BONITRON

Solutions for AC Drives

Model M3452ON

Active Braking Indicator

Customer Reference Manual

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Bonitron, Inc.
Nashville, TN

An industry leader in providing solutions for AC drives.

ABOUT BONITRON

Bonitron designs and manufactures quality industrial electronics that improve the reliability of processes and variable frequency drives worldwide. With products in numerous industries, and an educated and experienced team of engineers, Bonitron has seen thousands of products engineered since 1962 and welcomes custom applications.

With engineering, production, and testing all in the same facility, Bonitron is able to ensure its products are of the utmost quality and ready to be applied to your application.

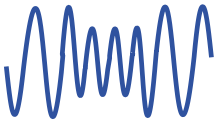
The Bonitron engineering team has the background and expertise necessary to design, develop, and manufacture the quality industrial electronic systems demanded in today's market. A strong academic background supported by continuing education is complemented by many years of hands-on field experience. A clear advantage Bonitron has over many competitors is combined on-site engineering labs and manufacturing facilities, which allows the engineering team to have immediate access to testing and manufacturing. This not only saves time during prototype development, but also is essential to providing only the highest quality products.

The sales and marketing teams work closely with engineering to provide up-to-date information and provide remarkable customer support to make sure you receive the best solution for your application. Thanks to this combination of quality products and superior customer support, Bonitron has products installed in critical applications worldwide.

AC Drive Options

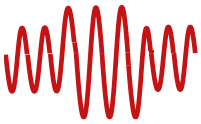
In 1975, Bonitron began working with AC inverter drive specialists at synthetic fiber plants to develop speed control systems that could be interfaced with their plant process computers. Ever since, Bonitron has developed AC drive options that solve application issues associated with modern AC variable frequency drives and aid in reducing drive faults. Below is a sampling of Bonitron's current product offering.

World Class Products



Undervoltage Solutions

Uninterruptible Power for Drives
(DC Bus Ride-Thru)
Voltage Regulators
Chargers and Dischargers
Energy Storage



Overvoltage Solutions

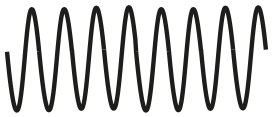
Braking Transistors
Braking Resistors
Transistor/Resistor Combo
Line Regeneration
Dynamic Braking for Servo Drives

Common Bus Solutions

Single Phase Power Supplies
3-Phase Power Supplies
Common Bus Diodes

Portable Maintenance Solutions

Capacitor Formers
Capacitor Testers



Power Quality Solutions

12 and 18 Pulse Kits

Green Solutions

Line Regeneration

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1. INTRODUCTION

1.1. WHO SHOULD USE

This manual is intended for use by anyone who is responsible for integrating, installing, maintaining, troubleshooting, or using this equipment with any DC energy storage system.

Please keep this manual for future reference.

1.2. PURPOSE AND SCOPE

This manual is a user's guide for the Model M3452ON Active Braking Indicator. It will provide the user with the necessary information to successfully install, integrate, and use the M3452ON.

In the event of any conflict between this document and any publication and/or documentation related to the system, the latter shall have precedence.

1.3. MANUAL VERSION AND CHANGE RECORD

Rev 00 is the original release of the M3452ON manual.

Updates to About Bonitron were made in Rev 00a.

The manual template was updated in Rev 00b.

Figure 1-1: Model M3452ON

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2. PRODUCT DESCRIPTION

The M3452ON Active Braking Indicator has been designed for use with the M3452 high current braking chopper series. It is intended to provide a contact that may be used to indicate braking activity. The M3452ON module is intended to connect to the Master/Slave control signal of the standard braking modules and provide a Form C MOSFET output isolated from the input. The Form C output may follow the input signal directly or provide a signal with a selectable minimum pulse width.

2.1. RELATED PRODUCTS

This product is designed for use with any M3452 braking chopper with Master/Slave control signal connections. Contact your distributor for more information.

2.2. PART NUMBER BREAKDOWN

BASE MODEL NUMBER

The Base Model Number, M3452, indicates that the unit is related to braking modules. 'ON' specifies a buffer board and 'M1' specifies the version.

There are no special options at this time.

2.3. GENERAL SPECIFICATIONS

Table 2-1: General Specifications Chart

PARAMETER	SPECIFICATION
Power	24VDC ± 10%, 100 mA
Input Signal	Control Signal from M3452 Braking Chopper
Outputs	Active braking Form C Solid State Relay, 250V, 100mA, 35 Ω
Operation Temperature	0ºC to +40ºC
Storage Temperature	-20ºC to +65ºC
Humidity	Below 90% non-condensing
Atmosphere	Free of corrosive gas and dust

2.4. General Precautions and Safety Warnings

DANGER!

- **High voltages may be present!**
- **Failure to heed these warnings may result in serious bodily injury or death!**

CAUTION!

- **No user-serviceable parts are contained within this product.**
- **Inoperable units should be replaced or returned for evaluation and/or repair by qualified technicians**
- **Before attempting installation or removal of this product, be sure to review documentation of all connected devises for pertinent safety precautions.**
- **Installation and/or removal of this product should only be accomplished by a qualified electrician in accordance with National Electrical Code or equivalent regulations.**

ANY QUESTIONS AS TO APPLICATION, INSTALLATION OR SERVICE SAFETY SHOULD BE DIRECTED TO THE EQUIPMENT SUPPLIER.

3. INSTALLATION INSTRUCTIONS

WARNING! *Installation and/or removal of this product should only be performed by a qualified electrician in accordance with National Electrical Code or local codes and regulations.*

Proper installation of the Model M3452ON Active Braking Indicator is described below. Please direct all installation and start up inquiries regarding this product to your supplier or system integrator.

3.1. ENVIRONMENT

The installation site should be dry and clean without extreme temperatures.

3.2. UNPACKING

Upon receipt of this product, please verify that the product received matches the product that was ordered and that there is no obvious physical damage to the unit. If the wrong product was received or the product is damaged in any way, please contact the supplier from which the product was purchased.

3.3. MOUNTING

The unit is mounted with a standard DIN rail clip attached to the back of the enclosure. Refer to Figure 6-1 to determine the correct mounting dimensions for your unit.

3.4. WIRING AND CUSTOMER CONNECTIONS

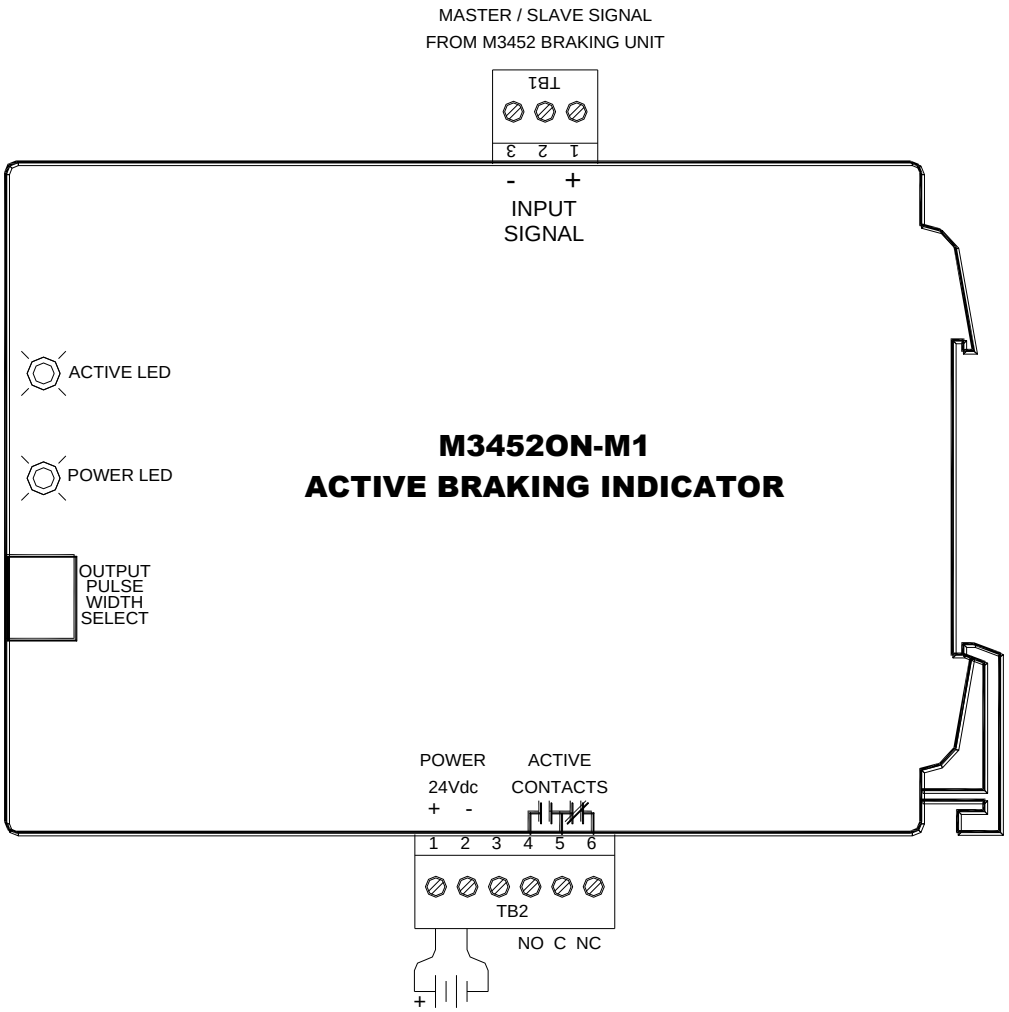
This section provides information about the field connection of the M3452ON Active Braking Indicator.

Be sure to review all system documentation as well as the power wiring information in Section 3.4.1 before proceeding.

For the maximum wire size accepted by the individual field connection terminals, refer to Table 3-1. Wire types and sizes should be chosen in accordance with national and local electrical codes to meet the voltage and current levels present for your application.

Figure 3-1 shows a typical interconnection of the M3452ON with a typical braking chopper and I/O signals.

Figure 3-1: Typical Interconnection Diagram



WARNING!

Only qualified electricians should perform and maintain the interconnection wiring of this product. All wiring should be done in accordance with National Electrical Code or equivalent regulations.

3.4.1. POWER WIRING

This unit requires an external 24Vdc power supply . The system must be supplied with at least 100 mA at 24VDC +/- 10% to guarantee correct operation.

3.4.2. I/O WIRING

The Input Signal connector should only be connected to the Master/Slave control signal of a M3452 Braking Transistor. The Output Contacts ratings are listed in the table below.

Table 3-1: Wiring Specifications

TERMINAL	FUNCTION	ELECTRICAL SPECIFICATIONS	MIN WIRE AWG	MAX WIRE AWG	TORQUE
TB1-1	Signal Input +	0-30VDC to TB1-3	28	16	.22-.25 Nm
TB1-2	No Connection				
TB1-3	Signal Input -	Common to TB1-1	28	16	.22-.25 Nm
TB2-1	Power Input +	+24VDC to TB2-2	28	16	.22-.25 Nm
TB2-2	Power Input -	24VDC common to TB2-1	28	16	.22-.25 Nm
TB2-3	No Connection				
TB2-4	NO Output Contact	250V AC/DC 120mA Max	28	16	.22-.25 Nm
TB2-5	Contact Common	250V AC/DC 120mA Max	28	16	.22-.25 Nm
TB2-6	NC Output Contact	250V AC/DC 120mA Max	28	16	.22-.25 Nm

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4. OPERATION

4.1. FUNCTIONAL DESCRIPTION

The M3452ON Module monitors the signal from the standard M3452 Braking Transistor module and provides isolated output contacts that follow the input. The output pulse width may be adjusted for longer on-state periods for use by other devices. The module uses a 10 position switch to select the output pulse width.

4.2. FEATURES

4.2.1. CONNECTORS

4.2.1.1. TB1 – 1&3 (INPUT SIGNAL)

The input signal connector accepts the control signal from an M3452 braking transistor. This signal is a 24Vpk pulse which may vary from a 200µS to 10mS. The signal from the M3452 unit may be common to the Negative DC Bus and wire should be rated for 600V. The input signal is optically isolated from all other connections on the M3452ON.

4.2.1.2. TB2 – 1&2 (POWER)

The power input accepts 24VDC to supply power to the voltage monitor board.

4.2.1.3. TB2 – 4, 5, &6 (FORM C OUTPUT CONTACT)

The output contact is composed of a Form C optomos relay. The optomos relay is much faster than a mechanical relay allowing lower input to output delays. This relay will accept AC and DC voltages up to 250V and a current of 120mA. For loads requiring more current, buffer relays may be needed.

4.2.2. OUTPUT SELECTION SWITCH

4.2.2.1. RANGE (POSITION 0 TO 8)

The Output Selection Switch allows the user to choose the output pulse time when an input signal is received. The output contact times may be found in the following table.

Table 4-1: Output Switch selections

SELECTION	OUTPUT
0	= INPUT
1	= INPUT + 100mS
2	= INPUT + 200mS
3	= INPUT + 300mS
4	= INPUT + 400mS
5	= INPUT + 500mS
6	= INPUT + 1 Sec
7	= INPUT + 2 Sec
8	= INPUT + 5 Sec
9	TEST MODE 1 Sec Off/On

4.2.3. TEST MODE (POSITION 9)

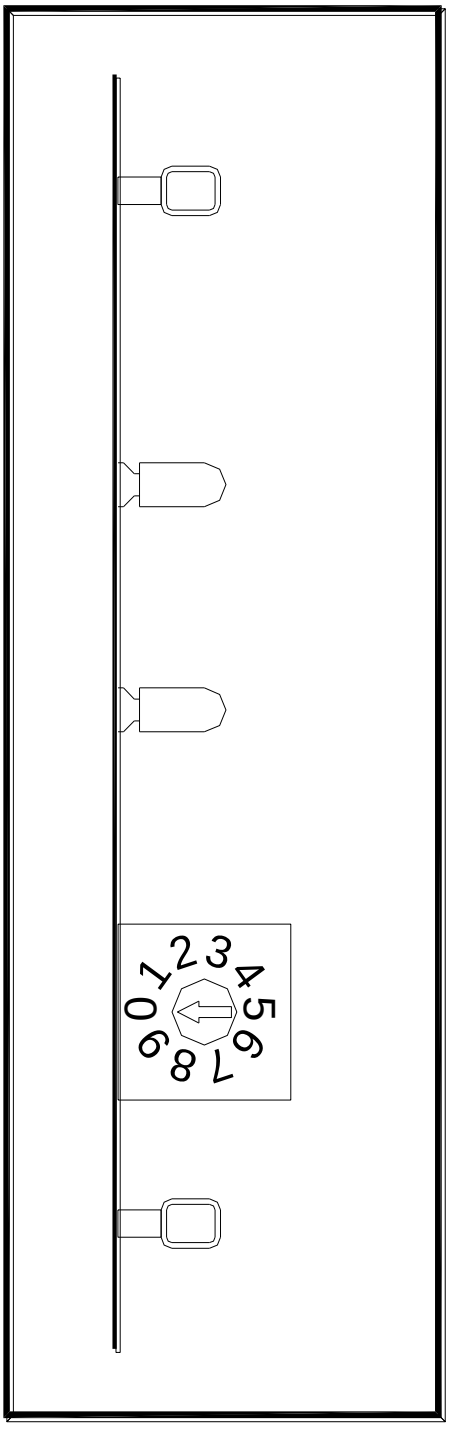
Test mode is used to insure the wiring for the output of the module is correct. In test mode, the output will cycle on and off at 1 second intervals regardless of the input.

To enter test mode:

1. Remove 24V power from the module.
2. Select Position “9” on the output selection switch.
3. Apply 24V power from the module.
4. Output will cycle.
5. When finished testing, select a different switch position and cycle power.

Note: Unit will stay in test mode until power is cycled.

Figure 4-1: Front View



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5. MAINTENANCE AND TROUBLESHOOTING

5.1. TROUBLESHOOTING

If a problem occurs on start-up or during normal operation, refer to the problems described below. If a problem persists after following the steps below, contact the product supplier or your system integrator for assistance.

Repairs or modifications to this equipment are to be performed by Bonitron approved personnel only. Any repair or modification to this equipment by personnel not approved by Bonitron will void any warranty remaining on this unit.

OUTPUT CONTACTS DO NOT CHANGE

Remove power and set selection switch to position "9". Apply power and the Power LED should be on as well as Signal LED pulsing in 1 second intervals. The output contacts should be following the Signal LED. The Output contacts should read approximately 30 ohms when closed. If the module functioned properly during the preceding step you may set the selection switch back to the desired mode. Verify the connection including polarity on the Input Signal and check for proper operation again. If the module does not operate correctly during this step, contact Bonitron.

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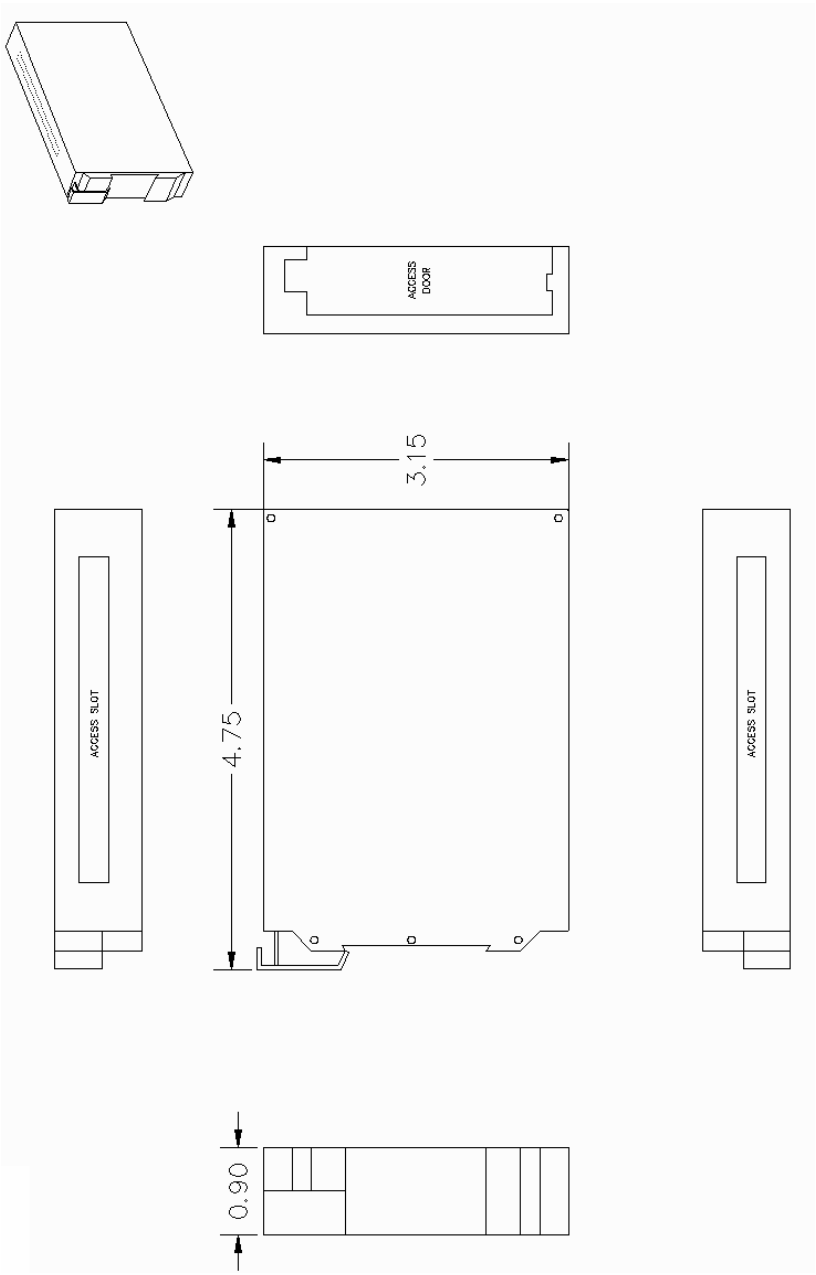
6. ENGINEERING DATA

6.1. DIMENSIONS AND MECHANICAL DRAWINGS

Figure 6-1: M3452ON Chassis Dimensional Outline Drawing



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