

Makel T610-M610

Prepaid Meters

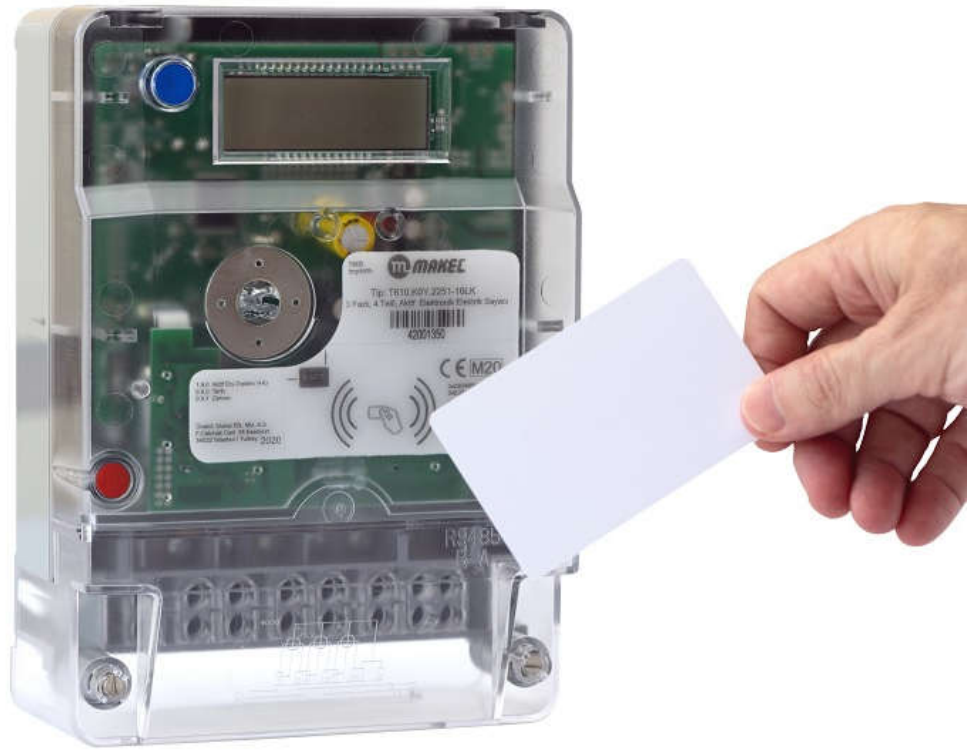
User Guide



12.11.2020

This document explains below prepaid meters operations.

- T610 Three Phase Prepaid Direct or CT Connected Meter with Smart Card



- M610 Single Phase Prepaid Meter with Smart Card



1. LCD Menu

During the prepaid meter operation and credit transferring, informative text and abbreviations appear on the LCD. Their explanations and when will be encountered are explained below.

1.1. Auto Scroll Menu

In the auto scroll menu, besides the meter energy values, values given in the table below are displayed automatically and cyclically at 5-second intervals.

Appearing	Explanation
CR TO	It shows the total amount of purchased credit to the meter.
CR RE	It shows the amount of remaining credit.
BR TO	It shows the amount of borrow credit that can be used after the purchased credit is over.
BR RE	It shows the remaining borrow credit amount.
TOP P	It indicates the maximum demand amount that can be withdrawn when borrow credit active. If the value is "0", it means no demand limit.

1.2. Manuel Menu

Press the blue button to switch to the manual menu. Each time the button is pressed, the following parameters will be displayed in sequence addition with the meter default menu.

Appearing	Explanation
CR TO	It shows the total amount of purchased credit to the meter.
CR RE	It shows the amount of remaining credit.
BR TO	It shows the amount of borrow credit that can be used after the purchased credit is over.
BR RE	It shows the remaining borrow credit amount.
TOP P	It indicates the maximum demand amount that can be withdrawn when borrow credit active. If the value is "0", it means no demand limit.
CR DT	It shows the date of last credit purchase to the meter.
CR TI	It shows the time of last credit purchase to the meter.
MODE	Indicates in which mode the meter is running; <ul style="list-style-type: none"> • PRODUCT: It says that the meter is in production mode. When the meter production process is finished, it automatically exits this mode. • CREDIT AC: If there is enough credit on the meter, it is in active credit mode. • NO CREDIT: If the purchased credit in the meter is consumed, it is in No Credit mode. • BORROW AC: If the borrow energy is activated, the meter is in Borrow Active mode. • BARROW NO: If the borrow credit on the meter is consumed, the meter is in Borrow No mode. • LOW CREDIT: If credit reach warning credit level, low credit warning shown the meter LCD.

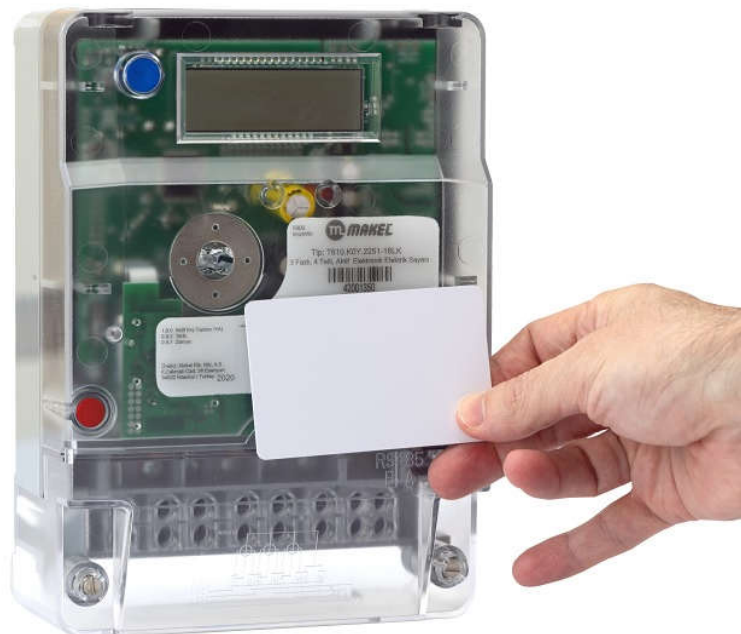
1.3. Credit Transfer Menu

The credit transfer process takes place in several steps after the card is brought closer to the meter. Whether the process is successful can be followed on the screen. The card should be kept at the same point throughout the credit transfer process.

Appearing	Explanation
CARD ENTER	After the card is brought closer to the meter and detected, CARD ENTER will be displayed on the screen. The first step for the credit transferring process is realized.
CARD HOLD	The credit transferring process is in progress. At this point, the card should not be withdrawn from the meter and should be kept stable at the same point.
CARD SUCCESS	If the credit transferring process was successful, this text will be displayed on the screen. After this text is read on the screen, the card can be withdrawn from the meter.
CARD NO CREDIT	If there is no credit in the card, this message appears on the screen.
CARD FAIL	<p>If the credit transferring process is interrupted, this message is displayed with two digit error code. The error code meaning like below;</p> <ul style="list-style-type: none"> • FAIL_NO_04:Puchasing credit read error • FAIL_NO_05:Warning or Limit read error • FAIL_NO_06:First Authentication error • FAIL_NO_07:SerialNo, card status read error • FAIL_NO_08:Customer password read error • FAIL_NO_09:Reading serialNo from meter read error • FAIL_NO_10:Writing serialNo from meter write error • FAIL_NO_11:FF status read error • FAIL_NO_12:Manufacturing end read error • FAIL_NO_13:Meter credit write error • FAIL_NO_14:Meter parameter write error • FAIL_NO_15:Same purchase date error

2. Credit Transfer

The prepaid meter card should be brought as close as possible to the card area shown in the pictures and monitored on the LCD as described in the "Credit Loading Menu". The card must be held and not removed until the transferring operation is finished. Along with the information displayed on the LCD, the warning sounds from the meter inform the user whether the operation was successful. The types of audible warnings and what they mean are described in "Audible Alert" section.



2.1. Credit Transfer at Meter Has no Credit Condition

2.1.1. If Borrow Credit Has not been Used

If borrow credit isn't used, purchased credit is added on Total Credit register without deduction.

Case Study:

First Condition	Explanation
CR TO → 50kWh	Indicates that 50kWh of energy is transferred to the meter.
CR RE → 0kWh	All of the purchased credit was used and latch role cut off energy.
After Credit Transferring	Explanation
CR TO → 70kWh	When the meter is over purchased credit, another 70kWh of energy is transferred.
CR RE → 70kWh	Since the newly transferred 70kWh purchased credit will start to be used, the remaining amount will be 70kWh.

2.1.2. If Borrow Credit Has been Used

If there is a used borrow credit before transferring purchased credit to the meter, the amount of the used borrow decreases from the transferred credit.

Case Study:

First Condition	Explanation
CR TO → 50kWh	Indicates that 50kWh of energy is transferred to the meter.
CR RE → 0kWh	All of the purchased credit was used and latch role cut off energy.
After used Borrow Credit	Explanation
BR TO → 30kWh	Amount of borrow credit is 30kWh.
BR RE → 10kWh	20kWh of the borrow credit was used and 10kWh remained.
After Credit Transferring	Explanation
CR TO → 80kWh	If there is used up to 20 kWh borrow credit, another 100 kWh of energy is transferred.
CR RE → 80kWh	20kWh of borrow energy has been deducted from the newly loaded 100kWh credit. It shows the remaining net 80kWh energy.

2.2. Transferring Credit in Case of Existing Credit

When the credit is loaded to the meter, it adds over the existing credit amount.

Case Study:

First Condition	Explanation
CR TO → 50kWh	Indicates that 50kWh of energy is transferred to the meter.
CR RE → 10kWh	40kWh is used and 10kWh credit remains.
After Credit Transferring	Explanation
CR TO → 120kWh	While there was credit on the meter, another 70kWh credit was transferred. Finally the total amount of credit is 120kWh.
CR RE → 80kWh	The newly transferred 70kWh credit has been added above the remaining 10kWh.

3. Running Condition

The meter runs as relay energy enable condition in two cases. These situations are described below.

3.1. Running with Purchased Credit

The meter firstly checks whether there is sufficient credit for latch relay control. If the amount of credit is more than the spent, relay will allow feed the load.

3.2. Running with Borrow Credit

While purchased credit is transferred on the card, it can also be transferred on a borrow energy. The aim of the borrow energy is continue energized the load if the purchased credit consumed. After the borrow energy is over, the latch relay goes to cut off, stop to current flowing.

3.2.1. Maximum Demand Limit

While the meter is working with borrow credit, demand limitation can be set by the system operator. This request is written to the card during the credit loading process. This information is transferred to the meter during purchased credit transferring. When the meter is working with borrow energy, by taking this information into consideration, if the specified demand value is exceeded, the relay automatically switches to energy flow cut-off state. In order to activate current flow, demand remains within the specified limit and the borrow energy is activated again.

4. Audible Alert

Voice alerts inform the user during credit transferring. Different sounds tone is heard for different messages types. These messages are described below.

4.1. Successful Process

The successful transaction sound is expressed in two beeps. It is heard if the transaction is successful at the beginning and termination of the credit transferring process.

4.2. Uncompleted Process

If the credit transferring process has been interrupted for any reason, it will beep three times.

4.3. Rejected Process

When a beep sounds occurs four times during the credit loading process, this means that the transaction is invalid.

5. Card Credit Loading

Makel MCR terminal is used for loading credit and reading card memory. Card credit read/write operations are made on customer defined password as securely.

