

Preface

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Updated the firmware section to specify connector type	9
Changed Command Input AC and DC voltage ratings from 70 to 75	10
Updated number of DIP switches from 16 to 12	18
Updated voltage values for when undervoltage protection is initiated	28
Updated Factory Default Settings table to reflect 12 DIP switches	32
Corrected Series C and D spare part number to 1503VC-BMC4	37

About This Publication

This document contains information for the Allen-Bradley Bulletin 1503VC IntelliVAC™ control module. The Bulletin 1503VC is used to control the Allen-Bradley Bulletin medium voltage 1502 vacuum contactors that are a significant component of the Bulletin 1500/1900 CENTERLINE® medium voltage motor controllers offered by Rockwell Automation. IntelliVAC control modules are an efficient and flexible solution for controlling medium voltage vacuum contactors used in motor starter and feeder applications.

An IntelliVAC control module may also be provided as a loose OEM component, for use with a Bulletin 1502 contactor by a third party (OEM).

This document applies to the Series F version of IntelliVAC.

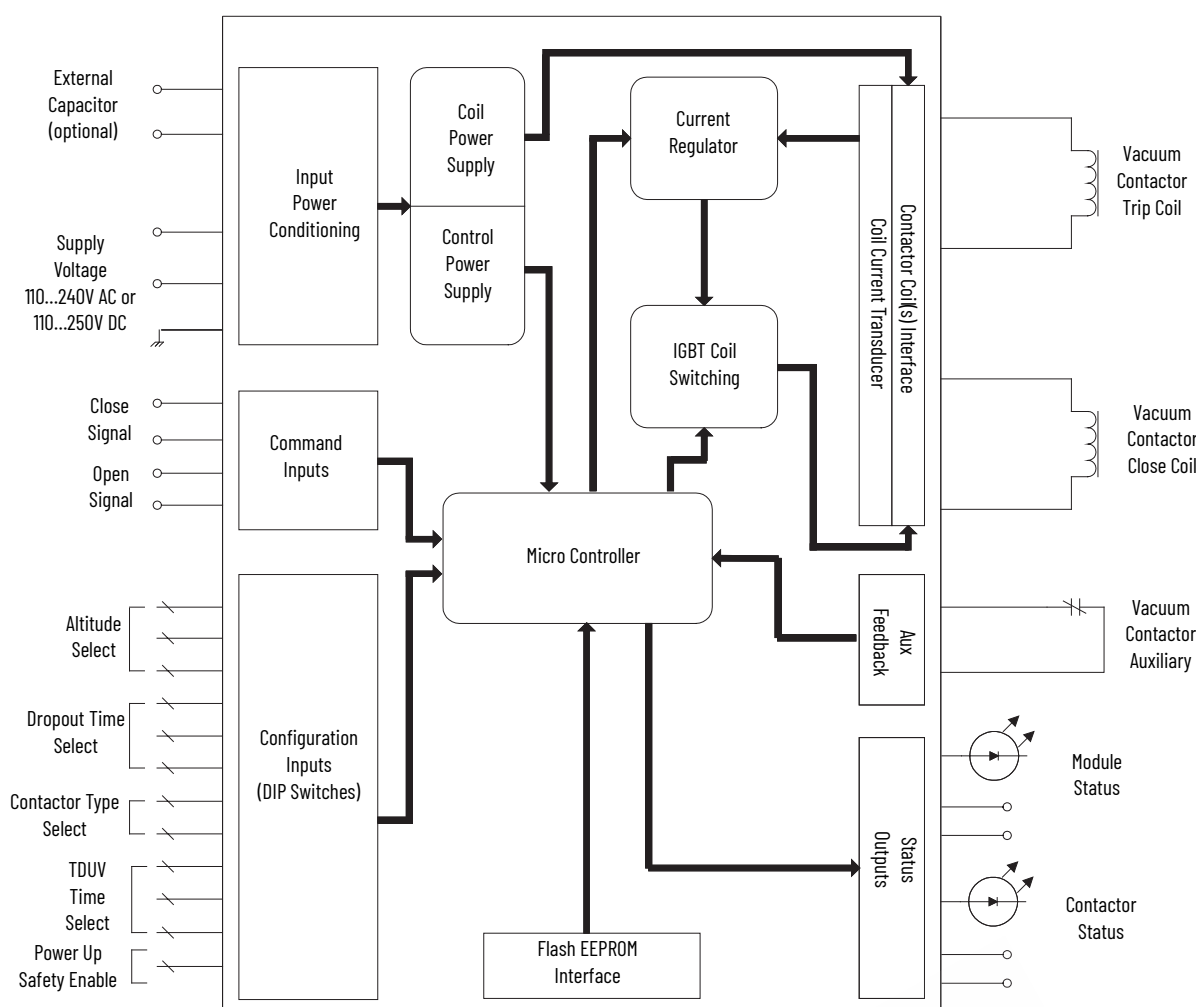
- See publication 1503-UM051 for information related to the Series A and B
- See publication 1503-UM052 for information related to Series C and D
- See publication 1503-UM053 for information related to Series E

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at rok.auto/literature.

Resource	Description
IntelliVAC Contactor Control Module (Series A/B), 1503-UM051	Provides information on installing, wiring, commissioning, and troubleshooting of the IntelliVAC Series A/B control module.
IntelliVAC Contactor Control Module (Series C/D), 1503-UM052	Provides information on installing, wiring, commissioning, and troubleshooting of the IntelliVAC Series C/D control module.
IntelliVAC Contactor Control Module, (Series E), 1503-UM053	Provides information on installing, wiring, commissioning, and troubleshooting of the IntelliVAC Series E control module.
EtherNet/IP Network Devices User Manual, ENET-UM006	Describes how to configure and use EtherNet/IP™ devices to communicate on the EtherNet/IP network.
Ethernet Reference Manual, ENET-RM002	Describes basic Ethernet concepts, infrastructure components, and infrastructure features.
System Security Design Guidelines Reference Manual, SECURE-RM001	Provides guidance on how to conduct security assessments, implement Rockwell Automation products in a secure system, harden the control system, manage user access, and dispose of equipment.
UL Standards Listing for Industrial Control Products, publication CMPNTS-SR002	Assists original equipment manufacturers (OEMs) with construction of panels, to help ensure that they conform to the requirements of Underwriters Laboratories.
American Standards, Configurations, and Ratings: Introduction to Motor Circuit Design, publication IC-AT001	Provides an overview of American motor circuit design based on methods that are outlined in the NEC.
Industrial Components Preventive Maintenance, Enclosures, and Contact Ratings Specifications, publication IC-TD002	Provides a quick reference tool for Allen-Bradley® industrial automation controls and assemblies.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation® industrial system.
ProposalWorks™ configuration software, rok.auto/systemtools	Helps configure complete, valid catalog numbers and build complete quotes based on detailed product information.
Rockwell Automation Global SCCR tool, rok.auto/sccr	Provides coordinated high-fault branch circuit solutions for motor starters, soft starters, and component drives.
Product Certifications website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.

Figure 2 - IntelliVAC Block Diagram



IntelliVAC Features

- A range of supply voltage (110...240V AC 50/60 Hz, 110...250V DC) allows implementation in multiple applications.
- Consistent vacuum contactor pick-up time (at a given supply voltage) ensures repeatable performance.
- Selectable vacuum contactor drop-out time improves coordination with upstream power fuses.
- Electronic altitude compensation (Bulletin 1502 450 A only) eliminates mechanical compensation required for altitudes above 1000 m (Bulletin 1502 800 A contactors include a user-friendly mechanical altitude adjustment).
- Power loss ride-through (TDUV) allows the vacuum contactor to remain closed during short power loss (may require an optional external capacitor, dependent on ride-through time).
- Anti-kiss and anti-pumping protection ensure that the vacuum contactor close – open sequence occurs as expected, avoiding rapid reclosure due to faulty control devices.
- Delayed restart protects the vacuum contactor by ensuring that the rated duty cycle is not exceeded.
- Temporary jog function (electrically held contactors only) allows the motor to be positioned for process set-up.

The firmware version supplied with the module is displayed on top of the DIP switches (see [Figure 17](#)).

Table 1 - Firmware Compatibility

IntelliVAC Series Letter	Firmware Version	Compatible with Earlier Versions?
A	2.XXX	No
B		
C		
D	3.XXX	
E	4.XXX	
F	5.XXX	

Table 2 - Electrical Ratings

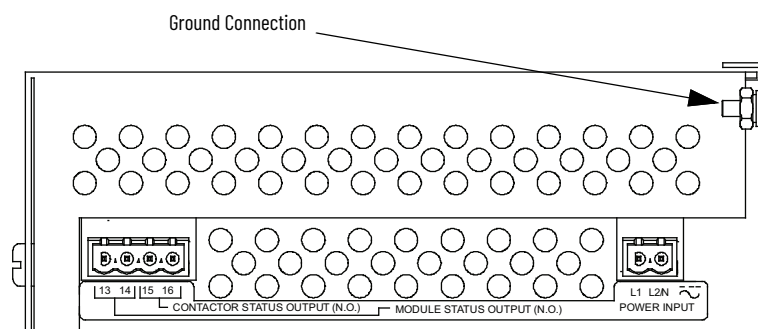
Main Input Voltage (L1 ... L2/N)	AC - 110...240V rms, +10/-15%, 47...63 Hz DC - 110...250V, +10/-15					
	Description	Contactors Ratings (A)	Control Voltage (AC or DC)	AC Rating	DC Rating	Minimum Voltage (V AC, 47...63 Hz)
Main Input Current (L1 ... L2/N)	Inrush current	450/800	120/240	25 A peak (1/2 cycle)	25 A peak	—
	Idle current (maximum without contactor coil energized)	450/800	120/240	125 mA	35 mA	—
	Hold current ⁽¹⁾ (maximum)	450/800	120/240	300 mA	100 mA	—
	Close current (0.2 s)	450	120	4.6 A	3.6 A	—
			240	3.4 A	3.3 A	—
		800	120	11.3 A	4.8 A	—
			240	8.9 A	4.5 A	—
	Trip current (latch) (0.2 s)	450	120	7.0 A	3.7 A	—
			240	3.6 A	2.0 A	—
		800	120	7.0 A	3.3 A	—
			240	4.3 A	1.9 A	—
Minimum IntelliVAC Operational Supply Voltages	Pick-up	450/800	—	—	—	95
	Drop-out	450/800	—	—	—	75
	Trip (mechanical latch)	450	—	—	—	70
Command Inputs ^{(2) (3)}	AC - 75...240V rms DC - 75...250V Maximum on state current for open or close command: 4 mA _{AC} @ 276V AC, 60 Hz, T _A = 60 °C 4.1 mA _{DC} @ 276V DC, T _A = 60 °C Minimum on state current for open or close command: 1.2 mA _{AC} @ 70V AC, 60 Hz, T _A = 60 °C 1.2 mA _{DC} @ 68V DC, T _A = 60 °C Maximum off state current for open or close command: 1 mA @ 50V AC, 60 Hz, T _A = 60 °C 850 µA @ 50V DC, T _A = 60 °C					
Status Output Contacts	AC - 250V rms, 5 A, R load; 2 A (reactive), PF = 0.4 DC - 30V, 5 A, R load; 2 A (reactive), L/R = 7 ms					
Standards and Approvals	CE, cULus, CSA, IEC pending					

(1) Includes idle current.

(2) T_A = Ambient Temperature

(3) Ensure compatibility of IntelliVAC input ratings with those of circuit components activating these inputs. Consider means of isolating/loading these signals, as required (using interposing relays or load resistors). Consult factory for assistance, if required. The Series C, D, E, and F IntelliVAC control modules are compatible with most PLC outputs, and have been verified with Rockwell Automation OA type 120V triac outputs. See [Wiring Guidelines](#) for more information.

Figure 7 - Bottom Side Connections



Interface Connections

All other control interface connections are made at a twelve-pole connector located on the top of the module. See [Figure 8 on page 20](#) and [Table 6 on page 20](#) for connections, and [Table 5](#) for electrical ratings.

See [Wiring Guidelines on page 21](#) for guidance in making connections to the control circuit.

Figure 8 - Top Side Connections

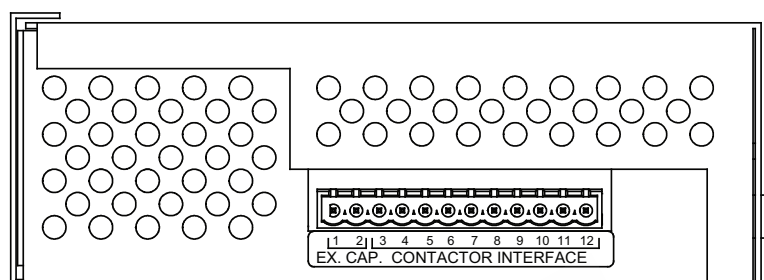


Table 6 - Terminal Assignments for IntelliVAC Interface Connections

Terminal Number	Terminal Designation	Description
1	External capacitor (negative) ⁽¹⁾	Power connection for TDUV or capacitor trip options only
2	External capacitor (positive) ⁽¹⁾	
3	Latch trip coil (common) ⁽¹⁾	Output for mechanical latch contactor trip coil
4	Latch trip coil ⁽¹⁾	
5	Close coil (common)	Output to close coil of electrically held & mechanical latch contactors
6	Close coil	
7	Open / Jog command ^{(1) (2) (3)}	Input to open a mechanical latch contactor or jog an electrically held contactor (mutually exclusive)
8	Open / Jog command (common) ^{(1) (2) (3)}	
9	Close command ⁽²⁾	Input to initiate the closure of electrically held and mechanical latch contactors
10	Close command (common) ⁽²⁾	
11	Contactor auxiliary contact ⁽²⁾	Input to indicate the state of the contactor (typically wired to a normally closed auxiliary contact)
12	Contactor auxiliary contact ⁽²⁾	

(1) No connection required if option is not used.

(2) Ensure compatibility of IntelliVAC input ratings with those of circuit components activating these inputs. Consider means of isolating/loading these signals, as required (using interposing relays or load resistors). Consult factory for assistance, if required. The Series F IntelliVAC control module is compatible with most PLC outputs, and have been verified with Rockwell Automation OA type 120V triac outputs. See [Wiring Guidelines on page 21](#).

(3) For electrically held contactor, this command will energize the close coil output (CCO). For mechanically held contactor, this command will energize the trip coil output (TCO).

Chapter 6

Spare Parts

Spare Parts List

IntelliVAC™ (electrically held) Series A ⁽¹⁾	1503VC-BMC1 - Order 1503VC-BMC5
IntelliVAC (mechanical latch) Series A ⁽¹⁾	1503VC-BMC2 - Order 1503VC-BMC5
IntelliVAC (electrically held and mechanical latch) Series B ⁽¹⁾	1503VC-BMC3 - Order 1503VC-BMC5
IntelliVAC (electrically held and mechanical latch) Series C and D ⁽¹⁾	1503VC-BMC4 - Order 1503VC-BMC5
IntelliVAC (electrically held and mechanical latch) Series E and F ⁽¹⁾	1503VC-BMC5
Internal Fuse: 6.3 A, 250V (Littlefuse 21506.3)	80174-902-14-R
Multi-pole connectors:	
2 pole (module power)	80174-014-01-R
4 pole (status outputs)	80174-014-03-R
12 pole (coil and I/O connections)	80174-014-11-R

(1) The series letter is printed on the large label on the right-hand side of the enclosure, beside the part number.

Optional Equipment

TUV Capacitor⁽¹⁾	
110/120V AC control (1650 µF)	80158-779-51-R
220/240V AC control (330 µF)	80158-779-52-R

(1) Includes mounting bracket and terminal guards.