ARGUS

CLM01
Modular Current Limiter System

013-001-B2

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Power

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Argus Technologies Ltd.

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CLM01 MODULAR
CURRENT LIMITER SYSTEM

 # 013-001-B2

Serial #_____

The following documents and drawings are included in this manual to provide the necessary information required for routine operation and fault diagnosis of the unit.

- Specifications, 137VDC Current Limiter: 013-001-B1 Rev B
- Warranty Policy: 048-507-10
- Installation and Operation instructions: 013-001-C0 Rev B
- Outline Drawings: 030-592-06
- Factory Service Information: 048-527-10

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SPECIFICATIONS FOR ARGUS TECHNOLOGIES' CURRENT LIMITER CLM01

Module Output:

Output Voltage:	5x -137 VDC
Current:	Up to 0.70A (x 5) DC continuous per module
Power:	5 x 100VA continuous per module
Current Limit:	0.67A to 0.73A (0.7A typical)
Short Circuit Current:	2.5A pulse for 2 ms max pulse repetition rate = 600ms to 1second
Noise:	No filtering is present. Noise is equal to level at input of limiters.
Output Transient Protection:	Compliant to Bellcore TA-NWT-000909 Section 14.1
EMI:	This system meets the requirements of: Bellcore TR-NWT-000499 Bellcore GR-1089-CORE
Output Fuse:	10 x 2A @ 250V, slow-blow type (2AG)
Startup Time:	Dependent on capacitance of ONU; with a resistive load of ≥ 13.7kΩ and 50uF, startup time ≤ 25 ms 500uF, startup time ≤ 10 sec 5000uF, startup time ≤ 100 sec
Output Isolation:	Output to chassis ground ≥ 1kV Output to Input, no isolation

Module Input:

Voltage:	-130 to -150 VDC
Current:	4.0A max @ -137 VDC
Efficiency:	97% @ full load (dual feed cabinet with List 80). 98% @ full load (single feed cab without List 80).
Noise:	Compliant to GR-1089-CORE Issue 1A

Transients/Overvoltage Protection:	Up to +/- 200V
Input Transient Suppression:	Meets Bellcore GR-1089-CORE
Recommended Feeder Breaker:	2x 80A @ 140V for fully loaded system
Power Module Input Fuse:	5x 1.5A @ 250V, fast-blow type
Alarm Input Fuse:	1A @ 125V, very-fast blow type

Miscellaneous:

Cabinet Size:	(23") 132mm H x 533mm W x 305mm D (5.2" H x 21" W x 12" D)
Module Size:	114mm H x 24mm W x 254mm D (4.5" H x 0.95" W x 10" D)
Mounting:	23” flush or offset (2” or 5”), universal mounting
Weight:	11.3 kg (25.1 lb) maximum
Alarm Connection Ratings:	40-60 VDC, 0.1A maximum

Recommended Connection Wire Sizes:

Ambient Temperature = 50 °C

Cabinet:	Input: 2x 10 mm^2 (#8 AWG) per feed Output: 0.34 mm^2 (#22 AWG) 12 position male connections per module for 0.100” ribbon connector; type Amp #1-640440-2 or equivalent.
Alarm Module:	Input: 0.25 mm^2 to 0.75 mm^2 (#24 to #18 AWG) Output: 0.25 mm^2 to 0.75 mm^2 (#24 to #18 AWG)

Environmental:

Temperature:	Full Load: 0 to 50°C (32 to 122°F) [natural convention] 0 to 65°C (32 to 149°F) [w/ 60 CFM forced cooling] -40 to+65°C (-40 to 149°F) [w/ extended temp option]
Humidity	5% to 95% Relative non-condensing
Elevation	-500 to 2800 m (-1640 to 9186 ft)

(Specifications are subject to change without notice)

WARRANTY AND REPAIR INFORMATION

Warranty Policy

Argus Technologies Ltd. warrants all equipment manufactured by it to be free from defects in parts and labor, excluding third party OEM materials (example: air conditioners, batteries), for a period of two years from the date of shipment from the factory. For third party products the OEM's warranty shall apply. The liability of Argus applies solely to repairing, replacing or issuing credit (at Argus' sole discretion) for any equipment manufactured by it and returned by the customer during the warranty period. The terms of the warranty are Ex Works (EXW) from Argus' factory service location.

Argus reserves the right to void the warranty if:

(1) identification marks or serial numbers are removed or altered in any way,
(2) invoice is unpaid, or
(3) defect is the result of misuse, neglect, improper installation, environmental conditions, non-authorized repair, alteration or accident.

Argus shall not be liable to the customer or other parties for any loss of profits, loss of use, costs for removal or installation of defective equipment, damages or consequential damages based upon equipment failure during or after the warranty period. There shall be no other obligations either expressed or implied. Argus will not honor warranties for batteries and other third party products without prior written Argus authorization.

Freight Policy

Customer is responsible for all shipping and handling charges (COD and freight collect will not be accepted without prior approval from Argus Technologies).

Terms of Payment (North America)

Payment terms are net 30 days subject to prior credit approval. All other orders require payment before shipping.

Terms of Payment (International)

Payment terms are subject to prior approval and are typically through Tele-Transfer.

Return Material Policy

Our RMA policy is designed to ensure prompt, efficient and high quality factory service. A Return Material Authorization (RMA) number must be obtained before products can be accepted for servicing by the Argus factory. For returns to an authorized service center (refer to "Authorized Service Centers" for locations), please consult the individual service center for specific return policies and instructions.

To obtain a RMA number for a factory return, customers must call the appropriate location with the product serial and model number, as well as a brief description of the problem, shipment instructions and billing details.

The original packing container should be used whenever possible. Both the shipping documents and the outside of the box must have the RMA # clearly marked and the product shipped prepaid to the Argus factory service center. Argus will endeavor to repair products within five working days of receipt. Repairs to the returned product are warranted for a period of six months. A service charge may be applied if no fault is found in the returned product. Argus will not accept products without an RMA number.

Business Hours

Argus North American office hours are 7:30 am to 5:00 pm (Pacific Standard Time) Monday to Friday.

Factory Service Centers

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048-507-10-I1 Rev S (09/2007)

CSA/NRTL — MARKS — BACKGROUND

What are the CSA and NRTL?

CSA (Canadian Standards Association also known as CSA International) was established in 1919 as an independent testing laboratory in Canada. CSA received its recognition as an NRTL (Nationally Recognized Testing Laboratory) in 1992 from OSHA (Occupational Safety and Health Administration) in the United States of America (Docket No. NRTL-2-92). This was expanded and renewed in 1997, 1999, and 2001. The specific notifications were posted on OSHA's official website as follows:

Federal Register #: 59:40602 - 40609 [08/09/1994]
Federal Register #: 64:60240 - 60241 [11/04/1999]
Federal Register #: 66:35271 - 35278 [07/03/2001]

C US NRTL/C

The product on which either of these marks appear has been certified by CSA as meeting applicable Canada/US standards.

When these marks appear with the indicator "C and US" or "NRTL/C" it means that the product is certified for both the US and Canadian markets, to the applicable US and Canadian standards. (1)

Argus rectifier and power system products, bearing the aforementioned CSA marks, are certified to CSA C22.2 No. 950 and UL 1950, or CSA/UL 60950.

c UL US

The product on which this mark appears has been certified by UL as meeting applicable Canada/US standards.

As part of the reciprocal, US/Canada agreement regarding testing laboratories, the Standards Council of Canada (Canada's national accreditation body) granted Underwriters Laboratories (UL) authority to certify products for sale in Canada. (2)

Only Underwriters Laboratories may grant a licence for the use of this mark, which indicates compliance with both Canadian and US requirements. (3)

What are NRTLs and what do they do?

NRTLs are third party organizations recognized by OSHA, US Department of Labor, under the NRTL program.

The testing and certifications are based on product safety standards developed by US based standards developing organizations and are often issued by the American National Standards Institute (ANSI). (4)

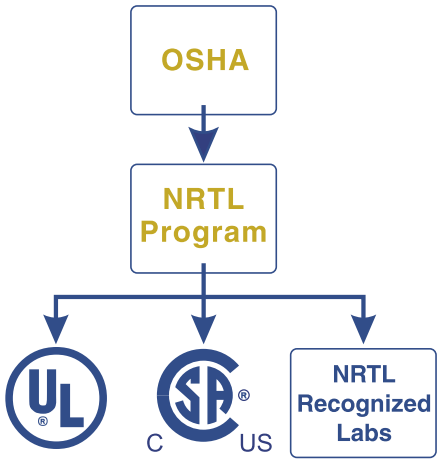
The NRTL determines that a product meets the requirements of an appropriate consensus-based product safety standard either by successfully testing the product itself, or by verifying that a contract laboratory has done so, and the NRTL certifies that the product meets the requirements of the product safety standard. (4)

When was the NRTL started and who governs it?

In 1983, in a suit brought on by an independent testing laboratory, OSHA was court ordered to remove specific references to UL (Underwriters Laboratories) and FMRC (Factory Mutual Research Corporation) from its regulations.

In 1988, OSHA revised its regulations to remove those references and the NRTL program was established.

The NRTL Program is both national and international in scope with foreign labs permitted.



References:
Information in this document has been developed from the official websites of the respective organizations.
(1) www.csa-international.org
(2) www.scc.ca
(3) www.ulc.ca
(4) www.osha.gov

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS - This manual contains important safety and operating instructions for the CLM 01/02 Current Limiter.

1. **Before using current limiter, read all instructions and cautionary markings on: (1) current limiter and (2) product using current limiter.**

2. **Do not expose current limiter to rain or snow.**

3. **Use of an attachment not recommended or sold by the current limiter manufacturer may result in a risk of fire, electric shock, or injury to persons.**

4. **Do not operate current limiter if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified service center.**

5. **Do not disassemble current limiter; take it to a qualified service center when service or repair is required. Incorrect reassembling may result in a risk of electrical shock or fire.**

Table of Contents

1.0 DOCUMENTATION/PART NUMBERS

1.1 Introduction

Please read this manual thoroughly prior to use in order to become familiar with the unit's numerous features and operating procedures. To obtain a maximum degree of safety, follow the prescribed sequences as outlined.

This manual incorporates warnings and notes to the user. Points that are vital to the proper operation or safety of the operator are indicated by the heading: **WARNING**. Points that are important to the performance or ease of use of the equipment are covered by a notation that is in bold italics.

1.2 Argus Numbering system

Argus Technologies uses an eight digit drawing number system which is broken into three blocks. The first three digits describe the category of the product e.g. rectifier or fuse panel. The next three digits indicate the sequence in which the product number was allocated in a particular category. The last two digits indicate the type of drawing e.g.:

- 05 .....Schematic
- 06 .....Outline Drawing
- 20 .....Main Assembly

Argus uses an eight digit part numbering system for all components and sub assemblies. Each part is covered by its own unique number. Due to the quantity, categories will not be listed within this manual.

2.0 GENERAL INFORMATION

2.1 Scope of the Manual

This instruction manual covers the installation, and operation of Argus Technologies' CLM 01/02 Current Limiter system. Both the current limiter modules and the accompanying cabinet are covered in this manual.

2.2 Product Description

The CLM 01/02 current limiter module provides five current limited DC outputs from one or two DC inputs (feed A and B). Each module plugs into a common cabinet. The cabinet provides external connections for input, output and alarm interfaces. Additional modules can be plugged into the converter cabinet to increase the system capacity. Up to twenty modules can be plugged into the 23” rack mount cabinet to provide one hundred outputs.

A complete current limiter system consists of one or more current limiter modules and an alarm module installed in a 23” cabinet. Additional current limiter modules can be added to the cabinet at a later time after the system has been installed.

The part numbers required for ordering current limiter systems or modules are as follows:

Description	Part Number
CLM01 Current Limiter Cabinet, 23"	030-592-20
CLM02 Current Limiter Cabinet, 23"	030-611-20
Universal Mounting Bracket	List 18
Serial Communications Interface (future option)	List 81
Module Blank Plate	List 90
CLM01 Current Limiter Module	013-001-20
CLM02 Current Limiter Module	013-002-20
Extended Temperature Option	List 42
Dual Input feed	List 80
Single Input feed	List 81
Spare Parts	013-001-G0
CLM01 Current Limiter Alarm Module	018-538-20
CLM02 Current Limiter Alarm Module	018-544-20

The above information is accurate at time of publication. Consult factory for up-to-date ordering information.

2.3 Current Limiter Cabinet Features

The current limiter cabinet accommodates up to 21 (20 + 1 spare) current limiter modules, and an alarm module in a 23” cabinet. The following sections cover the various features available on the current limiter cabinet.

2.3.1 Output Feeds

Each cabinet consists of five outputs for every one module. The cabinet can accommodate up to a maximum of 100 outputs (plus five extra outputs for the spare module). Each output has connections for both polarities (common and -137V for each twisted pair feed).

2.3.2 Redundant Input Feeds

Each cabinet includes two independent -137VDC input terminals (Feed A and B). This provides redundancy protection to each current limiter module in the event of an input fuse/circuit breaker or power source failure.

2.3.3 Alarm Contacts

The current limiter cabinet has terminal blocks for the following Form C alarm contacts:

- Major Fail Alarm
- Minor Fail Alarm

2.3.3.1 Major Fail Alarm

The Major Fail Alarm contacts will change state (both normally open and normally closed contacts are available) under the following conditions:

- When no current limiter modules are installed,
- When one or more current limiter modules has a shorted output, or blown fuse,
- When one or more current limiter module outputs is in current limit,
- When both of the cabinet inputs are below the specified minimum limit,
- When either of the cabinet inputs are above the specified maximum limit,
- When both -48V inputs for the alarm module are below the specified minimum limit.

The major alarm is controlled by the alarm module and the Form C contact on the backplane is de-energized on alarm condition.

NOTE: The NC contact for the Major Fail Alarm closes during an alarm condition.

2.3.3.2 Minor Fail Alarm

The Minor Fail Alarm contacts will change state (both normally open and normally closed contacts are available) under the following conditions:

- When one of the cabinet inputs is below the specified minimum limits (-137V or -48V),
- When the internal ambient temperature is above or below the specified operating limits but will not occur if a major alarm condition exists.

The minor alarm is controlled by the alarm module and the Form C contact on the backplane is energized on an alarm condition.

NOTE: The NO contact for the Minor Fail Alarm closes during an alarm condition.

2.3.4 Spare Current Limiter Module

The cabinet slot, position 21, to the immediate left of the alarm module is dedicated as a spare current limiter module slot. This allows for bypassing power to the connected loads while replacing a failed or partially failed current limiter module.

2.4 Current Limiter Module Features

The following sections will cover the various features and options available on the CLM 01/02 current limiter modules.

2.4.1 Module Indicators

Two indicators are provided on the current limiter module to provide visual indication of its operational status. The conditions and associated colors are:

Module Power On (PWR) .....Green
Current Limiter Fail (FAIL).....Red

2.4.1.1 Module Power Indicator

The PWR LED indicator illuminates when the current limiter module is getting power from the cabinet and at least one module input fuse is intact.

2.4.1.2 Current Limiter Fail Indicator

The FAIL LED indicator illuminates when the limiter module is in a fail or limiting condition.

2.4.2 Current Limiter Fail Alarm

The current limiter module is equipped with a current limiter fail alarm which is extended to the alarm module. The alarm will be extended under the following conditions:

- If any of the input or output fuses are open,
- If any of the outputs are overloaded or shorted.

Current limiter fail alarm discrimination circuitry is factory set. The alarm is 'real time' and therefore does not latch. When the unit returns to normal operation the alarm will clear.

2.4.3 Current Limit

The current limiting function provides a primary response to output overload situations. When any of the current limiter outputs is in current limit mode, the module front panel FAIL LED turns on and a major alarm is extended to the alarm module.

When the output current of the module exceeds the preset level of 0.7A (± 0.03A) the output starts to cycle on and off with an off period of between 600ms and 1 second. The peak current is allowed to increase to 2.5A at 25ms pulses. If the output is further overloaded the on period will reduce becoming 2ms for a short circuit. If the output load returns to normal operating limits, the pulsing will discontinue, the major alarm will clear and normal operation will resume.

2.4.4 Output Startup Time

The startup time of the current limiter is dependent upon the capacitance of the load input. The startup time is very quick (< 25ms) for load capacitance < 50μF but will increase for higher values becoming < 10s for 500μF and 100s for 5000μF. The input of the load must be designed so as to only apply a resistive load of ≤ 13.7kΩ, if the load capacitance is > 50μF, until it's capacitance is fully charged.

2.4.5 Input/Output Fuses

Each current limiter module is equipped with five input (one per limiter) and ten output (two per limiter) fuses. These fuses should not open unless line cross faults or failure of the limiter occurs causing the FAIL LED to illuminate.

2.4.6 Ventilation

Cooling of the current limiter module is achieved via bottom to top natural convection and/or forced air cooling. To maintain proper operation over the full temperature range (see specifications), allow at least one rack space above and below the current limiter cabinet. An air flow baffle should be used beneath the current limiter cabinet if any power dissapating units are mounted below. This will deflect high temperature air away from the current limiter shelf.

2.5 Alarm Module Features

The following sections cover the various features available in the alarm module:

2.5.1 Alarm Module Indicators

Three indicators are provided on the alarm module for visual indication of its operational status. The conditions and associated colors are:

Module Power On (PWR ON) .....Green
Major Alarm (MJR ALM).....Red
Minor Alarm (MIN ALM) .....Yellow

2.5.1.1 Power On Indicator

Illuminates when the alarm module is powered up from the -48 volt inputs. It will flash for 1 second when the module is first powered up, and will stay illuminated throughout normal operation.

2.5.1.2 Major Alarm Indicator

Illuminates under any one of the following conditions:

- When no current limiter modules are installed,
- When one or more current limiter modules has a shorted output, or blown fuse,
- When one or more current limiter modules is in current limit,
- When both of the -137 volt inputs of the cabinet are below the specified limit,
- When one of the -137 volt inputs of the cabinet is above the specified limit,
- When both of the -48V inputs for the alarm module are below the specified limit.

2.5.1.3 Minor Alarm Indicator

Illuminates under any one of the following conditions:

- When one of the -48V or -137V inputs is below the specified limit,
- When the internal ambient temperature is above or below specified limits.

3.0 INSTALLATION

3.1 Inspection

All Argus products are shipped in rugged, double-walled boxes and suspended via solid inserts to minimize shock that may occur during transportation. Package assemblies and methods are tested to National Safe Transit Association (NSTA) standards.

Before uncrating the current limiter, look for signs of damage to the shipping container. Next, uncrate the unit and inspect the exterior. If any damage is observed, contact the carrier immediately. Continue the inspection for internal damage. In the unlikely event of internal damage, please inform the carrier and contact Argus Technologies for advice on the impact of the damage.

NOTE: Save the original shipping container. If the unit needs to be returned for service, it should be packaged in its original shipping container. If the original container is unavailable, make sure the unit is packed with at least three inches of shock-absorbing material to prevent shipping damage. Argus Technologies is not responsible for damage caused by the improper packaging of returned units.

3.2 Preparation/Mounting

The current limiter cabinet has been designed for mounting in a 23" EIA standard relay rack. Universal mounting brackets accommodate both 1” or 1-3/4” spacing. Units can be arranged in several different rack mounting configurations:

2” offset rack mounting – All loose units shipped from the factory are arranged for 2” offset rack mounting as shown in drawing #030-592-06.
Flush rack mounting – Remove the three attaching screws, move the brackets to the front-mounting position and re-attach as shown in drawing #030-592-06.
5" offset rack mounting – Remove the three attaching screws, move the brackets to the mid-mounting position and re-attach as shown in drawing #030-592-06.

The rectifier cabinet should be mounted to the rack using two, #12 – 24 x 1/2" screws in each bracket. A Philips screwdriver should be used to eliminate the possibility of slippage and scratching of the unit's exterior.

The unit must be mounted in a clean and dry environment. Allow at least 1.75" of free space above and below the unit for uninterrupted airflow.

In addition to rear access holes, the current limiter cabinet incorporates side access holes for routing wiring cables. To use these side holes, remove the blanking plates by unscrewing the top and bottom screws immediately above and below the holes. Reposition the blank plates to the rear holes.

3.3 Grounding

NOTE: Connections to the current limiter system should comply with all local codes and ordinances.

3.3.1 Chassis Ground (Required)

WARNING: The current limiter cabinet (or "chassis") should be connected to the earth ground for safety.

3.4 DC Input Connections

WARNING: The current limiter cabinet may be supplied from two independent feeds (Feed A or B).

WARNING: Ensure that the current limiter cabinet feeder breakers are in the "off" position prior to any work being performed on the input connections.

WARNING: Do not attempt to connect or disconnect energized battery or live cables. Doing so can be extremely dangerous.

NOTE: The size of the common connections should be equal to the size of the line feeds.

Each cabinet feed (A and B) and the common return feed requires two input wires to distribute the full rated current capacity across the system. If one feed option is used, both inputs should be connected together via a jumper to prevent a minor alarm indication.

We recommend that each current limiter cabinet have one dedicated input feeder breaker for each feed (only one breaker is required for the one feed option). See specifications section and Tables 1-4 for recommended input feeder breaker ratings and wire gauges. Circuit breakers should be placed in the off state when connecting cables.

DC output wire must be UL approved File # B64801, XHHW or RHH/RHW (for Canadian users; RW90 Type). Lugs required should be Amp #324061 or equivalent for #8 AWG. Use suitable type for #10 and #12 AWG.

Remove the rear panel from the current limiter cabinet to expose the terminals for the input cables. Insert the input cables through the cabinet's rear wireway. Secure the DC input cables to the input terminal of the correct polarity. See outline drawings at the rear of the manual to determine the correct polarity of the input connections.

WARNING: Observe the correct polarity of input cables. Reverse polarity may damage the current limiter modules.

WARNING: Do not over tighten the terminal screws. This may result in damage to the input connectors.

INPUT FEEDER BREAKER RATINGS AND WIRE GAUGES;
TABLE 1: FULL CABINET AND 10KW LOAD, (RECOMMENDED)

TB1 INPUTS	DESIGNATION	CIRCUIT BREAKER	AWG WIRE SIZE
1	FEED A	80A	#8
2			#8
3	CHASSIS GROUND	N/A	#8
4	COMMON RETURN	N/A	#8
5			#8
6	FEED B	80A	#8
7			#8

TABLE 2: 12 MODULES MAX. OR 6KW MAX. LOAD, (OPTIONAL)

TB1 INPUTS	DESIGNATION	CIRCUIT BREAKER	AWG WIRE SIZE
1	FEED A	60A	#10
2			#10
3	CHASSIS GROUND	N/A	#10
4	COMMON RETURN	N/A	#10
5			#10
6	FEED B	60A	#10
7			#10

TABLE 3: 10 MODULES MAX. OR 5KW MAX. LOAD, (OPTIONAL)

TB1 INPUTS	DESIGNATION	CIRCUIT BREAKER	AWG WIRE SIZE
1	FEED A	50A	#12
2			#12
3	CHASSIS GROUND	N/A	#12
4	COMMON RETURN	N/A	#12
5			#12
6	FEED B	50A	#12
7			#12

TABLE 4: 6 MODULES MAX. OR 3KW MAX. LOAD, (OPTIONAL)

TB1 INPUTS	DESIGNATION	CIRCUIT BREAKER	AWG WIRE SIZE
1	FEED A	30A	#10
2			N/A
3	CHASSIS GROUND	N/A	#10
4	COMMON RETURN	N/A	#10
5			N/A
6	FEED B	30A	#10
7			N/A

3.5 DC Output Connections

3.5.1 Main DC Output Terminals

WARNING: Ensure that the input feeder breakers to the current limiter cabinet are turned "OFF" before attempting to work on the output connectors.

Remove the rear panel from the current limiter cabinet to expose the connectors for the module outputs. Insert the output cables through the right rear wireway of the cabinet. Connect the output cables to the output terminals using a 12-pin ribbon or wire cable assembly. See Specifications section of this manual for recommended wire sizes and connectors.

NOTE: The bottom five output pins of each power module provide five independent current limited negative outputs. The top five pins are used as a common for the bottom five pins. The middle two pins are not used.

3.6 Alarm Connections

Alarm cables should be bundled and routed through the rear holes of the cabinet. Insert each wire into the appropriate terminal on the termination block and secure the wires by tightening the terminal screw. See Specifications section of this manual for recommended wire sizes.

The Major Fail Alarm and the Minor Fail Alarm terminals are connected to relay contacts in the alarm module and both are jumper selectable for normally open or normally closed contacts.

NOTE: The Major Alarm relay is de-energized and the Minor Alarm relay is energized during alarm conditions.

3.7 Module Installation and Removal

WARNING: HIGH VOLTAGE AND SHOCK HAZARD. Only qualified personnel familiar with line and battery voltage should attempt to change modules while the current limiter cabinet is energized. Remove rings, watches and other jewelry before performing this procedure. Keep fingers clear of live electric parts while unit is energized.

WARNING: Do not force a module into position if it does not seat properly! The rightmost module position is reserved for the alarm module.

3.7.1 Installing Module

Engage the alarm module PCB in the guides provided in the right-hand position of the current limiter cabinet. Gently slide the module into the current limiter cabinet and engage the plastic latch into the bottom rail of the cabinet. Snap the latch into position. Make sure the bottom pin engages correctly in the cabinet (do not force latch closed). Begin installing the current limiter PCB's in the same manner starting with the left-hand position of the cabinet.

3.7.2 Removing Module

Gently disengage the plastic latch out of the bottom rail of the current limiter cabinet and slide the module out of the cabinet. When removing an energized current limiter module it is recommended to bypass power to the ONU's using the spare module slot and a patch panel; refer to section 4.3 of this manual.

3.8 Module Fuse Replacement

The output fuses are located on the current limiter module's PCB. Remove the current limiter module as outlined above and replace any blown fuse(s). ***Ensure fuse is replaced with the same type as identified in the specifications section of this manual.***

3.9 Initial Startup

Disengage all modules from their sockets in the current limiter cabinet by pulling out at least one inch.

Confirm that the DC input cables are connected to the terminal of the correct polarity. Apply DC power to the current limiter cabinet by turning on the input feeder breakers.

Plug in the alarm module first (right-hand position). The green PWR ON LED should flash. After 1 second, it should become steady and the red FAIL LED will extinguish. If not, turn off the feeder breakers and check all connections for correct polarity.

Plug in one current limiter module (left-hand position). Confirm that the green PWR ON LED indicator illuminates. If not, immediately turn off power to the cabinet and check all DC input connections for correct polarity.

Plug in the remaining converter modules, left to right, following the steps above.

4.0 OPERATION

4.1 Current Limiter Shutdown

Disengage any module by pulling down on the plastic latch. To shut down a complete system disconnect the input power source.

4.2 Normal Mode of Operation

Normal operation of the current limiter system will be indicated by the illumination of the PWR LED indicators on each module and the absence of illumination of the FAIL LED indicators on each limiter module and the alarm module.

4.3 Current Limiter Bypass

It is possible to enable replacement of failed or partially failed current limiter module without disabling connected ONU's. Two new modules are required if there is not already a spare module in place. The spare module slot is to the immediate left of the alarm module slot (position 21). Install a module in the spare module slot and verify that the green PWR ON LED indicator is illuminated.

At the patch panel* use the pigtail provided to jumper from the number of the failed module position to position 21; also on the patch panel. This allows for bypassing power to the connected loads. Disengage the failed module by pulling down on the plastic latch. Replace the failed module with the second new module. Confirm that its green PWR ON LED indicator illuminates and red FAIL LED indicators are not illuminated or extinguish by expiry of the ONU startup time (see Section 2.4.4). Immediately remove the jumper at the patch panel to complete this procedure.

* See information provided with patch panel for additional details.

5.0 MAINTENANCE

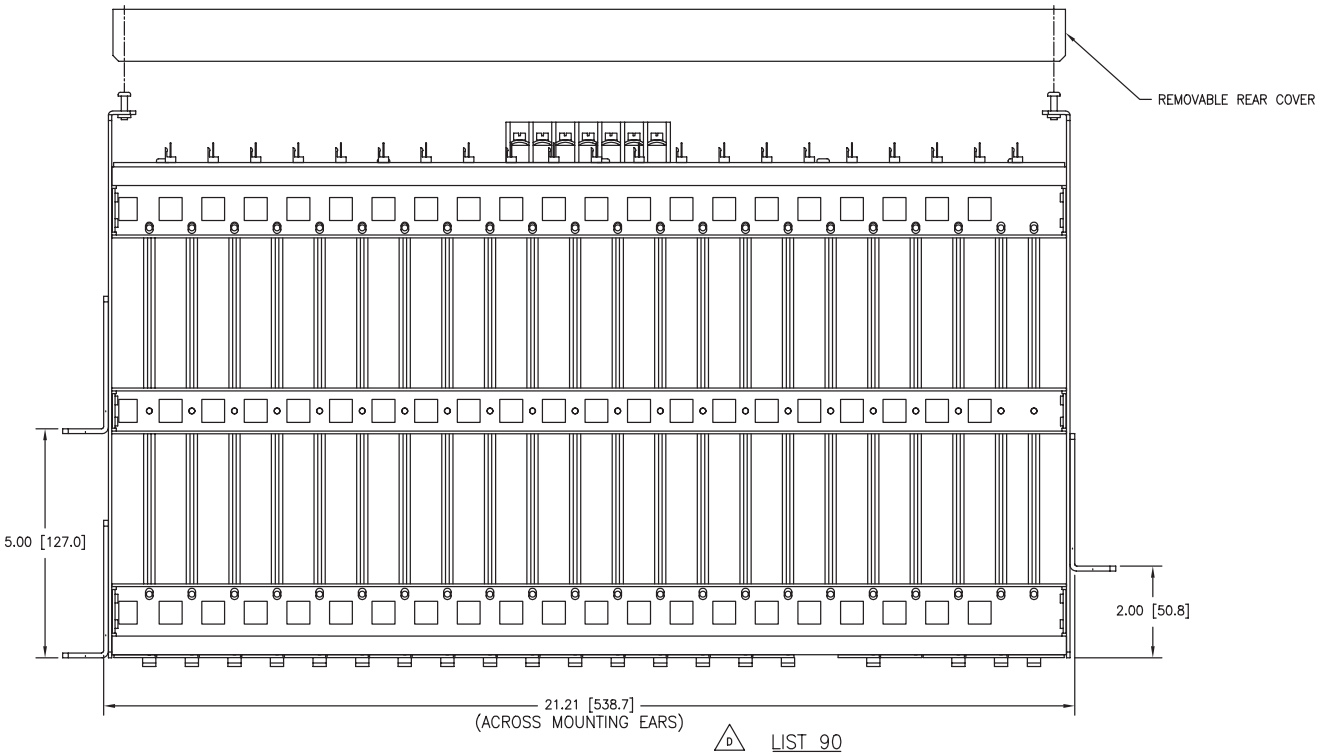
Although very little maintenance is required with Argus systems, routine checks and adjustments are recommended to ensure optimum system performance. Repairs should be done by qualified service personnel.

The following table outlines several maintenance procedures for this system. These procedures should be performed at least once a year.

WARNING: Use extreme care when working inside the cabinet while the system is energized. Do not make contact with live components or parts. HIGH VOLTAGE AND SHOCK HAZARD.

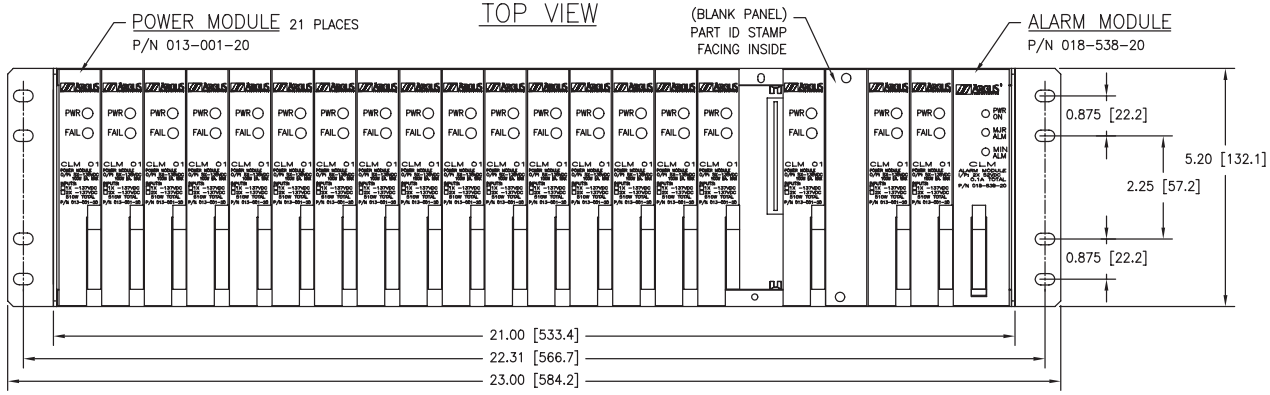
WARNING: Ensure redundant modules or batteries are used to eliminate the threat of service interuptions while performing maintenance on the system's alarms and control settings.

Procedure	New Setting	Date
Clean ventilation openings		
Inspect all system connections (retorque as necessary)		
Verify alarm/control settings		

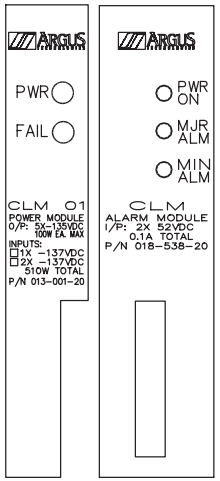


TOP VIEW

△D LIST 90
(BLANK PANEL)
PART ID STAMP
FACING INSIDE



FRONT VIEW



POWER MODULE (CURRENT LIMITER)

ALARM MODULE

DIMENSIONS ARE IN INCHES WITH METRIC [mm] IN BRACKETS: INCHES [mm]

REVISIONS			
LTR	DESCRIPTION	DATE	APPD
△B	REDESIGNED	97/11	CDD
△C	REDESIGNED	98/01	CDD
△D	ADDED LIST 90	99/02	

LTR	DESCRIPTION	QTY
	FINISHED HOLE LEGEND	

ARGUS TECHNOLOGIES

DESIGN	PDS	97/08	MATERIAL
DRAWN	PDS	97/10	
CHECKED			
APPROVED	CDD	97/11	FINISH

TOLERANCES (UNLESS OTHERWISE NOTED)
x.x ±0.04" [x] ±1mm
x.xx ±0.02" [x.x] ±0.5mm
x.xxx ±0.01" [x.xx] ±0.25mm

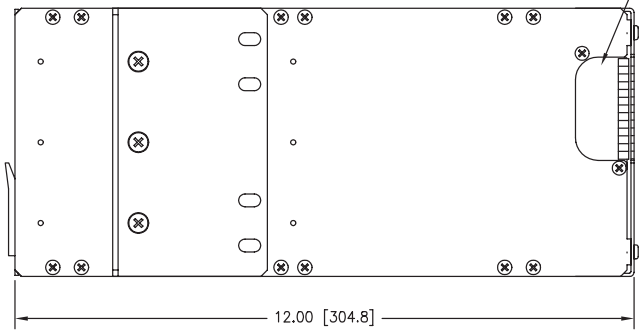
SCALE N.T.S.

TITLE
OUTLINE DRAWING
23" CURRENT LIMITER CABINET

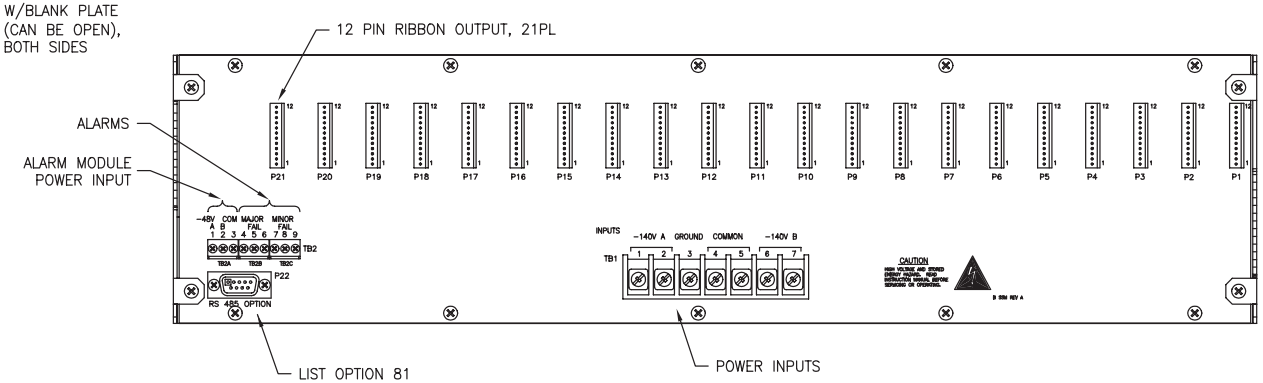
ISSUE DATE | SHEET 1 OF 2

SIZE	TYPE	DWG NO.	REV
B	A1	030-592-06	D

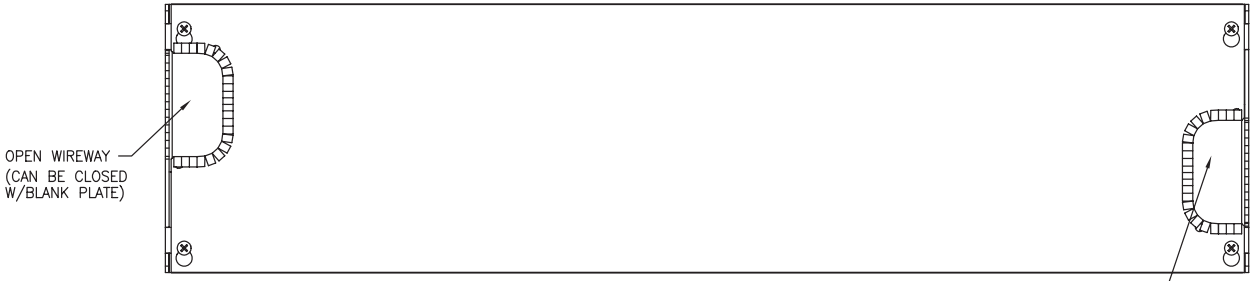
REVISIONS			
LTR	DESCRIPTION	DATE	APPD



LEFT SIDE VIEW

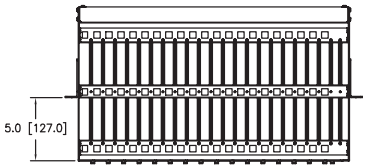


REAR VIEW
(COVER REMOVED)

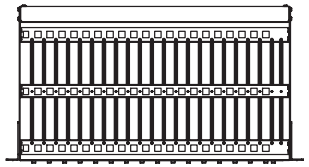


REAR VIEW
(COVER INSTALLED)

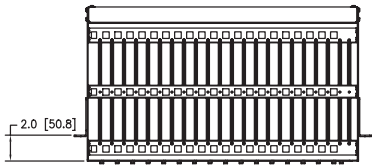
LIST OPTION 20
(INTERNAL USE ONLY)
TOP VIEW:
5 [127.0] OFFSET MOUNTING



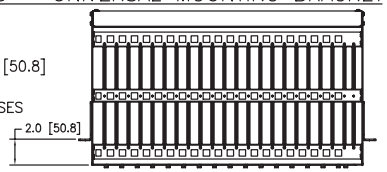
LIST OPTION 21
(INTERNAL USE ONLY)
TOP VIEW:
FLUSH MOUNTING



LIST OPTION 22
(INTERNAL USE ONLY)
TOP VIEW:
2 [50.8] OFFSET MOUNTING



LIST OPTION 18 – UNIVERSAL MOUNTING BRACKET
DEFAULT
TOP VIEW:
BRACKET MOUNTED 2 [50.8]
OFFSET POSITION
FOR SHIPPING PURPOSES



BRACKET MOUNTING OPTIONS

LTR	DESCRIPTION	QTY
	FINISHED HOLE LEGEND	

ARGUS TECHNOLOGIES

DESIGN	PDS	97/08	MATERIAL
DRAWN	PDS	97/10	
CHECKED			
APPROVED	CDD	97/11	FINISH

TOLERANCES (UNLESS OTHERWISE NOTED)
x.x ±0.04" [x] ±1mm
x.xx ±0.02" [x.x] ±0.5mm
x.xxx ±0.01" [x.xx] ±0.25mm

SCALE N.T.S.

TITLE
OUTLINE DRAWING
23" CURRENT LIMITER CABINET

ISSUE DATE | SHEET 2 OF 2

SIZE	TYPE	DWG NO.	REV
B	A1	030-592-06	D

DIMENSIONS ARE IN INCHES WITH METRIC [mm] IN BRACKETS: INCHES [mm]

FACTORY SERVICE INFORMATION

Technical Support

Technical support staff are available for answering general questions related to installation, operation and maintenance of Argus products. In Canada and the USA, call Argus toll free 7:30 am to 5:00 pm Pacific Standard Time at:

+1-888 GO ARGUS

(+1-888-462-7487)

For emergencies, call +1-888-GO-ARGUS 24 hours a day, seven days a week.
Customers outside Canada and the USA, call +1-604-436-5547 for technical support.

Training

Argus offers various levels of product and technical training. These workshops provide a mix of theory and hands on application for qualified customers. Please consult your sales representative for course schedules, locations and costs, or visit our website at ***www.argusdcpower.com***.

Factory Repair and Servicing

All service, beyond initial adjustments, should be carried out by qualified factory service personnel. For these procedures, please contact Argus Technologies at the locations listed to the right.

Product Returns

Before returning any product for service, please obtain a Return Material Authorization (RMA) number from an Argus factory service representative. The representative will require the model and serial number, as well as a brief description of the problem prior to issuing the RMA number. All material must be pre-authorized before being returned.
See document 048-507-10 "Warranty and Repair Information" for more details.

Moving and Storage

Units must be suitably packed in the original shipping container (or equivalent) prior to re-shipping. The box should be completely enclosed and constructed of wood or double-wall, corrugated cardboard. At least 3" of foam or shock absorbing packing material must surround the unit.

Factory Service Centers

Canada and International
Argus Technologies Ltd.
ATTN: RMA Returns
7033 Antrim Avenue
Burnaby, BC, V5J 4M5 Canada
Tel: +1 604 436 5900
Fax: +1 604 436 1233
Email: returns@argusdcpower.com

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Argus Technologies Inc.
ATTN: RMA Returns
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Email: returns-usa@argusdcpower.com

Asia-Pacific
PCM Electronics (Dong Guan) Co., Ltd.
Hongli Industrial Area, Miaobian, Liaobu Town,
Dongguan City, Guangdong Province,
523400 China
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Fax: +86 755 8895 3307

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048-527-10-I1 Rev L (09/2007)