P2847

Submitter Email: interj.kony@gmail.com
Type of Project: New IEEE Standard
PAR Request Date: 04-Sep-2019
PAR Approval Date: 07-Nov-2019
PAR Expiration Date: 31-Dec-2023
Status: PAR for a New IEEE Standard

1.1 Project Number: P2847
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Standard for DC Power Transmission and Communication to DC Loads

3.1 Working Group: DC Power Transmission and Communication to DC Loads Working Group (COM/PLC/DCPTCL)
Contact Information for Working Group Chair
Name: SangKwon Jeong
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None

3.2 Sponsoring Society and Committee: IEEE Communications Society/Power Line Communications (COM/PLC)
Contact Information for Sponsor Chair
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Contact Information for Standards Representative
None

4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 06/2021
4.3 Projected Completion Date for Submittal to RevCom
Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.: 02/2022

5.1 Approximate number of people expected to be actively involved in the development of this project: 20
5.2 Scope: This standard defines Physical Layer and Medium Access Control specifications for power supply and communication (at 9,600 bps or lower) over power lines from a DC (Direct Current) Power Source (50V or less) to multiple DC loads (more than 10W and less than 2KW for each load and supply capacity more than 100W of one Power transmitter). Each receiver has its own physical address (4 bits or more) and is connected to the transmitter through a pair of power lines (1km or less) in a 1: n multi drop bus or tree topology. The transmitter transmits the DC Power and the electric signals corresponding to the communication packets including the control command/data for controlling the DC loads and the target address through the power line by electrically changing the voltage of the wires. Each receiver supplies power to the DC load with the transmitted and voltage-flattened DC power. Each receiver decodes the control command/data and address from electric signals on the power line and uses them for the connected DC load control if the addresses match. The standard considers compliance to Electro Magnetic Compatibility (EMC) regulations.

5.3 Is the completion of this standard dependent upon the completion of another standard: No
5.4 Purpose: The purpose of this standard is to define how to supply power and transmit a control command or data through power line to the DC loads such as LED Lightings, DC motor, DC actuator, battery control device, DC home electronic appliances from DC power source such as AC (Alternating Current) to DC power conversion device, battery, UPS (Uninterruptible Power Supply), ESS (Energy Storage System), or renewable DC power generation device such as a solar panel in an economical and reliable way.
The new DC PLC (Power Line Communications) Technology defined in the standard provides the following advantages:
* Enables an increased noise margin and S/N ratio, common mode noise rejection (to use the line DC voltage totally as signal range)
* Lowers the cost of communication solutions (by excluding the blocking filters essential to AC PLC and by adopting simple circuits)
* Lowers the maintenance cost of LED lightings or DC loads by eliminating electrolytic condensers installed on the ceiling for AC to DC conversion.
* Avoid efficiency problems due to the double conversions of DC->AC->DC in the power supply process from renewable Energy Generation
5.5 Need for the Project: The project will provide a new solution for combining communication and DC power supply over power lines. This standard can be utilized in the system control business and indoor electric power distribution business, which uses existing indoor wiring to transfer DC power to the loads from a centralized DC power source such as an AC to DC power conversion device, battery, ESS/UPS, or distributed power generation system such as a solar panel and which remotely control the DC loads such as LED Lighting, electric appliances, DC motors and DC actuators. The use of this standard is as follows.
* Energy control Communication for DC Loads.
* DC Power Supply and Control of the DC Electric Appliances and DC Electric Devices for user convenience.
* Smart Home, HEMS (Home Energy Management Systems), Smart Energy for Living.
* Terminal Loads Control in Smart Grid.
* Demand Response.
* DC Loads Control Communication in the High Voltage Direct Current Transmission and Distribution (HVDC) or DC Micro grid environment.
* Communication and Power Supply to Vehicle Electric Appliances (Electric Car).
* LED System Lightings.
* Battery information/Control Communication.
* Traffic lights, guidance light control
* Valves for Agriculture or Actuator Control in the Smart Farm.
* Actuator control for machine tools in the Smart Factory.
* DC Power Supply and DC Loads Control with the DC Wiring and Renewable Energy Generation (Solar Panel).
* Actuation Network Terminal Control for IoT Load/Actuator Network End Nodes.
* Terminal Power Load Control and Power Supply in the Energy Saving Solution for Smart City.


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Intellectual Property

6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No
6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No

7.1 Are there other standards or projects with a similar scope?: No
7.2 Joint Development
   Is it the intent to develop this document jointly with another organization?: No

8.1 Additional Explanatory Notes: