



White Paper: Ensuring Accurate Timekeeping in McGrath Smart Locks for Reliable Scheduled Functions

Executive Summary

McGrath smart locks rely on internal clocks to manage time-based access, such as scheduled eKeys, time-limited passcodes, auto-lock, and passage mode schedules. Unlike computers or smartphones, McGrath locks **do not autonomously track time zones or daylight-saving changes**. Accurate enforcement of timed functions requires **regular synchronization** with a mobile device (phone app) or a McGrath gateway. Failure to maintain proper time synchronization can result in unintended access failures or security risks.

1. How McGrath Locks Handle Time

Each McGrath lock maintains two key time parameters:

1. **Internal Real-Time Clock (RTC):** Tracks the current epoch time in seconds/milliseconds since January 1, 1970 (UTC).
2. **Time zone Offset:** Stores the difference from UTC in milliseconds, which accounts for the local time zone and any daylight-saving adjustments.

Key Point: The lock **cannot independently determine its geographic time zone** or whether daylight-saving is active. It relies entirely on the time and offset provided by the McGrath app or a connected gateway.

2. The Role of the Phone App

The McGrath mobile app is the primary source of both the current time and time zone information. Updates occur in the following scenarios:

- **Manual Calibration:** Users can open the app and select *Lock* → *Settings* → *Lock Clock* → *Calibrate Time* to push the phone's current time and offset to the lock.
- **After Bluetooth Unlocks:** Many SDK implementations trigger an automatic time calibration after a successful unlock if the lock's clock differs significantly from the phone.
- **When Issuing or Updating Credentials:** Time-limited eKeys or passcodes are only enforced correctly if the lock's clock matches the phone's time.

Important: Daylight-saving time changes on the phone do **not automatically update the lock**. Time-based functions will remain offset until the next app or gateway interaction.

3. Daylight-saving time (DST) and the McGrath App

3.1 Why the App Asks About DST

McGrath locks cannot detect DST changes themselves. The app asks:

- “Enter Daylight-saving time?”
- “Exit Daylight-saving time?”

This is a manual mechanism to adjust the lock’s **stored time zone offset by ± 1 hour** to match the current local DST status.

3.2 Effect of Selecting “Enter” or “Exit”

- **Enter Daylight-saving time:**
 - Adds 1 hour to the stored time zone offset.
 - Shifts scheduled unlocks, time-limited eKeys, and logs forward by 1 hour.
- **Exit Daylight-saving time:**
 - Subtracts 1 hour from the stored time zone offset.
 - Shifts scheduled unlocks, time-limited eKeys, and logs backward by 1 hour.

Practical Impact: Selecting the correct DST adjustment ensures that scheduled access windows and auto-lock functions remain aligned with the intended local time.

3.3 What Triggers the DST Prompt

- Manual interaction via *Lock Clock* in the app.
- Phone system clock changes due to DST transitions or time zone changes.
- Long periods of no lock calibration, causing offset discrepancies.

Consequence of Ignoring the Prompt: Time-limited eKeys, passage modes, or auto-lock schedules may fail or execute at the wrong hour.

4. The Role of McGrath Gateways

For remote management, McGrath Wi-Fi or G2 gateways act as intermediaries between the cloud and the lock:

- **Automatic Daily Calibration:** Gateways typically push a time calibration command approximately every 24 hours.
- **Credential Updates:** Any new or modified eKeys, passcodes, or cards trigger an immediate time sync.

Limitation: Gateways do not automatically compute DST changes. Proper time zone offsets must be supplied from the cloud or app.

5. Implications for Timed Functions

Time-sensitive features such as:

- Time-limited eKeys or passcodes
- Scheduled passage modes
- Auto-lock schedules
- Access logs with timestamps

...will fail or misbehave if the lock's clock or offset is inaccurate. For example, a code valid between 10:00–12:00 may be rejected or accepted at the wrong hour if DST or time drift is not updated.

Key Insight: The DST adjustment is critical for preserving the accuracy of all time-based operations.

6. Recommended Best Practices

1. **Respond to DST Prompts:** Immediately select *Enter* or *Exit Daylight-saving time* in the app after local DST changes.
 2. **Manual Calibration After DST:** If the app does not prompt, run *Calibrate Time* in the app.
 3. **Gateway Monitoring:** Ensure gateways remain online and properly connected to propagate regular time sync commands.
 4. **Firmware Updates:** Keep lock and gateway firmware current to avoid known timing bugs.
 5. **Scheduled API Syncs:** For large installations, integrate automated DST or daily time syncs via McGrath's API.
 6. **Verification:** Test one time-sensitive credential or schedule immediately after a time update to confirm correct behaviour.
-

7. Conclusion

McGrath locks rely entirely on external sources — either the mobile app or gateways — for accurate time and time zone information. **DST changes require manual or gateway-initiated updates** to maintain proper offset. Regular synchronization is critical to ensure that all time-based access functions operate correctly.

Key Takeaway: Timed functions are only reliable when locks interact regularly with the app or gateway and when DST adjustments are applied promptly.