The optional plain text operator panel is intended to additionally enhance the user friendliness of the MICROMASTER, MICROMASTER Vector and MIDIMASTER Vector. Furthermore, it has been designed for use with COMBIMASTER. This provides the operator with a plain text basis for commissioning, parameterizing, configuring and operating the drive inverter.

The following functions are provided:

- Back lit LCD display with a high resolution and contrast control.
- 7 languages
- Up to 31 drive inverters can be centrally controlled, which are networked via USS.
- Up to 10 parameter sets can be saved in the non-volatile memory for uploading and downloading data between the plain text operator panel and drive.
- Help texts for diagnostics (troubleshooting).
- Insulated RS232 interface to connect to a PC.

The plain text operator panel fits perfectly into the front panel of the drive (screws are not required) and can be easily removed by lifting a bracket below the unit.

The operator panel is automatically activated as soon as it is connected to a drive inverter or the voltage is switched-on.

The plain text operator panel can be connected to the drive using a cable which means that it can be used as mobile terminal. It can also be mounted on a cabinet door thus serving as a favorably priced "Man/machine interface" for one or several drives in a cabinet.

Caution:
When using the plain text operator panel as interface converter RS232/RS485 or without drive inverter, then an additional 6V DC power supply is always required.

The power supply specifications are as follows:
- Voltage tolerance: 6V ± 0.5V
- Current drain for operation with a drive inverter: 50mA
- Current drain for operation without drive inverter: 250mA
- Connector:
  - outer diameter: 3.5 mm (=0V)
  - inner diameter: 1.35 mm (=+6V)
Operating Instruction of Enhanced Operator Panel OPM2

Figure 2: Dimensions

<table>
<thead>
<tr>
<th>Dimensions H x W x D</th>
<th>130 mm x 73 mm x 40 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current drain at 5 V</td>
<td>200 mA</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 54</td>
</tr>
<tr>
<td>Max. cable length</td>
<td>5 m</td>
</tr>
</tbody>
</table>

Figure 3: Order Numbers

<table>
<thead>
<tr>
<th>Designation</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-lingual plain-text operator panel OPM2 with integrated interface converter RS232/RS485</td>
<td>6SE3290-0XX87-8BF0</td>
</tr>
<tr>
<td>CABLE SET TO MOUNT THE OPM 2 IN THE CABINET, 3M LONG</td>
<td>6SE3290-0XX87-8PK0</td>
</tr>
<tr>
<td>PC INTERFACE CABLE RS232 FOR OPM 2, 1M LONG</td>
<td>6SE3290-0XX87-8SK0</td>
</tr>
</tbody>
</table>

![Pin assignment of the RS232 connector](image)

Fig. 4: Pin assignment of the RS232 connector

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function, information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not assigned</td>
</tr>
<tr>
<td>2</td>
<td>External TxD</td>
</tr>
<tr>
<td>3</td>
<td>External RxD</td>
</tr>
<tr>
<td>4</td>
<td>External RTS</td>
</tr>
<tr>
<td>5</td>
<td>Insulated 0V</td>
</tr>
</tbody>
</table>

Figure 5: RS485-PIN

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function, information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not assigned</td>
</tr>
<tr>
<td>2</td>
<td>Not assigned</td>
</tr>
<tr>
<td>3</td>
<td>RS485 send and receive data line, two-wire, positive differential input/output B/P</td>
</tr>
<tr>
<td>4</td>
<td>Switch-on the send section (&quot;request-to-send&quot; RTS)</td>
</tr>
<tr>
<td>5</td>
<td>Reference potential, 0 V</td>
</tr>
<tr>
<td>6</td>
<td>Insulated power supply, 5V, for the terminating resistors</td>
</tr>
<tr>
<td>7</td>
<td>Not assigned</td>
</tr>
<tr>
<td>8</td>
<td>RS485 send and receive data line, two-wire, negative differential input/output A/N</td>
</tr>
<tr>
<td>9</td>
<td>Not assigned</td>
</tr>
</tbody>
</table>
Enhanced Operator Panel Introduction
The Enhanced Operator Panel (OPm) is a plug–in module that provides users with a clear text display that is both easy to use and understand.

The OPm has the following features:
- 64 character backlit LCD screen.
- Choice of five languages.
- Can operate as a master device for controlling up to 31 inverters via the USS bus.
- Ability to upload and download parameters.
- Non–volatile storage for up to 31 parameter sets.
- Menu–driven screen options.
- Simple to install.

Installation
Simply plug the OPm into the RS485 socket on the front of the inverter and then tighten the single securing screw. The inverter does not need to be switched off prior to installation (or removal). The OPm can also be panel–mounted using two M5 screws (see installation diagram). In this case, the cable used to connect the OPm to the inverter must not exceed 4 m in length and must be shielded. The shield must be connected to the shell of each connector. If two or more inverters are to be connected together via the serial link, the OPm may be powered either by one of the inverters or by an external +6 V power supply. The serial interfaces on the inverters may be connected together through either the external D–type connectors or the internal RS485 terminal connectors.

Start–Up
The front panel buttons operate in a similar manner to the original buttons on the inverter (where fitted); i.e. the \( \wedge \) and \( \vee \) buttons enable you to scroll through available options and pressing P selects the current option. The screen that appears when the OPm is first powered on shows the language options. The flashing dashed line (cursor) shows the language that will be selected when the P button is pressed. To select a different language, press the \( \wedge \) or \( \vee \) button until the cursor is beneath the language required and then press P. The display will change to show the Main Menu (see below) in the language selected.

This menu can be accessed at any time by pressing the P and _ buttons simultaneously.

LOCAL Mode (Single Inverter Operation)

OPERATE

<table>
<thead>
<tr>
<th>Menu</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>P000</td>
<td>RUNNING →</td>
</tr>
<tr>
<td>RPM</td>
<td>1250</td>
</tr>
<tr>
<td>F</td>
<td>50.00 Hz</td>
</tr>
<tr>
<td>I</td>
<td>1.5 A</td>
</tr>
<tr>
<td>M</td>
<td>125% P</td>
</tr>
</tbody>
</table>

Selecting OPERATE causes a screen similar to that shown below to appear:

This is the first screen that appears whenever the OPm is subsequently powered on. The top line indicates the current operational state of the inverter. The arrow indicates the direction of rotation of the motor.

RPM = Speed of the motor.
F = Frequency (adjustable using the \( \wedge \) and \( \vee \) buttons).
I = Motor current.
M = Motor torque.

Note
If a fault or warning is detected, the OPm will display the fault or warning code together with a brief explanatory message.

Pressing P causes the parameter selection screen to be displayed:

<table>
<thead>
<tr>
<th>Menu</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>P000</td>
<td>Access Params.</td>
</tr>
<tr>
<td>p</td>
<td>Operate Drive</td>
</tr>
</tbody>
</table>

Press the \( \wedge \) or \( \vee \) button to view parameter settings. The procedure for changing parameter settings is described in the inverter’s handbook. Press P to return to the OPERATE screen.

DIAG

Selecting this option after a fault has occurred causes the diagnostics screen to be displayed:

<table>
<thead>
<tr>
<th>Menu</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>overt</td>
<td>temp not too hi</td>
</tr>
<tr>
<td>F005</td>
<td>P</td>
</tr>
</tbody>
</table>

Pressing the \( \wedge \) or \( \vee \) button scrolls through the text that describes the possible causes of the
Operating Instruction of Enhanced Operator Panel OPM2

fault (refer to the Fault Codes section of the inverter’s handbook for further details). Press P to return to the Main Menu.

PARAMS

Selecting this option causes the parameter selection screen to be displayed (see OPERATE above).

MODE

This option enables you to configure the OPM for controlling other inverters connected via the USS serial bus and for editing the OPM’s operational parameters. The mode selected is retained during power interruptions.

The default mode is LOCAL. In this mode the OPM can only control a single inverter. If several inverters are connected together then you must select MASTER mode. Note that the INTERNAL and CONTROL modes operate in a similar manner regardless of whether LOCAL or MASTER mode has been selected.

UPREAD

This option lets you copy the inverter’s parameter set to any of 31 locations within the OPM. The parameters are retained in memory during power interruptions and even while the OPM is disconnected from the inverter.

DOWNLOAD

This option lets you copy a parameter set to the inverter that has previously been stored in the OPM.

LANGUAGE

This option lets you change the language at any time.

Note

The language selected is retained during power interruptions and even while the OPM is disconnected from the inverter.

INFO

Selecting this option causes the LCD screen to display a brief description of the OPM. Press the button to scroll through the text one line at a time. Press P at any time to return to the Main Menu.

MASTER Mode (Multi Inverter Operation)

Selecting the MASTER option on the MODE screen enables you to control two or more inverters from the OPM.

If you select OPERATE from the Main Menu after putting the OPM into MASTER mode, a screen similar to that shown below will appear. (Note that the PARAMS option is not available on the Main Menu in MASTER mode.)

This is the first screen that appears whenever the OPM is subsequently powered on in MASTER mode. In this example the top line shows that 4 inverters are connected to the bus with addresses 00, 01, 02 and 15. The address of the selected inverter is shown alongside the operational state. Select the inverter to be controlled by pressing or and then pressing P. This causes the local OPERATE screen to appear.

Note

If the front panel buttons on an inverter are disabled (P007 = 0), the parameters can be changed but the inverter will not run.

If ‘B’ (Broadcast) is selected, all inverters connected to the bus can be controlled simultaneously via the ON, OFF, REVERSE and JOG buttons on the OPM.

DIAG

Selecting this option after a fault has occurred causes the master OPERATE screen to be displayed. Select the inverter to be diagnosed by using the and buttons and then pressing P.
UPREAD

This option lets you copy parameter sets to the OPm from any inverter connected via the USS bus. Up to a maximum of 31 sets can be stored. They are retained in memory during power interruptions and even while the OPm is disconnected from the inverter. This function operates in a similar manner as when selected in LOCAL mode, except that it is necessary to enter the required inverter address using the \( \wedge \) and \( \vee \) buttons and then select it by pressing P.

DOWNLOAD

This option lets you copy parameter sets previously stored in the OPm to any inverter connected via the USS bus. This function operates in a similar manner as when selected in LOCAL mode, except that it is necessary to enter the required inverter address using the \( \wedge \) and \( \vee \) buttons and then select it by pressing P.

INTERNAL Mode

Selecting INTERNAL enables you to access and edit stored parameter sets, even if the OPm is not connected to an inverter (providing an external power supply is used).

CONTROL Mode

If you select PARAMS from the Main Menu after selecting INTERNAL, a screen similar to that shown below will appear. (Note that the OPERATE and DIAG options are not available on the Main Menu in INTERNAL mode.) Select the required parameter set by using the \( \wedge \) and \( \vee \) buttons and then pressing P. If the selected set is empty, the default settings for the required inverter type may be installed. Note that the default settings for the motor parameters (P081 to P086) apply only to the smallest variant of each inverter type.

Note

Do not confuse the number assigned to a parameter set with the address of individual inverters. This is the first screen that appears whenever the OPm is subsequently powered on in INTERNAL mode.
KIT: 6SE3290-0XX87-8SK0 (Items 1 & 2 below)

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Ext-TXD</td>
<td>Ext-RXD</td>
<td>Ext-RTS</td>
<td>ISOL_0V</td>
<td>RXD</td>
<td>TXD</td>
<td>GND</td>
<td>n-c</td>
</tr>
<tr>
<td>MOLEX 08-50-0032</td>
<td>MOLEX 22-01-2051</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RS232  OPM2  RS485

RS232  OPM2

6V DC  250 mA

6V DC  250 mA
Menu

10.09.97

OPM2 - OPERATING INSTRUCTIONS

1. Menu

2. Menu

3. Menu

- **Haupt Menu** (Main Menu)
- **Start** (Start)
- **Stop** (Stop)
- **Start Inverter** (Start Inverter)
- **Stop Inverter** (Stop Inverter)
- **Jog** (Jog)
- **RUN** (Run)
- **STOP** (Stop)

- **Spannungsnachlas < 0.2V** (Voltage Drop < 0.2V)
- **Verbrauch < 0.2V** (Consumption < 0.2V)
- **Caduta di tensione < 0.2V** (Drop in Voltage < 0.2V)
- **Caída de tensión < 0.2V** (Drop in Voltage < 0.2V)
- **Spanningsverlies < 0.2V** (Voltage Drop < 0.2V)
- **Spending Fald < 0.2V** (Voltage Drop < 0.2V)

**Note:** Please note that the diagram includes various indicators and labels, which are too small to be transcribed accurately here. The diagram shows a detailed view of the device with various components and their labeling in different languages.