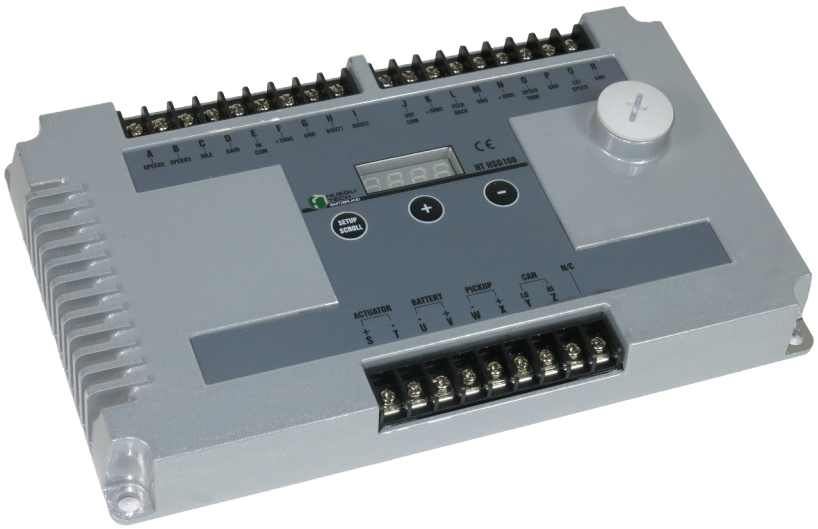
Electronic Gas-Engine Speed Governor

HT-HSG100

Benefits

- IP65
- USB PnP communication
- Multiple PID settings
- Variable chopper frequency
- 3 fixed speed and 1 variable speed
- Overspeed protection
- AUX input for synch/load sharing
- RPM adjustment via digital signal
- Current limitation for actuator
- Adjustable via Keypad and PC software
- Programmable Fuel Ramping Timing for black smoke minimisation
- Display with good visibility under extreme temperature and lighting conditions
- Simple user interface with 3 push buttons
- Intuitive PC application software for configuring all features.
- Galvanic isolated digital input and output.
- Digital output indication for overspeed and crank termination.



Smart Governing

The **HT-HSG100**, part of the InGovern Series, is an electronic engine speed governor for managing motor RPM that is designed specially to work with the HT-TM2200-75 actuator. The governor features fast and precise reaction to load changes. A closed control circuit us¬ing an actuator and magnetic RPM sensor can be operated for a large number of motors in both an isochronous and static fashion. High precision and robust construction makes it possible to use in the harshest motor use conditions.

The microprocessor design provides precise and user-specific performance and functionality. The **HT-HSG100** enables exact (< 0.25%) isochronous rotation speed control. The permanent memory saves the settings even if the power supply is interrupted and thanks to a wide voltage range of 12-24 VDC the **HT-HSG100** has a wide range of uses. The digital inputs/outputs of HT-HSG100 are galvanic isolated and it also features a feedback signal input that works hand in hand with the InGovern Series HT-TM2200-75 actuator for even more precise and powerful engine management performance.

HUEGLI TECH
SWITZERLAND

Technical Specification

Safety instructions and Warnings

Before installing and starting the device, please read the operating instructions. These contain important notes for safety and use.

No liability can be accepted for damage arising from failure to follow the instructions or any inappropriate use.

The governor may only be used for the manner of operation prescribed in the operating instructions and only in connection with third-party devices and components recommended or installed by us or software supplied by us. Any other use shall be considered inappropriate use and will result in the voiding of all liability and warranty claims against the manufacturer.

Interventions and alterations that influence the safety technology and the functionality of the governor may be carried out only by the manufacturer.

Fault-free and safe operation is conditional upon competent transport, assembly and installation as well as qualified use and correct maintenance.

All relevant accident prevention regulations and other generally recognised technical safety and health and safety at work rules are to be observed. Fault-free functioning of the machinery and its peripheral components is only guaranteed with original accessory parts and spare parts.
The HT-HSG100 engine speed governor is robust enough to be placed in a control cabinet with other operating control devices or installed on the motor. If water, mist or condensation can come into contact with the controller, it should be mounted vertically, allowing the liquid to flow away from the controller. Extremes of heat should be avoided.

Overspeed protection

IMPORTANT

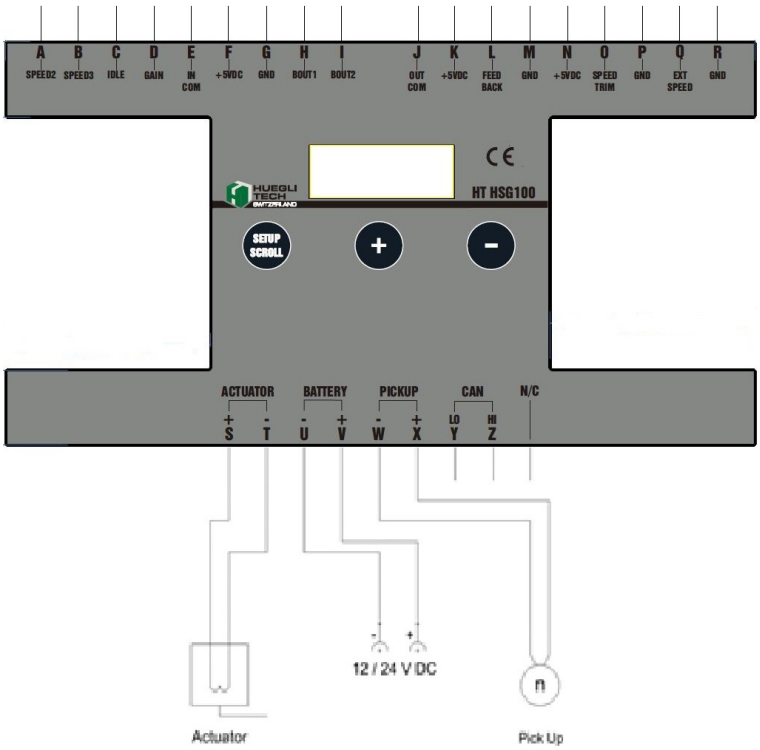
An overspeed shut down mechanism must be installed separately from the control system as a safety measure, to prevent motor faults that may result in damage or injury to machinery or persons.A secondary shut down device (fuel valve) must be installed.

Installation and connection

General information

The pick up cable should be shielded to guarantee that no electromagnetic interference can reach the engine speed governor. The shield should be on tied to the battery negative.

To maintain the correct distance between the flywheel and the RPM sensor, the sensor must be rotated in until the flywheel clicks and then rotated out again for ¾ of a rotation. This achieves the correct spacing between flywheel and sensor. To be able to start the motor, the RPM sensor must generate at least 1V AC RMS during the start.



Cross-section of the battery and actuator cable at terminals A,B,C, and D:
1.5 mm2 for 24 VDC or **2.5 mm2 for 12 VDC**

For longer cables (>5m) the cable cross-section is to be increased appropriately to keep the voltage drop low.

- Battery positive (+) input, connection M, should be fused 8 A.
- The governor should be installed such that the housing has connection with the chassis of the control cabinet.
- The cable of the actuator must be shielded along its entire length.
- The cable of the magnetic engine speed sensor must be shielded along its entire length.
- The cable of the variable RPM speed input can be up to 5m long. For longer cables, a shielded cable must be used.
- The shielding must always be grounded such that it does not come into contact with the chassis of the machine. This is to prevent stray signals from entering the governor andcausing interference. The shield must be grounded at one end.

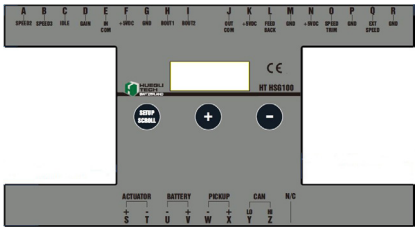
Electronic Gas-Engine Speed Governor

Coonnection terminals

Connection terminal	Description	Definition
A	SPEED2	Speed Setting 2
B	SPEED3	Speed Setting 3
C	IDLE	Idle
D	GAIN	GAIN Parameter Set 1 or 2
E	IN COM	Input Common
F	+5VDC	Digital I/O Supply
G	GND	Digital I/O Ground
H	BOUT1	Digital Output 1
I	BOUT2	Digital Output 2
J	OUT COM	Output Common
K	+5VDC	Feedback Sensor Supply
L	FEEDBACK	Feedback Sensor Input
M	GND	Feedback Sensor Ground
N	+5VDC	+5VDC Supply
O	SPEED TRIM	Variable RPM Input
P	GND	Ground
Q	EXT SPEED	Load Distribution/ Sychronisation
R	GND	Ground
S	S+	Actuator (Plus)
T	T-	Actuator (Minus)
U	U-	Battery (Minus)
V	V+	Battery (Plus)
W	W-	Pickup (Minus)
X	X+	Pickup (Plus)
Y	LO	CAN Low
Z	HI	CAN High

Hardware use (Keypad)

The HT-HSG100 has three menu buttons, with which allows parameters to can be set locally. The set values are indicated on the LED display. In normal operating mode, the RPM is indicated on the display.



Accessing the functions

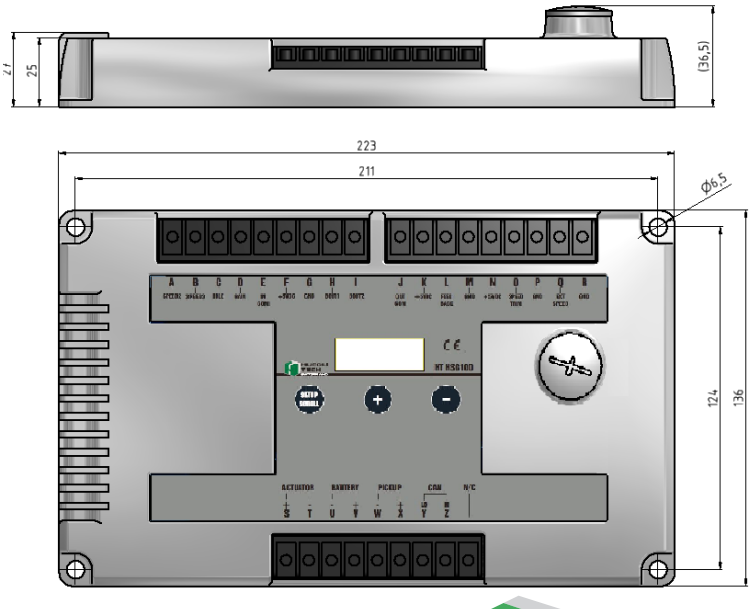
In SETUP mode, the functions listed below can be accessed using the SETUP/SCROLL button.
Each press of the SETUP/SCROLL button makes the next menu active.
The active menu is shown on the LED display for 2 seconds, after which the relevant value of this function appears.

Settings are changed with the arrow keys [+] [-] and raise/ lower the value by 1.
If the arrow keys [+] [-] are held down longer, the value increases at a greater rate.

Normal operating mode	0000	RPM	e.g. 1500 rpm
SETUP/SCROLL button: 1x press	GAI/5020	P value*	e.g. 50.20
SETUP/SCROLL button: 2x press	INT/2192	I value*	e.g. 21.92
SETUP/SCROLL button: 3x press	DER/0700	D value*	e.g. 7.00
SETUP/SCROLL button: 4x press	GEAR/0170	Number of teeth	e.g. 170 teeth
SETUP/SCROLL button: 5x press	CRAN/0500	Crankspeed	e.g. 500 rpm
SETUP/SCROLL button: 6x press	FURA/3	Fuel ramp	e.g. 3 secs.
SETUP/SCROLL button: 7x press	SPRA/10	Speed ramp	e.g. 10 secs.
SETUP/SCROLL button: 8x press	STPO/0050	Start Position	e.g. 50 %
SETUP/SCROLL button: 9x press	OSPD/2000	Overspeed	e.g. 2000 rpm
SETUP/SCROLL button: 10x press	0000	RPM display	e.g. 1500 rpm
+ button: 1x press	2000→2001	Increase value by 1	for all parameters
- button: 1x press	2000→1999	Reduce value by 1	for all parameters

*Display of the values is dependent on input G (Gain). If this is open, parameter set 1 (Gain 1, Int 1 and Der 1) is shown; if the input is closed, parameter set 2 (Gain 2, Int 2 and Der 2) is shown.

Dimensions



Electronic Gas-Engine Speed Governor

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Technical Data

Performance

Isochronous/stability.....±0.25%
RPM range.....300 - 8 KHz
(112-4000 RPM for flywheel with 160 teeth)
RPM variation with temperature.....±0.25% max.
Idle adjustment.....Full Range
Speed Trim.....Programmable 0-100%, (default = 5%)

Surroundings

Temperature range.....-40° to 85°C (-40 to +180°F)
Relative humidity.....up to 95%
Surface finish.....Fungus Proof and Corrosion Resistant
CE certificate.....EN55011, EN50081-2, EN50082-2, EN61326-1

Input/output parameters

Supply voltage.....12 or 24 VDC Battery, (6.5 VDC to 33 VDC)
Polarity.....Negative Ground (housing isolated)
Current Consumption.....100 mA max. continuous,
(Excluding actuator drawn current)
Max permitted actuator current.....6 A continuous (at 25°C)
Engine speed sensor signal.....1 – 120 V RMS
+5VDC Output (Terminal F, K, N).....up to 12 mA
Load Share/Synchronizer Input.....0-10 VDC
(5V nominal, reversed, 5 rpm/V)
Reverse Power Protection.....Yes
Transient Voltage Protection.....60V
Digital Input (Terminal A, B, C, D).....galvanic isolated
Digital Output (Terminal H,I).....galvanic isolated

Norms/standards

Authorising office.....CE and RoHS requirements
Communication.....SAE J1939 (Option)

Reliability

Vibration.....7G, 20-100 Hz
Shock.....20G Peak
Inspection.....100% functionality inspection

Mass and weight

Dimensions.....223 x 136 x 39 mm
Weight.....0.9 kg
Installation.....direct on motor chassis, preferably vertical,
with rubber shock absorbers, insulated,
or in control cabinet

Configuration parameters

Number of flywheel teeth, range.....50 -250 teeth
Overspeed protection.....max. 4000 rpm
Starter cut-out speed.....4000 rpm*
Fixed RPM.....4000 rpm*
Variable RPM.....4000 rpm*
Prescribed start quantity.....0 - 100 %
Start ramp.....0 – 20 secs.
Speed ramp.....0 - 100 secs.

*** Depending on Overspeed Protection. These values are always < Overspeed.**

Local Distributor / Partner:

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