

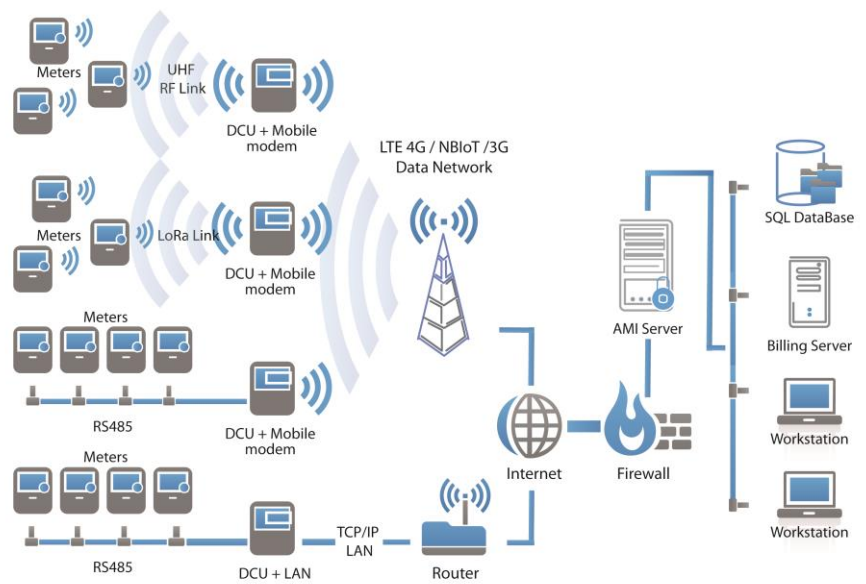


ZM6380 Data Concentrator Unit

DATA CONCENTRATOR UNIT AND ITS SYSTEM APPLICATIONS

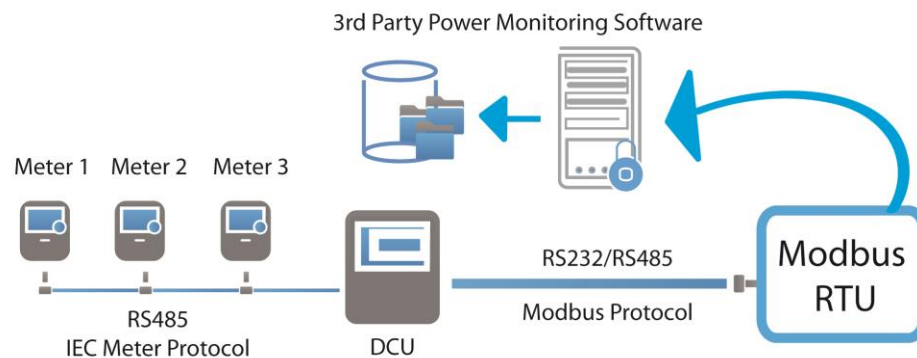
A DCU-CUM-MODBUS CONVERTER FOR EFFICIENT & COST-SAVING 2-WAY DATA COMMUNICATION

The ZM6380 is a microprocessor-based Data Concentrator Unit (DCU) designed especially for remote data reading of clusters of electric meters. This DCU incorporates an MCU running on Linux platform to provide multiple communication interface options such as LAN, LTE 4G, NBIoT, WCDMA 3G, HSPDA, GPRS, LoRa, Short Range RF, RS232 and RS485 serial connectivity in order to ensure two-way meter data communication in a reliable, efficient, and cost-saving manner. A variety of protocol sets are also available to support different meter standards adopted by various manufacturers.



When set in DCU mode, the device will periodically poll readings from a cluster of meters, compress and encrypt the data before saving them to local storage and simultaneously as backup to an SD card. Upon request, the packed and compressed data files will be efficiently transmitted to a central server.

This DCU can double as a Modbus converter for energy conservation purpose in Building Management System (BMS). When in Modbus mode, the ZM6380 will serve as a bridge between BMS' Modbus protocol and the IEC meter standard used in the electricity sector, enabling active remote monitoring of energy usage in various locations within a commercial/industrial facility. Data collected through the Modbus converter are analysed for energy efficiency measures. The overall risk and maintenance costs are thus kept in check. Should there be a surge in loading demand, the system will identify the source of issue and tailor a solution to pre-empt the facility from being charged the maximum tariff rate.



Other features of this DCU include a separate hardware watchdog timer for automatic system reset if there is a software hang.

In addition, the ZM6380 can connect to different sensors and meters through RS485, LoRa and Short Range RF for IoT system implementation. LoRa and short range RF module slave devices are available for connecting the sensors and meters. The slave module can be connected to the sensors and meters through UART, 4 ~ 20mA current loop and other interfaces.

Key Features

- Debian Linux 8.3 OS
- Industrial grade design with watchdog monitoring
- Support IEC62056-21 (formerly IEC 61107) meter protocol
- Support DLMS/COSEM (IEC 62056, EN13757-1)
- Support Modbus
- Support USB, LAN, RS232, RS485, UHF Short Range Radio Data, LoRa, NBIoT, LTE-4G and UMTS 3G Mobile data
- Isolated RS232 and RS485 interfaces
- On-board SD card for backup data storage
- Real-time clock
- LED indicators for field diagnosis & testing
- Simple design for easy field installation
- Supplied with a wall-mount casing graded in IP53



Technical Data

System

MCU	: AM3358 ARM Cortex A8
System Clock	: 1GHz
Flash Memory	: 4GB, 8-bit Embedded MMC
SD RAM	: 512MB DDR3L 800MHz
Operating System	: Debian Linux 8.3

USB Port

No. of Port	: 2
USB Port 0	: HS USB 2.0, Client, miniUSB
USB Port 1	: HS USB 2.0, Host, Type A

Data Communication

Local Communication (Meters):

RS232 & RS485

Data Rate	: 1.2kbps – 11.5kbps
Connection	: Isolated from CPU and WAN
Connector	: 3-pin phoenix connector
No. of Port	: 2

Short Range RF (Optional)

Frequency	: 409 MHz
Data Rate	: 1200 bps and 2400 bps
Transmit Power	: 0.5W
Receive Sensitivity	: -110dBm

LoRa (Optional)

LoRa Class	: A and C
Frequency	: 850 ~ 930 MHz programmable
Modulation	: Spread Spectrum
Transmit Power	: +20dBm (Max.)
Receive Sensitivity	: -148dBm
Link Budget	: 168dB (Max.)
Data Rate	: 1200bps ~ 57600bps

WAN Communication (Central Server Connection):

RS232 & RS485

Data Rate	: 1.2kbps – 11.5kbps
Connection	: Isolated from CPU and meters
Connector	: 3-pin phoenix connector
No. of Port	: 2 (One RS232, One RS485)

Ethernet LAN

Standard	: IEEE802.3
Data Rate	: 10Mbps – 100Mbps
Connection	: RJ45

Mobile Modem (Optional)

Cellular Network	: Worldwide LTE, UMTS/HSPA+ and GSM/GPRS/EDGE coverage
Output Power	: Class 3 23dBm for LTE FDD Class 3 23dBm for LTE TDD Class 3 24dBm for UMTS Class E2 27dBm for EDGE 850/900 MHz Class E2 26dBm for EDGE 1800/1900 MHz Class 4 33dBm for GSM 850/900 MHz Class 1 30dBm for GSM 1800/1900 MHz
Data Rate	: LTE FDD Max. 10Mbps(DL) Max. 5Mbps(UL) DC-HSPA+ Max. 42Mbps(DL) Max. 5.76Mbps(UL) UMTS Max. 384kbps(DL) Max. 384Mbps(UL) Edge Max. 236.8kbps(DL) Max. 256.8kbps(UL) GPRS Max. 85.6kbps(DL) Max. 85.6kbps(UL)

NB-IoT (Optional)

Cat	: LTE Cat M1 & Cat NB1 & EGPRS
Data rate-Cat M1	: Max. 375kbps(DL) Max. 375kbps(UL)
Data rate-Cat NB1	: Max. 32kbps(DL) Max. 70kbps (UL)
Data rate-EDGE	: Max. 296kbps(DL) Max. 236.8kbps(UL)
Data rate-GPRS	: Max. 107kbps(DL) Max. 85.6kbps(UL)

Real Time Clock

Accuracy	: 6 min / year (approx..)
Backup battery	: 3VDC

Watchdog Timer

- MCU	: Reset within 1 minute if malfunctioned
- Mobile modem	: Reset within 20 seconds if malfunctioned
- RF Module	: Reset within 2 seconds if malfunctioned
- WLAN	: Reset within 2 seconds if Malfunctioned

Electrical

Power Supply	: 220VAC \pm 5%
Connection	: Double-screw terminals
Power	: 6VA at 40°C
Consumption	

Mechanical

Dimensions	: 235mm x 166mm x 85 mm
Weight	: 1500g

Environmental (Main Unit)

Temperature	
Operating	: -20°C – +85°C
Storage	: -65°C – +150°C

Compliance

RoHS and CE compliant