

**Breaker integrated transformer (BIT)**  
Customized at the DTDT Flex Center

# Breaker integrated transformer (BIT)

Reduce cost, footprint  
and arc flash hazard



**EATON**

*Powering Business Worldwide*

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of Service

Today's power distribution components are expected to provide reliable performance and reduced footprint without breaking the budget. Eaton's breaker integrated transformer meets these needs by integrating a traditionally separate molded-case circuit breaker (primary, secondary or both simultaneously) and a low-voltage dry-type distribution transformer package—arriving factory assembled and fully tested to help you reduce the footprint and overall cost of your electrical distribution system.

## Features and benefits

### REDUCED PROJECT COSTS

- Replace the need for separate power distribution components with a fully enclosed molded-case circuit breaker (MCCB) integrated into Eaton's proven low-voltage dry-type distribution transformer technology
- Eliminate the need for extra panels, equipment, floor space and associated installation labor

### MINIMIZED FOOTPRINT

- Take advantage of space savings with an integrated design that can save up to 30 percent compared to traditional, separately installed solutions
- Reduce installation footprint with 2-inch transformer-to-wall clearance

### SIMPLIFIED INSTALLATION

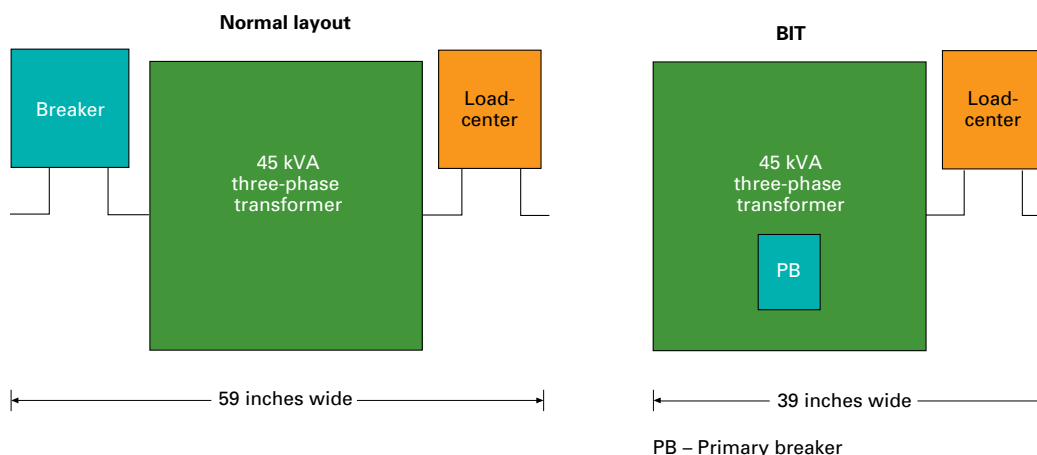
- Meet NEC® 410.10A with a factory-installed ground bar
- Large cable entry area and wiring space for ease of installation
- Easy conveyance with 4-inch bottom-to-floor clearance

### ENHANCED POWER SYSTEM FLEXIBILITY

- Easily configure to specific application needs with a wide range of primary and secondary breaker choices
- Use Eaton's transformer Flex Center to meet special customer needs, including enclosure-type, safety requirements, monitoring devices and more
- Reduce hazard of arc flash
- Arcflash Reduction Maintenance System™ compatible on 400 A and above applications

## Compare the space savings—39 instead of 59 inches

Have your architects, design engineers, and buyers insert the Eaton BIT catalog number in the specification to take advantage of the space and cost savings.



## Compare the installation time savings—18 percent less

The table below shows the time saved by incorporating an Eaton BIT vs. a three-component system that uses a separate breaker, transformer and loadcenter.

### Estimates in hours ①

Installation	45 kVA	
	Three-component system	Breaker integrated transformer
Breaker layout	4	0
Breaker and fuse mount	3	0
Transformer layout, remove knockout, etc.	24	24
Loadcenter layout, mount and connect source	6	6
<b>Total hours</b>	<b>37</b>	<b>30</b>
<b>Percent of time saved with Eaton's breaker integrated transformer</b>	<b>18% savings</b>	

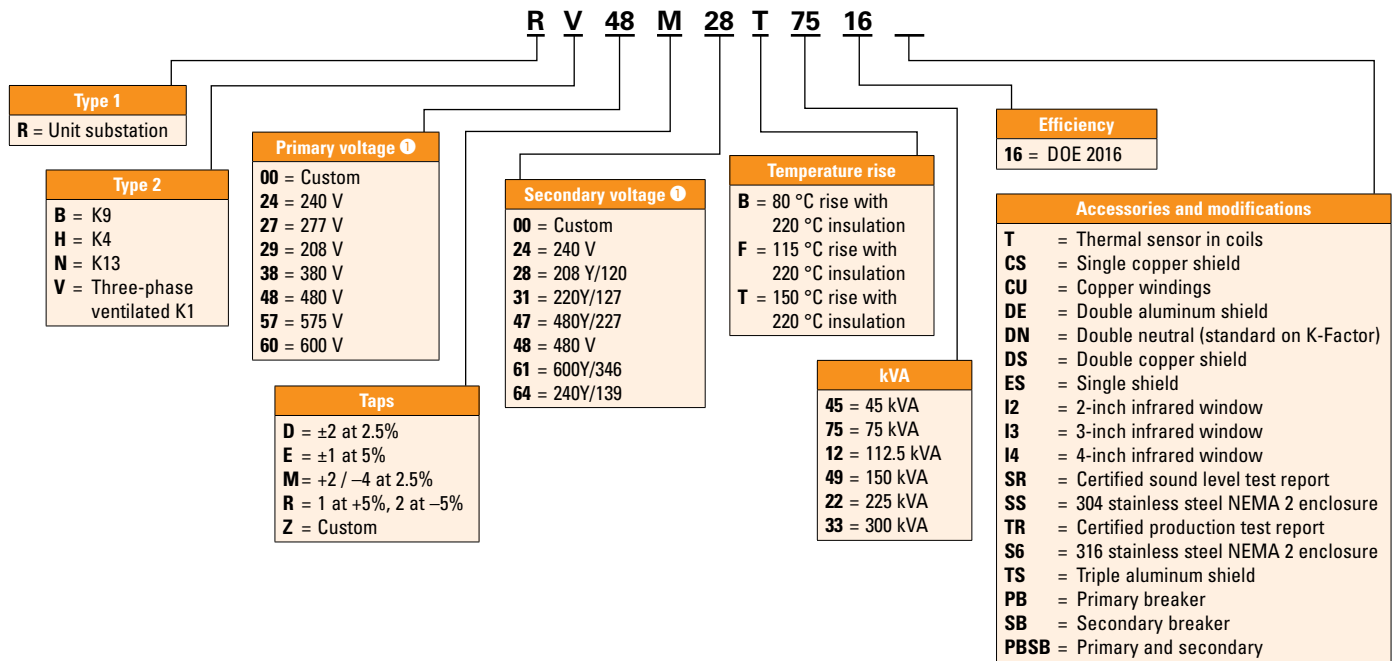
① Time estimates are typical and will vary by geographical area.

# Customized to meet your needs

To help meet unique breaker integrated transformer needs that cannot be met with standard offerings, Eaton's transformer Flex Center provides the ability to engineer or modify solutions to solve your most critical application challenges—with full access to our expert team of engineers. Options include, but are not limited to:

- Tailor-made configurations and dimensions
- Harmonic mitigation transformers
- K-Factor rated transformers
- Custom testing for compliance with industry and regional standards
- NEMA® Type 3R with the addition of weathershields
- Stainless steel enclosures (NEMA Type 1 or 3R) 304 or 316
- Infrared windows to ease diagnostics
- Easy access hinged-doors to simplify maintenance and testing
- Custom paint colors
- Custom designs to meet special requirements for efficiency, sound, impedance, altitude and temperature rise needs.

## Catalog numbering system

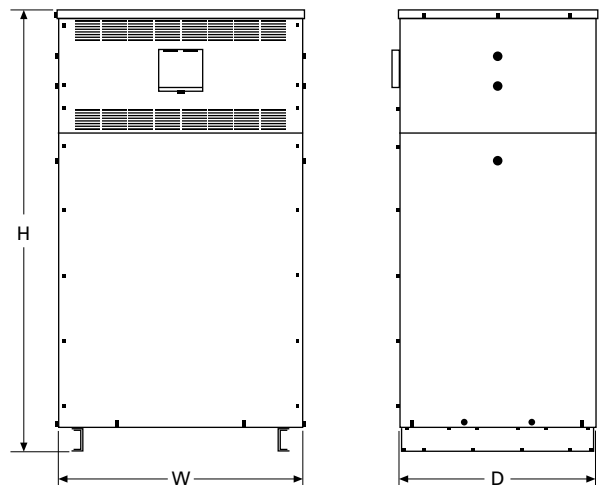


① The most common voltages are listed. Contact Eaton for additional voltage combinations.

## Technical specifications

### Dimensions in inches (mm)

Frame	kVA	Width (W)	Depth (D)	Height (H)
940SD	45	24.88 (632)	21.13 (537)	36.88 (937)
942SD	75	30.50 (775)	24.00 (610)	43.00 (1092)
943SD	112.5	34.50 (876)	31.50 (800)	51.00 (1295)
943SD	150	34.50 (876)	31.50 (800)	51.00 (1295)
944SD	225	38.00 (965)	33.50 (851)	60.00 (1524)
945SD	300	42.18 (1071)	33.50 (851)	66.18 (1681)



# Technical specifications

## Three-phase—Type DT-3 60 Hz DOE 2016 energy-efficient

kVA	Temperature rise °C	Frame	Wiring diagram	Weight lb (kg)	Circuit breaker		
					Primary	Secondary	Catalog number
<b>480 delta volts to 208Y/120 volts primary breaker—aluminum windings</b>							
45	150	FR940SD	280BPB	471 (214)	JGE3160FAGC	—	<b>RV48M28T4516PB</b>
75	150	FR942SD	280BPB	570 (259)	JGE3250FAGC	—	<b>RV48M28T7516PB</b>
112.5	150	FR943SD	280BPB	1045 (474)	LGE3400FAGC	—	<b>RV48M28T1216PB</b>
150	150	FR943SD	280BPB	1327 (602)	LGE3500FAGC	—	<b>RV48M28T4916PB</b>
225	150	FR944SD	280BPB	1773 (804)	NGS3080KSEC	—	<b>RV48M28T2216PB</b>
300	150	FR945SD	280BPB	2493 (1131)	NGS3120KSEC	—	<b>RV48M28T3316PB</b>
<b>480 delta volts to 208Y/120 volts secondary breaker—aluminum windings</b>							
45	150	FR940SD	280BSB	471 (214)	—	JGE3160FAGC	<b>RV48M28T4516SB</b>
75	150	FR942SD	280BSB	570 (259)	—	JGE3250FAGC	<b>RV48M28T7516SB</b>
112.5	150	FR943SD	280BSB	1045 (474)	—	LGE3400FAGC	<b>RV48M28T1216SB</b>
150	150	FR943SD	280BSB	1327 (602)	—	LGE3500FAGC	<b>RV48M28T4916SB</b>
225	150	FR944SD	280BSB	1773 (804)	—	NGS3080KSEC	<b>RV48M28T2216SB</b>
300	150	FR945SD	280BSB	2493 (1131)	—	NGS3120KSEC	<b>RV48M28T3316SB</b>
<b>480 delta volts to 208Y/120 volts primary breaker—copper windings</b>							
45	150	FR940SD	280BPB	521 (236)	JGE3160FAGC	—	<b>RV48M28T4516CUPB</b>
75	150	FR942SD	280BPB	676 (307)	JGE3250FAGC	—	<b>RV48M28T7516CUPB</b>
112.5	150	FR943SD	280BPB	1313 (596)	LGE3400FAGC	—	<b>RV48M28T1216CUPB</b>
150	150	FR943SD	280BPB	1466 (665)	LGE3500FAGC	—	<b>RV48M28T4916CUPB</b>
225	150	FR944SD	280BPB	2143 (972)	NGS3080KSEC	—	<b>RV48M28T2216CUPB</b>
300	150	FR945SD	280BPB	2828 (1283)	NGS3120KSEC	—	<b>RV48M28T3316CUPB</b>
<b>480 delta volts to 208Y/120 volts secondary breaker—copper windings</b>							
45	150	FR940SD	280BSB	521 (236)	—	JGE3160FAGC	<b>RV48M28T4516CUSB</b>
75	150	FR942SD	280BSB	676 (307)	—	JGE3250FAGC	<b>RV48M28T7516CUSB</b>
112.5	150	FR943SD	280BSB	1313 (596)	—	LGE3400FAGC	<b>RV48M28T1216CUSB</b>
150	150	FR943SD	280BSB	1466 (665)	—	LGE3500FAGC	<b>RV48M28T4916CUSB</b>
225	150	FR944SD	280BSB	2143 (972)	—	NGS3080KSEC	<b>RV48M28T2216CUSB</b>
300	150	FR945SD	280BSB	2828 (1283)	—	NGS3120KSEC	<b>RV48M28T3316CUSB</b>

**Note:** For custom configurations including primary and secondary breakers installed simultaneously, contact the DTD Flex Center at [Transflexsupp@eaton.com](mailto:Transflexsupp@eaton.com).

### Breaker information

Ampere rating	Nominal trip unit (amperes)	kAIC at 480 Vac	Standard lug capacities			
			Per phase		Terminal	
			Min. wire size	Max. wire size	Lug	Terminal material
JGE3160FAGC	160	25	(1) #8	(1) 350 kcmil	TA250FJ	Aluminum
JGE3250FAGC	250	25	(1) #8	(1) 350 kcmil	TA250FJ	Aluminum
LGE3400FAGC	400	35	(2) #2	(2) 500 kcmil	TA632L	Aluminum
LGE3500FAGC	500	35	(2) #2	(2) 500 kcmil	TA632L	Aluminum
NGS3080KSEC	800	50	(3) 3/0	(3) 400 kcmil	TA1000NB1	Aluminum
NGS3120KSEC	1200	50	(4) 4/0	(4) 500 kcmil	TA1200NB1	Aluminum



To learn more about Eaton's breaker integrated transformer, contact your Revere Electric Account Manager.

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# Breaker integrated transformer (BIT) FAQs

**Q: What are the features and benefits of the BIT?**

**A:** Eaton's BIT helps reduce project costs by replacing the need for separate power distribution components with a fully enclosed molded-case circuit breaker (MCCB) integrated into Eaton's proven dry-type distribution transformer technology.

The integrated design of the BIT can save up to 30 percent of wall space compared to traditional, separately installed solutions to help end-users maximize available physical footprint.

This innovative design also eliminates the need for extra panels, equipment, floor space and associated installation labor. Because it arrives as a complete set, site costs associated with tracking and handling material are also reduced, while the potential to lose parts is eliminated. Additionally, labor and shipping risk is minimized with 4 inches of ground clearance and a low center of gravity for easy conveyance.

For simplified code compliance, a factory-installed ground bar is integral to the BIT design to help meet NEC® 410.10A. To ease installation, a large wiring compartment provides easy access to configure the conduit.

**Q: How is Eaton's new BIT different from standard transformers and MCCB combinations found in the market today?**

**A:** The BIT combines a dry-type distribution transformer with a primary, secondary or both disconnect breakers into a single enclosure to reduce installation time and arc-flash hazard and optimize available space.

Shipped as a full solution—factory tested and integrated—the MCCB is factory installed and specifically selected for the application. The wiring between the components is made at the factory, saving labor at the site and eliminating conduit and fittings installation—resulting in fewer inventory transactions and simplifying the installation.

**Q: What ratings are available for the BIT?**

**A:** The BIT is available in a wide variety of configurations and ratings, including:

- 45 kVA to 300 kVA, three-phase
- 80 °C, 115 °C and 150 °C winding temperature rise
- K-Factor rated transformers
- Any voltage combination below 600 V
- Harmonic mitigating
- 60/50 Hz

**Q: What NEMA® ratings are available?**

**A:** The BIT is available in NEMA Type 1 and 3R. Both options are available in 304- and 316-grade stainless steel.

**Q: Is the BIT compliant with the new energy-efficiency regulations (DOE 2016)?**

**A:** The BIT meets the most stringent government regulations ever—35 percent improvement over TP-1, issued by the Department of Energy on January 1, 2016 (DOE 2016).

You'll see an "Energy Verified" UL mark on our transformers. Even though it's not mandatory, Eaton asked UL to verify their efficiencies. Our nameplate shows it; customers can rely on Eaton transformers to meet their energy-efficiency requirements.

**Q: Are additional options available for this new product?**

**A:** Through Eaton's Transformer Flex Center, the BIT is available with a wide range of options, including:

- 35/65/100 kAIC breakers
- Shunt trips
- Electronic trip units
- Auxiliary switch/bell alarms
- Metering modules
- Painted or stainless steel enclosures
- Custom colors
- Breakers on the primary or secondary side
- Infrared windows

The BIT is also available with features such as surge protection devices, customized ground bars, terminal blocks, double neutrals, IR windows and custom impedances, as well as sound reduction and monitoring.

**Q: Is the new BIT the same dimensions as the transformers I am used to purchasing?**

**A:** The BIT is designed to have the same footprint as a dry-type distribution transformer. It includes the 2-inch minimum clearance from enclosure to walls to reduce the overall footprint.

**Q: Can I customize the BIT for unique project and/or customer requirements?**

**A:** The BIT is available with a wide range of customizations to help enhance power system safety, flexibility and reliability. For example, the BIT can easily be configured to end-users' specific application needs with a wide range of primary and secondary breaker choices.

Additionally, Eaton's Arcflash Reduction Maintenance System™ is available to improve safety by providing a simple and reliable method to reduce fault-clearing time for applications 400 A and above.

Eaton's Transformer Flex Center is available to meet nearly any customization need, including enclosure types, safety requirements, monitoring and more.

**Q: Who can I contact if I am interested in special BIT customizations?**

**A:** Eaton's Transformer Flex Center is designed specifically to help meet unique general-purpose and distribution transformer needs that cannot be met with standard offerings.

With the ability to engineer or modify transformers to meet nearly any application requirement, Eaton's expert team is a valuable resource for solving the most critical application challenges.

We're continuously expanding our portfolio of solutions to better serve the industries we support. If you do not see a solution that meets your needs, please contact our staff to develop one that's right for you. Visit [Eaton.com/BIT](http://Eaton.com/BIT) for more information.

For more information, contact Eaton's transformer experts today. Call **915-401-8316** or email [TransFlexSupp@eaton.com](mailto:TransFlexSupp@eaton.com)



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