Product | English

One System. Best Solutions.

SIGNALS AND ENERGY DATA

multimax

Energy optimization system

A highlight for energy optimization

ptiEnergy
The **multimax** energy optimization system optimizes the energy consumption behavior of devices connected to the system, thereby preventing expensive power peaks. The system works as an optimization calculator taking into account the available compensation power and the assumed further energy consumption within the measurement period. To avoid unnecessary shutdown, careful adjustments are made to the energy consumption in consideration of the device properties:

- priority in the current operating process
- minimum and maximum on and off times
- available compensation power
Combinable energy optimization. Modular design for maximum flexibility

Highlight:

OptiEnergy
A new energy optimization method now makes it possible to incorporate the instantaneous device power into the optimization calculation. This considerably reduces the number of device shutdowns while increasing savings.

multimess measuring module
Feedback device with instantaneous device power consumption monitoring.

multimax 4-SET
Contains all the devices and components needed to optimize the specified outputs or digital feedback.

multisio relay modules
The relay modules are decentralized substations that are available as an add-on to the multimax energy optimization system.
Energy optimization system with trend calculation

The multimax energy optimization system serves to monitor electricity consumption and maintain the specified average power by switching devices connected to the system on or off.

All the parameters that are relevant to energy optimization are transmitted by the KBR eBus and displayed and processed by the web-based analysis and visualization software visual energy.

Note: To switch devices, multisio 1D4-4RO-ISO relay modules are needed. Communication between the central unit and relay module takes place via the KBR module bus.

A detailed technical overview can be found on page 6. The housing dimensions are given on page 7.
## Input and output configuration

### DEVICE TYPE

<table>
<thead>
<tr>
<th>DEVICE TYPE</th>
<th>4D6-ESBSDS-5DI6RO1DO</th>
</tr>
</thead>
</table>

### INPUTS

<table>
<thead>
<tr>
<th></th>
<th>Pulse inputs (energy and synchronization pulse)</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Setpoint switching (for floating contact)</td>
<td>3</td>
</tr>
</tbody>
</table>

### OUTPUTS

<table>
<thead>
<tr>
<th></th>
<th>Relay outputs</th>
<th>via multisio 1D4-4RO-ISO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum prewarning relay</td>
<td></td>
</tr>
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</table>

### INTERFACE

<table>
<thead>
<tr>
<th></th>
<th>Serial interfaces:</th>
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<tbody>
<tr>
<td></td>
<td>KBR eBus</td>
</tr>
<tr>
<td></td>
<td>KBR module bus</td>
</tr>
<tr>
<td></td>
<td>KBR display</td>
</tr>
</tbody>
</table>

### SOFTWARE SUPPORT

<table>
<thead>
<tr>
<th></th>
<th>visual energy starter / OPC server</th>
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<tbody>
<tr>
<td></td>
<td>yes</td>
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</tbody>
</table>

|       | visual energy 4 | yes |

### POWER SUPPLY

<table>
<thead>
<tr>
<th></th>
<th>Operating voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>85 - 265 V AC / DC, 50 / 60 Hz</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Power consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15 VA</td>
</tr>
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</table>

### MECHANICAL DATA

<table>
<thead>
<tr>
<th></th>
<th>Central unit:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Modules and dimensions in mm (H x W x D)</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
</tr>
<tr>
<td></td>
<td>Display</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>6 TE (90 x 105 x 61 mm)</th>
<th>approx. 650 g</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>96 x 96 mm (visible 92 x 92 mm)</td>
<td></td>
</tr>
</tbody>
</table>

### Connection diagram

[Diagram showing connections between inputs and outputs, modular setup, and various energy management components such as display, modules, outputs, inputs, power supply, and relay connections.]
### multimax Technical details

#### MENU AND STATUS DISPLAYS
- Energy: $W_{\text{Act}}$
- Trend power: $P_{\text{trend}}$
- Instantaneous power: $P_{\text{act}}$
- Cumulative power: $P_{\text{Cum}}$
- Corrective power: $P_{\text{Corr}}$
- Average measuring period: $P$
- Maximum daily and monthly values: $P_{\text{Dmax}}$ and $P_{\text{Dmin}}$
- Switching operations, error and alarm messages

#### DEVICE TYPE
- multimax
- 4D6-ESBSDS-5DI6RO1DO

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#### OPTIMIZATION LINES
- **Optimization lines (maximum expandability)**
  - 32 lines (up to 80 devices)

#### SUBSTATIONS
- **Output modules for switching devices on and off**
  - 4 electrically insulated outputs
  - 4 non-electrically insulated outputs
  - 2 outputs for analog device control

- **Input modules for feedback on the device status**
  - 4 floating inputs
  - 3 inputs with device power recording

#### OPTIMIZATION CRITERIA
- **Self-optimizing (circuit switching of the same stages)**
- Priority can be adjusted for each optimization output
- Setpoint control (variably programmable setpoints)
- Setpoints can be controlled using time programs
- Stage power and start-up probability
- Priority switching (circuit switching with the same priority)
- Measuring period time-out, minimum on time, minimum and maximum off time
- Non-typical network usage

#### SWITCHING PERFORMANCE
- Maximum prewarning if power is exceeded
- Automatic emergency shutdown of selected devices in the event of malfunction
- Target value tracking if power value is exceeded
- Counter and synchronous pulse monitoring
- Period-independent monitoring of maximum instantaneous power
- Communication monitoring between central unit and substation

#### MONITORING FUNCTIONS
- LCD, via display multimax 4F96-DS
- Combined pulse interval measuring / trend calculation
- Pulse summation function for multiple counters
- Direct measurement with multimess 1D4 additional module (transformer measurement)

#### MEASUREMENT
- Load profile memory
- Active energy memory for high and low tariffs
- Switching operation memory
- Event memory (power failures, errors, programming interventions, etc.)
- Memory can be read on device | Memory can be read via KBR eBus

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* Standard version
## Technical details

### MENU AND STATUS DISPLAYS
- Energy: $W_{\text{Act}}$
- Trend power: $P_{\text{trend}}$
- Instantaneous power: $P_{\text{act}}$
- Cumulative power: $P_{\text{cum}}$
- Corrective power: $P_{\text{corr}}$
- Average measuring period: $P$
- Maximum daily and monthly values: $P_{\text{day}}$ and $P_{\text{mon}}$
- Switching operations, error and alarm messages

### DEVICE TYPE
- multimax 4D6-ESBSDS-SD6RO1DO

### TIME FUNCTIONS
- 10 internal time programs (global eBus master time programs are processed)
- Calendar function
- Daylight saving time
- Automatic leap year adjustment

### PASSWORD PROTECTION
- Digit code

## Dimensions

### multimax 4D6-ESBSDS-SD6RO1DO

```
+----------------+-------------------+-------------------+
|                |       50.0         |       5.00        |
|                |       45.00        |       90.00       |
|                |       106.00       |                  |
| Height         |                  |                  |
| Width          |                  |                  |
+----------------+-------------------+-------------------+
```

### multimax 4F96-DS

```
+----------------+-------------------+-------------------+
|                |       5.00        |       50.0         |
|                |       90.00        |       96.00       |
|                |       96.00        |                  |
| Height         |                  |                  |
| Width          |                  |                  |
+----------------+-------------------+-------------------+
```

Switchboard cutout (H x W): 92 x 92

All dimensions in mm. Not suitable for measurement purposes.

Status: March 2014 Subject to change.
multimax 4-Set

Two sample sets are given below:

**multimax 4-SET-12RO-ISO-0DI**
Energy optimization system for mounting rail installation with 12 electrically insulated switching stages (ISO) without feedback; KBR eBus interface, Us: 85-265V AC/DC; 15VA;

**Consisting of:**
- 1 x multimax 4D6-ESBDS-5DI6RO1DO (6TE)
- 1 x multimax 4F96-DS (96x96x45mm door installation)
- 3 x multisio 1D4-4RO-ISO (4TE)

**Optional housing**

**multimax 4-SET-12RO-ISO-12DI**
Energy optimization system for mounting rail installation with 12 electrically insulated switching stages (ISO) and 12x feedback; KBR eBus interface, Us: 85-265V AC/DC; 15VA;

**Consisting of:**
- 1 x multimax 4D6-ESBDS-5DI6RO1DO (6TE)
- 1 x multimax 4F96-DS (96x96x45mm door installation)
- 3 x multisio 1D4-4RO-ISO (4TE)
- 3 x multisio 2D2-4DI (2TE)
- 1 x multisys 1D4-PS24V (4TE)

**Optional housing**
**Definition of terms:**

- **multimax 4-SET** contains all the devices and components needed to optimize the specified outputs or digital feedback. Please refer to the table for different models.
- **Optional housing**

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### multimax 4-SET

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<td>8</td>
<td>8</td>
<td>12</td>
<td>12</td>
<td>16</td>
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<td>32</td>
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<td>4</td>
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<td>1</td>
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<tr>
<td>multisys 1D4-PS-24V</td>
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</tbody>
</table>

**Standard version**
- not available

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The housing dimensions are given on page 10.
multimax Housing models

multimax WG-AT31
Housing type AT31

- Steel wall housing
- Fully wired for easy integration of the multimax energy optimization system (mounting rail installation)
- Safety class 1, IP 30
- Dimensions (H x W x D) 524 x 324 x 140 mm

multimax WG-AT32
Housing type AT32

- Steel wall housing
- Fully wired for easy integration of the multimax energy optimization system (mounting rail installation)
- Safety class 1, IP 30
- Dimensions (H x W x D) 524 x 574 x 140 mm

multimax WG-AT52
Housing type AT52

- Steel wall housing
- Fully wired for easy integration of the multimax energy optimization system (mounting rail installation)
- Safety class 1, IP 30
- Dimensions (H x W x D) 824 x 574 x 140 mm

All dimensions in mm. Not suitable for measurement purposes.
multimax Housing dimensions

multimax WG-AT62

Housing type AT62

- Steel wall housing
- Fully wired for easy integration of the multimax energy optimization system (mounting rail installation)
- Safety class 1, IP 30
- Dimensions (H x W x D) 974 x 574 x 140 mm

<table>
<thead>
<tr>
<th>Housing type</th>
<th>H</th>
<th>B</th>
<th>T</th>
<th>H1</th>
<th>B1</th>
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<td>824</td>
<td>574</td>
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<td>974</td>
<td>574</td>
<td>140</td>
<td>835</td>
<td>417</td>
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</tbody>
</table>

All dimensions in mm. Not suitable for measurement purposes.