The Marway Power MIB

Status of this Memo

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Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in The Internet community.

In particular, it defines managed objects exposing management information about the configuration and status of Marway power devices

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1. Introduction

This memo defines managed objects exposing management information about the configuration and status of Marway power devices

2. The Internet-Standard SNMP Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to section 7 of RFC 3410 [RFC3410].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP).

Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIv2, which is described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].

3. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

4. Overview

This section provides an overview of this MIB module.

Section 4.1 discusses the relationship of this MIB module to other MIB modules.

Section 4.2 presents the organization of this MIB module.

4.1 Relationship to Other MIB Modules

This section discusses the relationship of this MIB module to MIB modules published by the Internet Engineering Task Force (IETF) and to other Marway Enterprise MIB modules.

4.1.1 ENTITY-MIB

The ENTITY-MIB is designed to expose management information about the inventory of components associated with a managed system. These components include power devices.

This MIB module defines extensions to the ENTITY-MIB, exposing additional management information for Marway products.

For each entPhysicalEntry in the entPhysicalTable where the value of entPhysicalClass is 'energyObject(13)', there exists a corresponding Marway power device.

A mPowerIdentityEntry and entPhysicalEntry that share the same entPhysicalIndex value correspond to each other and expose management information about the same Marway power device.

4.2 Organization of This MIB Module

This MIB module defines nine textual conventions that are described in the following section.

This MIB module organizes its OBJECT-TYPE definitions into five conceptual tables and one scalar group. These tables and scalar group are described in a subsequent section.

There are also two NOTIFICATION-TYPE definitions contained in this MIB module. These notifications are described in a subsequent section.

4.2.1 Textual Conventions

This section describes the nine textual conventions defined in this MIB module.

4.2.1.1 MObjectLabel

The MObjectLabel textual convention provides semantics for administratively defined labels that are useful for display purposes.

Values that conform to the MObjectLabel TC SHOULD be descriptive and meaningful within the user context. Some examples follow:

- the label for a power outlet MAY describe the attached device:
  'WebServer 01,'
  'DBShard A-M,'
  'Engineering Firewall.'

- the label for a power inlet MAY be:
  'Power Utility Grid A'

- the label for a temperature probe MAY be:
  'Cabinet Front Top'

When administratively set to the zero-length string, the agent SHALL assign a default value consisting of the device type and the device id, for example:
'Outlet 3'
'Humidity 1'

Note that the characters within the label MUST be represented using the ISO/IEC IS 10646-1 character set, encoded as an octet string using the UTF-8 transformation format described in [RFC2279].

Semantics for this textual convention are identical to that of the SnmpAdminString [RFC3411], except for a more restrictive SIZE clause.

4.2.1.2 MSetpointStatus

The MSetpointStatus textual convention provides an enumeration of the possible Marway setpoint states.

A Marway setpoint state applies to a setpoint set as a whole. If none of the four setpoints have a value, the state will be `disabled(7)'. Otherwise, one of the other five states will be present.

The `normal(1)' state simply means that the measured setpoint value has not crossed any of the four setpoint limits.

The possible Marway setpoint states follow:

`other(1)' - the Marway setpoint state is something other than one of the following

`normal(2)' - the Marway setpoint state is normal

`highCritical(3)' - the Marway setpoint state is high critical

`highWarning(4)' - the Marway setpoint state is high warning

`lowWarning(5)' - the Marway setpoint state is low warning

`lowCritical(6)' - the Marway setpoint state is low critical

`disabled(7)' - the Marway setpoint state is disabled

4.2.1.3 MSwitchStartupMode

The MSwitchStartupMode textual convention enumerates the possible configured startup modes for a switchable power device within a Marway Power Distribution Unit (PDU).

At the time a Marway PDU is re-initialized, all switchable outlets and relays revert to an off status. The switch startup mode determines the state of an outlet (or relay) once a Marway PDU completes re-initialization.

The switch startup mode values are interpreted as follow:

`off(1)' - the startup mode for explicitly setting a switch to the off state after re-initialization

`on(2)' - the startup mode for explicitly setting a switch to the on state after re-initialization

`lastKnown(3)' - the startup mode for setting a switch to its last known state after re-initialization.

For the `lastKnown(3)' startup mode, if a switch was in the on (off) state prior to re-initialization it will be placed into the on (off) state after re-initialization

NOTE: the term 'switch' derives from the common terminology of a 'switched PDU' as a product classification, even though the feature is implemented with the use of an electrical relay.

4.2.1.4 MSwitchStatus

The MSwitchStatus textual convention enumerates the set of possible operational states for a switchable Marway power device.

Within an SNMP Set-Request, values conforming to the semantics of this textual convention MUST be one of the following, interpreted as:

`off(2)' - turn on the Marway power device

`on(3)' - turn off the Marway power device

`cycle(4)' - power cycle the Marway power device

An attempt to set a value to a named-number not listed above will receive an error response of `wrongValue(10)'.

When monitoring the operational state of a switchable Marway power device, values MAY be one of the following, interpreted as:

`other(1)' - the current state is other than one of the following

`off(2)' - a Marway power device is off

`on(3)' - a Marway power device is on

`cycle(4)' - a Marway power device is currently performing a power cycle operation

`onFail(5)' - a Marway power device is supposed to be in the `on(3)' state (powered), yet appears to be in the `off(2)' state (unpowered). This may be due to a failed relay or EPO override.

`offFail(6)' - a Marway power device is supposed to be in the `off(2)' state (unpowered), yet appears to be in the `on(3)' state (powered). This may be due to a failed relay or EPO override.

4.2.1.5 MPowerFactorMode

The MPowerFactorMode textual convention enumerates the possible power factors associated with a Marway power device.

The various power factor modes follow:

`none(1)' - the power factor mode is 'none', as no power factor is currently available

`unity(2)' - the power factor mode is 'unity', and the power factor displays as a positive number

`leading(3)' - the power factor mode is 'leading', and the power factor displays as a positive number

`lagging(4)' - the power factor mode is 'lagging' and the power factor displays as a negative number

4.2.1.6 MPowerPhaseOrPolarity

The MPowerPhaseOrPolarity textual convention enumerates the conventional labels for conductors (wires) in an AC and in a DC power source.

AC power conductors (wires) which supply current and voltage are

known as phases. Some forms of AC power also have a neutral conductor, which are not considered phases by themselves.

By convention, the word 'phase' is used with two meanings relative to AC power.

The first usage of 'phase' refers to a single conductor from an AC power source:

> A single-conductor phase (a.k.a. current phase or amps phase) is meaningful because this is where current is supplied and measured (typically in amps).
>
> With AC single-phase power, there are two conductors. These are labeled `L' (line) and `N' (neutral). The `L' conductor carries current. It's a single-conductor phase, though it is usually just called line rather than phase L.
>
> There are two types of AC three-phase power. The delta type has three conductors labeled `A', `B', and `C'. The wye type adds a neutral fourth wire labeled `N'. Phase A, phase B, and phase C each supply current.

The second meaning of 'phase' refers to a pair of conductors from an AC power source:

> A two-conductor phase (a.k.a. voltage phase or volts phase) is meaningful because two wires are needed to supply and measure voltage.
>
> With single-phase AC power sources, the two-wire pair is labeled `LN'.
>
> With three-phase delta power, three two-wire pairs are formed and labeled `AB', `BC', and `CA. Each of these pairs has its own voltage measurement.
>
> With three-phase wye power, three two-wire pairs are formed and labeled `AN', `BN', and `CN'. Each of these pairs has its own voltage measurement.

A DC power source has two conductors, but the term phase is not applied to DC power in any way. For DC, one wire is labeled `positive' and the other is labeled `negative'.

The options `abc(14)', `abcn(15)', and `positiveNegative(18)' describe all available phases and polarities of inlet power devices, or the available phases and polarities of devices such as circuits and outlets which involve all power conductors of a power source rather than a subset of those conductors as explained above.

4.2.1.7 MPowerDeviceType

The MPowerDeviceType textual convention enumerates the set of possible Marway power devices types.

A Marway power device may be an inlet, a single- or dual-conductor phase, a circuit, or an outlet. A Marway inlet is further categorized by its basic power configuration.

The Marway power device type values follow:

`other(1)' - a type other than one of the following

`inletSinglePhase(2)' - an inlet with an AC single-phase configuration

`inletSplitPhase(3)' - an inlet with an AC split-phase configuration

`inletThreePhaseDelta(4)' - an inlet with an AC three-phase delta configuration

`inletThreePhaseWye(5)' - an inlet with an AC three-phase wye configuration

`inletDC(6)' - an inlet with a DC configuration

`phase(7)' - a phase combining the data from related current phase and voltage phase conductors

`circuit(8)' - a circuit

`outlet(9)' - an outlet

A Marway power device is a key element within the power distribution architecture of a Marway Power Distribution Unit (PDU).

A Marway inlet is a power device through which a Marway PDU draws its power from some upstream source. Examples of an upstream source include:

- a breaker panel

- wall outlet

Examples of a Marway inlet power device follow:

- a plug on the end of a cable

- a recessed panel connector

- screw terminals inside an enclosure

- some other form of connection

The classification of a Marway inlet may be:

- AC single-phase

- AC three-phase Delta

- AC three-phase Wye

- DC

A Marway phase device applies only to Marway AC inlets, and represents either a single conductor or a specific set of paired conductors from a Marway inlet.

A Marway single-conductor phase is from an AC power source where current is measured (e.g. Phase A, Phase B).

A Marway two-conductor phase is from an AC power source where voltage is measured (e.g. Phase AB, Phase BC).

In a Marway PDU, a Marway `phase' combines the data collected from a single-conductor phase and the data collected from a two-conductor phase beginning with the same label (e.g. `A' and `AN') into a single data object.

A Marway circuit is a branch inside the PDU after the power inlet which typically has a dedicated over-current protection device (circuit breaker or fuse). Downstream of the over-current device will be one or more Marway outlets. In simple, small-capacity units, there may be no current-protection device, and the entire unit is a single circuit.

A Marway outlet is a power device through which a Marway PDU provides electrical power to downstream devices. A Marway outlet is typically a female connector through which an external piece of equipment is attached and powered by the PDU.

4.2.1.8 MPowerDataType

The MPowerDataType textual convention enumerates the set of possible types of power data associated with a Marway power setpoint.

The Marway power data type values follow:

`other(1)' - the data type is other than one of the following

`volts(2)' - the data type is 'volts'

`amps(3)' - the data type is 'amperes'

`watts(4)' - the data type is 'watts'

`voltamps(5) - the data type is 'volt amperes'

The Marway power data type applies to all setpoints in a Marway power setpoint set.

4.2.1.9 MPowerVoltsType

The MPowerVoltsType type indicates whether an associated Marway power device is using AC voltage or DC voltage.

The Marway power volts types follow:

The various power volts types follow:

`none(1)' - not applicable, the power device has no voltage

`ac(2)' - the power volts type is 'AC'

`dc(3)' - the power volts type is 'DC'

A Marway single conductor is an example of a device associated with the `none(1)' power volts type, as a single conductor has no measurable voltage potential.

4.2.2 Tables and Scalar Groups

This section describes the five tables and one scalar group defined in this MIB module.

4.2.2.1 mPowerIdentityTable

The mPowerIdentityTable extends the entPhysicalTable with configuration information about Marway power devices.

Each Marway power device is represented in this table.

The management information contained in this table is useful when interacting with the Marway console or web server. In particular, power devices are assigned numerical IDs useful for command line operations, and user-defined labels useful for describing the purpose of a power device, its location, or other meaning.

4.2.2.2 mPowerConfigTable

The mPowerConfigTable extends the mPowerIdentityTable with electrical power configuration and ratings information for Marway power devices.

The management information contained within this table complements that within the mPowerIdentityTable. Associated rows share the same instance value for entPhysicalIndex.

4.2.2.3 mPowerSettingsScalars

The mPowerSettingsScalars provide configuration and control information for Marway power devices.

The parameters exposed in this scalar group provide global control and configuration of all applicable Marway power devices.

4.2.2.4 mPowerDataTable

The mPowerDataTable extends the mPowerIdentityTable with metrics associated with Marway power devices.

A metric defined in this table MAY NOT be relevant to a particular Marway power device.

The availability of a metric depends upon its relevance and the presence of certain sensors in a Marway product model.

For additional management information describing Marway power devices, see the mPowerIdentityTable.

4.2.2.5 mPowerSetpointTable

The mPowerSwitchTable extends the mPowerIdentityTable with management information about the configuration and status of Marway power setpoint sets.

A Marway power setpoint set has six configurable parameters:

- Low Critical
- Low Warning
- High Warning
- High Critical
- Hysteresis Control
- Debounce Control

4.2.2.6 mPowerSwitchTable

The mPowerSwitchTable extends the mPowerIdentityTable with configuration, control and monitoring information for remotely switchable Marway power devices.

The management information in this table provides management applications with the ability to control the state of a power device.

4.2.3 Event Notifications

This section describes the two event notifications defined in this MIB module.

4.2.3.1 mPowerSetpointStatusChange

The mPowerSetpointStatusChange event notification provides an indication that a Marway power setpoint status has changed.

The management information provided with this event notification include:

mChassisTime	- the date and time this event was observed
mChassisAckId	- the ACK ID associated with this event
mPowerIdentityType	- the type of power device associated with this event
mPowerIdentityId	- the numeric identifier for the power device associated with this event

mPowerIdentityLabel - the administratively assigned label of the power device associated with this event

mPowerSetpointStatus - the current status for the Marway power setpoint set associated with this event

mPowerSetpointTriggerValue - the value retrieved from the power device that triggered this event

Note that the mPowerSetpointType value of the Marway power setpoint set appears in the instance portion of the varbind name of the mPowerSetpointStatus and mPowerSetpointType objects. The mPowerSetpointType value indicates the type of power setpoint (amps or volts).

Note that the entPhyscialIndex value associated with a Marway power device appears in the instance portion of the varbind name of most of the objects listed above.

A management application can use this value to identify rows in other tables that contain additional management information about the Marway power device associated with this event.

4.2.3.2 mPowerSwitchStatusChange

The mPowerSwitchStatusChange event notification provides an indication that a Marway switch status has changed.

The management information provided with this event notification include:

mChassisTime - the date and time this event was observed

mPowerIdentityType - the type of power device associated with this event

mPowerIdentityId - the numeric identifier for the power device associated with this event

mPowerIdentityLabel - the administratively assigned label of the power device associated with this event

mPowerSwitchStatus - the current operational state of the power device associated with this event

Note that the entPhyscialIndex value associated with a Marway power device appears in the instance portion of the varbind name of most of the objects listed above.

A management application can use this value to identify rows in other tables that contain additional management information about the Marway power device associated with this event.

5. Definitions

```
   MARWAY-POWER-MIB DEFINITIONS ::= BEGIN

   IMPORTS
        MODULE-IDENTITY, OBJECT-IDENTITY,
        OBJECT-TYPE, NOTIFICATION-TYPE,
        Integer32, Unsigned32, Gauge32,
        TimeTicks
                    FROM SNMPv2-SMI                -- [RFC2578]
        TEXTUAL-CONVENTION, TruthValue,
        TimeStamp, DateAndTime
                        FROM SNMPv2-TC             -- [RFC2579]
        MODULE-COMPLIANCE, OBJECT-GROUP,
        NOTIFICATION-GROUP
                        FROM SNMPv2-CONF           -- [RFC2580]
        ZeroBasedCounter32
                        FROM RMON2-MIB             -- [RFC4502]
        entPhysicalIndex
                        FROM ENTITY-MIB            -- [RFC6933]
        SnmpAdminString
                        FROM SNMP-FRAMEWORK-MIB    -- [RFC3411]
        marwayMibs
                    FROM MARWAY-SMI-MIB            -- [MAR-SMI]
        mChassisTime, mChassisAckId
                        FROM MARWAY-CHASSIS-MIB;   -- [MAR-CHA]


   marwayPowerMib MODULE-IDENTITY
       LAST-UPDATED "201704100000Z"     -- 10 April 2017, midnight
       ORGANIZATION "Marway Power Solutions"
       CONTACT-INFO
               "Marway Power Solutions
                1721 S. Grand Avenue
                Santa Ana, California 92705
                USA

                Telephone:   +1 714 917 6200
                EMail:       support@marway.com
                URL:         http://www.marway.com

                 Send comments to <support@marway.com>
               "
       DESCRIPTION
               "This MIB module defines managed objects exposing
               management information about the configuration and
               status of Marway power devices.

               Copyright (C) 2017 Marway Power Solutions. All
               rights reserved. Use is subject to license terms.
```

```
                The MARWAY-POWER-MIB module is part of Marway
                publication, `The Marway Power MIB', April 2017.

                See the publication itself for full legal notices.
                "

        -- Revision log
        REVISION         "201704100000Z"   -- 10 April 2017, midnight
        DESCRIPTION
                "Initial version, as part of Marway publication `The
                Marway Power MIB', April 2017.
                "
        ::= { marwayMibs 6 }

    mPowerObjects OBJECT-IDENTITY
        STATUS      current
        DESCRIPTION
                "This subtree contains OBJECT-TYPE definitions
                exposing management information about Marway power
                devices
                "
        ::= { marwayPowerMib 1 }

    mPowerEvents OBJECT-IDENTITY
        STATUS      current
        DESCRIPTION
                "This subtree contains OBJECT-TYPE and
                NOTIFICATION-TYPE definitions exposing events
                associated with Marway power devices.
                "
        ::= { marwayPowerMib 2 }

    mPowerEventNotify OBJECT-IDENTITY
        STATUS      current
        DESCRIPTION
                "The required SNMP notification prefix.
                "
        ::= { mPowerEvents 0 }

    mPowerConformance OBJECT-IDENTITY
        STATUS      current
        DESCRIPTION
                "This subtree contains conformance statements for
                this MIB module.
                "
        ::= { marwayPowerMib 3 }
```

```
   --
   -- assignments under mPowerConformance
   --


   mPowerCompliances OBJECT-IDENTITY
       STATUS      current
       DESCRIPTION
               "This subtree contains compliance statements for
               this MIB module.
               "
       ::= { mPowerConformance 1 }

   mPowerGroups OBJECT-IDENTITY
       STATUS      current
       DESCRIPTION
               "This subtree contains OBJECT-GROUP and
               NOTIFICATION-GROUP definitions for this MIB module.
               "
       ::= { mPowerConformance 2 }


   --
   -- Textual Conventions
   --


   MObjectLabel ::= TEXTUAL-CONVENTION
       DISPLAY-HINT "255t"
       STATUS current
       DESCRIPTION
               "An administratively defined label useful for
               display purposes.

               A value SHOULD be descriptive and meaningful within
               the user context. Some examples follow:

               - the label for a power outlet MAY describe the
                  attached device:
                     'WebServer 01,'
                     'DBShard A-M,'
                     'Engineering Firewall.'

               - the label for a power inlet MAY be:
                    'Power Utility Grid A'

               - the label for a temperature probe MAY be:
                    'Cabinet Front Top'
```

```
                When administratively set to the zero-length string,
                the agent SHALL assign a default value consisting of
                the device type and the device id, for example:
                     'Outlet 3'
                     'Humidity 1'

                Note that the characters within the label MUST be
                represented using the ISO/IEC IS 10646-1 character
                set, encoded as an octet string using the UTF-8
                transformation format described in [RFC2279].

                Semantics for this textual convention are identical
                to that of the SnmpAdminString [RFC3411], except for
                a more restrictive SIZE clause.
                "
        SYNTAX OCTET STRING (SIZE (0..30))

  MSetpointStatus ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
                "The MSetpointStatus textual convention provides an
                enumeration of the possible Marway setpoint states.

                A Marway setpoint state applies to a setpoint set as
                a whole. If none of the four setpoints have a value,
                the state will be `disabled(7)'. Otherwise, one of
                the other five states will be present.

                The `normal(1)' state simply means that the measured
                setpoint value has not crossed any of the four
                setpoint limits.

                The possible Marway setpoint states follow:

                     `other(1)'         - the Marway setpoint state
                                          is something other than one
                                          of the following

                     `normal(2)'        - the Marway setpoint state
                                          is normal

                     `highCritical(3)' - the Marway setpoint state
                                          is high critical

                     `highWarning(4)'   - the Marway setpoint state
                                          is high warning

                     `lowWarning(5)'    - the Marway setpoint state
                                          is low warning
```

```
                `lowCritical(6)'   - the Marway setpoint state
                                     is low critical

                `disabled(7)'      - the Marway setpoint state
                                     is disabled
            "
        SYNTAX INTEGER {
                other(1),
                normal(2),
                highCritical(3),
                highWarning(4),
                lowWarning(5),
                lowCritical(6),
                disabled(7)
        }

    MSwitchStartupMode ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
                "The configured startup mode for a switchable power
                device within a Marway Power Distribution Unit (PDU).

                At the time a Marway PDU is re-initialized, all
                switchable outlets and relays revert to an off
                status. The switch startup mode determines the state
                of an outlet (or relay) once a Marway PDU completes
                re-initialization.

                The switch startup mode values are interpreted as
                follow:

                     `off(1)' - the startup mode for explicitly
                                setting a switch to the off state
                                after re-initialization

                     `on(2)'   - the startup mode for explicitly
                                 setting a switch to the on state
                                 after re-initialization

                     `lastKnown(3)' - the startup mode for setting a
                                switch to its last known state
                                after re-initialization.

                For the `lastKnown(3)' startup mode, if a switch was
                in the on (off) state prior to re-initialization it
                will be placed into the on (off) state after
                re-initialization
```

```
                NOTE: the term 'switch' derives from the common
                terminology of a 'switched PDU' as a product
                classification, even though the feature is
                implemented with the use of an electrical relay.
                "
        SYNTAX INTEGER {
                off(1),
                on(2),
                lastKnown(3)
        }

    MSwitchStatus ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
                "The current operational state for a switchable
                Marway power device.

                Within an SNMP Set-Request, values conforming to the
                semantics of this textual convention MUST be one of
                the following, interpreted as:

                     `off(2)'   - turn on the Marway power device

                     `on(3)'    - turn off the Marway power device

                     `cycle(4)' - power cycle the Marway power device

                An attempt to set a value to a named-number not
                listed above will receive an error response of
                `wrongValue(10)'.

                When monitoring the operational state of a
                switchable Marway power device, values MAY be one of
                the following, interpreted as:

                     `other(1)'  - the current state is other than
                                   one of the following

                     `off(2)'    - a Marway power device is off


                     `on(3)'     - a Marway power device is on

                     `cycle(4)'  - a Marway power device is currently
                                   performing a power cycle operation

                     `onFail(5)' - a Marway power device is supposed to
                                   be in the `on(3)' state (powered),
                                   yet appears to be in the `off(2)'
                                   state (unpowered). This may be due to
                                   a failed relay or EPO override.
```

```
                    `offFail(6)' - a Marway power device is supposed to
                                   be in the `off(2)' state (unpowered),
                                   yet appears to be in the `on(3)'
                                   state (powered). This may be due to
                                  a failed relay or EPO override.
                "
        SYNTAX INTEGER {
                other(1),
                off(2),
                on(3),
                cycle(4),
                onFail(5),
                offFail(6)
        }

    MPowerFactorMode ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
                "The power factor mode indicates whether an
                associated power factor is leading, lagging, or in
                unity.

                The various power factor modes follow:

                    `none(1)'      - the power factor mode is 'none',
                                     as no power factor is currently
                                     available

                    `unity(2)'     - the power factor mode is
                                     'unity', and the power factor
                                     displays as a positive number

                    `leading(3)'   - the power factor mode is
                                     'leading', and the power factor
                                     displays as a positive number

                    `lagging(4)'   - the power factor mode is
                                     'lagging' and the power factor
                                     displays as a negative number
               "
        SYNTAX INTEGER {
                none(1),
                unity(2),
                leading(3),
                lagging(4)
        }

    MPowerPhaseOrPolarity ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
                "The conventional label for a conductor (wire) in an
                AC and DC power source.
```

AC power conductors which supply current and voltage are known as phases. Some forms of AC power also have a neutral conductor, which is considered phase.

By convention, the word 'phase' is used with two meanings relative to AC power.

The first usage of phase refers to a single conductor from an AC power source:

A single-conductor phase is meaningful because this is where current is supplied and measured (typically in amps).

With AC single-phase power, there are two conductors. These are labeled `L' (line) and `N' (neutral). The `L' conductor carries current. It's a single-conductor phase, though it is usually just called line rather than phase L.

There are two types of AC three-phase power. The delta type has three conductors labeled `A', `B', and `C'. The wye type adds a neutral fourth wire labeled `N'. Phase A, phase B, and phase C each supply current.

The second meaning of phase refers to a pair of conductors from an AC power source:

A two-conductor phase is meaningful because two wires are needed to supply and measure voltage.

With single-phase AC power sources, the two-wire pair is labeled `LN'.

With three-phase delta power, three two-wire pairs are formed and labeled `AB', `BC', and `CA'. Each of these pairs has its own voltage measurement.

With three-phase wye power, three two-wire pairs are formed and labeled `AN', `BN', and `CN'. Each of these pairs has its own voltage measurement.

A DC power source has two conductors, but the term phase is not applied to DC power in any way. For DC, one wire is labeled `positive' and the other is labeled `negative'.
The options `abc(14)', `abcn(15)', and

```
                `positiveNegative(18)' describe all available phases
                and polarities of inlet power devices, or the
                available phases and polarities of devices such as
                circuits and outlets which involve all power
                conductors of a power source rather than a subset of
                those conductors as explained above.
                "
        SYNTAX INTEGER {
                none(1),
                a(2),
                b(3),
                c(4),
                n(5),
                l(6),
                ln(7),
                an(8),
                bn(9),
                cn(10),
                ab(11),
                bc(12),
                ca(13),
                abc(14),
                abcn(15),
                positive(16),
                negative(17),
                positiveNegative(18)
        }

    MPowerDeviceType ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
                "The type of a Marway power device.

                A Marway power device May be an inlet, a single- or
                dual-conductor phase, a circuit, or an outlet. A
                Marway inlet power device is further categorized by
                its basic power configuration.

                This value is interpreted as follows:

                     `other(1)'   - a type other than one of the
                                    following

                     `inletSinglePhase(2)' - an inlet with an AC
                                    single-phase configuration

                     `inletSplitPhase(3)' - an inlet with an AC
                                    split-phase configuration

                     `inletThreePhaseDelta(4)' - an inlet with an AC
                                    three-phase delta configuration
```

`inletThreePhaseWye(5)' - an inlet with an AC three-phase wye configuration

`inletDC(6)' - an inlet with a DC configuration

`phase(7)' - a phase combining the data from related current phase and voltage phase conductors

`circuit(8)' - a circuit

`outlet(9)' - an outlet

A Marway power device is a key element within the power distribution architecture of a Marway Power Distribution Unit (PDU).

A Marway inlet is a power device through which a Marway PDU draws its power from some upstream source. Examples of an upstream source include:

- a breaker panel

- wall outlet

Examples of an Marway inlet power device follow:

- a plug on the end of a cable

- a recessed panel connector

- screw terminals inside an enclosure

- some other form of connection

The classification of a Marway inlet may be:

- AC single-phase

- AC three-phase Delta

- AC three-phase Wye

- DC

A Marway phase device applies only to Marway AC inlets, and represents either a single conductor or a specific set of paired conductors from a Marway inlet.

A Marway single-conductor phase is from an AC power source where current is measured (e.g. Phase A, Phase B).

```
                A Marway two-conductor phase is from an AC power source
                where voltage is measured (e.g. Phase AB, Phase BC).

                In a Marway PDU, a Marway `phase' combines the data
                collected from a single-conductor phase and the data
                collected from a two-conductor phase beginning with the
                same label (e.g. `A' and `AN') into a single data object.

                A Marway circuit is a branch inside the PDU after
                the power inlet which typically has a dedicated
                over-current protection device (circuit breaker or
                fuse). Downstream of the over-current device will be
                one or more Marway outlets. In simple, small-
                capacity units, there may be no current-protection
                device, and the entire unit is a single circuit.

                A Marway outlet is a power device through which a
                Marway PDU provides electrical power to downstream
                devices. A Marway outlet is typically a female
                connector through which an external piece of
                equipment is attached and powered by the PDU.

                For additional information about Marway device types
                see the full text of the MIB module.
                "
        SYNTAX INTEGER {
                other(1),
                inletSinglePhase(2),
                inletSplitPhase(3),
                inletThreePhaseDelta(4),
                inletThreePhaseWye(5),
                inletDC(6),
                phase(7),
                circuit(8),
                outlet(9)
        }

    MPowerDataType ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
                "The data type of a Marway power setpoint.

                The Marway power data type values follow:

                   `other(1)'     - the data type is other than one
                                    of the following

                    `volts(2)'     - the data type is 'volts'

                    `amps(3)'      - the data type is 'amperes'
```

```
                `watts(4)'     - the data type is 'watts'

                `voltamps(5)   - the data type is 'volt amperes'

               The Marway power data type applies to all setpoints
               in a Marway power setpoint set.
               "
       SYNTAX INTEGER {
               other(1),
               volts(2),
               amps(3),
               watts(4),
               voltamps(5)
        }

   MPowerVoltsType ::= TEXTUAL-CONVENTION
       STATUS current
       DESCRIPTION
               "The power volts type indicates whether an
               associated Marway power device is using AC voltage
               or DC voltage.

               The various power volts types follow:

                   `none(1)'    - not applicable, the power device
                                  has no voltage

                   `ac(2)'      - the power volts type is 'AC'

                   `dc(3)'      - the power volts type is 'DC'

              A Marway single conductor is an example of a device
               associated with the `none(1)' power volts type, as a
               single conductor has no measurable voltage
               potential.
               "
       SYNTAX INTEGER {
               none(1),
               ac(2),
               dc(3)
       }
```

```
   --
   -- Marway Power Objects
   --


   --
   -- mPowerIdentityTable
   --


   mPowerIdentityTable OBJECT-TYPE
       SYNTAX      SEQUENCE OF MPowerIdentityEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
               "This table extends the entPhysicalTable with
               configuration information about Marway power
               devices.

               Each Marway power device is represented in this
               table.

               The management information contained in this table
               is useful when interacting with the Marway console
               or web server. In particular, power devices are
               assigned numerical IDs useful for command line
               operations, and user-defined labels useful for
               describing the purpose of a power device, its
               location, or other meaning.
               "
       ::= { mPowerObjects 1 }

   mPowerIdentityEntry OBJECT-TYPE
       SYNTAX      MPowerIdentityEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
               "Configuration information about a Marway power
               device.

               Examples of Marway power devices include:
                    - inlet
                    - circuit
                    - outlet
               "
       INDEX   { entPhysicalIndex }
       ::= { mPowerIdentityTable 1 }
```

```
   MPowerIdentityEntry ::= SEQUENCE   {
         mPowerIdentityId              Unsigned32,
         mPowerIdentityType            MPowerDeviceType,
         mPowerIdentityPanelName       SnmpAdminString,
         mPowerIdentityLabel           MObjectLabel,
         mPowerIdentityConnectorType   SnmpAdminString
       }

   mPowerIdentityId OBJECT-TYPE
       SYNTAX      Unsigned32
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The numeric identifier for this Marway power
               device. This value is preassigned and remains
               constant.

               The numeric identifier (ID) of a Marway power device
               is useful when using console commands that target a
               specific power device.

               For example: 'getOutlet 5 label' where 5 is the
               Marway power device ID.

               Note that numeric identifiers for each Marway power
               device type restart at 1. Thus, there may be a
               'inlet 1', 'circuit 1', 'circuit 2', 'outlet 1',
               'outlet 2', etc.
               "
       ::= { mPowerIdentityEntry 1 }

  mPowerIdentityType OBJECT-TYPE
       SYNTAX      MPowerDeviceType
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The type of this Marway power device.

               A Marway power device may be an inlet, a single- or
               dual-conductor phase, a circuit, or an outlet. A
               Marway inlet power device is further categorized by
               its basic power configuration.

               This value is interpreted as follows:

                   `other(1)'            - a type other than one of the
                                           following

                   `inletSinglePhase(2)' - an inlet with an AC
                                           single-phase configuration
```

```
                `inletSplitPhase(3)' - an inlet with an AC
                                       split-phase configuration

                `inletThreePhaseDelta(4)' - an inlet with an AC
                                     three-phase delta configuration

                `inletThreePhaseWye(5)' - an inlet with an AC
                                     three-phase wye configuration

                `inletDC(6)'      - an inlet with a DC configuration

                `phase(7)'        - a phase combining the data from
                                    related current phase and voltage
                                    phase conductors

                `circuit(8)'      - a circuit

                `outlet(9)'       - an outlet

            See the MPowerDeviceType textual convention for
            additional information.
            "
        ::= { mPowerIdentityEntry 2 }

    mPowerIdentityPanelName OBJECT-TYPE
        SYNTAX      SnmpAdminString
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The panel label for this Marway power device.

            When an inlet, outlet, or other Marway power device
            includes a visible object on the panel of a Marway
            Power Distribution Unit (PDU), this value provides
            the associated label, as present on the panel.

            This value is the zero-length string when there is
            no label associated with a Marway power device.

            Examples of panel name labels follow:

                 `Main Power In'    - power inlet

                 `CB1', `Phase AB' - common circuit breaker
                                     labels

                 `J1', `J2' etc.    - MIL-STD convention for
                                      jacks
            "
        ::= { mPowerIdentityEntry 3 }
```

```
   mPowerIdentityLabel OBJECT-TYPE
       SYNTAX      MObjectLabel
       MAX-ACCESS  read-write
       STATUS      current
       DESCRIPTION
               "An administratively assigned label for this Marway
               power device.

               This value SHOULD indicate the purpose, location, or
               other semantic aspect of the sensor considered
               useful.

               See the MObjectLabel textual convention for
               additional information.
               "
       ::= { mPowerIdentityEntry 4 }

   mPowerIdentityConnectorType OBJECT-TYPE
       SYNTAX      SnmpAdminString
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The connector type for this Marway power device.

               A Marway inlet and a Marway outlet power device are
               terminated with a connector.

               This value identifies the connector interface
               standard as a displayable text string.

               Examples of connector strings are as follow:

                    `NEMA 5-15R'
                    `IEC C13'
                    `NEMA L21-30P'

               A Marway phase and a Marway circuit power device do
               not have a connector.

               This value is the zero-length string when there is
               no connector associated with a Marway power device.
               "
       ::= { mPowerIdentityEntry 5 }
```

```
   --
   -- mPowerConfigTable
   --

   mPowerConfigTable OBJECT-TYPE
       SYNTAX      SEQUENCE OF MPowerConfigEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
               "This table extends the mPowerIdentityTable with
               electrical power configuration and ratings
               information for Marway power devices.

               The management information contained within this table
               complements that within the mPowerIdentityTable.
               Associated rows share the same instance value for
               entPhysicalIndex.
               "
       ::= { mPowerObjects 2 }

   mPowerConfigEntry OBJECT-TYPE
       SYNTAX      MPowerConfigEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
               "The electrical power configuration and ratings
               information for a Marway power device.
               "
       INDEX   { entPhysicalIndex }
       ::= { mPowerConfigTable 1 }

    MPowerConfigEntry ::= SEQUENCE {
         mPowerConfigVoltsType              MPowerVoltsType,
         mPowerConfigVoltsPhase             MPowerPhaseOrPolarity,
         mPowerConfigVoltsRatingMin         Unsigned32,
         mPowerConfigVoltsRatingMax         Unsigned32,
         mPowerConfigAmpsPhase              MPowerPhaseOrPolarity,
         mPowerConfigAmpsRatingMax          Unsigned32,
         mPowerConfigAmpsRatingContinuous   Unsigned32
       }

  mPowerConfigVoltsType OBJECT-TYPE
       SYNTAX      MPowerVoltsType
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The configured volts type for this Marway power
               device.
               "
       ::= { mPowerConfigEntry 1 }
```

```
   mPowerConfigVoltsPhase OBJECT-TYPE
       SYNTAX      MPowerPhaseOrPolarity
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The configured two-conductor phase (AC) or the
               voltage polarity (DC) for a Marway power device.

               For an AC power device, this value provides the
               two-conductor phase from which voltage is drawn.

               For a DC power device, this value provides the
               polarity of the conductor.

               See the MPowerPhaseOrPolarity TC for additional
               information.
               "
       ::= { mPowerConfigEntry 2 }

   mPowerConfigVoltsRatingMin OBJECT-TYPE
       SYNTAX      Unsigned32
       UNITS       "tenths of a volt"
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The configured minimum voltage rating for this
               Marway power device.

               This value is the minimum voltage for a Marway power
               device configured with an operating voltage range.
               For example, this value would be `900' for a Marway
               power device configured with an operating voltage
               range of `90-240 volts AC'.

               Otherwise, this value is the nominal single voltage
               rating as configured for a Marway power device. For
               example, this value would be `1200' for a Marway
               power device configured with an nominal single
               voltage of `120 VAC', or `480' for a Marway power
               device configured with an nominal single voltage
               of`48 VDC'.

               See the mPowerConfigVoltsType object to determine
               whether the configured minimum voltage rating is in
               tenths of an AC or a DC volt.
               "
       ::= { mPowerConfigEntry 3 }
```

```
  mPowerConfigVoltsRatingMax OBJECT-TYPE
       SYNTAX      Unsigned32
       UNITS       "tenths of a volt"
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The configured maximum voltage rating for this
               Marway power device.

               This value is the maximum voltage for a Marway power
               device configured with an operating voltage range.
               For example, this value would be `2400' for a Marway
               power device configured with an operating voltage
               range of `90-240 volts AC'.

               Otherwise, this value is the nominal single voltage
               rating as configured for a Marway power device. For
               example, this value would be `1200' for a Marway
               power device configured with an nominal single
               voltage of `120 VAC', or `480' for a Marway power
               device configured with an nominal single voltage
               of`48 VDC'.

               See the mPowerConfigVoltsType object to determine
               whether the configured maximum voltage rating is in
               tenths of an AC or a DC volt.
               "
       ::= { mPowerConfigEntry 4 }

   mPowerConfigAmpsPhase OBJECT-TYPE
       SYNTAX      MPowerPhaseOrPolarity
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The configured single-conductor phase (AC) or the
               polarity (DC), upon which amperage is measured for
               this Marway power device.

               For an AC power device, this value provides the
               single-conductor phase from which amperage is drawn.

               For a DC power device, this value provides the
               polarity of the conductor.

               See the MPowerPhaseOrPolarity TC for additional
               information.
               "
       ::= { mPowerConfigEntry 5 }
```

```
  mPowerConfigAmpsRatingMax OBJECT-TYPE
       SYNTAX      Unsigned32
       UNITS       "tenths of an ampere"
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The maximum load rating for this Marway power
               device.

               For an AC power device, the maximum load rating MAY
               NOT be the permissible continuous load.

               For a DC power device, the maximum load rating is
               typically a permissible continuous load.

               See the mPowerConfigAmpsRatingContinuous object for
               additional information about the permissible
               continuous load.

               See the mPowerConfigVoltsType object to determine
               whether the configured maximum amperage rating is in
               tenths of an AC or a DC ampere.
               "
       REFERENCE
               "United States: National Electric Code, including
               sections 210.19 and 210.20. Other sections may apply
               as well. You may want to research 'electrical 80%
               rule'.
               "
       ::= { mPowerConfigEntry 6 }

   mPowerConfigAmpsRatingContinuous OBJECT-TYPE
       SYNTAX      Unsigned32
       UNITS       "tenths of an ampere"
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The continuous load rating for this Marway power
               device.

               For an AC power device, the continuous load rating
               is usually 80% of the permissible maximum load.

               For a DC power device, the maximum load rating is
               typically the same as the permissible maximum load.

               See the mPowerConfigAmpsRatingMax object for
               additional information about the permissible maximum
               load.

               See the mPowerConfigVoltsType object to determine
               whether the configured continuous amperage rating is
```

```
                in tenths of an AC or a DC ampere.
                "
        REFERENCE
                "United States: National Electric Code, including
                sections 210.19 and 210.20. Other sections may apply
                as well. You may want to research 'electrical 80%
                rule'.
                "
        ::= { mPowerConfigEntry 7 }


    --
    -- mPowerSettingsScalars
    --


    mPowerSettingsScalars OBJECT-IDENTITY
         STATUS      current
         DESCRIPTION
                "This subtree contains scalar object type
                definitions for global power settings. These
                settings apply to all Marway power devices.
                "
        ::= { mPowerObjects 3 }

   mPowerSettingsEnergyResetDay OBJECT-TYPE
        SYNTAX      Unsigned32 (0 | 1..31)
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "The configured day of month, upon which the
                associated counter objects are to be automatically
                reset to zero. The associated counter objects are:

                     mPowerDataWattHoursCurrPeriod

                In addition, the following updates will occur:

                     (1) All values of mPowerDataWattHoursPrevPeriod
                         will be updated to the final value of the
                         corresponding mPowerDataWattHoursCurrPeriod
                         object.

                     (2) The mPowerSettingsStartPrevEnergyPeriod
                         value will be set to the previous value of
                         mPowerSettingsStartCurrEnergyPeriod

                     (3) The mPowerSettingsStartCurrEnergyPeriod
                         value will be set to the current date and
                         time.
```

```
                By convention, counter reset occurs at midnight, the
                start of the configured day of the month.

                Some example configurations:

                        0 - disable automatic reset of the counters

                        1 - reset the counters to zero on the first
                            day of each month

                    15 - reset the counters to zero on the
                         fifteenth day of each month

                    30 - reset the counters to zero on the
                         thirtieth day of each month

                For the example '30', there will be no reset during
                the month of February, as the thirtieth day of the
                month never arrives.

                Note that an associated counter value may roll over
                and appear to be reset. Management applications
                SHOULD retrieve the sysUpTime.0 object along with
                counter based objects in order to determine when a
                roll over has occurred.
                "
        ::= { mPowerSettingsScalars 1 }

    mPowerSettingsEnergyResetNow OBJECT-TYPE
        SYNTAX       TruthValue
        MAX-ACCESS  read-write
        STATUS       current
        DESCRIPTION
                "Should associated counter objects be reset to zero
                now?

                Setting a value of `true(1)' will result in an
                immediate reset of the associated counter objects.
                The associated counter objects are:

                     mPowerDataWattHoursCurrPeriod

                In addition, the following updates occur:

                     (1) All values of mPowerDataWattHoursPrevPeriod
                         are updated to the final value of the
                         corresponding mPowerDataWattHoursCurrPeriod
                         object.

                     (2) The mPowerSettingsStartPrevEnergyPeriod
                         value is set to the previous value of
                         mPowerSettingsStartCurrEnergyPeriod
```

```
                    (3) The mPowerSettingsStartCurrEnergyPeriod
                        value is set to the current date and time.

                When set to a value of `true(1)', a reset occurs
                regardless of the configured value for the
                associated mPowerSettingsEnergyResetDay object.

                This value is `false(2)' when read.

                An attempt to set this value to a named-number other
                than `true(1)' will receive an error response of
                `wrongValue(10)'.
                "
        ::= { mPowerSettingsScalars 2 }

    mPowerSettingsStartPrevEnergyPeriod OBJECT-TYPE
        SYNTAX      DateAndTime
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The starting date and time for the previous
                statistics collection interval.

                The duration of the previous collection period is
                calculated by subtracting this value from the value
                of mPowerSettingsStartCurrEnergyPeriod.
                "
        ::= { mPowerSettingsScalars 3 }

    mPowerSettingsStartCurrEnergyPeriod OBJECT-TYPE
        SYNTAX      DateAndTime
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The starting date and time of the current
                statistics collection interval.

                The duration of the current collection period is
                calculated by subtracting this value from the
                current date and time.

                When this value updates:

                    (1) All values of mPowerDataWattHoursPrevPeriod
                        are updated to the final value of the
                        corresponding mPowerDataWattHoursCurrPeriod
                        object.

                    (2) All values of mPowerDataWattHoursCurrPeriod
                        are reset to zero(0).
```

```
                    (3) The mPowerSettingsStartPrevEnergyPeriod
                        value is set to the previous value of
                        mPowerSettingsStartCurrEnergyPeriod
                "
        ::= { mPowerSettingsScalars 4 }


  --
   -- mPowerDataTable
   --


   mPowerDataTable OBJECT-TYPE
       SYNTAX      SEQUENCE OF MPowerDataEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
               "This table extends the mPowerIdentityTable with
               metrics associated with Marway power devices.

               A metric defined in this table MAY NOT be relevant
               to a particular Marway power device.

               The availability of a metric depends upon its
               relevance and the presence of certain sensors in a
               Marway product model.

               For additional management information describing
               Marway power devices, see the mPowerIdentityTable.
               "
       ::= { mPowerObjects 4 }

   mPowerDataEntry OBJECT-TYPE
       SYNTAX      MPowerDataEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
               "The current operational metrics associated with a
               Marway power device.
               "
       INDEX   { entPhysicalIndex }
       ::= { mPowerDataTable 1 }
```

```
   MPowerDataEntry ::= SEQUENCE {
         mPowerDataUpdateRate              TimeTicks,
         mPowerDataMostRecentUpdate        TimeStamp,
         mPowerDataHertz                   Gauge32,
         mPowerDataVoltsRMS                Gauge32,
         mPowerDataAmpsRMS                 Gauge32,
         mPowerDataWatts                   Gauge32,
         mPowerDataVA                      Gauge32,
         mPowerDataVAR                     Gauge32,
         mPowerDataWattHoursCurrPeriod     ZeroBasedCounter32,
         mPowerDataWattHoursPrevPeriod     Unsigned32,
         mPowerDataCrestFactor             Gauge32,
         mPowerDataPowerFactor             Gauge32,
         mPowerDataPowerFactorMode         MPowerFactorMode
       }

   mPowerDataUpdateRate OBJECT-TYPE
       SYNTAX      TimeTicks
       UNITS       "hundredths of a second"
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The approximate duration of time between
               consecutive updates of the power data associated
               with this Marway power device.

               For a list of the objects periodically updated, see
               the mPowerDataMostRecentUpdate object.

               A management application SHOULD NOT poll the
               associated operational metrics for a Marway power
               device more frequently than this time duration.
               "
       ::= { mPowerDataEntry 1 }
```

```
  mPowerDataMostRecentUpdate OBJECT-TYPE
       SYNTAX      TimeStamp
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The value of sysUpTime at the time of the most
               recent update of the power data associated with this
               Marway power device.

               On each update, the value for the following objects
               refresh:

                    - mPowerDataHertz

                    - mPowerDataVoltsRMS

                    - mPowerDataAmpsRMS

                    - mPowerDataWatts

                    - mPowerDataVA

                    - mPowerDataVAR

                    - mPowerDataWattHoursCurrPeriod

                    - mPowerDataWattHoursPrevPeriod

                    - mPowerDataCrestFactor

                    - mPowerDataPowerFactor

                    - mPowerDataPowerFactorMode

               A management application SHOULD poll for this object
               in order to determine if the associated operational
               metrics for this Marway power device were refreshed
               since the previous polling cycle.
               "
       ::= { mPowerDataEntry 2 }

  mPowerDataHertz OBJECT-TYPE
       SYNTAX      Gauge32
       UNITS       "tenths of a hertz"
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The alternating current (AC) frequency of the line
               voltage for this Marway power device.
```

```
                This value is measured across the conductors
                specified by the corresponding instance of the
                mPowerConfigVoltsPhase object.

                A value of zero (0) indicates this Marway power
                device may be disabled, turned off, disconnected,
                or, there may be no actively powered downstream
                device.

                A `noSuchInstance' exception is returned when
                voltage measurements are not available for this
                Marway power device, such as when the device has a
                voltage type of DC.
                "
        ::= { mPowerDataEntry 3 }

    mPowerDataVoltsRMS OBJECT-TYPE
        SYNTAX      Gauge32
        UNITS       "tenths of a volt"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The root mean square (RMS) of the line voltage for
                this Marway power device.

                This value is measured across the conductors
                specified by the corresponding instance of the
                mPowerConfigVoltsPhase object.

                A value of zero (0) indicates this Marway power
                device may be disabled, turned off, disconnected,
                or, there may be no actively powered downstream
                device.

                A `noSuchInstance' exception is returned when
                voltage measurements are not available for this
                Marway power device.
                "
        ::= { mPowerDataEntry 4 }

    mPowerDataAmpsRMS OBJECT-TYPE
        SYNTAX      Gauge32
        UNITS       "tenths of an ampere"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The root mean square (RMS) of the line amperage for
                this Marway power device.

                This value is measured on the conductor specified by
                the corresponding instance of the
                mPowerConfigAmpsPhase object.
```

```
                A value of zero (0) indicates this Marway power
                device may be disabled, turned off, disconnected,
                or, there may be no actively powered downstream
                device.

                A `noSuchInstance' exception is returned when
                voltage measurements are not available for this
                Marway power device.
                "
        ::= { mPowerDataEntry 5 }

    mPowerDataWatts OBJECT-TYPE
        SYNTAX      Gauge32
        UNITS       "tenths of a watt"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The wattage for this Marway power device.

                The SNMP agent calculates this value using several
                internally measured and calculated values.

                A value of zero (0) indicates this Marway power
                device may be disabled, turned off, disconnected,
                or, there may be no actively powered downstream
                device.

                A `noSuchInstance' exception is returned when
                voltage measurements are not available for this
                Marway power device.
                "
        ::= { mPowerDataEntry 6 }

    mPowerDataVA OBJECT-TYPE
        SYNTAX      Gauge32
        UNITS       "tenths of a volt ampere"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The volt amperes for this Marway power device.

                The SNMP agent calculates this value using several
                internally measured and calculated values.

                A value of zero (0) indicates this Marway power
                device may be disabled, turned off, disconnected,
                or, there may be no actively powered downstream
                device.
```

```
                A `noSuchInstance' exception is returned when
                voltage measurements are not available for this
                Marway power device.
                "
        ::= { mPowerDataEntry 7 }

    mPowerDataVAR OBJECT-TYPE
        SYNTAX      Gauge32
        UNITS       "tenths of a volt ampere reactive"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The volt amperes reactive (VAR) value for this
                Marway power device.

                The SNMP agent calculates this value using several
                internally measured and calculated values.

                A value of zero (0) indicates this Marway power
                device may be disabled, turned off, disconnected,
                or, there may be no actively powered downstream
                device.

                A `noSuchInstance' exception is returned when
                voltage measurements are not available for this
                Marway power device.
                "
        ::= { mPowerDataEntry 8 }

    mPowerDataWattHoursCurrPeriod OBJECT-TYPE
        SYNTAX      ZeroBasedCounter32
        UNITS       "kilowatt hours"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of kilowatt hours consumed by this
                Marway power device during the current collection
                period.

                The SNMP agent calculates this value using several
                internally measured and calculated values.

                A management application may choose to poll for this
                value hourly or even every 15 minutes in order to
                detect spikes in consumption for this Marway power
                device.

                The date and time for the start of the current
                collection period is provided by the
                mPowerSettingsStartCurrEnergyPeriod scalar object.
```

```
                Note that the mPowerSettingsEnergyResetNow scalar
                object can be used to manually restart the current
                collection period for this Marway power device.

                Note that the mPowerSettingsEnergyResetDay scalar
                object configures the day of the month to
                automatically restart the current collection period
                for this Marway power device.

                This value is most meaningful when allowed to
                accumulate over a regular time period (e.g. monthly)
                and then reset at the end of that period. The agent
                can be configured to automatically reset this value
                monthly using mPowerSettingsEnergyResetDay scalar
                object.

                When this counter for kilowatt hours is reset, all
                power devices are reset at the same time.

                To avoid losing the kilowatt hours value when a new
                reset period starts, the final kilowatt hours value
                is transferred to mPowerDataWattHoursPrevPeriod.

               A value of zero (0) indicates this Marway power
                device may be disabled, turned off, disconnected,
                or, there may be no actively powered downstream
                device.
                "
        ::= { mPowerDataEntry 9 }

    mPowerDataWattHoursPrevPeriod OBJECT-TYPE
        SYNTAX      Unsigned32
        UNITS       "kilowatt hours"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of kilowatt hours consumed by this
                Marway power device during the previous collection
                period.

                A management application need only poll for this
                value once per change to the
                mPowerSettingsStartCurrEnergyPeriod scalar object.

                This value is provided to enable management
                applications to poll on an infrequent basis to
                obtain the total number of kilowatt hours consumed
                during a regular collection period, typically once
                per month.
                "
        ::= { mPowerDataEntry 10 }
```

```
   mPowerDataCrestFactor OBJECT-TYPE
       SYNTAX      Gauge32 (0..141)
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The crest factor for this Marway power device.

               Valid crest factor values are within the range of
               zero to 141.

               The SNMP agent derives this value using several
               internally measured and calculated values.

               A value of zero (0) indicates this Marway power
               device may be disabled, turned off, disconnected,
               or, there may be no actively powered downstream
               device.
               "
       ::= { mPowerDataEntry 11 }

   mPowerDataPowerFactor OBJECT-TYPE
       SYNTAX      Gauge32 (0..100)
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The power factor for this Marway power device.

               Valid power factor values are within the range of
               zero to 100.

               The SNMP agent derives this value using several
               internally measured and calculated values.

               A power factor represents a measure of efficiency
               expressed as a fixed point decimal value within a
               range that is greater than zero (0) and equal or
               less than (1).

               A value of zero (0) indicates this Marway power
               device may be disabled, turned off, disconnected,
               or, there may be no actively powered downstream
               device.

               See the corresponding mPowerDataPowerFactorMode
               object to determine the sign, positive (+) or
               negative (-), for this value.
               "
       ::= { mPowerDataEntry 12 }
```

```
  mPowerDataPowerFactorMode OBJECT-TYPE
       SYNTAX      MPowerFactorMode
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The power factor mode for this Marway power device.

               This value is interpreted as follows:

                 `none(1)'    - the power factor value is not
                                currently available

                 `unity(2)'   - the power factor value is positive
                                and exactly `1.0'

                 `leading(3)' - the power factor value is a
                                positive number

                 `lagging(4)' - the power factor value is a
                                negative number

               See the MPowerFactorMode TC for additional
               information.
               "
       ::= { mPowerDataEntry 13 }


   --
   -- mPowerSetpointTable
   --


   mPowerSetpointTable OBJECT-TYPE
       SYNTAX      SEQUENCE OF MPowerSetpointEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
               "This table extends the mPowerIdentityTable with
               management information about the configuration and
               status of Marway power setpoint sets.

               A Marway power setpoint set has six configurable
               parameters:

                    - Low Critical

                    - Low Warning

                    - High Warning

                    - High Critical
```

```
                    - Hysteresis Control

                    - Debounce Control
                "
        REFERENCE
                "The Marway user documentation for your product.
                "
        ::= { mPowerObjects 5 }

    mPowerSetpointEntry OBJECT-TYPE
        SYNTAX      MPowerSetpointEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
                "Configuration and status information about a Marway
                power setpoint set.
                "
        INDEX   { entPhysicalIndex,
                  mPowerSetpointType
                }
        ::= { mPowerSetpointTable 1 }

    MPowerSetpointEntry ::= SEQUENCE   {
          mPowerSetpointType            MPowerDataType,
          mPowerSetpointStatus          MSetpointStatus,
          mPowerSetpointTriggerValue    Integer32,
          mPowerSetpointHighCritical    Integer32,
          mPowerSetpointHighWarning     Integer32,
          mPowerSetpointLowWarning      Integer32,
          mPowerSetpointLowCritical     Integer32,
          mPowerSetpointHysteresis      Integer32,
          mPowerSetpointDebounce        TimeTicks
        }

    mPowerSetpointType OBJECT-TYPE
        SYNTAX      MPowerDataType
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
                "The type of power setpoint.

                Examples of power setpoint types include:

                    - volts

                    - amperes

                    - watts

                    - volt amperes
```

```
                See the MPowerDataType textual convention for
                additional information.
                "
        ::= { mPowerSetpointEntry 1 }

    mPowerSetpointStatus OBJECT-TYPE
        SYNTAX       MSetpointStatus
        MAX-ACCESS  read-only
        STATUS       current
        DESCRIPTION
                "The current status for this Marway power setpoint
                set.

                This value provides the current status of the Marway
                power setpoint set as a whole, as one of the
                following:

                  `other(1)'         - the current status is a value
                                       other than one of the
                                       following

                  `normal(2)'        - the current status is
                                       `normal'

                  `highCritical(3)' - the current status is `high
                                      critical'

                  `highWarning(4)'   - the current status is `high
                                       warning'

                  `lowWarning(5)'    - the current status is `low
                                       warning'

                  `lowCritical(6)'   - the current status is `low
                                       critical'

                When all setpoints of the Marway sensor setpoint set
                are disabled, this value is `disabled(7)'.
                "
        ::= { mPowerSetpointEntry 2 }
```

```
  mPowerSetpointTriggerValue OBJECT-TYPE
       SYNTAX      Integer32 (0 | 1..2147483647)
       UNITS       "precision in tenths"
       MAX-ACCESS  read-only
       STATUS      current
       DESCRIPTION
               "The most recent value retrieved from the associated
               Marway power device triggering a setpoint event.

               The corresponding value of mPowerConfigVoltsType
               identifies the data units associated with this
               Marway power setpoint value. The precision of this
               value is tenths of the specified data unit.

               This value is zero (0) when the corresponding value
               of mPowerSetpointStatus is `normal(1)' or
               `disabled(7)'.
               "
       ::= { mPowerSetpointEntry 3 }

  mPowerSetpointHighCritical OBJECT-TYPE
       SYNTAX      Integer32 (-1 | 1..2147483647)
       UNITS       "precision in tenths"
       MAX-ACCESS  read-write
       STATUS      current
       DESCRIPTION
               "The high critical value for this Marway power
               setpoint set.

               The corresponding value of mPowerConfigVoltsType
               identifies the data units associated with this
               Marway power setpoint value. The precision of this
               value is tenths of the specified data unit.

               This value SHOULD indicate an excessively high power
               reading that likely requires immediate corrective
               action.

               Depending upon what this power device measures, the
               imminent risk may be:

                    - a safety concern

                    - an equipment limitation

                    - a performance issue

                    - some other concern

               Setting this value to minus one (-1) disables the
               high critical setpoint.
```

```
                This value MUST be less than the rating maximum of
                the corresponding mPowerConfigVoltsType of this
                setpoint as determined by mPowerSetpointType which
                will one of:

                     - mPowerConfigAmpsRatingMax

                     - mPowerConfigVoltsRatingMax

                This value MUST be greater than following values in
                this Marway sensor setpoint set:

                     - mPowerSetpointHighWarning

                     - mPowerSetpointLowWarning

                     - mPowerSetpointLowCritical

                An attempt to set this value to a number not in
                conformance with the above constraints will receive
                an error response of `inconsistentValue(12)'.
                "
        DEFVAL { -1 }
        ::= { mPowerSetpointEntry 4 }

    mPowerSetpointHighWarning OBJECT-TYPE
        SYNTAX      Integer32 (-1 | 1..2147483647)
        UNITS       "precision in tenths"
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "The high warning value for this Marway power
                setpoint set.

                The corresponding value of mPowerConfigVoltsType
                identifies the data units associated with this
                Marway power setpoint value. The precision of this
                value is tenths of the specified data unit.

                This value SHOULD indicate an uncommonly high power
                reading that likely correlates with the onset of an
                unusual or unstable circumstance. Further
                investigation is warranted.

                Depending upon what this power device measures, the
                developing risk may be:

                     - a safety concern

                     - an equipment limitation

                     - a performance issue
```

```
                    - some other concern

                  Setting this value to minus one (-1) disables the
                  high warning setpoint.

                  This value MUST be less than following value in this
                  Marway power setpoint set:

                       - mPowerSetpointHighCritical

                  This value MUST be greater than following values in
                  this Marway power setpoint set:

                       - mPowerSetpointLowWarning

                       - mPowerSetpointLowCritical

                  An attempt to set this value to a number not in
                  conformance with the above constraints will receive
                  an error response of `inconsistentValue(12)'.
                "
                  DEFVAL { -1 }
        ::= { mPowerSetpointEntry 5 }

    mPowerSetpointLowWarning OBJECT-TYPE
        SYNTAX      Integer32 (-1 | 1..2147483647)
        UNITS       "precision in tenths"
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "The low warning value for this Marway power
                setpoint set.

                The corresponding value of mPowerConfigVoltsType
                identifies the data units associated with this
                Marway power setpoint value. The precision of this
                value is tenths of the specified data unit.

                This value SHOULD indicate an uncommonly low power
                reading that likely correlates with the onset of an
                unusual or unstable circumstance. Further
                investigation is warranted.

                Depending upon what this power device measures, the
                developing risk may be:

                     - a safety concern

                     - an equipment limitation

                     - a performance issue
```

```
                    - some other concern

                Setting this value to minus one (-1) disables the
                low warning setpoint.

                This value MUST be less than following values in the
                Marway power setpoint set:

                    - mPowerSetpointHighCritical

                    - mPowerSetpointHighWarning

                This value MUST be greater than following value in
                the Marway power setpoint set:

                    - mPowerSetpointLowCritical

                An attempt to set this value to a number not in
                conformance with the above constraints will receive
                an error response of `inconsistentValue(12)'.
               "
        DEFVAL { -1 }
        ::= { mPowerSetpointEntry 6 }

    mPowerSetpointLowCritical OBJECT-TYPE
        SYNTAX      Integer32 (-1 | 1..2147483647)
        UNITS       "precision in tenths"
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "The low critical value for this Marway power
                setpoint set.

                The corresponding value of mPowerConfigVoltsType
                identifies the data units associated with this
                Marway power setpoint value. The precision of this
                value is tenths of the specified data unit.

                This value SHOULD indicate an excessively low power
                reading that likely requires immediate corrective
                action.

                Depending upon what this power device measures, the
                imminent risk may be:

                    - a safety concern

                    - an equipment limitation

                    - a performance issue
```

```
                    - some other concern

                Setting this value to minus one (-1) disables the
                low critical setpoint.

                This value MUST be less than following values in the
                Marway power setpoint set:

                    - mPowerSetpointHighCritical

                    - mPowerSetpointHighWarning

                    - mPowerSetpointLowWarning

                An attempt to set this value to a number not in
                conformance with the above constraints will receive
                an error response of `inconsistentValue(12)'.
                "
        DEFVAL { -1 }
        ::= { mPowerSetpointEntry 7 }

    mPowerSetpointHysteresis OBJECT-TYPE
        SYNTAX      Integer32 (-1 | 1..2147483647)
        UNITS       "precision in tenths"
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "The hysteresis for this Marway power setpoint set.

                The corresponding value of mPowerConfigVoltsType
                identifies the data units associated with the
                hysteresis. The precision of the hysteresis is
                tenths of the specified data unit.

                This value serves to reduce setpoint sensitivity and
                applies to the following Marway sensor setpoints:

                    - mPowerSetpointHighCritical

                    - mPowerSetpointHighWarning

                    - mPowerSetpointLowWarning

                    - mPowerSetpointLowCritical

                The data value retrieved from a Marway power device
                may oscillate between slightly higher than, and
                slightly lower than, a setpoint value. Such
                oscillation can cause spurious setpoint triggers and
                clears.

                The hysteresis, in conjunction with a setpoint
```

```
                value, defines a threshold on the normal side of the
                setpoint value. Once a Marway power setpoint
                triggers, this threshold value must be crossed in
                order for the Marway power setpoint to clear.

                Setting this value to minus one (-1) disables the
                hysteresis for this Marway power setpoint set.

                A good hysteresis value depends upon the normal
                variation of power data and how frequently the power
                data changes. Establishing a good hysteresis may
                require some initial trial and error.
                "
        DEFVAL { -1 }
        ::= { mPowerSetpointEntry 8 }

    mPowerSetpointDebounce OBJECT-TYPE
        SYNTAX      TimeTicks
        UNITS       "hundredths of a second"
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "The debounce duration for this Marway power
                setpoint set.

                The debounce duration reduces setpoint sensitivity
                to short duration spikes (or troughs) of the data
                value provided by a Marway power device.

                The debounce duration establishes a minimum duration
                of time prior to triggering (or clearing) a Marway
                power setpoint.

                An effective debounce duration enables the Marway
                agent logic to ignore brief spikes and troughs of
                the underlying power data value, and to smooth
                clusters of trigger and clear events into a single
                pair of events.

                Setting this value to zero(0) disables the debounce
                duration for this Marway power setpoint set.

                A debounce duration depends upon the normal
                variation of power data and how frequently the
                sensor data changes. Establishing a good debounce
                duration may require some initial trial and error.
                "
        ::= { mPowerSetpointEntry 9 }
```

```
   --
   -- mPowerSwitchTable
   --


   mPowerSwitchTable OBJECT-TYPE
       SYNTAX      SEQUENCE OF MPowerSwitchEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
               "This table extends the mPowerIdentityTable with
               configuration, control and monitoring information
               for remotely switchable power devices within a
               Marway Power Distribution Unit.
               "
       ::= { mPowerObjects 6 }

   mPowerSwitchEntry OBJECT-TYPE
       SYNTAX      MPowerSwitchEntry
       MAX-ACCESS  not-accessible
       STATUS      current
       DESCRIPTION
               "Configuration, control and monitoring information
               for a remotely switchable power device within a
               Marway Power Distribution Unit.

               The objects in the mPowerSwitchEntry provide
               management applications the ability to control the
               state of a power device.
               "
       INDEX   { entPhysicalIndex }
       ::= { mPowerSwitchTable 1 }

    MPowerSwitchEntry ::= SEQUENCE {
         mPowerSwitchStatus       MSwitchStatus,
         mPowerSwitchStartupMode  MSwitchStartupMode,
         mPowerSwitchOnDelay      Unsigned32,
         mPowerSwitchOffDelay     Unsigned32,
         mPowerSwitchCycleDelay   Unsigned32,
         mPowerSwitchIsAlertable  TruthValue
       }

   mPowerSwitchStatus OBJECT-TYPE
       SYNTAX      MSwitchStatus
       MAX-ACCESS  read-write
       STATUS      current
       DESCRIPTION
               "The current operational state for this switchable
               Marway power device.

               Within an SNMP Set-Request, this value MUST be one
               of the following valid values, interpreted as
```

```
                follows:

                     `off(2)'   - turn on the Marway power device

                     `on(3)'    - turn off the Marway power device

                     `cycle(4)' - power cycle the Marway power device

                An attempt to set this value to a named-number not
                listed above will receive an error response of
                `wrongValue(10)'.

                When monitoring the operational state for a
                switchable Marway power device, this value MAY be
                one of the following valid values, interpreted as
                follow:

                     `other(1)' - the current state is something
                                  other than one of the following
                                  values

                     `off(2)'   - the Marway power device is off


                     `on(3)'    - the Marway power device is on

                     `cycle(4)' - the Marway power device is
                                  currently performing a power cycle
                                  operation

                     `stuckOff(5)' - the current state of the Marway
                                  power device is supposed to be
                                  `on(3)', but it is stuck in the off
                                  state

                    `stuckOn(6)' - the current state of the Marway
                                  power device is supposed to be
                                  `off(2)', but it is stuck in the on
                                  state

                See the MSwitchStatus textual convention for
                additional information.
                "
        ::= { mPowerSwitchEntry 1 }

    mPowerSwitchStartupMode OBJECT-TYPE
        SYNTAX      MSwitchStartupMode
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "This setting determines what state to set the
                switch into after a power-cycled startup. If the
```

```
                firmware is restarted (soft boot), then
                mPowerSwitchStatus will not change. However, upon
                loss of power to the whole power distribution unit,
                all switches will be set to off. This setting
                determines what state to set the switch to after
                startup has completed.

                When using the `lastKnown(3)' option, the switch
                could be set to on or off depending on what it was
                before the power cycle occurred.

                See the MSwitchStartupMode textual convention for
                additional information.
                "
        ::= { mPowerSwitchEntry 2 }

    mPowerSwitchOnDelay OBJECT-TYPE
        SYNTAX      Unsigned32 (0..6000)
        UNITS       "hundredths of a second"
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "The duration of time to delay execution of any
                received command to turn on this remotely switchable
                Marway power device.

                This value is expressed in hundredths of a second.
                Valid values are within the range of 0 to 6000
                hundredths of a second.
                "
        ::= { mPowerSwitchEntry 3 }

    mPowerSwitchOffDelay OBJECT-TYPE
        SYNTAX      Unsigned32 (0..6000)
        UNITS       "hundredths of a second"
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "The duration of time to delay execution of any
                received command to turn off this remotely
                switchable Marway power device.

                This value is expressed in hundredths of a second.
                Valid values are within the range of 0 to 6000
                hundredths of a second.
                "
        ::= { mPowerSwitchEntry 4 }

    mPowerSwitchCycleDelay OBJECT-TYPE
        SYNTAX      Unsigned32 (0..6000)
        UNITS       "hundredths of a second"
        MAX-ACCESS  read-write
```

```
        STATUS      current
        DESCRIPTION
                "The duration of time to delay execution of the 'on'
                phase for any received command to cycle the power of
                this remotely switchable Marway power device.

                This value is expressed in hundredths of a second.
                Valid values are within the range of 0 to 6000
                hundredths of a second.

                During execution of a command to cycle power, this
                value determines the duration of time between
                completing the state change to 'off' and initiating
                the state change to 'on' for a remotely switchable
                Marway power device.
                "
        ::= { mPowerSwitchEntry 5 }

    mPowerSwitchIsAlertable OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
                "This setting determines whether a notification is
                broadcast when the switch status is changed from either
                off to on or on to off.

                Within an SNMP Set-Request, this value MUST be one
                of the following valid values, interpreted as
                follows:

                    `true(1)'  - mPowerSwitchStatusChange notification
                                 is enabled.

                    `false(2)' - mPowerSwitchStatusChange notification
                                 is disabled.
                "
        ::= { mPowerSwitchEntry 6 }


    --
    -- accessible-for-notify event scalars
    --
```

```
   --
   -- Power Notifications
   --


   mPowerSetpointStatusChange NOTIFICATION-TYPE
       OBJECTS {
               mChassisTime,
               mChassisAckId,
               mPowerIdentityType,
               mPowerIdentityId,
               mPowerIdentityLabel,
               mPowerSetpointStatus,
               mPowerSetpointTriggerValue
       }
       STATUS       current
       DESCRIPTION
               "A Marway power setpoint status has changed value.

               The management information provided within the
               varbind list include:

                    mChassisTime   - the date and time this event
                                     was observed

                    mChassisAckId - the ACK ID associated with this
                                    event


                    mPowerIdentityType - the type of power device
                                    associated with this event


                    mPowerIdentityId - the numeric identifier for
                                    the power device associated
                                    with this event

                    mPowerIdentityLabel - the administratively
                                    assigned label of the power
                                    device associated with this
                                    event

                    mPowerSetpointStatus - the current status for
                                    the Marway power setpoint set
                                    associated with this event

                    mPowerSetpointTriggerValue - the value
                                    retrieved from the power
                                    device that triggered this
                                    event

               Note that the mPowerSetpointType value of the Marway
```

```
                power setpoint set appears in the instance portion
                of the varbind name of the mPowerSetpointStatus and
                mPowerSetpointType objects. The mPowerSetpointType
                value indicates the type of power setpoint (amps or
                volts).

                Note that the entPhyscialIndex value associated with
                a Marway power device appears in the instance
                portion of the varbind name of most of the objects
                listed above.

                A management application can use this value to
                identify rows in other tables that contain
                additional management information about the Marway
                power device associated with this event.
                "
        ::= { mPowerEventNotify 1 }

    mPowerSwitchStatusChange NOTIFICATION-TYPE
        OBJECTS {
                mChassisTime,
                mPowerIdentityType,
                mPowerIdentityId,
                mPowerIdentityLabel,
                mPowerSwitchStatus
        }
        STATUS       current
        DESCRIPTION
                "A Marway switch status has changed value.

                The management information provided within the
                varbind list include:

                     mChassisTime   - the date and time this event
                                      was observed

                     mPowerIdentityType - the type of power device
                                    associated with this event

                     mPowerIdentityId - the numeric identifier for
                                    the power device associated
                                    with this event

                     mPowerIdentityLabel - the administratively
                                    assigned label of the power
                                    device associated with this
                                    event

                     mPowerSwitchStatus - the current operational
                                    state of the power device
                                    associated with this event
```

```
                Note that the entPhyscialIndex value associated with
                a Marway power device appears in the instance
                portion of the var bind name of most of the objects
                listed above.

                A management application can use this value to
                identify rows in other tables that contain
                additional management information about the Marway
                power device associated with this event.
                "
        ::= { mPowerEventNotify 2 }


    --
    -- conformance and compliance statements
    --


    mPowerCompliance1 MODULE-COMPLIANCE
        STATUS current
        DESCRIPTION
                "The compliance statement for Marway systems
                supporting this MIB module.
                "

        MODULE -- this module
        MANDATORY-GROUPS {
                mPowerBasicObjectGroup
        }

        GROUP       mPowerCurrentMonitorObjectGroup
        DESCRIPTION
                "This group is mandatory for all Marway power
                entities with support for the current monitoring
                feature.
                "

        GROUP       mPowerPowerMonitorObjectGroup
        DESCRIPTION
                "This group is mandatory for all Marway power
                entities with support for the power monitoring
                feature.
                "

        GROUP       mPowerEnergyMonitorObjectGroup
        DESCRIPTION
                "This group is mandatory for all Marway power
                entities with support for the energy monitoring
                feature.
                "
        GROUP       mPowerSetpointObjectGroup
```

```
        DESCRIPTION
                "This group is mandatory for all Marway power
                entities with support for the power setpoint
                feature.
                "

        GROUP       mPowerSwitchObjectGroup
        DESCRIPTION
                "This group is mandatory for all Marway power
                entities with support for the remote switching
                feature."



        GROUP       mPowerSetpointNotificationGroup
        DESCRIPTION
                "This group is mandatory for all Marway power
                entities with support for the power setpoint
                feature.
                "

        GROUP       mPowerSwitchNotificationGroup
        DESCRIPTION
                "This group is mandatory for all Marway power
                entities with support for the remote switching
                feature.
                "

        ::= { mPowerCompliances 1 }


    --
    -- units of conformance
    --


    mPowerBasicObjectGroup OBJECT-GROUP
        OBJECTS {
                mPowerIdentityId,
                mPowerIdentityType,
                mPowerIdentityPanelName,
                mPowerIdentityLabel,
                mPowerIdentityConnectorType
                }
        STATUS    current
        DESCRIPTION
                "A collection of managed objects exposing basic
                identification and configuration information for
                Marway power entities.
                "
        ::= { mPowerGroups 1 }
```

```
  mPowerCurrentMonitorObjectGroup OBJECT-GROUP
       OBJECTS {
               mPowerConfigAmpsPhase,
               mPowerConfigAmpsRatingMax,
               mPowerConfigAmpsRatingContinuous,
               mPowerDataUpdateRate,
               mPowerDataMostRecentUpdate,
               mPowerDataAmpsRMS
               }
       STATUS    current
       DESCRIPTION
               "A collection of managed objects exposing
               configuration information and metrics for Marway
               power entities with support for the current
               monitoring feature.
               "
       ::= { mPowerGroups 2 }

   mPowerPowerMonitorObjectGroup OBJECT-GROUP
       OBJECTS {
               mPowerConfigVoltsType,
               mPowerConfigVoltsPhase,
               mPowerConfigVoltsRatingMin,
               mPowerConfigVoltsRatingMax,
               mPowerDataHertz,
               mPowerDataVoltsRMS,
               mPowerDataWatts,
               mPowerDataVA,
               mPowerDataVAR,
               mPowerDataCrestFactor,
               mPowerDataPowerFactor,
               mPowerDataPowerFactorMode
               }
       STATUS    current
       DESCRIPTION
               "A collection of managed objects exposing
               configuration information and metrics for Marway
               power entities with support for the power monitoring
               feature.
               "
       ::= { mPowerGroups 3 }

   mPowerEnergyMonitorObjectGroup OBJECT-GROUP
       OBJECTS {
               mPowerSettingsEnergyResetDay,
               mPowerSettingsEnergyResetNow,
               mPowerSettingsStartPrevEnergyPeriod,
               mPowerSettingsStartCurrEnergyPeriod,
               mPowerDataWattHoursCurrPeriod,
               mPowerDataWattHoursPrevPeriod
               }
       STATUS    current
```

```
        DESCRIPTION
                "A collection of managed objects exposing
                configuration information and metrics for Marway
                power entities with support for the energy
                monitoring feature.
                "
        ::= { mPowerGroups 4 }

    mPowerSetpointObjectGroup OBJECT-GROUP
        OBJECTS {
                mPowerSetpointStatus,
                mPowerSetpointTriggerValue,
                mPowerSetpointHighCritical,
                mPowerSetpointHighWarning,
                mPowerSetpointLowWarning,
                mPowerSetpointLowCritical,
                mPowerSetpointHysteresis,
                mPowerSetpointDebounce
                }
        STATUS    current
        DESCRIPTION
                "A collection of managed objects exposing
                configuration and status information for Marway
                power entities with support for the power setpoint
                feature.
                "
        ::= { mPowerGroups 5 }

    mPowerSwitchObjectGroup OBJECT-GROUP
        OBJECTS {
                mPowerSwitchStatus,
                mPowerSwitchStartupMode,
                mPowerSwitchOnDelay,
                mPowerSwitchOffDelay,
                mPowerSwitchCycleDelay,
                mPowerSwitchIsAlertable
                }
        STATUS    current
        DESCRIPTION
                "A collection of managed objects exposing
                configuration and status information for Marway
                power entities with support for the remote switching
                feature.
                "
        ::= { mPowerGroups 6 }

    mPowerSetpointNotificationGroup NOTIFICATION-GROUP
        NOTIFICATIONS {
                       mPowerSetpointStatusChange
                       }
        STATUS    current
        DESCRIPTION
```

```
                "A collection of notifications exposing setpoint
                events for Marway power entities.
                "
        ::= { mPowerGroups 7 }


    mPowerSwitchNotificationGroup NOTIFICATION-GROUP
        NOTIFICATIONS {
                       mPowerSwitchStatusChange
                       }
        STATUS    current
        DESCRIPTION
                "A collection of notifications exposing switch
                events for Marway power entities.
                "
        ::= { mPowerGroups 8 }


    END
```

6. Acknowledgments

The production and maintenance of this memo is a group effort of the Marway Power Solutions development team.

7. Security Considerations

There are a number of management objects defined in this MIB module with a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations. These are the tables and objects and their sensitivity/vulnerability:

In the mPowerSettingsScalars group-
- mPowerSettingsEnergyResetDay
- mPowerSettingsEnergyResetNow

Tampering with a properly configured Marway power setting MAY result in improper resetting of metrics associated with the impacted Marway power device.

In the mPowerIdentityTable-
- mPowerIdentityLabel

Tampering with a properly configured identity label for a Marway power device MAY cause unintended consequences when using the tampered value within command line interactions.

In the mPowerSetpointTable-
- mPowerSetpointHighCritical
- mPowerSetpointHighWarning
- mPowerSetpointLowWarning
- mPowerSetpointLowCritical
- mPowerSetpointHysteresis
- mPowerSetpointDebounce

Tampering with a properly configured Marway power setpoint value MAY result in improper alerts and notifications involving the impacted Marway power device.

In the mPowerSwitchTable-
- mPowerSwitchStatus
- mPowerSwitchStartupMode
- mPowerSwitchOnDelay
- mPowerSwitchOffDelay
- mPowerSwitchCycleDelay
- mPowerSwitchIsAlertable

Tampering with a properly configured switch profile for a Marway power device MAY result in improper loss (or supply) of power to the impacted Marway power device and downstream power devices.

None of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) are considered sensitive or vulnerable within network environments.

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB module.

It is RECOMMENDED that implementers consider the security features as provided by the SNMPv3 framework (see [RFC3410], section 8), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

8. References

8.1 Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC2578] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Structure of Management Information Version 2 (SMIv2)", STD 58, RFC 2578, April 1999.

[RFC2579] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Textual Conventions for SMIv2", STD 58, RFC 2579, April 1999.

[RFC2580] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Conformance Statements for SMIv2", STD 58, RFC 2580, April 1999.

[RFC6933] Bierman, A., Romascanu, D., Quittek, J., and M. Chandramouli, "Entity MIB (Version 4)", RFC 6933, May 2013

[MAR-SMI] Marway Power Solutions, "The Marway Structure of Management Information (SMI), April 2017.

8.2 Informative References

[RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Network Management Framework", RFC 3410, December, 2002.

Change Log

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   Changes introduced in revision "201704100000Z", 10 April 2017
   - initial version
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