

APPLICATION NOTE #118

Multi-box iX Series Configurations -MB Option

Introduction

The iX Series of AC/DC power sources was designed as a modular system consisting of inherently independent 5 kVA power modules that can be combined into a number of configurations. This modularity allows a great deal of flexibility for the end user to reconfigure an AC/DC power system using existing building blocks. The same units can be used as a high power single phase system, a medium power three phase system or a number of smaller single phase systems deployed in different locations.

This capability is offered in the form of an “-MB option” (Multi-Box option) to the standard iX system. This option covers the additional test and calibration cost for these multi-box reconfigurable systems, as well as the additional cabling required to put together the various system combinations in the field. This application note explains the available configurations and provides the relevant ordering information.

Standard three phase iX configuration

The standard three phase iX series uses a single master unit with a three phase controller to drive two additional slave units. The master provides phase A output while the slaves are used to provide output for phase B and C. Neither slave unit has a controller since all three units are controlled from the master unit's controller using a system interface connection. This connection consists of a ribbon cable that connects all three units together. Figure 1 shows a standard 15003iX configuration. The 15003iX can be used in single or three phase mode with the addition of the Mode-iX option which provides for automatic phase mode and output connection switching. A 30 kVA system is available as model 30003iX and operates in three phase mode only.

While the master unit could be used in a single phase 5001iX mode by disabling the two slaves and setting the master controller to single phase, no other use can be made of the two slave units in this standard system configuration. To expand your configuration options, the -MB option will have to be ordered at the time of purchase.

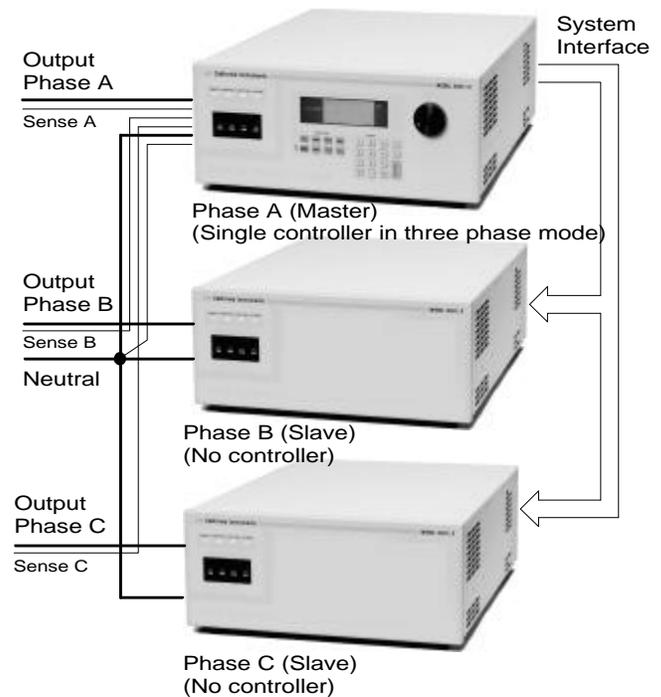


Figure 1 : Standard 15003iX system configuration

Option -MB three phase configuration

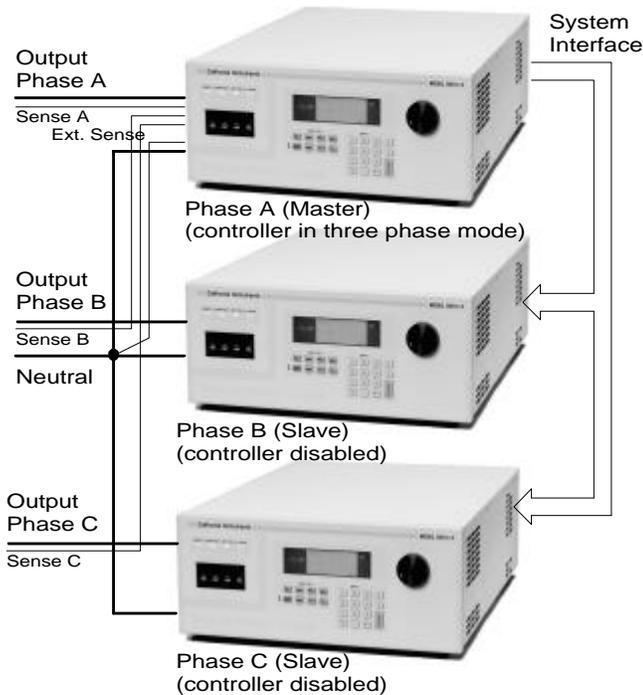


Figure 2 : Three phase mix and match configuration

In addition to the normal 15003iX or 30003iX configurations, it is possible to configure three or six single phase 5 kVA power units with additional controllers in the slave units. The controller in the master unit still drives the two slave units through a system interface connection. This allows all three phases to be controlled from a single front panel and operate in a phase locked mode. Remote control is possible through both IEEE-488 and RS232C.

The slave units in this three phase configuration still have their own single phase controller installed but the slave controllers must be disabled to operate in this mode. Jumpers are provided for this purpose. Figure 2 shows this alternative configuration.

Available power levels in this mode of operation are 15000 VA (5000 VA per phase) or 30000 VA (10,000 VA per phase). The additional cost for the single phase controllers in the slave units is offset by the enhanced flexibility of reconfiguring the units for different applications. For example, a 15003iX-MB configuration allows the following derivations:

- (1) 15 kVA 3 ϕ system
- (1) 15 kVA 1 ϕ system
- (1) 10 kVA 1 ϕ system and (1) 5 kVA, 1 ϕ system
- (3) 5 kVA, 1 ϕ systems

Option -MB single phase configuration

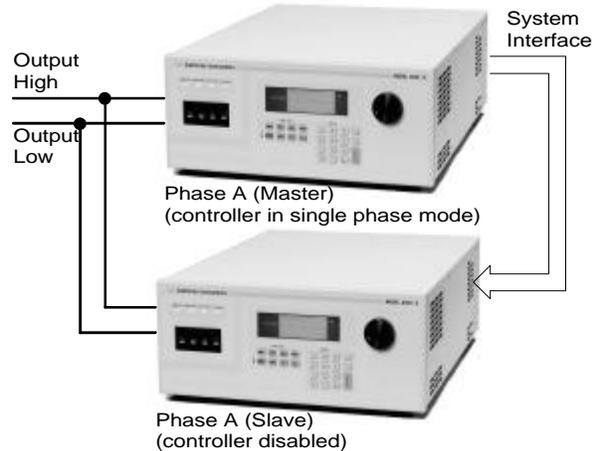


Figure 3 : Single phase, multi-box configuration

Three phase systems may be broken up into individual single phase AC/DC sources to be used in different test stands. The master unit's (Phase A) controller must be reconfigured from three phase mode to single phase mode. It is even possible to combine several single phase units into a higher power single phase system by paralleling the output of two or three 5000 VA units, thus creating a 10,000 VA or 15,000 VA single phase system. Single phase systems only require a single controller. If multiple units are used in parallel, the master unit's controller is used while slave controllers are disabled. As is the case with three phase configurations, a single front panel controller is used to control the system.

This configuration consists of a 15001iX-MB and allows the following derivations:

- (1) 15 kVA 1 ϕ system
- (1) 10 kVA 1 ϕ system and (1) 5 kVA, 1 ϕ system
- (3) 5 kVA, 1 ϕ systems

Conclusion

The multi box and controller architecture of the iX series provides the end-user with a wide array of configuration options that often eliminate the need to purchase different AC or DC power systems to meet a variety of applications.

For more information on configuration options or to discuss your application needs, contact California Instruments.

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