NexGear
*Intelligent Power Systems*

# Modular Power Distribution System (MPDS) for Generac® MPS

## CONNECTION AND POWER DISTRIBUTION FOR MPS GENERATORS

Generac® Modular Power Systems (MPS) provide scalable capacity using aggregated generators. Each generator has synchronizing and control ability as part of the generator package.

To optimize the generator aggregation and provide power distribution points, a Modular Power Distribution System (MPDS) consisting of low voltage switchgear may be applied for cost effective connection, protection, control and isolation capability.

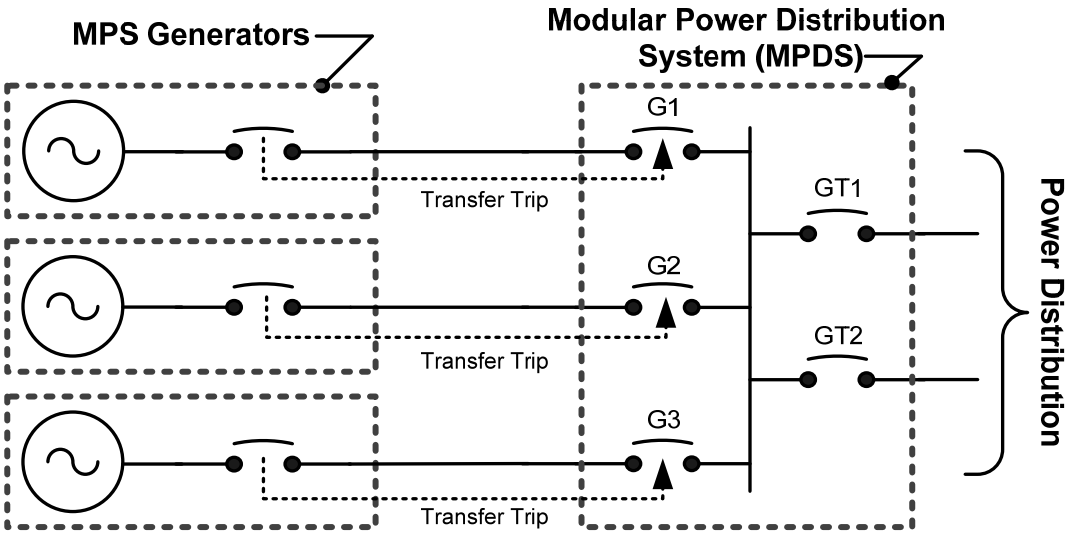


**Figure 1: MPDS for 3 MPS Generators, 2 GT CBs, Single Bus, Fixed CBs**

*The MPDS may be configured as follows:*

- Multiple MPS® generator connections
- Multiple power distribution connections
- Fixed, draw out or plug in CBs
- Coordinated protection using LSI, LSIG or LSIA trip units
- Utility-grade protective relays
- Closed transition control of internal/external CBs
- Single, M-T-M or M-T-M-T-M bus topologies
- Shunt trip (transfer trip) capability for the CBs with provision for wiring connection between the MPSs and the MPDS
- Transfer control for multi-bus and/or Utility connected systems
- Bus protection
- Other equipment (ex., meters) as required

300 Kitty Hawk Drive
Morrisville, NC 27560

**NexGear**
*Intelligent Power Systems*

Tel: 919-818-4009
www.nexgearfast.com

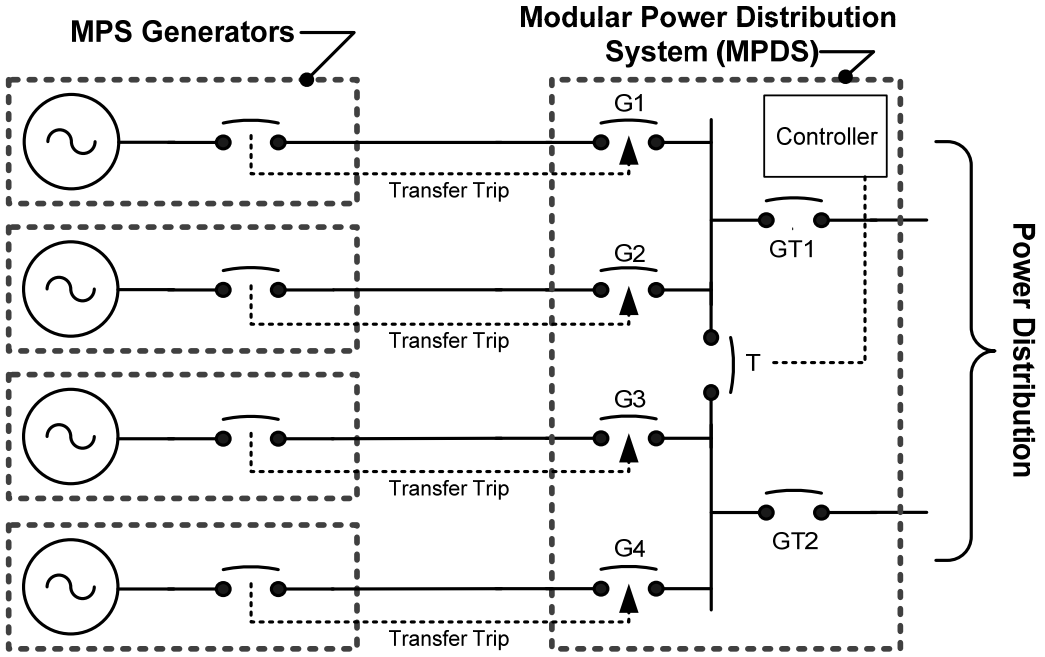


**Figure 2: MPDS for 4 MPS Generators,**
**2 GT CBs, 1 Bus Tie CB, M-T-M Bus, Fixed CBs**
**Closed Transition Control for T CB**

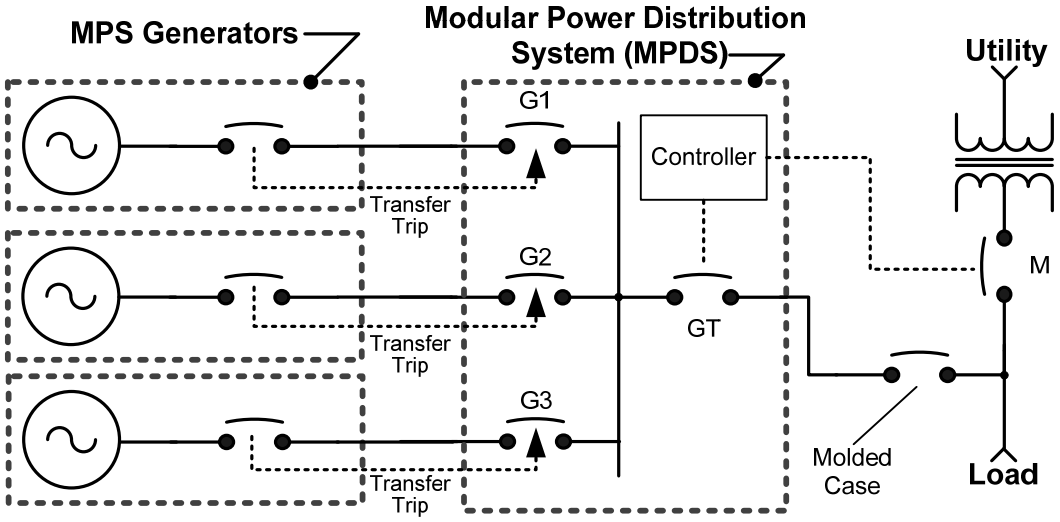


**Figure 3: Example 1-Line; MPDS for 3 MPS Generators,**
**1 GT CB, Single Bus, Fixed CBs**
**Closed Transition Control of GT and M CBs**

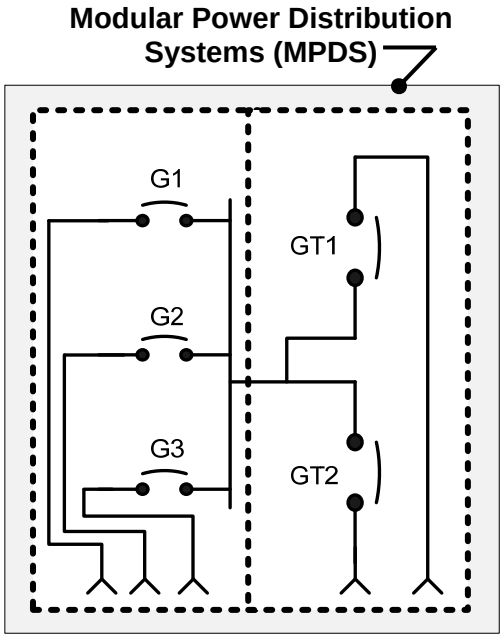


**Figure 4**
**MPDS for 3 MPS Generators,**
**2 GT CBs, Single Bus, Fixed CBs**
**MPS Generators not shown**

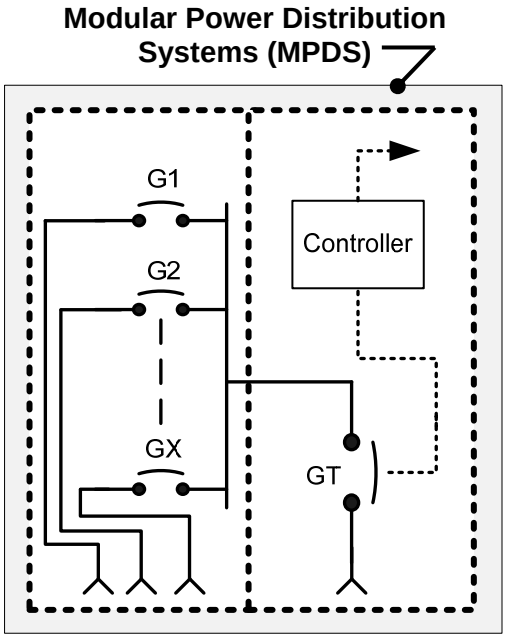


**Figure 5**
**MPDS for up to 6 MPS Generators,**
**1 GT CB with Closed Transition Control**
**(using external CB), Single Bus,**
**Fixed CBs,**
**MPS Generators not shown**

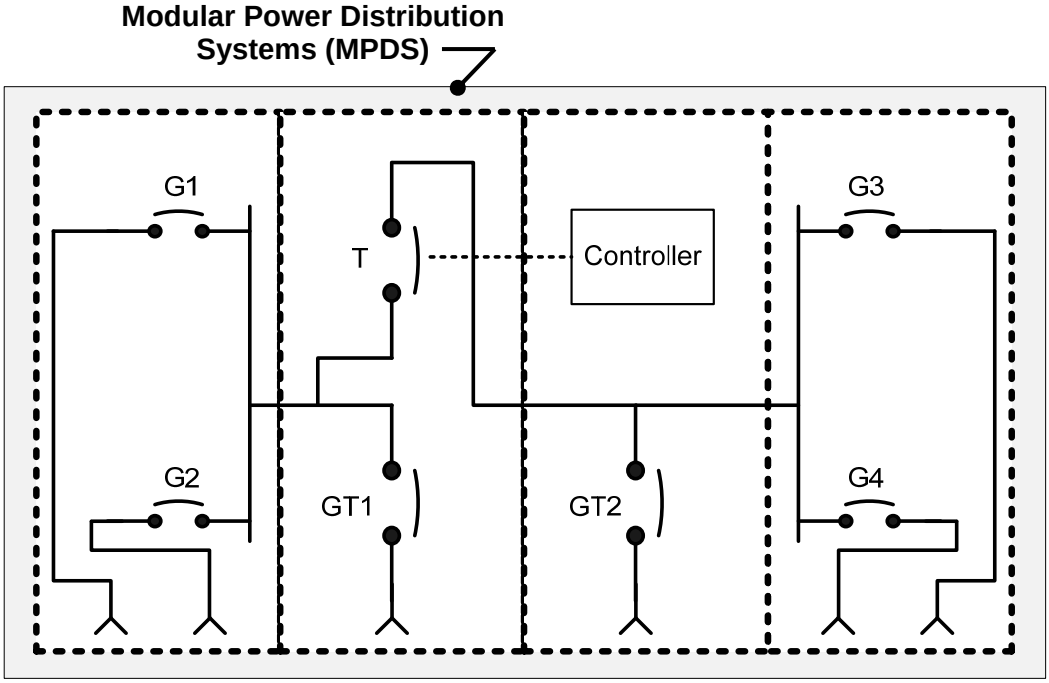


**Figure 6: MPDS for 4 MPS Generators,**
**Dual Bus, Fixed CBs, Closed Transition Control of T CB**
**MPS Generators not shown**

**MPDS Operation (General):**

1. Normally all CBs in the MPDS are closed, except for bus tie CBs or MPDS tie CBs interlocked with a Utility connection CBs (if used).
2. Each MPS Generator starts and syncs using its own control and CB (or switching device)
3. If any MPS Generator trips due to a fault, (not a normal shutdown), a transfer trip is issued to the generator's corresponding GX CB in the MPDS. This isolates the cable between the MPS Generator and the MPDS to clear a fault in case the fault was located in the cable or the MPS Generator CB.
4. MPDS CBs may employ trip units for selective coordination between the MPS Generators, the MPDS CBs and the connected power system's CBs.

**MPDS Operation (Tie CBs and Utility Connection):**

5. Where ties are made between buses within the MPDS, or between the MPDS and a Utility connection CB, if both sources are energized, a closed transition transfer is applied that ensures the CB closure is made synchronously and without momentary outage. See Figures 2 and 6.
6. Where a tie is made between the MPDS and an external Utility connection CB, transfer control is used to provide emergency power to the loads while the Utility is deenergized, and applies closed transition transfer when the Utility power returns. See Figures 3 and 5.
7. For peak shaving using parallel operation of the generators with the Utility, the Utility connection can be made to the MPDS with the generators offline, and then each generator will start and sync using its own control and CB. See Figures 3 and 5.