

# Solar Energy Cable Solutions

## SOLAR PV

### INTRODUCTION

Photovoltaic (PV) is the process by which solar energy from the sun is converted into electrical energy through solar panels. The term derives from the Ancient Greek word 'phos', meaning light, and 'volt', the unit of measurement for electrical voltage. In a photovoltaic system, clean electrical energy is generated in solar/PV cells. PV cells are made from semi-conductor materials such as silicon that are able to release electrons when exposed to solar radiation by using the photoelectric effect. The electrons from many cells are gathered together through conductors to make up the generation capacity of one module and many modules can be connected together to produce power in large quantities.

A photovoltaic plant is made up of several modules, which are connected together in what are known as solar panel strings. An inverter converts direct current generated by the solar generator into alternating current that can be fed into the utility grid. In off-grid systems for on-site consumption, some of the energy generated is temporarily stored in a storage battery.

Clean sources of renewable power has seen increased attention from governments across the globe and in South Africa alone, a total of 8.4 GW of power has been allocated to solar PV projects as part of the IRP of 2010 to 2030.

Solar PV plants which will connect into the national grid and contribute almost 40% of South Africa's new electrification capacity by 2030.

## SOLARDAC™ PV Cable (900/1 500 V DC)



### Introduction

Aberdare developed the SOLARDAC™ range of low voltage DC cables specifically for wiring of PV panels to comply with both local and international requirements in accordance with the Aberdare specification AB 1574-PV.

### Features of SOLARDAC™

Aberdare's SOLARDAC™ cable is intended for use in photovoltaic power supply systems and similar applications. This cable can be used in DC installations, both indoors and outdoors.



Single core, Class 5 tinned stranded copper wires bunched together to SANS 1411-1, polyolefin insulated and polyolefin sheathed LSOH FR construction.

## Application Information

Flexible cables for mobile and fixed solar PV installations. Moreover, these cables are suitable for interconnecting of photovoltaic panels and connecting of panels to AC/DC inverters. The product is halogen-free, low smoke and no flame propagation and is suitable for indoor and outdoor use.

## Properties

Specification	: Aberdare Specification AB 1574-PV, SANS 1507 and TÜV 2 Pfg 1169 (as far as applicable for the South African environment)
Temperature Range	: -15°C to 90°C (Maximum continuous conductor operating temperature)
Special features	: UV and ozone resistant : Oil, moisture and chemical resistant
Voltage Rating	: 1500 V DC (non-earthed system between two conductors). 600/1000 V AC
Core Identification	: Black
Packaging	: 100 m coils. (Other lengths available on request)

## Technical Data

Product Code	Cable Size	Colour	Conductor Diameter	Approx. Overall Diameter	Current Rating (*)	Conductor Resistance @ 20°C Maximum	1 $\oplus$ Volt Drop	Approx. Cable Mass
	(mm <sup>2</sup> )		(mm)	(mm)	(A)	( $\Omega$ /km)	(mV/A/m)	(kg/km)
GPEE1.5T01TCXX1GC1	1.5	Black	1,6	5,6	27	13,7	34,9	49,7
GPEE2.5T01TCXX1GC1	2.5	Black	2,0	6,0	36	8,21	20,9	62,4
GPEE4.0T01TCXX1GC1	4	Black	2,6	6,6	48	5,09	13	83,1
GPEE6.0T01TCXX1GC1	6	Black	3,1	7,1	61	3,39	8,6	104,7
GPEE10T01TCXX1GC1	10	Black	4,1	8,5	84	1,95	4,9	159,2
GPEE16T01TCXX1GC1	16	Black	5,1	9,5	111	1,24	3,1	227,6

- (\*) **Note:**
- Ratings based on IEC 60287 for a single cable
  - Assumed ambient air temperature is 30°C
  - Assumed maximum conductor temperature is 90°C

In cases where halogen free cable designs are not required, Aberdare Cables offers variations to the standard Solardac™ (LSOH FR) design in order to meet specific customer requirements. LH FR flexible cable designs with XLPE insulation and low halogen sheath material are recommended for such installations.

