



The DLMS Generic Companion Profiles (GCPs) are the next level development in smart metering compatibility, designed to streamline operations and ensure seamless integration across devices and systems. The GCP's are available to all DLMS UA members and licensable to non-DLMS UA members, making them accessible to all industry stakeholders. They provide a standard template for implementing DLMS/COSEM functionalities across energy devices and head-end systems (HES). Adoption of the DLMS ACESM GCP establishes a consistent foundation for smart metering solutions, enhancing efficiency and reliability while enabling regional extensions such as the North America (NA) Annex.



## ACESM (AC Electricity Smart Meter) GCP ED1 V2.0 Overview

The ACESM GCP is a specialized profile designed to meet the stringent requirements of the electricity smart meter market. It encompasses 21 essential use cases, ensuring devices meet the minimum functional expectations of this market while allowing for future expansion. The profile serves as a standardized specification, enabling seamless data exchange across manufacturers, thus promoting a global, interoperable and compatible metering ecosystem. **Version 2.0 introduces a NA Annex**, a dedicated North American extension tailored to meet the specific requirements of the electricity smart meter market in that region.

### Addressing Industry Challenges with ACESM GCP

The electricity metering industry faces challenges due to varying market requirements and regulatory constraints. Crafting custom specifications for each market often leads to complexity, increased costs, and extended time-to-market. **ACESM GCP** streamlines this process by providing a **standardized, off-the-shelf solution** that alleviates the complexities of creating bespoke meter specifications.

#### KEY BENEFITS

**Interoperability Assurance:** ACESM GCP guarantees compatibility within the smart metering ecosystem. It enables the exchangeability of devices from different manufacturers, simplifying utilities supply chain. It is communication technology-agnostic, currently supporting GSM, 3/4G, Ethernet, G3-PLC, Wi-SUN, LPWAN and will evolve to integrate additional technologies in the future offering unparalleled flexibility.

**Multi-Market Versatility:** The ACESM GCP transcends single-country or DSO-specific applications. The NA Annex outlines specific use cases for the North American market, illustrating the GCP's flexibility to extend definitions and adapt to diverse operational requirements

**Certified Level of Interoperability:** Through DLMS UA's rigorous certification process, devices implementing the ACESM GCP are validated for compatibility, ensuring reliability and reducing the need for expensive, bespoke certification platforms.



## Highlighting the Main Use Cases

|           |                                                                      |                                                                                                               |           |                                             |                                                                                                                                                       |
|-----------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1</b>  | <b>Meter registration</b>                                            | Process of incorporating devices (ACESMs, submeters, ...) into the system                                     | <b>11</b> | <b>Meter supervision</b>                    | Process of supervising any events which could comprise the meter and the system                                                                       |
| <b>2</b>  | <b>Remote Tariff Programming</b>                                     | Process of remotely programming the parameters necessary to support a time of use (TOU) based tariff contract | <b>12</b> | <b>Consumer Information</b>                 | Process of periodically transmitting meter reads and consumer information via a local digital interface                                               |
| <b>3</b>  | <b>On Demand Meter Register reading for multi-utility meters</b>     | Process of collecting meter register readings upon a specific request                                         | <b>13</b> | <b>Communication Supervision</b>            | Process of supervising events affecting the meter to HES communication                                                                                |
| <b>4</b>  | <b>On Demand Meter Load Profile reading for multi-utility meters</b> | Process of collecting load profile register readings upon a specific request                                  | <b>14</b> | <b>Enabling / disabling functionalities</b> | Process of enabling or disabling a functionality                                                                                                      |
| <b>5</b>  | <b>Periodic Meter reading for multi-utility meters</b>               | Process of periodically collecting meter readings for billing purposes (periodic reading)                     | <b>15</b> | <b>Power control</b>                        | Process of activating or deactivating the demanded power control mode in meters                                                                       |
| <b>6</b>  | <b>Remote or local Disconnection and Reconnection (E, G)</b>         | Process of disconnecting or reconnecting the electricity I or gas (G) supply of a customer                    | <b>16</b> | <b>Alarm and event Management</b>           | Process of management of events and equipment alarms                                                                                                  |
| <b>7</b>  | <b>Clock Synchronization</b>                                         | Process of adjusting the internal clock of the metering equipment                                             | <b>17</b> | <b>Meter Availability Control</b>           | Process to ping a meter to check that communication works                                                                                             |
| <b>8</b>  | <b>Quality of Supply</b>                                             | Process of supervising Power Outages, Sags and Swells                                                         | <b>18</b> | <b>Display messages on meter display</b>    | Process of displaying pre-defined or on-the-fly messages such as supply of energy or tariffs                                                          |
| <b>9</b>  | <b>Load Management by relay (E only)</b>                             | Process of controlling specific local loads by means of relays                                                | <b>19</b> | <b>Configuration of meter locally</b>       | Process of initial installation or in-service control                                                                                                 |
| <b>10</b> | <b>Firmware update</b>                                               | Process of downloading new firmware to a device                                                               | <b>20</b> | <b>Manage security settings</b>             | Process of setting and updating security credential scan be done locally or remotely and cover setting new security keys or certificates in the meter |
|           |                                                                      |                                                                                                               | <b>21</b> | <b>Prepayment</b>                           | Process for prepayment functions of the electricity meter                                                                                             |



## ACESM (AC Electricity Smart Meter) GCP - NA Annex Overview

The North American (NA) Annex applies exclusively to the North American market. It includes updates that either expand upon the existing specifications in the AC Electricity Smart Meter Generic Companion Profile or modify certain behaviors to align with regional requirements.

In addition to the 21 use cases defined in the ACESM GCP, the NA Annex **adds one new use case**, introduces **new objects and events**, and updates existing use cases with additional objects. It also reclassifies certain objects as mandatory or optional to better reflect the specific needs of the North American electricity smart meter market.

### These regional requirements are organized into four sections:

- Section A2 outlines items that are optional in the main ACESM GCP but are mandatory for North America.
- Section A3 covers items that are mandatory in the main ACESM GCP but are considered optional or prohibited in North America.
- Section A4 introduces new requirements specific to North America, which may be either mandatory or optional.
- Section A5 includes additional changes, enhancements, and deviations from the main GCP.

## Specific NA Use Case

**NA-01**

**Measurement algorithms**

Process of remotely programming new measurement algorithms for active, reactive and apparent power and Energy