ELEKTRA
Electronic Fuel Metering and AFR Control

- Integrated electronic
- Fast response
- Outstanding accuracy
- Easy to integrate
- Proven reliability
ELEKTRA

Flexible gas metering and lambda control

As a main component of the full authority engine management system KRONOS 30 the Gas Metering Control Unit ELEKTRA (GMCU-XX) can be used as a fully integrated stand-alone system for flow control and in an extended version as a lambda control device for stationary gas engines.

The gas metering system contains a very flexible control unit based on the well-proven digital controller DC 6. Freely configurable I/Os allow the user to customise the unit to almost any application. CAN bus permits the communication with other HEINZMANN devices or with external systems.

The units come along in different designs and sizes.

ELEKTRA Benefits

- Proven reliability
- High accuracy flow control and lambda control (GMCU-XX-FC / GMCU-XX-LC)
- Modular concept extendable from flow control to lambda control
- Lambda control with open and closed loop mode based on power feedback
- Integrated misfire detection and overspeed/overload protection (lambda control version)
- CAN bus communication
- Flexible I/O interfaces for customised solutions
- Fast response on fuel demands and stable operation
- Full compensation for variations in input pressure and ambient temperature
- Wide input pressure range. No zero pressure regulator required
- V-engines: bank balancing via mixture flow is possible using two ELEKTRA
- Configuration and system monitoring with communication software DcDesk or hand programmer
Highly integrated design
The highly integrated design of the ELEKTRA system requires only little wiring, allows easy installation and avoids configuration errors. Controller and sensor box are fixed on the device to provide the best mechanical and electrical conditions.

Any gas quality
For a given gas quality the actual flow follows the flow demand very quickly and with high accuracy. For changing gas qualities the flow can be corrected by an additional density information.

Fast response
For lambda control a calibrated Venturi gas mixer can be used as an air flow sensor. The short distance between air flow sensor and gas flow control valve ensures a very good transient behaviour resulting in stable lambda values even with large load changes.

Wide pressure range
The algorithms used, the high accuracy throttle valve-actuator device and the precise calibration of the gas metering unit provide an 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. Ambient changes in pressure and temperature are fully compensated.

Internal/external lambda setpoint
The lambda control version includes an integrated speed and load dependant lambda map. Lambda control can be realised without any external equipment.

User-friendly communication
System set up and monitoring is made with the user-friendly DcDesk tool. Powerful functions allow an easy understanding and straight forward commissioning.

ELEKTRA the ideal solution
ELEKTRA is the ideal solution for high accuracy emission control on stationary engines combining the best engineering technology for flexible gas metering and lambda control.

Application range
The Gas Metering Control Unit ELEKTRA (GMCU-XX) is applicable at stationary gas engines. It is available as a pure fuel gas dosing system by performing flow control (FC). Furthermore, it can comprise a lambda control system (LC) with external lambda setpoint or a complete stand-alone control system with integrated speed and load dependant lambda map. The GMCU system contains a very flexible digital control unit. Freely configurable I/O allow its customising to almost any application.
## Specification of ELEKTRA

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Flow accuracy</td>
<td>± 5% for the entire flow range</td>
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<td>I/O interfaces</td>
<td>CAN bus</td>
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<tr>
<td></td>
<td>Serial</td>
</tr>
<tr>
<td></td>
<td>1 speed pickup</td>
</tr>
<tr>
<td></td>
<td>1 temp. input</td>
</tr>
<tr>
<td></td>
<td>3 digital in</td>
</tr>
<tr>
<td></td>
<td>1 digital out</td>
</tr>
<tr>
<td></td>
<td>2 multifunction ports:</td>
</tr>
<tr>
<td></td>
<td>0 ... 5 V;</td>
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<tr>
<td></td>
<td>4 ... 20 mA;</td>
</tr>
<tr>
<td></td>
<td>PWM</td>
</tr>
<tr>
<td>Air humidity</td>
<td>Up to 98 % at 55 °C</td>
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<tr>
<td>Protection grade</td>
<td>IP55</td>
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<tr>
<td>EMC</td>
<td>2014/30/EU</td>
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<tr>
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<td>2004/104/EU</td>
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<tr>
<td>Weight</td>
<td>8.5 ... 42 kg</td>
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For further information please refer to the respective data sheets.

## Dimensions

![Dimensions Diagram](image)

**GMCU 30/42**

**GMCU 50**

**GMCU 85**

**GMCU 110**

**GMCU 160**
**Power range**

<table>
<thead>
<tr>
<th>Power range</th>
<th>GMCU 160</th>
<th>GMCU 110</th>
<th>GMCU 85</th>
<th>GMCU 50</th>
<th>GMCU 42</th>
<th>GMCU 30</th>
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<tbody>
<tr>
<td>Biogas (LHV: 18 MJ/scm)</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Natural gas (LHV: 36 MJ/scm)</td>
<td></td>
<td></td>
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</table>

**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. Tried and tested 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.
The Group started in 1897 with Heinzmann GmbH & Co. KG, and now includes HEINZMANN UK, HEINZMANN Shanghai, HEINZMANN Korea, HEINZMANN India, HEINZMANN Australia, HEINZMANN DATA PROCESS, 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 after-treatment solutions, for industrial combustion engines and turbines. It also encompasses automation systems, primarily for the shipping industry.

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