SIEMENS

SIMATIC HMI

**Configuring
Text-based Displays**

Product Brief

Edition 12/01

A5E00148094

Safety Guidelines

This manual contains notices which you should observe to ensure your own personal safety, as well as to protect the product and connected equipment. These notices are marked as follows according to the level of danger:

Danger

indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Warning

indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution

used with the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Caution

used without safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Attention

indicates that unwanted events or status can occur if the relevant information is not observed.

Note

draws your attention to particularly important information on the product, handling the product, or to a particular part of the documentation.

Qualified Personnel

Equipment may be commissioned and operated only by qualified personnel. Qualified personnel within the meaning of the safety notices in this manual are persons who are authorized to commission, ground and identify equipment, systems and circuits in accordance with safety engeneering standards.

Correct Usage

Note the following:

⚠ Warning

The equipment may be used only for the applications stipulated in the catalog and in the technical description and only in conjunction with other equipment and components recommended or approved by Siemens.

Startup must not take place until it is established that the machine, which is to accommodate this component, is in conformity with the guideline 98/37 ECC.

Faultless and safe operation of the product presupposes proper transportation, proper storage, erection and installation as well as careful operation and maintenance.

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Impressum

Editor and Publisher: A&D PT1 D1

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Introduction

ProTool is the configuration software for operating units required to visualize and operate processes. Operating units are basically divided into three families:

- Units with a text-based display (e.g. TD 17, OP 3, OP 7, OP 17)

- Units with a graphics display (e.g. OP 27, OP 37, TP 27, TP 37)

- Windows-based systems (e.g. Panel PC, standard PC, MP 370, MP 270, MP 270B, OP 270)

ProTool is available in three versions:

- ProTool/Pro
  to configure the entire unit family

- ProTool
  to configure units with graphics and text-based displays

- ProTool/Lite
  to configure units with text-based displays

The procedures and descriptions in this quick reference manual should help provide an introduction to configuring units with text-based displays. PLC-specific details for creating the associated program are not provided.

Notes on using the quick reference manual

Texts or inputs required for the configuration which can be selected from items provided appear in `Courier` typeface.

Menus, menu options, dialogs or texts in dialog boxes which can be selected appear in *italics*.

Further information

Further information is provided in the following:

- Online help

- ProTool User's Guide - Configuring Text-based Displays

- User's Guide - Communications

Elements of a configuration

The following elements, described below, are available to carry out a configuration and are explained by means of configuration examples in this manual.

Creating screens

Screens enable processes to be visualized. Screens indicate the current process statuses in the form of numeric values and also provide function keys with which to modify values and, thus, influence processes.

Linking screens

The screens involved in a configuration can be linked to each other.

PLC process value input/output

Process values can be displayed and modified directly by using input and output fields. The entries can be assigned limit values and protected by a password. Output is possible in a number of display formats, such as decimal or binary.

Integrating texts

Input/output fields and function keys can be labeled with text for the user.

Display messages

Messages indicate events and statuses in the process. ProTool distinguishes between event messages and alarm messages. Event messages relate to the status of a machine or process. Alarm messages indicate operating faults concerning a machine or process and must be acknowledged.
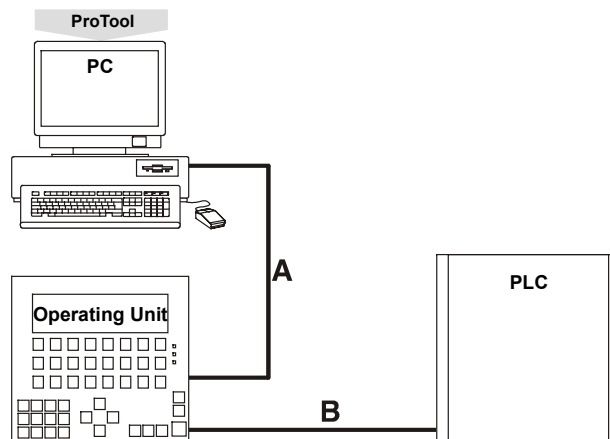
! The TD17 supports the above named elements by displaying in event messages and issuing process values in messages.

Commissioning Operating Units

Hardware structure

The following figure illustrates an example of a variant of the hardware structure using the OP17:

A Serial connection for downloading configurations (configuration phase only)

B Connection between operating unit and PLC (configuration phase and online operation)

Installing the software

Installing ProTool on a PC

– Insert the installation CD in the CD-ROM drive; setup starts automatically after a few seconds

– Follow the instructions on the screen

Using online help and context-sensitive help

If problems arise during the configuration, or further information concerning specific points is required, proceed as follows:

- − Click on the question mark symbol

- − Click on the elements for which information is required

Using context menus

Context menus are available for the elements of a configuration. Context menus can be used to trigger actions which are related to the corresponding element. Proceed as follows to call in a context menu:

- − Select an element

- − Click the right mouse button

Basic Steps for a Configuration

Start ProTool

− Double click on the ProTool symbol on the desktop

Define the new configuration

In the case of new ProTool users, it is recommended to use standard configurations as a basis for individual configurations. Standard configurations are available for all operator panels with a text-based display. They contain screens in which generally used functions are already configured.

− Select *File → New*

− Select the operating unit to be configured

− Click on *Continue*

− Select PLC

− Set further parameters for the PLC under *Parameter*

Example: Parameters when an S7 is connected
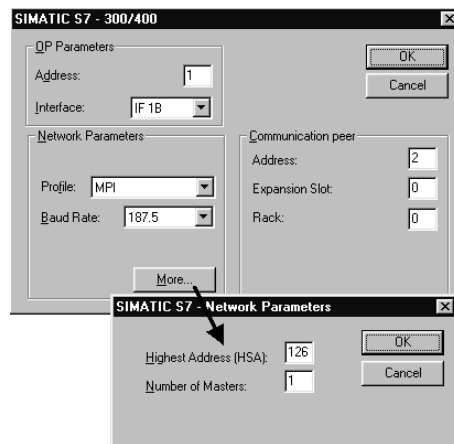
- Click on *Continue*

- Activate checkbox *Use Standard Project*

- Click on *Continue*

- Enter a name for the configuration in *Project*

- Click on *Finish*

Define default settings

In order for the operating unit to perform special tasks, communication areas must be configured in the PLC. Communication areas are necessary, for example, to trigger and acknowledge messages. Both operating unit and PLC access the same configured data areas in order to communicate with each other.

Proceed as follows to configure a communication area for alarm messages:

- Select *System* → *Area Pointers*

- Select *Type* `Alarm Messages`

- Click on *Add*

- In *PLC*, select the PLC used in the system

- Define the other settings for alarm messages

- Click on *OK*

Setup this data area in the PLC program too.

! In the case of connection to a SIMATIC S5, a communication area of the type Interface Area must always be set up for communication between the operating unit and PLC. The setup procedure is the same as for setting up a communication area for alarm messages described above.

Creating the start screen for the configuration

The start screen is the first screen displayed with regard to a configuration. The start screen identification has the following effect:

- OP7, OP17:
  the start screen is displayed immediately after the unit has booted

- Other units:
  the unit is in message level after booting; press the ENTER key to call the start screen

### Add new screen to a configuration

Proceed as follows:

− Double click on *Screens* in the project window

A new screen is added and opened.

Identify new screen as start screen

Proceed as follows:

– Click on the screen entry on the right-hand side of the project window using the right mouse button

– Select *Properties* in the context menu

– Activate checkbox *Start Screen*

– Click on *OK*
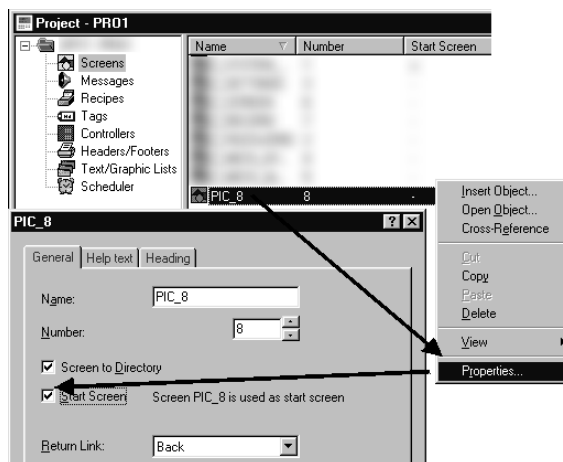
Add descriptive text to start screen

! In the case of units with text-based displays, each screen is comprised of several screen entries.

Proceed as follows:

– Click on the required line in the first screen entry of the start screen

– Enter the text `Start Screen`

Enable switch to download mode

Before a generated configuration can be downloaded from a PC to an operating unit, the operating unit must be set to Download mode. In order to access Download mode simply and quickly, assign the function *Mode* to a function key.

The function should be assigned to a global function key so that Download mode can be activated from any screen in the configuration. When a global function key is assigned, the function is available in every screen.

! When using operating unit OP3, the function must be assigned to a local function key since no global assignment is possible. Where a local function key is assigned, the function is only available a certain screen.

Assign function *Mode* globally

Proceed as follows:

- Select *System → Screen/Keys*

 – Click on the required function key

- Open the folder *Toggle* in *Select Object*

- Assign the function *Mode* by double clicking on the function key

- Enter 2 in parameter *Mode* 2

- Click on *OK* twice
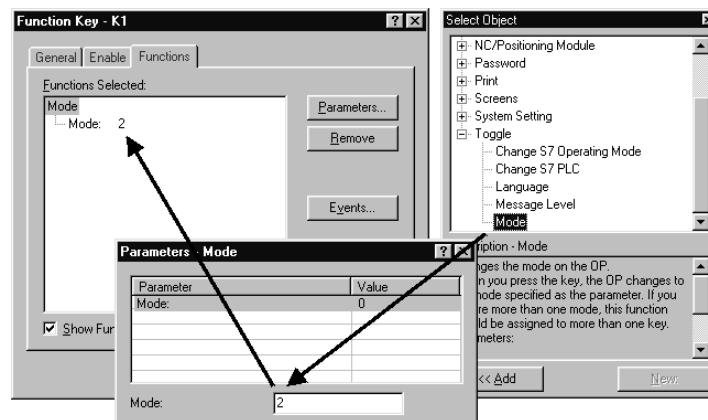
Activate configuration on operating unit

Compile operation-capable configuration

Proceed as follows:

- Click on the symbol for compiling

- Follow the instructions on the screen

Download operation-capable configuration to operating unit

The configuration must be downloaded to the operating unit for testing. Downloading is carried out via a direct serial connection between the PC and operating unit.

Proceed as follows:

- Select *File → Settings → Download*

- Set downloading parameters
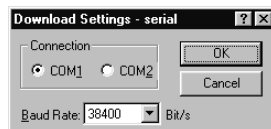
- Click on *OK*

In order to download the configuration, the operating unit must be in Download mode. The procedure with which to activate Download mode depends on the configuration status of the operating unit:

- An operating unit which has not received a configuration switches to Download mode automatically.

- An operating unit which contains a configuration can be switched to Download mode directly after switching on the power supply by pressing the key combination:
  ESC, CURSOR RIGHT and CURSOR DOWN.
  The key combination deletes the configuration.

- If a function key has already been assigned for switching the unit to Download mode, as described in Section **Enable switch to download** mode on Page 12, simply press that key

When the message `Ready for transfer` appears on the operating unit, proceed as follows:

- Click the download symbol

After downloading has been completed successfully, the operating unit is rebooted with the downloaded configuration. It can then be tested.

## Extend Configuration with Simple Elements

!   A condition for the procedures described in this section is that the following configuration steps, defined in the Section **Basic Steps for a Configuration,** have been carried out:

- Define the new configuration (Page 8)
- Define default settings (Page 9)
- Creating the start screen for the configuration (Page 10)
- Enable switch to download mode (Page 12)

Add second screen to configuration and configure changing screens

At this point, the configuration only contains the start screen. If other screens are to be added, the operator must be able to switch between the screens.

This example illustrates how a second screen is linked to the start screen. A function key is assigned which enables switching to a different screen from any screen.
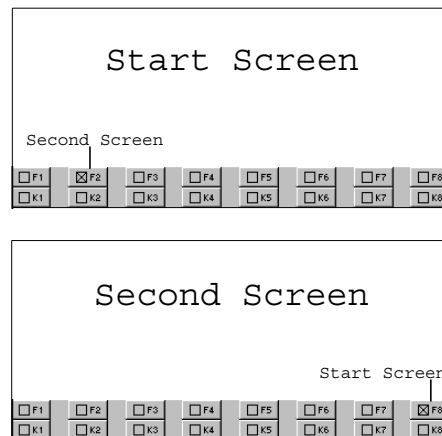
Add second screen to configuration

Proceed as follows:

− Double click on *Screens* in the project window

A new screen is added and opened.
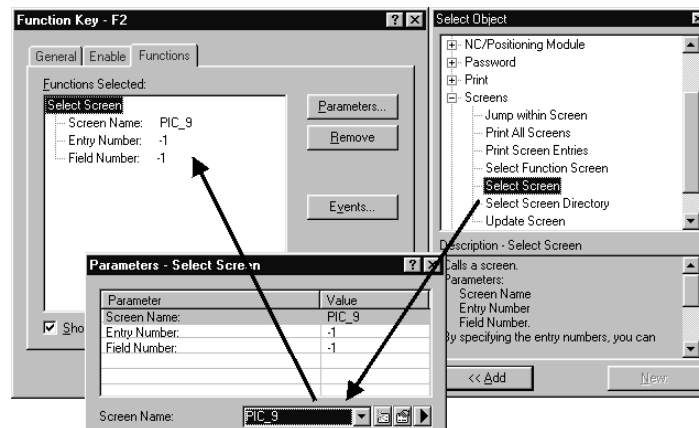
Add descriptive text to second screen
Proceed as follows:

− Click on the required line in the first screen entry of the second screen

− Enter text `Second screen`

Configure switching to second screen

Proceed as follows:

□F2 − Click required function key in the first screen entry of the start screen

− Open the folder *Screens* in *Select Object*

− Double click on *Select Screen*

− Select the name of the second screen under *Screen Name*

− Click on *OK*

Configure change to start screen

Proceed as follows:

☐F8   –   Click on the required function key in the first screen entry of the second screen

– Open the folder *Screens* in *Select Object*

– Double click on *Select Screen*

– Select the name of the start screen in *Screen Name*

– Click on *OK* twice

The sequence of screens displayed is stored in the operating unit. Return to the screen previously displayed by pressing the ESC key.

!   The configuration can be tested at this point. The procedure is described in Section **Activate configuration on operating unit** on Page 14.

Input/output of PLC process values as numeric values

This example illustrates how a PLC process value is entered in an operating unit input field and output via an output field.

Inserting an input field

Proceed as follows:

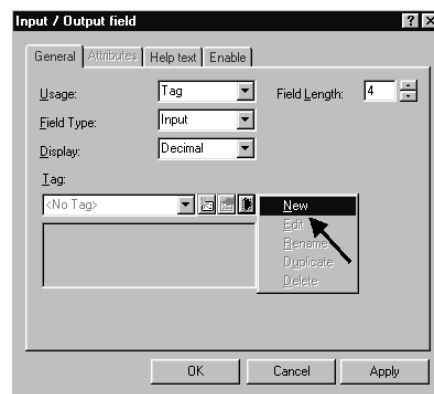− Click on the first line of the second screen entry of the start screen

{F}   − Click on the Input/Output Field symbol

− Select *Field Type* Input

Generate a new tag

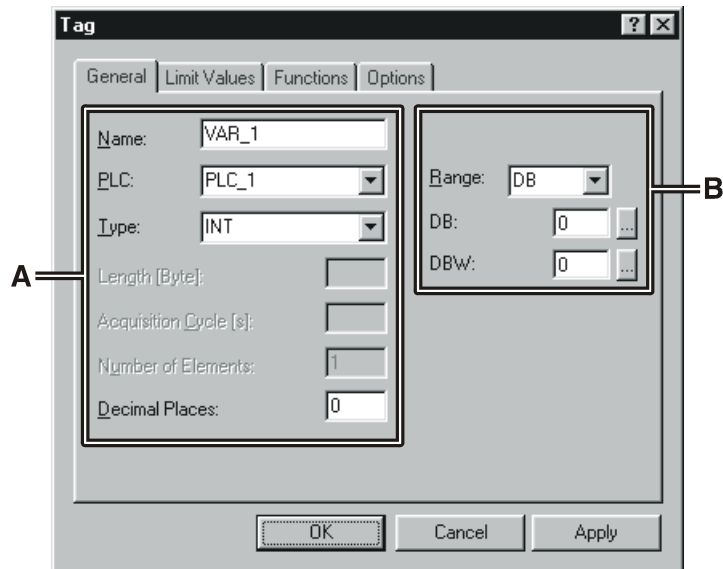Proceed as follows:

▶   − Click on the context menu symbol

− Click on *New* in the context menu

- − Define tag parameters
- − Click *OK* twice

Example: Tag for S7 connection

A Formatting for display in the configuration

B Address in the PLC

The representation of the address in the PLC is dependent on the PLC selected. ProTool adapts dynamically to the programmable address area.
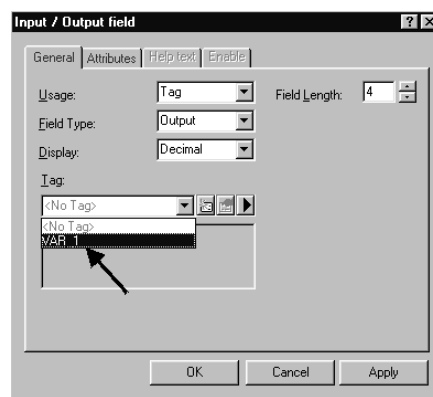
Insert an output field
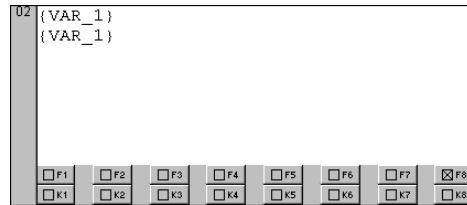
Proceed as follows:

− Click on the second line in the second screen entry of the start screen

{F} − Click on the Input/Output Field symbol

− Select *Field Type* Output

− Select the name of the tag generated in *Tag*

− Click on *OK*

Set up a data area for the tag in the PLC. Using the input field, it is possible to enter a process value in the PLC which is then issued via the output field.

```
02 {VAR_1}
   {VAR_1}



   □F1   □F2   □F3   □F4   □F5   □F6   □F7   ⊠F8
   □K1   □K2   □K3   □K4   □K5   □K6   □K7   □K8
```

! The configuration can be tested at this point. The procedure is described in Section **Activate configuration on operating unit** on Page 14.

Display messages

In order to issue information concerning current process faults in the form of messages, a communication area was configured for alarm messages in Section **Define default settings** on Page 9.

Proceed as follows to configure alarm message texts for output:

− *Messages* in the project window

− Double click on *Alarm Messages* on the right-hand side of the project window

− Enter the alarm message text for `Alarm Message 1` in line *0001*

− Enter the alarm message text for `Alarm Message 2` in line *0002*

− Enter the alarm message text for `Alarm Message 3` in line *0003*

The status line, at the bottom right of the screen, indicates the respective address linking the alarm message to the PLC. This information is PLC-specific.

In order to display the configured alarm messages on the operating unit, the corresponding bits must be set in the PLC using the PLC program.

! The configuration can be tested at this point. The procedure is described in Section **Activate configuration on operating unit** on Page 14.