Inspired by
temperature

Pilot Remote Application

V1.2.0

Manual

huber

Pilot Remote Application

Table of contents

1 Introduction

1.1 Safety

1.1.1 Symbols used for Safety Instructions

Safety instructions are indicated by the below combinations of pictograms and signal words. The signal word describes the classification of the residual risk when disregarding the operation manual.

⚠ DANGER	**Denotes an immediate hazardous situation that will result in death or serious injuries.**

⚠ WARNING	**Denotes a general hazardous situation that may result in death or serious injuries.**

⚠ CAUTION	**Denotes a hazardous situation that can result in injury.**

NOTE	**Denotes a situation that can result in property material damage.**

INFORMATION	Denotes important notes and usable hints.

Explanation
Safety information and
procedure
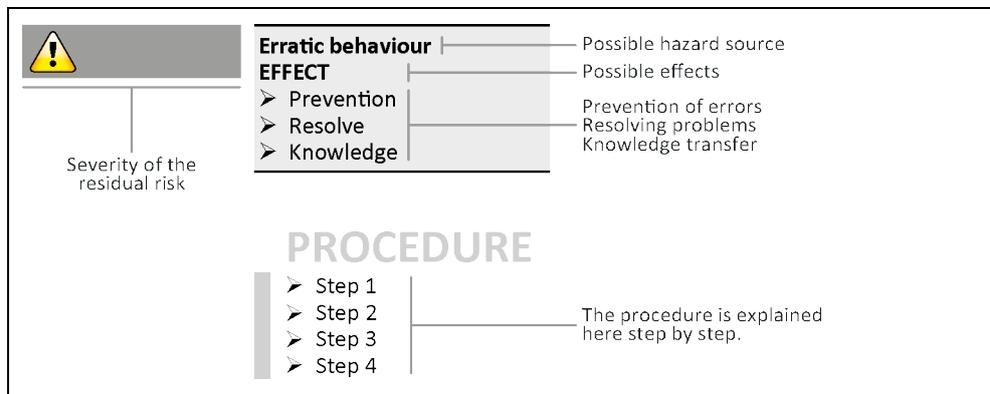
The safety information in this manual is designed to protect the responsible body, operator and the equipment from damage. Safety information must always appear BEFORE instructions and at the beginning of each chapter. First inform yourself about any residual risks due to misuse before you start an operation.

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1.1.2 Proper operation

⚠ WARNING	**The supplied USB dongle is used in an ATEX zone for program licensing** **DEATH OR SERIOUS INJURY DUE TO EXPLOSION** ➢ The supplied USB dongle must not be used in an ATEX zone! ➢ The USB dongle is a possible source of ignition in an ATEX zone! ➢ In an ATEX zone, use a license file for program licensing!

"Pilot Remote" is a computer application for Microsoft Windows (7, 8, 10) and provides the following function:

Remotely controlling any number of Huber temperature control units (with Pilot ONE) that are connected to a computer by an Ethernet network.

Range of functions: Most features of the Huber temperature control units can be remotely controlled. This does not apply, for example, to the overtemperature protection and the Ethernet settings.

Prerequisites for running the "Pilot Remote" application:

- A computer with an Ethernet interface (RJ45 jack 100BaseT) and a Microsoft Windows OS (7, 8, 10).
- Activation of the Ethernet ports 8102 and 8103 in firewalls (if available).
- The supplied USB flash drive for program installation and the exchange of SSL certificates between computer and temperature control unit.
  or
  an Internet connection to download the required programs from http://www.huber-online.com.
- The supplied USB dongle to license the application.

The following languages are supported:

- German
- English

For safety reasons, you can stop the operating modes "Temperature Control", "Degassing", "Venting" and "Circulation" at the temperature control unit at any time.

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2 Description of function

2.1 Basics

2.1.1 SSL Certificates

The "Pilot Remote" application and "Pilot ONE" use the network protocol SSL (Secure Socket Layer) for the secure transmission of data. The new description / version of SSL is TLS (Transport Layer Security).This manual uses the term SSL.

The SSL network protocol has the following features:

- **Secure authentication** of the communication device
- **Encrypted communication** (end-to-end. The sender encrypts the data and only the recipient decrypts them)

A secure authentication of the communication device ensures that no unauthorized party can establish a communication.

INFORMATION	In an encrypted connection, the message is encrypted by the sender and decrypted only by the receiver. This makes the communication secure.

The "Pilot Remote" application can communicate with a "Pilot ONE" only after certificates have been exchanged! This means the "Pilot ONE" certificate handed over to the "Pilot Remote" application and the "Pilot Remote" certificate must be handed over to the "Pilot ONE". This requires a USB flash drive.

2.1.2 Token

You must have a token make changes to the temperature control unit. Only one user can have a token at a time. A temperature control unit can be remotely controlled via the "Remote GUI" if it has the token. Or the "Remote GUI" user has the token and can thus remotely control the temperature control unit.

The token owner can change the set point, start / stop a temperature control process / edit / start / stop programs and much more.

For safety reasons, you can stop the operating modes "Temperature Control", "Degassing", "Venting" and "Circulation" at the temperature control unit at any time. The temperature control unit does not have to have the token to do so.

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3 Setup mode

⚠ WARNING	**The work on the computer and the temperature control unit is performed in an active ATEX Zone** **DEATH OR SERIOUS INJURY DUE TO EXPLOSION** ➢ Never perform work on the computer and the temperature control unit in an active ATEX Zone! ➢ Follow the installation guide for the Ex px cabinet! ➢ Use a license file in an ATEX zone!

3.1 Installation | Deinstallation

You must install two files:

- **install_Huber_Runtime_Package.exe** contains open source runtime libraries and programs required for the operation of the "Pilot Remote" application.
- **install_Pilot_Remote.exe** is the "Pilot Remote" application enabling the remote control of Pilot ONE.

These two files must be installed in the sequence specified above and require administrator rights. The "Pilot Remote" application installer terminates if the Huber Runtime package was not installed.

Go to the Start menu or go to Control Panel / Programs to uninstall the files. It does not matter which sequence you use when uninstalling these files.

INFORMATION	A shortcut to the "Pilot Remote" application appears on the desktop after program installation. You can use this link to start the application.

3.2 Network configuration

Pilot ONE communicates with the Remote GUI under the following Ethernet ports:

- **Port 8102**
- **Port 8103**

If the Pilot ONE and the PC on which the Pilot Remote is executed are connected within a corporate network, you must observe the following:
The ports in the firewall must be activated by the IT, otherwise no communication can be established.

The PC itself can also block communication via the firewall. Therefore, the PC firewall must also be provided with a corresponding activation.

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3.3 Pilot ONE configuration

Pilot ONE must be configured before you can establish a connection with the temperature control unit. The following settings must be made:

- Time
- Ethernet
- "Pilot Remote" application

INFORMATION	Changing certain settings on the temperature control unit may require the generation of a new certificate. A newly generated certificate must be re-imported by the "Pilot Remote" application.

3.3.1 Setting the time

The time and the time zone a very important parts of the SSL certificates as the period of validity is limited. The connection set-up will fail if the time data do not match.

PROCEDURE

➢ Go to the "Categories Menu".
➢ Tap on the category "System Settings".
➢ Tap on the category "Clock, Calendar".
➢ Make the changes needed and confirm them by tapping "OK".

3.3.2 Ethernet set-up

IP address, host name, domain name and DNS servers must be configured before certificates can be exchanged. These settings are applied to the certificates. Certificates must be recreated if settings are changed later. The "Pilot Remote" application must be informed about a newly generated certificate by way of a re-imported.

PROCEDURE

➢ Go to the "Categories Menu".
➢ Tap on the category "Interfaces".
➢ Tap on the category "Ethernet".
➢ Make the changes needed and confirm each by tapping "OK".

3.3.3 Setting up the "Pilot Remote" application

3.3.3.1 Remote Server

The remote server must be started from Pilot ONE to enable a connection between the "Pilot Remote" application and the temperature control unit.

PROCEDURE

➢ Go to the "Categories Menu".
➢ Tap on the category "Interfaces".
➢ Tap on the category "Pilot Remote".
➢ Tap on the entry "Start/Stop".

You have the following options, if the remote server does not start:

- **Start (once)** is only valid until the next restart of the temperature control unit. The remote server is automatically stopped after each restart of the temperature control unit.
- **Enable (always)** starts the remote server and saves the settings. The remote server is automatically started after each restart of the temperature control unit.

You have the following options once the remote server was started:

- **Stop** disables the remote server if the previous mode was "Start (once)". The remote server is stopped and the settings are saved if the mode was **"Enable (always)"**. Thus, the remote server is not started automatically after restarting the temperature control unit.

3.3.3.2 Token mode

The owner of the token controls the temperature control unit. Writing actions are effective only if you have the token. Thus, a user can change the setpoint only if the user has the token.

You must set up the temperature control unit on how to get the token and thus get control.

PROCEDURE

- ➢ Go to the "Categories Menu".
- ➢ Tap on the category "Interfaces".
- ➢ Tap on the category "Pilot Remote".
- ➢ Tap on the entry "Token mode".

There are three setting options:

- **Embedded** is the factory setting. If this option is selected, only the temperature control unit itself can have the token and perform actions.
- **Manual** means possession of the token is possible only when the current owner releases it. You can grab (grab token) or release the token (release token) via the Categories menu → Interfaces → Token.
- **Automatic** mean anyone can grab the token directly without the current owner releasing it. You can grab (grab token) or release the token (release token) via the Categories menu → Interfaces → Token.
  This setting is particularly advantageous in an ATEX zone. You can turn on the temperature control unit in the ATEX zone and don't have to grab it from the temperature control unit. This occurs automatically when someone wants to grab the token.

INFORMATION It is important to understand that "Grab token" makes you the token owner until someone else grabs the token.
The user is still the owner when the action "Release token" is triggered! The token is only released so someone else can grab it. "Release token" makes sense only in Manual mode.

The token is automatically returned to the temperature control unit when the "Pilot Remote" application is done, provided the user was the token owner.

The temperature control unit automatically becomes the token owner if the Ethernet connection is interrupted. This provides process safety.

For safety reasons, you can always stop the operating modes "Temperature control", "Degassing", "Venting" and "Circulation" directly at the temperature control unit.

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3.4 Initial setup of the "Pilot Remote" application

A setup wizard appears if the "Pilot Remote" application is started for the first time or has not yet been set up. Use the setup wizard to make the following settings:

- Language setting
- Exchange of SSL certificates if encryption is desired (recommended)
- Establishing the remote connection

3.4.1 Language setting

Figure 1
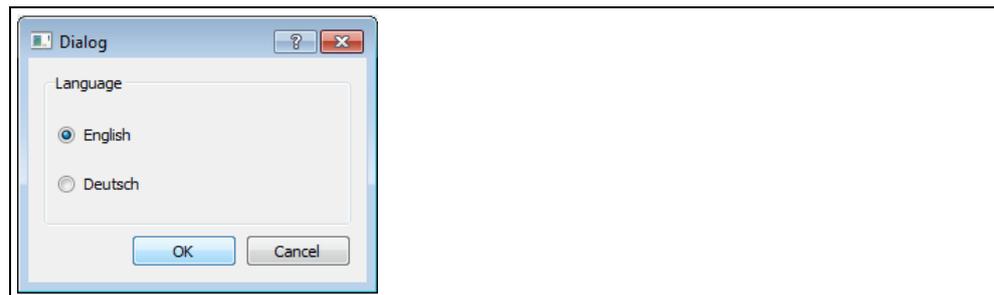
Select the applicable language and confirm by clicking [OK]. The language can be changed later. The application applies the language setting immediately and does not need to be restarted.

3.4.2 Exchange of certificate

Figure 2

The wizard explains the steps to be performed. Confirm the dialog by clicking [OK].

Figure 3

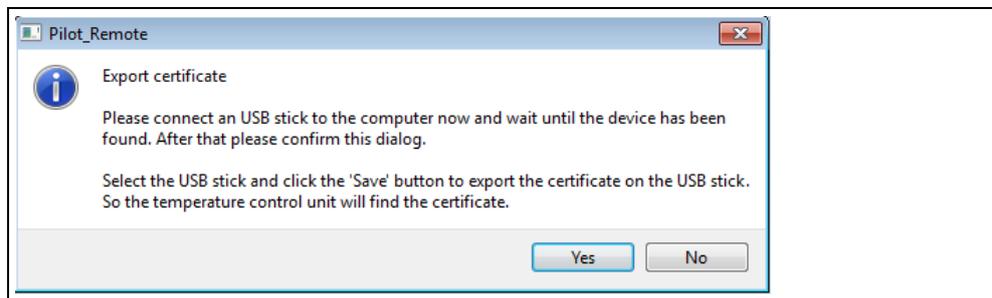Clicking [Yes] creates the "Pilot Remote" certificate.

Figure 4

The above dialog appears if the "Pilot Remote" certificate was successfully created. Confirm the dialog by clicking [OK].

INFORMATION   If you do **not** want to establish an encrypted connection **(not recommended)**, you must confirm [No] when exporting and importing the certificates.

Figure 5

Connect a USB flash drive to the computer. Wait until the USB flash drive was detected. You can select the USB flash drive after clicking [Yes].
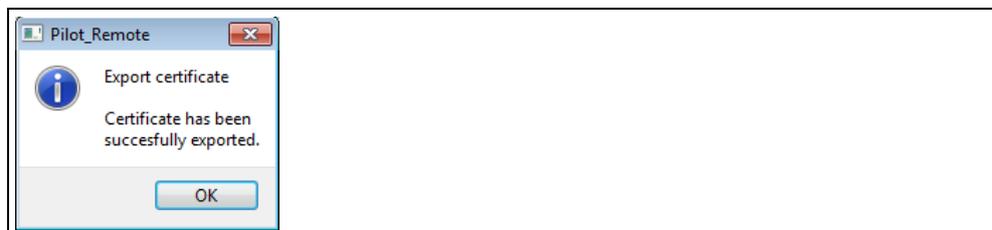
Figure 6

In this example, the USB flash drive is drive "G:\" and may be different on your computer. Verify in Windows Explorer that the correct drive was selected. Click [Save] to export the "Pilot Remote" certificate to the USB stick.
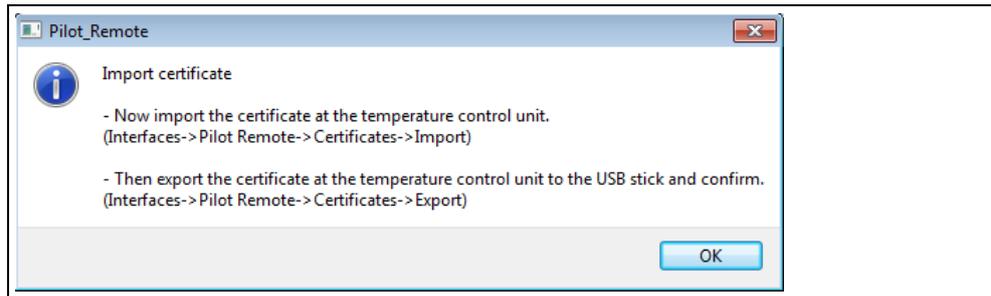
INFORMATION   The certificate is saved to the root directory of the USB flash drive. Pilot ONE will recognize it only in this directory.

Figure 7

The above dialog appears if the export was successful. Confirm the dialog by clicking [OK].

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Figure 8

PROCEDURE

- ➤ Log the USB flash drive off the computer.
- ➤ Remove the USB flash drive from the computer.
- ➤ Connect the USB flash drive with Pilot ONE. Wait until the message "USB stick recognized" appears on the home screen status line.
- ➤ Go to the "Categories Menu".
- ➤ Tap on the category "Interfaces".
- ➤ Tap on the category "Pilot Remote".
- ➤ Tap on the entry "Certificate".
- ➤ Tap on the entry "Import (from USB flash drive)".
- ➤ Confirm your choice by tapping on "OK".
- ➤ Select the certificate by tapping on it.
- ➤ The certificate name is composed of: USERNAME@COMPUTERNAME.
- ➤ Confirm your choice by tapping on "OK".
- ➤ Tap on the entry "Certificate".
- ➤ Tap on the entry "Export (to USB flash drive)".
- ➤ Confirm your choice by tapping on "OK".
- ➤ Wait for about 3 seconds. Note: A successful export is not confirmed. The Pilot ONE certificate was saved on the USB flash drive in the "server certs" directory and named "PilotONE-<serial_number>.crt".
- ➤ Remove the USB flash drive from Pilot ONE.
- ➤ Connect the USB flash drive with the computer.
- ➤ Confirm the dialog on the computer by clicking [OK].

Figure 9
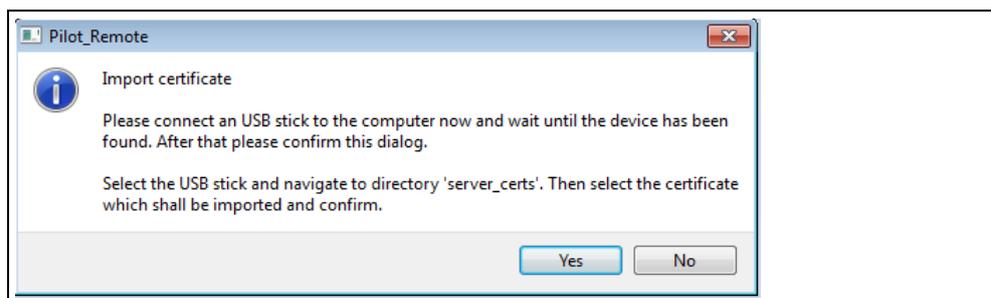
Click [Yes] when the USB flash drive has been detected by the computer.

Figure 10
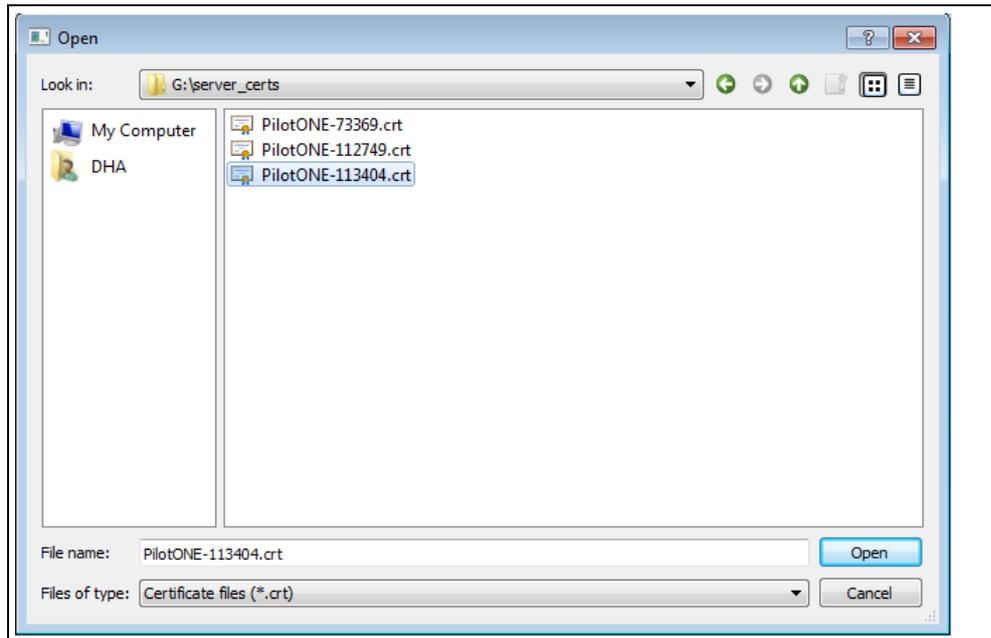
Select the USB flash drive and navigate to the directory "server_certs". Select to imported Pilot ONE certificate and click [Open].
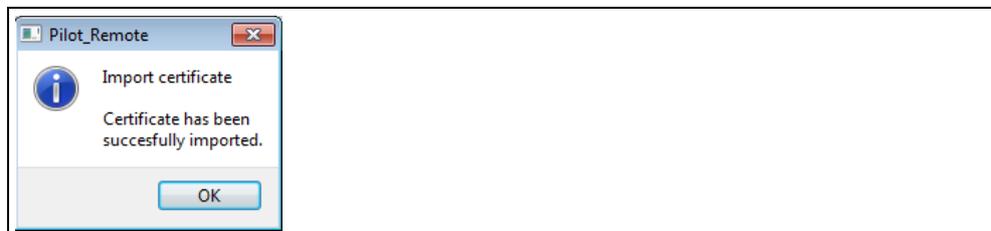
| INFORMATION	A standard certificate name is composed as follows: **Hostname.crt** wherein the factory setting of the host name is **PilotONE-<serial_number>**. A new certificate with the appropriate name is generated if the **host name**, **IP address**, **domain name** or **DNS server** is changed on the Pilot ONE. You then have to export it on the Pilot ONE and import it on the computer.

Figure 11

The above dialog appears if the export was successful. Confirm the dialog by clicking [OK].

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3.4.3 Connecting the temperature control unit

Figure 12
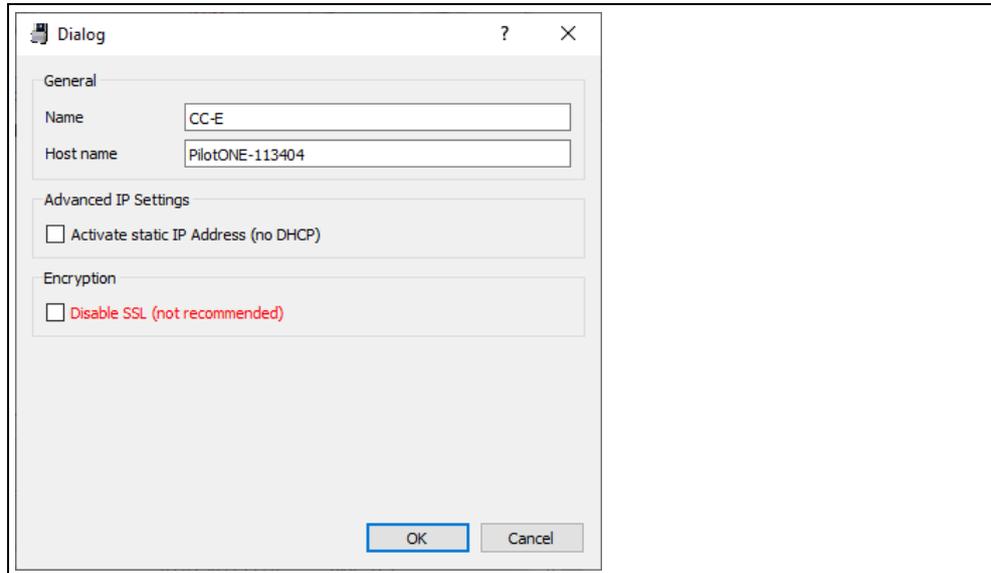
Connect the first temperature control unit, with which the "Pilot Remote" application is to be connected later.

Enter any name in the **"Name"** field. Choose a name you can clearly identify the temperature control unit with.

Enter the Pilot ONE host name in the **"Host Name"** field. This name becomes a part of the Pilot ONE certificate file name. The remote connection will not work if the name is incorrectly entered. You can find the host name under Ethernet settings on the temperature control unit. The host name is also the network name through which the Pilot ONE can be addressed via DHCP.

If you do not want to use DHCP but a static IP address, you must activate the checkbox **"Activate static IP address (no DHCP)"**. A box into which you must enter the static IP address is shown.

If you want to deactivate SSL encryption, you must activate the checkbox **"Deactivate SSL (not recommended)"**. You must acknowledge the warning that appears with "Yes". Besides, you must also deactivate encryption in the Pilot ONE; this can be done in the menu under Interfaces → Pilot Remote → Encryption.
ATTENTION: Deactivating encryption is NOT recommended in productive environments and is only used for debugging connections or for special applications that make encryption superfluous! This setting allows data to be read and/or manipulated in the network! To ensure data integrity, you must take further measures (e.g. 1:1 connection within a specially secured installation space or by means of other IT technical processes).
Note: The Pilot ONE must use the same SSL encryption setting as the Pilot Remote software and you must therefore configure the Pilot ONE accordingly (encryption switched on or off).

Confirm the dialog by clicking [OK] when all entries have been made.

Figure 13
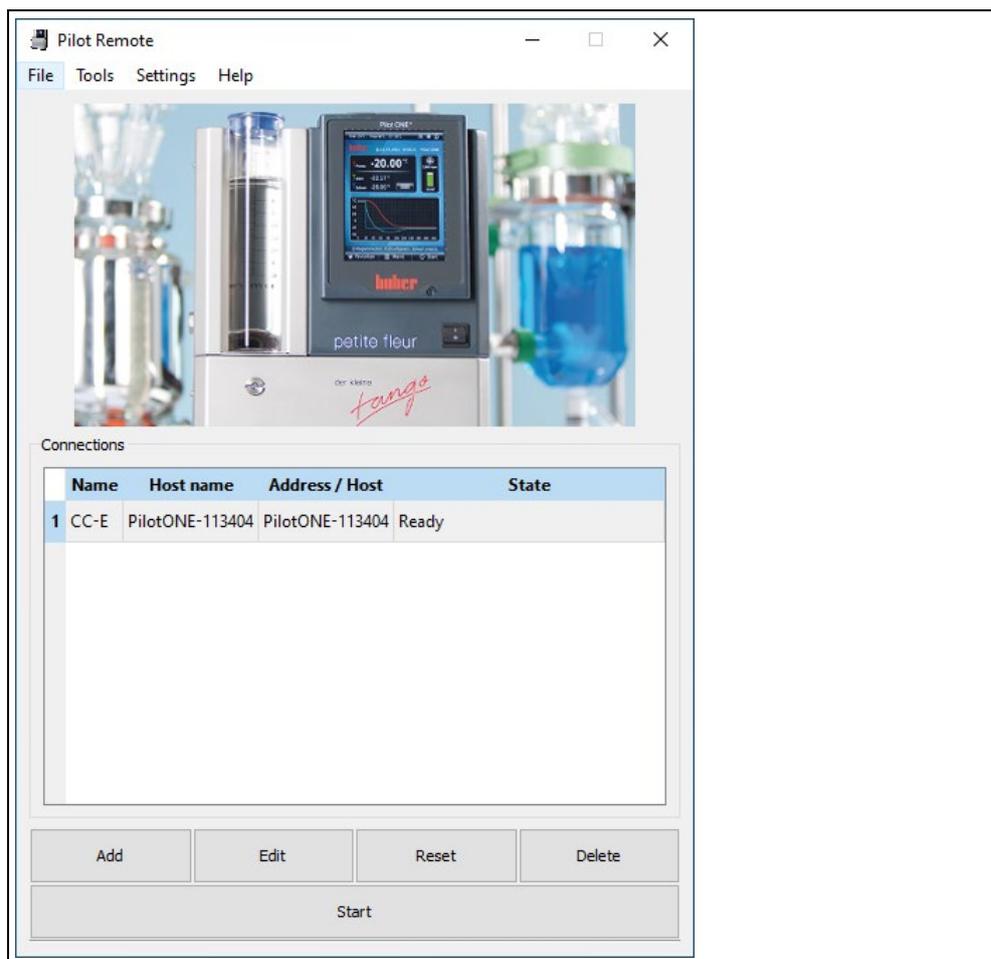
The connected temperature control unit can be selected in the above dialog. All settings can be changed at any time. Open the entry by double-clicking it or by selecting the entry and clicking [Edit].

| INFORMATION | The setup wizard is completed. You then have to set up the temperature control unit itself. To do so, follow the operation manual of the temperature control unit and the installation guide manual of the accessory. |

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4 Normal operation

⚠ WARNING	**The supplied USB dongle is used in an ATEX zone for program licensing** **DEATH OR SERIOUS INJURY DUE TO EXPLOSION** ➢ The supplied USB dongle must not be used in an ATEX zone! ➢ The USB dongle is a possible sources of ignition in an ATEX zone! ➢ In an ATEX zone, use a license file or the E-grade Remote GUI for program licensing!

4.1 Connecting with the temperature control unit

4.1.1 Licensing the "Pilot Remote" application

Figure 14
Schematic
representation:
USB dongle

You must have purchased a license before you can start the remote connection. There are three possibilities:

- **Licensing via a USB dongle:** Insert the USB dongle with the license key into the computer. Windows automatically detects the USB dongle and uses a standard driver. A red LED on the USB dongle will light up when the USB dongle is ready.
- **Licensing via a license file:** Huber customer support will create a license file. This license key is valid only for the computer it was requested for. A license is therefore limited to a computer hardware and cannot be transferred to another computer. Each computer must therefore be licensed individually.
- **Licensing via E-grade Remote GUI:** The Huber Customer Support generates an E-grade package code to be entered at the Pilot ONE. Doing so will license this device. A license is therefore limited to this device and cannot be transferred to another device. You must license each device individually.

INFORMATION	The "Pilot Remote" application can be installed on any number of computers simultaneously if licensed via a USB dongle. The USB dongle is only required on the computer that is used to establish a connection.

4.1.2 Starting a remote connection on a computer

Figure 15
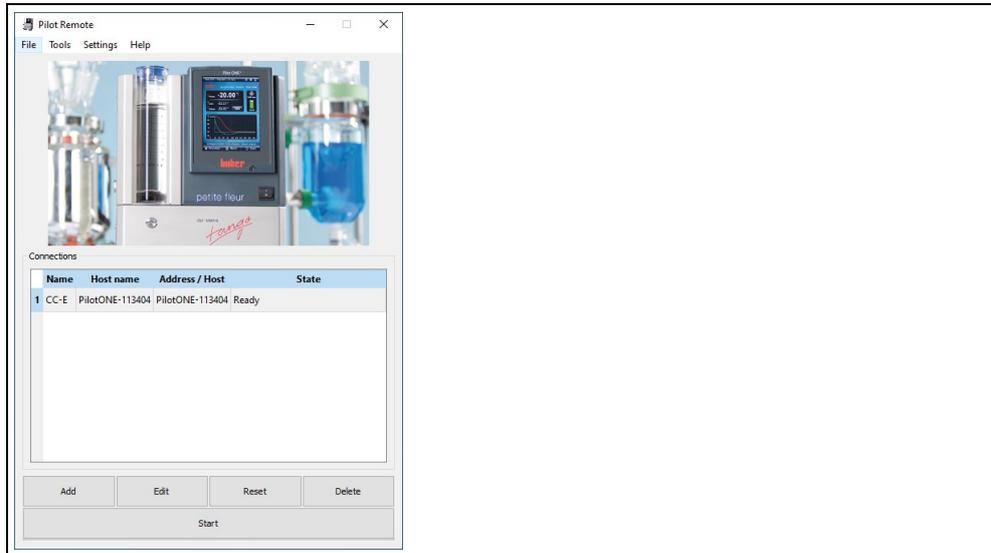
The "Pilot Remote" application must execute the following steps to establish a connection with a temperature control unit:

- Exchange certificates (if not done previously)
- Download the "Remote GUI" package from the temperature control unit
- Unpack the "Remote GUI" package

PROCEDURE

➢ Select the temperature control unit you want to connect to.
➢ Click [Start] to establish a connection.
A message asks you if you want to exchange certificates. Click [No] if this has already been done.

The "Remote GUI" package is now downloaded from the temperature control unit and then un-packed. Prerequisite: The connection data were set correctly.

A dialog will confirm that the set-up is complete if everything was done correctly. Confirm the dialog by clicking [OK]. The settings will be saved and thus preserved. The following window appears:

Figure 16
Exemplary
"Remote GUI" of a
remotely controlled
temperature control
unit
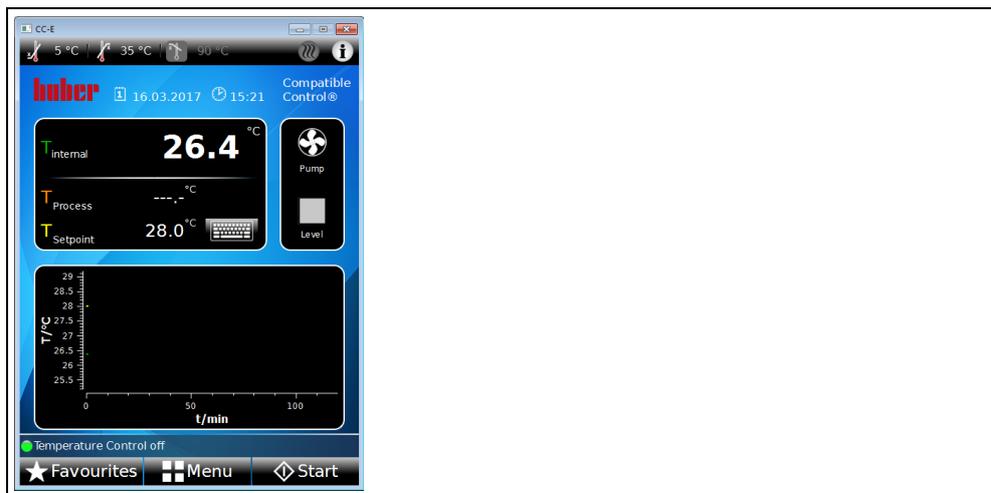
INFORMATION The temperature control unit must first allow being controlled by the "Pilot Remote" application before this action can be performed (e.g. adjusting the setpoint etc.).

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4.1.3 Controlling a temperature control unit via the "Pilot Remote" application

4.1.3.1 Grabbing a token

The token can be grabbed by any "Remote GUI". The temperature control unit is always privileged in any conflict. In Token Mode, the temperature control unit can "manually" grab a token even if it has not been released by a "Remote GUI" yet.

To grab a token, proceed as follows:

PROCEDURE

- ➢ Go to the "Categories Menu".
- ➢ Tap on the category "Interfaces".
- ➢ Tap on the category "Token".
  The "Release token" option appears if the token is owned. The "Grab token" option appears if the token was released.
- ➢ Tap the required entry.
- ➢ Confirm your choice by tapping on "OK".

An animated LED on the status bar of the main screen (bottom left) of the respective "Remote GUI" indicates who owns the token. If the LED is green, the user is the token owner.

4.1.3.2 Performing actions

The "Remote GUI" can perform many actions that can be performed on the temperature control unit too. However, not all menu items exist on the "Remote GUI". One such example is the "Overtemperature" entry in the "Safety" category: For safety reasons, the overtemperature protection can only be set on the temperature control unit itself.

4.1.3.3 Properties

The token is automatically returned to the temperature control unit if a "Remote GUI" that owns the token is terminated. The same behavior is programmed in case an Ethernet connection terminates (e.g. due to a cable break or because the RJ45 connector was pulled out).

The "Stop" button on the "Home" screen of the temperature control unit also works without a token. For safety reasons, various modes can be stopped on the temperature control unit itself.

5 Troubleshooting

5.1 Creating a log file

When an error occurs, you can open the log dialogue with the F2 button. You can save the dialogue by pressing the "Save" button. You should then pass on the file to Customer Support who will analyze the error.

5.2 Connection error

If you are unable to establish the connection with encryption, this may be due to the certificates. When certificates were exchanged and subsequent changes were made to the network settings of the Pilot ONE, e.g. IP address, DHCP, host name, domain name, etc., the Pilot ONE automatically generates a new certificate. You then have to export this new certificate from the Pilot ONE and import it to the Pilot Remote application.

It is also important that you set the correct time and time zone both on the Pilot ONE and on the PC. If time or time zone need to be corrected at the Pilot ONE, you must also generate a new certificate on the Pilot ONE: Menu → Interfaces → Pilot Remote → Certificates → Generate new certificate (overwrite). You must export the newly generated certificate from the Pilot ONE and import it to the PC.

If despite all the measures mentioned you still are unable to establish a connection, you can temporarily attempt to use an unencrypted connection. To do so, you must deactivate encryption in the Pilot ONE: Menu → Interfaces → Pilot Remote → Encryption → Deactivated.
You must also activate this in the Pilot Remote software. To do so, select the desired entry and press [Edit] or simply double-click. Then select the checkbox [Deactivate SSL (not recommended)] and confirm the warning with [Yes]. Then quit the current dialogue with [OK]. If this option is successful, there is a problem with the certificate. If this option is unsuccessful, then there is a problem with the network.

A network problem can e.g. occur due to an incorrect IP address, subnet mask, etc., or when ports 8102 and 8103 are blocked. This should be determined together with the IT department.

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6 Phone number and company address

6.1.1 Phone: Customer Support

Phone: +49-781-9603-244

6.1.2 Phone: Sales

Phone: +49-781-9603-123

6.1.3 E-mail address: Customer Support

E-mail: support@huber-online.com

6.1.4 Service/return address

Peter Huber Kältemaschinenbau SE
Werner-von-Siemens-Straße 1
77656 Offenburg

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Inspired by **temperature**
designed for you

-125 °C ...+425 °C

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