

# BACK FEED MANAGEMENT FOR SOLAR POWER PLANT



FROM TEAM DRS

## PRODUCT BROCHURE

Most of the EPC companies face challenges in Synchronizing the Solar Power Plant with Diesel Generator Set. It is not that Solar Power Plant cannot automatically synchronize with DG power (if it is a DG set has a good quality governor and AVR).

When Power from Solar Power Plant flows to Diesel Generator, it can seriously harm the alternator/generator. It can also increase the electricity bill of the customer (where net metering is not available) or cause penalties where Grid export is not allowed or during certain specified TOD.

DRS has a solution where we have a proven, field-tested product SolCON, which prevents back injection of solar power to a diesel generator. This also works equally well on Grid (where net metering is not possible or is not needed). The product is working successfully in multiple locations across India with many of leading solar EPC using it.

The conditions for used for SolCON is created when the load drops to less than Power Produced by Solar Power Plant like weekends and holidays. This could even happen any time of the day with the load is less than power produced by a solar power plant, during lunch hours or shift changeover

- Monitors Power going into Alternator of DG. In the normal course of the event, current flows out of alternator DG. But in case Solar Power Produced is more than the load on DG-Solar Power combine, the current going back to alternator must be monitored and controlled.
- It calculates if the current is going back to the alternator, irrespective of the source of current.
- Cuts off solar power plant, either by cutting off the inverter (some inverters have the necessary hardware) or by cutting off solar power output.
- After a predetermined interval the Solar Power is switched on again

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## PRODUCT FEATURES

- Controls and/or prevents solar export from Solar Power Plants to DG.
- Suitable for all the reputed Solar Inverters Manufacturers like SMA, Schneider, ABB, Delta, Kaco, etc. DRS model SolCON-4 can be used for up to 4 Inverters by cascading the cutoff, in case of multiple plants or multiple inverters, thereby avoiding wastage of precious Solar Power. So, you are essentially ramping up / ramping down the solar power produced depending on load conditions.
- Monitors excess solar power going into DG.
- Alternatively, if opted for, switching non - essential fixed loads if excess solar power is available can also help in avoiding wastage of precious Solar Power.
- Only a minor change in the way solar power plant is commissioned.
- Data Logging is not available in this model. But same can be given as a separate package.
- The accuracy of better than +/- 5%.

## TECHNICAL FEATURES

1. **Sol.CON** - It helps to protect a DG against any back feed current, which could seriously damage the alternator or even the generator.
2. **Sol.CON** - It does DG Solar Protection. It also helps to run DG at minimum of 30% load, in line with recommended by the DG set manufacturer.
3. **Sol.CON OD** -It prevents export of solar power to DG / Grid, ensuring solar power is exclusively used within premises for captive use.
4. **Sol.CON** - It also, optionally, does a T.O.D. export prevention / enablement to Grid, if so required.

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## DESCRIPTION

- IP Protection Class - IP54 (IP65 in selected models)
- Environmental conditions - 0°C to 45 & 5% to 95% RH
- Installations Options - Wall mounting
- Control Voltage Range - 200-270V AC; 50/60Hz
- Measurement Accuracy -  $\leq 5\%$
- Minimum Inverter at one Sol.CON - 1 No
- Ramp up/ramp down - Isolated output only in SolCON 4
- Enclosure Material - Sheet Steel (Powder Coated) / Polycarbonate  
(Transparent / Opaque Cover)
- Mounting Location - Indoors
- Power Interface - Phases: Single / Three
- Current Range - up to 1000A using external CT's (CTs not included in the scope of supply).
- Maximum Inverters at one Sol.CON.4 - 4 no
- Power Consumption - Max 25W
- **Discuss any challenges you are facing for innovative solutions.**

## PRODUCT RANGE

**Sol.CON-M:** Back Feed Power Preventer for both DG and Grid,

**Sol.CON-DG:** Back Feed Power Preventer for DG only,

**Sol.CON.Grid:** Back feed Power Preventer for Grid Only

**Sol.CON-4:** Back Feed Power Preventer - Stepped cutting off up to 4 inverters one by one.

**Sol.CON-4.4:** Back Feed Power Preventer - Stepped adding of loads one by one to utilize Solar Power instead of cutting off the SPP.

**Both of the Above has an add-on feature:**

**Sol.CON-30** Cuts off Solar Power Plant production if DG is running less than 30% load.

**Sol.CON-TOD** Cuts off Solar Power Plant Export to Grid during the predefined time of day / predefined intervals.

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## Comparison

S. No	Model No	SolCON Mono	SolCON DG	SolCON Grid	SolCON 4	SolCON 30	SolCON TOD
01	Prevention of Export of Surplus Power to DG	Yes		No	Yes		
02	Prevention of Export of Surplus Power to Grid	* Yes	No	Yes			
03	Prevention of Export of Surplus Power to Grid and DG	Yes	No		Yes	No	Yes
04	DG run 30% or as per recommended by DG Manufacturer	No			Optional		Yes
05	Number of Inverters supported per device	1			4	1	4
06	Display	No					Yes
07	PC Connectivity	No					Optional
08	Accuracy	<= 5%					
09	Switching Non-essential loads if excess solar power is available.	No			Optional	No	Optional
10	Data Logging / Remote Monitoring / Local Monitoring	Optional					
11	Warranty	One Year from Date of Invoice					

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## WHY IS IT REQUIRED?

The usual reasons where the Self-Consumption application is required by utility or energy distributor

1. The Solar Power Plant Owner does not have a Power Purchase Agreement (PPA) or Net Excess Feed-In Tariff (FiT is also called Net Metering) from Energy Distributor
2. The Solar Power Plant Owner is not allowed to export excess PV energy to the grid because the Energy Retailer is not obliged by law to provide revenue to the Asset Owner for the unused PV energy.
3. Grid Voltage is too high due to saturated grid-tied solar systems in the area PV Inverter increases AC Output Voltage to export solar energy. Due to large solar penetration in the network and the fact most Grid-Connected PV Inverters are transformerless, it will cause the grid voltage to increase along the distribution line resulting in large voltage fluctuations.
4. High Penetration of Solar Energy which introduces Reverse Power flow that could disrupt Distribution Network Assets This could lead to increased short-circuit currents, fault level, affecting protection coordination and sensitivity, and the introduction of harmonics and transients.
5. Local site's existing LV/MV Transformer has reached its capacity When PV System is connected to Shared LV Circuit or Dedicated LV Circuit that utilized Shared Transformer with other Load, the capacity of Transformer may be reached and hence Export Limiting Control may be required to avoid upgrading Local Existing Transformer
6. Energy Distributor only allows a certain amount of Energy to be fed into its distribution system to ensure grid stability or allows a discrete (or full) amount of energy feed-in at certain times of day or week or month.
7. In absence of Grid Power, the supply is made by on-site, local backup power units like turbines and or diesel generators which do not allow reverse power flow.
8. One wants to contribute to the environment by utilizing Solar Power to the maximum

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## SOLUTION DOES NOT COVER THE FOLLOWING

- *Single phase self-consumption applications for grid connect PV Storage system with only DC coupling using MPPT Solar Charge Controller*
- *Three phase self-consumption applications for grid-connected PV Storage system*
- *Off Grid Standalone PV Storage system*
- *Backup Power application*
- *Energy and Load Management application*
- *Microgrid PV systems installed and act as providing a spinning reserve to Generator*

The following information is needed to select SeICON model: -

1. Number of Inverters needed to be sleeved
2. Make & model number of Inverters needed to be sleeved
3. Number of load Side outgoings needed to be monitored
4. Single line diagram of power distribution panel where solar power output is to be connected.

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