IPS –
IGNITION PICKUP
SIMULATOR

OPERATING MANUAL

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1 GENERAL INFORMATION

Prior to use, read this operating manual carefully and familiarize yourself with the product. Installation and start-up should not be performed without reading and understanding this document. Keep this manual readily available so that you can reference it as needed.

1.1 What is the Purpose of this Operating Manual?

This Manual serves as an aid for the installation and operation of the product and supports the technical staff with all operating and maintenance tasks to be performed. Furthermore, this manual is aimed at preventing dangers to life and health of the user and third parties.

1.2 Who is this Operating Manual Targeted To?

The operating manual provides a code of conduct for personnel tasked with the set-up, operation, maintenance, and repair of gas engines. A certain level of technical knowledge with respect to the operation of gas engines and basic knowledge of electronic ignition systems are necessary. Persons who are merely authorized to operate the gas engine shall be trained by the operating company and shall be expressly instructed concerning potential hazards.

1.3 Which Symbols are Used in the Operating Manual?

The following symbols are used in this Manual and must be observed:

Example

This symbol indicates examples that illustrate the necessary steps and techniques for you. Furthermore, the examples provide you with supplemental information to increase your knowledge.

Note

This symbol indicates important information for the operator. Observe these instructions. Additionally, this symbol is used for overviews that provide you with a summary of the required work steps.

Warning

This symbol indicates warnings of potential risks of damage or danger to health. Read these warning notices carefully and take the stated safety precautions.

Danger

This symbol warns of danger to life, especially due to high voltage. Read these warning notices carefully and take the stated safety precautions.

DANGER

1.4 Which Abbreviations/Acronyms are Used in the Operating Manual?

In the manual or the user interface, the following abbreviations / acronyms are used.

Abb.	Description
DC	Direct Current
RPM	Revolutions per minute

2 SAFETY INSTRUCTIONS

If the equipment is operated on a stationary gas engine, all the applicable regulations in this environment must be observed. Also, follow all safety instructions of the equipment manufacturer, especially with regards to sections under high voltage. All work must be performed by trained and authorized personnel only.

WARNING

Risk of damage and injury

The pickup simulator is only suitable for test operation. When you install the simulator on the engine, observe the following safety procedures to avoid damaging the engine:

– Close the gas valve.

– Purge the engine, so that no flammable gas mixture remains in the combustion chamber.

3 INTENDED USE

3.1 Function Description

The IPS pickup simulator aids you during troubleshooting or during testing of your electronic ignition system. Depending on the requirements of the ignition controller used, one or three pickup signals can be generated. The simulated engine speed can be freely adjusted. Thus, signals from the crankshaft or camshaft can be simulated.

3.2 Applications

The pickup simulator must only be used for ignition controllers released by MOTORTECH. The respective matching adapter cables are available for these.

Any use other than the one described in the operating manual shall be considered improper use and will result in the voiding of all warranties.

4 PRODUCT DESCRIPTION

4.1 Technical Data

Property	Value
Power supply	10 to 30 V DC
Max. dimensions	216 x 113 x 39 mm (8.5 x 4.4 x 1.5 ") (length x width x height)

Adjustment ranges of the pickup simulator:

Parameters	Adjustment range
Speed	2 to 5000 rpm
Number of teeth	50 to 500
Trigger disk	2+1 to 16+1
Acceleration rate	10 to 500 rpm per second

4.2 Overview
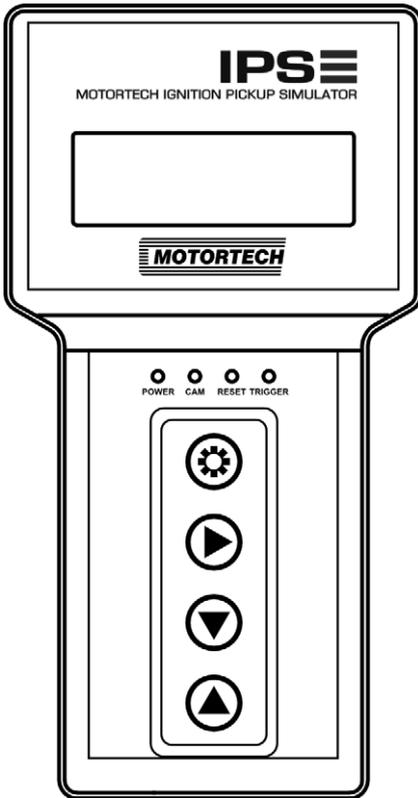
Display
The display shows the operating data and the settings for programming.

LEDs
– POWER
  illuminates when the supply voltage is sufficient.

– CAM
  – *One pickup:*
    signals the uniformly distributed events of the trigger disk.

  – *Three pickups:*
    signals the individual events once per revolution of the camshaft

– RESET
  – *One pickup:*
    no function

  – *Three pickups:*
    signals the individual events once per revolution of the crankshaft

– TRIGGER
  – *One pickup:*
    signals the index signal

  – *Three pickups:*
    signals the trigger signal from the crankshaft

Buttons
– ⚙

  – In operating mode:
    starts the acceleration or reduction of the current speed

  – In programming mode:
    alternates between trigger settings and acceleration rate

  – In programming mode, pressed together with ▼:
    alternates between the mode for one pickup or for three pickups

4 PRODUCT DESCRIPTION

–   ▶

  –   In operating mode:
      changes to program mode, in doing so the currently set speed setpoint is also stored.

  –   In programming mode:
      changes into operating mode

–   ▼

  –   Reduces the settings values

  –   In programming mode, pressed together with ⚙:
      alternates between the mode for one pickup or for three pickups

–   ▲

  –   Increases the settings values

5 WIRING OF THE DEVICE

Adapter cables are available for various ignition controllers. These are not included in the scope of supply of the simulator and must be ordered separately.

The connector on the pickup simulator has the following connection assignment:

PIN	Designation
1	+24 V DC
2	+ Reset
3	-CAM
4	+Trigger
5	GND
6	-Reset
7	+CAM
8	-Trigger
9	not used

To wire the pickup simulator, proceed as follows:

1. Plug the 9-pin Sub-D connector into the connection on the simulator.
2. Plug the second connection of the adapter cable into the pickup connection of your ignition controller.

6 PROGRAMMING

Before operation of the pickup simulator, it must be programmed to the values of the desired application.

Proceed as follows:

1. Switch on the simulator. This happens automatically if the device is supplied with the required voltage via the connected ignition controller.

    ▸   The operation display is shown with the last settings.

    For example:

```
 IGN. MPU SIMULATOR
   SPEED =        0 RPM
 Setpoint =    1500 RPM
 Conf: 3MPU,   160TEETH
```

2. This view is taken, whether the mode is set for one pickup (*Conf: 1MPU*) or for three pickups (*Conf: 3MPU*).

3. Press the ⊙ button, to change to programming mode.

4. If necessary, press down the ⊛ and ⊙ buttons simultaneously and hold for approx. one second, to change from the mode for one pickup to the mode for three pickups, or vice versa.

    ▸   The set mode is recognized by the displayed setting options:

    Example of one pickup:

```
 ->    Programming Mode    ->
        Disk Configuration
              12+1
```

    Example of three pickups:

```
 ->    Programming Mode    ->
         Number of Teeth
            160  per  360'
```

5. When the desired mode is displayed, adapt the set value to the application that you want to simulate:

    –   In mode for one pickup:
        Set the desired trigger disk configuration, by increasing the value with the ⊙ button or reducing with the ⊙ button.

– In mode for three pickups:
Set the desired number of teeth for the trigger signal from the crankshaft, by increasing the value with the ⓐ button or reducing with the ⓥ button. For the two other simulated pickups there is a permanent specified signal with a single event per revolution of the crankshaft and of the camshaft.

6. For setting the acceleration rate, change with the ⊛ button. The acceleration rate indicates how fast the speed is increased during operation.

```
->    Programming Mode    ->
        Acceleration Rate
            35 RPM/MIN
```

7. Adapt the value as needed, by increasing the value with the ⓐ button or reducing with the ⓥ button.

8. Press the ▶ button again, to leave programming mode.

▸ The programming of the simulator is now completed.

9. Make sure that the set values agree with the configuration of your ignition controller or adapt them accordingly.

Configuration MIC500

The MIC500 works with one pickup. During the programming of the pickup simulator, the configuration of the trigger disk must be indicated accordingly. This information is included in the sequence number during the parameterization of the MIC500. An overview of the possible sequence numbers and configurations are found in the operating manual for the MIC500.

In the following example the sequence number 37 is set:
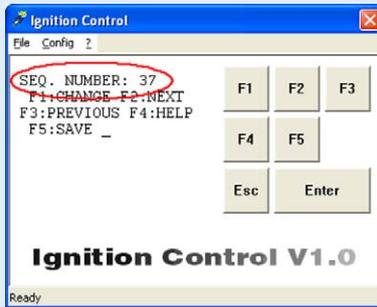
From the sequence tables it can be found that this number corresponds to the following configuration:

– 12 Outputs

– Trigger disk 12+1

– Ignition offset 50-70

– Installation location of the disk: camshaft

Program the pickup simulator accordingly for a 12+1 trigger disk. Since the ignition controller expects a signal from the camshaft, specify during operation as a maximum half of the nominal speed as speed setpoint for the simulator.

Configuration MIC850 and MIC4

The MIC850 and the MIC4 work with up to three pickups. In the mode for three pickups, the pickup simulator delivers the following signals:

– One event per revolution from the crankshaft

– One event per revolution from the camshaft

– Ring gear on the crankshaft with a configurable number of teeth

This configuration is stored in the MICT in the predefined pickup setting *3PU Pickup Simulator*. If this setting has been selected, only the number of teeth must be matched to your desired application. In the following example a ring gear with 160 teeth is set up.
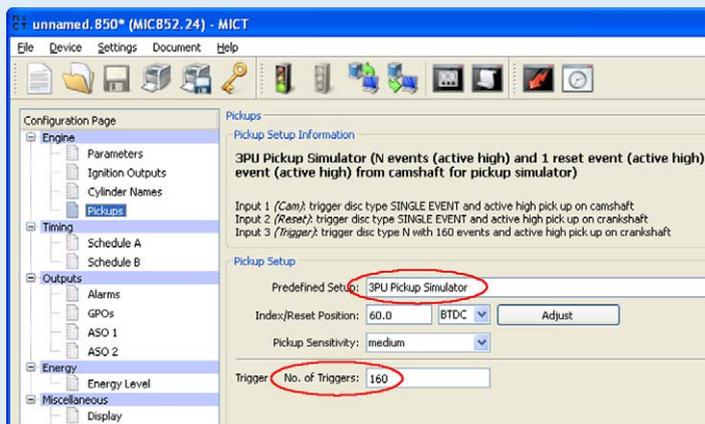
The illustration is created with the MICT for the MIC850. The settings for the MIC4 are the same.

All pickups are set as active, since the pickup simulator delivers exclusively digital signals.

Risk of damage and injury

The pickup simulator is only suitable for test operation. When you install the simulator on the engine, observe the following safety procedures to avoid causing damage to the engine:

– Close the gas valve.

– Purge the engine, so that no flammable gas mixture remains in the combustion chamber.

In operating mode you receive the following view, depending on the programming:

Programmed for one pickup:

```
IGN. MPU SIMULATOR
 SPEED =        0 RPM
Setpoint =   1500 RPM
Conf: 1MPU,  12+1 DISK
```

Current speed in rpm

Set speed setpoint

Programmed configuration

Programmed for three pickups:

```
IGN. MPU SIMULATOR
 SPEED =        0 RPM
Setpoint =   1500 RPM
Conf: 3MPU,  160TEETH
```

Current speed in rpm

Set speed setpoint

Programmed configuration

1. Check before operating the simulator that the configuration values set in the programming correspond to your ignition controller.

2. Set the setpoint for the speed, by increasing the displayed value with the ⊕ button or reducing with the ⊖ button.

Camshaft signal

When you have configured a camshaft signal in the mode for one pickup, set as setpoint maximum half of the nominal speed, to avoid an error due to overspeed.

3. To store the setpoint, change into programming mode with the ⏵ button, and by pressing the button again, change back into operating mode.

    ▸   The setpoint is now also available again after switching the simulator off and on.

4. Press the ⊛ button, to accelerate to the set speed setpoint.

    ▸   The pickup signals are transmitted to the ignition controller.

5. If you press the ⊛ button again, the speed is again reduced to zero.

8 MAINTENANCE

8.1 Spare Parts and Accessories

For spare parts and accessories, please refer to our current Product Guide, which is available for you to download on the Internet at *www.motortech.de*.

8.2 Customer Service Information

You can reach our customer service during business hours by phone, fax, or e-mail at:

Tel.   +49 5141 9399 0

Fax   +49 5141 9399 99

E-mail   servicemail@motortech.de

8.3 Returning Equipment for Repair / Inspection

Enclose an insert containing the following information when returning the equipment for repair and inspection:

– Name of operating company
– Name and location at which the equipment is installed
– Name and phone number of a contact person
– Engine type
– Part and serial numbers of the device
– Description of the defect/error
– Instructions concerning the desired type of repair/inspection

Providing this information will ensure the speedy and smooth processing of your repair order.

Send the equipment to one of the two addresses below or to the nearest MOTORTECH representative:

MOTORTECH GmbH
Hogrevestrasse 21-23
29223 Celle

Germany

Tel.   +49 51 41 - 93 99 0
Fax   +49 51 41 - 93 99 98

www.motortech.de
motortech@motortech.de

MOTORTECH Americas
1400 Dealers Avenue
New Orleans. LA 70123

USA

Tel.   +1 504 355 4212
Fax   +1 504 355 4217

www.motortechamericas.com
info@motortechamericas.com

8.4 Instructions for Packaging the Equipment

For return shipment, equipment should be packaged as follows:

– Use packaging material that does not damage the equipment surfaces.

– Wrap the equipment with sturdy materials and stabilize it inside the packaging.

– Use sturdy adhesive film to seal the packaging.

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