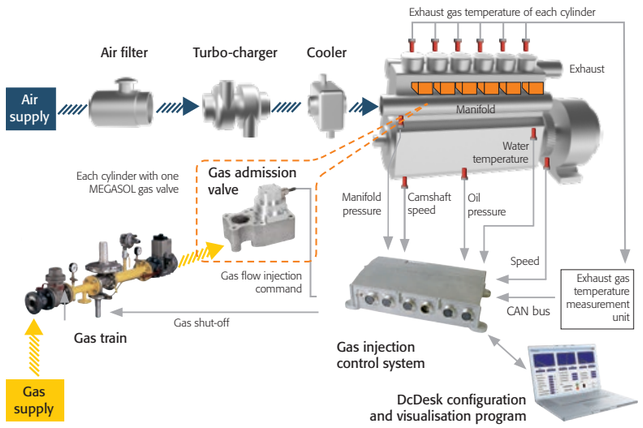
MEGASOL

KRONOS 40 is based on the MEGASOL gas injection valve and the proven DARDANOS solenoid valve control, which performs speed/load and also gas admission control. The range of valve and control device types offers a highly flexible system that can be adapted to suit different engine sizes, cylinder configurations and functions. Integrated sensing of exhaust gas temperature enables accurate timing and monitoring of all cylinders. This ensures optimal engine functioning with high efficiency, low emissions and protection of engine components. Additional sensor technology can further enhance these features. The gas injection valves are located directly on the cylinder inlet, this requires a gas supply pressure of approx. 1 bar higher than the manifold pressure.

With large engines the use of gas injection valves prevents unburnt fuel being released into the air. This makes optimal fuel use possible and lowers harmful emissions. A long life cycle and easy replacement of worn parts ensures low servicing costs.

Features

- High-precision gas metering and accurate tuning
- For new engines and retrofit applications
- Can be expanded to complete engine management system (e.g. mixture adjustment, ignition timing, wastegate, generator management)
- For low and medium-speed engines
- Fast engine response thanks to valve position close to cylinders
- Minimal backfire risk
- Optional misfire detection
- CAN communication including standard CAN protocols (CANopen, DeviceNet, SAE J1939)
- DcDesk menu driven programming



Part Numbers - Gas Admission Valves

Product – Name	*Part Number*
MEGASOL 200 II	**472-00-027-00**
MEGASOL 250 II	**472-00-031-00**
MEGASOL 400 II*	**472-00-032-00**
MEGASOL 425 II	**472-00-026-00**
MEGASOL 1000	**472-00-013-03**
MEGASOL PCV	**472-00-023-02**

Length of cable harness need to be clarified.
Components have to be designed specifically for each engine.

* Direct replacement to SOGAV 105.
Further dimensions on request.

MVC 01-20

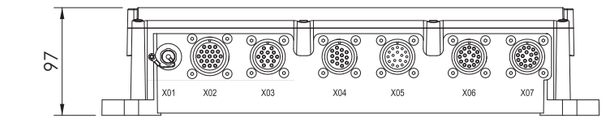
Part Numbers - MVCs

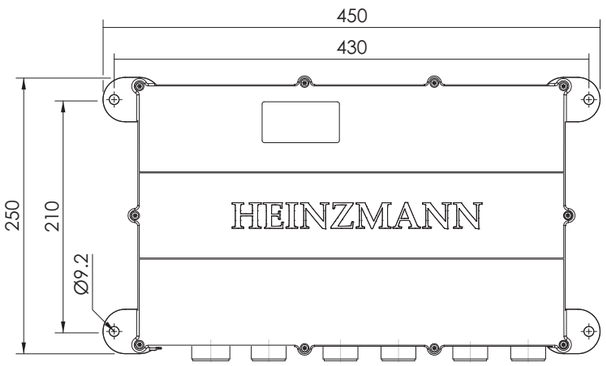
Product – Type	*Part Number*
MVC 01-20/90V	**620-00-147-02**

Technical Data

Supply voltage (max./min)	24 VDC
Voltage range	18 ... 32 VDC
Max. inj. boost/hold current	25/6 A
Ambient temperature	-40 ... +80 °C
Degree of protection	IP65

I/O specification of EFI control units on demand.





Air-Fuel Ratio Control

KRONOS 40 – MEGASOL

Gas admission valves

MEGASOL (**ME**tering of **GA**s by **SOL**enoid) is HEINZMANN's series of electrically actuated gas admission valves. It is intended for industrial gas and dual-fuel engines on turbo-charged four-stroke engines.

As the gas is injected into the intake manifold, each cylinder requires one MEGASOL. Together with HEINZMANN's DARDANOS series applying MVC (Magnetic Valve Control) MEGASOL ensures precise gas dosing for each cylinder and allows gas flow compensation per each cylinder.

MEGASOL valves are suitable for new engines as well as retrofits and are bolt-on compatible to market standard. They are characterised by excellent load response, precise dosage for each cylinder and fast opening and closing times.

They have a very low leakage when closed and, due to their design including only few components, they are easy to maintain.

All parts exposed to the gas are resisting to corrosion and stress corrosion cracking.

MEGASOL PCV

MEGASOL PCV is an electrically actuated gas valve for gas injection into a prechamber. Due to its flow dynamic design it can cope with high pressure drop between air and gas.

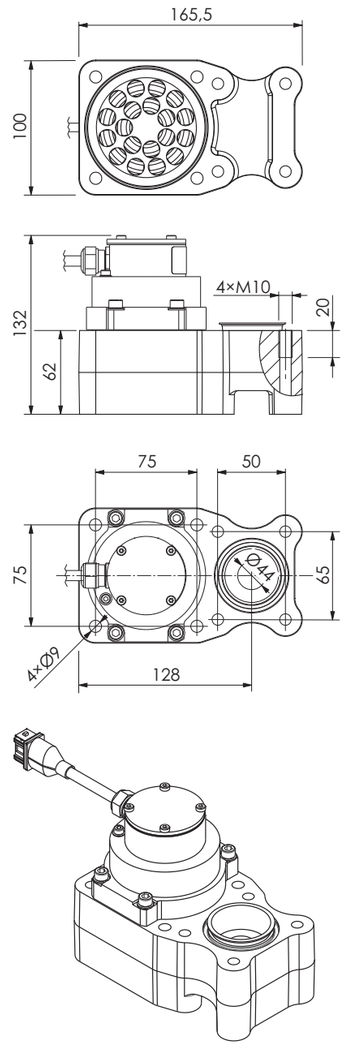
MEGASOL 200 II/250 II/400 II/425 II

The models MEGASOL 200 II/250 II/400 II/425 II are designed to operate with a comparatively high differential pressure of supplying air and gas. Marine versions are available on request.

MEGASOL 1000

The HEINZMANN MEGASOL 1000 is capable to work with higher pressure drop between air and gas due to its state of the art flow dynamic design. Therefore, the gas pressure has less effect on opening and closing duration and there is no delay due to it.

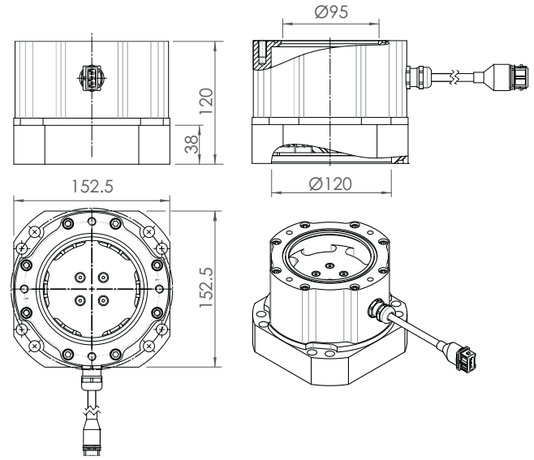
Dimensions



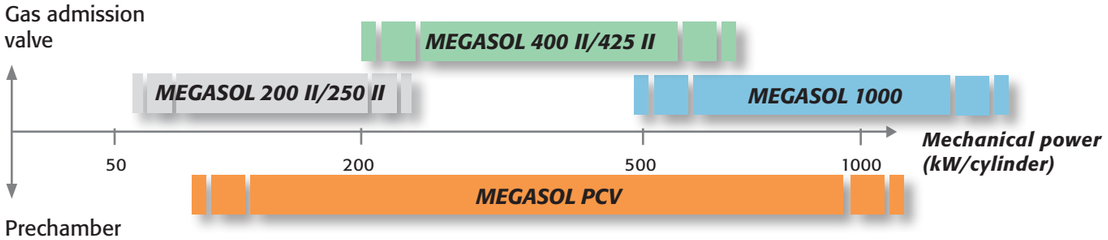
Technical Data

Flow rate (Z-value)	MEGASOL 200 II: 55 MEGASOL 250 II: 69 MEGASOLl 400 II: 105 MEGASOL 425 II: 128
Response time to 100 % open after signal on	< 3 ms
Response time to fully closed after signal off	< 2 ms
Internal leakage when closed	< 0.25 % of steady state flow-rate
Max. pressure gas supply (p1)	8 bar
Max. pressure air supply (p2)	6 bar
Max. differential pressure	3 bar
Max. backfire pressure, peak	0.5 bar
Max. temperature gas supply	80 °C
Filtration required	5 µm
Operating temperature	-20 … +105 °C
Voltage supply	48 … 110 VDC
Diameter gas inlet	44 mm

Dimensions MEGASOL 1000



Power Range



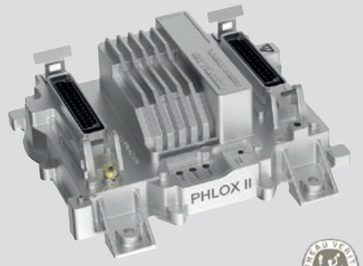
Guideline only, MEGASOL size depends on gas quality and pressure difference between gas and boost pressure

Air-Fuel Ratio Control

Ignition control systems

PHLOX II

Ignition control systems



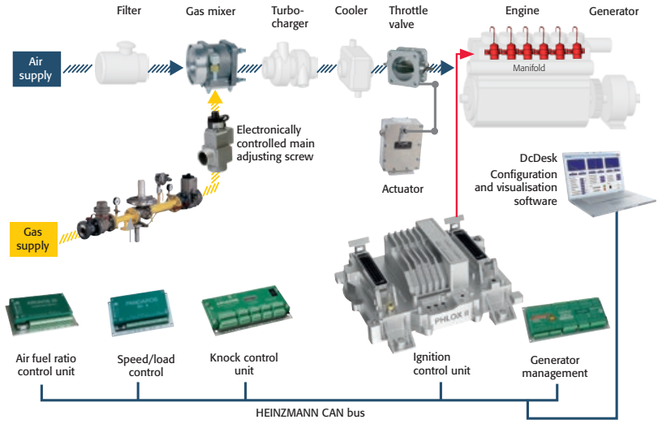
As it triggers the combustion process of the air-fuel mixture, the ignition system has major influences on performance and emissions of gas fuelled engines. Thus, it plays an important role in modern gas engine management systems. Based on HEINZMANN's many years of experience in the field of gas engine 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 harness, trigger discs, sensors and spark plugs, are available in an integrated solution. The HEINZMANN ignition kits meet all customer requirements. The customers can choose from a variety of system components.

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 to increase the spark plugs durability by reducing wear.

Features

- Configurable solution
- Precise ignition timing
- High ignition capabilities
- Hall or inductive pick-ups to cover all engine configurations
- 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 available



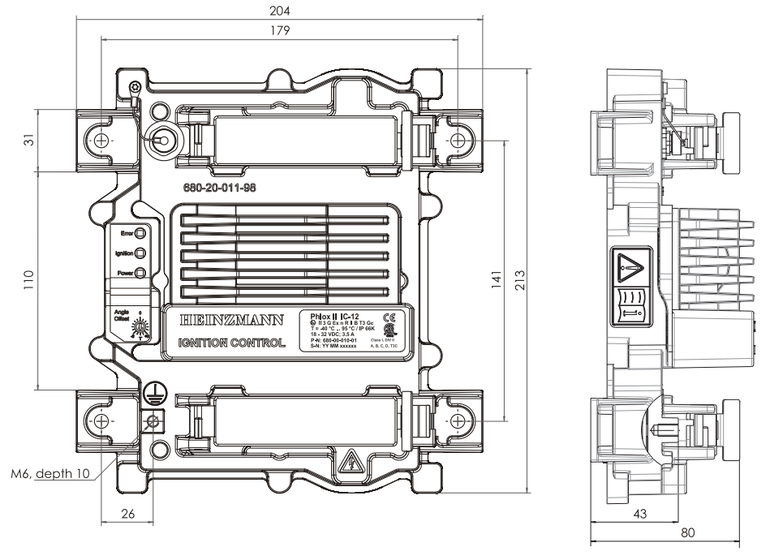
PHLOX II provides:

- **Solution for any engine type**
- **Complete system from one source**

Part Numbers

PHLOX II Controller	*Additional Information*	*Part Number*
Controller PHLOX II IC-08	Up to 8 cylinder	**680-00-010-00**
Controller PHLOX II IC-12	Up to 12 cylinder	**680-00-010-01**
Controller PHLOX II IC-16	Up to 16 cylinder	**680-00-010-02**
Controller PHLOX II IC-12A	Up to 12 cylinder, incl. CAN2	**680-00-010-11**
Controller PHLOX II IC-16A	Up to 16 cylinder, incl. CAN2	**680-00-010-12**
Controller PHLOX II IC-12B	Up to 12 cylinder, incl. Modbus	**680-00-010-21**
Controller PHLOX II IC-16B	Up to 16 cylinder, incl. Modbus	**680-00-010-22**

Dimensions



Example

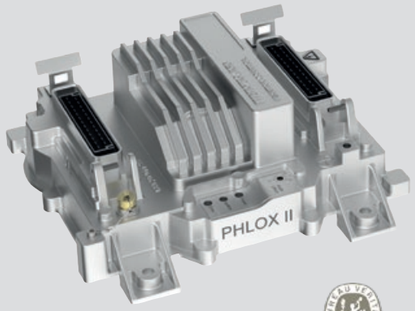
Example of a complete PHLOX II system: MAN E2876

Part Numbers

Product – Type	*Product – Name*	*Additional Information*	*Part Number*
1x Control unit	PHLOX II IC-08		**680-00-010-00**
1x Cable harness input	Cable harness w/ CAN		**680-81-002-10**
1x Ignition rail with coil grey			**Z00-21-055-00**
6x Ignition leads			**Z00-19-038-00**
1x Pick-up IA-M12-100/160		76 mm, M12*1	**600-00-111-00**

PHLOX II

Ignition control unit



The PHLOX II controller is available in 3 versions up to 8, 12, 16 cylinders. Based on two control units it is possible to control engines up to 24 cylinders.

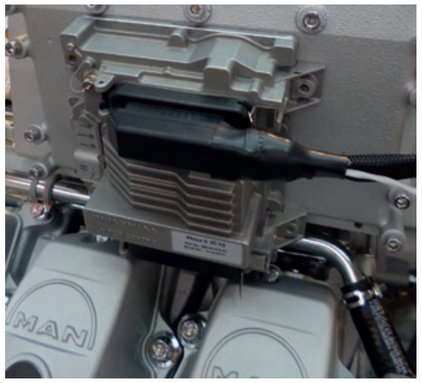
Flexibility and I/O possibilities of PHLOX II allow easy integration into every gas engine management system and guarantee individual and cost-effective solutions for OEMs, packagers and retrofit customers.

PHLOX II supports all common CAN protocols. Furthermore, PHLOX II can be perfectly combined with the different KRONOS systems for gas engine control.

To reduce spark plug wear, PHLOX II control units offer 32 levels of ignition energy in a range of 25 to 280 mJ. Depending on application, the energy level can be fixed or adjusted as a function of speed, load or on-board spark diagnostics.

Technical Data

Number of cylinders	Up to 8 (IC-08) Up to 12 (IC-12 or IC-12A or IC-12B) Up to 16 (IC-16 or IC-16A or IC-16B)
Power supply	24 V (18 ... 32 V) DC
Ambient temperature	-40 ... +95 °C
Engine speed	30 ... 3000 rpm
Spark duration	200 ... 600 µs
Energy level	25 ... 280 mJ (32 levels)
Pick-ups	2 (Hall or inductive)
Analogue input	1 (0 ... 5 V/0 ... 25 mA)
Digital input/output	2 (low/high side)
Communication/protocol	Can2.0B, SAE J1939, CANopen, DeviceNet, Modbus
Configuration tool	HEINZMANN DcDesk, easyPHLOX



PHLOX II - IC-08/12/16 – Pin assignment Connector X2

Pin No.	*Signal Name*	*Application*	
1	"CHANNEL_1"	"+" Ignition coil Cyl. 1*	
2	"CHANNEL_2"	"+" Ignition coil Cyl. 2*	
3	"CHANNEL_3"	"+" Ignition coil Cyl. 3*	
6	"CHANNEL_4"	"+" Ignition coil Cyl. 4*	
5	"CHANNEL_5"	"+" Ignition coil Cyl. 5*	
4	"CHANNEL_6"	"+" Ignition coil Cyl. 6*	
8	"CHANNEL_7"	"+" Ignition coil Cyl. 7*	
7	"CHANNEL_8"	"+" Ignition coil Cyl. 8*	
13	"CHANNEL_9"	"+" Ignition coil Cyl. 9*	
12	"CHANNEL_10"	"+" Ignition coil Cyl. 10*	
11	"CHANNEL_11"	"+" Ignition coil Cyl. 11*	
10	"CHANNEL_12"	"+" Ignition coil Cyl. 12*	
15	"CHANNEL_13"	"+" Ignition coil Cyl. 13*	
14	"CHANNEL_14"	"+" Ignition coil Cyl. 14*	
16	"CHANNEL_15"	"+" Ignition coil Cyl. 15*	
17	"CHANNEL_16"	"+" Ignition coil Cyl. 16*	
25	"JL"	"–" Ignition coils rail Bank A / Motor ground	
24	"JL"		
23	"JL"		
22	"JR"	"–" Ignition coils rail Bank B / Motor ground	
21	"JR"		
9	"JR"		
20	"J"	Motor ground	Hardwired ignition stop
19	"G"	Shutdown-wire	
18		Not used	

* Ignition order configurable by software

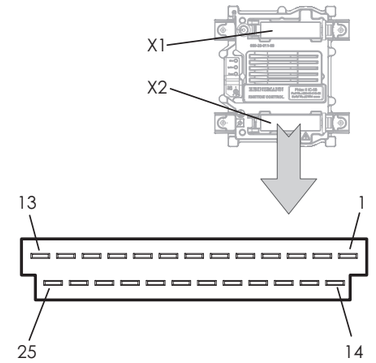
PHLOX II - IC-08/12/16 – Pin assignment Connector X1

Pin No.	*Signal Name*	*Application*	*Function*
2	"+BAT"	"+" Power supply	
15	"+BAT"		
1	"-BAT"	"–" Power supply	
14	"-BAT"		
16	"DIO1"	Digital / PWM input 1	DIO1
3	"DIO2"	Digital / PWM input 2	DIO2
4	"AI_POW(5VR/24V)"	Sensor supply	AI (C/V): Differential analogue input, configurable
17	"AI_SIG(C/V)"	Sensor signal (configurable 0 ... 25 mA/ 0 ... 5 V)	
18	"AI_SIG_0V"	Signal ground (SIG_0V)	
5	"AI_POW_0V"	Sensor supply ground (POW_0V)	
6	"AI_SHILD"	Cable shield	
21	"CAN-H"	"CAN-High"	CAN-Interface ISO/DIS 11898 (CAN2.0B)
20	"CAN-L"	"CAN-Low"	
7	"CAN-GND"	CAN ground shield connection	
9	"CAN2-H / Modbus-A"	"CAN2-High / Modbus-A"	CAN2 / Modbus Interface (option)
8	"CAN2-L / Modbus-B"	"CAN2-Low / Modbus-B"	
19	"CAN2 / Modbus-GND"	CAN2 / Modbus ground and shield connection	
11	"SPEED_5/12V"	Hall Speed pick-up power supply	Speed Pick-up, magnetic or Hall
23	"SPEED_SIG"	Speed pick-up input signal	
22	"SPEED_0V"	Speed pick-up ground	
10	"SPEED_SHIELD"	Speed pick-up cable shield	
13	"INDEX_5/12V"	Hall index pick-up power supply	Index Pick-up, magnetic or Hall
25	"INDEX_SIG"	Index pick-up input signal	
24	"INDEX_0V"	Index pick-up ground	
12	"INDEX_SHIELD"	Index pick-up cable shield	

PHLOX II SOFTWARE

easyPHLOX

Communication software for basic settings and monitoring of the ignition system PHLOX II. For use without additional software dongle on all PHLOX II Ignition Control Units programmed with the basic software without CAN option.



PHLOX II
Ignition coils

An optimum accessory for HEINZMANN Ignition Control System PHLOX II 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.

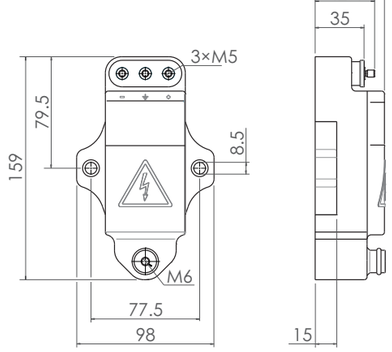
Features

- Enhanced ignition performance
- Up to 50 kV continuous operation
- Meets directive EN 55012

Part Numbers

PHLOX II Ignition Coils	*Part Number*
Ignition coil grey with ignition coil cap	**Z00-17-006-01**
Ignition coil grey	**Z00-17-006-00**
Ignition coil Cap 90°	**Z00-20-001-00**
Ignition coil, shielded integral	**Z00-17-002-00**
Ignition coil, shielded integral	**Z00-17-003-00**

Dimensions Z00-17-006-00



PHLOX II
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.

Part Numbers

Engine type	*Part Number*
MAN E0834 / LMB G924	**Z00-21-061-00**
MAN E0836 / LMB G926	**Z00-21-060-00**
MAN E2876	**Z00-21-055-00**
MAN E2676	**Z00-21-054-00**
MAN E2848, left bank	**Z00-21-056-00**
MAN E2848, right bank	**Z00-21-057-00**
MAN E2842, left bank	**Z00-21-058-00**
MAN E2842, right bank	**Z00-21-059-00**
MAN E 3262, left bank	**Z00-21-050-00**
MAN E 3262, right bank	**Z00-21-051-00**
MAN E 3268, left bank	**Z00-21-052-00**
MAN E 3268, right bank	**Z00-21-053-00**
Liebherr G 934 / G944	**Z00-21-063-00**
Liebherr G 936 / G946	**Z00-21-064-00**
Liebherr G 9508 / G9408, left bank	**Z00-21-065-00**
Liebherr G 9508 / G9408, right bank	**Z00-21-066-00**
Liebherr G 9512, left bank	**Z00-21-067-00**
Liebherr G 9512, right bank	**Z00-21-068-00**
Perkins 4006 TRS	**Z00-21-069-00**
Perkins 4008 TRS	**Z00-21-070-00**
Doosan GE08 TI	**Z00-21-071-00**
Doosan GV158, left bank	**Z00-21-072-00**
Doosan GV158, right bank	**Z00-21-073-00**
Doosan GV222, left bank	**Z00-21-074-00**
Doosan GV222, right bank	**Z00-21-075-00**

Further on request.

PHLOX II
Ignition leads

Ignition leads connector straight

Ignition leads with 90° angle

High-quality Teflon made spark plug boots are high-temperature and high-voltage resistant and ensure best insulation against spark flashover. They are particularly suitable for lean-burn applications.

PHLOX II
Cable harness

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.

Part Numbers

PHLOX II Ignition Leads w/ 90° SAE connector		*Part Number*
Ignition lead	for MAN E0834 / E0836	**Z00-19-035-00**
Ignition lead	for MAN E2876 / E2848 / E2842	**Z00-19-037-00**
Ignition lead	for MAN E3262 / E3268	**Z00-19-042-00**
Ignition lead	for MAN E2676	**Z00-19-044-00**
Ignition lead	for Liebherr G924	**Z00-19-049-00**

PHLOX II Ignition Leads w/ ring connector M6		*Part Number*
Ignition lead	for MAN E0834 / E0836	**Z00-19-036-00**
Ignition lead	for MAN E2876 / E2848 / E2842	**Z00-19-038-00**
Ignition lead	for MAN E3262 / E3268	**Z00-19-043-00**
Ignition lead	for MAN E2676	**Z00-19-045-00**
Ignition lead	for Doosan V12	**Z00-19-040-00**
Ignition lead	for Liebherr G924	**Z00-19-050-00**
Ignition lead	for Liebherr G934 / G944 / G936 / G946 / G9508 / G9512	**Z00-19-021-01**

Further on request.

Part Numbers

Input	*Part Number*
Cable harness for M12 IA sensor without CAN 1 *(Standard for MAN and other engines)*	**680-81-002-09**
Cable harness for M12 IA sensor with CAN 1 *(Standard for MAN and other engines)*	**680-81-002-10**
Cable harness for M12+M16 IA sensor with CAN 1+2	**680-81-002-11**
Cable harness for 2x HIA sensors with CAN 1+2	**680-81-002-12**
Cable harness HIA for Liebherr HIA sensor without CAN 1 *(Standard for Liebherr engines)*	**680-81-002-17**
Cable harness HIA for Liebherr HIA sensor with CAN 1 *(Standard for Liebherr engines with CAN)*	**680-81-002-18**
Input connector with PINs	**680-80-003-01**

Output	Cylinder	Length	*Part Number*
Cable harness	6	1.2 m	**680-81-001-05**
Cable harness	8	1.2 m	**680-81-001-00**
Cable harness	12	1.2 m	**680-81-001-01**
Cable harness	16	2.5 m	**680-81-001-02**
Cable harness	12	2.5 m	**680-81-001-03**
Cable harness	8	4 m	**680-81-001-04**
Output connector with PINs			**680-80-003-00**

PHLOX II
Trigger discs

Trigger discs are available in different designs for any application.

PHLOX II
Pick-up sensors

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

Inductive pick-ups

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

Hall effect pick-ups

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

Part Numbers

PHLOX II Trigger Discs	*Part Number*
Trigger disc 12+1	**Z00-22-000-00**
Trigger disc 8+1	**Z00-22-001-00**
Trigger disc 6+1	**Z00-22-002-00**
Trigger disc 4+1	**Z00-22-003-00**

Inductive pick-up

M12x1x76

For use as camshaft position sensor at trigger disc or with 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

M12x1x76

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

M18x1

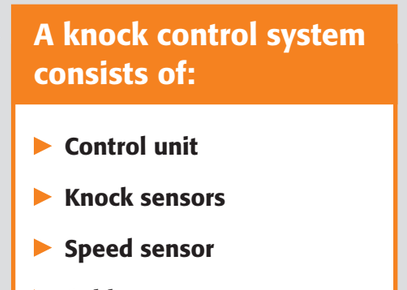
For use as crankshaft or camshaft position sensor (50 or more).

Part Numbers

PHLOX II Pick-up Sensor	*Part Number*
IA-M12-100/160, 76 mm, M12x1,0	**600-00-111-00**
HIA-M12-76, 76 mm, M12x1,0	**600-00-140-00**
IA 02-76 , 76 mm, M16x1,5	**600-00-006-01**
IA 12-76 , 76 mm, 5/8" - 18 UNF	**600-00-006-02**
HIA 32-76 , 76 mm, M18 x 1	**600-00-060-02**

ARIADNE

Knock control unit



The knock control ARIADNE is able to accurately detect knock in each cylinder individually (up to 20), and maintain optimal operation under all conditions in order to protect the engine from damage.

Used as part of a gas engine management system, ARIADNE offers advantages in terms of engine protection, performance and cost.

A knock control system consists of:

- **Control unit**
- **Knock sensors**
- **Speed sensor**
- **Cables**

Features

- Engine protection against knocking combustion damages
- Engines can safely be run close to the knock limit, leading to high efficiency and low emissions
- Applicable for variable gas qualities
- Each cylinder is monitored on a cycle-by-cycle basis. This makes it possible to fine-tune individual cylinders.
- Monitoring of several cylinders using one single sensor
- Compatible with other HEINZMANN systems and the advanced user interface DcDesk
- Status report via intgrated diagnostic display
- A wide range of I/Os options makes it suitable for all types of application. Stand-alone as well as highly integrated part of engine management system.

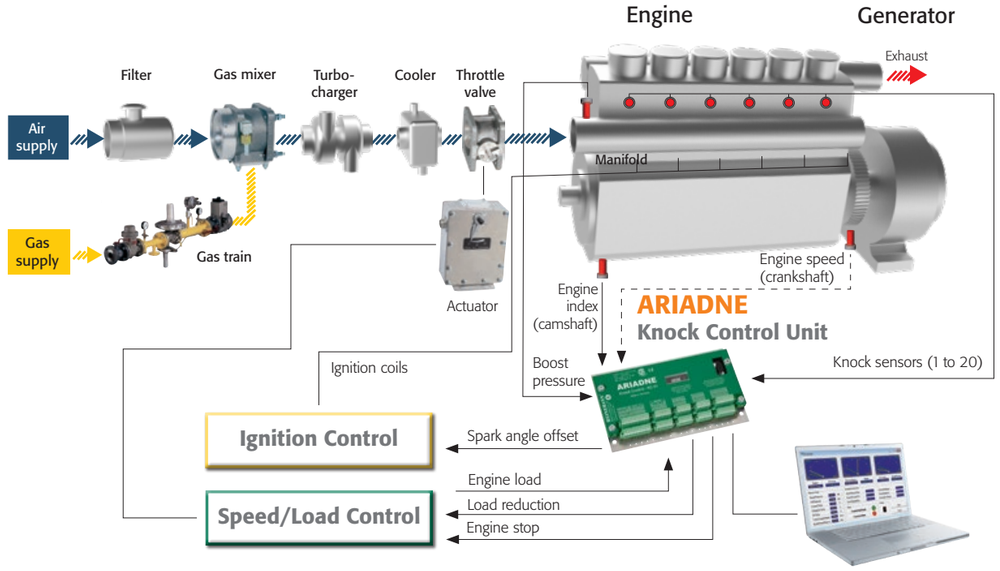
Inputs and Outputs

The ARIADNE IP00 version provides all inputs and outputs via terminal strips. All inputs and outputs feature reverse polarity protection and short circuit protection for positive and negative battery voltages.

Inputs	*Outputs*
1 speed sensor, Hall sensor	1 analogue, 0... 5 V, 4... 20 mA
1 phase sensor, Hall sensor	4 digital, low side
1 analogue, 0 ... 5 V, 4 ... 20 mA	
20 knock sensor	

Communication

- 2x CAN bus
- 1x Modbus
- 1x serial interface



Fully Integrated Control Unit

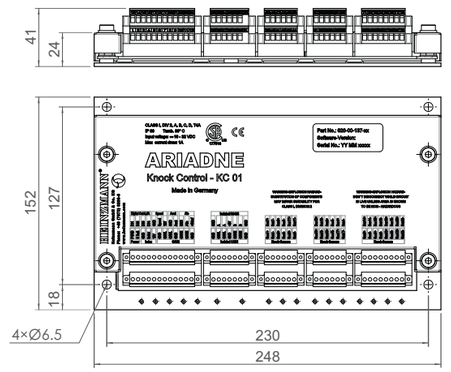
ARIADNE can also be configured as part of a highly integrated gas engine management system. In this type of application ARIADNE transmits and receives all necessary information using the CAN bus (cylinder knock levels and load measurements).

The knock levels can be used by other units, in combination with other information such as cylinder exhaust gas temperatures, to provide functionality such as control of ignition angle and gas injection time for individual cylinders (to have optimal cylinder balancing). The knock levels can also be used as inputs to derating algorithms for use when over temperature or combustion knock are detected.

Technical Data

Ambient temperature	-40 ... +80 °C
Degree of protection	IP00 or IP66
Weight	approx. 1 kg
Power supply	
Supply voltage	18 ... 32 VDC
Nominal voltage	24 VDC
Current consumption	max. 1 A
External fuse protection	2 A time lag fuse or circuit-breaker 2 A C-type

Dimensions



Part Numbers

Control Unit	*Additional Information*	*Part Number*
Knock control unit KC 01-IP 00	Up to 6 knock sensors	**620-00-137-06**
Knock control unit KC 01-IP 00	Up to 12 knock sensors	**620-00-137-12**
Knock control unit KC 01-IP 00	Up to 16 knock sensors	**620-00-137-16**
Knock control unit KC 01-IP 00	Up to 20 knock sensors	**620-00-137-20**
Accessories		*Part Number*
Knock sensor KS 1-01		**010-80-022-00**
Connecting Cable		*Part Number*
Knock sensor cable	Length to be defined (max. 10m)	**600-81-082-00**
Pick-up camshaft/crankshaft		*Part Number*
HIA 32-76	76 mm; M 18 x 1	**600-00-060-02**
Cable for pick-up HIA 32		**620-81-176-00**

Knock Control

Software

DcDesk

Configuration software

The HEINZMANN PC program DcDesk can be used with any of the digital HEINZMANN systems, such as speed governors, engine monitoring units, electronic fuel injection, generator sets and electric drives controls, to adjust and view operational data. It offers a number of numerical and graphical features required for testing, configuration, commissioning and servicing.

HEINZMANN control devices work independently of DcDesk, once the parameters are configured for the respective application and have been stored in the unit.

DcDesk will function with all control unit types and software versions. Customer software versions may cause minor changes or add some features.

There are additional special graphic windows for:

- EFI control units
- THESEUS Digital Generator Management

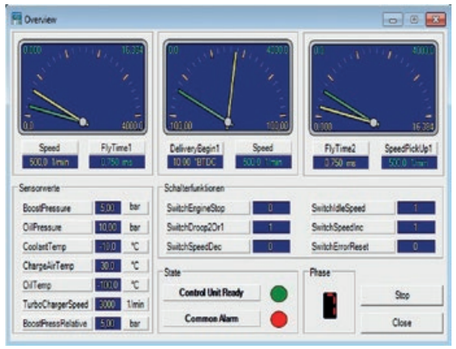
Features

- Operation is possible in online mode with a control unit connected, and in offline mode without connection
- For connection of the PC to the control unit the USB port is used This requires an individual HEINZMANN communication cable
- The CAN bus version of DcDesk requires a CAN adapter for PC and a CAN communication cable
- Functionality and mode of operation are identical for DcDesk/Serial and DcDesk/CAN
- DcDesk/CAN allows access to every HEINZMANN device in the network (with HEINZMANN CAN protocol implemented). This is especially useful for installations with multiple generator sets, sharing load via CAN.

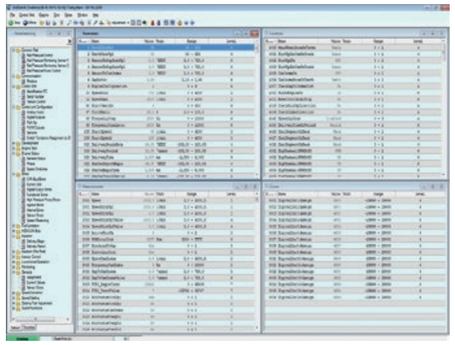
DcDesk Levels

Level	*User*	*Access*
1	End user	Indication of operating data and error conditions. No modification of any parameters allowed.
2	Plant manufacturer	Speed, dynamics and performance can be adjusted within the permissible ranges.
3	Customer´s service	Except for certain engine parameters the majority of parameters can be modified.
4	Engine manufacturer	All engine control parameters are accessible.
5	Manufacturer of particular engines	Customer specific software modifications and expansions can be parameterised.
6	Control manufacturer	Modifying the full functionality and configuration of inputs/outputs.

Applications

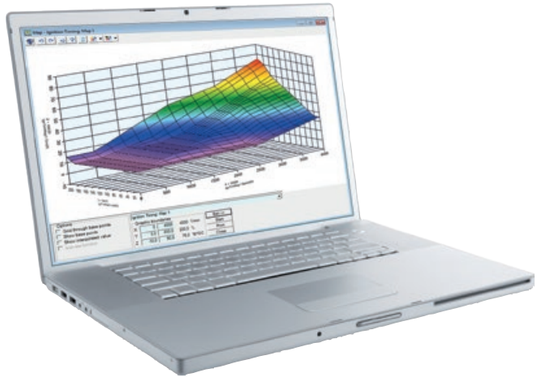


Overview of the principal measured values and switch positions



Parameterisation of digital HEINZMANN systems.

Visualisation of injection timing and injection duration for magnetic valve technology



DcDesk Dongle

A hardware dongle controls access to parameter settings, controller types and software versions.

Every DcDesk dongle has an identification number. The control unit keeps a record, which program or dongle was used for saving the actual data (i.e. which group of persons is responsible for the actual adjustment).

USB dongle

Dongle Content

Identify	Identifies the dongle and the user
Access Level	Permits parameter and function access
Software versions	Basic software 00.xx.xx customer software yy.xx.xx
Control units	Selection of digital control units
PC software access	DcDesk, Packager, ...
Expiration date	If ordered (e.g.: six months)

Notes

HEINZMANN Group

Quality & Precision since 1897

The Group started in 1897 with Heinzmann GmbH & Co. KG, and now includes HEINZMANN UK, HEINZMANN China, HEINZMANN Korea, HEINZMANN India, HEINZMANN Australia, HEINZMANN AUTOMATION, REGULATEURS EUROPA, and CPK Automotive as member companies.

The HEINZMANN Group operates numerous global subsidiaries, including eight production sites and an international distributor network.

Our product portfolio comprises engine management system solutions, as well as exhaust gas aftertreatment solutions, for industrial combustion engines and turbines. It also encompasses automation systems, primarily for the shipping industry.

HEINZMANN Subsidiaries

Australia
Heinzmann Australia Pty Ltd
Geebung QLD 4034
Phone: +61 7 3868 3333
info.au@heinzmann.com
www.heinzmann.com.au

China
Heinzmann Power Control (Jiaxing) Co. Ltd.
Jiashan
Phone: +86 573 8466 1358
hzm-china@heinzmann.com

Germany
CPK Automotive GmbH & Co. KG
Münster
Phone: +49 251 23948 50
info@cpk-automotive.com
www.cpk-automotive.com

Great Britain
Heinzmann UK Ltd.
Middlesbrough
Phone: +44 1 642 467 484
info@heinzmannuk.com
www.heinzmann-turbine-controls.com

Regulateurs Europa Ltd.
Colchester, Essex
Phone: +44 1206 799 556
sales@regulateurseuropa.com
www.regulateurseuropa.com

India
Heinzmann India Private Ltd.
Pune
Phone: +91 98 22069508
s.jog@heinzmann.in

Korea
Heinzmann / Regulateurs Europa Korea Pte. Ltd.
Ulsan
Phone: +82 52 227 7673
heinzmann@korea.com

The Netherlands
Regulateurs Europa B.V.
Roden
Phone: +31 5050 19888
sales@regulateurs-europa.com
www.regulateurseuropa.com

Norway
Heinzmann Automation AS
Narvik
Phone: +47 769 610 80
post@heinzmann.no
www.heinzmann.no

South Africa
Heinzmann
Stellenbosch
Phone: +27 82 6898100
diemont@worldonline.co.za

Ukraine
Heinzmann / Regulateurs Europa
Kiev
Phone: +38 44 331 96 75
hzm-kiev@hzm.com.ua

USA
Heinzmann / Regulateurs Europa America Inc.
Fort Collins, CO
Phone: +1 970 484 1863
info.usa@heinzmann.com

Head Office
Germany
Heinzmann GmbH & Co. KG
Schönau
Phone: +49 7673 8208 0
info@heinzmann.de
www.heinzmann.com

HEINZMANN®

Further representations: www.heinzmann.com/representations

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