Frequently Asked Questions (FAQ)
Customizable Trunk Solution (CTS) for solar farm applications

How can TE’s Customizable Trunk Solution (CTS) help to minimize and determine the voltage drop level?
The voltage drop requirement varies by project since the combination of factors like power output per panel, location, system configuration, etc. dictates the voltage drop level. The design of each CTS system addresses the voltage drop requirement on a case-by-case basis with our free consultative service which will provide a detailed report with all the calculations and balance of system (BOS) to make sure our CTS will not exceed the voltage drop requirement.

Can TE’s CTS be applied to any utility-scale solar farm?
Yes, our CTS is a standard model for each solar project, and the goal is the optimum design with a cost-effective technical solution while increasing the productivity, accessibility, and safety of your site. We ensure each solar project layout will utilize CTS’s product to its maximum capabilities and functionality.

What is the warranty of the TE’s CTS?
Our CTS has a five-year warranty.

Can TE offer Trunk Bus Engineering Services?
Yes, once you choose to use our system, we may be able to offer consultative services on a case-by-case basis. Our solar engineering team can provide voltage drop calculations for a project that is not yet optimized for our Customizable Trunk Solution.

We are seeing much higher string currents due to more powerful panel technology along with a movement toward bifacial panels – can TE CTS adapt to that?
Yes, both our GS-IPC and the fuse harness are ready and compatible with higher ampacity level as well as large string cross-section cables. We offer unparalleled flexibility to meet strings up to 60 amps.

How flexible is the Trunk Bus design in terms of configurability?
There is no premade Trunk Bus. With our CTS you have the flexibility to take the Trunk Bus all the way to the inverter. In addition, you have real-time configurability – the GS-IPC for positive and negative are placed exactly where they are needed. The field variance of tracker row spacing can be accommodated in real-time and there is no need for rework, unlike for a factory premade version.

How much current can a GS-IPC-500U handle?
Each GS-IPC-500 can handle up to 168 amps although most of the strings will have the maximum ampacity of 60 amps which coincides with the fuse protection level. The smaller GS-IPC-4 can handle up to 63 amps.
What is the leakage current of TE’s GS-IPC?

We have only been able to measure around 0.1 milliamperes, which is extremely low compared to UL 9703 requirements.

What is the voltage range of the GS-IPC-500U?

The connector was designed for continuous operating voltage of 2 kV DC. Internal testing has proven that GS-IPC can withstand up to 20 kV DC under emergency operating voltage, also exceeding the UL6703 requirements.

How long does it take to install a GS-IPC-500?

Each assembly has been designed to take less than 2 minutes. The required tool is a socket or impact wrench with a hexagonal ½ socket size. The connector has a shearbolt head that will shear off once the proper torque is achieved and the blades of the connector will simultaneously penetrate into the insulation of the cable, reaching the conductor strands without damaging them. The torque will vary from 8 to 10 foot-pounds according to the cable size. Once the connector is properly installed, the next step is to place and close the Powergel-filled cover. The Powergel sealant protects and seals the connection against humidity and water. These connectors have been successfully tested in accordance with UL 486A-486B, CSA C22.2 No. 65-03 and applicable UL6703 tests as listed by Underwriters Laboratories Inc., File No. E13288. We also provide onsite training free of charge for TE product installations.

Can I use my own PV wire for the Trunk Bus?

Yes, we will offer the best possible PV wire for Trunk Bus but you are free to source your own.

Does TE’s Trunk Disconnect Box provide load break, surge protection, and switched negative (common ground)?

Yes, TE’s Trunk Disconnect Boxes utilize a load break switch that was built from the ground up to be a 1500 V switch. Competing solutions will often utilize vendors with a disconnect switch that is built from a 1000 V chassis and it has been upgraded to handle 1000 V. This can result in very high heat within the disconnect box. This disconnect switch is especially important now that our customers are coming to us with much higher string currents. Our Trunk Disconnect Boxes utilize a larger load break switch. We provide a 30” x 24” x 10” enclosure providing better head dissipation and we can accommodate larger bend radiiuses for 500 kcmil – 1250 kcmil cable. This larger enclosure size also allows for 2-holes TE’s Aluminum Shearbolt Terminals (ASBT). These are UL rated from 2 AWG to 1000 kcmil conductors. You need a common impact wrench to install these instead of a crimping tool, decreasing the installation time. In addition, you can quickly carve out a slot in our high-grade Aluminum alloy for each of the shearbolts if the terminal would need to be removed.
How does the installation of TE’s Trunk Disconnect Boxes compare to an older combiner system?

Compared to the older systems, our Trunk Disconnect Box only has 5 connections: 2 trunk bus inputs, 2 output from the disconnect to the inverter and ground. It has been designed to take less than approximately 45 minutes to install.

Can TE’s CTS help me with a fixed tilt design?

Yes, our CTS is getting great traction in this space, also. Our system is especially valuable when you have several rows that will make up 24 strings to feed our 400 A Trunk Bus Disconnect or our Fused Trunk Bus Disconnect.

For example: If you have 2 rows with 12 strings each, they will need to feed into our Fused Trunk Bus Disconnect with each row having its own 200 A fuse. Now, you only need a 350 kcmil Trunk Bus pair going between rows vs 24 string wires. This is much easier to manage and requires less civil work between rows. Another major advantage of our CTS is that this will result in improved Voltage Drop number. Our system is better for parcels of land where you might have 6, 4 string tracker rows that would feed into a Fused Trunk Bus Disconnect. Now you can snake a positive and negative Trunk Bus wire pair along the edge of each of these tracker rows and feed into it with the over-molded assemblies that connect to the common Trunk Bus positive and negative Trunk Bus wires. It meets Voltage Drop requirements while reducing the civil work needed.

Can TE’s CTS work with narrow block designs that are sometimes 4 feet high?

Yes, and we will provide a solution that will minimize 750 kcmil wire in CAB. For example, high current groupings and long runs to the inverter = larger Trunk Bus wire. When these block designs are needed, we can mitigate these groupings to just 2 – 4 out of 18 groupings. We have a 500 kcmil to 750 kcmil (or larger) shearbolt assembly with a cold shrink wrap that will allow a quick assembly for a transition to a thicker wire.