

**ALD118**

**RACK-MOUNTED 18 MODULE**

**ALPHANUMERIC DISPLAY**



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See important *limited warranty* information at the end of this document.

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## **Introduction**

The ALD118 is an alphanumeric 7×90 dot-matrix 2-color LED display. The units can be programmed to display either character strings or bit-mapped images. Character strings can either be stationary or scrolling. Stationary strings can be stored in non-volatile memory.

Communication to the ALD118 is done through a serial port. The serial port supports both RS-232 and two-wire RS-485 communication. The ALD118 also supports RS-485 pass-through, so an RS-485 network of up to 31 ALD118 devices can be created. The cabling requirements for the various configurations can be found on the company web site, [www.masterclock.com](http://www.masterclock.com).

## **Operating Environment**

The ALD118 is not water or moisture proof. Treat it as you would any other delicate electronic device and do not expose it to water, excessive heat or physical abuse.

## **Configuration**

Basic operation of the ALD118 is configured via the switch bank accessible on the back panel of the clock.

The switch bank configures fundamental operation as follows:

Switches 1-5 compose a 5 binary-digit (bit) RS-485 address, with S5 being the most significant bit (MSB) and S1 being the least significant bit (LSB) (default address 0).

Hour offset	S1	S2	S3	S4	S5
RS-485 address 0	<i>OFF</i>	<i>OFF</i>	<i>OFF</i>	<i>OFF</i>	<i>OFF</i>
RS-485 address 1	<i>ON</i>	<i>OFF</i>	<i>OFF</i>	<i>OFF</i>	<i>OFF</i>
RS-485 address 2	<i>OFF</i>	<i>ON</i>	<i>OFF</i>	<i>OFF</i>	<i>OFF</i>
...					
RS-485 address 30	<i>OFF</i>	<i>ON</i>	<i>ON</i>	<i>ON</i>	<i>ON</i>
RS-485 address 31	<i>ON</i>	<i>ON</i>	<i>ON</i>	<i>ON</i>	<i>ON</i>

RS-485 address 0 is a special broadcast address. No matter what the ALD118's address is set to, the device will respond to messages sent to address 0. If the ALD118's address is set to 0, it will only respond to broadcast messages.

Switches 6 and 7 are reserved, but should be left in the OFF position.

Switch 8 configures the ALD118 to enable circuitry that terminates the RS-485 network. Only one device on your RS-485 network should have this circuitry enabled.

Function	S8
RS-485 termination circuitry disabled	<i>OFF</i>
RS-485 termination circuitry enabled	<i>ON</i>

**The ALD118 must be power cycled for any switch changes to take effect.**

Note: For RS-232 connections, all switches should be left in the *OFF* position.

### **Default Configuration**

An ALD118 ships from the factory with all switches in the *OFF* position. This configuration results in an RS-485 address of 0 with the RS-485 termination circuitry disabled.

### **Operation**

Insert the power cord into an appropriate AC source. Connect your controller to one of the communication jacks. If you are setting up an RS-485 network, you can connect another ALD118 to the second communication jack.

After application of power the ALD118 will go through an internal checkout and display an internal message. Then it will start displaying the data from non-volatile memory, if it has been previously configured to do so. At this point the ALD118's display can be programmed through its communication port according to the ALD communication specification, which can be downloaded from the Masterclock web site, [www.masterclock.com](http://www.masterclock.com).

### **Troubleshooting Tips**

Problem: No data is ever displayed on the screen

Possible reasons/solutions:

1. Check that the power connector connector is securely plugged in to the ALD118 and that the power is being supplied.

Problem: The display shows its startup message, but then does not respond to commands.

Possible reasons/solutions:

1. Check that the RS-232 or RS-485 cable is securely plugged in to one of the RJ12 sockets. If using RS-232, the cable must be connected directly to the controlling computer. If using RS-485, the cable must be connected to the RS-485 network, either directly to the controlling computer, or to another device, which is itself connected to the network. Verify that all connectors are secure.
2. If you are attempting to use RS-485 from a PC controller, you must have a converter that converts RS-232 to two-wire RS-485. (Such as B&B Electronics RS-232/RS-485 Converter Model 485DRJ). Verify that your adapter is configured to provide two-wire RS-485, and that the cable use use matches your adapter's pinouts to the correspondong pinouts of the ALD118. An example cable drawing for connecting the B&B Electronics Converter to the ALD118 can be downloaded from the company web site, [www.masterclock.com](http://www.masterclock.com).

3. Check that the RS-485 destination address that the controller is using matches the address that is encoded in the ALD118's switches. Note that you must cycle power on the ALD118 in order for switch changes to take effect.
4. There is a ground loop or other type of interference on the RS-232/RS-485 network. Verify that a common ground exists between the ALD118 and other devices on the network.
5. More than one device on the RS-485 network has its termination circuitry enabled. No more than one device should have this circuitry enabled. Check all the devices on your RS-485 network to make sure that no more than one device has this circuitry enabled.

## **SPECIFICATIONS**

### **Input/Output**

Serial Protocol.....RS-232 or RS-485 (cabling requirements and communication specification can be downloaded from the company web site, [www.masterclock.com](http://www.masterclock.com).  
Connectors.....RJ12 (2). One for connection to the controller/network, the other for RS-485 pass-through to additional devices.

### **Power Requirements**

AC Input Voltage .....93-263 VAC  
AC Input Frequency.....47-63 Hz  
Power Consumption.....< 15 W

### **Physical**

Size.....19" standard 1RU 1¾" rackmount case, depth 5"  
Weight .....4.8 lbs.

### **Power Supply Component Characteristics**

Approvals - UL, CSA, IEC & VDE. Built in output power limiting, over voltage and short circuit protection. Input AC fuse protection – internal built in fuse designed to blow if a catastrophic failure occurs. Fuse does not blow on overload or short circuit.

### **Operating/Storage Temperature & Humidity**

Operating Temperature 0 to +40°C  
Relative Humidity Up to 90% (non condensing @ 25°C)  
Storage Temperature -40 to +70° C  
Relative Humidity Up to 90% (non condensing @ 25°C)

## **OPTIONS – Special Order**

- RS-485 pass-through cables (Masterclock part # CCRJ12) can be ordered separately.

## **Limited Warranty**

This Masterclock, Inc. (hereinafter Masterclock) product warranty extends to the original purchaser.

Masterclock warrants the ALD118 against defects in materials and workmanship for a period of one year from date of sale. If Masterclock receives notice of such defects during the warranty period, Masterclock will, at its option, either repair or replace products that prove to be defective.

Should Masterclock be unable to repair or replace the product within a reasonable amount of time, the customer's alternate remedy shall be a refund of the purchase price upon return of the product to Masterclock. This warranty gives the customer specific legal rights. Other rights, which vary from state to state or province to province, may be available.

## **Exclusions**

The above warranty shall not apply to defects resulting from improper or inadequate installation or maintenance by the customer, customer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product or improper site preparation and maintenance (if applicable).

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