

EMOG Keypad User Manual

Smart Meter User Interface

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1. Introduction

Welcome to your EMOG Keypad user manual. This keypad is your personal interface to your electricity meter, allowing you to:

- View your remaining electricity credit (prepaid meters) or account balance (smart meters)
- Enter prepaid tokens to add credit
- Check your meter readings and status

- Monitor your current power consumption
- Access important meter information

This manual will guide you through all the features and functions of your keypad.

2. Keypad Overview

2.1 Physical Description

Dimensions:

- Height: 90mm
- Width: 56mm
- Depth: 25mm

Components:

- 2.8-inch TFT touchscreen display (60mm × 48mm) on front
- USB-C power connector (bottom)
- Wall mounting provision (back)



![[Photo 1: Front view of keypad showing display, keypad layout, and normal operation with remaining credit display]]



![[Photo 2: Bottom view showing USB-C connector for power]]

2.2 Screen Layout

The touchscreen (60mm × 48mm) is divided into two main areas:

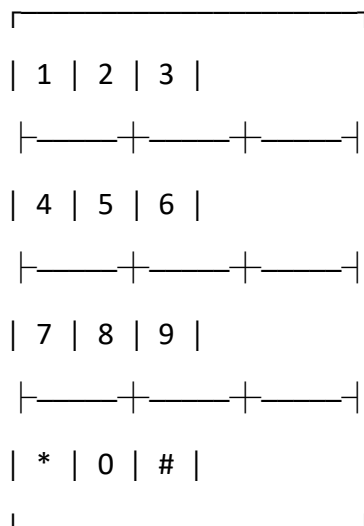
Top Section (33% of screen):

- Line 1: Register name
- Line 2: Register value
- Line 3: Credit bar OR keypad entry display
- Communication indicator (top right corner)

Bottom Section (67% of screen):

- Touch keypad with 12 keys arranged in 4 rows × 3 columns
- Blue rounded rectangular keys
- Large yellow numbers on each key

2.3 Keypad Layout



Key Appearance:

- Normal state: Dark blue rounded rectangles
- Pressed state: Light blue (while finger is touching)
- Key labels: Large yellow font (0-9, *, #)

Refer to Photo 1 (front view) to see the keypad layout and display.

3. Getting Started

3.1 Power Connection

IMPORTANT: The keypad must remain permanently powered.

1. Locate the USB-C connector at the bottom of the keypad
2. Connect the provided USB-C cable
3. Plug the power adapter into a wall outlet
4. The keypad will power on automatically

⚠ WARNING: Do not disconnect the keypad power. There is no internal battery, and the keypad will stop functioning if unplugged.

Photo 2 shows the USB-C connector location at the bottom of the keypad.

3.2 Initial Startup

When first powered on, the keypad will:

1. Display a startup screen (briefly)
2. Attempt to connect to the meter via the network gateway
3. Show "Not Ready" if connection cannot be established
4. Display "Remaining Credit" once connection is successful

3.3 Normal Operation

Once connected, the keypad will:

- Display your remaining credit by default
 - Update automatically every minute
 - Show a communication indicator blinking in the top right corner
 - Respond to touch inputs for entering tokens or commands
-

4. Display Information

4.1 Display Areas

Line 1 - Register Name (Top):

- Shows what information is currently displayed
- Default: "Remaining Credit"
- Changes when using shortcodes

Line 2 - Register Value (Middle):

- Shows the current value
- For prepaid meters: Credit in kWh
- For smart meters: Credit in currency
- Shows "Not Ready" if meter cannot be reached

Line 3 - Dual Purpose (Bottom):

- **Credit Bar:** Shows remaining credit as a percentage bar
- **Entry Display:** Shows numbers as you type (tokens or shortcodes)

Communication Indicator (Top Right):

- A single digit (1, 2, 3, etc.)
- Lights up when receiving messages
- Goes dark when sending messages
- Should light up at least once per minute in a healthy system
- The number indicates network level (1 = direct connection to gateway)

Photo 1 shows the communication indicator "1" in the top right corner of the display.

4.2 Text Display

- All text is white on a black background
 - Register values are displayed in large, easy-to-read font
 - Long numbers are formatted with spaces every 4 digits for readability
 - Example: 1234 5678 9012 3456 7890
-

5. Using the Keypad

5.1 Touch Screen Operation

IMPORTANT: This keypad uses a resistive touchscreen, which is different from smartphone screens.

Touchscreen Tips:

- Press firmly and deliberately on each key
- Allow time between key presses for the screen to respond
- Watch for the key to turn light blue, confirming your press
- Wait for the key to return to dark blue before pressing the next key
- Do not rush when entering numbers

 **Common Mistake:** Pressing keys too quickly may result in missed digits. Take your time!

5.2 Entering Numbers

1. Touch a key firmly
2. The key will turn light blue
3. The number appears in Line 3 (bottom display area)
4. Release your finger
5. The key returns to dark blue

6. Repeat for the next digit

The key press behavior (dark blue to light blue and back) provides visual feedback for each entry.

5.3 Correcting Mistakes

Delete Last Character (Backspace):

- Touch the top portion of the screen (Lines 1, 2, or 3 area)
- The last digit entered will be removed
- **Note:** If no digits are entered, touching the top of screen activates Sleep Mode (see Section 5.4)

Clear All Entered Digits:

- Press the # key
- All digits are cleared
- Display returns to showing remaining credit

Example:

- You typed: 1234 56
- Touch top of screen once: 1234 5
- Touch top of screen again: 1234
- Press # key: Display clears completely

5.4 Sleep Mode

The keypad features a sleep mode to turn off the screen while maintaining all communication functions.

Activating Sleep Mode:

1. Ensure no digits are currently entered (display shows remaining credit)
2. Touch the top portion of the screen (Lines 1, 2, or 3 area)
3. The screen will turn off immediately

Why Use Sleep Mode:

- Eliminates light from screen in dark rooms
- Saves energy
- Maintains network communication for other users

 **IMPORTANT - DO NOT UNPLUG KEYPAD FOR DARKNESS:**

- Other users in your apartment block may rely on your keypad for their network connection
- Your keypad functions as a mesh network node even when you're not using it
- Always use Sleep Mode instead of unplugging the keypad
- Unplugging your keypad may disrupt service for neighbors

Waking from Sleep Mode:

- Touch anywhere on the screen
- Screen turns on immediately
- Display shows current remaining credit
- Keypad is ready for use

During Sleep Mode:

- Screen is off (black)
 - All communication continues normally
 - Network connections maintained
 - Credit updates continue
 - Keypad still functions as network node for other users
-

6. Entering Prepaid Tokens

6.1 What is a Token?

A prepaid token is a 20-digit code that adds credit to your prepaid electricity meter. You receive tokens when you purchase electricity credit.

6.2 How to Receive Tokens

Tokens are typically delivered in two ways:

1. **Automatically:** Sent directly to your meter via the network
2. **Via SMS:** Sent to your mobile phone for manual entry

6.3 Entering a Token

Step-by-step process:

1. Ensure the keypad is showing the normal display (Remaining Credit)
2. Begin typing the 20-digit token number

- Type carefully and deliberately
 - Allow time between each digit
 - Watch each number appear on Line 3
- 3. The display will show your entry with spaces for readability:
- 4. 1234 5678 9012 3456 7890
- 5. After entering the 20th digit:
 - The token is automatically sent to your meter
 - "Processing..." may appear briefly
 - Display returns to showing Remaining Credit
 - New credit amount will be reflected within a few seconds
- 6. If you make a mistake before completing 20 digits:
 - Use backspace (touch top of screen) to correct
 - Or press # to clear and start over

The display will format your token entry with spaces for easy verification: 1234 5678 9012 3456 7890

6.4 Token Entry Tips

✓ DO:

- Count digits carefully (20 total)
- Take your time
- Verify each digit as it appears
- Keep your token number until credit is confirmed

X DON'T:

- Rush through typing
- Continue if you see a wrong digit (correct it immediately)
- Discard your token number until credit appears
- Share your token numbers with others

6.5 After Token Entry

Successful Entry:

- Display returns to Remaining Credit

- Credit amount increases within 5-10 seconds
- Credit bar updates to show new percentage

If Credit Doesn't Appear:

- Wait up to 1 minute for network communication
- Check that Line 2 doesn't show "Not Ready"
- If still not updated, try entering the token again
- Contact your electricity provider if problem persists

7. Accessing Meter Information

7.1 Shortcode Commands

Shortcodes allow you to view different meter information. Enter a shortcode exactly as shown, including the * and # symbols.

7.2 Available Shortcodes

Shortcode Information Displayed Description

*800#	Current Reading	Total electricity consumed (kWh)
*801#	Meter Date	Current date configured in meter
*803#	Meter Time	Current time configured in meter
*804#	Meter Number	Serial number of your meter
*807#	Meter Status	Operating status of meter
*808#	Current Power	Instantaneous power consumption (kW)
*809#	Last Month Reading	Meter reading from end of previous month

7.3 Using Shortcodes

Example: Checking Current Power Consumption

1. Type: ***808#**
 - Press: *
 - Press: 8
 - Press: 0
 - Press: 8

- Press: #
2. Display changes:
 - Line 1: "Power"
 - Line 2: "2.45 kW" (your current consumption)
 - Line 3: Shows entry or credit bar
 3. Display automatically returns:
 - After the next update from gateway (usually within 1 minute)
 - Returns to showing "Remaining Credit"

When viewing shortcode information, the display will temporarily show the requested data in Line 1 (register name) and Line 2 (register value) before automatically returning to the default Remaining Credit display.

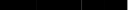
7.4 Shortcode Tips

- You must enter the complete shortcode (including * and #)
- If you make a mistake, press # to clear and start over
- Information stays on screen until next automatic update
- To return to remaining credit immediately, press # after viewing

8. Understanding the Display

8.1 Normal Display States

Healthy System:

| REMAINING CREDIT 1 [1] | ← Line 1 + Comm Indicator
 | 122.6 KWH | ← Line 2
 |  61% | ← Line 3 (Credit Bar)

Example from actual keypad display showing 122.6 kWh remaining credit at 61%

Communication Lost:

Remaining Credit [] ← No comm indicator

| Not Ready | ← Line 2 shows error

| |
|_____|

Entering Token:

|_____|
| Remaining Credit [1] |
| 45.8 kWh |
| 1234 5678 90__ | ← Line 3 shows entry
|_____|

8.2 Credit Display

For Prepaid Meters:

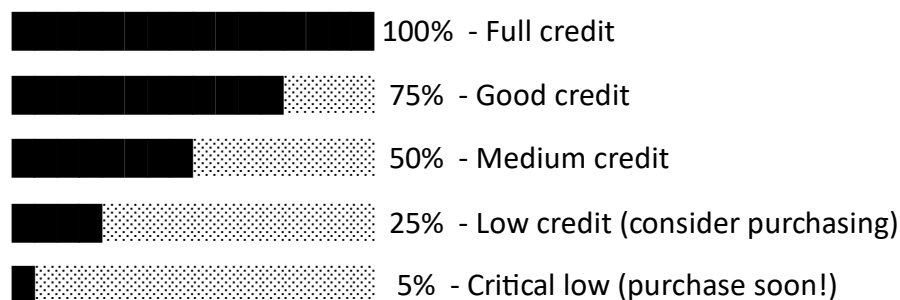
- Credit shown in kilowatt-hours (kWh)
- Example: "45.8 kWh"
- Bar shows percentage of maximum configured credit

For Smart Meters:

- Credit shown in currency
- Example: "R 245.50" or "\$ 12.30"
- Bar shows percentage of credit limit

8.3 Credit Bar Interpretation

The credit bar uses visual representation:



8.4 Communication Indicator

The number in the top right corner indicates:

Number Meaning:

- **1:** Direct connection to gateway (best)

- **2:** Connected via one intermediate node
- **3:** Connected via two intermediate nodes
- **4+:** Connected via three or more nodes

Indicator Behavior:

- **Flashing regularly:** Healthy communication
 - **Steady/unchanging:** Possible communication issue
 - **Blank (no number):** No communication with gateway
-

9. Troubleshooting

9.1 Display Shows "Not Ready"

Possible Causes:

- Keypad cannot communicate with meter
- Network gateway is offline
- Meter is powered off or disconnected

Solutions:

1. Wait 2-3 minutes for automatic reconnection
2. Check that communication indicator is flashing
3. Verify meter has power
4. Contact your electricity provider if problem persists

9.2 Token Not Accepted

Possible Causes:

- Token already used
- Token entered incorrectly
- Token not intended for your meter
- Communication problem

Solutions:

1. Verify you entered all 20 digits correctly
2. Try entering token again
3. Check that Line 2 doesn't show "Not Ready"

4. Contact your electricity provider with token number

9.3 Touchscreen Not Responding

Possible Causes:

- Pressing too lightly
- Pressing too quickly between keys
- Screen needs cleaning
- Hardware issue

Solutions:

1. Press more firmly on keys
2. Slow down - wait for each key to return to dark blue
3. Clean screen gently with soft, dry cloth
4. Contact installer if problem persists

9.4 Communication Indicator Not Flashing

Possible Causes:

- Gateway is offline
- Network connection lost
- Keypad position has poor signal

Solutions:

1. Wait 5 minutes to see if it reconnects
2. Check with neighbors if they have same issue
3. Contact your electricity provider

9.5 Credit Not Updating After Token

What to Check:

1. Did you enter all 20 digits?
2. Does Line 2 show "Not Ready"?
3. Is communication indicator flashing?
4. Has it been less than 1 minute since entry?

If credit still doesn't update:

1. Wait up to 2 minutes

2. Try entering token again
3. Write down token number for reference
4. Contact electricity provider

9.6 Display is Blank

Possible Causes:

- Keypad in Sleep Mode
- Power disconnected
- USB cable unplugged
- Power adapter failure
- Hardware fault

Solutions:

1. Touch the screen to wake from Sleep Mode
 2. Check USB-C cable is firmly connected
 3. Check power adapter is plugged into wall outlet
 4. Try different power outlet
 5. Contact installer for replacement
-

10. Safety and Care

10.1 Electrical Safety

WARNINGS:

- **DO NOT** open the keypad enclosure
- **DO NOT** expose to water or moisture
- **DO NOT** use if damaged
- **DO NOT** use near flammable materials
- **KEEP** out of reach of small children

✓ SAFE PRACTICES:

- Use only the provided power adapter
- Keep USB-C connection secure

- Mount in dry, protected location
- Maintain adequate ventilation around device
- **KEEP POWERED:** Do not unplug to darken room - use Sleep Mode instead
- Your keypad helps others in the building stay connected

10.2 Cleaning and Maintenance

Cleaning the Screen:

1. Unplug power (only for cleaning)
2. Use soft, dry cloth
3. Wipe gently - do not press hard
4. Do not use water or cleaning chemicals
5. Reconnect power after cleaning

Regular Maintenance:

- Check USB-C connection monthly
- Verify mounting is secure
- Keep area around keypad clean and dry
- Report any damage to installer immediately

10.3 Environmental Conditions

Operating Environment:

- Indoor use only
- Temperature: 0°C to 40°C (32°F to 104°F)
- Humidity: 20% to 80% (non-condensing)
- Avoid direct sunlight on screen
- Protect from rain and moisture

10.4 Installation Location

Good Locations:

- Inside home near entrance
- Protected from weather
- Easy access for daily viewing
- Away from heat sources

Avoid:

- Outdoor locations
 - Bathrooms or kitchens (moisture)
 - Direct sunlight
 - Near stoves or heaters
-

11. Technical Specifications

11.1 Hardware Specifications

Specification	Value
Display Type	2.8" TFT Touchscreen (Resistive)
Display Dimensions	60mm (W) × 48mm (H)
Display Resolution	320 × 240 pixels
Enclosure Dimensions	90mm (H) × 56mm (W) × 25mm (D)
Power Input	USB-C, 5V DC
Power Consumption	Normal Mode: 0.74 W, Sleep Mode: 0.32 W
Operating Temperature	0°C to 40°C
Storage Temperature	-10°C to 50°C
Humidity Range	20% to 80% RH (non-condensing)
Communication	Wireless mesh network
Network Levels Supported	1-4+ hops to gateway
Sleep Mode	Yes (screen off, communication active)

11.2 Display Specifications

Feature	Description
Display Area	Full front of enclosure
Touch Technology	Resistive touchscreen
Key Layout	4 rows × 3 columns (12 keys)

Feature	Description
Key Appearance	Blue rounded rectangles, yellow text
Information Lines	3 lines (Register name, value, entry/bar)
Text Color	White on black background
Communication Indicator	Single digit, top right corner

12. Frequently Asked Questions

Q: Can I turn off the keypad screen at night?

A: Yes, use Sleep Mode by touching the top of the screen when no digits are entered. Never unplug the keypad - other users may depend on it for network connectivity.

Q: What's the difference between unplugging and Sleep Mode?

A: Sleep Mode turns off only the screen while keeping all network functions active. Unplugging stops all functions and may disrupt service for neighbors who use your keypad as part of their network path.

Q: How do I wake the keypad from Sleep Mode?

A: Simply touch anywhere on the screen and it will turn on immediately.

Q: How long does it take for a token to register?

A: Usually 5-10 seconds, but can take up to 1 minute during network delays.

Q: Can I enter a token if the display shows "Not Ready"?

A: Yes, you can enter it, but it won't reach the meter until communication is restored. Wait for "Not Ready" to clear before entering.

Q: Why does the communication indicator number change?

A: The number shows your network level. It may change as the mesh network automatically optimizes routing paths. This is normal.

Q: How often should I see the communication indicator flash?

A: At least once per minute in a healthy system. More frequent flashing is normal and indicates active communication.

Q: Can I use the keypad during a power outage?

A: Only if the USB-C power source has backup power. The keypad has no battery and requires continuous power.

Q: What happens if I enter the wrong token?

A: The meter will reject incorrect tokens. Your credit will not change. You can try entering the correct token.

Q: Can I check my meter reading without using electricity?

A: Yes, use shortcode *800# to view your current meter reading at any time.

Q: How do I know if my token was successful?

A: Your remaining credit amount will increase within 5-10 seconds of entering the complete 20-digit token.

Q: The screen is responding slowly. Is this normal?

A: Resistive touchscreens are naturally slower than phone screens. Press deliberately and wait between key presses. This is normal behavior.

Q: Can I mount the keypad outside?

A: No, the keypad is for indoor use only. It must be protected from weather and moisture.

13. Contact Information

13.1 For Service and Support

Electricity Provider:

- Contact your electricity provider for:
 - Token purchases
 - Credit inquiries
 - Account questions
 - Meter readings

Technical Support:

- Contact your installer or service provider for:
 - Keypad not responding
 - Communication issues
 - Hardware problems
 - Installation questions

13.2 Emergency Contacts

Power Outages:

- Contact your electricity provider's emergency line

Safety Concerns:

- If keypad shows signs of damage, burning smell, or overheating
- Disconnect power immediately

- Contact your installer or service provider

14. Warranty and Compliance

14.1 Warranty Information

(To be specified by manufacturer)

14.2 Regulatory Compliance

(To be specified - CE, FCC, or regional compliance marks)

15. Quick Reference Guide

Common Tasks

Task	How To
Enter Token	Type 20 digits, automatically sent after last digit
Check Reading	Type *800#
Check Power	Type *808#
Check Meter Number	Type *804#
Check Meter Time	Type *803#
Clear Entry	Press # key
Backspace	Touch top portion of screen (when digits entered)
Sleep Mode	Touch top portion of screen (when no digits entered)
Wake from Sleep	Touch anywhere on screen
Return to Credit Display	Wait for automatic update or press #

Indicator Meanings

Display	Meaning
Remaining Credit + value	Normal operation
Black screen	Sleep Mode - touch to wake
Not Ready	Cannot reach meter
[1], [2], [3]	Network level (1 is best)

Display	Meaning
Flashing indicator	Healthy communication
No indicator	No network connection
