

# How can you display error messages and warnings of a frequency converter on a panel?

WinCC flexible RT and Panels

FAQ • February 2011



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<http://support.automation.siemens.com/WW/view/en/29522676>

## Question

How can you display error messages and warnings of a frequency converter on a panel?

## Answer

The instructions and notes listed in this document provide a detailed answer to this question.

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# 1 Introduction

In this FAQ we describe how to read out all error and warning parameters from a frequency converter of the SINAMICS/Micromaster family and display them on a panel. A library has been created in WinCC flexible for the error and warning messages.

This FAQ gives a detailed description of how to establish a direct connection between a converter and the panel via PROFIBUS (except SINAMICS G110).

**NOTE** Any HMI panel that supports PROFIBUS DP can be used as operator panel.

**NOTE** The error and warning messages can also be read out with other connections. For example, via a connection with a S7 300 CPU or via the USS protocol and an S7 200 CPU.

## 2 Direct Connection (Panel to Frequency Converter)

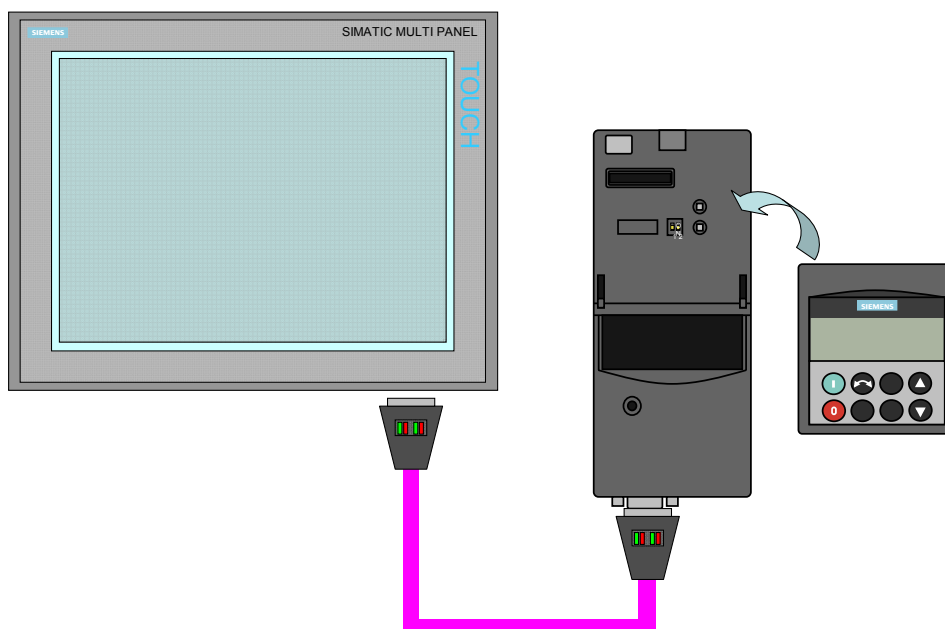
### 2.1 Configuration

The components below have been used in this sample configuration:

- Micromaster 440 with PROFIBUS module
- MP 377 12" Touch
- WinCC flexible 2008

The components were interconnected in a PROFIBUS DP network as in Figure 2-1.

Figure 2-1



#### NOTE

The R parameters (display parameters) can only be read. The P parameters can be read and written. Note here that different P parameters can only be written depending on other parameters (Quick commissioning mode, for example). More information about the parameters is available in the manual of the frequency converter concerned in each case.

The manuals are available at the link below:

<http://support.automation.siemens.com/WW/view/de/10804921/133300>.

## 2.2 Sample Configuration of the Micromaster 440

You must assign a PROFIBUS address to the Micromaster to establish a connection via PROFIBUS DP. You have two options for this in the case of Micromaster MM440:

- Via the DIP switches on the PROFIBUS module.
- Via a user-specified value at parameter P0918 (DIP switches must be set to 0).

If the DIP switch is not set to 0, the switch position always has priority. If this is set to 0, the bus address is determined by P0918.

See here the examples in Figure 2-2.

Figure 2-2

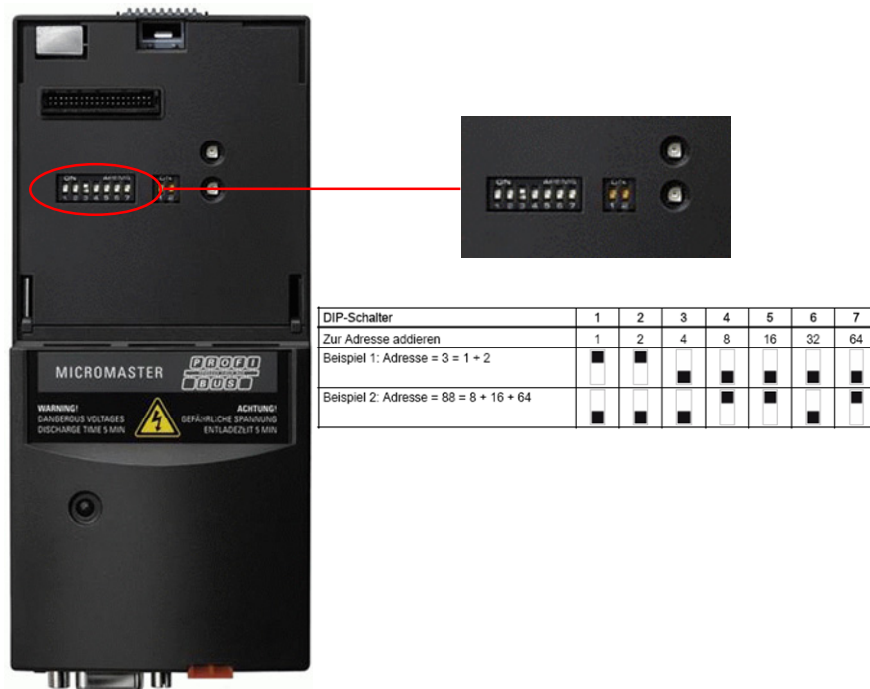



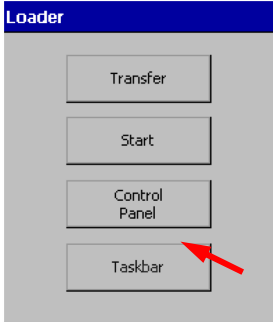

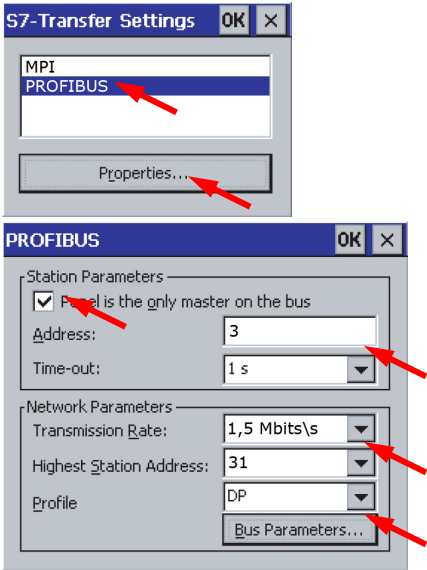
Table 2-1

No.	Procedure
1	Configure the parameters of the Micromaster 440 with the specifications of the motor you have connected.
2	Connect you PROFIBUS module to the Micromaster 440.
3	Use the DIP switches to set the PROFIBUS address to 4. 

## 2.3 Sample Configuration of the MP 377 12" Touch

You must also configure a PROFIBUS address on the MP 377 12" Touch. This is done using the "Control Panel". Here you can configure the type of connection and its settings under "S7 Transfer Settings".

Table 2-2

No.	Procedure
1	Start the MP 377 12" Touch by switching on the power supply.
2	Open the "Control Panel" with the "Control Panel" button. 
3	Select the "S7 Transfer Settings" option by double-clicking the "Transfer" field. 
4	Mark the field PROFIBUS and open the bus settings by clicking "Properties...". Set the PROFIBUS address to 3. Make sure that the transmission rate is set to 1.5 Mbits/s. Select the option "Panel is the only master on the bus". 
5	Click OK to confirm the settings made.

**Note**

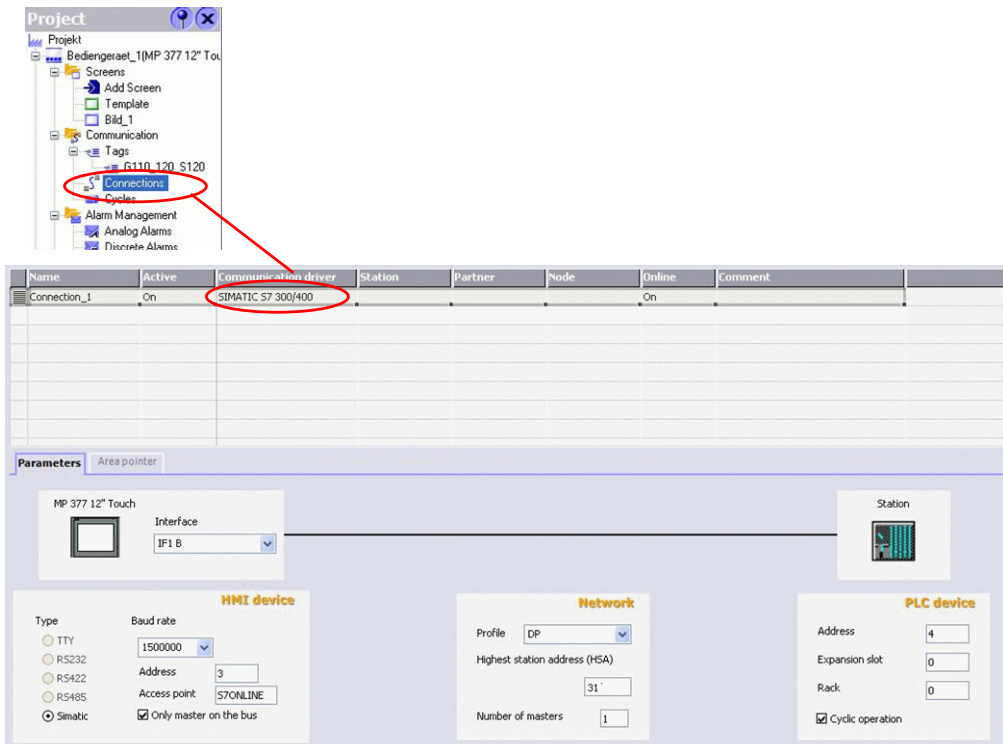
"Only master on the bus"

Disable any additional safety function against bus defects when connecting the operator panel to the network. A passive station (slave) can only send data when if requested to do so by an active station (master). Since the panel is to request the information from the Micromaster (active node) and there is no controller in between, it is mandatory to enable this option.

## 2.4 Settings in WinCC Flexible

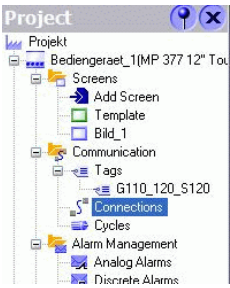

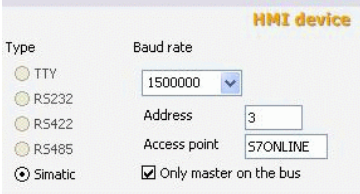

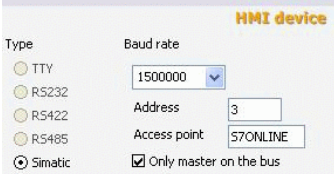
In WinCC flexible you must configure a SIMATIC S7 300/400 connection. The frequency converter is recognized as such a station. Here you must pay attention to the correct transmission rate, the address of the operator panel, the network configuration and the address of the controller or frequency converter.

Figure 2-3



Follow the instructions in the table below to configure the connection in WinCC flexible.

Table 2-3

No.	Procedure
1	<p>Double-click to open the connection settings.</p> 
2	<p>Create a new connection. This should be a SIMATIC S7 300/400 connection.</p> 
3	<p>In the parameters you now configure the bus settings for the operator panel. Set the baud rate to 1500000. The access point is "S7ONLINE". The address must be identical to that which you set for the "S7 Transfer Settings" in the MP 377 12" Touch. Set the bus address to 3. Make sure that the "Only master on the bus" field is checked.</p> 
4	<p>Set the network profile to "DP". Only one master is allowed in this network.</p> 
5	<p>Now configure the controller. The address must be identical to that which you assigned using the DIP switches on the PROFIBUS module of the Micromaster 440. Set the bus address to 4. You do not need to worry about the slot and rack.</p> 

## 2.5 Inserting and Configuring the Library

The error and warning messages of the frequency converter are collected together in a library. You can use the library with the converters below:

- G110
- G120

- Micromaster 410
- Micromaster 420
- Micromaster 430
- Micromaster 440
- S120

The library allows you to use drag & drop to incorporate message texts in two languages (German/English) into your project. The library has four different lists.

A distinction is made in S120 and G110/G120/Micromaster whereby you can choose from short message texts (25 characters) and long texts (80 or 100 characters) in each case. A message consists of:

- Error number tags ("ErrorNo1")
- Warning number tags ("WarningNo1")
- A text list

Two variables have been created for the error and warning messages, because these are represented by two different parameters in the frequency converter.

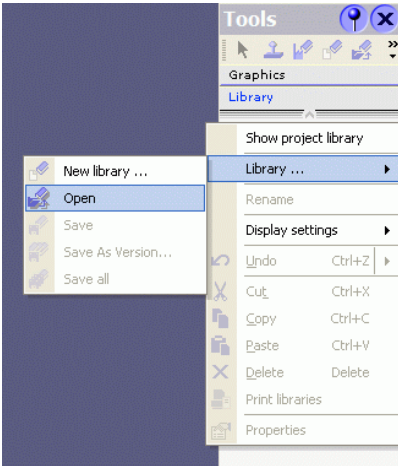
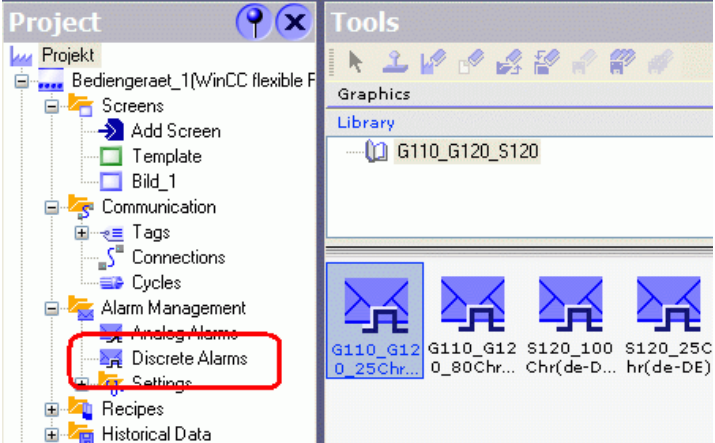
**Note**

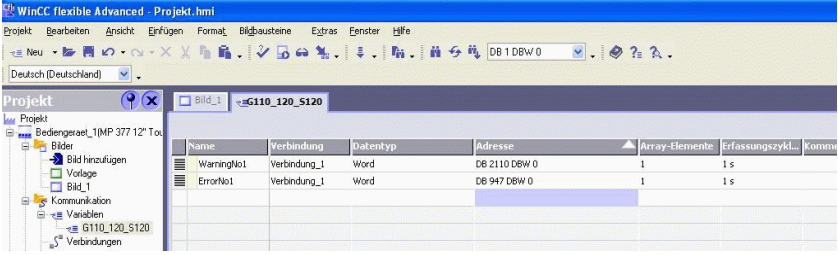
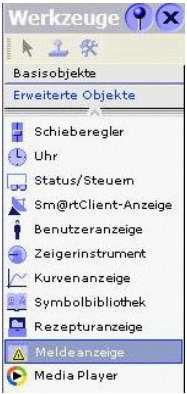
The errors and warnings issued by the frequency converter can be output in two steps. However, in this example we have simplified matters and used just the first step.

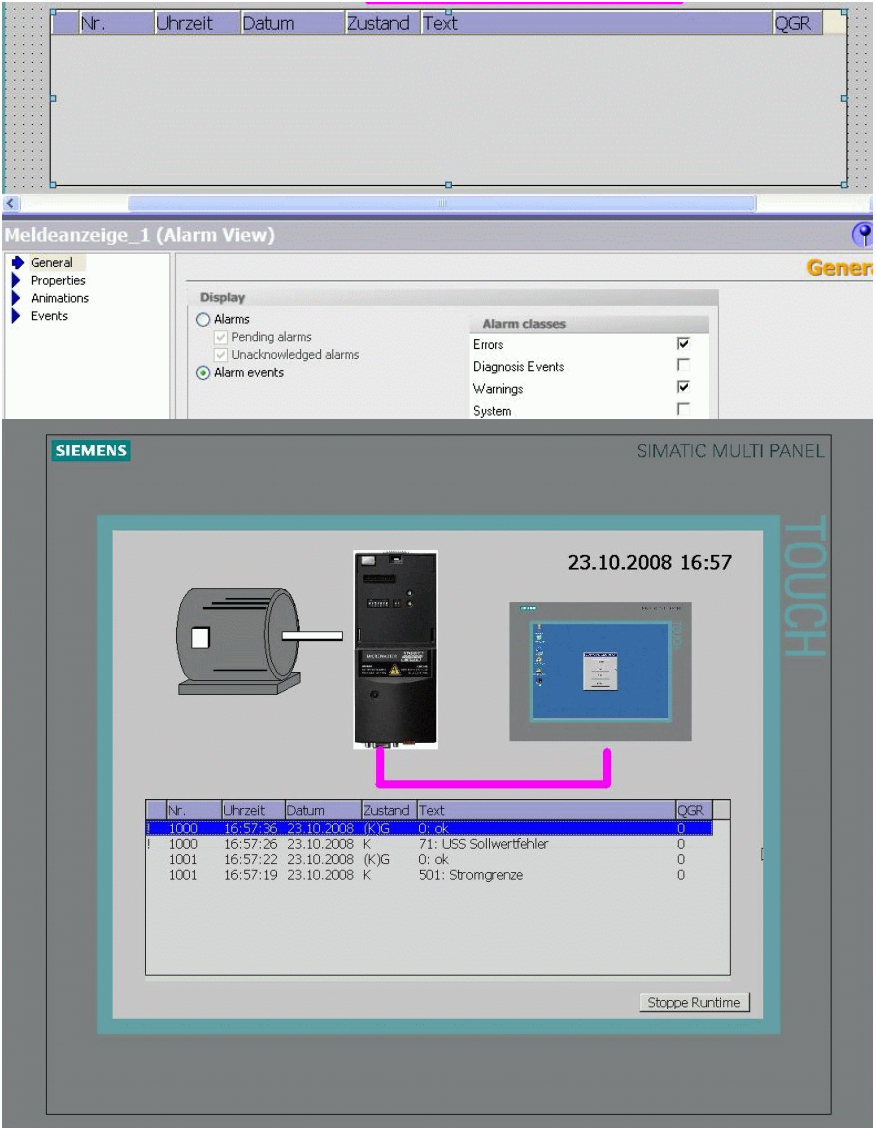
Therefore, only the message is output and not the additional error value and description.

Follow the steps described in the table to insert the library.

Table 2-4

No.	Procedure
1	Save the archive file in a directory of your choice and unpack it.
2	<p>Right-click to open the WLF file in the library window of the working area with "Library &gt; Open".</p>  <p>The screenshot shows the 'Tools' menu with the 'Library' sub-menu open. The 'Open' option is highlighted in blue. Other options in the 'Library' sub-menu include 'New library ...', 'Save', 'Save As Version...', 'Save all', 'Show project library', 'Library ...', 'Rename', and 'Display settings'. The 'Tools' menu also includes 'Undo (Ctrl+Z)', 'Cut (Ctrl+X)', 'Copy (Ctrl+C)', 'Paste (Ctrl+V)', 'Delete', 'Print libraries', and 'Properties'.</p>
3	<p>Incorporate the messages of the library "G110_G120_80Chr" by dragging and dropping them into the analog messages.</p>  <p>The screenshot shows the 'Project' tree on the left and the 'Tools' window on the right. In the 'Project' tree, the 'Discrete Alarms' folder is highlighted with a red rectangle. In the 'Tools' window, the 'Library' tab is active, showing a list of messages including 'G110_G120_S120' and 'G110_G120_25Chr...'. Below the list, four message icons are visible, with the first one labeled 'G110_G120_25Chr...'.</p>

No.	Procedure																					
4	<p>Open the "Tags" window and configure them.</p> <p>Set the configured connection. Change the data type to WORD. The parameter for error messages is the address DB 947 DBW 0. The parameter for warning messages is the address DB 2110 DBW 0.</p> <p>The following holds here: Parameter number = Data block number</p>  <table border="1" data-bbox="657 593 1332 712"> <thead> <tr> <th>Name</th> <th>Verbindung</th> <th>Datentyp</th> <th>Adresse</th> <th>Array-Elemente</th> <th>Erfassungszykl...</th> <th>Komm...</th> </tr> </thead> <tbody> <tr> <td>WarningNo1</td> <td>Verbindung_1</td> <td>Word</td> <td>DB 2110 DBW 0</td> <td>1</td> <td>1 s</td> <td></td> </tr> <tr> <td>ErrorNo1</td> <td>Verbindung_1</td> <td>Word</td> <td>DB 947 DBW 0</td> <td>1</td> <td>1 s</td> <td></td> </tr> </tbody> </table> <p><b>Note</b></p> <p>When using a SINAMICS S110/S120 note that the converter is split into separate drive objects (DO), for example DO1 = Control Unit, DO2 = Motor module 1, DO3 = Motor module 2 etc.). When you read out a parameter, you must also specify the relevant drive object. The parameter r947 in DO1 =&gt; DB 947 DBW xxxx. xxxx is calculated, for example, from <math>1024 * \text{drive object number (DO no.)} + \text{subindex}</math>.</p> <p><b>Example</b></p> <p>From parameter r947 the index 4 is to be read out of DO2. The calculation here is <math>1024 * 2 + 4 = 2052</math>.</p>	Name	Verbindung	Datentyp	Adresse	Array-Elemente	Erfassungszykl...	Komm...	WarningNo1	Verbindung_1	Word	DB 2110 DBW 0	1	1 s		ErrorNo1	Verbindung_1	Word	DB 947 DBW 0	1	1 s	
Name	Verbindung	Datentyp	Adresse	Array-Elemente	Erfassungszykl...	Komm...																
WarningNo1	Verbindung_1	Word	DB 2110 DBW 0	1	1 s																	
ErrorNo1	Verbindung_1	Word	DB 947 DBW 0	1	1 s																	
5	<p>You must insert a message display in the desired picture in order to display messages on the MP 377 12" Touch. You insert a message display by dragging and dropping the message display into the picture under the option "Extended Objects".</p> 																					

No.	Procedure																														
6	<p>You can now adapt the message display to suit your requirements. It is important to check the Errors and Warning fields.</p>  <table border="1"> <thead> <tr> <th>Nr.</th> <th>Uhrzeit</th> <th>Datum</th> <th>Zustand</th> <th>Text</th> <th>QGR</th> </tr> </thead> <tbody> <tr> <td>1000</td> <td>16:57:36</td> <td>23.10.2008</td> <td>(K)G</td> <td>0: ok</td> <td>0</td> </tr> <tr> <td>1001</td> <td>16:57:26</td> <td>23.10.2008</td> <td>K</td> <td>71: USS Sollwertfehler</td> <td>0</td> </tr> <tr> <td>1001</td> <td>16:57:22</td> <td>23.10.2008</td> <td>(K)G</td> <td>0: ok</td> <td>0</td> </tr> <tr> <td>1001</td> <td>16:57:19</td> <td>23.10.2008</td> <td>K</td> <td>501: Stromgrenze</td> <td>0</td> </tr> </tbody> </table>	Nr.	Uhrzeit	Datum	Zustand	Text	QGR	1000	16:57:36	23.10.2008	(K)G	0: ok	0	1001	16:57:26	23.10.2008	K	71: USS Sollwertfehler	0	1001	16:57:22	23.10.2008	(K)G	0: ok	0	1001	16:57:19	23.10.2008	K	501: Stromgrenze	0
Nr.	Uhrzeit	Datum	Zustand	Text	QGR																										
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1001	16:57:22	23.10.2008	(K)G	0: ok	0																										
1001	16:57:19	23.10.2008	K	501: Stromgrenze	0																										

**Note**

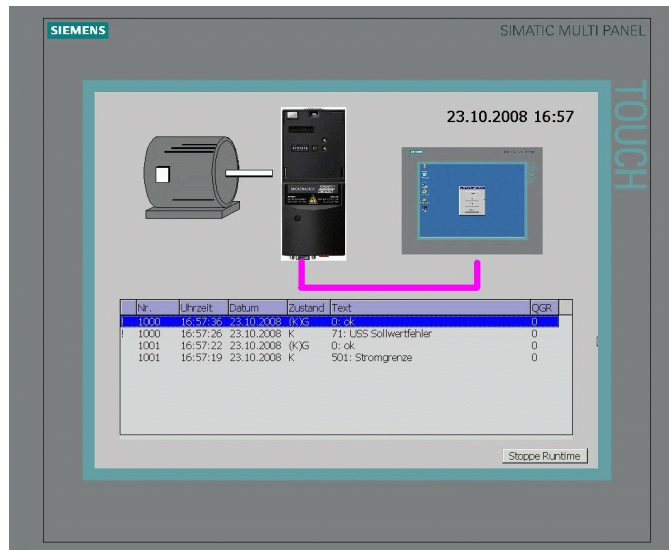
You can change the message number and message texts of the inserted library yourself to suit your needs. Furthermore, you also have the option of using the text list in a symbolic I/O field.

## 2.6 Commissioning

Check the wiring of the components to commission the configuration. Download the WinCC flexible project to the MP 377 12" Touch.

Start the complete plant and the messages are transferred to the configured message display.

Figure 2-4

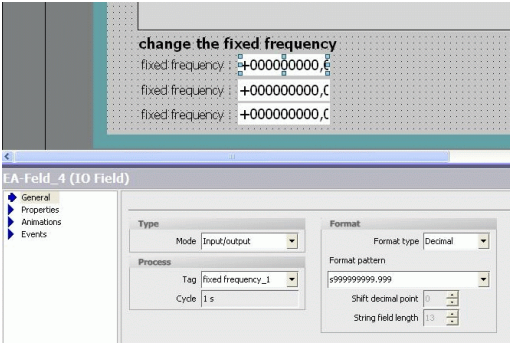
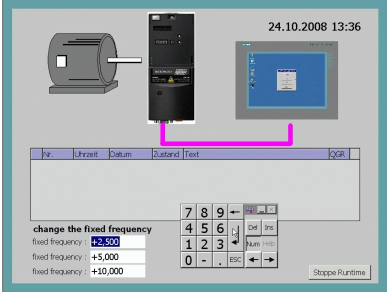
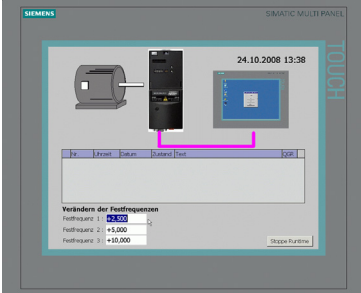


## 2.7 Expansion

You can also control parameters individually with the direct connection. It is not possible to control "R parameters" with the acyclic data traffic used. However, you can change the "P parameters" using the panel.

This expansion is explained taking the example of fixed frequencies. Follow the instructions below.

Table 2-5

No.	Procedure																												
1	<p>Create 3 tags in your WinCC flexible project (Fixed_frequency_1; Fixed_frequency_2; Fixed_frequency_3).</p> <p>The parameter numbers are:</p> <ul style="list-style-type: none"> <li>Fixed_frequency_1: P1001</li> <li>Fixed_frequency_2: P1002</li> <li>Fixed_frequency_3: P1003</li> </ul> <p>(These can be taken from the parameter list of the frequency converter.)</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Verbindung</th> <th>Datentyp</th> <th>Symbol</th> <th>Adresse</th> <th>Array-Elemente</th> <th>Erfass</th> </tr> </thead> <tbody> <tr> <td>Festfrequenz_1</td> <td>Verbindung_1</td> <td>Real</td> <td>&lt;Undefiniert&gt;</td> <td>DB 1001 DBD 0</td> <td>1</td> <td>1 s</td> </tr> <tr> <td>Festfrequenz_2</td> <td>Verbindung_1</td> <td>Real</td> <td>&lt;Undefiniert&gt;</td> <td>DB 1002 DBD 0</td> <td>1</td> <td>1 s</td> </tr> <tr> <td>Festfrequenz_3</td> <td>Verbindung_1</td> <td>Real</td> <td>&lt;Undefiniert&gt;</td> <td>DB 1003 DBD 0</td> <td>1</td> <td>1 s</td> </tr> </tbody> </table>	Name	Verbindung	Datentyp	Symbol	Adresse	Array-Elemente	Erfass	Festfrequenz_1	Verbindung_1	Real	<Undefiniert>	DB 1001 DBD 0	1	1 s	Festfrequenz_2	Verbindung_1	Real	<Undefiniert>	DB 1002 DBD 0	1	1 s	Festfrequenz_3	Verbindung_1	Real	<Undefiniert>	DB 1003 DBD 0	1	1 s
Name	Verbindung	Datentyp	Symbol	Adresse	Array-Elemente	Erfass																							
Festfrequenz_1	Verbindung_1	Real	<Undefiniert>	DB 1001 DBD 0	1	1 s																							
Festfrequenz_2	Verbindung_1	Real	<Undefiniert>	DB 1002 DBD 0	1	1 s																							
Festfrequenz_3	Verbindung_1	Real	<Undefiniert>	DB 1003 DBD 0	1	1 s																							
2	<p>In the picture you create 3 I/O fields and link these to the relevant tags.</p> 																												
3	<p>Transfer the project again and start Runtime on the panel.</p>																												
4	<p>Click in one of these I/O fields created. The screen keyboard is displayed. Using the screen keyboard you enter a different value and confirm it with "Enter".</p> 																												
5	<p>The value is applied and is now displayed in the I/O field. In this way you have made a user-defined change to the fixed frequencies.</p> 																												

## **3 Alternatives**

### **3.1 Additional Controller with PROFIBUS**

The frequency converter is controlled and monitored by a PLC via PROFIBUS. The controller forwards the relevant parameters to the operator panel.

### **3.2 Additional Controller with USS Protocol**

The SINAMICS G110 frequency converter supports only the USS protocol and does not support PROFIBUS.

For the USS protocol there are communication blocks for the S7-200.

Micro Automation Set 26 provides a general solution.

<http://support.automation.siemens.com/WW/view/de/21690362>