9.5.3 Non-real time measurement attribute mapping

The real-time data classes may also have data attributes for non-real-time data that can be mapped to CIM classes and attributes as shown in Table 20.

Table 20 – Mapping IEC 61850 Non-real time data attributes to CIM classes/attributes

CDC	Attribute	Description	CIM Class	CIM Attribute
Various	d	Textual description	Measurement	name or description
MV CMV	units.SIUnit	Units of the attribute(s) representing the value of the data	Analog	unitSymbol
MV CMV	units.multiplier	Units of the attribute(s) representing the value of the data	Analog	unitMultiplier
MV CMV	rangeC.min	minimum process measurement	Analog	minValue
MV CMV	rangeC,max	maximum process measurement	Analog	maxValue
APC	minVal	Setting range	Setpoint	minValue
APC	maxVal	Setting range	Setpoint	maxValue

9.5.4 Recommendation for harmonization: CIM measurement classes

Recommendation R17: Add additional CIM measurement classes to hold multiple measured values with the same timestamp and quality.

These classes would be similar to the SvPowerFlow or SvVoltage classes for state variables.

For example:

- MeasurementVector would have attributes “magnitude” and “angle” and would correspond to the CMV common data class.
- MeasurementComplexValue would have attributes “real” and “imaginary” and would typically be used to hold values for real and reactive power.

10 Control Model

10.1 CIM Control Modelling

10.1.1 General

The control model needs to be able to allow high level information exchange regarding capabilities. However, it is not required to convey specific control service information (e.g. directControl, selectBeforeOperate, etc.) that may be required to actually issue the telecontrol to the field. Configuration of the service specific information is intended to be performed in a protocol specific manner and is out of scope of this document. This area may be a topic for future work.

The current CIM control model lacks some of the aspects that are needed in order to allow telecontrol to field devices. The current IEC 61970 control model is shown in Figure 16.

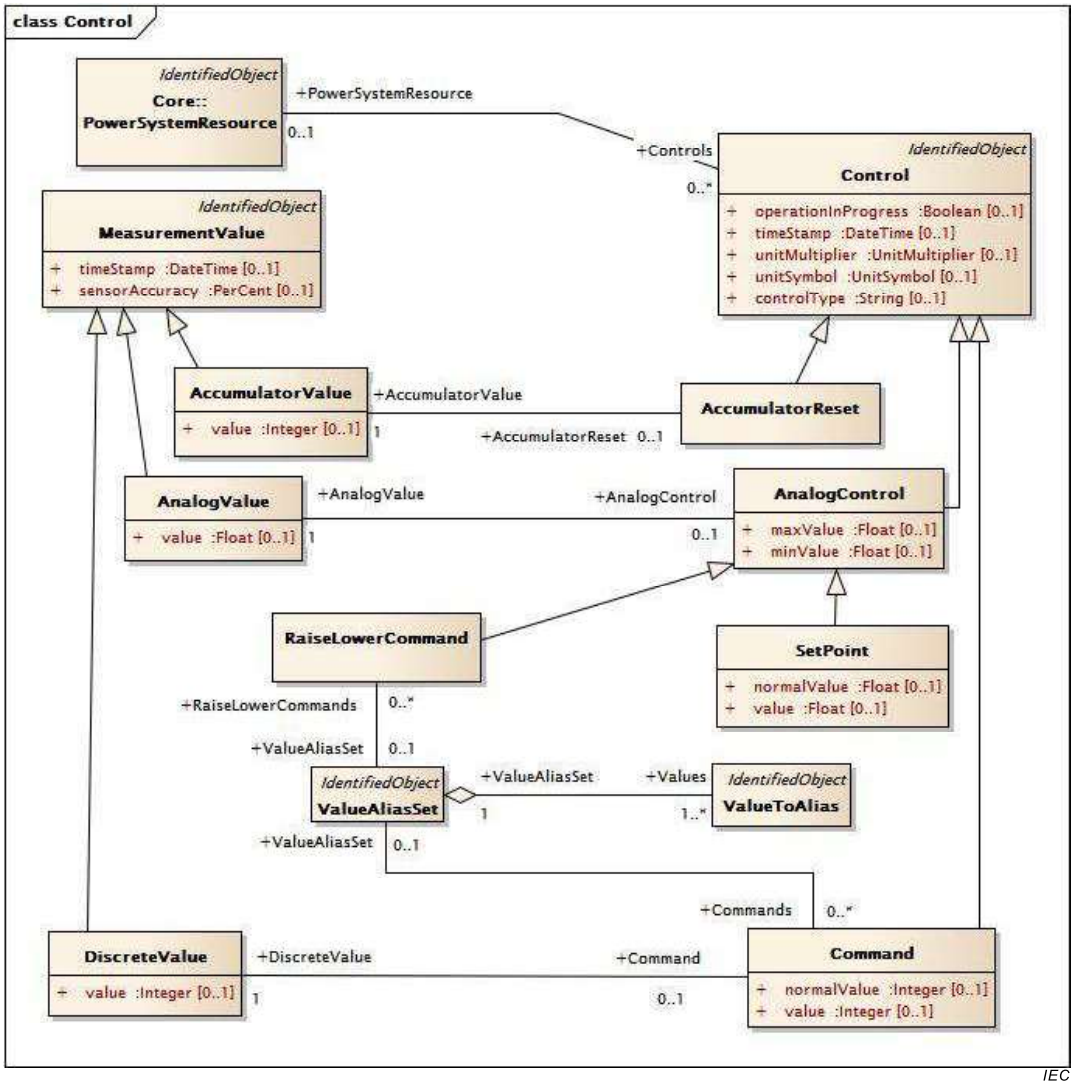

Figure 16 – Current CIM Control Model

10.1.2 Recommendation for harmonization: CIM control model

Recommendation R18: Modify the CIM control model as shown in Figure 17.

The changes from the current model to the proposed model are based upon the need to:

- Generalized Raise/Lower into a DiscreteCommand. The DiscreteCommand allows an enumerated control to be sent, and the MeasurementValue whose value should change based upon the control, to be specified.
- The value and normalValue attributes in Command were removed and equivalent attributes of the appropriate type, were placed into DiscreteCommand and AnalogControl.

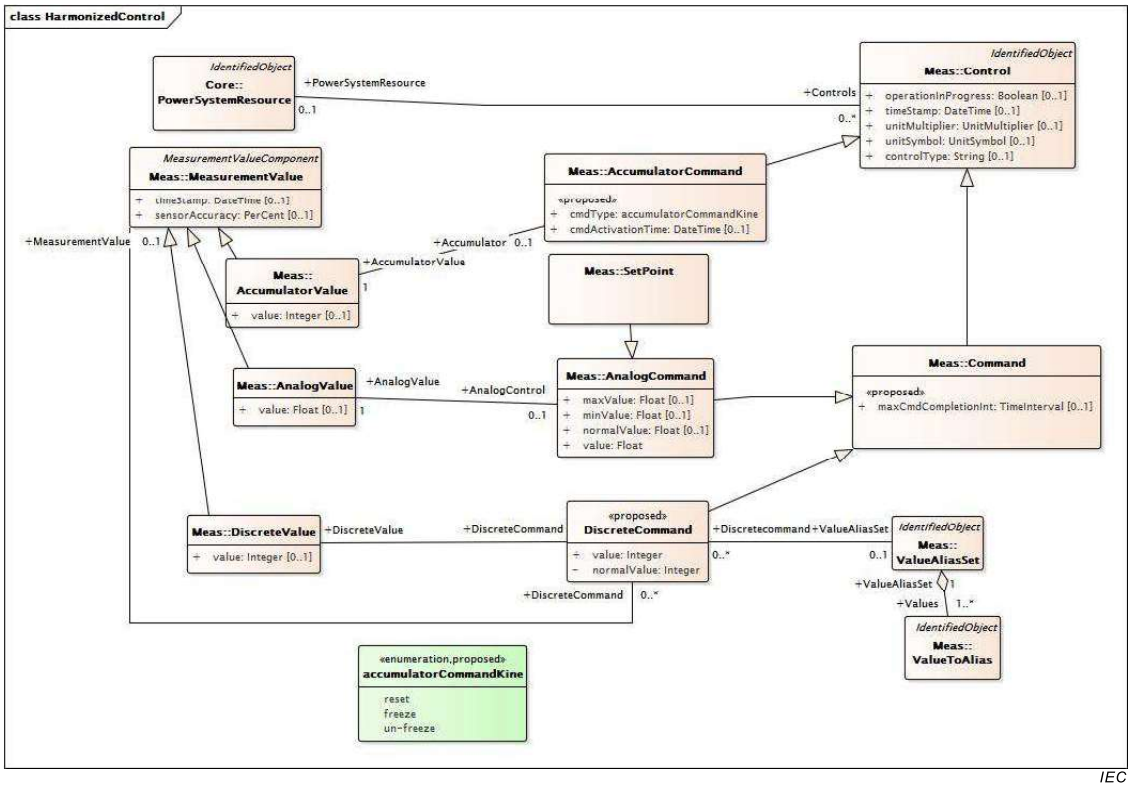

Figure 17 – Proposal for revised CIM Control Model

10.1.3 Recommendation for harmonization: CIM CONTROL TYPES

Control Types are analogous to measurementTypes but apply to commands. IEC 61970-301 does not define a standard list of control types.

Recommendation R19: CIM based standards should use selected IEC 61850 data object names as ControlType names or add a specific attribute as recommended for MeasurementTypes.

10.2 Automated control sequences

Models to enable the exchange of automated control sequences (e.g. System Integrity Protection Schemes and/or switching sequences) are currently being developed by working groups or task forces responsible for both IEC 61970 and IEC 61850.

Recommendation R20: The relevant working groups and task forces should coordinate to propose a harmonized models and mappings for automated control sequences.

11 Protection modelling

There is a general agreement within the IEC that the IEC 61970 Protection Model (see Figure 18) needs to be re-evaluated prior to attempts to perform harmonization with IEC 61850. This re-evaluation will probably cause a refactoring/redesign of the protection model based upon the newer concepts of protection functions instead of protection equipment as well as accommodating requirements for System Integrity Protection Schemes (SIPS).