HEINZMANN®
Digital Electronic Speed Governors

Basic Systems

HELENOS IV

DG EDC.2-01
Helenos IV
for engines from approx. 200kW up to approx. 1500kW

Basic System  DG EDC 2 - 01

Control Unit  DC EDC 2 - 01
Actuator       Bosch EDC
Setpoint Pot.  SW ...
Pickup        IA ...

D : Digital
DG : Digital Governor (Basic System)
DC : Digital Control Unit
StG : Actuator (Stellgerät)
SW : Setpoint Potentiometer (Sollwertpot.)
IA : Pickup (Impulsaufnehmer)
WARNING

Read this entire manual and all other publications appertaining to the work to be performed before installing, operating or servicing this equipment. Practice all plant and safety instructions and precautions. Failure to follow instructions correctly may result in personal injury and/or damage to property.

WARNING

The engine, turbine or any other type of power plant must be equipped with separate overspeed-, overtemperature- resp. overpressure shutdown devices operating independently of the electronic speed governor. Such devices are absolutely indispensable in order to protect operating personnel against injuries and the engine against damages that may occur in case of a runaway or of a failure of the electronic speed control.

We retain the right to introduce technical changes!
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1. General Remarks

Robert Bosch Company delivers size „P“ in-line injection pumps where the all electric actuator is directly mounted on the pump.

According to an agreement between HEINZMANN and Bosch the delivery of the controller as well as the customer service, e.g. training, application service, technical service, will in certain cases be done by HEINZMANN.

This agreement covers the following business parts:

- Stationary applications, such as gensets, total energy plants
- Heavy duty machines, such as crawlers
- Agriculture machines, such as tractors, harvestors
- Locomotive applications
- Marine applications
- Special vehicles, such as mobile cranes

This agreement does not cover any truck applications.

In order to cover the various functions HEINZMANN offers 3 different lines of governor systems:

- PRIAMOS IV - DG EDC 1 - 03
  Systems with complex functions

- HELENOS IV - DG EC 2 - 01
  Systems with medium number of functions

- ALEXANDROS IV - DG EDC 3 - 00
  Systems with low number of functions

This brochure describes the Helenos IV system

System PRIAMOS IV please refer to brochure DG 96 004-e
System ALEXANDROS IV please refer to brochure DG 96 ...-e
2. Functions

The HEINZMANN digital governor with the control unit DC EDC 2 - 01 constitutes a speed governor offering a medium range of functions.

In addition to speed regulation, the following functions are available:

a) Starting Fuel Flow Adjustment

When setting starting fuel flow, starting minimum fuel flow or starting maximum fuel flow are available as alternatives. Furthermore, variable starting fuel flow can be provided, by which starting fuel flow is increased automatically during start-up.

b) Speed Ramp

For applications in which speed is not supposed to respond as fast as possible to changes of setpoint values (e.g., locomotive operation), a speed ramp is available which according to requirements may be programmed separately for increasing or decreasing speed.

c) Fixed Fuel Limitation

For the stop-position and the maximum fuelling position "electric catches" can be provided. This will prevent the governor's thrust from affecting the terminal stops of the injection pump, etc.

d) Speed Dependent Fuel Limitation

For variable speed governors, there is provided an option of programming speed dependent limit curves. Thus, for any speed, torque can be reduced as is permissible for the engine or desired by the user.

e) Boost Pressure Dependent Fuel Limitation

For turbocharged engines, fuelling can be reduced to achieve smokeless operation in case of missing boost pressure (e.g., starting or load change). The respective limit curves can be programmed accordingly.
1. General Remarks

f) **Idling and Maximum Speed Control**

For vehicle application, the governor can be made to operate as an idling and maximum speed controller. In addition, one fixed intermediate speed is available, e.g., for an application combining driving and stationary mode (e.g., generator at power take-off). If necessary, a change-over switching of the droop can be provided, i.e., during stationary operation also droop zero is possible.

g) **Temperature Dependent Idling Speed**

For low temperatures, the engine can be run at some higher idling speed. With the engine warming up, idling speed is reduced to its normal value.

h) **Velocity Limitation**

For vehicles velocity limitations may be provided.

i) **Velocity Regulation**

For vehicles velocity regulation can be provided, by which the vehicle is made to maintain some preset velocity.

j) **Oil Pressure Monitoring**

For the purpose of oil pressure monitoring, speed/pressure dependent limit curves can be provided. If oil pressure is too low, an alarm is given; if oil pressure continues to drop, the engine is shut down.

k) **Load Regulation System**

For diesel-electric locomotive operation, a load regulation system can be provided, by which generator output is regulated in dependence on speed resp. load.

l) **Anti Stick Slip Device**

For locomotive operation, an anti stick slip device can be provided.
2. Functions

m) Accessories

Accessories such as synchronizing units, load measuring units, disturbance variable compensation units can be connected via a CAN-Bus within the control unit. The CAN-Bus may also be used to implement load distribution by equal fuelling (e.g., two engines on one gear).

n) Output Signals

For speed and actuator travel, proportional signals are available in the range of 4–20 mA. They can be used for purposes of display or for further processing (e.g., switches). Furthermore, if errors occur at the sensors or within the control system, an alarm is given.

o) Operating Data Storage

On request, operating data storage can be provided, by which in cases of disturbances and failures the causes may be traced back even at some later time.

When selecting and determining the functions, it has to be ascertained whether the hardware equipment suffices with respect to the total range of functions.
3. Mode of Operation

The actual speed of the engine is read by a pulse pickup from a cog wheel, preferably from the starter gear. The microprocessor (CPU) of the control unit compares the actual speed with the preset value. If differences are stated, the new actuator signal is calculated by the CPU and transmitted to the actuator via the output stage. Feedback from the actuator indicates the current position of the output shaft thus allowing optimum signal adjustment by the CPU.

As the governor comprises an I-fraction and as for any load level the speed is permanently compared with a fixed preset value, speed can be kept constant also in steady state, i.e., droop is zero.

For applications requiring droop, the speed related to the respective fuelling is calculated by the CPU and entered as correction of the setpoint value.

During standstill, a particular circuit ensures that only the current of the control unit is received by the governor, but no current flows to the actuator motor.
4. Block Diagram of the Digital Governor DG EDC 2 - 01

figure 1: blockdiagram DG EDC 2 - 01
5. Pickup IA ...

The pick-up integrated inside the Bosch actuator is normally not used because its resolution is not high enough (half engine speed, low number of teeth)

5.1. Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>5.02 - 76 to 5.12 - 102</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperatur Range</td>
<td>-55 °C to +120 °C</td>
</tr>
<tr>
<td>Output Voltage</td>
<td>0,5 to 10 Volt ~ (AC)</td>
</tr>
<tr>
<td>Resistance</td>
<td>approx. 52 Ohm</td>
</tr>
<tr>
<td>Distance from Pickup Wheel</td>
<td>0,5 to 0,8 mm</td>
</tr>
<tr>
<td>Protection grade</td>
<td>IP 55</td>
</tr>
</tbody>
</table>

5.2. Installation

The installation of the pickup has to be arranged in such a way as to obtain a frequency as high as possible. Normally, the HEINZMANN governors are designed for a maximum frequency of 12000 Hz. Frequency (by Hz) is calculated according to the formula

\[
f (\text{Hz}) = \frac{n (1/ \text{ min}) \times z}{60}
\]

\[
z = \text{number of teeth on the pickup wheel}
\]

Example:

\[
\begin{align*}
  n & = 1.500 \\
  z & = 160 \\
  f & = \frac{1500 \times 160}{60} = 4.000 \text{ Hz}
\end{align*}
\]
NB: It should be taken care that the speed can be measured by the pulse pickup without any bias. For best results therefore, the speed pickup should take the engine speed from the crankshaft. A suitable position for this is, e.g., the starter gear (but not the injection pump wheel).

The pickup gear must consist of magnetic material (e.g., steel, cast iron).

5.3. Tooth profile

Any tooth profile is admissible. The top width of the tooth should be 2.5 mm minimum, the gap and the depth of the gap at least 4 mm. For index plates the same dimensions are valid.

Due to tolerances, a radial arrangement of the magnetic pickup is preferable.
5.4. Clearance of Magnetic Pickup

The distance between the magnetic pulse pickup and the tooth top should range from 0.5 and 0.8 mm. (It is possible to screw in the magnetic pickup till it touches the tooth and then unscrew it for about half a turn.)

![Diagram showing clearance of pickup]

**Figure 2: Clearance of pickup**
5.5. Mounting Measurements

![Figure 3: Measurements of pickup]

<table>
<thead>
<tr>
<th>Measures</th>
<th>L (mm)</th>
<th>G</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01 - 38</td>
<td>38</td>
<td>M 16 x 1,5</td>
<td>appropriate plug</td>
</tr>
<tr>
<td>02 - 76</td>
<td>76</td>
<td>M 16 x 1,5</td>
<td>SV6-IA-2K</td>
</tr>
<tr>
<td>03 - 102</td>
<td>102</td>
<td>M 16 x 1,5</td>
<td></td>
</tr>
<tr>
<td>11 - 38</td>
<td>38</td>
<td>5/8&quot;-18UNF-2A</td>
<td></td>
</tr>
<tr>
<td>12 - 76</td>
<td>76</td>
<td>5/8&quot;-18UNF-2A</td>
<td></td>
</tr>
<tr>
<td>13 - 102</td>
<td>102</td>
<td>5/8&quot;-18UNF-2A</td>
<td></td>
</tr>
</tbody>
</table>

Ordering specification, e.g. IA 02-76

5.6. Redundant Speed Signal

If precautions are to be taken with regard to failures of the pulse pickup, a second pulse pickup can be connected to the control unit. In case that an electric generator with terminal W is available, this signal may be used for emergency operation as well as any other signal of a tachogenerator.

In case of a failure on pulse pickup 1, the governor automatically switches over to the redundant speed signal and gives an alarm.
6. Setpoint Potentiometers and Sensors

Dependent on particular applications, a series of setpoint potentiometers are available for the HEINZMANN Digital Controls.

### 6.1. Setpoint Potentiometer SW 01 - 1 - o (one turn)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement Angle</td>
<td>approx. 312°</td>
</tr>
<tr>
<td>Resistance</td>
<td>5 kOhm</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-55 °C to + 120 °C</td>
</tr>
<tr>
<td>Protection</td>
<td>IP 00</td>
</tr>
</tbody>
</table>

![Figure 4: Potentiometer SW 01 - 1](image1)

### 6.2. Setpoint Potentiometer SW 02 - 10 - o (10 turns)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement Angle</td>
<td>10 turns</td>
</tr>
<tr>
<td>Resistance</td>
<td>5 kOhm</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-55 °C to + 105 °C</td>
</tr>
<tr>
<td>Protection</td>
<td>IP 00</td>
</tr>
</tbody>
</table>

![Figure 5: Potentiometer SW 02 - 10](image2)
6. Setpoint Potentiometers and Sensors

On request, the potentiometers, as specified under 6.1 and 6.2, can be supplied with analogue adjustment knob with lock in place of the standard rotating knob. In this case, ordering specification is SW..-..-m.

Equally, instead of the knob a clamping fixture can be installed. Ordering specification is to changed to SW ..-..-k.

6.3. Setpoint Value Adjustment by Current Signal

For the speed setpoint value a current signal of 4–20 mA can be directly connected to the control unit. If the signal fails, the governor will set minimum speed according to the 4 mA value or a programmable substitute value.

6.4. Digital Presetting of Setpoint Values

A 4 bit binary coded digital input for 16 speed levels from \( n_{\text{min}} \) to \( n_{\text{max}} \) can be directly connected to the control unit.

6.5. Setpoint Value Adjustment by Pedal

This unit is basically an angular position transducer that translates a foot pedal into a proportional current or voltage for 0 - 45° rotation. The resulting output can be used for speed setting. For more information refer broschure E 83 005 - e.

6.6. Pressure Sensors

For pneumatic setpoint adjustment are pressure sensors available as follows:

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Sensor Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 10 bar</td>
<td>DSG 01</td>
</tr>
<tr>
<td>up to 5 bar</td>
<td>DSG 02</td>
</tr>
</tbody>
</table>

As boost pressure sensor for a range up to 2 bar the pressure sensor DSG 03 is available.
6.7. Temperature Sensors

As temperature sensors NTC - resistors or Ni 1000 - resistors are to be utilized.
7. Control Unit DC EDC 2 - 01

7.1. Specification

Operating Voltage 24 V DC (12 V DC)
Maximum Voltage 35 V DC
Minimum Voltage 18 V DC (9 V DC)
Maximum Ripple Voltage maximum 10 % with 100 Hz
Permissible Voltage Dip at
Maximum Voltage of Actuator maximum 10 % in control
device
Fuse Protection of Governor
   Electronic 3 A
   Power stage 16 A
Current Consumption approx. 200 mA + current of
   actuator
Storing Temperature - 55 °C to + 85 °C
Operating Ambient Temperature - 40 °C to + 70 °C
Humidity up to 100 %
Control Frequency 200 to 12,000 Hz
Steady State Variation ± 0.25 %
Speed Variation due to Temperature for
Frequency greater than 500 Hz
between -40 °C and + 70°C ± 1 %
Protection grade
DC EDC 2 - 01 - 00 IP 00
DC EDC 2 - 01 - 55 IP 55
Weight
DC EDC 2 - 01 - 00  approx. 1.2kg
DC EDC 2 - 01 - 55  approx. 3kg

Remark

The control unit is available with terminal strip (DC EDC 2 - 01 - 00) or with plug-in connectors (DC EDC 2 - 01 - 55) alternatively. At delivery of the control unit the exact governor type together with identification of housing, software version and serial number is printed on the type plate.

Example: DC EDC 2 - 01 - 55 - 12700
7.2. Measurements

Control Unit with plug-in connectors (DC EDC 2 - 01 - 55)

![figure 6: housing of DC EDC 2 - 01 - 55](image-url)
Control Unit with terminal strip (DC EDC 2 - 01 - 00)

figure 7: housing of DC EDC 2 - 01 - 00
8. Actuators

8.1. Design and Mode of Operation

The Bosch - EDC - actuator (RE...) is directly mounted on the in-line pump so that there is no linkage necessary.

The spring loaded control rack is moved by a magnet, where the spring power moves the control rack to stop position and the magnet power to max. fuel.

The position of the control rack is monitored by a no-touch feedback system and transferred to the control unit.
## 8.2. Specification

(For information only! Refer to appropriate Bosch- documents)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Bosch - EDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. actuator travel</td>
<td>21mm</td>
</tr>
<tr>
<td>Spring power of back spring in stop position</td>
<td>approx. 10 N</td>
</tr>
<tr>
<td>Spring power of back spring in full position</td>
<td>approx. 50 N</td>
</tr>
<tr>
<td>Max. magnetic power</td>
<td>approx. 75 N</td>
</tr>
<tr>
<td>Max. current consumption</td>
<td>approx. 11 A</td>
</tr>
<tr>
<td>Current consumption in operation</td>
<td>approx. 4-6 A</td>
</tr>
<tr>
<td>Coil resistance of governing magnet</td>
<td>$R_{20}$ approx. 0.6 Ohm</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-55°C to +90°C</td>
</tr>
<tr>
<td>Ambient temperature in operation</td>
<td>-40°C to +80°C</td>
</tr>
<tr>
<td>Ambient temperature with reduced governor functions</td>
<td>-40°C to 0°C</td>
</tr>
<tr>
<td>Protection grade</td>
<td>IP 55</td>
</tr>
</tbody>
</table>
9. Electric Connection

9.1. Connection of Shielding

To avoid electromagnetic influences it is necessary to connect cable shields at both ends. This includes shielding from control housing to sensors, from control housing to potentiometers, from control housing to actuator and from control housing to accessory units. If there is a potential difference between the control housing and any of these other components, to avoid currents via the shielding it is necessary to run a separate wire from the control housing to each of these components.

![Diagram of sensor connection with separate wire](image1)

At cable ends without plugs (e.g. terminal strip or pins) the shielding must be connected at the housing near the contacts.

![Diagram of shield connection without plug](image2)
In case of a plug connection the shielding is jammed in the strain relief of the plug.

figure 11: shield connection in the plug
9. Electric Connection

9.2. Example of Connection for Generator Set
(Parallel- and mains operation with digital accessories)

[Diagram showing connections and labels for various components such as Bosch EDC Actuator, Governor, Display, Motor Stop, etc.]

Cable Size

I
- up to 10 m
- over 10 - 20 m
- over 20 - 40 m

II
- up to 15 m
- over 15 - 30 m

Rest

2,5 mm²
4,0 mm²
6,0 mm²
2,5 mm²
4,0 mm²
0,75 mm²
9. Electric

Connection

figure 12: connections with plugs (IP 55) for genset with digital accessories
9. Electric Connection

HELENOS IV

HEINZMANN
Energy requires Control

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**Cable Size**

| I | up to 10 m | 2.5 mm² |
|   | over 10 - 20 m | 4.0 mm² |
|   | over 20 - 40 m | 6.0 mm² |
| II | up to 15 m | 2.5 mm² |
|    | over 15 - 30 m | 4.0 mm² |
| Rest | 0.75 mm² |
figure 13: connections with terminal strip (IP 00) for genset with digital accessories
9.3. Example of Connection for Generator Set
(Parallel- and mains operation with analogue accessories)
figure 14: connections with plugs (IP 55) for genset with analogue accessories
9. Electric Connection

Heinzmann Energy requires control

Actuator
Bosch EDC

Over speed protection
Magnetic Pickup 1 IA...
Magnetic Pickup 2 IA...
(or Terminal W)
Temperature Sensor
Cooling Water Sensor

16 A slow Governor on

12V

Display Overall Alarm Governor Overspeed

Display fuel

Display speed

Display speed

Manual Setpoint

Synchronizer

Cable Size

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>Rest</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 10 m</td>
<td>up to 15 m</td>
<td>over 10 - 20 m</td>
</tr>
<tr>
<td>2.5 mm²</td>
<td>2.5 mm²</td>
<td>4.0 mm²</td>
</tr>
<tr>
<td>over 20 - 40 m</td>
<td>over 15 - 30 m</td>
<td>6.0 mm²</td>
</tr>
<tr>
<td>4.0 mm²</td>
<td>4.0 mm²</td>
<td>0.75 mm²</td>
</tr>
</tbody>
</table>
Connection

figure 15: connections with terminal strip (IP 00) for genset with analogue accessories
9. Electric Connection

9.4. Example of Connection for Vehicle Operation

![Connection Diagram]

**figure 16**: connections with plugs (IP 55) for vehicle operation
9. Electric Connection

figure 17: connections with terminal strip (IP 00) for vehicle operation
9.5. Example of Connection for Locomotive Operation
(16 speed levels)
figure 18: connections with plugs (IP 55) for locomotive with speed steps
9. Electric

Connection

HELENOS IV

Cable Size

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>Rest</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 10 m</td>
<td>2.5 mm²</td>
<td>0.75 mm²</td>
</tr>
<tr>
<td>over 10 - 20 m</td>
<td>4.0 mm²</td>
<td></td>
</tr>
<tr>
<td>over 20 - 40 m</td>
<td>6.0 mm²</td>
<td></td>
</tr>
<tr>
<td>up to 15 m</td>
<td>2.5 mm²</td>
<td></td>
</tr>
<tr>
<td>over 15 - 30 m</td>
<td>4.0 mm²</td>
<td></td>
</tr>
</tbody>
</table>
9. Electric Connection

figure 19: connections with terminal strip (IP 00) for locomotive with speed steps
9.6. Example of Connection for Locomotive Operation
(Speed adjustment by current signal)
9. Electric Connection

![HEINZMANN®]

Energy requires Control

---

**figure 20:** connections with plugs (IP 55) for locomotive with current input
9. Electric Connection

Figure 21: Connections with terminal strip (IP 00) for locomotive with current input.
9. Electric Connection

9.7. Example of Connection for Marine Operation
(Twin operation: 2 engines with 1 propeller)
9. Electric Connection

figure 22: connections with plugs (IP 55) for marine twin operation
figure 23: connections with terminal strip (IP 00) for marine twin operation
9.8. Example of Connection for Marine Operation
(Single engines)
figure 24: connections with plugs (IP 55) for marine single operation
figure 25: connections with terminal strip (IP 00) for marine single operation
9.9. I/O- Configuration according to Customers Demand

For different modes of usage HEINZMANN suggests the input/output-configuration as shown in the following table:
10. Programming Possibilities

Programming the Heinzmann Digital Governor can be performed according to the possibilities described below:

10.1. Programming by the Manufacturer

During final inspection by the manufacturer, the functionality of the governor is checked by means of a test program. If the operational data for the governor are available, the test program is executed using those data. On the engine, only the dynamic values and, if necessary, the actuator position limits and sensors have to be adjusted.

10.2. Programming with the Hand-Held Programmer 2

The entire programming can be performed using the Hand-Held Programmer 2. This handy device may be conveniently used for development and for serial adjustment as well as for service purposes.

10.3. Programming by PC

Programming can also be performed using the PC. In comparison with the hand-held programmer, this method offers advantages with respect to the possibilities of having characteristic curves readily displayed on the screen and easily varied; the same holds for the time diagrams when putting the governor into operation on the engine. Furthermore, the PC offers a better overview, as the PC program presents a menu structure and is able to continuously display several parameters at a time.

The PC program also permits to save and load governor data to and from diskettes.
10. Programming Possibilities

10.4. Programming with User Masks

Principally, programming may be performed with the help of user masks that have been provided by Heinzmann or may conveniently be created by the user himself. Within a user mask, only those parameters are accessible that are actually needed.

10.5. Transferring Data Sets

Once programming with respect to a specific engine type and its application has been completed, the data set can be stored (in the hand-held programmer or on diskette). For future cases of similar applications, the data set may be downloaded into the new governors.

10.6. Assembly Line End Programming

This method of programming is applied by the engine manufacturer during the final bench tests of the engine. On this occasion, the governor is programmed with regard to operation requirements and to ordering specifications.

For more details consult the special brochure DG 94 104 - e.
11. Starting the Engine - Brief Instructions

11.1 Adjust clearance of magnetic pulse pickup.

11.2 Check program with respect to relevant parameters: number of teeth, speed, etc.

11.3 Set point potentiometer in mid-position:
   - P - Gain to 50
   - I - Stability to 0
   - D- Derivative to 0

   If the dynamic values have already been determined for an installation, they can be programmed directly at this point.

   Attention: Overspeed protection must be guaranteed!

11.4 Start engine and run it up to nominal speed using the set point potentiometer.

11.5 Increase gain (P-fraction) up to instability and reduce until stability is attained.
   Increase stability (I-fraction) up to instability and reduce until stability is attained.
   Increase derivative (D-fraction) up to instability and reduce until stability is attained.

   With these values set, engine speed is to be disturbed briefly (e.g., by shortly pressing the stop switch), and the transient oscillations are to be observed.

11.6 Check over the entire speed range.

   If for maximum and minimum speed other values than the programmed ones should result, this will be due to tolerances of the set point potentiometer. If the speed derivation is not acceptable, it will be necessary to measure the setpoint source.
11.7 Gain-correction (P-correction) for gas engines resp. for variable speed governors with larger speed ranges; adjust map if necessary.

11.8 Checking the remaining program items, e.g., starting fuel injection, ramp time, etc.

The adjustment procedures as required for items 11.2 bis 11.8 and any further options of adjustment are in detail described in brochure DG 95110 - e.
12. Plug Connections

Control Unit
DC EDC 2 - 01

SV 103-DC-19 SG (010-02-183-00)
SV 103-DC-19 PG (010-02-222-00)
SV 103-DC-24 SG (010-02-185-00)

SV 103-DC-24 PK (010-02-177-00)
SV 103-DC-19 SK (010-02-165-00)
SV 103-DC-19 PK (010-02-175-00)

SV 6-IA-2 K (010-02-170-00)

Pickup IA ...

Injection Pump with EDC-Actuator

SV EDC-7 K (010-02-335-00)

figure 26: plugs with destination
13. Ordering Specifications

13.1. General Informations

Every data as

- supply voltage and kind of usage
- parameters, such as speeds and number of teeth on the flywheel
- sensors, such as speed probes, pressure and temperature sensors
- limitation curves
- additional functions
- monitoring functions
- input / output configuration

are noted in the brochure “Order Information Digital Speed Governors“ Nr. DG 96012-e and should be transferred to HEINZMANN.
13. Ordering Specifications

13.2. Cable Harness

![Diagram of Cable Harness]

- **Pickups**
- **Sensors**
- **Overspeed Protection**
- **Battery**
- **Setpoint Adjuster**
- **Control Unit DC EDC 2 - 01**
- **Digital Inputs**
- **Power Outputs**
- **Frequency Inputs**
- **PWM - Inputs**
- **Communication**
- **Status Indicator**
- **Analogue Outputs**

*Figure 27: Harness with cable numbers*
13.3. Cable Lengths

It is of advantage to obtain the harness together with the governor.

The necessary cable lengths and versions of units have to be registered here and transferred to HEINZMANN.

Please note: It is not possible to use all signals simultaneous because some inputs and outputs of the governor have various options depending on the application.

Version of Control Unit:
with plugs (IP55) □
with terminal strip (IP00) □

Version of Actuator:
with plug (IP55) □
with terminal strip (IP00) □

a) L1 = Control unit - battery

L 1 Control unit - battery ....... cm
Cable size
up to 15 m 2 x 2.50 mm²
over 15 - 30 m 2 x 4.00 mm²

b) L2 = Control unit - actuator

L 2.1 Control unit - actuator (feedback) ....... cm 3 x 0.75 mm²shielded
L 2.2 Control unit - actuator (power) ....... cm
Cable size
up to 10 m 2 x 2.50 mm²
over 10 - 20 m 2 x 4.00 mm²
over 20 - 40 m 2 x 6.00 mm²

c) L3 = Control unit - setpoint adjusting unit

L 3.1 Control unit - setpoint poti 1 ....... cm 3 x 0.75 mm²shielded
L 3.2 Control unit - setpoint poti 2 ....... cm 3 x 0.75 mm²shielded
13. Ordering Specifications

L 3.3  Control unit - 4-20 mA input  ...... cm  2 x 0.75 mm²
L 3.4  Control unit - synchronizer  ...... cm  2 x 0.75 mm² shielded
L 3.5  Control unit - load measuring unit  ...... cm  2 x 0.75 mm² shielded

d) L4 = Control unit - pickup

L 4.1  Control unit - pickup 1  ...... cm  2 x 0.75 mm² shielded
L 4.2  Control unit - pickup 2  ...... cm  2 x 0.75 mm² shielded

e) L5 = Control unit - sensor inputs

L 5.1  Control unit - temperature 1  ...... cm  2 x 0.75 mm²
L 5.2  Control unit - cooling water temperature  ...... cm  2 x 0.75 mm²
L 5.3  Control unit - boost pressure  ...... cm  3 x 0.75 mm²
L 5.4  Control unit - oil pressure  ...... cm  3 x 0.75 mm²

f) L6 = Control unit - digital inputs

L 6.1  Control unit - switch 1 - 4  ...... cm  5 x 0.75 mm²
L 6.2  Control unit - switch 5 - 8  ...... cm  5 x 0.75 mm²

g) L7 = Control unit - overspeed protection

L 7  Control unit - overspeed protection  ...... cm  2 x 1.50 mm²

h) L8 = Control unit - controlled current output

L 8  Control unit - contr. current output  ...... cm  2 x 1.50 mm²

i) L9 = Control unit - status indicator

L 9.1  Control unit - "Overall alarm" ind.  ...... cm  2 x 0.75 mm²
L 9.2  Control unit - "Overspeed" ind.  ...... cm  2 x 0.75 mm²
13. Ordering Specifications

j) **L10 = Control unit - analogue outputs**

- **L 10.1 Control unit - display fuel (V)** ....... cm 2 x 0.75 mm²
- **L 10.2 Control unit - display fuel (A)** ....... cm 2 x 0.75 mm²
- **L 10.3 Control unit - display speed (V)** ....... cm 2 x 0.75 mm²
- **L 10.4 Control unit - display speed (A)** ....... cm 2 x 0.75 mm²
- **L 10.5 Control unit - load sharing** ....... cm 2 x 0.75 mm²
- **L 10.6 Control unit - controll pitch propeller** ....... cm 2 x 0.75 mm²

k) **L11 = Control unit - frequency input**

- **L 11 Control unit - tacho** ....... cm 2 x 0.75 mm²

l) **L12 = Control unit - PWM input**

- **L 12 Control unit - PWM-in** ....... cm 2 x 0.75 mm²

m) **L13 = Communication**

- **L 13.1 Control unit - CAN - Bus** ....... cm 2 x 0.14 mm²shielded
- **L 13.2 Control unit - PC** ....... cm 4 x 0.14 mm²shielded
14. Order Specifications for Brochures

Our technical brochures can be ordered without any charges.

Order the necessary manuals on our speed governors from your nearest HEINZMANN location.
(Please click on “HEINZMANN location” to see the list of our subsidiaries and agents in the world).

Please include the following information:

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You can directly use the following fax-document for ordering one or several brochures.

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We request your comments about the content and the presentation of our brochures. Please send your comments to:

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