Eppetone Engineers Pvt. Ltd.

MRI USER MANUAL

Version: 1.0

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1 Introduction

DLMS MRI software is BIS compatible software used to download various DLMS meter data.

2 System Requirements

2.1 MRI Software

2.1.1 Hardware Requirements

Sands Make DLMS Compatible CMRI or HHU Machine.

2.2 BCS Software

The system is implemented using C# and .NET languages.

2.2.1 Hardware Requirements

Processor	P-4 based PC or Later
RAM	512 MB or Higher

Table 2-1

2.2.2 Software Requirements

Operating System	Windows XP, Windows Vista , Windows 7
Database	Access
Supporting Software	Dot Net Framework2.0
Installer	Windows Installer 3.1 or Higher
Reporting	MS Excel, Adobe PDF

Table 2-2

3 MRI Software Operating Procedure

The following are the list of software's shall be used for Data collection, Data dump to PC and Meter Configuration using sands CMRI.

1. SDLMS.EXE (Main Menu Software)

Figure 3-1

The following software's will be called as child process by SDLMS SW.

a. HHUMR.EXE (Data Collection Software)
b. SDDFUP.EXE (Data dumping Software to PC)
c. HHUVW (INS and BILL data view SW)
d. LOG (View / Delete Log Data)
e. SDHLS.EXE (Meter Configuration Software using high level security)

3.1 Main Menu Software – SDLMS

a. Press twice "ON/OFF" switch in CMRI with a fraction of time gap.
b. After booting CMRI will display B:\ .
c. Type "SDLMS" in CMRI, e.g. B:\SDLMS.
d. Press Enter button in CMRI.
e. The following Menus will be displayed.

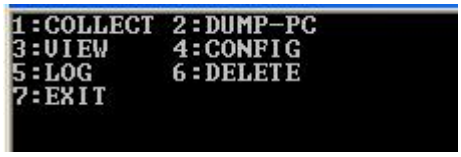

Figure 3-2

Each Menu detailed explanation refer the upcoming sections 3.1.1 to 13.1.8

3.1.1 Data Collection (Collect) – Meter to HHU (HHUMR)

A Client Software to obtain data from DLMS BIS Compliant Electricity Meters.

NOTE: Please make sure the CMRI used is a DLMS Compatible CMRI. For any queries Contact sands.

Software Name: HHUMR.EXE
Supporting File Name: LOGICAL.MAP (Will be created automatically)

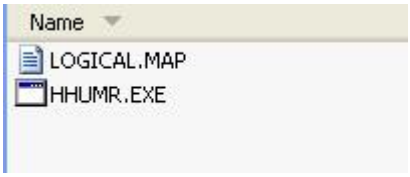

Figure 3-3

Note: Both files HHUMR.EXE and LOGICAL.MAP will be in same path/folder.

3.1.1.1 LOG FILE FORMAT: LOGICAL.MAP

<Logical Device Name>, <Meter Serial Number>, <Channel Number >, <Collection Type>, <Download Date&Time>.

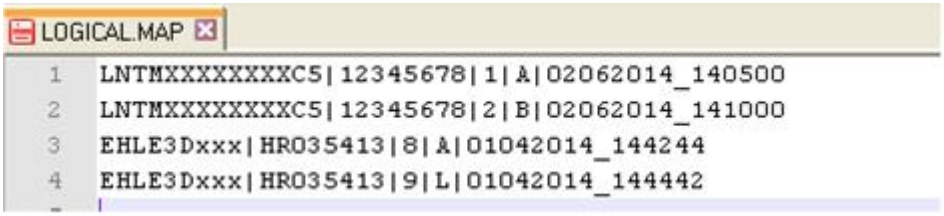

Figure 3-4

3.1.1.2 USER INTERFACE:

In Collect option (HHUMR.EXE) the following menu will appear for notifying software details & version.

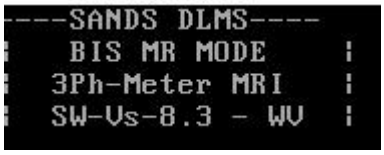

Figure 3-5

3.1.1.3 COMMUNICATION CONFIGURATION MENU

The first menu will allow the user to select the Communication Port through which the user wishes to communicate between the Meter and the Common Meter Reading Instrument – CMRI. The following are the two options available to the user:

Figure 3-6

3.1.1.4 SELECTION MENU

The second menu will allow the user to select the read options. It will have the following options:

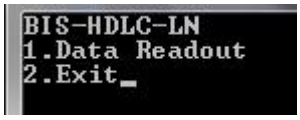

Figure 3-7

The third menu will allow the user to select the sub read options

Figure 3-8

If the select meter option is selected then meter options will be displayed as below or enter password menu will be displayed in the next window. No password menu if the meter type is selected, the meter password will be given automatically

Figure 3-9

3.1.1.5 LOW LEVEL PASSWORD (LLS):

α. After Downloading options selection the user need to enter Low level password to authenticate & to retrieve the meter data.

β. This password will vary from meter manufacturer to meter manufacturer. One HHU can retrieve maximum 255 no. of meter data. Every meter will have unique channel ID number. After entering the low level password, Log ID menu will appears.

Figure 3-10

3.1.1.6 DOWNLOADING OPTIONS

The forth menu will allow the user to select various download options. It will have the following options:

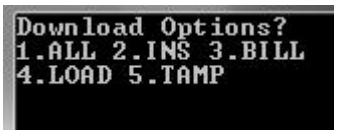

Figure 3-11

a. All – All profile data's will be downloaded.
b. INS – Only Name Plate, Programmable and Instantaneous profile data's will be downloaded.
c. BILL - Only Name Plate, Programmable, Instantaneous and Billing profile data's will be downloaded.
d. LOAD - Only Name Plate, Programmable, Instantaneous and Load Survey profile data's will be downloaded.
e. TAMP - Only Name Plate, Programmable, Instantaneous and Tamper profile data's will be downloaded.

For Load Survey selection user needs to select the load survey days as per the user requirement. Note: Some meter may not support selective load survey option. If not supported use Full option only.

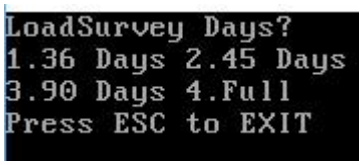

Figure 3-12

3.1.1.7 MEMORY STATUS:

a. If the data storage memory status is less than 200KB, the downloading will not start, it will throw exception.
b. If any exception received on memory clear the data files and start again.

3.1.1.8 SERVICE ERROR:

If the user not entered the correct LLS password, It will display the following error message.

Figure 3-13

3.1.1.9 AUTHENTICATION ERROR:

If the user not using the DLMS compatible CMRI the software will display the following error message.

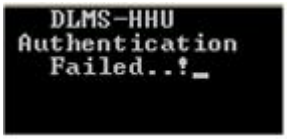

Figure 3-14

3.1.1.10 READING METER DATA:

If authentication success the SW starts download the meter data according to the user selection.

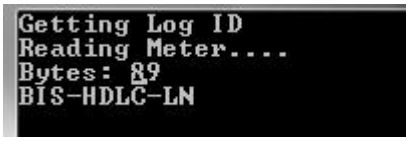

Figure 3-15

Initially it will download the Logical Device Name and Meter Serial Number and display the same to the user.

Figure 3-16

3.1.1.11 DATA READ COMPLETED:

If reading success the following message will be displayed and the SW will come back to Main Menu.

Figure 3-17

3.1.1.12 METER DATA STORAGE:

According the incremental channel number (1 to 255) the output file will be created.

E.g.: If the channel number is 1 the output file name will be '1.DAT'.

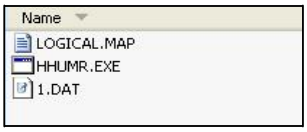

Figure 3-18

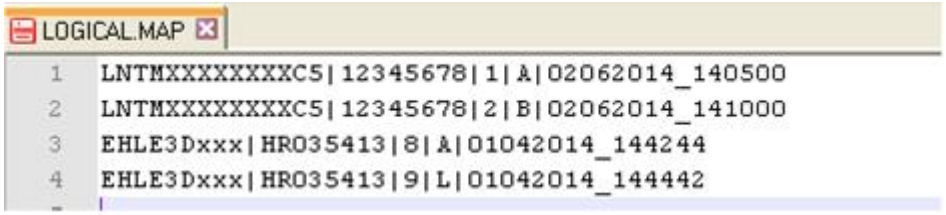

Figure 3-19

3.1.1.13 COMMUNICATION ERROR:

The following are the common causes for communication error.

Optical probe not properly connected.
Defect in optical probe.
Optical probe power not properly powered up.
Optical probe disturbed during meter data download.
Meter is not responding for the client query, Time out case.

Note: Always use SANDS Universal optical probe. If any problem in communication contact sands customer support.

3.1.2 Dumping to Pc (DUMP-PC) – HHU to PC (SDDFUP)

For dumping data to PC user need to execute two software's one on CMRI side and another one

on PC side.

Supporting Software's and Files in HHU:

Software Name: SDDFUP.EXE **Supporting File Name:** LOGICAL.MAP **Output Files:**
1.DAT , 2.DAT , 3.DAT ….....

Supporting Software's and Files in PC:

Software Name: SANDS_DLMS_FUP_UI-<Version>

3.1.2.1 CMRI END:

a. Select the menu option DUMP-PC in CMRI, the following screen will be displayed.

Figure 3-20

b. Select COM port.

Figure 3-21

Figure 3-22

3.1.2.2 PC END:

Refer the usermanual for Operating procedure.

3.1.3 View Software (HHUVW)

This software shall be used to view selected instantaneous data and billing data.

3.1.3.1 USER INTERFACE:

In VIEW Collect option (HHUVW.EXE) the following menu will appear for notifying software details & version.

Figure 3-23

3.1.3.2 COMMUNICATION CONFIGURATION MENU

The first menu will allow the user to select the Communication Port through which the user wishes to communicate between the Meter and the Common Meter Reading Instrument – CMRI. The following are the two options available to the user:

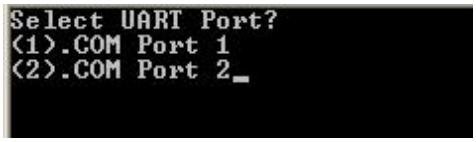

Figure 3-24

3.1.3.3 SELECTION MENU

The second menu will allow the user to select the read options. It will have the following options:

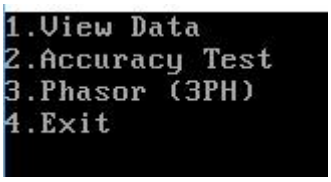

Figure 3-25

3.1.3.4 DOWNLOADING OPTIONS

After pressing 1 it will request to select or enter low level password.

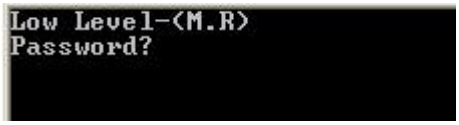

Figure 3-26

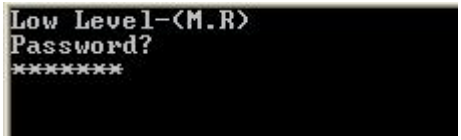

Figure 3-27

After entering the correct password it will start download the instantaneous data and billing data.

Figure 3-28

Upon download completion it will display the values in the screen

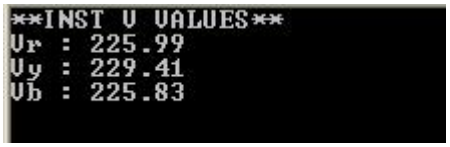

Figure 3-29

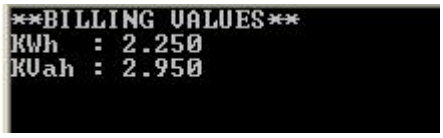

Figure 3-30

After pressing 2 it will request to select or enter low level password for Accuracy Test.

After pressing 3 it will request to select or enter low level password for Phasor (applicable only for 3ph meter).

3.1.4 Meter Configuration (CONFIG) – HHU to METER (SDHLS)

To configure the meter through CMRI.

Supporting Software's and Files in HHU:

Software Name: SDHLS.EXE
Supporting File Names: LOGICAL.MAP, SET files

Note: The SET files are required before you run this software. The SET files need to be using DLMS BCS software.

Supporting Software's PC:

Software Name: DLMS BCS

3.1.4.1 CMRI END:

a. Select the menu option CONFIG in CMRI, the following screen will be displayed.

Figure 3-31

b. Select the port Com1 or Com 2 from the below option.

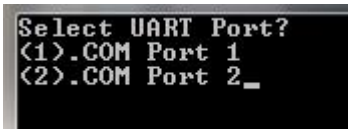

Figure 3-32

b1. Meter selection window.

Figure 3-33

b2. Note: The SET file is required to proceed further please get a .SET file by using sands DLMS BCS. If the .SET file is not present in the CMRI then an error will be displayed as below.

Figure 3-34

c. Select the options to read the programmable data details from meter or write the programmable data to meter.

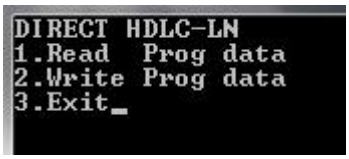

Figure 3-35

d. select option for Read Prog data.

e. If option 2 Write Prog data chosen, the following screen will appear.

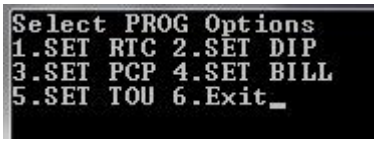

Figure 3-36

Menu Details:

i. SET RTC (SET REAL TIME CLOCK)

ii. SET DIP (DEMAND INTEGRATION PERIOD)

iii. SET PCP (PROFILE CAPTURE PERIOD)

iv. SET BILL (SET BILLING PERIOD)

v. SET TOU (SET TIME OF DAY)

Note: For SET BILL and SET TOU, CMRI need to be prepared using DLMS BCS SOFTWARE (Refer section BCS software operating procedure).

f. If Option 1 (SET RTC) chosen it will ask for confirmation, just press y to proceed else press n to discard.

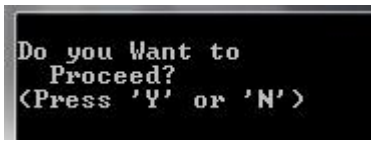

Figure 3-37

Note: If HLS password is wrong you will get communication error.

1. If HLS password is correct "Meter Programmed Successfully" message will be shown else Communication error will be shown. To conform the METER RTC corrected or not read the meter and check.

If Option 2 (SET DIP)

1. Choose the options 1 to 4 as per the user requirement. The following confirmation screen will appear, just press y to proceed else press n to discard.

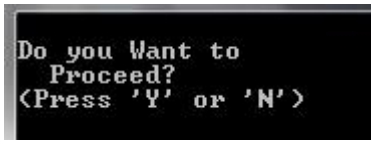

Figure 3-38

2. If HLS password is correct "Meter Programmed Successfully" message will be shown else Communication error will be shown. To conform the DIP corrected or not read the meter and check.

g. If Option 3 (SET PCP) chosen the following screen appear

1. . The following confirmation screen will appear, just press y to proceed else press n to discard.

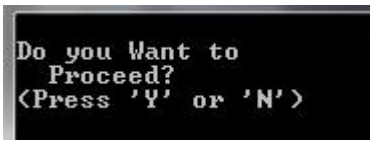

Figure 3-39

Note: If HLS password is wrong you will get communication error.

3. If HLS password is correct "Meter Programmed Successfully" message will be shown else Communication error will be shown. To conform the PCP corrected or not read the meter and check.

h. If Option 4 (SET BILL) chosen,

1. The following confirmation screen will appear, just press y to proceed else press n to discard.

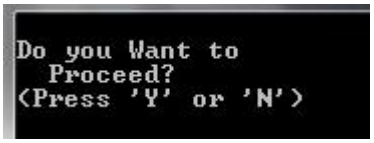

Figure 3-40

Note: If HLS password is wrong you will get communication error.

4. If HLS password is correct "Meter Programmed Successfully" message will be shown else Communication error will be shown. To confirm the BILL DATE corrected or not read the meter and check.

i. If Option 5 (SET TOU - Activity Calendar), In activity calendar we can set the following 5 attributes using CMRI individually, refer the screen below.

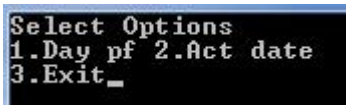

Figure 3-41

j. Select any of the above required option as per the requirement, According to the selection It will check for files

a) Cal name (Calendar name Passive) - File name -> DLMT6.SET (NA)
b) Season (Season Profile Passive) - File name -> DLMT7.SET (NA)
c) Week pf (Week Profile table Passive) - File name -> DLMT8.SET (NA)
d) Day pf (Day Profile table Passive) - File name -> .SET
e) Act Date (Active Passive Calendar Time) - File name -> .SET

k. If setting files available it will ask for confirmation.

1. The following confirmation screen will appear, just press y to proceed else press n to discard.

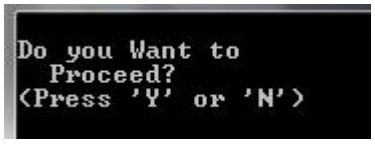

Figure 3-42

Note: If HLS password is wrong you will get communication error.

5. If HLS password is correct "Meter Programmed Successfully" message will be shown else Communication error will be shown. To conform the TOU corrected or not read the meter and check.

3.1.5 Meter Read Summary (View Log)

a. Select the menu option VIEWLOG in CMRI, the following screen will be displayed.

Figure 3-43

b. After few seconds it will show the meter data downloaded log details.

Figure 3-44

Note: Only 3 rows shall be viewed at a time. If you want to view next record press 'N' and keep on press 'N' until end. At the end of the record it will come back to main menu. No Previous record viewing option available.

c. If not meter data downloaded, the following message will be displayed.

Figure 3-45

d. LOGICAL.MAP file format.

<Logical Device Name>, <Meter Serial Number>, <Channel Number >, <Collection Type>, <Download Date&Time>.

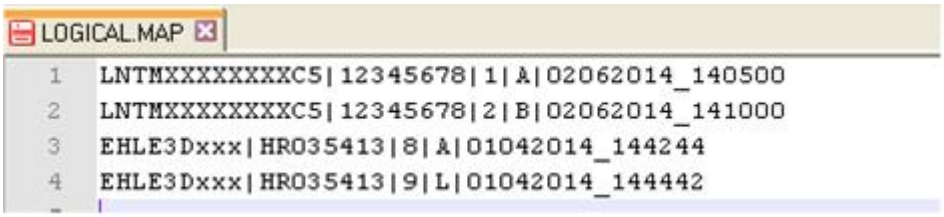

Figure 3-46

3.1.6 LOG

To view the download log details in CMRI.

a. Select the menu option LOG DELETE in CMRI, the following screen will be displayed, press enter.

Figure 3-47

b. Upon selecting up arrow and down arraw in CMRI the following screens will appear.

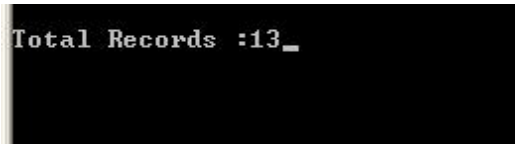

Figure 3-48

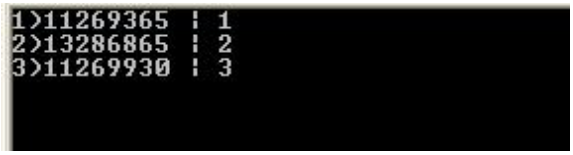

Figure 3-49

3.1.7 Cleanup CMRI Data (DELETE)

To clear the data files and the log file (LOGICAL.MAP) files from CMRI, the following option shall be used.

c. Select the menu option DELETE in CMRI, the following screen will be displayed, Enter Password (signals).

Figure 3-50

d. After password entry it will show the following screen.

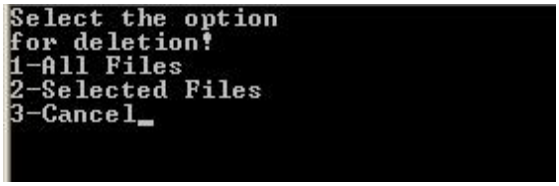

Figure 3-51

e. Press 1 to delete all data.

Figure 4.3-52

f. Press 2 to delete selected data.

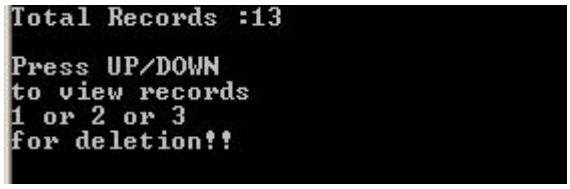

Figure 3-53

Figure 3-54

3.1.8 Exit

α. Select the menu option EXIT in CMRI to exit form SW.

4 Output file format (*.OUT)

a. Refer the file OUTPUT FILE FORMAT.pdf for detailed description.

5 Glossary

CMRI	Common Meter Reading Instrument
Client	A station, asking for services. Normally the master station
API	Application Programming Interface
DLMS	Device Language Message Specification
HDLC	High Level Data Link Control
HHU	Hand Held Unit
HLS	High Level Security
HW	Hard Ware
ICS	Indian Companion Specification (IS 15959; 2011)
IEC	International Electrotechnical Commission
IS	Indian Standard
LLS	Low Level Security
MLD	Management Logical Device

MR	Meter Reader
MRI	Meter Reading Instrument
NA	Not Applicable
PC	Public Client
US	Utility Setting
SW	Software
PC	Personal Computer
OS	Operating System
TBD	To Be Done

Table 5-3