NETWORK DEPARTMENT

NOTICE OF CALL FOR TENDERS NO DD-….

PROJECT: "Pilot Telemetering and Management System for the Electric Power Supply Demand by Residential and Small Commercial Consumers and Implementation of Intelligent Networks".

DOMESTIC MONITOR
[In-Home Display (IHD)]

Introduction

This document lays down the necessary technical specifications of the **In-Home Display (IHD)** units that are used in combination with the other devices of PPC's telemetering system.

The **In-Home Display (IHD)** is a device that displays information about the telemetering system which, for example, will display information such as the current energy consumption, the historical pattern of consumptions, statistical data, as well as messages from PPC and, potentially, alternative providers. It is a useful tool by which consumers will be able to communicate with the telemetering system. It is intended for being installed at an exceptionally visible and accessible point in the customer's residence, e.g. in the kitchen or hall.
The **In-Home Display (IHD)** must be suitable for use inside the domestic environment and be approved as a CE-marked device.
It must be designed in such a way so that it presents no risk for any person, including the consumer and the engineer who will install it. There must be no sharp edges, points or gaps that may cause injury during the installation, maintenance, or regular everyday operation by the consumer.
All parts and connections that may be exposed to voltage to earth over 50V must be isolated and protected for preventing any unintended contact by the consumer or the engineer who will install them.
The monitor must be designed in such a way so as to operate within a temperature range from -25 °C to 55 °C. It must be constructed in such a way so as to provide at least protection level as per IP52.

Power supply and batteries

The monitor must function at low voltage with an external transformer via a plug-in. It is desirable that the device be also powered by alternative energy sources, e.g. a USB port.
The **In-Home Display (IHD)** must include a standby battery/ supercapacitor that will enable its functioning for 72 consecutive hours, in case that the central electricity network is not available.
The monitor must show a sign of the battery's capacity and transmit a warning signal when 10% of the battery's capacity is left.
In case that batteries are used, it must be possible to change them without access to any other part of the **In-Home Display (IHD)** being required.

Functionality

The **In-Home Display (IHD)** must be able to communicate with the electricity meter using a reliable technology for distances encountered in multi-storey buildings (> 30 m.). It must also be able to receive and display messages from the central AMM-MDM

system and send back "YES / NO" replies and/or additional messages.
All communications with the meter must be performed under secure, encrypted protocols.
The monitor must produce a sound signal, as well as a readable visual signal, in case that a determined proportion of load has been exceeded and the consumer must be able to mute such sound.
The **In-Home Display (IHD)** must allow the consumer to set his own warning load limit.
The **In-Home Display (IHD)** must be able to provide a secure communication environment for the consumer, enabling functions such as pre-payment, etc.
The monitor must enable the display of all additional information used for elaborating the consumer's bill.
Each category of messages must be recognized and respectively dealt with.
For example, a message informing the consumer that its credit is about to expire will not be deleted from the screen, while a "Happy Christmas" message could be deleted two days later. For certain categories of messages, the **In-Home Display (IHD)** must be able to accept consumer's intervention by pressing a button which confirms the acceptance of a message. Until the message is accepted by the consumer, it must be preserved and the sign "Unread message" or another respective sign must be displayed.

Certain categories of messages must be protected by a password / PIN. Such messages may be (indicatively, not restrictively):

- Availability of a new bill
- History of payments and details

Examples of messages that should not be protected by a password are (indicatively, not restrictively)

- Greetings
- Special offers
- A warning for scheduled power cuts
- Changes in the energy tariffs, etc.

The monitor must be able to save the messages prior to displaying them. It must also save the date on which the messages will become visible, while, until that time, the message will remain hidden.

Note: This allows a message that is related to a change in the billing be kept invisible until the time the change enters in effect.

The **In-Home Display (IHD)** must be able to receive, save and renew the data of the metering system, as well as payment information, from the provider, as follows:

- **In-Home Display (IHD)** details: model number, serial number.
- Meter details: electric point number, serial number, number of domestic network which it is connected with.
- PPC details and the contact details of the customer service center.

- The meter's on/off status.
- Customer's payment schedule
- Payment dates
- History of credit and debit transactions for at least the five last transactions
- Generation data from generation unit meters (e.g. PV systems).

The **In-Home Display (IHD)** must be able to determine the power of the signal of the domestic network which it is connected with.
If the power of the signal is so weak that it does not permit reliable communication, it must display warning messages in combination with instructions to the consumer to move the screen to a different point in the area.
In case or power supply and/or communication loss, the full restoration and automatic reconnection of the monitor to the system must be possible.
The monitor must be able to display the local time, based on which it will synchronize.
The monitor must be able to communicate with meters manufactured by various firms.

Display

Information must be displayed in Greek.
All signs must be clear, readable, easy-to-understand and:

- Alpharithmetic characters must have dimensions that are suitable for reading them from a distance of approximately one meter.
- Correct and clear reading from a horizontal angle of 45° and from a vertical angle of 22° must be possible.

- The monitor must offer improved visibility in low lighting conditions, e.g. back-lighting. To support the battery's life cycle, it must feature functions restricting battery exhaustion.
- It must be able to display graphics with a resolution of at least 600x400 pixels.

The **In-Home Display (IHD)** must display at least the following:

- A default message containing the contact details of PPC, including the telephone number and the e-mail.
- A logo. The default logo shall be that of PPC.
- A method by which the consumer will be able to determine the current history of electricity use.

  Note: **This may be performed by simple diagrams (bar charts) and by using additional red/orange/green LEDs, etc.**
- The meter's disconnector status.

The **In-Home Display (IHD)** must be also able to display:

- Information about the bill, including any pending payments.
- Real-time energy cost (expressed in cents/ hour at a current use/extraction rate)
- The current average daily/ weekly/ monthly/ quarterly price of the energy for consumption or generation.

- The consumption profile in different periods (e.g. daily, weekly, monthly, quarterly, annually)
- The CO_2 emissions
- Messages to the consumers from PPC. The monitor's specifications relating to such type of messages shall be as follows:
    - The monitor must have adequate characters to enable the display of an initial 82-character message displayed without any need for movement.
    - The **In-Home Display (IHD)** must feature a function by which the consumer will be able to send a confirmation of receipt of the said messages.
    - The confirmation of receipt will have the form of "YES/NO/Clear" replies which must be sent back to PPC.
    - The monitor must save at least the five last messages. When a message needs to be replied, it will be displayed on the screen indefinitely, until a reply is given.
- The status of the load limit, whether it is active/ inactive, regardless of whether it consumes power or not.
- The energy consumed as a proportion or fraction of the load limit.
- The total value of the outgoing energy.
- The ambient temperature inside the consumer's house.
- An estimate or forecast of the next bill in Euros based on the daily consumption and charging period
- The current billing compared to the previous bill and the average cost during the charging period.
- The profile of cost elements.

The **In-Home Display (IHD)** must also display the following messages it receives from the providers' computerized systems (billing) via the central system:

- Payment deadline
- Warning that the supply may be interrupted if the payment is not made.
- Payment confirmation and acceptance etc.

In all cases, the monitor must be able to display a payment history, including the payment dates or the credit amounts for the last five payments.
The **In-Home Display (IHD)** must be able to save and display the electricity consumption history of at least the last 24 months.
It must also enable comparison between the current billing and the billing in the two previous periods.
When the profiles of the consumption history are displayed, it must be able to save and display the consumption in different periods, at least for hourly periods of the last seven days.
The monitor must be able to display the energy cost. The cost must be displayed by using the correct currency symbol (€).
When access to a large amount of information is required, the monitor must offer a medium for easy navigation into the messages.
The device must include basic instructions for safe use and for the restoration of its functioning.