

SYNC 521 DLMS/COSEM Client Library

OVERVIEW

Kalkitech provides an easy upgrade path for users to implement the DLMS protocol in their client with the SYNC 521 DLMS Client Source Code Library. The protocol stack is written in ANSI C. and is suitable for Head End System, Data concentrator, Hand Held Units and Modems Kalkitech also provides a wrapper for using the client stack in C#.

KEY FEATURES

- Suitable for simple microcontroller to full fledged desktop/server
- Server OS Operating System
- Platform specific functionality separated out as a file, with default implementations available for Windows and Linux. Sample projects given for Windows (using Microsoft Visual Studio - C as well as C#) and Linux (for generating shared object library)
- Supports HDLC and COSEM wrapper for IP (IPv4 and IPv6)
- Supports Event notification and Data notification
- Supports IEC 62056-21 Mode-E implementation
- Support Security suite 0 (AES-GCM-128 Authenticated Encryption and AES-128 key wrap for key transport) and suite 1 (AES-GCM-128 Authenticated Encryption, ECDSA with P-256 Digital signature and key agreement, AES-128 key wrap for key transfer)
- Supports various companion specifications including Indian Standard IS15959-1, IS15959-2/IS16444-1 IS15959-3/IS16444-2

COSEM APPLICATION LAYER

Interface Classes

The stack supports the following Interface Classes and their instantiation:

- Data (IC: 1)
- Register (IC: 3)
- Extended Register (IC: 4)
- Demand Register (IC: 5)
- Register Activation (IC: 6)
- Profile Generic (IC: 7)
- Clock (IC: 8)
- Script Table (IC: 9)
- Schedule (IC: 10)
- Special Days Table (IC: 11)
- Association SN (IC: 12)
- Association LN (IC: 15)
- SAP Assignment (IC: 17)
- Image Transfer (IC: 18)
- IEC Local Port Setup (IC: 19)
- Activity Calendar (IC: 20)
- Register Monitor (IC: 21)

- Single Action Schedule (IC: 22)
- IEC HDLC Setup (IC: 23)
- M-Bus Slave Port Setup (IC: 25)
- Utility Table (IC: 26)
- PSTN Modem Configuration (IC: 27)
- PSTN Auto Answer (IC: 28)
- Auto Connect (IC: 29)
- Push Setup (IC: 40)
- TCP-UDP Setup (IC: 41)
- IPv4 Setup (IC: 42)
- Ethernet Setup (IC: 43)
- PPP Setup (IC: 44)
- GPRS Modem Setup (IC: 45)
- SMTP Setup (IC: 46)
- GSM Diagnostic (IC: 47)
- IPv6 Setup (IC: 48)
- S-FSK IEC 61334-4-32 LLC Setup (IC: 55)
- ISO/IEC 8802-2 LLC Type 1 Setup (IC: 57)
- ISO/IEC 8802-2 LLC Type 2 Setup (IC: 58)
- ISO/IEC 8802-2 LLC Type 3 Setup (IC: 59)
- Register Table (IC: 61)
- Compact Data (IC: 62)
- Security Setup (IC: 64)
- Parameter monitor (IC: 65)
- Sensor Manager (IC: 67)
- Disconnect Control (IC: 70)
- Limiter (IC: 71)
- M-Bus Client (IC: 72)
- Wireless Mode Q Channel (IC: 73)
- M-Bus Master Port Setup (IC: 74)
- LLC SSCS setup (IC: 80)
- PRIME NB OFDM PLC Physical layer counters (IC: 81)
- PRIME NB OFDM PLC MAC setup (IC: 82)
- PRIME NB OFDM PLC MAC functional parameters (IC: 83)
- PRIME NB OFDM PLC MAC counters (IC: 84)
- PRIME NB OFDM PLC MAC network administration data (IC: 85)
- PRIME NB OFDM PLC Applications identification (IC: 86)
- G3-PLC MAC layer counters (IC: 90)
- G3-PLC MAC setup (IC: 91)
- G3-PLC 6LoWPAN adaptation layer setup (IC: 92)
- Account (IC: 111)
- Credit (IC: 112)
- Charge (IC: 113)
- Token Gateway (IC: 115)
- Zigbee Setup classes (IC:101-105)

Application Contexts

The protocol stack supports both Short Name (SN) and Logical Name (LN) referencing with ciphering and with no ciphering

Access Control (authentication)

- No security
- Low level security (LLS)
- High Level Security HLS-2 (using AES128-ECB)
- High Level Security HLS-3 (using MD5)
- High Level Security HLS-4 (using SHA-1)
- High Level Security HLS-5 (using AES-GMAC)
- High Level Security HLS-6 (using SHA-256)
- High Level Security HLS-7 (using ECDSA)

Data Security (Encryption)

- Security suite0 (AES GCM128 encryption and AES GMAC authentication)
- Security suite1 (AES-GCM-128 Authenticated Encryption, ECDSA with P-256 Digital signature and key agreement, AES-128 key wrap for key transfer)
- AES Key wrap for Global/Master Key transfer

Conformance block

The stack supports the following featured services in the DLMS Conformance-block:

LN Services

- GET
- GENERAL PROTECTION
- BLOCK TRANSFER WITH GET
- SET
- BLOCK TRANSFER WITH SET
- ACTION

- SELECTIVE ACCESS
- DATA NOTIFICATION
- GENERIC BLOCK TRANSFER (along with Data Notification)
- EVENT NOTIFICATION
- MULTIPLE REFERENCING

SN Services

- READ
- WRITE
- Parameterized Access

HDLC DATALINK LAYER

Addressing

Supports 1-byte, 2-byte and 4-byte addressing

Timeouts

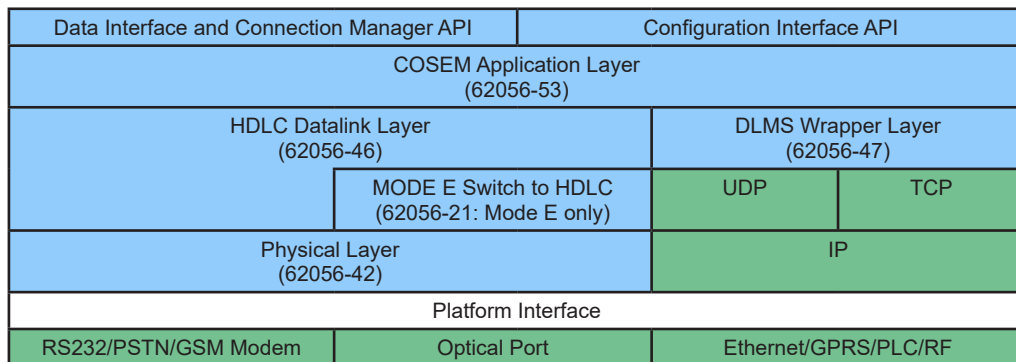
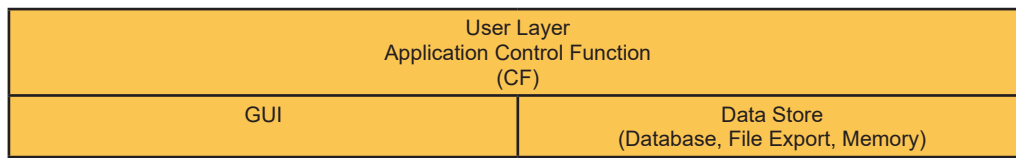
Supports inactivity and inter-frame timeouts

COSEM Transport Layer for IPv4/IPv6 Networks

SCL supports COSEM wrapper layer for IPv4/IPv6 networks, to enable communication via Ethernet/GPRS/ PPP/PLC/RF

OBIS CODES

The complete range of standard OBIS codes related to the above mentioned Interface Classes can be used with the system



DLMS Communication to Servers (Meters)

Legend

Code	Scope
	Kalkitech
	Kalkitech and Customer. For Windows platforms Kalkitech scope
	For Windows, Kalki Scope. For non-Windows platforms customer Scope
	Customer