P1 Certifier ver 3.0
P1C-003

Compatible with DSMR 2.2, DSMR 4.0 and (E)SMR 5.0

Manual

1. Introduction

The P1 Certifier is a measurement device that helps with the evaluation and certification of the properties of a smart meter P1 port, as have been defined in the respective P1 standard documents. (See Appendix A for a list of the P1 standard documents that were used.)

The P1 certifier is configurable to work with P1 ports according to DSMR 2.2, DSMR 4.0 and (E)SMR 5.0 standards.

The P1 certifier can be used to actively test a single aspect of a P1 port as well as be configured to run a series of tests on a P1 port in unattended mode.

The results of tests, be they active or unattended tests, can be saved on the device and in combination with a PC application can be turned into reports.

2. What's in the case

1 – P1 Certifier   3 – Micro USB cable
2 – USB memory stick   4 – RJ-11 cable

3. Getting to know your P1 Certifier Device

14. RJ-11 (P1 port)

not used in P1C-003

1. OLED display

2. STOP button

3. Scroll button

4. Test set button

5. Power on switch

6. Charging LED

7. START button

8. Directional buttons

9. Center /O.K. button

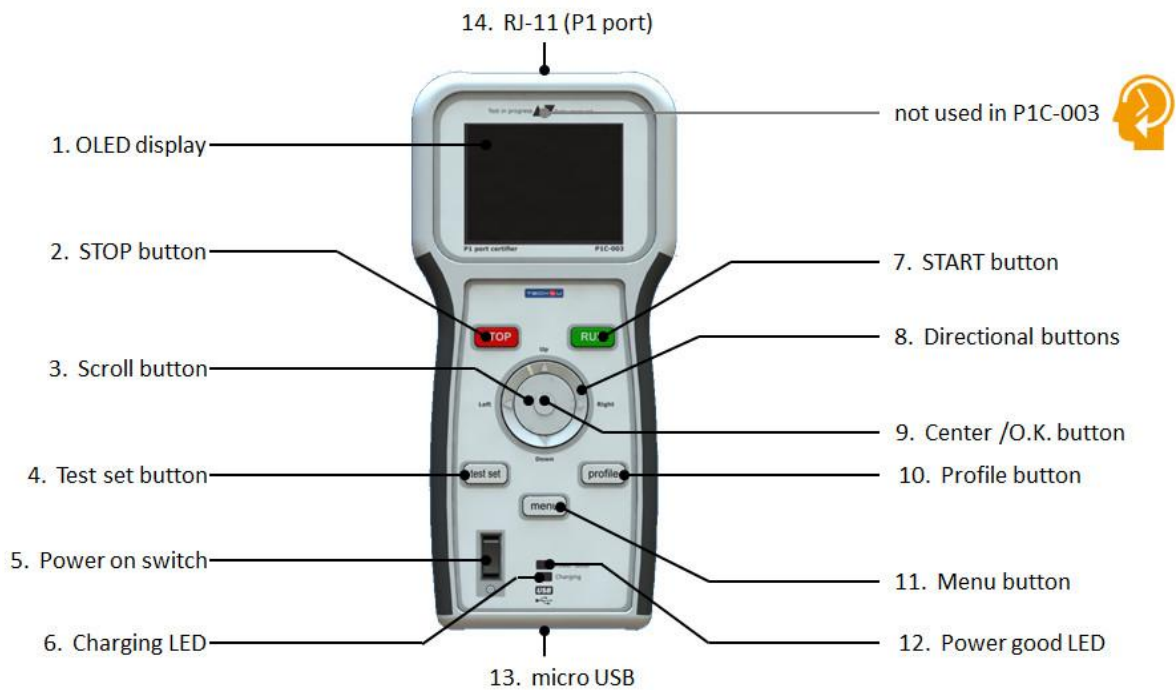10. Profile button

11. Menu button

12. Power good LED

13. micro USB

Figure 1: Overview

4. Charging the battery

The P1 Certifier device has an internal "Li-Po" battery. Before using the device the first time, you need to charge the battery fully (approximately 4 hours). After that, re-charge the battery as needed.

Use the supplied micro-USB cable to charge the device from a USB port. Alternatively, you can also use any micro-USB charger to charge the device.

Figure 2: Charging the battery

It is very important to switch off the device after usage, to avoid deep discharge of the battery.

Figure 3: Battery status LEDs

5. Installing the PC software

On the supplied USB stick, you will find the PC software needed for working with the P1 certifier. This software is needed to create test sets as well as to generate reports based on the test results.
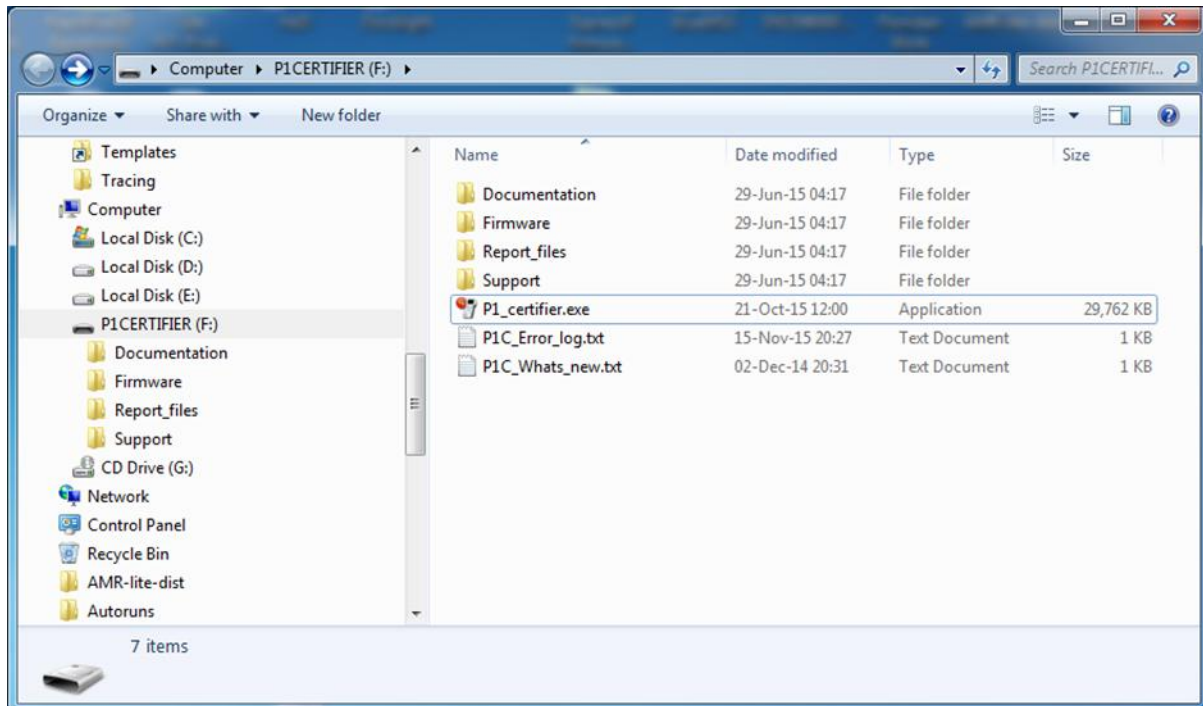

Figure 4: Files on USB memory stick

There are 2 ways you can use the PC software:

1. Run the software directly from the USB stick.

    a. Plug USB stick into your computer.

    b. Run P1_certifier.exe.

2. Place the software executable in a local drive.

    a. Create a directory on target PC (e.g. P1Certifier).

    b. Copy all files and directories from the USB stick to the newly created directory.

    c. Run the P1_certifier.exe from the folder.

NB: Always connect the P1Certifier to the computer before running the software.

6. Connecting the device to a PC

Before starting the software, connect the device to your PC. This can be done with the supplied micro-USB cable.

7. Using the PC software

The application is started by double clicking the 'P1_certifier.exe' icon. The following window will open.

Figure 5: Main Application Window

7.1. Creating Profiles

7.2. Creating Test Sets

7.3. Updating the software

7.3.1. PC

7.3.2. Device firmware

8. Connecting with the smart meter

The device can be connected with a smart meter using the supplied RJ-11 cable as shown in the picture below.

Figure 6: Connecting to a smart meter

8.1.   Using the device

Basic usage of the device is done by navigating the device menu structure with the navigation buttons, scroll button and center button.

Navigate to the desired menu option and press the center button to enter a submenu or activate the function.

The following shortcut buttons have been defined: The "Menu" button will display and jump to the main menu. The "Profile" button will display and jump to the Profile menu and the "Test set" button will display and jump to the Test suite menu.
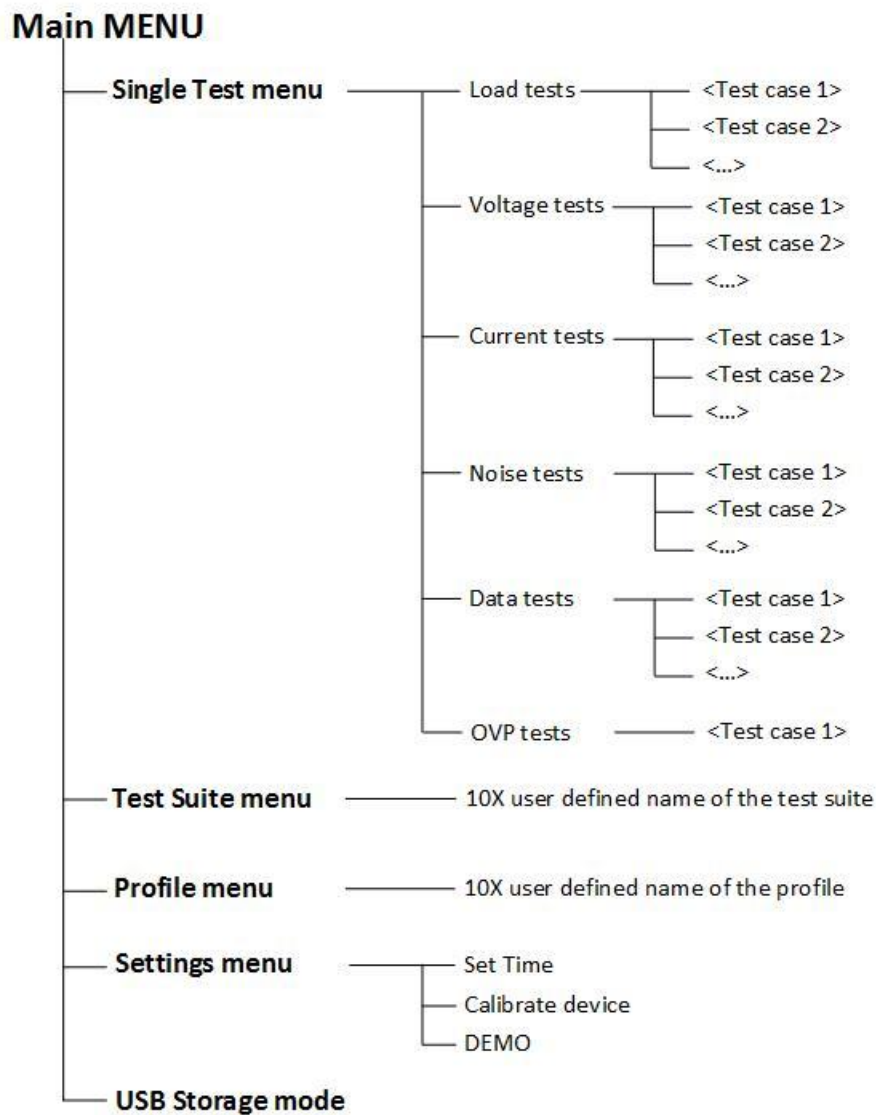
8.2.   Menu Overview

Main MENU

- **Single Test menu**
  - Load tests
    - \<Test case 1\>
    - \<Test case 2\>
    - \<...\>
  - Voltage tests
    - \<Test case 1\>
    - \<Test case 2\>
    - \<...\>
  - Current tests
    - \<Test case 1\>
    - \<Test case 2\>
    - \<...\>
  - Noise tests
    - \<Test case 1\>
    - \<Test case 2\>
    - \<...\>
  - Data tests
    - \<Test case 1\>
    - \<Test case 2\>
    - \<...\>
  - OVP tests
    - \<Test case 1\>
- **Test Suite menu**
  - 10X user defined name of the test suite
- **Profile menu**
  - 10X user defined name of the profile
- **Settings menu**
  - Set Time
  - Calibrate device
  - DEMO
- **USB Storage mode**

Figure 7: Menu overview.

8.3.   Selecting the profile

Selecting the correct profile for the meter you want to start testing is important and should be the first thing you do when using the device.

At the moment there are three main profiles defined just as there are three main P1 standards: "DSMR2.2","DSMR4.0" and "(E)SMR5.0".

To select a profile, either choose the 'Profile menu' from the 'Main menu' or press the 'profile' shortcut button.

Figure 8: Main menu.

Highlight the profile you want to use and select it with the 'Center' button.

Figure 9: Profile select menu.

The active profile is displayed on the information bar at the bottom of the screen.

8.4. Selecting and Running a Single Test

To quickly test an aspect of the P1 port, single tests can be selected and executed.
Selecting the 'Single test menu' option from the main menu will bring up the 'Tests menu'.
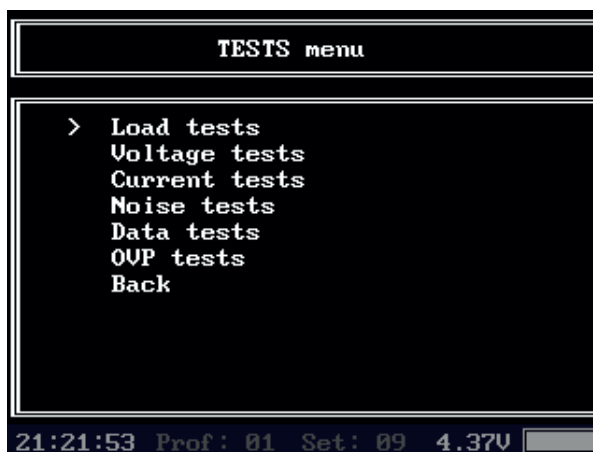
Figure 10: Test menu.

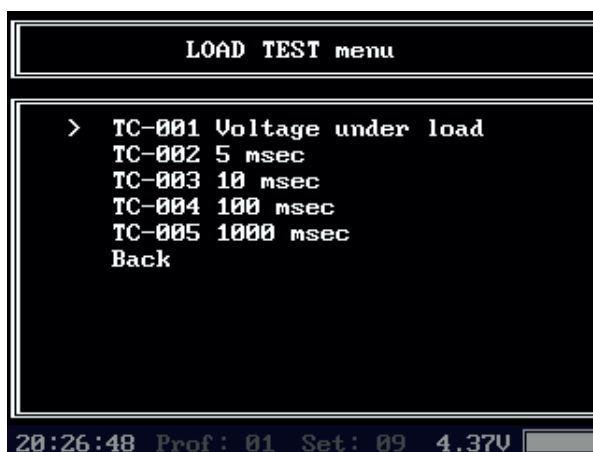The available tests are further categorized in the following sub-menus:
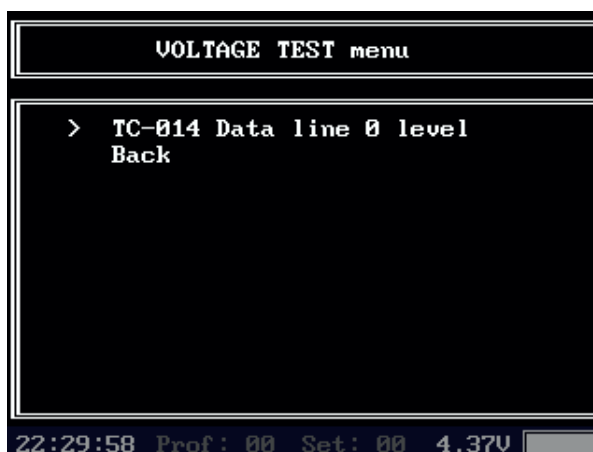

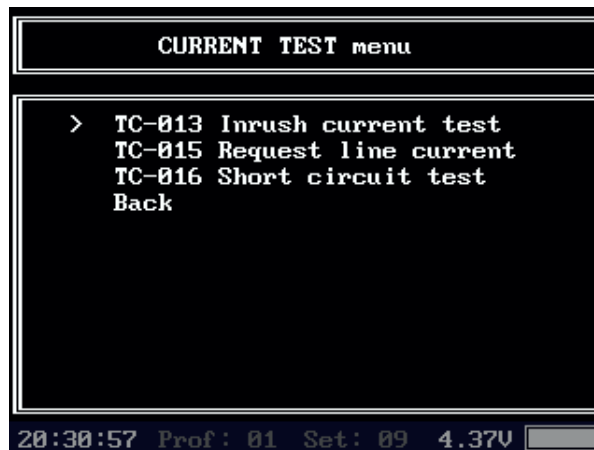*Figure 11: LOAD TEST menu.*

Figure 12: VOLTAGE TEST menu.

Figure 13: CURRENT TEST menu.
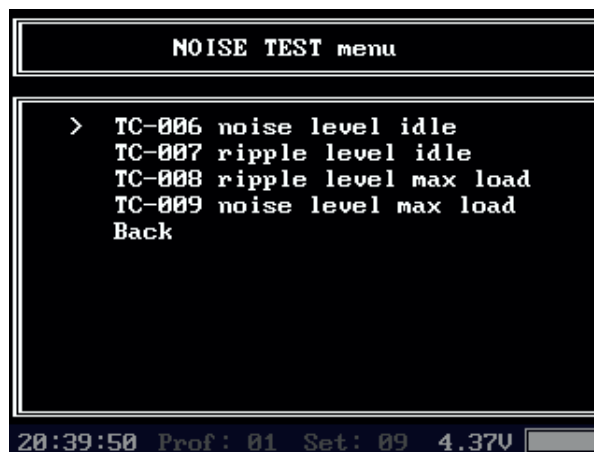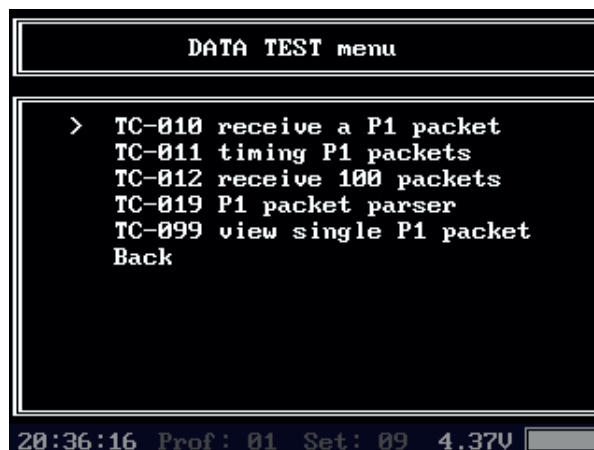

Figure 14: NOISE TEST menu.
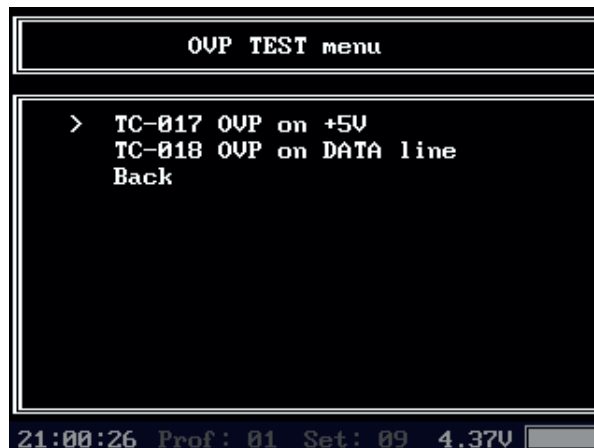

Figure 15: DATA TEST menu.

Figure 16: OVP TEST menu.

Tests are selected and run individually by selecting the correct menu item followed by pressing the 'O.K.' button.

8.5. Running a Test Set

If you want to run a complete set of tests on the P1 port, you can use a 'test set'. A 'test set' is as the name suggests a selection of tests that can be run one after the other.

You select a test set by either choosing the 'Test suite' menu from the 'main menu' or by pressing the 'test set' shortcut button.
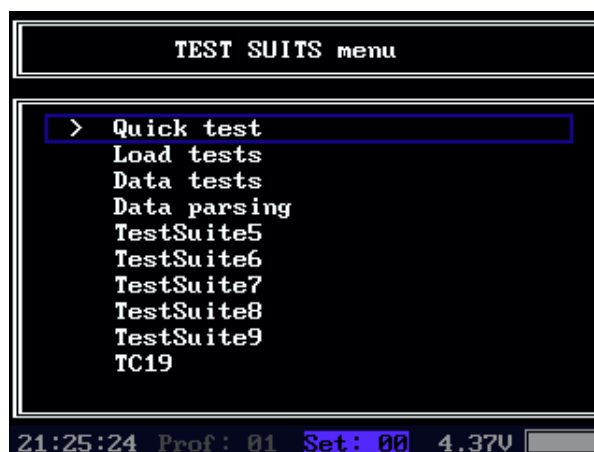

Figure 17: Test suits menu.

8.6. Test Reports

Use your PC software to create your test reports.

Appendix 1: Reference documents

"Dutch Smart Meter Requirements v2.2 final P1"

"DSMR v4.0 final P1"

"Dutch Smart Meter Requirement v5 0 P1"