BACnet Protocol Implementation Conformance Statement

Date： January 7, 2016
Vendor Name: Delta Electronics, Inc.
Product Name: Multi-Functional Power Meter
Product Model Number: DPM-C530A
Applications Software Version: Ver 01.1820- yyyymmdd
Firmware Revision: Ver 01.1820
BACnet Protocol Revision: 7

Product Description:
The DPM-C530A offers all the measurement capabilities, including highly precise measurement of bidirectional electrical energy and power quality parameters. It can also identify equipment malfunctions, energy waste, and other power quality issues for purposes such as analyzing electricity consumption and managing energy usage.

BACnet Standardized Device Profile (Annex L):

☐ **BACnet Operator Workstation (B-OWS)**
☐ **BACnet Building Controller (B-BC)**
☐ **BACnet Advanced Application Controller (B-AAC)**
■ **BACnet Application Specific Controller (B-ASC)**
☐ **BACnet Smart Sensor (B-SS)**
☐ **BACnet Smart Actuator (B-SA)**

List all BACnet Interoperability Building Blocks Supported (Annex K):

Data Sharing BIBBs
Data Sharing-ReadProperty-B (DS-RP-B)
Data Sharing-WriteProperty-B (DS-WP-B)
Data Sharing-ReadPropertyMultiple-B (DS-RPM-B)

Device and Network Management BIBBs
Device Management-Dynamic Device Binding-B (DM-DDB-B)
Device Management-Dynamic Object Binding-B (DM-DOB-B)
Device Management-DeviceCommunicationControl-B (DM-DCC-B)

Segmentation Capability:

☐ Segmented requests supported Window Size _____
☐ Segmented responses supported Window Size _____

Standard Object Types Supported:

Analog Value
Device

Object instantiation is static. Refer to table at end of this document for object details.

Data Link Layer Options:

☐ BACnet IP, (Annex J)
☐ BACnet IP, (Annex J), Foreign Device
☐ ISO 8802-3, Ethernet (Clause 7)
☐ ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
☐ ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s) _____
■ MS/TP master (Clause 9), baud rate(s): 9600, 19200, 38400
☐ MS/TP slave (Clause 9), baud rate(s): _____
☐ Point-To-Point, EIA 232 (Clause 10), baud rate(s):_____
☐ Point-To-Point, modem, (Clause 10), baud rate(s): _____
☐ LonTalk, (Clause 11), medium: _____
☐ Other: _____

Device Address Binding:

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) ☐Yes ■No

Networking Options:

☐ Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
☐ Annex H, BACnet Tunneling Router over IP
☐ BACnet/IP Broadcast Management Device (BBMD)
Does the BBMD support registrations by Foreign Devices? ☐ Yes ☐ No

Character Sets Supported:

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

■ ANSI X3.4	☐ IBM®/Microsoft® DBCS	☐ ISO 8859-1
☐ ISO 10646 (UCS-2)	☐ ISO 10646 (UCS-4)	☐ JIS C 6226

If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports:

_____
_____

The Properties of Objects

Property ID		Object Type	
		Device	**Analog Value**
#11	APDU_TIMEOUT	V	
#12	APPLICATION_SOFTWARE_VERSION	V	
#28	DESCRIPTION	V	V
#30	DEVICE ADDRESS BINDING	V	
#36	EVENT STATE		V
#44	FIRMWARE_REVISION	V	
#62	MAX_APDU_LENGTH_ACCEPTED	V	
#63	MAX_INFO_FRAMES	V	
#64	MAX_MASTER	V	
#70	MODEL_NAME	V	
#73	NUMBER_OF_APDU_RETRIES	V	
#75	OBJECT_IDENTIFIER	**V *1**	V
#76	OBJECT_LIST	V	
#77	OBJECT_NAME	**V *1**	V
#79	OBJECT_TYPE	V	V
#81	OUT OF SERVICE		V
#85	PRESENT VALUE		**V *2**
#87	PRIORITY ARRAY		V ***3**
#96	PROTOCOL_OBJECT_TYPES_SUPPORTED	V	
#97	PROTOCOL_SERVICES_SUPPORTED	V	
#98	PROTOCOL_VERSION	V	
#104	RELINQUISH DEFAULT		V ***3**
#107	SEGMENTATION_SUPPORTED	V	
#111	STATUS FLAGS		V
#112	SYSTEM_STATUS	V	
#117	UNITS		V
#120	VENDOR_IDENTIFIER	V	
#121	VENDOR_NAME	V	
#139	PROTOCOL_REVISION	V	
#155	DATABASE_REVISION	V	

***1. The Object_ID and Object_Name Properties of Device are writeable.**
***2. The Present_Value Property of some AV and BV objects are commandable.**
***3. Only Commandable objects support Priority_Array and Relinquish_Default.**

Commandable Analog Value Object

In DPM-C530A, we have AV_000~AV_010 supporting commandable Presnet_Value property. In these AV_Objects, we also can use (Multi)Read_Service to access Priority_Array and Relinquish_Default properties.

Object Number	R/W	Object Name	Object Description	Unit	Description
AV 000	RW	AV_000_Power_System	AV_000_Power_System	UNITS_NO_UNITS	0：3φ4W 1：3φ3W 2：1φ2W 3：1φ3W
AV 001	RW	AV_001_Primary_CT	AV_001_Primary_CT	UNITS_AMPERES	1 ~ 9999 A
AV 002	RW	AV_002_Secondary_CT	AV_002_Secondary_CT	UNITS_AMPERES	0：1A 1：5A 2：2.5A
AV 003	RW	AV_003_Primary_PT	AV_003_Primary_PT	UNITS_VOLTS	1 ~ 9999 V
AV 004	RW	AV_004_Secondary_PT	AV_004_Secondary_PT	UNITS_VOLTS	1 ~ 9999 V
AV 005	RW	AV_005_Number_of_Transformer	AV_005_Number_of_Transformer	UNITS_NO_UNITS	0：3CT3PT 1：3CT2PT 2：3CT0PT 3：2CT3PT 4：2CT2PT 5：2CT0PT 6：1CT3PT 7：1CT2PT 8：1CT0PT
AV 006	RW	AV_006_Demand_Mode	AV_006_Demand_Mode	UNITS_NO_UNITS	0：block
AV 007	RW	AV_007_Demand_Interval	AV_007_Demand_Interval	UNITS_MINUTE	1 ~ 60 min
AV 008	RW	AV_008_Phase Rotation	AV_008_Phase Rotation	UNITS_NO_UNITS	0：ABC 1：CBA
AV 009	RW	AV_009_UI_Language	AV_009_UI_Language	UNITS_NO_UNITS	0：English 1：Traditional Chinese 2：Simplify Chinese
AV 010	RW	AV_010_Reset_Parameter	AV_010_Reset_Parameter	UNITS_NO_UNITS	0x5768：kWh

Status (Readonly) Analog Value Object

In DPM-C530A, we have AV_011~AV_085 with readonly Presnet_Value property. In these AV_Objects, we do NOT have Priority_Array and Relinquish_Default properties.

Object Number	R/W	Object Name	Object Description	Unit	Description
AV 011	R	AV_011_Reserved	AV_011_Reserved	UNITS_NO_UNITS	
AV 012	R	AV_012_Reserved	AV_012_Reserved	UNITS_NO_UNITS	
AV 013	R	AV_013_Reserved	AV_013_Reserved	UNITS_NO_UNITS	
AV 014	R	AV_014_Reserved	AV_014_Reserved	UNITS_NO_UNITS	
AV 015	R	AV_015_Voltage_L-N_AN	AV_015_Voltage_L-N_AN	UNITS_VOLTS	0.000 ~ 99999.999 V
AV 016	R	AV_016_Voltage_L-N_BN	AV_016_Voltage_L-N_BN	UNITS_VOLTS	0.000 ~ 99999.999 V
AV 017	R	AV_017_Voltage_L-N_CN	AV_017_Voltage_L-N_CN	UNITS_VOLTS	0.000 ~ 99999.999 V
AV 018	R	AV_018_Voltage_L-N_AVG	AV_018_Voltage_L-N_AVG	UNITS_VOLTS	0.000 ~ 99999.999 V
AV 019	R	AV_019_Voltage_L-L_AB	AV_019_Voltage_L-L_AB	UNITS_VOLTS	0.000 ~ 99999.999 V
AV 020	R	AV_020_Voltage_L-L_BC	AV_020_Voltage_L-L_BC	UNITS_VOLTS	0.000 ~ 99999.999 V

AV 021	R	AV_021_Voltage_L-L_CA	AV_021_Voltage_L-L_CA	UNITS_VOLTS	0.000 ~ 99999.999 V
AV 022	R	AV_022_Voltage_L-L_AVG	AV_022_Voltage_L-L_AVG	UNITS_VOLTS	0.000 ~ 99999.999 V
AV 023	R	AV_023_Unbalance_Voltage_L-N_AN	AV_023_Unbalance_Voltage_L-N_AN	UNITS_PERCENT	0.00 ~ 99.99 %
AV 024	R	AV_024_Unbalance_Voltage_L-N_BN	AV_024_Unbalance_Voltage_L-N_BN	UNITS_PERCENT	0.00 ~ 99.99 %
AV 025	R	AV_025_Unbalance_Voltage_L-N_CN	AV_025_Unbalance_Voltage_L-N_CN	UNITS_PERCENT	0.00 ~ 99.99 %
AV 026	R	AV_026_Unbalance_Voltage_L-N_AVG	AV_026_Unbalance_Voltage_L-N_AVG	UNITS_PERCENT	0.00 ~ 99.99 %
AV 027	R	AV_027_Unbalance_Voltage_L-L_AB	AV_027_Unbalance_Voltage_L-L_AB	UNITS_PERCENT	0.00 ~ 99.99 %
AV 028	R	AV_028_Unbalance_Voltage_L-L_BC	AV_028_Unbalance_Voltage_L-L_BC	UNITS_PERCENT	0.00 ~ 99.99 %
AV 029	R	AV_029_Unbalance_Voltage_L-L_CA	AV_029_Unbalance_Voltage_L-L_CA	UNITS_PERCENT	0.00 ~ 99.99 %
AV 030	R	AV_030_Unbalance_Voltage_L-L_AVG	AV_030_Unbalance_Voltage_L-L_AVG	UNITS_PERCENT	0.00 ~ 99.99 %
AV 031	R	AV_031_Current_A	AV_031_Current_A	UNITS_AMPERES	0.000 ~ 99999.999 A
AV 032	R	AV_032_Current_B	AV_032_Current_B	UNITS_AMPERES	0.000 ~ 99999.999 A
AV 033	R	AV_033_Current_C	AV_033_Current_C	UNITS_AMPERES	0.000 ~ 99999.999 A
AV 034	R	AV_034_Current_AVG	AV_034_Current_AVG	UNITS_AMPERES	0.000 ~ 99999.999 A
AV 035	R	AV_035_Current_Neutral	AV_035_Current_Neutral	UNITS_AMPERES	0.000 ~ 99999.999 A
AV 036	R	AV_036_Unbalance_Current_A	AV_036_Unbalance_Current_A	UNITS_PERCENT	0.00 ~ 99.99 %
AV 037	R	AV_037_Unbalance_Current_B	AV_037_Unbalance_Current_B	UNITS_PERCENT	0.00 ~ 99.99 %
AV 038	R	AV_038_Unbalance_Current_C	AV_038_Unbalance_Current_C	UNITS_PERCENT	0.00 ~ 99.99 %
AV 039	R	AV_039_Unbalance_Current_AVG	AV_039_Unbalance_Current_AVG	UNITS_PERCENT	0.00 ~ 99.99 %
AV 040	R	AV_040_Power_Factor_Total	AV_040_Power_Factor_Total	UNITS_POWER_FACTOR	0.00000 ~ 1.00000 (the negative sign means lead, the positive sign means lag)
AV 041	R	AV_041_Power_Factor_A	AV_041_Power_Factor_A	UNITS_POWER_FACTOR	0.00000 ~ 1.00000 (the negative sign means lead, the positive sign means lag)
AV 042	R	AV_042_Power_Factor_B	AV_042_Power_Factor_B	UNITS_POWER_FACTOR	0.00000 ~ 1.00000 (the negative sign means lead, the positive sign means lag)
AV 043	R	AV_043_Power_Factor_C	AV_043_Power_Factor_C	UNITS_POWER_FACTOR	0.00000 ~ 1.00000 (the negative sign means lead, the positive sign means lag)
AV 044	R	AV_044_Displacement_Power_Factor_Total	AV_044_Displacement_Power_Factor_Total	UNITS_POWER_FACTOR	0.00000 ~ 1.00000 (the negative sign means lead, the positive sign means lag)
AV 045	R	AV_045_Displacement_Power_Factor_A	AV_045_Displacement_Power_Factor_A	UNITS_POWER_FACTOR	0.00000 ~ 1.00000 (the negative sign means lead, the positive sign means lag)
AV 046	R	AV_046_Displacement_Power_Factor_B	AV_046_Displacement_Power_Factor_B	UNITS_POWER_FACTOR	0.00000 ~ 1.00000 (the negative sign means lead, the positive sign means lag)
AV 047	R	AV_047_Displacement_Power_Factor_C	AV_047_Displacement_Power_Factor_C	UNITS_POWER_FACTOR	0.00000 ~ 1.00000 (the negative sign means lead, the positive sign means lag)
AV 048	R	AV_048_Frequency	AV_048_Frequency	UNITS_HERTZ	0.0000 ~ 99.9999 Hz
AV 049	R	AV_049_Active_Power_Total	AV_049_Active_Power_Total	UNITS_KILOWATTS	-99999.999 ~ 99999.999 kW
AV 050	R	AV_050_Active_Power_A	AV_050_Active_Power_A	UNITS_KILOWATTS	-99999.999 ~ 99999.999 kW
AV 051	R	AV_051_Active_Power_B	AV_051_Active_Power_B	UNITS_KILOWATTS	-99999.999 ~ 99999.999 kW
AV 052	R	AV_052_Active_Power_C	AV_052_Active_Power_C	UNITS_KILOWATTS	-99999.999 ~ 99999.999 kW
AV 053	R	AV_053_Reactive_Power_Total	AV_053_Reactive_Power_Total	UNITS_KILOVOLT_AMPERES_REACTIVE	-99999.999 ~ 99999.999 kVAR

AV 054	R	AV_054_Reactive_Power_A	AV_054_Reactive_Power_A	UNITS_KILOVOLT_AMPERES_REACTIVE	-99999.999 ~ 99999.999 kVAR
AV 055	R	AV_055_Reactive_Power_B	AV_055_Reactive_Power_B	UNITS_KILOVOLT_AMPERES_REACTIVE	-99999.999 ~ 99999.999 kVAR
AV 056	R	AV_056_Reactive_Power_C	AV_056_Reactive_Power_C	UNITS_KILOVOLT_AMPERES_REACTIVE	-99999.999 ~ 99999.999 kVAR
AV 057	R	AV_057_Apparent_Power_Total	AV_057_Apparent_Power_Total	UNITS_KILOVOLT_AMPERES	0.000 ~ 99999.999 kVA
AV 058	R	AV_058_Apparent_Power_A	AV_058_Apparent_Power_A	UNITS_KILOVOLT_AMPERES	0.000 ~ 99999.999 kVA
AV 059	R	AV_059_Apparent_Power_B	AV_059_Apparent_Power_B	UNITS_KILOVOLT_AMPERES	0.000 ~ 99999.999 kVA
AV 060	R	AV_060_Apparent_Power_C	AV_060_Apparent_Power_C	UNITS_KILOVOLT_AMPERES	0.000 ~ 99999.999 kVA
AV 061	R	AV_061_Active_Energy-delivered	AV_061_Active_Energy-delivered	UNITS_KILOWATT_HOURS	0.000 ~ 4294967.295 kWh
AV 062	R	AV_062_Active_Energy-received	AV_062_Active_Energy-received	UNITS_KILOWATT_HOURS	0.000 ~ 4294967.295 kWh
AV 063	R	AV_063_Reactive_Energy-delivered	AV_063_Reactive_Energy-delivered	UNITS_KILOWATT_HOURS*1	0.000 ~ 4294967.295 kVARh
AV 064	R	AV_064Reactive_Energy-received	AV_064Reactive_Energy-received	UNITS_KILOWATT_HOURS*1	0.000 ~ 4294967.295 kVARh
AV 065	R	AV_065_Apparent_Energy-delivered	AV_065_Apparent_Energy-delivered	UNITS_KILOWATT_HOURS*2	0.000 ~ 4294967.295 kVAh
AV 066	R	AV_066_Apparent_Energy-received	AV_066_Apparent_Energy-received	UNITS_KILOWATT_HOURS*2	0.000 ~ 4294967.295 kVAh
AV 067	R	AV_067_THD_Current_A	AV_067_THD_Current_A	UNITS_PERCENT	0.000 ~ 999.999 %
AV 068	R	AV_068_THD_Current_B	AV_068_THD_Current_B	UNITS_PERCENT	0.000 ~ 999.999 %
AV 069	R	AV_069_THD_Current_C	AV_069_THD_Current_C	UNITS_PERCENT	0.000 ~ 999.999 %
AV 070	R	AV_070_THD_Voltage_L-N_AN	AV_070_THD_Voltage_L-N_AN	UNITS_PERCENT	0.000 ~ 999.999 %
AV 071	R	AV_071_THD_Voltage_L-N_BN	AV_071_THD_Voltage_L-N_BN	UNITS_PERCENT	0.000 ~ 999.999 %
AV 072	R	AV_072_THD_Voltage_L-N_CN	AV_072_THD_Voltage_L-N_CN	UNITS_PERCENT	0.000 ~ 999.999 %
AV 073	R	AV_073_THD_Voltage_L-L_AB	AV_073_THD_Voltage_L-L_AB	UNITS_PERCENT	0.000 ~ 999.999 %
AV 074	R	AV_074_THD_Voltage_L-L_BC	AV_074_THD_Voltage_L-L_BC	UNITS_PERCENT	0.000 ~ 999.999 %
AV 075	R	AV_075_THD_Voltage_L-L_CA	AV_075_THD_Voltage_L-L_CA	UNITS_PERCENT	0.000 ~ 999.999 %
AV 076	R	AV_076_THD_Current	AV_076_THD_Current	UNITS_PERCENT	0.000 ~ 999.999 %
AV 077	R	AV_077_THD_Voltage	AV_077_THD_Voltage	UNITS_PERCENT	0.000 ~ 999.999 %
AV 078	R	AV_078_Present_Demand_Current	AV_078_Present_Demand_Current	UNITS_AMPERES	0.000 ~ 99999.999 A
AV 079	R	AV_079_Previous_Demand_Current	AV_079_Previous_Demand_Current	UNITS_AMPERES	0.000 ~ 99999.999 A
AV 080	R	AV_080_Present_Demand_Active_Power	AV_080_Present_Demand_Active_Power	UNITS_KILOWATTS	0.000 ~ 99999.999 kW
AV 081	R	AV_081_Previous_Demand_Active_Power	AV_081_Previous_Demand_Active_Power	UNITS_KILOWATTS	0.000 ~ 99999.999 kW
AV 082	R	AV_082_Present_Demand_Reactive_Power	AV_082_Present_Demand_Reactive_Power	UNITS_KILOVOLT_AMPERES_REACTIVE	0.000 ~ 99999.999 kVAR
AV 083	R	AV_083_Previous_Demand_Reactive_Power	AV_083_Previous_Demand_Reactive_Power	UNITS_KILOVOLT_AMPERES_REACTIVE	0.000 ~ 99999.999 kVAR
AV 084	R	AV_084_Present_Demand_Apparent_Power	AV_084_Present_Demand_Apparent_Power	UNITS_KILOVOLT_AMPERES	0.000 ~ 99999.999 kVA
AV 085	R	AV_085_Previous_Demand_Apparent_Power	AV_085_Previous_Demand_Apparent_Power	UNITS_KILOVOLT_AMPERES	0.000 ~ 99999.999 kVA

***1. The UNITS property will report kWh, because there is no unit type of kVARh in the BACnet standard.**
***2. The UNITS property will report kWh, because there is no unit type of kVAh in the BACnet standard.**