Options

Various options are available for the MICROMASTER inverters:
- Filters
- Chokes
- Operator panels
- PROFIBUS module
- DeviceNet module
- CANopen module
- Pulse encoder evaluation module
- Gland plates
- Mounting kits, etc.

Assignment of operator panels and modules to the inverter ranges:

<table>
<thead>
<tr>
<th>Options</th>
<th>Order No.</th>
<th>MICROMASTER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>410</td>
</tr>
<tr>
<td>Operator panels</td>
<td></td>
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<tr>
<td>OP</td>
<td>6SE6400-0SP00-0AA0</td>
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</tr>
<tr>
<td>BOP</td>
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<tr>
<td>BOP-2</td>
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</tr>
<tr>
<td>AOP</td>
<td>6SE6400-0AP00-0AA1</td>
<td>●</td>
</tr>
<tr>
<td>AAOP</td>
<td>6SE6400-0AP00-0AB0</td>
<td>●</td>
</tr>
<tr>
<td>Modules</td>
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<td></td>
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<tr>
<td>PROFIBUS</td>
<td>6SE6400-1FP00-0AA0</td>
<td>●</td>
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<tr>
<td>DeviceNet</td>
<td>6SE6400-1DN00-0AA0</td>
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</tr>
<tr>
<td>CANopen</td>
<td>6SE6400-1C800-0AA0</td>
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<tr>
<td>Pulse encoder evaluation</td>
<td>6SE6400-0EN00-0AA0</td>
<td>●</td>
</tr>
</tbody>
</table>

Possible combination
### Overview

**Basic Operator Panel (BOP)**
With the BOP, individual parameter settings can be made. Values and units are shown on a 5-digit display.

![Basic Operator Panel (BOP)](image)

**Advanced Operator Panel (AOP)**
The AOP is directly plugged into the inverter, or communicates with the latter through a door mounting kit. Together with the “AOP door mounting kit for multiple inverters”, the AOP permits bus communication with up to 30 inverters at a transmission rate of 38 kbaud (RS485, USS).

For servicing purposes, the AOP furthermore supports the download and upload of complete parameter kits.

**Asian Advanced Operator Panel (AAOP)**
The AAOP is the Chinese version of the AOP operator panel. It has an enhanced display and supports the operating languages of Chinese (simplified) and English.

![Asian Advanced Operator Panel (AAOP)](image)

**PROFIBUS module**
For a complete PROFIBUS connection with up to ≤ 12 Mbaud. Remote control of the inverter is possible with the PROFIBUS module. Remote control and operation at the inverter can be combined using an operator panel plugged onto the PROFIBUS module. The PROFIBUS module can be supplied by an external 24 V DC power supply and is thus also active when the inverter is disconnected from the power supply.

Connection by means of a 9-pin Sub-D connector (available as an option).

**DeviceNet module**
For networking the inverters to the DeviceNet fieldbus system widely used on the American market. A maximum transmission rate of 500 kbaud is possible. Remote control of the inverter is possible with the DeviceNet module. Remote control and operation at the inverter can be combined using an operator panel plugged onto the DeviceNet module.

The connection to the DeviceNet bus system is made using a 5-pin connector with terminal strip.

**CANopen module**
Using the CANopen communications module, an inverter can be linked to the CANopen fieldbus system and remote control is then possible.

Remote control and operation at the inverter can be combined using an operator panel plugged onto the CANopen module.

The module is connected to the bus system through a 9-pin Sub-D connector.

**Pulse encoder evaluation module**
The pulse encoder evaluation module permits direct connection of the most widely encountered digital pulse encoders to the inverter. They offer the following functions:
- Zero speed at full load torque
- Extremely accurate speed control
- Increased dynamic response of speed and torque control.

This module can be used with HTL and TTL pulse encoders (High voltage Transistor Logic, 24 V and Transistor Logic, 5 V).
Overview (continued)

Connection kit for PC to inverter
For controlling an inverter directly from a PC if the appropriate software has been installed (e.g., STARTER). Isolated RS-232 adapter module for reliable point-to-point connection to a PC. Includes a Sub-D connector and an RS-232 standard cable (3 m).

Connection kit for PC to AOP
For connecting a PC to an AOP or AAOP. Offline programming of inverters and archiving of parameter kits possible. Includes a desktop attachment kit for an AOP or AAOP, an RS-232 standard cable (3 m) with Sub-D connectors and a universal power supply unit.

Operator panel door mounting kit for single inverter
For mounting an operator panel in a control cabinet door. Degree of protection IP56. Contains a cable adapter module with screwless terminals for use with user’s own RS-232 cables ¹).

AOP door mounting kit for multiple inverters (USS)
For mounting an AOP or AAOP in a control cabinet door. Degree of protection IP56. The AOP or AAOP can communicate with several inverters by means of the RS-485 USS protocol. The 4-pin connecting cable from the AOP or AAOP to the RS-485 terminals of the inverter and to the 24 V user terminal strip is not included ²).

1) A shielded cable of type Belden 8132 (28 AWG) is recommended. The maximum cable length is 5 m for RS-232.
2) A shielded cable of type Belden 8/32 (28 AWG) is recommended. The maximum cable length is 10 m for RS-485.

Selection and ordering data
The options listed here are suitable for all MICROMASTER 440 inverters.

<table>
<thead>
<tr>
<th>Options</th>
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<tbody>
<tr>
<td>Basic Operator Panel (BOP)</td>
<td>6SE6400-BP00-0AA0</td>
</tr>
<tr>
<td>Advanced Operator Panel (AOP)</td>
<td>6SE6400-AP00-0AA1</td>
</tr>
<tr>
<td>Asian Advanced Operator Panel (AAOP)</td>
<td>6SE6400-AP00-0AB0</td>
</tr>
<tr>
<td>PROFIBUS module</td>
<td>6SE6400-1PB00-0AA0</td>
</tr>
<tr>
<td>DeviceNet module</td>
<td>6SE6400-1DN00-0AA0</td>
</tr>
<tr>
<td>CANopen module</td>
<td>6SE6400-1CB00-0AA0</td>
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<tr>
<td>Pulse encoder evaluation module</td>
<td>6SE6400-0EN00-0AA0</td>
</tr>
<tr>
<td>RS485/PROFIBUS bus connector</td>
<td>6GK1500-0FC00</td>
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<tr>
<td>Connection kit for PC to inverter</td>
<td>6SE6400-1PC00-0AA0</td>
</tr>
<tr>
<td>Connection kit for PC to AOP</td>
<td>6SE6400-OPA00-0AA0</td>
</tr>
<tr>
<td>Operator panel door mounting kit for single inverter</td>
<td>6SE6400-OPM00-0AA0</td>
</tr>
<tr>
<td>AOP door mounting kit for multiple inverters (USS)</td>
<td>6SE6400-0MD00-0AA0</td>
</tr>
</tbody>
</table>

Start-up tools
- STARTER
  Starter is graphic start-up software for guided start-up for MICROMASTER 410/420/430/440 frequency inverters under Windows NT/2000/XP Professional. Parameter lists can be read out, altered, stored, entered and printed.
- DriveMonitor
  is a start-up software for list-oriented programming of frequency inverters. This program executes under Windows 95/98/NT/2000/XP Professional. Both programs are included on the Docu CD which is provided with every inverter.
## Technical data

<table>
<thead>
<tr>
<th></th>
<th>PROFIBUS module</th>
<th>DeviceNet module</th>
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<tbody>
<tr>
<td></td>
<td>6SE6400-1PB00-0AA0</td>
<td>6SE6400-1DN00-0AA0</td>
</tr>
</tbody>
</table>

### Size (height x width x depth)
- PROFIBUS module: 161 mm x 73 mm x 46 mm
- DeviceNet module: 161 mm x 73 mm x 46 mm

### Degree of protection
- PROFIBUS module: IP20
- DeviceNet module: IP20

### Degree of pollution
- 2 to IEC 60 664-1 (DIN VDE 0110/T1), no condensation permitted during operation

### Strain resistance
- **Stationary**
  - Deflection: 0.15 mm in the frequency range of 10 Hz to 58 Hz
  - Acceleration: 19.6 m/s² in the frequency range of 58 Hz to 500 Hz
- **Transport**
  - Deflection: 3.5 mm in the frequency range of 5 Hz to 9 Hz
  - Acceleration: 9.8 m/s² in the frequency range of 9 Hz to 500 Hz

### Climatic category (during operation)
- 3K3 to IEC 60 721-3-3

### Cooling method
- Natural air cooling

### Permissible ambient or cooling agent temperature
- **Operation**
  - -10 °C to +50 °C (+14 °F to +122 °F)
  - -25 °C to +70 °C (+13 °F to +158 °F)
- **Storage and transport**
  - ≤ 85 % (non-condensing)
  - ≤ 95 %

### Relative humidity (permissible humidity rating)
- **Operation**
  - ≤ 85 % (non-condensing)
- **Storage and transport**
  - ≤ 95 %

### Electromagnetic compatibility
- **Emission**
  - to EN 55 011 (1991) Class A
  - to IEC 61 000-3 and EN 61 000-4-3
- **Interference**
  - 6.5 V ± 5 %, max. 300 mA, internal from inverter or 24 V ± 10 %, max. 350 mA, external
  - 6.5 V ± 5 %, max. 300 mA internal from inverter or 24 V, max. 60 mA from DeviceNet-Bus

### Power supply
- 5 V ± 10 %, max. 100 mA, galvanically isolated supply
- for terminating the serial interface bus or
- for supplying the OLP (Optical Link Plug)

### Data transmission rate
- PROFIBUS module: max. 12 Mbaud
- DeviceNet module: 125, 250 and 500 baud