DAIKIN

OPERATION MANUAL

OM 1406

JUNE 2025

MICROTECH® UNIT CONTROLLER

FOR REBEL APPLIED™ AIR-COOLED SPLIT CONDENSING SYSTEM

- MODEL DCSA
- R-32 REFRIGERANT

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Introduction

This manual provides information on the operation of MicroTech unit controller for air-cooled split condensing system (DCSA) units. It will assist the installer to understand which inputs and outputs are available to the field controller to control the unit.

The MicroTech unit controller for DCSA units is not capable of stand-alone operation of the unit. The DCSA unit requires inputs from an air handler unit to perform the desired sequence of operations.

The air handler unit will provide one or more analog inputs (user selectable 0 – 10 VDC or 4-20 mA) and one or more digital inputs to the MicroTech unit controller. Based on these analog and digital inputs, the MicroTech unit controller will respond to meet the requested cooling capacity from the DCSA condenser section.

The user can display and modify information in the MicroTech unit controller using the controller's keypad and display. Refrigerant pressures, subcooling, and superheat can be checked with the MicroTech unit controller. Refrigerant pressure gages are not required when performing start-up of DCSA systems. Schrader fittings are for evaluation and charging purposes only except if there is a problem that would require confirmation of transducer readings.

Table 1: Model DCSA Literature

Product Line	Installation	Operation
Rebel Applied DCSA	IM 1402	OM 1406

Hazard Identification

⚠ DANGER

Danger indicates a hazardous situation, which will result in death or serious injury if not avoided.

⚠ WARNING

Warning indicates a potentially hazardous situations, which can result in property damage, personal injury, or death if not avoided.

⚠ CAUTION

Caution indicates a potentially hazardous situations, which can result in minor injury or equipment damage if not avoided.

NOTICE

Notice indicates practices not related to physical injury.

NOTE: Indicates important details or clarifying statements.

Notices

A2L Refrigerant Leak Detection

NOTICE

This DCSA condenser unit does NOT include controls for refrigerant leak detection.

All controls and alarms relating to the detection of A2L refrigerant leaks must be conducted by the air handling unit(s) used in conjunction with this DCSA unit. If a leak is detected by the controls on the air handling unit(s), they must be configured to mitigate or disable operation of the DCSA unit.

Hazard Notices

NOTICE

Installation and maintenance are to be performed only by licensed, if required by local codes and regulations, or qualified personnel who are familiar with local codes and regulations and are experienced with this type of equipment.

⚠ DANGER

LOCKOUT/TAGOUT all power sources prior to service, pressurizing, de-pressuring, or powering down the unit. Failure to follow this warning exactly can result in serious injury or death. Disconnect electrical power before servicing the equipment. More than one disconnect may be required to denergize the unit. Be sure to read and understand the installation, operation, and service instructions within this manual.

⚠ WARNING

Electric shock hazard. Improper handling of this equipment can cause personal injury or equipment damage. This equipment must be properly grounded. Connections to and service of the MicroTech control panel must be performed only by personnel that are knowledgeable in the operation of the equipment being controlled.

⚠ WARNING

Polyolester Oil, commonly known as POE oil is a synthetic oil used in many refrigeration systems, and may be present in this Daikin Applied product. POE oil, if ever in contact with PVC/CPVC, will coat the inside wall of PVC/CPVC pipe causing environmental stress fractures. Although there is no PVC/CPVC piping in this product, please keep this in mind when selecting piping materials for your application, as system failure and property damage could result. Refer to the pipe manufacturer's recommendations to determine suitable applications of the pipe.

⚠ CAUTION

Static sensitive components. A static discharge while handling electronic circuit boards can cause damage to the components. Discharge any static electrical charge by touching the bare metal inside the control panel before performing any service work. Never unplug any cables, circuit board terminal blocks, or power plugs while power is applied to the panel.

Passwords

Various menu functions are made accessible based on the access level of the user. There are four access levels: Level 2, Level 4, Level 6, and no password. Level 2 has access to the most menu functions. Before entering a password, the user has access to basic status menu items.

The main password page is displayed when the keypad/display is first accessed, the Home Key is pressed, the Back Key is pressed multiple times, or if the keypad/display has been idle longer than the Password Timeout period (default 10 minutes). The main password page provides access to enter a password.

- A user can access the Quick Menu, access and acknowledge alarms in the alarm lists, and view information about the unit with no password.
- Entering the Level 6 password (5321) allows access to the Alarm Lists Menu, Quick Menu, View Status Menus group, System Mode, and compressor control mode.
- Entering the Level 4 password (2526) provides access to Level 6 items and the Commission Unit Menu, Local Control, Service Menu groups, and Unit Maintenance.
- Entering the Level 2 password (6363) provides access to Level 4 items and the Trending Set-Up and Advanced Menus.

Inspection and Operation

Unit Inspection

1. Visually inspect for damage inside and outside of the unit. Note any damage. Claims for freight damage must be filed by the consignee.
2. Confirm unit location meets ventilation and service clearance recommendations as stated in the installation manual for your unit type under “Unit Clearances”.
3. Confirm unit location condensate drain has been installed as stated in the installation manual for your unit type under “Unit Piping – Condensate Drain Connection”.
4. Confirm all field wiring is properly completed.

NOTICE

Remove power when making field connections. Damage to the MicroTech unit controller could occur if connections are made with the power applied.

Confirm Main Power Supply Connections, Phase Imbalance, and Clockwise Rotation

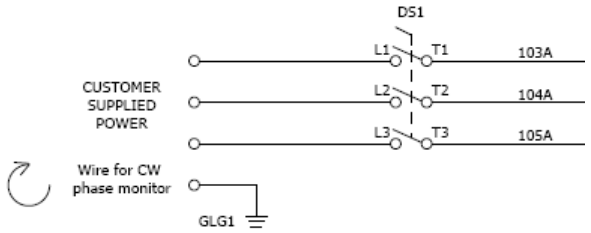
1. Confirm that the electrical power wiring lugs are tight. Check for proper voltage as per submittal and the wiring diagram included with the unit.

NOTICE

Incoming power phase imbalance must not exceed 2% of voltage.

Using a phase sequencing tester confirm power source (or sources if multiple) are all phased correctly for clockwise rotation.

Figure 1: Customer Supplied Power Schematic



Field Installed Sensors

Units equipped with refrigeration only controls ship with a limited number of sensors to protect the compressors by operating within their design performance envelope and to limit auxiliary heating temperature rise. The field installer must provide, install, and connect necessary sensors to control the conditioned air temperature and humidity.

Sequence of Operations from Field Provided Controller

The DCSA units are to be used in conjunction with air handler unit (AHU). Installers need to connect appropriate inputs and outputs between AHU(s) and DCSA unit(s) for proper use.

DCSA Input and Output Descriptions

The following sections provide descriptions of the various input and output contacts available on the air-cooled split condensing system (DCSA) with MicroTech unit control. Some contacts listed below will not be present on the unit as they depend on specific unit selection and configuration.

Verify all the following input and output connections are properly wired to the field controller based on the unit selection and field controller provided sequences.

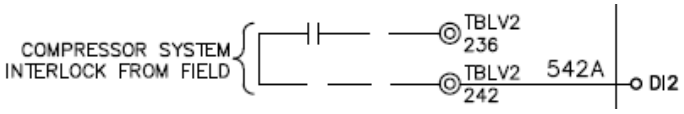
NOTICE

Remove power when making field connections. Damage to the MicroTech unit controller could occur if connections are made with the power applied.

Compressor System Protection Interlock Input

This input can be used to prevent compressor operation based on external system safeties (an airflow proving switch for example). When this input is Open, compressor operation is disabled.

Figure 2: Compressor System Protection Interlock Output Schematic



Compressor Cooling Capacity Input

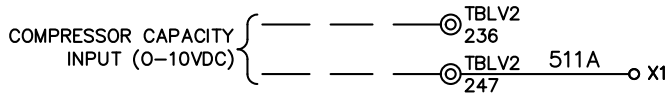
The field provided controller shall send control signal to the MicroTech unit controller which will control the fixed speed and inverter compressors if so equipped. The field controller must supply a 0-10 VDC signal to the appropriate input terminal depending on the specific unit type. The signal type can be changed to 4-20 mA in the MicroTech unit controller.

An input of 0 VDC (4 mA) requests the minimum cooling capacity and an input of 10 VDC (20 mA) requests the maximum cooling or heating output.

Cooling can only be initiated if both of the following conditions are met:

- Cooling enabled interlock is closed on Digital Input 2 (DI2). See Figure 2 on page 4.
- Compressor Capacity Command is above minimum value

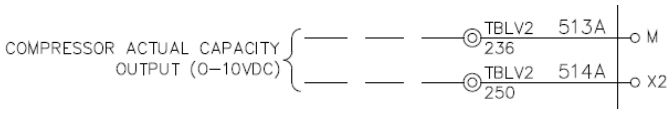
Figure 3: Compressor Capacity Input Schematic



Compressor Cooling Capacity Output

The current cooling capacity being produced of the unit is output as a 0-10 VDC signal on the X2 on terminals 236 & 250.

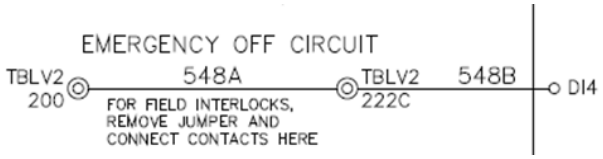
Figure 4: Compressor Actual Capacity Output Schematic



Emergency Shut Down Input

If compressor operation needs to be disabled (for example, from the output from the refrigerant detection system (RDS)), the field is responsible for wiring into the Emergency Off circuit on terminals 200 and 222C.

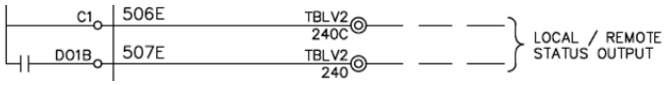
Figure 5: Emergency Shut Down Schematic



Local/Remote Status

A digital output will be provided to indicate the System Mode status. This output will be on when the System Mode parameter is set to Remote (can be set to local at the unit for servicing). Otherwise, this output will be off.

Figure 6: Local Remote Status Schematic



Alarm Status Output

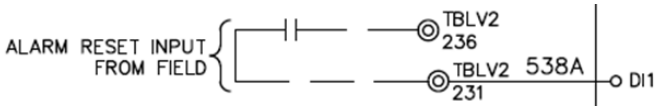
This output will be ON when there is one or more active alarms and OFF when there are no active alarms.

Figure 7: Alarm Status Output Schematic

Alarm Reset

When this input changes from OFF to the ON state, the current active alarms will be cleared. The input must then change from ON to OFF and then back on to initiate another reset command.

Figure 8: Alarm Reset Input Schematic



Oil Return Mode

The MicroTech unit controller includes an oil return mode of operation which automatically starts when a circuit has been operating at low capacity for an extended period. Oil return mode ensures adequate lubrication is always available to the compressors.

The oil return mode will be initiated when the cumulative time a circuit has been operating in the normal circuit state at low capacity exceeds a time limit indicating oil return is required (e.g. 120 minutes). The low-capacity threshold will depend on the unit size and the type of compressors that are operating on the circuit.

The unit controller tracks the accumulated number of minutes each circuit operates at low capacity. When the low capacity run time exceeds the time limit, the compressors will increase speed to the oil return speed specified for each unit size and compressor type. Fixed speed compressors will stage up to return oil to the compressors. The oil return sequence timer runs for 5 minutes if there is a variable speed compressor on the circuit. The time runs for 1 minute if all compressors on the circuit are fixed speed compressors.

NOTE: If the refrigeration system is commanded off while oil return mode is active (e. g. due to the space temperature being satisfied or a system alarm being activated), the compressors will return to oil return mode when the refrigeration system is next activated to complete the remaining duration of the oil return sequence timer.

NOTE: If the unit is equipped with modulating hot gas reheat (MHGRH) and liquid subcooling, MHGRH and liquid subcooling valves will be overridden to the 100% open position for 150 seconds and then closed for the remainder of the oil return mode to allow oil to return to the compressors. The valves will return to normal control once the oil return sequence is completed.

Limited Product Warranty

DAIKIN APPLIED AMERICAS INC.
LIMITED PRODUCT WARRANTY
(**United States and Canada**)

WARRANTY

Daikin Applied Americas Inc. dba Daikin Applied ("Company") warrants to contractor, purchaser and any owner of the product (collectively "Owner") that, subject to the exclusions set forth below Company, at its option, will repair or replace defective parts in the event any product manufactured by Company, including products sold under the brand name Daikin and used in the United States or Canada, proves defective in material or workmanship within twelve (12) months from initial startup or eighteen (18) months from the date shipped by Company, whichever occurs first. Authorized replacement parts are warranted for the remainder of the original warranty. All shipments of such parts will be made FOB factory, freight prepaid and allowed. Company reserves the right to select carrier and method of shipment. In addition, Company provides labor to repair or replace warranty parts during Company normal working hours on products with rotary screw compressors or centrifugal compressors. Warranty labor is not provided for any other products.

Company must receive the Registration and Startup Forms for products containing motor compressors and/or furnaces within ten (10) days of original product startup, or the ship date and the startup date will be deemed the same for determining the commencement of the warranty period and this warranty shall expire twelve (12) months from that date. For additional consideration, Company will provide an extended warranty(ies) on certain products or components thereof. The terms of the extended warranty(ies) are shown on a separate extended warranty statement.

No person (including any agent, sales representative, dealer or distributor) has the authority to expand the Company's obligation beyond the terms of this express warranty or to state that the performance of the product is other than that published by Company.

EXCLUSIONS

1. If free warranty labor is available as set forth above, such free labor does not include diagnostic visits, inspections, travel time and related expenses, or unusual access time or costs required by product location.
2. Refrigerants, fluids, oils and expendable items such as filters are not covered by this warranty.
3. This warranty shall not apply to products or parts : (a) that have been opened, disassembled, repaired, or altered, in each case by anyone other than Company or its authorized service representative; (b) that have been subjected to misuse, abuse, negligence, accidents, damage, or abnormal use or service; (c) that have not been properly maintained; (d) that have been operated or installed, or have had startup performed, in each case in a manner contrary to Company's printed instructions; (e) that have been exposed, directly or indirectly, to a corrosive atmosphere or material such as, but not limited to, chlorine, fluorine, fertilizers, waste water, urine, rust, salt, sulfur, ozone, or other chemicals, contaminants, minerals, or corrosive agents; (f) that were manufactured or furnished by others and/or are not an integral part of a product manufactured by Company; or (g) for which Company has not been paid in full.
4. This warranty shall not apply to products with rotary screw compressors or centrifugal compressors if such products have not been started, or if such startup has not been performed, by a Daikin Applied or Company authorized service representative.

SOLE REMEDY AND LIMITATION OF LIABILITY

THIS WARRANTY CONSTITUTES THE SOLE WARRANTY MADE BY COMPANY. COMPANY'S LIABILITY TO OWNER AND OWNER'S SOLE REMEDY UNDER THIS WARRANTY SHALL NOT EXCEED THE LESSER OF: (i) THE COST OF REPAIRING OR REPLACING DEFECTIVE PRODUCTS; AND (ii) THE ORIGINAL PURCHASE PRICE ACTUALLY PAID FOR THE PRODUCTS. COMPANY MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, REGARDING PREVENTION OF MOLD/MOULD, FUNGUS, BACTERIA, MICROBIAL GROWTH, OR ANY OTHER CONTAMINATES. THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT AND UNDER NO CIRCUMSTANCE SHALL COMPANY BE LIABLE TO OWNER OR ANY THIRD PARTY FOR INCIDENTAL, INDIRECT, SPECIAL, CONTINGENT, CONSEQUENTIAL, DELAY OR LIQUIDATED DAMAGES FOR ANY REASON, ARISING FROM ANY CAUSE WHATSOEVER, WHETHER THE THEORY FOR RECOVERY IS BASED IN LAW OR IN EQUITY, OR IS UNDER A THEORY OF BREACH CONTRACT OR WARRANTY, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE. THE TERM "CONSEQUENTIAL DAMAGE" INCLUDES, WITHOUT LIMITATION, THOSE DAMAGES ARISING FROM BUSINESS INTERRUPTION OR ECONOMIC LOSS, SUCH AS LOSS OF ANTICIPATED PROFITS, REVENUE, PRODUCTION, USE, REPUTATION, DATA OR CROPS.

ASSISTANCE

To obtain assistance or information regarding this warranty, please contact your local sales representative or a Daikin Applied office.

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Part No. 043028500 Rev.0F

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