

***MICROSTAR***

**STAR**

**Bluestar Electrical Meter Research Institute**

Microstar Electric Company Limited

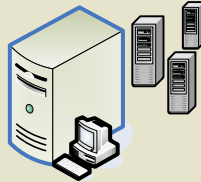
**BLUE**

## AMI Products Roadmap

### AMR/AMI Software Solutions



**TMR-BS06**  
Standalone AMR



**TMR-BS07**  
Distributed AMI System

Application Server  
Database Server  
Web Server

RS485  
GSM  
GPRS  
Ethernet  
PSTN

RS485  
GSM  
GPRS  
Ethernet  
PSTN

### AMR Tool



**Dataview**  
Convenient AMR tool

RS485  
GSM  
GPRS  
Ethernet  
PSTN

### Data Concentrators



**EDAT-BS06**  
Commercial  
sub-metering



**ERTU-BS05**  
Grid point metering

RS485  
bus

### AMR Smart Meter



**P2000**  
Three meter  
With Built-in  
AMR communication

Optical  
Port

### Smart Meters



**P2000**  
Three phase



**C2000**  
Single phase



**C1000M**  
Single phase

Optical  
Port

### HHU



**PR-510**  
Hand-held Meter reader

## **Three Phase Smart Meter**

### **P2000-T**

*Upgraded from A2000*

*Certified by*



- *Measurement of Active, Reactive and Apparent electricity energy*
- *Maximum Demand Registration*
- *Load monitoring with Instant Voltage, Current, Power & Power Factor*
- *Load Profile recording*
- *TOU Control with flexible programming of up to 8 tariffs*
- *Internal real-time clock and calendar with battery backup*
- *Data storage in large non-volatile memory*
- *Fully AMR compatible with options of built in GPRS, PSTN or Ethernet*
- *Easily readable data indication on LCD display*

### Measurement and Registration

- Energy: kWh, 4-Quadrant kvarh, kVAh
- Maximum Demand: kW, kvar, kVA
- Load profile recording

### TOU (Time of Use) Control

- Tariff switching                      Holidays, Weekend, & Seasons
- Number of tariffs                      up to 8 tariffs
- Programmable Holidays              120 special days
- Number of seasons                    10 tariff seasons
- Number of daily profiles              up to 8 daily profiles

### Data Storage

- Energy & Max demand:              Current and Last 16 months
- Load profile
  - Integration period: 1, 5, 10, 15, 20, 30 or 60 min
  - 420 days with integration period 60 min
  - 16 independently programmable channels
- Data Retention:                        25 Years

### Events Registration

- Power breakdown
- Phase failure recording
- Per-phase voltage-loss
- Voltage-under/over
- Per-phase current-loss
- Current imbalance
- Last meter programming
- Reverse current flow and overload

### Communications

- Optical Port                            IEC 62056-21
- RS 232/485                              IEC 62056-21,  
DLMS/COSEM  
MODBUS
- Internal (option)                        PSTN, GSM/GPRS or Ethernet

### Display

- Cyclic data indication automatically or by buttons
- Data indication on LCD during mains off by pushbutton
- 8 digit LCD

### P2000-T Technical Specifications

#### Ratings

- System                                    3P 3W, 3P 4W
- Accuracy class                         Class 0.2S, 0.5S, Class 1
- Standard                                 IEC 62053-22, and 23
- Reference voltage Un                    3 x 57.7/100...240/415V
- Normal (maximum) current  
CT Operated                              1(10)A, 5(20)A
- Starting Current  
CT Operated                                0.1% In
- Reference Frequency                    50/60 Hz
- Power consumption:
  - in voltage circuit                        < 1.5 W; < 3 VA
  - in current circuit                         < 0.1 VA
- Temperature ranges:
  - Working                                    -30°C to +70°C
  - Storage                                    -45°C to +85°C
- Humidity:                                 <= 95%

#### Internal real-time clock with backup batteries

- Time-keeping accuracy                < 0.5 Sec / 24Hours
- Clock operating with battery         > 15 years
- Clock synchronization                AMR software

#### Inputs and Outputs

- Electric pulse I/O                        4 programmable channels
- LED test output                         400 - 16000 imp/kWh
- Verification pulse output               kWh & kvarh
- Latching Relay                            5A 240V

#### Case and Dimension Sizes

- Casing                                    Polycarbonate
- Terminal cover                         Polycarbonate transparent
- Terminal Block                         Bakelite
- Insulation                                Protective Class II
- Dimensions (mm)                        263 x 175 x 83
- Weight                                    Approx. 1.4 Kg
- Water-proof                               IP51, IEC 529

### Security

- Meter programming protected by sealed push-button
- Up to 3 levels of meter access passwords

## **Three Phase Smart Meter**

# **Type P2000-D**

*Upgraded from B2000*

*Certified by*



- *Measurement & Registration of KWh, kvarh, kVAh*
- *Maximum Demand Registration kW, kvar & kVA*
- *TOU Control with flexible programming up to 8 tariffs*
- *Load Profile recording > 450 days @ 30 minutes interval*
- *Fully AMR compatible with options of built in GPRS, PSTN or Ethernet*
- *Backup battery to read meters during Mains Power failure*
- *Easily read-able LCD large characters with backlight*
- *LCD Working temperature up to 70 °C, will not fade away upon High Heat*
- *One whole body of meter casing, no need to seal the meter cover*
- *Option of power disconnect relay built-in*

### Measurement and Registration

- Energy: kWh, bi-directional metering import & export
- Maximum Demand with time stamps
- Load profile recording

### TOU (Time of Use) Control

- |                          |                         |
|--------------------------|-------------------------|
| ○ Tariff switching       | Int clock or Ext signal |
| ○ Number of tariffs      | Up to 4 tariffs         |
| ○ Number of seasons      | Up to 4 tariff seasons  |
| ○ Number of day profiles | Up to 4 day profiles    |
| ○ Maximum Demand         | Up to 4 tariffs         |

### Data Storage

- |                        |   |
|------------------------|---|
| ○ Energy & Max demand: | Current and Last 16 months  |
| ○ Load profile –       | Integration period: 1, 5, 10, 15, 20, 30 or 60 min<br>storage > 450 days with integration period 30 min |
| ○ Data Retention:      | 25 Years  |

### Events Registration

- Power breakdown
- Per-phase voltage-loss
- Voltage-under/over
- Per-phase current-loss
- Exploitation time for each tariff
- Last meter programming date & time
- Reverse current flow

### Communications

- |                     |                                       |
|---------------------|---------------------------------------|
| ○ Optical Port      | IEC 62056-21                          |
| ○ RS 232/485        | IEC 62056-21,<br>DLMS/COSEM<br>MODBUS |
| ○ Internal (option) | PSTN, GSM/GPRS or Ethernet            |

### Display

- Cyclic data indication automatically or by keys
- Data indication on LCD during power outages
- 8 Large digit LCD, with 7 digit OBIS/EDIS

### P2000-D Technical Specifications

#### Ratings

- |                               |                                    |
|-------------------------------|------------------------------------|
| ○ System                      | 3P 3W, 3P 4W                       |
| ○ Accuracy class              | Class 0.5S, Class 1                |
| ○ Standard                    | IEC 62053-21,23                    |
| ○ Reference voltage Un        | 3 x 90/157...240/415V              |
| ○ Reference (maximum) current | 5(60)A 10(120)A, 20(160)A          |
| ○ Current threshold           | Direct Connected                   |
|                               | 0.2% Ib Class 0.5S                 |
|                               | 0.4% Ib Class 1                    |
| ○ Reference Frequency         | 50/60 Hz                           |
| ○ Power consumption:          |                                    |
|                               | in voltage circuit < 1.5 W; < 3 VA |
|                               | in current circuit < 1 VA          |
| ○ Temperature ranges:         |                                    |
|                               | meter operating -30°C to +70°C     |
|                               | meter storage -45°C to +85°C       |
| ○ Humidity:                   | <= 95%                             |

#### Internal real-time clock with backup batteries

- |                                |                     |
|--------------------------------|---------------------|
| ○ Time-keeping accuracy        | < 0.5 Sec / 24Hours |
| ○ Clock operating with battery | > 15 years          |

#### Inputs and Outputs

- |                              |                     |
|------------------------------|---------------------|
| ○ Electric pulse output (SO) | Test output         |
| ○ LED test output            | 400 - 16000 imp/kWh |
| ○ Load control Relay         | 100A 240V           |

#### Case and Dimension Sizes

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| ○ Casing                            | Polycarbonate                       |
| ○ Terminal cover                    | Polycarbonate                       |
| ○ Terminal Block                    | Bakelite                            |
| ○ Insulation                        | Protective Class II                 |
| ○ Water-proof                       | IP51, IEC 529                       |
| ○ Dimensions & Weight (basic model) | 263 x 175 x 83 mm<br>Arppox. 1.5 Kg |

#### Security

- Meter programming by sealed button and password

## Single Phase Smart Meter C2000

- Very compact design and light weight
- Measurement of active energy kWh
- Time of Use (TOU) 4 Tariffs Option
- Data read by HHU via Optical port
- Easily readable data indication on LCD display
- Anti-Tampering by Reverse Units registration
- Option of read data without power (RWP)
- One whole body of meter casing, excellent water-proof

### Ratings

○ Standard	IEC 62053-21
○	IEC 62053-23 (optional)
○ Accuracy class	Class 1
○ Rated voltage	220V, 230V 240V
○ Reference current $I_b$ ( $I_{max}$ )	5 (80) A 10(100) A
○ Start Current	0.4% $I_b$
○ Reference Frequency	50/60 Hz
○ Power consumption:	
in voltage circuit	< 1 W; < 10 VA
in current circuit	< 2 VA
○ Temperature ranges:	
meter operating	-30°C to +70°C
meter storage	-45°C to +85°C

### Case and Dimension Sizes

○ Case Materials	Polycarbonate
○ Terminal cover	Polycarbonate
○ Terminal Block	Bakelite
○ Dimensions (mm)	102x110x43 (basic model)
○ Weight	0.4 Kg (basic model)
○ Water-proof	IP51
○ Terminal Cover	Short or Extended

Certified by



### Communications

○ Optical port	IEC 62056-21 (IEC 1107)
○ Optional	RS-485, Infrared Internal GPRS

### Inputs and Outputs

○ Pulse output (SO)	Test output
○ LED (meter constant)	500 - 4000 imp/kWh
○ Power relay (option)	240V 100A (internal)

### LCD Display

- Scrolling display automatically with large 8 digit
- LCD data display during mains power off

## Single phase Multifunction Meter C1000M

- *Measurement of active electricity energy*
- *Maximum Demand Registration*
- *TOU with flexible control of up to 4 tariffs*
- *Internal real-time clock and calendar with battery*
- *Data storage in non-volatile memory*
- *Fully AMR (Automated Meter Reading) compatible*
- *Load monitoring with Instantaneous Voltage, Current and Power Factor*

### Ratings

- |   |                                    |
|---|------------------------------------|
| ○ System  | Single-Phase 2-wire                |
| ○ Accuracy class                                  | Class 1 IEC 62053-21, IEC 62052-11 |
| ○ Reference voltage                               | $U_n$ 110V; 220V; 230V; 240V       |
| ○ Reference (maximum) current $I_b$ ( $I_{max}$ ) | 1.5 (6) A 5 (60) A 10(120) A       |
| ○ Current threshold                               | 0.2% $I_b$                         |
| ○ Reference Frequency                             | 50/60 Hz                           |
| ○ Power consumption:                              |                                    |
| in voltage circuit                                | < 1 W, < 2 VA                      |
| in current circuit                                | < 1 W                              |
| ○ Temperature ranges:                             |                                    |
| meter operating                                   | -30°C to +70°C                     |
| meter storage                                     | -45°C to +85°C                     |

### TOU (Time of Use) Control

- |                          |                          |
|--------------------------|--------------------------|
| ○ Tariff switching       | Internal real-time clock |
| ○ Number of tariffs      | 4 tariffs                |
| ○ Number of seasons      | Up to 10 tariff seasons  |
| ○ Number of day profiles | Up to 10 daily profiles  |

### Communications

- |          |                                  |
|----------|----------------------------------|
| ○ RS-485 | Optional, IEC 62056-21 or MODBUS |
|----------|----------------------------------|

### Inputs and Outputs

- |                                    |                           |
|------------------------------------|---------------------------|
| ○ Electric pulse output (SO)       | Test output               |
| ○ LED test output (meter constant) | 500, 1000 or 4000 imp/kWh |

### Events Registration

- |                                   |                                 |
|-----------------------------------|---------------------------------|
| ○ Registration of power outages   | Last 10 events with date & time |
| ○ Reverse current flow indication | Indication on LCD               |
| ○ Meter programming               | Last programming date & time    |

### Case and Dimension Sizes

- |                                   |                          |
|-----------------------------------|--------------------------|
| ○ Case Materials                  | Reinforced Polycarbonate |
| ○ Transparent UV Stabilized Cover | Reinforced Polycarbonate |
| ○ Insulation                      | Protective Class II      |
| ○ Dimensions (mm)                 | 165 x 112 x 60           |
| ○ Weight                          | 1.0 Kg                   |
| ○ Water-proof                     | IP51                     |

**Energy Remote  
Terminal Unit  
ERTU-BS05**

**Grid Electricity Data Acquisition**

- Power Generation Plants
- Transmission & Distribution Substations
- Large Industrial Enterprises

- *Highly reliable software and hardware design; Mono-structure; Excellent performance*
- *Real-time multi-task running mode based on real-time operating system VxWorks*
- *Powerful data processing and communications; supports transparent communications*
- *Flexible user running mode; supports multiple user tasks*
- *Adequate meter communications protocols; extensible on customer requirement*
- *Flexible meter physical interfaces*
- *Multi-protocols and simultaneous multi-central station communications*
- *Flexible communications, supports dial-up, dedicated and LAN communications*
- *Perfect events registration functions*
- *Different user access levels management; system security achieved by password protection*
- *Large screen LCD display; interchangeable English and Chinese operation interface*
- *Convenient and easy remote maintenance functions*
- *Super capacity data storage space; non-volatile data storage longer than 20 years*
- *A/C & D/C redundancy design; seamless interchangeable without interruption*

## Data Acquisition

- Collecting energy meter's data at real-time
- Timing tasks collecting energy meter's data
- Collecting various energy meters data
- Cycling data storage mode with sampling data or sampling cycle; storage capacity configurable

## Events Registration

- System reboot
- System power outage; AC/DC power source interchanging
- User operation info
- System running info
- Warning and error info

## Clock Synchronization

- Clock sync from remote central station
- Clock sync from local GPS
- Synchronize energy meters' clocks

## Archive Management

- ERTU archive management
- Energy meters archive management
- User info archive management

## Scheduled Timing Tasks

- Energy meters clock sync task
- Multiple energy data acquisition tasks
- Timing data-send-back task
- Task parameters can be customized

## Local Operations

- Inquire electricity data and recorded events
- Configure and inquire running parameters

## Remote Operations

- Parameters configuration
- Remote diagnosis & maintenance

## Security

- Different user access levels management
- system security achieved by password protection

## Self Diagnosis

- Hardware and software watchdogs guarantee system uptime and continuity of data acquisition

## ERTU-BS05 Technical Specifications

### Power

- Rated voltage A/C 85 - 265V, 47-63Hz  
D/C 120-330V
- Power Consumption depends on configuration  
Normal 35W  
Maximum 75W

### Environmental Parameters

- Storage temperature -25°C - +70°C
- Operating temperature -20°C - +55°C
- Humidity <= 90%
- Shock IEC68-2-6
- Mechanical strength IEC68-2-27

### Internal real-time clock with backup batteries

- Time-keeping accuracy < 0.5 Sec / 24Hours
- Clock operating with battery > 15 years

### Communications - Meters

- Up to 8 RS-485, each supports up to 128 meters
- up to 4 current loop, each for 4 meters
- Up to 255 meters total

### Communications - Central Station

- 10/100 Ethernet
- Up to 2 embedded internal V90/56K modems
- Built-in GSM/GPRS
- RS-232 Serial port

### Integration Cycle

- Adjustable from 1 to 65535 (45 days) minutes

### Memory

- Flash disk 512M to 2G for data storage
- Up to 10,000 cyclic events registration

### Display

- 320 x 240 matrix LCD

### Case and Dimension Sizes

- Case Standard 3U, 19"
- Dimensions (mm) 483 x 320 x 132
- Weight 7.25 Kg

### Reliability

- MTBF > 60,000 Hours
- Service time > 15 Years

## AMR System Integration

ERTU-BS05 can be integrated into AMR/AMI system with BlueStar central station software TMR and BlueStar Class 0.2S & 0.5S electricity meters, or other brand meters.

## **Hand-held Unit**

### **PR-510**

- *Portable, convenient and powerful*
- *Meter data reading & meter programming*
- *Large data storage memory*
- *Data files transmission & sharing with PC*

### **Portable Energy Meter Data Reader**

- *C/C++ API for user application development*
- *TureFFS file system for high capacity, easy & secure data storage*
- *Files sharing with PC conveniently*
- *Boot-up password to ensure data security*
- *Supports various alarm clock functions*

### **Specification**

- *CPU:* Powerful 32-Bit MCU
- *Operating System:* Real-time embedded OS VxWorks
- *ROM:* 2M bytes code memory
- *RAM:* 512K bytes for code running
- *FLASH:* 16M bytes for file storage
- *Display:* 160×160 graphical LCD screen with backlight
- *Clock:* Date and Time, Error < 2 seconds / day
- *Keypad:* 21 keys, supports numeric, alphabetic
- *Communication:* RS-232 (57600 bps), RS-485, IR port (1200bps) & Optical IEC 1107
- *Size:* 166 mm (L) × 79 mm (W) × 26 mm (H)
- *Net Weight:* 210 g without battery
- *Battery:* 2 AA batteries, Direct charge port, recharger not needed
- *Power consumption:* Standby: < 65 mA, Shutdown < 200 uA
- *Water-proof:* IP54
- *Work temperature:* -20 °C to 70 °C

## Data Concentrator

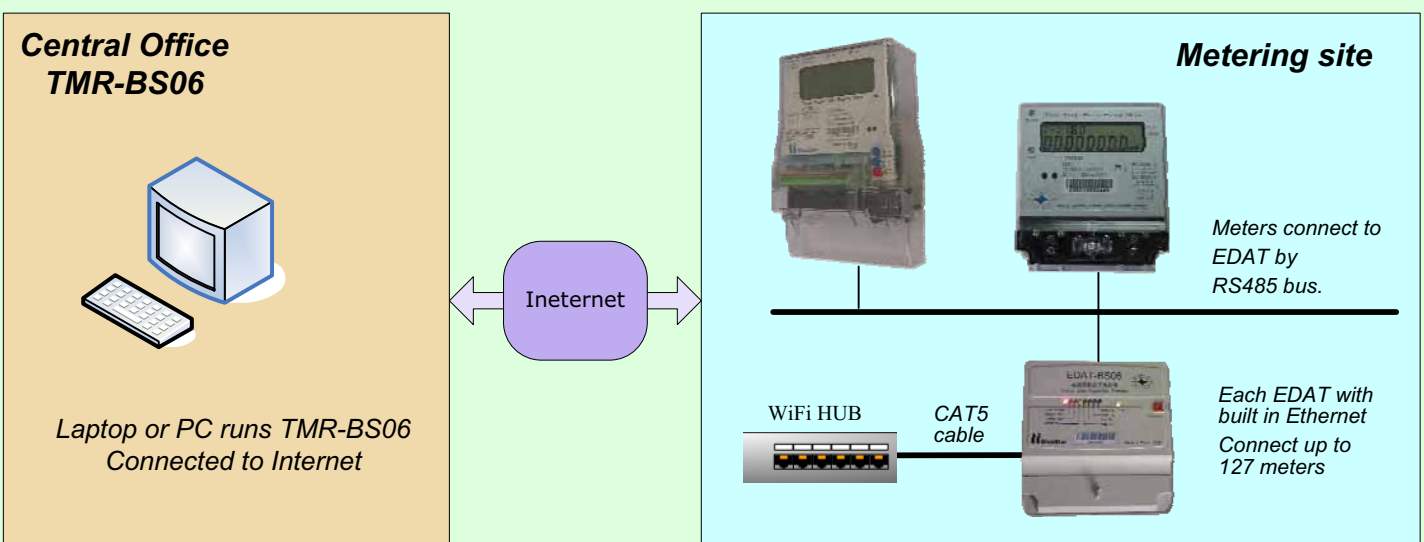
### EDAT-BS06

- Perfect for commercial sub-metering
- PSTN, GSM, Ethernet or RS-485
- Synchronize meters clock
- Compatible with other brands meters
- Instant Tamper Alarms sent to mobile phone
- SMS (short message service) configuration at real time
- Data acquisition automatically or on demand at real-time
- Task data automatically send back to central station (Bluestar TMR)

### Specification

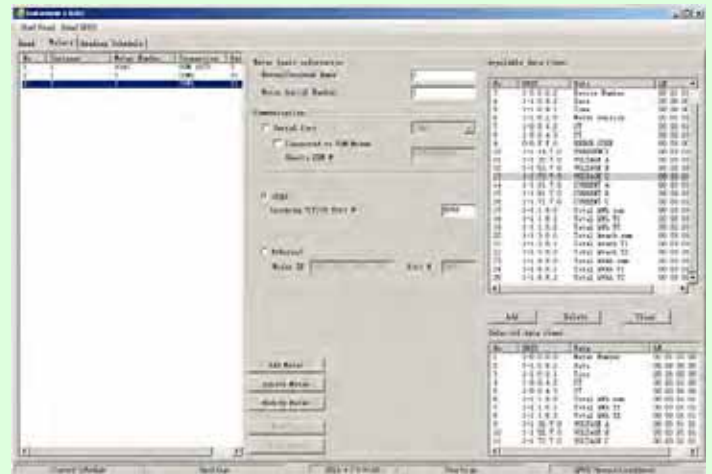
- Working voltage: 85 - 265 VAC, 50/60 Hz,
- Power Supply: Three Phase or Single Phase optional
- Power consumption: 3-5 W
- Communication with Central Station:
  - 56K PSTN Modem
  - GSM networks, 900/1800 MHz
  - 10/100 Ethernet
  - RS-485 serial port
- Data read cycle: 1-65536 minutes
- Meters connected: up to 127, mixed of 1P and 3P, and other brands
- Memory storage: up to 32 Mega Bytes
- Working temperature: -20 - +55°C
- Digital Input: 2 channels to monitor tampering events
- Digital Output: 1 channel

### Sample Application



## AMR TOOL Dataview

- Perfect tool for medium or pilot projects
- Most simple and easy to use AMR tool
- Minimum configuration needed
- No database needed



Dataview configuration

### Connect to meters via

- RS-485
- GSM Modem
- PSTN Modem
- Ethernet
- GPRS

### Protocols supported

- IEC 1107
- DLMS
- MODBUS

**Communication**

**Serial Port** COM3

Connected to GSM Modem  
Remote SIM # 18705169409

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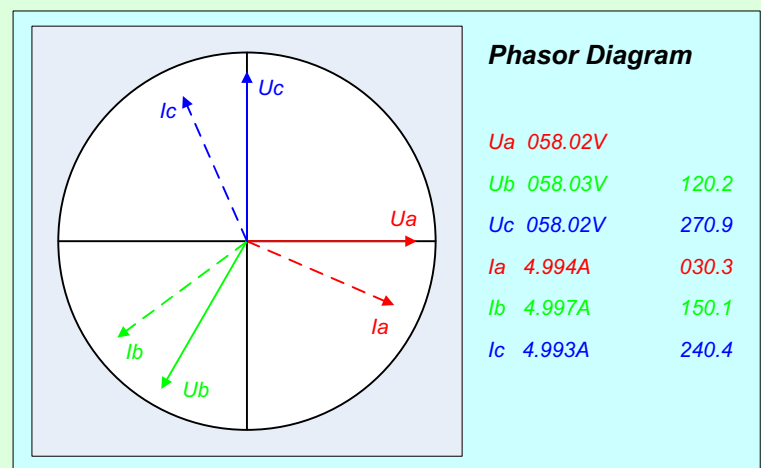
**GPRS**  
Incoming TCP/IP Port # 9058

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**Ethernet**  
Meter IP Port # 9058

Dataview communications

- ❖ Automatic reading at programmable intervals
- ❖ Save data automatically
- ❖ Send reading data by emails
- ❖ Check parameters & data from web
- ❖ Check engineering data remotely, instantly



Dataview phasor diagram

# AMR SOFTWARE TMR-BS06

**All-in-one**

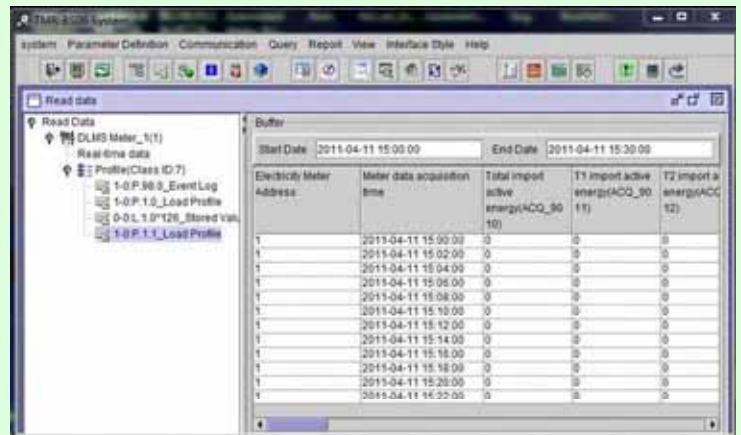
From data reading to billing reports

**Mixed connections**

RS-485, GPRS, Ethernet, PSTN

**Standalone**

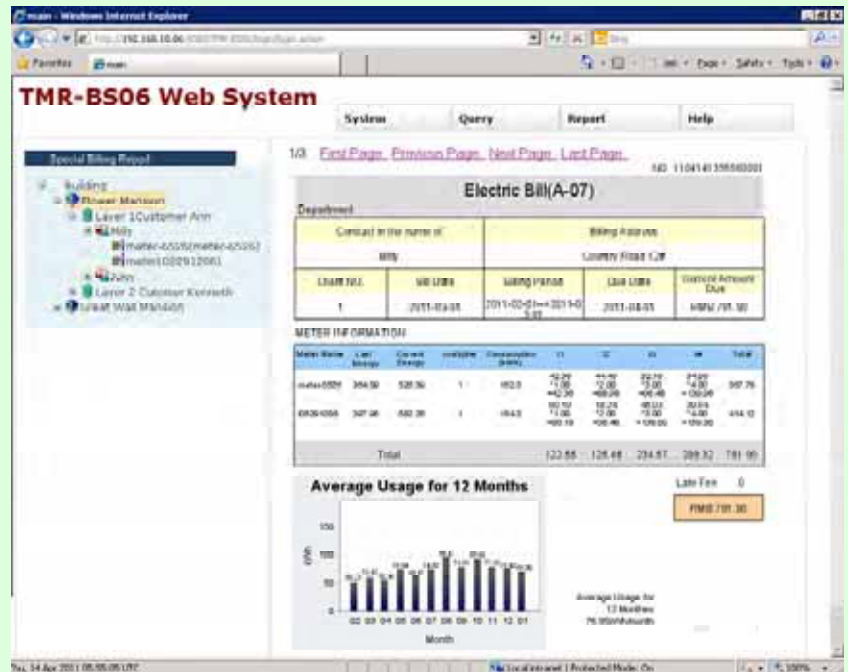
Minimum hardware requirement can run on laptop



TMR-BS06 data acquisition

## Report Highlights

- Formats:**  
PDF, Excel, Word, XML
- Data:**  
Task data, read on demand
- Date:**  
Random or periodical

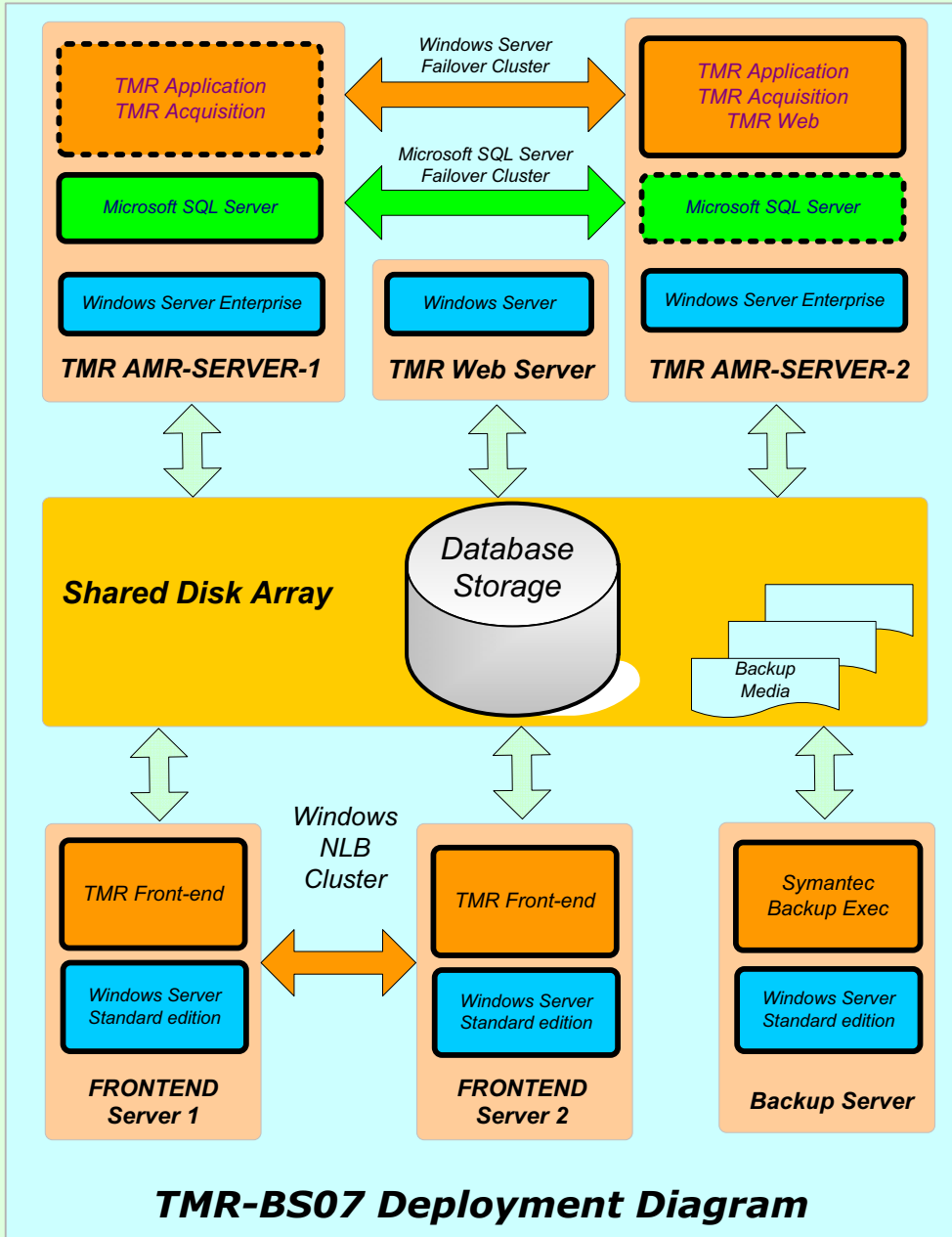


TMR-BS06 Web reports

## Specifications

- Operating System:** Windows 2003/2008/XP/7, UNIX, Linux
- Database supported:** MS Access, MS SQL Server, Oracle, MySQL, PostgreSQL
- Communications:** Ethernet, PSTN, GSM/GPRS & Serial Port
- Release package:** Stand-alone version
- Protocol:** Concentrators: IEC60870-5-102  
Meters: DLMS
- Capacity:** Data acquisition points 5000  
(Number of concentrators or AMR meters)





**TMR-BS07 System Rack**

**TMR-BS07 Salient Features**

- ◇ Customers and meters management
- ◇ Energy data acquisition
- ◇ Revenue Management
- ◇ Custom Billing Reports design
- ◇ Instant status monitoring
- ◇ Various databases supported
- ◇ Data available through web
- ◇ Scalable as Distributed or Standalone

**Typical TMR Rack components**

- |                          |                       |
|--------------------------|-----------------------|
| 1 AMR & Web Server       | 2 x HP ML370G6        |
| 2 Storage                | HP MSA2300            |
| 3 Front-End Server       | 2 x HP DL160G6        |
| 4 Backup                 | HP DL160G6            |
| 5 GPS Clock              | HORARYN               |
| 6 Network router         | CISCO 2811-sec Router |
| 7 Network switch         | H3C S1224R Switch     |
| 8 GPRS Modem Pool        | WAVECOM M1206B        |
| 9 Client Workstation     | HP dx2310             |
| 10 Network Printer       | HP LaserJet 5200n     |
| 11 User Interface Device | 8 port KVM            |
| 12 Rack                  | HP 10642G2            |

## Fiber Glass Boxes

- Fire retardant, BS476 Part 7 Class 2.
- Compact design & light weight
- Fiber Glass, Flush Fitted
- HHU Infrared reading without door open
- Provisions for Seals by utilities company
- Option of MCB in separate compartment
- Option of GPRS & antenna for AMR meter

### Specifications

- o Case Materials Fiber Glass, SMC
- o Water-proof IP51



**DBX-M1**



**DBX-MMC3**

PRODUCTS	Type	Size (mm)	Weight (Kg)	Option
❖ <b>DBX-C1</b>	Single phase 240V 100A	215x410x155	1.4	
❖ <b>DBX-M1</b>	Single phase 240V 100A	215x410x155	1.5	MCB
❖ <b>DBX-MMC3</b>	Three phase 400V 100A	355x680x182	3.5	GPRS Modem

## Three Phase Sheet Steel Boxes

- Hinged lockable door with 2 sealing provisions.
- Clear polycarbonate windows for easy meter display viewing
- Window lined with weatherproof rubber gasket to prevent water ingress.
- Panel top slopped to prevent rain water stay.
- Option of RS232 port on door for HHU reading without opening door
- Adequate protective coating using strong anti-corrosion material.
- Meter reading during power failure without opening door
- Grounding bolts for earthing panel with 6 mm<sup>2</sup> stranded copper
- Hinged door earthed through flexible earthing braid.
- Cable entry & exit holes fitted with PVC cable glands on bottom
- 4 holes on back for concrete wall mounting
- Air vents on panel sides for panel ventilation
- Spacious to accommodate Meter, CTs, test terminal block & cabling

### Specifications

- o Material Sheet steel
- o Thickness (mm) 1.5, 2.0
- o Cable Entry Bottom or side
- o Anti-corrosion Acid washing, Phosphating  
Powder coating by plastic spraying



**DBX-M3**

PRODUCTS	Type	Dimension (mm)	Weight (Kg)	Option
❖ <b>DBX-C3</b>	Whole current	425 x 250 x 100	5.5	GPRS Modem
❖ <b>DBX-M3</b>	Ring type CT	905 x 360 x 165	15	GPRS Modem
❖ <b>DBX-M32</b>	Block type CT	941 x 761 x 165	18	GPRS Modem
❖ <b>DBX-M3B</b>	Back board, Block CT	824 x 800 x 175	20	GPRS Modem



### **Bluestar Electrical Meter Research Institute**

Founded as a privately held company in June 1999, Bluestar has been focusing in designing and manufacturing innovative electricity meters, as well as advanced AMR/AMI system including high technology AMR/AMI meters, Smart meters, data concentrators and web-enabled energy information collection and analysis system. In China, Bluestar has been recognized as one of the leading technology providers for advanced electrical energy metering products.

In the last a few years, Bluestar has been recognized as the leading OEM/ODM technology provider to main meter manufacturing companies in China. We have also sold our meters to many other countries as well, including Asia, Europe and Africa. All Bluestar three-phase and single-phase meters comply fully with IEC standards and are designed for all kinds of severe environments including extreme temperatures and humidity.

Bluestar offers turnkey AMR/AMI system solutions for Power Plants, Substations, Industrial Enterprises, Utility companies, Power Distributors, Suppliers and Consumers organizations. Custom tailored software system plus remote energy data terminals can serve all kinds of energy metering and billing requirement.

### **Microstar Electric Company Limited**

Invested and owned solely by Bluestar, Microstar is responsible to manufacture all the products designed by Bluestar.

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