



## TECHNICAL BULLETIN

➤ *Recommend Earliest Possible Action* ◀

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**Reference #** 161

**Route to** Modernization Managers/Service Managers

**From** MCE Application Support Engineering Department

**Date** March 1, 2023

**Pages** 2

**Subject** **Dynamic Braking Resistors Monitoring and Cutoff Circuit**

**Equipment** All AC-Drive controllers with Dynamic Braking Resistors (DBR).

**Description** If an AC Drive's Braking transistor short-circuits, power from the AC line will flow continuously to the braking resistors and, over time, can cause heat and fire that will damage the resistors, surrounding components, controller, and equipment room. While there is no way to prevent the failure mode from happening, a monitoring circuit designed to detect a shorted transistor and a cutoff circuit to remove power can significantly limit the loss to just the drive.

**Action** If you have an MCE AC traction controller with DBR in your maintenance portfolio on your route, please capture (take a picture) of the product silver tag on both the controller and drive and email the info to [mcehelp@nidec-mce.com](mailto:mcehelp@nidec-mce.com), titled TB 161. Our application support team will review and recommend the best field retrofit kit for the job. Currently, three detection methods are available to cover all likely scenarios.

In addition to the listed methods, MCE will review all controller designs and recommend High-Speed Class J fuses. While these fuses are not sufficient in cutting off 100% of overheated DBR, they do serve an essential role in short-circuit protection. Please reference TB 147 for more details.

Method 1: KEB internal Brake Transistor Monitor  
Method 2: KEB external Brake Transistor Monitor  
Method 3: MCE Temperature Sensor Board

Scenario one: Starting around late 2021, KEB drives have an internal Brake Transistor Monitor circuit that detects a shorted braking transistor, and the controller uses it to activate a cutoff circuit. No further action is

required unless High-Speed Class J fuses are needed.

Scenario two: The KEB drive has an internal Brake Transistor Monitor circuit, but the controller is not equipped with the cutoff circuit. A cutoff circuit can be added, and we will use the internal monitoring circuit. High-Speed Class J fuses will be added if necessary.

Scenario three: The KEB drive does not have an internal Brake Transistor Monitor circuit. A KEB external Brake Transistor Monitor module can be used along with a cutoff circuit. High-Speed Class J fuses will be added if necessary.

Scenario four: The AC drive is not a KEB drive. MCE has developed a temperature sensor circuit that can be placed near the braking resistors. If a high temp situation occurs, the assumption is that the braking transistor is shorted, and this detection will activate the cutoff circuit. High-Speed Class J fuses will be added if necessary.

Scenario Five: You have a non-MCE controller. Email MCE with controller prints, and we can assess whether our detection and cutoff circuit may be applied. High-Speed Class J fuses will be added if necessary.

## **MCE Help**

As always, should you require any additional technical assistance on this or any other issues:

- **Email: [mcehelp@nidec-mce.com](mailto:mcehelp@nidec-mce.com)**
- **Refer to the reference number above**