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Elster Metering Systems Meter Data Definition

Meter Name : A1140_---_01

Document Number : 104M044

Document Issue : V

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Document Revision History

Issue	Changes
Q	Format change (multiple meter compatibility). Added extra flags in TSystemError. Added data identity 996. Modified data identity 689.
R	Corrected documentation for data identity 552, added data identities 994, 995, 707 and 709. Modified data identity 724. Corrected documentation of data identity 550. Corrected documentation of data identities 510, 543, 544, 546, 680, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 719, and 863. Added data identity 864. Added data identities 520 through 531 to support 12 external registers. Extended data identity 980 to include external register format definitions. Added new display identifiers to those supported by data identity 971 to cater for the display of external registers (note this changed the display terminator). Modified TDisplayDefinition to support external registers and correct an error.
S	Modifications to support the Persian Calendar feature. Modifications to data identities 709 and 861.
T	Modifications to include code '02' issue numbers.
U	Modifications to support enhanced A1140P. Modifications to include code '03' issue numbers. Added data identity 770, 681 & 682. Extended 544 last packet (per set) to 55-bytes. Added data identities for instrumentation profiling (879, 775, 776, 555, 556, 558 and 994). Added data identities for EEPROM access (15, 16, and 17). Revised introductory text.
V	Modifications to support enhancements for ESB version. Modifications to include code '04' issue numbers. Added data identities 990 and 992 (User Interface Display Messages and Display Override). Added data identity 730 (HAN/WAN Signal Strength). Added data identity 545 (Daily Historical Data). Added data identity 991 (Meter Type). Added data identity 729 (Latched User Interface Action Status). Added data identities 170, 177, 178 and 179 (Display of Daily Billing Data).

Meter Types Supported

IEC62056-1 Protocol Sign-On String
1205100101
1205100102
1205100103
1205100104
1205100201
1205100202
1205100203
1205100204
1205100301
1205100302
1205100303
1205100304
1205100401
1205100402
1205100403
1205100404
1205100501
1205100502
1205100503
1205100504
1205100601
1205100602
1205100603
1205100604
1205100701
1205100702
1205100703
1205100704

Data Types & Conventions

Data Types

The following data types are used in this document.

Byte

An unsigned 8 bit integer.

Unsigned Short

A 16 bit unsigned integer.

Unsigned

A 32 bit unsigned integer.

Signed Short

A 16 bit two's complement signed integer.

Signed

A 32 bit two's complement signed integer.

Float

A single precision (32 bit) IEEE 754 floating point number.

BCD

An array of binary coded decimal digits. Each digit being encoded in 4 bits i.e. a single byte contains a pair of digits.

String

An array of 8 bit character codes.

BitField

Defines the bit structure within a single or even numbered array of bytes, the structure is defined by reference (via a name) to a Defined Type (see below).

Time Stamp

A 32 bit unsigned integer time stamp defined to be the number of seconds since 00:00:00 01/01/1970.

16 Bit Action Date

Used to define (using 16 bits) a date and additional bit flags indicating actions to be performed on that date.

Action dates are stored in a 16 bit format, with absolute or repeating modes and optional day of week matching or February 29th date translation. All such action dates will be held as a day count from a reference date, with a resolution of one day.

An absolute action date is a day that will occur once during the operational life of the meter. The count of days will start from January 1st 1970 and extend to 18th September 2059.

A repeating action date will recur at an interval defined by certain bits. The allowed repeats are every year and every four years (a leap year cycle). The range of days necessary to describe a repeating action date will be a maximum of four years' worth, somewhat less than that needed for an unambiguous absolute action date. Optionally, a repeating action date can be defined as happening on a fixed day in the repeat cycle or on a particular day of the week. To remove arithmetic problems around the boundary of February 28th / 29th and March 1st all days in a year will be counted from March 1st. Day 0 will be March 1st itself, and day 364 will be the following February 28th. To complete the picture, a four year cycle will be defined as starting on the March 1st immediately after a February 29th and finishing on the following February 29th. The first day in the four year cycle is day 0 (March 1st) and the last day is day 1460 (February 29th). This scheme

allows any day in a year or four year cycle to be specified unambiguously, with correct arithmetic comparisons for tests.

The repeating action date specifiers will have an option to allow for the matching of an action date to a day of the week in a date range. Day of the week matching is done by an extension of the 'Rayleigh' algorithm, which defines an earliest possible starting day and a day of week number. The day number extracted from a 16 bit action date will be used as the earliest possible starting date if day of week matching is selected and the algorithm will evaluate the matching day number in the current repeat cycle.

Any action date that needs to be defined as occurring on February 29th is a special case. This can be defined in one of two ways for repeating action dates, either as a fixed date in a four year cycle (day 1460) or as a 'last day in February' every year, where February 28th in non leap years is converted into February 29th during leap years. An option flag enables the translation in the year cycle repeat mode.

Absolute Action Date

0 n n n n n n n n n n n n n n n n
Mode bit (most significant) is clear
n...n days since 1st January 1970

Repeating Action Date

1 r d d d f/n n n n n n n n n n n
Mode bit (most significant) is set

r - Repeat Interval

1 : Every Four Years

Options available : DOW Matching

Action date specified as days into four year cycle from March 1st, n...n is days into four year repeat interval, 0 to (1461 - 1) days

0 : Every Year

Options available : DOW Matching, February 28th to 29th Translation

Action date specified as days into year cycle from March 1st, n...n is days into year repeat interval, 0 to (365 - 1) days

Optional Day Of Week Matching (every year, every four years only)

ddd - Matching Day Number

000 : Match first Monday on or after starting day

001 : Match first Tuesday on or after starting day

010 : Match first Wednesday on or after starting day

011 : Match first Thursday on or after starting day

100 : Match first Friday on or after starting day

101 : Match first Saturday on or after starting day

110 : Match first Sunday on or after starting day

111 : Exact day, do not use DOW matching

Optional February 28th to 29th translation (every year only)

f - Enable 28th to 29th Translation

0 : Feb 28th remains unchanged in Leap Year

1 : Feb 28th converts to Feb 29th in Leap Year

32 Bit Action Date

Used to define (using 32 bits) a date and or time and additional bit flags indicating actions to be performed at that time.

Events that require a date and time to be specified are stored a 32 bit format is used. All such events are held as a minute count from a reference time, with a resolution of one minute. Events can be either absolute (once only) or repeating.

An absolute event time is a point in time that will occur once during the operational life of the meter. Sufficient dynamic range is used to ensure that any time can be defined to a one minute resolution. The count of minutes will start from midnight on January 1st 1970 and extend to 23:59 on the 31st December 2069. The minute count is derived from the number of days until the event date since 1st January 1970 times 1440, plus the number of minutes into that day to the event time.

A repeating event time will recur at an interval defined by certain bits in the format. The allowed repeats are every day, every week, every year and every four years (a leap year cycle). The range of minutes necessary to describe a repeating event will be a maximum of four years' worth, somewhat less than that needed for an unambiguous absolute time event. Optionally, a repeating event can be defined as happening on a fixed day in the repeat cycle or on a particular day of the week. To remove arithmetic problems around the boundary of February 28th / 29th and March 1st all days in a year will be counted from March 1st and all minutes will be counted from midnight on March 1st. Day 0 will be March 1st itself, and day 364 will be the following February 28th. To complete the picture, a four year cycle will be defined as starting on the March 1st immediately after a February 29th and finishing on the following February 29th. The first day in the four year cycle is day 0 (March 1st) and the last day is day 1460 (February 29th). This scheme allows any day in a year or four year cycle to be specified unambiguously, with correct arithmetic comparisons for tests.

The every year and every four year repeating event have an option to allow for the matching of an event to a day of the week in a date range. Day of the week matching is done by an extension of the 'Rayleigh' algorithm, which defines an earliest possible starting day and a day of week number. The day number extracted from a 32 bit event (by dividing the minutes value by 1440) will be used as the earliest possible starting date if day of week matching is selected and the algorithm will evaluate the matching day number in the current repeat cycle. Daily and weekly repeats will not use the day of week matching option.

An event that needs to be defined as occurring on February 29th is a special case. This can be defined in one of two ways for repeating events, either as a fixed date in a four year cycle (day 1460) or as a 'last day in February' every year, where February 28th in non leap years is converted into February 29th during leap years. An option flag enables the translation in the year cycle repeat mode.

Absolute Action Date

[illegible]

Repeating Action Date (events recurring once every repeat interval)

[illegible]

rr - Repeat Interval

00 : Every Four Years

Options available : DOW Matching

Event specified as minutes into four years from March 1st midnight, m...m time into four year repeat interval, 0 to (2103840 - 1) minutes

01 : Every Year

Options available : DOW Matching, February 28th to 29th Translation

Event specified by minutes into year from March 1st midnight, cannot specify February 29th directly can only use the optional translation, m...m time into year repeat interval, 0 to (525600 - 1) minutes

10 : Every Week

Options available :

Event specified by minutes from Monday midnight, m...m time into week repeat interval, 0 to (10080 - 1) minutes

11 : Every Day

Options available :

Event specified by minutes from midnight, m...m time into day repeat interval, 0 to (1440 - 1) minutes

Optional Day Of Week Matching (every year, every four years only)

ddd - Matching Day Number

```
000 : Match first Monday on or after starting day
```

```
000 : Match first Monday on or after starting day
001 : Match first Tuesday on or after starting day
```

```
001 : Match first Wednesday on or after starting day
010 : Match first Wednesday on or after starting day
```

```
011 : Match first Thursday on or after starting day
```

```

100 : Match first Friday on or after starting day

```

```

100 : Match first Friday on or after starting day
101 : Match first Saturday on or after starting day

```

110 : Match first Sunday on or after starting day
 111 : Exact day, do not use DOW matching
 Optional February 28th to 29th translation (every year only)

1 - Enable 28th to 29th Translation

0 : Feb 28th remains unchanged in Leap Year
 1 : Feb 28th converts to Feb 29th in Leap Year

Option Specifiers

The three spare bits can be used to convey further options. They are designated option flags F3, F2 and F1 and will appear in the 32 bit pattern as follows

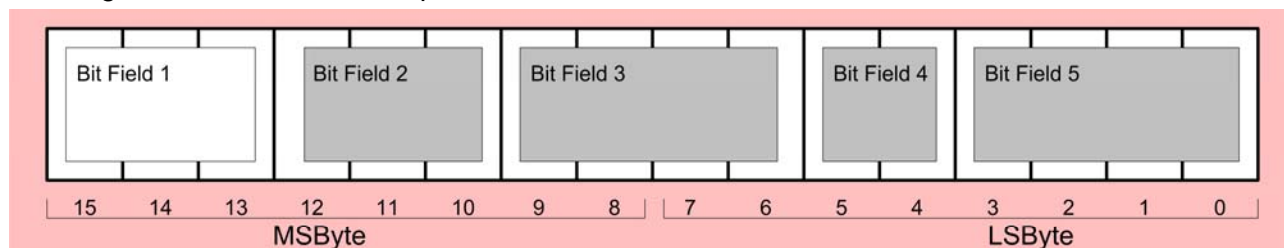
- F3 F2 F1 - - - - -

When used for daylight saving adjustment F1, F2, and F3 specify the amount of time shift.

When used for tariff changeover date F1 indicates if a billing reset is required.

Defined Types

A defined type (conventionally named starting with the letter T) represents a bit structure defined within a single byte (or an array of bytes usually of even dimension). A defined type is composed of one or more bit fields. A bit field defines 1 to 8 8 bits. Within the defined type as a whole the bits are numbered from 0 upwards. Within this document, defined types are listed most significant bit to least significant bit. As an example see the illustration.



Most significant bit

Defined Type Size 2 Bytes

Least significant bit

Illustrated above is a 2 byte defined type with big endian byte order. The defined type is composed of 5 bit fields (the first of which for the purposes of this example is not used). This defined type will be specified in this document as:-

Offset : 15 (Size 3) Name : Bit Field 1
 Offset : 12 (Size 3) Name : Bit Field 2
 Offset : 9 (Size 4) Name : Bit Field 3
 Offset : 5 (Size 2) Name : Bit Field 4
 Offset : 3 (Size 4) Name : Bit Field 5

Since the defined type is defined to have big endian byte order it will be transmitted to and from the meter most significant byte first. If the above defined type was specified as having little endian byte order, the order of the transmitted bytes would be reversed.

Conventions

The following conventions are used in this document.

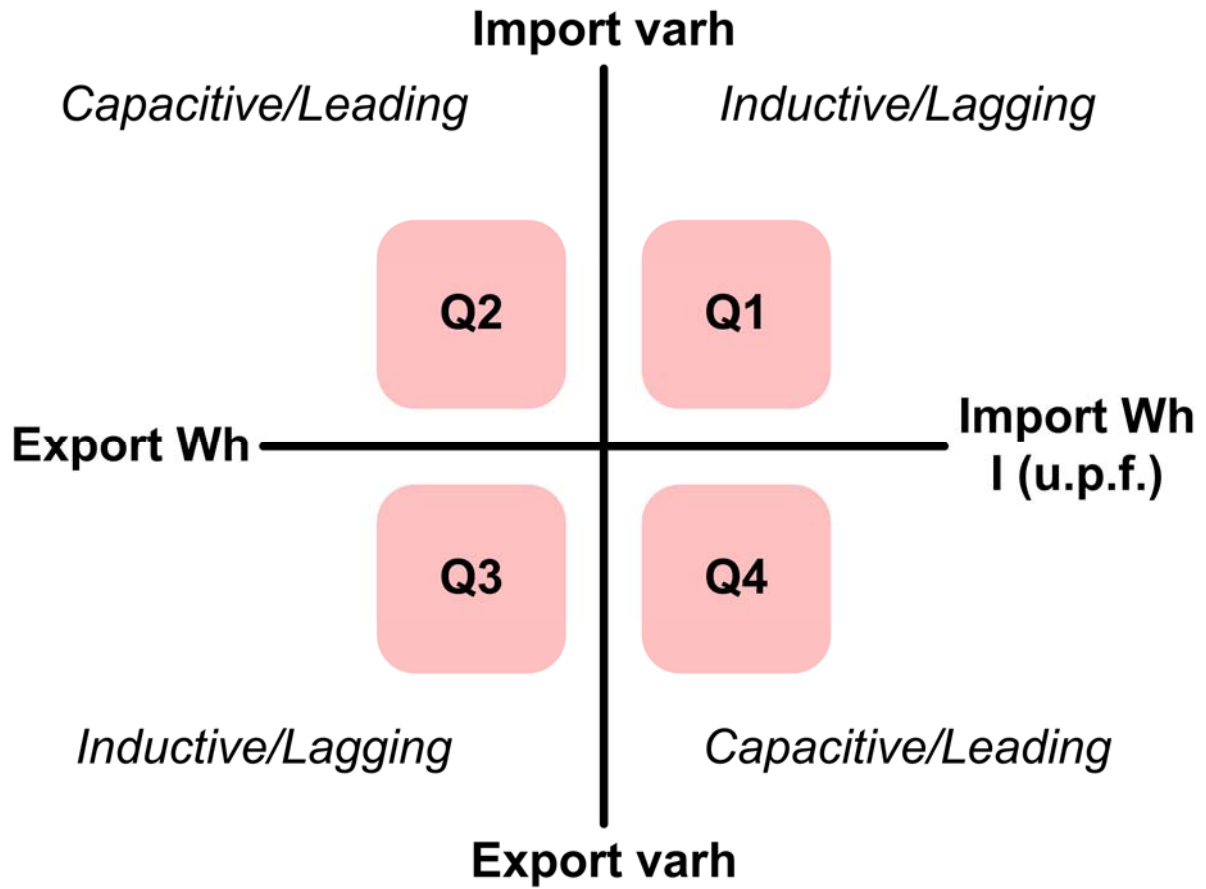
Byte Order

A multi byte data type may be defined to have little endian (L) or big endian (B) byte order. An item with little endian byte order is transmitted to/from the meter least significant byte first. An item with big endian byte order is transmitted to/from the meter most significant byte first. As an example, the two byte unsigned integer 0x4567 when defined as little endian would be transmitted as 0x67, 0x45 and when defined as big endian would be transmitted as 0x45, 0x67.

Access

An item is defined to have read/write (RW), read only (RO) or write only (WO) access.

Quadrant Numbering



Introductory Text

Meter Data Definition for A1120/A1140 Electricity Meter

Meter Identification

Members of the A1120/A1140 family of electricity meters are differentiated from each other using the identification data obtained during the IEC 62056-21 protocol sign on sequence. The identification data is a 10 digit string in four parts. The Identity (2 digits having a fixed value of 12 for A1120 and A1140 meters), the Product Range (3 digits having a value of 050 representing an A1120 and 051 representing an A1140), the Device Number (or variant) (3 digits) and finally the Issue Number (2 digits). The Device Number is used to indicate the variant of the meter. The term variant, in this context, is used to deduce which of the meters registers have been configured during the manufacturing process to be active i.e. those registers that advance and may be used as sources. The Issue Number if used to denote the firmware revision of the meter. All firmware revisions will support as a minimum the following 7 variants numbered 001 to 007.

Register Sources							
Variant	001	002	003	004	005	006	007
Import Wh	Y	Y	Y	Y	Y	Y	Y
Export Wh	N	N	N	Y	Y	Y	Y
Q1 varh	N	Y	Y	N	Y	N	Y
Q2 varh	N	N	Y	N	Y	N	Y
Q3 varh	N	N	Y	N	Y	N	Y
Q4 varh	N	Y	Y	N	Y	N	Y
VAh 1	N	N	Y	N	N	Y	Y
VAh 2	N	N	N	N	N	Y	Y

To illustrate a sign on string, consider an A1120 meter configured at manufacture as variant 007 and having a firmware version of 02. This meter would identify itself at sign on as 1205000702.

Communications

All members of the A1120/A1140 family are capable of communicating (via optical and remote serial ports) using the IEC 62056-21 protocol. All meter's support either a standard communications turnaround time of 200ms or a fast turnaround time of 20ms which can be used to improve performance. In addition, all A1120 and A1140 meters support reading the contents of all data identities using Data Stream Mode (see document 102M152 for full details of Data Stream Mode). When returning data following a Data Stream Mode request, the meter will always return packets of length 256 bytes, unused bytes being return as 0xFF.

Load Profiling (A1140 cf. A1700)

The A1140 meter's load profiling function operates identically to that of the A1700 meter. The format of the time stamps and profiled data is as in the A1700 meter. There are however small differences that must be taken into account.

1) Channel Definition

The profiled channels are specified differently (see data identity 777). The profiled channels are reported in the load profile (in blocks E4 and E8) in the same manner as they are configured.

2) Status

The status bits located in the first byte of every block of period data have a different meaning to those of the A1700, see TLoadProfileStatus for details of the status bits in the A1140.

3) Daylight Savings / Demand Period

The enabling/disabling of the use of daylight savings time by the load profiling function is configured via data identity 778. It's state however is no longer reported using a bit within the configured channels. Instead its state is reported together with the demand period in the last byte of blocks E4 and E8. The demand period itself is configured via data identity 878 using an enumerated value as opposed to BCD as in the A1700.

Instrumentation Profiling (A1140 cf. A1700)

The A1140 meter's instrumentation profiling function operates identically to that of the A1700 meter. The format of the time stamps and profiled data is as in the A1700 meter. There are however small differences that must be taken into account.

1) Status

The status bits located in the first byte of every block of period data are currently not used and will always be set to zero.

2) Daylight Savings / Demand Period

The enabling/disabling of the use of daylight savings time by the load profiling function is configured via data identity 776. It's state however is no longer reported using a bit within the configured channels. Instead its state is reported together with the demand period in the last byte of blocks E4 and E8. The demand period itself is configured via data identity 879 using an enumerated value as opposed to BCD as in the A1700.

Meter Personalities

The password levels of some data identities change according to the enabled / disabled state of various meter configuration options.

1) A1140

Data identities 550, 551, 552, 554, 777 and 778 only exist when the meter is configured as an A1140.

Data identities 555, 556, 557, 558, 775 and 776 only exist when the meter is configured as an A1140.

2) Clear Registers

Data identity 099 becomes writable at level 4 if this option is enabled.

3) Zero Level Time Shift (ZLTS)

Data identity 860 only exists if this option is enabled.

Data identity 861 is writeable and readable at level 0 if this option is enabled.

4) RS232 Lockout

Data identities 861 and 862 cannot be written to if this option is enabled.

5) Display Link

Data identities 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985 and 987 are writable only at link level if this option is enabled.

CT Ratio Change Enable Function

Note that when bit 6 of data identity 602 is clear, it is possible to read and write data identities 616, 645, 646 and 647 under password level control. When bit 6 is set however, it is only possible to read the previously mentioned data identities under password level control. It is not possible to write to the data identities under password level control unless the CT Ratio Change Enable button has been pressed either during the current or the previous communication session. The meter does not remember the press of the CT Ratio Enable button over a power cycle.

Data Change Event

The following set of data identities DO NOT cause the meter to create a write access event i.e. an entry in the programming log when their content are changed via either communications port.

001, 099, 101, 102, 103, 111, 112, 113, 400, 403, 551, 552, 554, 556, 557, 558, 576, 606, 655, 690, 724, 861, 862, 863, 900, 988, 989, 997, 998.

CT Change Event

The following set of data identities cause the meter to create a CT programming event i.e. an entry in the CT programming log when their content are changed via either communications port.

615, 616, 645, 646, 647, 700.

Data Refresh

The following list of data identities are refreshed from EEPROM when any data identity belonging to the set of data identities that cause a write access event to be created is written.

602, 603, 872, 873, 609, 610, 626, 621, 622, 625, 633, 704, 781, 645, 646, 647, 702, 703, 706, 708.

Meter Restart

The following set of data identities cause the meter to restart following a write access event.

300, 301, 702, 703, 645, 646, 647.

Flag Protocol Behaviour

Note that if software communicating with the meter requests more bytes than are defined by this document for any data identity then the returned packet will be padded with zero bytes i.e. '00'. This behaviour is to ensure full compatibility with the A1700 product.

Data Identities (by Number)

No.	Name	Page
507	Cumulative Registers	18
508	TOU Registers	19
509	Cumulative Maximum Demand Registers	20
510	Maximum Demand Registers	21
520	External Register Set 1 Register 1	23
521	External Register Set 1 Register 2	24
522	External Register Set 1 Register 3	25
523	External Register Set 1 Register 4	26
524	External Register Set 2 Register 1	27
525	External Register Set 2 Register 2	28
526	External Register Set 2 Register 3	29
527	External Register Set 2 Register 4	30
528	External Register Set 3 Register 1	31
529	External Register Set 3 Register 2	32
530	External Register Set 3 Register 3	33
531	External Register Set 3 Register 4	34
543	Historical Registers	35
544	Historical Events	39
545	Daily Historical Registers	43
546	Battery Installation Date	47
547	Battery Support Status	48
550	Formatted Load Profile Data	75
551	Configure Load Profile Read By Day	49
554	Configure Load Profile Read By Date	50
555	Formatted Instrumentation Profile Data	78
556	Configure Instrumentation Profile Read By Day	51
558	Configure Instrumentation Profile Read By Date	52
600	Active Customer Register Configuration	53
601	Deferred Customer Register Configuration	54
616	CT Primary And Secondary	55
687	Communications Port Options	56
690	Modem GSM Signal Strength	57
710	Model Code	58
724	Current System Status	59
729	Latched User Interface Actions Status	60
730	WAN HAN Signal Strength	61
775	Instrumentation Profile Configuration	62
776	Instrumentation Profile Daylight Savings Configuration	63

No.	Name	Page
777	Load Profile Configuration	64
778	Load Profile Daylight Savings Configuration	65
795	Meter Scheme Identifier	66
798	Name Plate Serial Number	67
861	Time and Date	68
862	Time Adjustment Control	69
867	Date and Time String	70
878	Demand Period	71
879	Instrumentation Demand Period	72
990	User Interface Display Messages	73
992	Display Override String	74

Data Identities (by Name)

No.	Name	Page
600	Active Customer Register Configuration	53
546	Battery Installation Date	47
547	Battery Support Status	48
687	Communications Port Options	56
558	Configure Instrumentation Profile Read By Date	52
556	Configure Instrumentation Profile Read By Day	51
554	Configure Load Profile Read By Date	50
551	Configure Load Profile Read By Day	49
616	CT Primary And Secondary	55
509	Cumulative Maximum Demand Registers	20
507	Cumulative Registers	18
724	Current System Status	59
545	Daily Historical Registers	43
867	Date and Time String	70
601	Deferred Customer Register Configuration	54
878	Demand Period	71
992	Display Override String	74
520	External Register Set 1 Register 1	23
521	External Register Set 1 Register 2	24
522	External Register Set 1 Register 3	25
523	External Register Set 1 Register 4	26
524	External Register Set 2 Register 1	27
525	External Register Set 2 Register 2	28
526	External Register Set 2 Register 3	29
527	External Register Set 2 Register 4	30
528	External Register Set 3 Register 1	31
529	External Register Set 3 Register 2	32
530	External Register Set 3 Register 3	33
531	External Register Set 3 Register 4	34
555	Formatted Instrumentation Profile Data	78
550	Formatted Load Profile Data	75
544	Historical Events	39
543	Historical Registers	35
879	Instrumentation Demand Period	72
775	Instrumentation Profile Configuration	62
776	Instrumentation Profile Daylight Savings Configuration	63
729	Latched User Interface Actions Status	60
777	Load Profile Configuration	64

No.	Name	Page
778	Load Profile Daylight Savings Configuration	65
510	Maximum Demand Registers	21
795	Meter Scheme Identifier	66
710	Model Code	58
690	Modem GSM Signal Strength	57
798	Name Plate Serial Number	67
862	Time Adjustment Control	69
861	Time and Date	68
508	TOU Registers	19
990	User Interface Display Messages	73
730	WAN HAN Signal Strength	61

Defined Types

Name	Page
TAddSystemStatus	81
TBillingTrigger	82
TIndexMessagePoints	83
TInstProfChannelConfig	84
TLoadProfileDLSCfg	85
TLocalCommsConfig	86
TMainMessagePoints	87
TPartialTimeAndDate	88
TRegisterConfig	89
TRemoteCommsConfig	90
TSystemStatus	91
TUIActionStatus	92

507 : Cumulative Registers

Total packets 2

Read at level 1

Write at level L

The contents of each cumulative register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The contents of a cumulative register will only advance if the register has been made active at the time of manufacture.

The contents of the cumulative registers may be reset via data identity 099.

Item(s) belonging to packet : P001 : 507001 : 64 bytes

Offset	Name	Type	Access	Size	Order	See
0	Import Wh	BCD[16]	RW	8	L	
8	Export Wh	BCD[16]	RW	8	L	
16	Q1 varh	BCD[16]	RW	8	L	
24	Q2 varh	BCD[16]	RW	8	L	
32	Q3 varh	BCD[16]	RW	8	L	
40	Q4 varh	BCD[16]	RW	8	L	
48	VAh 1	BCD[16]	RW	8	L	
56	VAh 2	BCD[16]	RW	8	L	

Item(s) belonging to packet : P002 : 507002 : 64 bytes

Offset	Name	Type	Access	Size	Order	See
0	Reserved 1	BCD[16]	RW	8	L	
8	Reserved 2	BCD[16]	RW	8	L	
16	Reserved 3	BCD[16]	RW	8	L	
24	Reserved 4	BCD[16]	RW	8	L	
32	Reserved 5	BCD[16]	RW	8	L	
40	Reserved 6	BCD[16]	RW	8	L	
48	Customer Defined 1	BCD[16]	RW	8	L	
56	Customer Defined 2	BCD[16]	RW	8	L	

508 : TOU Registers

Total packets 1

Read at level 1

Write at level L

The contents of each TOU register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10.

The contents of the TOU registers may be reset via data identity 099.

Item(s) belonging to packet : P001 : 508001 : 64 bytes						
Offset	Name	Type	Access	Size	Order	See
0	TOU 1	BCD[16]	RW	8	L	
8	TOU 2	BCD[16]	RW	8	L	
16	TOU 3	BCD[16]	RW	8	L	
24	TOU 4	BCD[16]	RW	8	L	
32	TOU 5	BCD[16]	RW	8	L	
40	TOU 6	BCD[16]	RW	8	L	
48	TOU 7	BCD[16]	RW	8	L	
56	TOU 8	BCD[16]	RW	8	L	

509 : Cumulative Maximum Demand Registers

Total packets 1

Read at level 1

Write at level L

The contents of each cumulative maximum demand register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. At the end of a billing period, each cumulative maximum demand register is incremented by the greatest of the three highest qualifying values for the associated maximum demand register (see data identity 510).

The contents of the cumulative maximum demand registers may be reset via data identity 099.

Item(s) belonging to packet : P001 : 509001 : 36 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Cumulative MD 1	BCD[16]	RW	8	L	
8	Cumulative MD 1 Source	Byte[1]	RW	1	n/a	
9	Cumulative MD 2	BCD[16]	RW	8	L	
17	Cumulative MD 2 Source	Byte[1]	RW	1	n/a	
18	Cumulative MD 3	BCD[16]	RW	8	L	
26	Cumulative MD 3 Source	Byte[1]	RW	1	n/a	
27	Cumulative MD 4	BCD[16]	RW	8	L	
35	Cumulative MD 4 Source	Byte[1]	RW	1	n/a	

510 : Maximum Demand Registers

Total packets 3

Read at level 1

Write at level L

There are 4 maximum demand registers. For each register the 3 records of the 3 highest qualifying values are stored. Each record contains the time stamp (see note below), the register source and the maximum demand register value. The contents of each maximum demand register is represented by 14 binary coded decimal digits with a fixed decimal point location between the 11th and 12th digits i.e. 3 decimal places. For example the value 12345678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x34,0x12.

If the Tariff Time Stamp DLS Adjust bit in data identity 864 is set time stamps are adjusted for daylight savings.

The contents of the maximum demand registers may be cleared via data identity 099.

Item(s) belonging to packet : P001 : 510001 : 64 bytes						
Offset	Name	Type	Access	Size	Order	See
0	MD 1 Record 1 Time	Time Stamp [1]	RW	4	L	
4	MD 1 Record 1 Source	Byte[1]	RW	1	n/a	
5	MD 1 Record 1 Value	BCD[14]	RW	7	L	
12	MD 1 Record 2 Time	Time Stamp [1]	RW	4	L	
16	MD 1 Record 2 Source	Byte[1]	RW	1	n/a	
17	MD 1 Record 2 Value	BCD[14]	RW	7	L	
24	MD 1 Record 3 Time	Time Stamp [1]	RW	4	L	
28	MD 1 Record 3 Source	Byte[1]	RW	1	n/a	
29	MD 1 Record 3 Value	BCD[14]	RW	7	L	
36	MD 2 Record 1 Time	Time Stamp [1]	RW	4	L	
40	MD 2 Record 1 Source	Byte[1]	RW	1	n/a	
41	MD 2 Record 1 Value	BCD[14]	RW	7	L	
48	MD 2 Record 2 Time	Time Stamp [1]	RW	4	L	
52	MD 2 Record 2 Source	Byte[1]	RW	1	n/a	
53	MD 2 Record 2 Value	BCD[14]	RW	7	L	
60	MD 2 Record 3 Time	Time Stamp [1]	RW	4	L	

Item(s) belonging to packet : P002 : 510002 : 64 bytes						
Offset	Name	Type	Access	Size	Order	See
0	MD 2 Record 3 Source	Byte[1]	RW	1	n/a	
1	MD 2 Record 3 Value	BCD[14]	RW	7	L	
8	MD 3 Record 1 Time	Time Stamp [1]	RW	4	L	
12	MD 3 Record 1 Source	Byte[1]	RW	1	n/a	
13	MD 3 Record 1 Value	BCD[14]	RW	7	L	
20	MD 3 Record 2 Time	Time Stamp [1]	RW	4	L	
24	MD 3 Record 2 Source	Byte[1]	RW	1	n/a	
25	MD 3 Record 2 Value	BCD[14]	RW	7	L	
32	MD 3 Record 3 Time	Time Stamp [1]	RW	4	L	

Item(s) belonging to packet : P002 : 510002 : 64 bytes						
Offset	Name	Type	Access	Size	Order	See
36	MD 3 Record 3 Source	Byte[1]	RW	1	n/a	
37	MD 3 Record 3 Value	BCD[14]	RW	7	L	
44	MD 4 Record 1 Time	Time Stamp [1]	RW	4	L	
48	MD 4 Record 1 Source	Byte[1]	RW	1	n/a	
49	MD 4 Record 1 Value	BCD[14]	RW	7	L	
56	MD 4 Record 2 Time	Time Stamp [1]	RW	4	L	
60	MD 4 Record 2 Source	Byte[1]	RW	1	n/a	
61	MD 4 Record 2 Value	BCD[6]	RW	3	L	

Item(s) belonging to packet : P003 : 510003 : 16 bytes						
Offset	Name	Type	Access	Size	Order	See
0	MD 4 Record 2 Value	BCD[8]	RW	4	L	
4	MD 4 Record 3 Time	Time Stamp [1]	RW	4	L	
8	MD 4 Record 3 Source	Byte[1]	RW	1	n/a	
9	MD 4 Record 3 Value	BCD[14]	RW	7	L	

520 : External Register Set 1 Register 1

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 520001 : 24 bytes

Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

521 : External Register Set 1 Register 2

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 521001 : 24 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

522 : External Register Set 1 Register 3

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 522001 : 24 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

523 : External Register Set 1 Register 4

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 523001 : 24 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

524 : External Register Set 2 Register 1

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 524001 : 24 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

525 : External Register Set 2 Register 2

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 525001 : 24 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

526 : External Register Set 2 Register 3

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 526001 : 24 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

527 : External Register Set 2 Register 4

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 527001 : 24 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

528 : External Register Set 3 Register 1

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 528001 : 24 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

529 : External Register Set 3 Register 2

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 529001 : 24 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

530 : External Register Set 3 Register 3

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 530001 : 24 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

531 : External Register Set 3 Register 4

Total packets 1

Read at level 0

Write at level 0

The data component of each external register is represented by 16 binary coded decimal digits with a fixed decimal point location between the 13th and 14th digits i.e. 3 decimal places. For example the value 1021435678901.234 would be returned as 0x34,0x12,0x90,0x78,0x56,0x43,0x21,0x10. The description component allows textual information to be associated with the external register.

The data component of each external register may be reset to zero via data identity 099.

Item(s) belonging to packet : P001 : 531001 : 24 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Data	BCD[16]	RW	8	L	
8	Description	String[16]	RW	16	n/a	

543 : Historical Registers

Total packets 192

Read at level 1

Write at level N

There are 24 sets of historical registers giving a total number of packets of $8 \times 36 = 192$. Only the first set of historical data is defined here, the other sets have an identical structure. Set 2 starts at packet 009. Historical set 1 always contains the most recent data.

Each set contains the following data recorded at the end of a billing period. Register values consisting of the Cumulative Registers, the TOU Registers (and sources), the Cumulative Maximum Demand Registers (and sources). Maximum demand register values (4 sets). Billing date and trigger.

The possible sources of TOU and MD registers are defined as follows.

00 : Import Wh

01 : Export Wh

02 : Q1 varh

03 : Q2 varh

04 : Q3 varh

05 : Q4 varh

06 : VAh 1

07 : VAh 2

08 : Reserved

09 : Reserved

0A : Reserved

0B : Reserved

0C : Reserved

0D : Reserved

0E : Customer Defined Register 1

0F : Customer Defined Register 2

FF : Not Used

The contents of the historical registers may be reset via data identity 099.

Note that the contents of a set of historical registers are undefined if the Billing Time Stamp has a value of zero.

If the Tariff Time Stamp DLS Adjust bit in data identity 864 is set time stamps are adjusted for daylight savings.

Item(s) belonging to packet : P001 : 543001 : 64 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
0	Import Wh	BCD[16]	RO	8	L	
8	Export Wh	BCD[16]	RO	8	L	
16	Q1 varh	BCD[16]	RO	8	L	
24	Q2 varh	BCD[16]	RO	8	L	
32	Q3 varh	BCD[16]	RO	8	L	
40	Q4 varh	BCD[16]	RO	8	L	
48	VAh 1	BCD[16]	RO	8	L	

Item(s) belonging to packet : P001 : 543001 : 64 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
56	VAh 2	BCD[16]	RO	8	L	

Item(s) belonging to packet : P002 : 543002 : 64 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
0	Reserved 1	BCD[16]	RO	8	L	
8	Reserved 2	BCD[16]	RO	8	L	
16	Reserved 3	BCD[16]	RO	8	L	
24	Reserved 4	BCD[16]	RO	8	L	
32	Reserved 5	BCD[16]	RO	8	L	
40	Reserved 6	BCD[16]	RO	8	L	
48	Customer Defined 1	BCD[16]	RO	8	L	
56	Customer Defined 2	BCD[16]	RO	8	L	

Item(s) belonging to packet : P003 : 543003 : 64 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
0	TOU 1	BCD[16]	RO	8	L	
8	TOU 2	BCD[16]	RO	8	L	
16	TOU 3	BCD[16]	RO	8	L	
24	TOU 4	BCD[16]	RO	8	L	
32	TOU 5	BCD[16]	RO	8	L	
40	TOU 6	BCD[16]	RO	8	L	
48	TOU 7	BCD[16]	RO	8	L	
56	TOU 8	BCD[16]	RO	8	L	

Item(s) belonging to packet : P004 : 543004 : 64 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
0	Reserved 1	BCD[16]	RO	8	L	
8	Reserved 2	BCD[16]	RO	8	L	
16	Reserved 3	BCD[16]	RO	8	L	
24	Reserved 4	BCD[16]	RO	8	L	
32	Reserved 5	BCD[16]	RO	8	L	
40	Reserved 6	BCD[16]	RO	8	L	
48	Reserved 7	BCD[16]	RO	8	L	
56	Reserved 8	BCD[16]	RO	8	L	

Item(s) belonging to packet : P005 : 543005 : 64 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
0	TOU Sources	Byte[16]	RO	16	n/a	
16	Cumulative MD 1	BCD[16]	RO	8	L	
24	Cumulative MD 1 Source	Byte[1]	RO	1	n/a	
25	Cumulative MD 2	BCD[16]	RO	8	L	
33	Cumulative MD 2 Source	Byte[1]	RO	1	n/a	
34	Cumulative MD 3	BCD[16]	RO	8	L	
42	Cumulative MD 3 Source	Byte[1]	RO	1	n/a	
43	Cumulative MD 4	BCD[16]	RO	8	L	
51	Cumulative MD 4 Source	Byte[1]	RO	1	n/a	
52	MD Set 1 Record 1 Time	Time Stamp [1]	RO	4	L	
56	MD Set 1 Record 1 Source	Byte[1]	RO	1	n/a	
57	MD Set 1 Record 1 Value	BCD[14]	RO	7	L	

Item(s) belonging to packet : P006 : 543006 : 64 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
0	MD Set 1 Record 2 Time	Time Stamp [1]	RO	4	L	
4	MD Set 1 Record 2 Source	Byte[1]	RO	1	n/a	
5	MD Set 1 Record 2 Value	BCD[14]	RO	7	L	
12	MD Set 1 Record 3 Time	Time Stamp [1]	RO	4	L	
16	MD Set 1 Record 3 Source	Byte[1]	RO	1	n/a	
17	MD Set 1 Record 3 Value	BCD[14]	RO	7	L	
24	MD Set 2 Record 1 Time	Time Stamp [1]	RO	4	L	
28	MD Set 2 Record 1 Source	Byte[1]	RO	1	n/a	
29	MD Set 2 Record 1 Value	BCD[14]	RO	7	L	
36	MD Set 2 Record 2 Time	Time Stamp [1]	RO	4	L	
40	MD Set 2 Record 2 Source	Byte[1]	RO	1	n/a	
41	MD Set 2 Record 2 Value	BCD[14]	RO	7	L	
48	MD Set 2 Record 3 Time	Time Stamp [1]	RO	4	L	
52	MD Set 2 Record 3 Source	Byte[1]	RO	1	n/a	
53	MD Set 2 Record 3 Value	BCD[14]	RO	7	L	
60	MD Set 3 Record 1 Time	Time Stamp [1]	RO	4	L	

Item(s) belonging to packet : P007 : 543007 : 64 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
0	MD Set 3 Record 1 Source	Byte[1]	RO	1	n/a	
1	MD Set 3 Record 1 Value	BCD[14]	RO	7	L	

Item(s) belonging to packet : P007 : 543007 : 64 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
8	MD Set 3 Record 2 Time	Time Stamp [1]	RO	4	L	
12	MD Set 3 Record 2 Source	Byte[1]	RO	1	n/a	
13	MD Set 3 Record 2 Value	BCD[14]	RO	7	L	
20	MD Set 3 Record 3 Time	Time Stamp [1]	RO	4	L	
24	MD Set 3 Record 3 Source	Byte[1]	RO	1	n/a	
25	MD Set 3 Record 3 Value	BCD[14]	RO	7	L	
32	MD Set 4 Record 1 Time	Time Stamp [1]	RO	4	L	
36	MD Set 4 Record 1 Source	Byte[1]	RO	1	n/a	
37	MD Set 4 Record 1 Value	BCD[14]	RO	7	L	
44	MD Set 4 Record 2 Time	Time Stamp [1]	RO	4	L	
48	MD Set 4 Record 2 Source	Byte[1]	RO	1	n/a	
49	MD Set 4 Record 2 Value	BCD[14]	RO	7	L	
56	MD Set 4 Record 3 Time	Time Stamp [1]	RO	4	L	
60	MD Set 4 Record 3 Source	Byte[1]	RO	1	n/a	
61	MD Set 4 Record 3 Value	BCD[6]	RO	3	L	

Item(s) belonging to packet : P008 : 543008 : 9 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
0	MD Set 4 Record 3 Value	BCD[8]	RO	4	L	
4	Billing Trigger Flags	TBillingTrigger	RO	1	L	82
5	Billing Time Stamp	Time Stamp [1]	RO	4	L	

544 : Historical Events

Total packets 120

Read at level 1

Write at level N

There are 24 sets of historical event logs giving a total number of packets of $5 \times 24 = 120$. Only the first set of historical data is defined here, the other sets have an identical structure. Set 2 starts at packet 006. Historical set 1 always contains the most recent data.

The contents of the historical event logs may be reset via data identity 099.

If the Event Time Stamp DLS Adjust bit in data identity 864 is set time stamps are adjusted for daylight savings.

Item(s) belonging to packet : P001 : 544001 : 64 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
0	Reverse Run Cumulative Event Count	Unsigned Short[1]	RO	2	L	
2	Reverse Run Time Stamp Last	Time Stamp [1]	RO	4	L	
6	Reverse Run Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
10	Reverse Run Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
14	Phase Failure Cumulative Event Count	Unsigned Short[1]	RO	2	L	
16	Phase Failure Time Stamp Last	Time Stamp [1]	RO	4	L	
20	Phase Failure Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
24	Phase Failure Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
28	Phase Failure Phase	Byte[1]	RO	1	n/a	
Info	0x1 : Phase A 0x2 : Phase B 0x4 : Phase C					
29	Phase Failure Phase - 1	Byte[1]	RO	1	n/a	
Info	0x1 : Phase A 0x2 : Phase B 0x4 : Phase C					
30	Phase Failure Phase - 2	Byte[1]	RO	1	n/a	
Info	0x1 : Phase A 0x2 : Phase B 0x4 : Phase C					
31	Power Fail Cumulative Event Count	Unsigned Short[1]	RO	2	L	
33	Power Fail Time Stamp Last	Time Stamp [1]	RO	4	L	
37	Power Fail Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
41	Power Fail Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
45	Programming Cumulative Event Count	Unsigned Short[1]	RO	2	L	
47	Programming Time Stamp Last	Time Stamp [1]	RO	4	L	
51	Programming Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
55	Programming Time Stamp Last - 2	Time Stamp [1]	RO	4	L	

Item(s) belonging to packet : P001 : 544001 : 64 bytes						
Repeated 24 times						
Offset	Name	Type	Access	Size	Order	See
59	Programming Source	Byte[1]	RO	1	n/a	
Info	0 : optical communications port 1 : remote communications port					
60	Programming Source - 1	Byte[1]	RO	1	n/a	
Info	0 : optical communications port 1 : remote communications port					
61	Programming Source - 2	Byte[1]	RO	1	n/a	
Info	0 : optical communications port 1 : remote communications port					
62	Programming User Name	String[2]	RO	2	n/a	
Info	The user name associated with the event					

Item(s) belonging to packet : P002 : 544002 : 64 bytes						
Repeated 24 times						
Offset	Name	Type	Access	Size	Order	See
0	Programming User Name	String[10]	RO	10	n/a	
Info	The user name associated with the event					
10	Programming User Name - 1	String[12]	RO	12	n/a	
Info	The user name associated with the event					
22	Programming User Name - 2	String[12]	RO	12	n/a	
Info	The user name associated with the event					
34	CT Ratio Cumulative Event Count	Unsigned Short[1]	RO	2	L	
36	CT Ratio Time Stamp Last	Time Stamp [1]	RO	4	L	
40	CT Ratio Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
44	CT Ratio Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
48	CT Ratio Source	Byte[1]	RO	1	n/a	
Info	0 : optical communications port 1 : remote communications port					
49	CT Ratio Source - 1	Byte[1]	RO	1	n/a	
Info	0 : optical communications port 1 : remote communications port					
50	CT Ratio Source - 2	Byte[1]	RO	1	n/a	
Info	0 : optical communications port 1 : remote communications port					
51	CT User Name	String[12]	RO	12	n/a	
Info	The user name associated with the event					
63	CT User Name - 1	String[1]	RO	1	n/a	
Info	The user name associated with the event					

Item(s) belonging to packet : P003 : 544003 : 64 bytes						
Repeated 24 times						
Offset	Name	Type	Access	Size	Order	See
0	CT User Name - 1	String[11]	RO	11	n/a	
Info	The user name associated with the event					
11	CT User Name - 2	String[12]	RO	12	n/a	
Info	The user name associated with the event					
23	Billing Cumulative Event Count	Unsigned Short[1]	RO	2	L	
25	Billing Time Stamp Last	Time Stamp [1]	RO	4	L	
29	Billing Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
33	Billing Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
37	Billing Source	TBillingTrigger	RO	1	L	82
38	Billing Source - 1	TBillingTrigger	RO	1	L	82
39	Billing Source - 2	TBillingTrigger	RO	1	L	82
40	Transient Reset Cumulative Event Count	Unsigned Short[1]	RO	2	L	
42	Transient Reset Time Stamp Last	Time Stamp [1]	RO	4	L	
46	Transient Reset Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
50	Transient Reset Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
54	Meter Error Cumulative Event Count	Unsigned Short[1]	RO	2	L	
56	Meter Error Time Stamp Last	Time Stamp [1]	RO	4	L	
60	Meter Error Time Stamp Last - 1	Time Stamp [1]	RO	4	L	

Item(s) belonging to packet : P004 : 544004 : 64 bytes						
Repeated 24 times						
Offset	Name	Type	Access	Size	Order	See
0	Meter Error Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
4	Terminal Cover Cumulative Event Count	Unsigned Short[1]	RO	2	L	
6	Terminal Cover Time Stamp Last	Time Stamp [1]	RO	4	L	
10	Terminal Cover Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
14	Terminal Cover Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
18	Main Cover Cumulative Event Count	Unsigned Short[1]	RO	2	L	
20	Main Cover Time Stamp Last	Time Stamp [1]	RO	4	L	
24	Main Cover Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
28	Main Cover Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
32	Internal Battery Cumulative Event Count	Unsigned Short[1]	RO	2	L	
34	Internal Battery Time Stamp Last	Time Stamp [1]	RO	4	L	
38	Internal Battery Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
42	Internal Battery Time Stamp Last - 2	Time Stamp [1]	RO	4	L	

Item(s) belonging to packet : P004 : 544004 : 64 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
46	External Battery Cumulative Event Count	Unsigned Short[1]	RO	2	L	
48	External Battery Time Stamp Last	Time Stamp [1]	RO	4	L	
52	External Battery Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
56	External Battery Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
60	Battery 1 Capacity	Unsigned[1]	RO	4	L	

Item(s) belonging to packet : P005 : 544005 : 55 bytes

Repeated 24 times

Offset	Name	Type	Access	Size	Order	See
0	Battery 1 Time Remaining	Unsigned[1]	RO	4	L	
4	Battery 1 Power Down Time	Unsigned[1]	RO	4	L	
8	In Service Time	Unsigned[1]	RO	4	L	
12	Power Down Time	Unsigned[1]	RO	4	L	
16	External Battery Install Time	Time Stamp [1]	RO	4	L	
20	Time Since Last Power Up	Unsigned[1]	RO	4	L	
24	Internal Battery Life Warning Cumulative Event Count	Unsigned Short[1]	RO	2	L	
26	Internal Battery Life Warning Time Stamp Last	Time Stamp [1]	RO	4	L	
30	Internal Battery Life Warning Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
34	Internal Battery Life Warning Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
38	Invalid Password Attempt Cumulative Event Count	Unsigned Short[1]	RO	2	L	
40	Invalid Password Attempt Time Stamp Last	Time Stamp [1]	RO	4	L	
44	Invalid Password Attempt Time Stamp Last - 1	Time Stamp [1]	RO	4	L	
48	Invalid Password Attempt Time Stamp Last - 2	Time Stamp [1]	RO	4	L	
52	Invalid Password Attempt Communication port last	Byte[1]	RO	1	n/a	
53	Invalid Password Attempt Communication port last - 1	Byte[1]	RO	1	n/a	
54	Invalid Password Attempt Communication port last - 2	Byte[1]	RO	1	n/a	

545 : Daily Historical Registers

Total packets 112

Read at level 1

Write at level N

There are 14 sets of historical registers giving a total number of packets of $8 \times 14 = 112$. Only the first set of historical data is defined here, the other sets have an identical structure. Set 2 starts at packet 009. Historical set 1 always contains the most recent data.

Each set contains the following data recorded at midnight (if Daily Billing is enabled). Register values consisting of the Cumulative Registers, the TOU Registers (and sources), the Cumulative Maximum Demand Registers (and sources), Maximum demand register values (4 sets), Billing date and trigger.

The possible sources of TOU and MD registers are defined as follows.

00 : Import Wh

01 : Export Wh

02 : Q1 varh

03 : Q2 varh

04 : Q3 varh

05 : Q4 varh

06 : VAh 1

07 : VAh 2

08 : Reserved

09 : Reserved

0A : Reserved

0B : Reserved

0C : Reserved

0D : Reserved

0E : Customer Defined Register 1

0F : Customer Defined Register 2

FF : Not Used

The contents of the historical registers may be reset via data identity 099.

Note that the contents of a set of historical registers are undefined if the Billing Time Stamp has a value of zero.

If the Tariff Time Stamp DLS Adjust bit in data identity 864 is set time stamps are adjusted for daylight savings.

Item(s) belonging to packet : P001 : 545001 : 64 bytes

Repeated 14 times

Offset	Name	Type	Access	Size	Order	See
0	Import Wh	BCD[16]	RO	8	L	
8	Export Wh	BCD[16]	RO	8	L	
16	Q1 varh	BCD[16]	RO	8	L	
24	Q2 varh	BCD[16]	RO	8	L	
32	Q3 varh	BCD[16]	RO	8	L	
40	Q4 varh	BCD[16]	RO	8	L	
48	VAh 1	BCD[16]	RO	8	L	

Item(s) belonging to packet : P001 : 545001 : 64 bytes

Repeated 14 times

Offset	Name	Type	Access	Size	Order	See
56	VAh 2	BCD[16]	RO	8	L	

Item(s) belonging to packet : P002 : 545002 : 64 bytes

Repeated 14 times

Offset	Name	Type	Access	Size	Order	See
0	Reserved 1	BCD[16]	RO	8	L	
8	Reserved 2	BCD[16]	RO	8	L	
16	Reserved 3	BCD[16]	RO	8	L	
24	Reserved 4	BCD[16]	RO	8	L	
32	Reserved 5	BCD[16]	RO	8	L	
40	Reserved 6	BCD[16]	RO	8	L	
48	Customer Defined 1	BCD[16]	RO	8	L	
56	Customer Defined 2	BCD[16]	RO	8	L	

Item(s) belonging to packet : P003 : 545003 : 64 bytes

Repeated 14 times

Offset	Name	Type	Access	Size	Order	See
0	TOU 1	BCD[16]	RO	8	L	
8	TOU 2	BCD[16]	RO	8	L	
16	TOU 3	BCD[16]	RO	8	L	
24	TOU 4	BCD[16]	RO	8	L	
32	TOU 5	BCD[16]	RO	8	L	
40	TOU 6	BCD[16]	RO	8	L	
48	TOU 7	BCD[16]	RO	8	L	
56	TOU 8	BCD[16]	RO	8	L	

Item(s) belonging to packet : P004 : 545004 : 64 bytes

Repeated 14 times

Offset	Name	Type	Access	Size	Order	See
0	Reserved 1	BCD[16]	RO	8	L	
8	Reserved 2	BCD[16]	RO	8	L	
16	Reserved 3	BCD[16]	RO	8	L	
24	Reserved 4	BCD[16]	RO	8	L	
32	Reserved 5	BCD[16]	RO	8	L	
40	Reserved 6	BCD[16]	RO	8	L	
48	Reserved 7	BCD[16]	RO	8	L	
56	Reserved 8	BCD[16]	RO	8	L	

Item(s) belonging to packet : P005 : 545005 : 64 bytes

Repeated 14 times

Offset	Name	Type	Access	Size	Order	See
0	TOU Sources	Byte[16]	RO	16	n/a	
16	Cumulative MD 1	BCD[16]	RO	8	L	
24	Cumulative MD 1 Source	Byte[1]	RO	1	n/a	
25	Cumulative MD 2	BCD[16]	RO	8	L	
33	Cumulative MD 2 Source	Byte[1]	RO	1	n/a	
34	Cumulative MD 3	BCD[16]	RO	8	L	
42	Cumulative MD 3 Source	Byte[1]	RO	1	n/a	
43	Cumulative MD 4	BCD[16]	RO	8	L	
51	Cumulative MD 4 Source	Byte[1]	RO	1	n/a	
52	MD Set 1 Record 1 Time	Time Stamp [1]	RO	4	L	
56	MD Set 1 Record 1 Source	Byte[1]	RO	1	n/a	
57	MD Set 1 Record 1 Value	BCD[14]	RO	7	L	

Item(s) belonging to packet : P006 : 545006 : 64 bytes

Repeated 14 times

Offset	Name	Type	Access	Size	Order	See
0	MD Set 1 Record 2 Time	Time Stamp [1]	RO	4	L	
4	MD Set 1 Record 2 Source	Byte[1]	RO	1	n/a	
5	MD Set 1 Record 2 Value	BCD[14]	RO	7	L	
12	MD Set 1 Record 3 Time	Time Stamp [1]	RO	4	L	
16	MD Set 1 Record 3 Source	Byte[1]	RO	1	n/a	
17	MD Set 1 Record 3 Value	BCD[14]	RO	7	L	
24	MD Set 2 Record 1 Time	Time Stamp [1]	RO	4	L	
28	MD Set 2 Record 1 Source	Byte[1]	RO	1	n/a	
29	MD Set 2 Record 1 Value	BCD[14]	RO	7	L	
36	MD Set 2 Record 2 Time	Time Stamp [1]	RO	4	L	
40	MD Set 2 Record 2 Source	Byte[1]	RO	1	n/a	
41	MD Set 2 Record 2 Value	BCD[14]	RO	7	L	
48	MD Set 2 Record 3 Time	Time Stamp [1]	RO	4	L	
52	MD Set 2 Record 3 Source	Byte[1]	RO	1	n/a	
53	MD Set 2 Record 3 Value	BCD[14]	RO	7	L	
60	MD Set 3 Record 1 Time	Time Stamp [1]	RO	4	L	

Item(s) belonging to packet : P007 : 545007 : 64 bytes

Repeated 14 times

Offset	Name	Type	Access	Size	Order	See
0	MD Set 3 Record 1 Source	Byte[1]	RO	1	n/a	
1	MD Set 3 Record 1 Value	BCD[14]	RO	7	L	

Item(s) belonging to packet : P007 : 545007 : 64 bytes

Repeated 14 times

Offset	Name	Type	Access	Size	Order	See
8	MD Set 3 Record 2 Time	Time Stamp [1]	RO	4	L	
12	MD Set 3 Record 2 Source	Byte[1]	RO	1	n/a	
13	MD Set 3 Record 2 Value	BCD[14]	RO	7	L	
20	MD Set 3 Record 3 Time	Time Stamp [1]	RO	4	L	
24	MD Set 3 Record 3 Source	Byte[1]	RO	1	n/a	
25	MD Set 3 Record 3 Value	BCD[14]	RO	7	L	
32	MD Set 4 Record 1 Time	Time Stamp [1]	RO	4	L	
36	MD Set 4 Record 1 Source	Byte[1]	RO	1	n/a	
37	MD Set 4 Record 1 Value	BCD[14]	RO	7	L	
44	MD Set 4 Record 2 Time	Time Stamp [1]	RO	4	L	
48	MD Set 4 Record 2 Source	Byte[1]	RO	1	n/a	
49	MD Set 4 Record 2 Value	BCD[14]	RO	7	L	
56	MD Set 4 Record 3 Time	Time Stamp [1]	RO	4	L	
60	MD Set 4 Record 3 Source	Byte[1]	RO	1	n/a	
61	MD Set 4 Record 3 Value	BCD[6]	RO	3	L	

Item(s) belonging to packet : P008 : 545008 : 9 bytes

Repeated 14 times

Offset	Name	Type	Access	Size	Order	See
0	MD Set 4 Record 3 Value	BCD[8]	RO	4	L	
4	Billing Trigger Flags	TBillingTrigger	RO	1	L	82
5	Billing Time Stamp	Time Stamp [1]	RO	4	L	

546 : Battery Installation Date

Total packets 1

Read at level 1

Write at level 3

Note that battery 2 is the external battery.

Item(s) belonging to packet : P001 : 546001 : 4 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Battery 2 Installation Date	Time Stamp [1]	RW	4	L	
Info	<p>When written signals to the meter that a new battery has been installed. When read contains the installation date of the battery.</p> <p>If the Event Time Stamp DLS Adjust bit in data identity 864 is set the installation date is adjusted for daylight savings.</p>					

547 : Battery Support Status

Total packets 1

Read at level 1

Write at level L

Note that battery 1 is the internal Real Time Clock battery.

Item(s) belonging to packet : P001 : 547001 : 12 bytes

Offset	Name	Type	Access	Size	Order	See
0	Battery 1 Capacity	Unsigned[1]	RW	4	L	
Info	The original capacity of the battery measured in seconds. Writing to this item will reset the time remaining.					
4	Battery 1 Time Remaining	Unsigned[1]	RO	4	L	
Info	The remaining capacity of the battery measured in seconds.					
8	Battery 1 Power Down Time	Unsigned[1]	RO	4	L	
Info	The time in seconds that the battery has been supporting the meter.					

551 : Configure Load Profile Read By Day

Total packets 1

Read at level 1

Write at level 1

This identity is dual purpose.

This identity must be written before being read.

Item(s) belonging to packet : P001 : 551001 : 4 bytes

Offset	Name	Type	Access	Size	Order	See
0	Number of Days And Number of Packets	Byte[2]	RW	2	n/a	
Info	<i>When written, the number of days of load profile being requested least significant bit first i.e. to request 265 days the two bytes need to contain 0901 (0x0109). The current day will be included in the request, so for example to retrieve the previous 5 days, 6 days must be requested.</i> <i>When read, the number of packets to read in order to retrieve the requested load profile data most significant byte first.</i>					
2	Number of Data Stream Mode Packets	Byte[2]	RW	2	n/a	
Info	<i>When written the bytes are ignored.</i> <i>When read, the number of data stream mode packets to read in order to retrieve the requested load profile data most significant byte first.</i>					

554 : Configure Load Profile Read By Date

Total packets 1

Read at level 1

Write at level 1

This identity is dual purpose, the data types listed pertain to a write of the identity.

This identity must be written before being read, the from date must precede the to date.

Item(s) belonging to packet : P001 : 554001 : 8 bytes

Offset	Name	Type	Access	Size	Order	See
0	From Date	Time Stamp [1]	RW	4	L	
Info	<i>When written, the date on which the load profile data will start. If the date does not exist in the load profile, the nearest day following that requested will be used.</i> <i>When read, the number of packets to read in order to retrieve the requested load profile data (first two bytes most significant byte first) and the number of data stream mode packets to read in order to retrieve the requested load profile data (last two bytes most significant byte first).</i>					
4	To Date	Time Stamp [1]	RW	4	L	
Info	<i>When written, the date on which the load profile data will end. If the date does not exist in the load profile, the nearest day preceding that requested will be used.</i> <i>When read the bytes are ignored.</i>					

556 : Configure Instrumentation Profile Read By Day

Total packets 1

Read at level 1

Write at level 1

This identity is dual purpose.

This identity must be written before being read.

Item(s) belonging to packet : P001 : 556001 : 4 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Number of Days And Number of Packets	Byte[2]	RW	2	n/a	
Info	<i>When written, the number of days of instrumentation profile being requested least significant bit first i.e. to request 265 days the two bytes need to contain 0901 (0x0109). The current day will be included in the request, so for example to retrieve the previous 5 days, 6 days must be requested.</i> <i>When read, the number of packets to read in order to retrieve the requested instrumentation profile data most significant byte first.</i>					
2	Number of Data Stream Mode Packets	Byte[2]	RW	2	n/a	
Info	<i>When written the bytes are ignored.</i> <i>When read, the number of data stream mode packets to read in order to retrieve the requested instrumentation profile data most significant byte first.</i>					

558 : Configure Instrumentation Profile Read By Date

Total packets 1

Read at level 1

Write at level 1

This identity is dual purpose, the data types listed pertain to a write of the identity.

This identity must be written before being read, the from date must precede the to date.

Item(s) belonging to packet : P001 : 558001 : 8 bytes

Offset	Name	Type	Access	Size	Order	See
0	From Date	Time Stamp [1]	RW	4	L	
Info	<i>When written, the date on which the instrumentation profile data will start. If the date does not exist in the instrumentation profile, the nearest day following that requested will be used.</i> <i>When read, the number of packets to read in order to retrieve the requested instrumentation profile data (first two bytes most significant byte first) and the number of data stream mode packets to read in order to retrieve the requested load profile data (last two bytes most significant byte first).</i>					
4	To Date	Time Stamp [1]	RW	4	L	
Info	<i>When written, the date on which the instrumentation profile data will end. If the date does not exist in the instrumentation profile, the nearest day preceeding that requested will be used.</i> <i>When read the bytes are ignored.</i>					

600 : Active Customer Register Configuration

Total packets 1

Read at level 1

Write at level 3

Note that changes to the active customer register configuration only take effect when the tariff is re-evaluated, this occurs at the start of every minute.

Item(s) belonging to packet : P001 : 600001 : 4 bytes

Offset	Name	Type	Access	Size	Order	See
0	Customer Register 1 Configuration	TRegisterConfig	RW	2	B	89
Info	<i>The allowable register source combinations are defined as any from the following groups.</i> <i>a) Export kW and Import Kw</i> <i>b) Q1 kvar, Q2 kvar, Q3 kvar and Q4 kvar</i> <i>c) kVA 1 and kVA 2</i> <i>The most significant two bits of TRegisterConfig are ignored by the meter as it is not possible to source a customer register from a customer register.</i>					
2	Customer Register 2 Configuration	TRegisterConfig	RW	2	B	89
Info	<i>The allowable register source combinations are defined as any from the following groups.</i> <i>a) Export kW and Import Kw</i> <i>b) Q1 kvar, Q2 kvar, Q3 kvar and Q4 kvar</i> <i>c) kVA 1 and kVA 2</i> <i>The most significant two bits of TRegisterConfig are ignored by the meter as it is not possible to source a customer register from a customer register.</i>					

601 : Deferred Customer Register Configuration

Total packets 1

Read at level 1

Write at level 3

Note that changes to the deferred customer register configuration only take effect when the tariff is re-evaluated, this occurs at the start of every minute.

Item(s) belonging to packet : P001 : 601001 : 4 bytes

Offset	Name	Type	Access	Size	Order	See
0	Customer Register 1 Configuration	TRegisterConfig	RW	2	B	89
Info	<i>The allowable register source combinations are defined as any from the following groups.</i> <i>a) Export kW and Import Kw</i> <i>b) Q1 kvar, Q2 kvar, Q3 kvar and Q4 kvar</i> <i>c) kVA 1 and kVA 2</i> <i>The most significant two bits of TRegisterConfig are ignored by the meter as it is not possible to source a customer register from a customer register.</i>					
2	Customer Register 2 Configuration	TRegisterConfig	RW	2	B	89
Info	<i>The allowable register source combinations are defined as any from the following groups.</i> <i>a) Export kW and Import Kw</i> <i>b) Q1 kvar, Q2 kvar, Q3 kvar and Q4 kvar</i> <i>c) kVA 1 and kVA 2</i> <i>The most significant two bits of TRegisterConfig are ignored by the meter as it is not possible to source a customer register from a customer register.</i>					

616 : CT Primary And Secondary

Total packets 1

Read at level 1

Write at level 3

Item(s) belonging to packet : P001 : 616001 : 8 bytes						
Offset	Name	Type	Access	Size	Order	See
0	CT Primary	Unsigned[1]	RW	4	B	
Info	Defines the CT primary e.g. to specify 3000A set to 3000					
4	CT Secondary	Unsigned[1]	RW	4	B	
Info	Defines the CT secondary e.g. to specify 5A set to 5					

687 : Communications Port Options

Total packets 1

Read at level 1

Write at level 3

Item(s) belonging to packet : P001 : 687001 : 2 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Optical Port Options	TLocalCommsConfig	RW	1	B	86
1	Remote Port Options	TRemoteCommsConfig	RW	1	B	90
Info	Note that the meter only supports the following combinations of bits and parity. 7, Even (1 stop bit) 8, None (1 stop bit)					

690 : Modem GSM Signal Strength

Total packets 1
Read at level 0
Write at level 0

Item(s) belonging to packet : P001 : 690001 : 1 bytes

Offset	Name	Type	Access	Size	Order	See
--------	------	------	--------	------	-------	-----

710 : Model Code

Total packets 1

Read at level 3

Write at level L

Item(s) belonging to packet : P001 : 710001 : 16 bytes

Offset	Name	Type	Access	Size	Order	See
0	Model Code	String[16]	RW	16	n/a	
Info	A string describing the model code (null terminated if less than 16 characters long).					

724 : Current System Status

Total packets 1

Read at level 1

Write at level N

The meter status consists of three 32 bit long words, the current system status, the system errors and the additional current system status. The meter's error display shows the hexadecimal value of bits 16 to 31 of the system errors.

Item(s) belonging to packet : P001 : 724001 : 12 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Current System Status	TSystemStatus	RO	4	B	91
8	Additional Current System Status	TAddSystemStatus	RO	4	B	81

729 : Latched User Interface Actions Status

Total packets 1

Read at level 0

Write at level 0

To clear a bit in the latched user interface actions status, write to this data identity with the bits to clear set to '1'

Item(s) belonging to packet : P001 : 729001 : 1 bytes

Offset	Name	Type	Access	Size	Order	See
0	Status	TUIActionStatus	RW	1	B	92

730 : WAN HAN Signal Strength

Total packets 1

Read at level 0

Write at level 0

Item(s) belonging to packet : P001 : 730001 : 2 bytes

Offset	Name	Type	Access	Size	Order	See
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775 : Instrumentation Profile Configuration

Total packets 1

Read at level 1

Write at level 3

Item(s) belonging to packet : P001 : 775001 : 16 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Channel 1 Configuration	TInstProfChannelConfig	RW	2	B	84
2	Channel 2 Configuration	TInstProfChannelConfig	RW	2	B	84
4	Channel 3 Configuration	TInstProfChannelConfig	RW	2	B	84
6	Channel 4 Configuration	TInstProfChannelConfig	RW	2	B	84
8	Channel 5 Configuration	TInstProfChannelConfig	RW	2	B	84
10	Channel 6 Configuration	TInstProfChannelConfig	RW	2	B	84
12	Channel 7 Configuration	TInstProfChannelConfig	RW	2	B	84
14	Channel 8 Configuration	TInstProfChannelConfig	RW	2	B	84

776 : Instrumentation Profile Daylight Savings Configuration

Total packets 1

Read at level 1

Write at level 3

Determines if the instrumentation profile time stamps are relative to GMT (UTC) or Daylight savings adjusted time. GMT configuration will always result in the same number of periods per day, whereas daylight savings adjusted will cause a variable number of periods to be stored on the days when daylight savings changes take place.

Item(s) belonging to packet : P001 : 776001 : 1 bytes

Offset	Name	Type	Access	Size	Order	See
0	Daylight Savings Configuration	TLoadProfileDLSSConfig	RW	1	B	85

777 : Load Profile Configuration

Total packets 1

Read at level 1

Write at level 3

Selects a maximum of 8 registers to be profiled. If more than 8 registers are selected, the profile will store the first 8 selected channels starting from the least significant bit.

Item(s) belonging to packet : P001 : 777001 : 2 bytes

Offset	Name	Type	Access	Size	Order	See
0	Channel Configuration	TRegisterConfig	RW	2	B	89

778 : Load Profile Daylight Savings Configuration

Total packets 1

Read at level 1

Write at level 3

Determines if the load profile time stamps are relative to GMT (UTC) or Daylight savings adjusted time. GMT configuration will always result in the same number of periods per day, whereas daylight savings adjusted will cause a variable number of periods to be stored on the days when daylight savings changes take place.

Item(s) belonging to packet : P001 : 778001 : 1 bytes

Offset	Name	Type	Access	Size	Order	See
0	Daylight Savings Configuration	TLoadProfileDLSSConfig	RW	1	B	85

795 : Meter Scheme Identifier

Total packets 1

Read at level 0

Write at level 3

Item(s) belonging to packet : P001 : 795001 : 8 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Scheme Identifier	String[8]	RW	8	n/a	
Info	A string identifying the scheme with which the meter has been programmed.					

798 : Name Plate Serial Number

Total packets 1

Read at level 0

Write at level 3

Item(s) belonging to packet : P001 : 798001 : 16 bytes

Offset	Name	Type	Access	Size	Order	See
0	Serial Number	String[16]	RW	16	n/a	
Info	A string describing the serial number used to identify the meter.					

861 : Time and Date

Total packets 1

Read at level 1

Write at level 2

Sets or gets the meter time (DLS adjusted) and date

Item(s) belonging to packet : P001 : 861001 : 7 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Seconds	BCD[2]	RW	1	B	
Info	<i>Seconds (Tens & Units)</i>					
1	Minutes	BCD[2]	RW	1	B	
Info	<i>Minutes (Tens & Units)</i>					
2	Hours	BCD[2]	RW	1	B	
Info	<i>Hours (Tens & Units)</i>					
3	Time And Date	TPartialTimeAndDate	RW	2	B	88
5	Reserved	Byte[1]	RW	1	n/a	
Info	<i>Reserved</i>					
6	Year	BCD[2]	RW	1	B	
Info	<i>Gregorian mode: Year (00 = 2000, 99 = 2099)</i> <i>Persian mode: Year (Valid range: 80...99 = 1380...1399, 00...35 = 1400...1435)</i>					

862 : Time Adjustment Control

Total packets 1

Read at level 1

Write at level 2

Item(s) belonging to packet : P001 : 862001 : 2 bytes

Offset	Name	Type	Access	Size	Order	See
0	Time Slew	Byte[2]	RW	2	n/a	
Info	The two bytes define a sign and magnitude, the sign being located in the most significant bit of the first byte i.e. the two bytes are big endian. The magnitude defines the number of seconds by which to adjust the clock up to a maximum of 5 seconds per demand period. The sign bit is defined as follows, 0 advance time, 1 retard time.					

867 : Date and Time String

Total packets 1
Read at level 0
Write at level N

Item(s) belonging to packet : P001 : 867001 : 17 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Date and Time String	String[17]	RW	17	n/a	

878 : Demand Period

Total packets 1

Read at level 1

Write at level 3

Defines the meter demand period

Item(s) belonging to packet : P001 : 878001 : 3 bytes

Offset	Name	Type	Access	Size	Order	See
0	Demand Period	Byte[1]	RW	1	n/a	
Info	<i>The demand period, valid values are</i> <i>0x00 : 1 minute.</i> <i>0x01 : 2 minutes.</i> <i>0x02 : 3 minutes.</i> <i>0x03 : 4 minutes.</i> <i>0x04 : 5 minutes.</i> <i>0x05 : 6 minutes.</i> <i>0x06 : 10 minutes.</i> <i>0x07 : 15 minutes.</i> <i>0x08 : 20 minutes.</i> <i>0x09 : 30 minutes.</i> <i>0x0A : 60 minutes.</i>					
1	Reserved 1	Byte[1]	RW	1	n/a	
2	Reserved 2	Byte[1]	RW	1	n/a	

879 : Instrumentation Demand Period

Total packets 1

Read at level 1

Write at level 3

Defines the meter instrumentation demand period

Item(s) belonging to packet : P001 : 879001 : 3 bytes

Offset	Name	Type	Access	Size	Order	See
0	Demand Period	Byte[1]	RW	1	n/a	
Info	<i>The demand period, valid values are</i> <i>0x00 : 1 minute.</i> <i>0x01 : 2 minutes.</i> <i>0x02 : 3 minutes.</i> <i>0x03 : 4 minutes.</i> <i>0x04 : 5 minutes.</i> <i>0x05 : 6 minutes.</i> <i>0x06 : 10 minutes.</i> <i>0x07 : 15 minutes.</i> <i>0x08 : 20 minutes.</i> <i>0x09 : 30 minutes.</i> <i>0x0A : 60 minutes.</i>					
1	Reserved 1	Byte[1]	RW	1	n/a	
2	Reserved 2	Byte[1]	RW	1	n/a	

990 : User Interface Display Messages

Total packets 4

Read at level 1

Write at level 3

Item(s) belonging to packet : P001 : 990001 : 18 bytes

Repeated 4 times

Offset	Name	Type	Access	Size	Order	See
0	Message Control	Byte[1]	RW	1	n/a	
Info	00 => OFF, other than 00 => ON					
1	Reserved 1	Byte[1]	RW	1	n/a	
2	Reserved 2	Byte[1]	RW	1	n/a	
3	Index Digit Characters	String[5]	RW	5	n/a	
Info	Characters that will appear in the Index Digit location.					
8	Reserved 3	Byte[1]	RW	1	n/a	
9	Main Digit Characters	String[7]	RW	7	n/a	
Info	Characters that will appear in the Main Digit location.					
16	Index Digit Points	TIndexMessagePoints	RW	1	B	83
17	Main Digit Points	TMainMessagePoints	RW	1	B	87

992 : Display Override String

Total packets 1

Read at level 0

Write at level 0

Item(s) belonging to packet : P001 : 992001 : 18 bytes						
Offset	Name	Type	Access	Size	Order	See
0	Message Control	Byte[1]	RW	1	n/a	
Info	00 => OFF, other than 00 => ON					
1	Reserved 1	Byte[1]	RW	1	n/a	
2	Reserved 2	Byte[1]	RW	1	n/a	
3	Index Digit Characters	String[5]	RW	5	n/a	
Info	Characters that will appear in the Index Digit location.					
8	Reserved 3	Byte[1]	RW	1	n/a	
9	Main Digit Characters	String[7]	RW	7	n/a	
Info	Characters that will appear in the Main Digit location.					
16	Index Digit Points	TIndexMessagePoints	RW	1	B	83
17	Main Digit Points	TMainMessagePoints	RW	1	B	87

550 : Formatted Load Profile Data

Read at level 1

Write at level 3

Clearing the Load Profile

A write of any data of any length to this data identity will reset (clear) the contents of the load profile.

Reading the Load Profile

A request for load profile data begins by writing the number of days (or a from/to date range) to data identity 551 (or data identity 554). Data identity 551 is then read to obtain the number of packets of load profile data to read from this data identity. The data is returned via this data identity earliest day first i.e. the first packet of data (001) will contain data for the earliest day. Note that the load profile data is updated by the meter at the end of each demand period and as such data from the current demand period will not be included in a request.

The load profile data may be read in either standard or data stream mode (note that the number of packets will differ).

Load Profile Format

The load profile data is retrieved in the form of a number of variable length blocks of data, each block beginning with an identifying marker byte (with the exception of the period data). The possible marker bytes and their meaning are as follows.

E4 : New Day

E5 : Power Up

E6 : Power Down

E8 : Configuration Change

EA : Time Change

EB : Profile Cleared

ED : Daylight Savings Change

E4 : New Day : 8 Bytes

Byte(s)	Description
1	New Day Marker
2,3,4,5	UTC Time Stamp (4 Bytes Unsigned Little Endian Integer). The number of seconds since midnight 01/01/1970.
6,7	Channel Configuration (2 Bytes). The internal structure of the channel configuration is defined by the type TRegisterConfig.
8	Period / Daylight Savings Indicator. The period is stored in the least significant nibble and takes values 0x0 : 1 minute, 0x1 : 2 minutes, 0x2 : 3 minutes, 0x3 : 4 minutes, 0x4 : 5 minutes, 0x5 : 6 minutes, 0x6 : 10 minutes, 0x7 : 15 minutes, 0x8 : 20 minutes, 0x9 : 30 minutes, 0xA : 60 minutes. If the most significant bit is set time stamps are stored in Daylight Savings adjusted time.

E5 : Power Up : 5 Bytes

Byte(s)	Description
1	Power Up Marker

E5 : Power Up : 5 Bytes

2,3,4,5	UTC Time Stamp (4 Bytes Unsigned Little Endian Integer). The number of seconds since midnight 01/01/1970.
---------	---

E6 : Power Down : 5 Bytes

Byte(s)	Description
1	Power Down Marker
2,3,4,5	UTC Time Stamp (4 Bytes Unsigned Little Endian Integer). The number of seconds since midnight 01/01/1970.

E8 : Configuration Change : 8 Bytes

Byte(s)	Description
1	Configuration Change Marker
2,3,4,5	UTC Time Stamp (4 Bytes Unsigned Little Endian Integer). The number of seconds since midnight 01/01/1970.
6,7	Channel Configuration (2 Byte Unsigned Integer Big Endian). The internal structure of the channel configuration is defined by the type TRegisterConfig.
8	Period / Daylight Savings Indicator. The period is stored in the least significant nibble and takes values 0x0 : 1 minute, 0x1 : 2 minutes, 0x2 : 3 minutes, 0x3 : 4 minutes, 0x4 : 5 minutes, 0x5 : 6 minutes, 0x6 : 10 minutes, 0x7 : 15 minutes, 0x8 : 20 minutes, 0x9 : 30 minutes, 0xA : 60 minutes. If the most significant bit is set time stamps are stored in Daylight Savings adjusted time.

EA : Time Change : 5 Bytes

Byte(s)	Description
1	Time Change Marker
2,3,4,5	The new time. UTC Time Stamp (4 Byte Unsigned Integer Little Endian). The number of seconds since midnight 01/01/1970.

EB : Profile Cleared : 5 Bytes

Byte(s)	Description
1	Profile Cleared Marker
2,3,4,5	UTC Time Stamp (4 Bytes Unsigned Little Endian Integer). The number of seconds since midnight 01/01/1970.

ED : Daylight Savings Change : 5 Bytes

Byte(s)	Description
1	Daylight Savings Change Marker
2,3,4,5	The advanced or retarded time. UTC Time Stamp (4 Bytes Unsigned Little

ED : Daylight Savings Change : 5 Bytes

	Endian Integer). The number of seconds since midnight 01/01/1970.
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Load profile channel values are stored as a 6 digit BCD string (most significant digit first). The first 5 digits form the mantissa representing mW, mvar or mVA and the last digit the exponent. The six digits 123456 represent the value 12345E+06mW (or 12345kW).

Period Data : 4, 7, 10, 13, 16, 19, 22 or 25 Bytes

Byte(s)	Description
1	Status. See TLoadProfileStatus for the definition of the load profile status byte.
2,3,4	If configured, Channel 1 Value 3 Byte BCD Big Endian.
5,6,7	If configured, Channel 2 Value 3 Byte BCD Big Endian.
8,9,10	If configured, Channel 3 Value 3 Byte BCD Big Endian.
11,12,13	If configured, Channel 4 Value 3 Byte BCD Big Endian.
14,15,16	If configured, Channel 5 Value 3 Byte BCD Big Endian.
17,18,19	If configured, Channel 6 Value 3 Byte BCD Big Endian.
20,21,22	If configured, Channel 7 Value 3 Byte BCD Big Endian.
23,24,25	If configured, Channel 8 Value 3 Byte BCD Big Endian.

555 : Formatted Instrumentation Profile Data

Read at level 1

Write at level 3

Clearing the Instrumentation Profile

A write of any data of any length to this data identity will reset (clear) the contents of the instrumentation profile.

Reading the Instrumentation Profile

A request for instrumentation profile data begins by writing the number of days (or a from/to date range) to data identity 556 (or data identity 558). Data identity 556 is then read to obtain the number of packets of instrumentation profile data to read from this data identity. The data is returned via this data identity earliest day first i.e. the first packet of data (001) will contain data for the earliest day. Note that the instrumentation profile data is updated by the meter at the end of each demand period and as such data from the current demand period will not be included in a request.

The instrumentation profile data may be read in either standard or data stream mode (note that the number of packets will differ).

Instrumentation Profile Format

The instrumentation profile data is retrieved in the form of a number of variable length blocks of data, each block beginning with an identifying marker byte (with the exception of the period data). The possible marker bytes and their meaning are as follows.

E4 : New Day

E5 : Power Up

E6 : Power Down

E8 : Configuration Change

EA : Time Change

EB : Profile Cleared

ED : Daylight Savings Change

E4 : New Day : 27 Bytes

Byte(s)	Description
1	New Day Marker
2,3,4,5	UTC Time Stamp (4 Bytes Unsigned Little Endian Integer). The number of seconds since midnight 01/01/1970.
6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	Channel Configuration (16 Bytes) see TInstProfChannelConfig for details.
22	Period / Daylight Savings Indicator. The period is stored in the least significant nibble and takes values 0x0 : 1 minute, 0x1 : 2 minutes, 0x2 : 3 minutes, 0x3 : 4 minutes, 0x4 : 5 minutes, 0x5 : 6 minutes, 0x6 : 10 minutes, 0x7 : 15 minutes, 0x8 : 20 minutes, 0x9 : 30 minutes, 0xA : 60 minutes. If the most significant bit is set time stamps are stored in Daylight Savings adjusted time.
23	Storage Mode. If set bit 0 indicates continuous storage.
24,25,26,27	Event Qualifier (4 Bytes Unsigned Little Endian Integer). Not used, will be set to

E4 : New Day : 27 Bytes

	0x00000000.
--	-------------

E5 : Power Up : 5 Bytes

Byte(s)	Description
1	Power Up Marker
2,3,4,5	UTC Time Stamp (4 Bytes Unsigned Little Endian Integer). The number of seconds since midnight 01/01/1970.

E6 : Power Down : 5 Bytes

Byte(s)	Description
1	Power Down Marker
2,3,4,5	UTC Time Stamp (4 Bytes Unsigned Little Endian Integer). The number of seconds since midnight 01/01/1970.

E8 : Configuration Change : 27 Bytes

Byte(s)	Description
1	Configuration Change Marker
2,3,4,5	UTC Time Stamp (4 Bytes Unsigned Little Endian Integer). The number of seconds since midnight 01/01/1970.
6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	Channel Configuration (16 Bytes) see TInstProfChannelConfig for details.
22	Period / Daylight Savings Indicator. The period is stored in the least significant nibble and takes values 0x0 : 1 minute, 0x1 : 2 minutes, 0x2 : 3 minutes, 0x3 : 4 minutes, 0x4 : 5 minutes, 0x5 : 6 minutes, 0x6 : 10 minutes, 0x7 : 15 minutes, 0x8 : 20 minutes, 0x9 : 30 minutes, 0xA : 60 minutes. If the most significant bit is set time stamps are stored in Daylight Savings adjusted time.
23	Storage Mode. If set bit 0 indicates continuous storage.
24,25,26,27	Event Qualifier (4 Bytes Unsigned Little Endian Integer). Not used, will be set to 0x00000000.

EA : Time Change : 5 Bytes

Byte(s)	Description
1	Time Change Marker
2,3,4,5	The new time. UTC Time Stamp (4 Byte Unsigned Integer Little Endian). The number of seconds since midnight 01/01/1970.

EB : Profile Cleared : 5 Bytes

EB : Profile Cleared : 5 Bytes	
Byte(s)	Description
1	Profile Cleared Marker
2,3,4,5	UTC Time Stamp (4 Bytes Unsigned Little Endian Integer). The number of seconds since midnight 01/01/1970.

ED : Daylight Savings Change : 5 Bytes	
Byte(s)	Description
1	Daylight Savings Change Marker
2,3,4,5	The advanced or retarded time. UTC Time Stamp (4 Bytes Unsigned Little Endian Integer). The number of seconds since midnight 01/01/1970.

Instrumentation profile channel values are stored as a 8 digit string. The first digit represents the sign (and for power factor the quadrant), the second digit represents the exponent, the remaining 6 digits form the mantissa in BCD (most significant digit first). For example 8 digits 81 12 34 56 represent the value -123456E+01.

Period Data : 5, 9, 13, 17, 21, 25, 29 or 33 Bytes	
Byte(s)	Description
1	Status. See TInstProfileStatus for the definition of the instrumentation profile status byte.
2,3,4,5	If configured, first channel value 4 Bytes.
6,7,8,9	If configured, second channel value 4 Bytes.
10,11,12,13	If configured, third channel value 4 Bytes.
14,15,16,17	If configured, fourth channel value 4 Bytes.
18,19,20,21	If configured, fifth channel value 4 Bytes.
22,23,24,25	If configured, sixth channel value 4 Bytes.
26,27,28,29	If configured, seventh channel value 4 Bytes.
30,31,32,33	If configured, eighth channel value 4 Bytes.

TAddSystemStatus : 4 Byte(s)

Offset [Bits]	Name	Info
31 [1]	Not Used	N/A
30 [1]	Not Used	N/A
29 [1]	Not Used	N/A
28 [1]	Not Used	N/A
27 [1]	Not Used	N/A
26 [1]	Not Used	N/A
25 [1]	Not Used	N/A
24 [1]	Not Used	N/A
23 [1]	Not Used	N/A
22 [1]	Not Used	N/A
21 [1]	Not Used	N/A
20 [1]	Not Used	N/A
19 [1]	Not Used	N/A
18 [1]	Not Used	N/A
17 [1]	Not Used	N/A
16 [1]	Not Used	N/A
15 [1]	Not Used	N/A
14 [1]	Not Used	N/A
13 [1]	Not Used	N/A
12 [1]	Not Used	N/A
11 [1]	Not Used	N/A
10 [1]	Not Used	N/A
9 [1]	Not Used	N/A
8 [1]	Not Used	N/A
7 [1]	Not Used	N/A
6 [1]	Not Used	N/A
5 [1]	Not Used	N/A
4 [1]	Not Used	N/A
3 [1]	Display Time Stamp DLS Adjust	0 - live time display not daylight savings adjusted 1 - live time display daylight savings adjusted
2 [1]	Tariff Time Stamp DLS Adjust	0 - maximum demand and historical time stamps not daylight savings adjusted 1 - maximum demand and historical time stamps daylight savings adjusted
1 [1]	Event Log Time Stamp DLS Adjust	0 - event log time stamps not daylight savings adjusted 1 - event log time stamps daylight savings adjusted
0 [1]	Auxiliary Power Mode	0 - not running in auxiliary power mode 1 - running in auxiliary power mode

TBillingTrigger : 1 Byte(s)

Offset [Bits]	Name	Info
7 [1]	Power Up	Trigger billing on power up.
6 [1]	CT Ratio Change	Trigger billing on CT Ratio change.
5 [1]	Billing Button	Trigger billing on press of billing button.
4 [1]	Optical Port	Trigger billing on write via optical port.
3 [1]	Serial Port	Trigger billing on write via serial port.
2 [1]	Tariff Changeover	Trigger billing on tariff change over.
1 [1]	Season Change	Trigger billing on season change.
0 [1]	Billing Date	Trigger billing on change of billing date.

TIndexMessagePoints : 1 Byte(s)

Offset [Bits]	Name	Info
7 [1]	Reserved	
6 [1]	Reserved	
5 [1]	Index Point 1	When set decimal point 1 (the left most) is turned on.
4 [1]	Index Point 2	When set decimal point 2 is turned on.
3 [1]	Index Point 3	When set decimal point 3 is turned on.
2 [1]	Index Point 4	When set decimal point 4 (the right most) is turned on.
1 [1]	Reserved	
0 [1]	Reserved	

TInstProfChannelConfig : 2 Byte(s)

Offset [Bits]	Name	Info
15 [6]	Not Used	Not used
9 [2]	SC	Storage configuration 0 - Average 1 - Maximum 2 - Minimum 3 - Last
7 [1]	Not Used	Not used
6 [3]	PC	Phase configuration 0 - System 1 - Phase A 2 - Phase B 4 - Phase C
3 [4]	VC	Value configuration 0 - Off 1 - RMS current x 10 (secondary) 2 - RMS volts x 10 (secondary) 3 - Power Factor x 1000 4 - Active Power x 1 (secondary) 5 - Reactive Power x 1 (secondary) 6 - Apparant Power x 1 (secondary) 7 - Phase Rotation 8 - Frequency x 10 9 - Phase Angle (V to I) x 10 A - RMS current x 10 (primary) B - RMS volts x 10 (primary) C - Active Power x 1 (primary) D - Reactive Power x 1 (primary) E - Apparant Power x 1 (primary)

TLoadProfileDLSSConfig : 1 Byte(s)

Offset [Bits]	Name	Info
7 [7]	Not Used	N/A
0 [1]	Daylight Savings Configuration	0 : The profile data is stored relative to GMT, this will result in a fixed number of periods per day. 1 : The profile data is stored relative to local time (daylight savings adjusted UTC), this will result in a variable number of periods for the days on which the daylight savings changes take place.

TLocalCommsConfig : 1 Byte(s)

Offset [Bits]	Name	Info
7 [5]	Not Used	N/A
2 [3]	Local Port Maximum Baud Rate	0 : 300 1 : 600 2 : 1200 3 : 2400 4 : 4800 5 : 9600 6 : Not Used 7 : Not Used

TMainMessagePoints : 1 Byte(s)

Offset [Bits]	Name	Info
7 [1]	Reserved	
6 [1]	Main Point 1	When set decimal point 1 (the left most) is turned on.
5 [1]	Main Point 2	When set decimal point 2 is turned on.
4 [1]	Main Point 3	When set decimal point 3 is turned on.
3 [1]	Main Point 4	When set decimal point 4 (the right most) is turned on.
2 [1]	Reserved	
1 [1]	Reserved	
0 [1]	Reserved	

TPartialTimeAndDate : 2 Byte(s)

Offset [Bits]	Name	Info
15 [2]	Leap Year Offset	Leap Year Offset (ignored when written), 00 leap year, 01 leap year plus one, 02 leap year plus two, 03 leap year plus three This data is not available when the meter is in Persian calendar mode (see data identity 709)
13 [6]	Day of Month	Days of Month BCD, valid values 1 to 31 inclusive
7 [3]	Day of Week	Day of Week (ignored when written), 0 is Monday, 6 is Sunday
4 [5]	Month	Month BCD, valid values 1 to 12 inclusive

TRegisterConfig : 2 Byte(s)

Offset [Bits]	Name	Info
15 [1]	Customer Defined 2	Set to select/enable Customer Defined Register 2
14 [1]	Customer Defined 1	Set to select/enable Customer Defined Register 1
13 [1]	Reserved 6 Export Wh Phase C	N/A
12 [1]	Reserved 5 Export Wh Phase B	N/A
11 [1]	Reserved 4 Export Wh Phase A	N/A
10 [1]	Reserved 3 Import Wh Phase C	N/A
9 [1]	Reserved 2 Import Wh Phase B	N/A
8 [1]	Reserved 1 Import Wh Phase A	N/A
7 [1]	Apparant Energy 2 VAh	Set to select/enable apparant energy 2 VAh
6 [1]	Apparant Energy 1 VAh	Set to select/enable apparant energy 1 VAh
5 [1]	Q4 varh	Set to select/enable Q4 varh
4 [1]	Q3 varh	Set to select/enable Q3 varh
3 [1]	Q2 varh	Set to select/enable Q2 varh
2 [1]	Q1 varh	Set to select/enable Q1 varh
1 [1]	Export Wh	Set to select/enable Export
0 [1]	Import Wh	Set to select/enable Import

TRemoteCommsConfig : 1 Byte(s)

Offset [Bits]	Name	Info
7 [2]	Not Used	N/A
5 [1]	Remote Port Enable Disable	0 : Disabled 1 : Enabled
4 [1]	Remote Port Bits	0 : 7 1 : 8
3 [1]	Remote Port Parity	0 : None 1 : Even
2 [3]	Remote Port Baud Rate	0 : 300 1 : 600 2 : 1200 3 : 2400 4 : 4800 5 : 9600 6 : Not Used 7 : Not Used

TSystemStatus : 4 Byte(s)

Offset [Bits]	Name	Info
31 [1]	Turbo Mode	Set when in turbo mode
30 [1]	Dial Test	Set when in dial test mode
29 [1]	Software Link Active	Set when the software link is active
28 [1]	Time Synchronisation	Set when the meter is adjusting the time
27 [1]	Battery 2 Failed	Set when battery 2 (optional external) has failed
26 [1]	Self Read Maximum Demand Reset	Set when a maximum demand reset as a result of self read is required
25 [1]	Self Read Request	Set when self read is in progress
24 [1]	Modem Supply Fault	Set when a modem power supply fault exists
23 [1]	System Reverse Run Latch	Set when system reverse run is latched
22 [1]	CT Ratio Changed	Set when a CT ratio change is pending
21 [1]	Data Changed	Set when a data change is pending
20 [1]	Transient Reset	Set when the last power down was due to a transient reset
19 [1]	System Reverse Run	Set when system reverse run is present
18 [1]	Phase C Reverse Run	Set when phase C reverse run is present
17 [1]	Phase B Reverse Run	Set when phase B reverse run is present
16 [1]	Phase A Reverse Run	Set when phase A reverse run is present
15 [1]	Active Power Flow Direction	Indicates the active power flow direction, 0 import, 1 export
14 [1]	Reactive Power Flow Direction	Indicates the reactive power flow direction, 0 import, 1 export
13 [1]	Phase C Power Fail	Set when phase C power fail is present
12 [1]	Phase B Power Fail	Set when phase B power fail is present
11 [1]	Phase A Power Fail	Set when phase A power fail is present
10 [1]	Phase C Phase Fail	Set when phase C phase fail is present
9 [1]	Phase B Phase Fail	Set when phase B phase fail is present
8 [1]	Phase A Phase Fail	Set when phase A phase fail is present
7 [1]	Active Anti Creep	Set when active anti creep is present
6 [1]	Reactive Anti Creep	Set when reactive anti creep is present
5 [1]	Power Mode Battery Economy	Set when running in economy mode
4 [1]	Power Mode Mains	Set when running on mains
3 [1]	Last Communications Port Used	Indicates the last communications port used
2 [1]	Communications In Progress	Set when communications are in progress
1 [1]	Daylight Savings In Force	when daylight savings time is in force
0 [1]	Manufacturing Link Present	Set when the manufacturing link is on

TUIActionStatus : 1 Byte(s)

Offset [Bits]	Name	Info
7 [1]	Reserved 8	
6 [1]	Reserved 7	
5 [1]	Reserved 6	
4 [1]	Reserved 5	
3 [1]	User Interface Display Message 4 Acknowledge	Set when the message has appeared on the display, followed by a LONG button press. Only available in the Utility Mode.
2 [1]	User Interface Display Message 3 Acknowledge	Set when the message has appeared on the display, followed by a LONG button press. Only available in the Utility Mode.
1 [1]	User Interface Display Message 2 Acknowledge	Set when the message has appeared on the display, followed by a LONG button press. Only available in the Utility Mode.
0 [1]	User Interface Display Message 1 Acknowledge	Set when the message has appeared on the display, followed by a LONG button press. Only available in the Utility Mode.