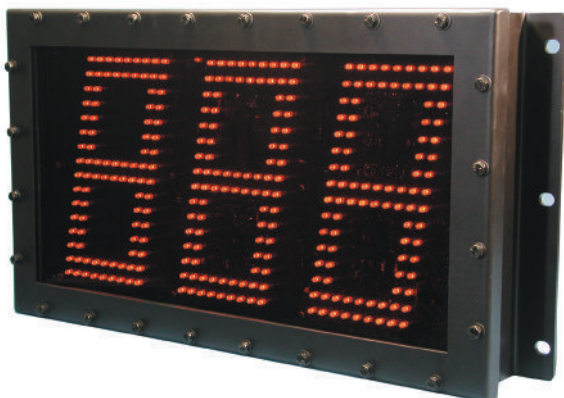


Microframe Corporation

Series 1033:
10" LED Display



Operating Manual

A1033-7021





SERIES 1033

INSTALLATION & SPECIFICATION GUIDE

ITEM NO: A1033-7021
REVISION DATE: 07/10

Microframe Corporation
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Broken Arrow, OK 74012

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Toll Free: 1-800-635-3811
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E-mail: support@microframecorp.com

Limited Warranty Agreement

Your Microframe System is warranted against failure due to defects in workmanship or material for a period of one (1) year from the date of purchase. Microframe Corporation will repair or replace any defective unit. Obvious abuse or mishandling of the unit is NOT covered by this warranty.

Merchandise Return

If your Unit does not work satisfactorily, please give us a call. We may be able to clear up the problem by phone. If it becomes necessary to return your Unit to the factory, please observe the following.

1. Place Unit in a sturdy box with sufficient packing material.
2. If requested, include the power supply. It is not necessary to return the cable and connectors unless they are the problem.
3. Return the system insured and prepaid since we are not responsible for shipping damages and losses on returned Units.

Warranty Service

For warranty service, please contact Microframe at 1-800-635-3811. A technician will gladly assist you.

Assistance

For any product assistance or maintenance help, contact Microframe by either calling 1-800-635-3811 or emailing us at support@microframecorp.com.

Safety

Do not install substitute parts or perform any modification to the product without first contacting Microframe.

Warning

All power transformers, line cords, and electrical equipment should be kept out of the reach of children and away from water. (If you are installing cable in an air plenum area, such as a drop ceiling used for air return, you must use plenum-rated cable. The cable supplied from Microframe is rated CL2 and is approved for installation everywhere indoors except plenum areas.)

Life Support Policy

Microframe's products are not authorized for use as components in life support devices or systems without the express written approval of the president of Microframe Corporation. As used herein:

1. Life support devices or systems are defined as systems which support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user or any one depending on the system.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

Disclaimer

We are constantly striving to improve our products. Due to this, specifications are subject to change without notice.

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MODEL 1033 SPECIFICATIONS

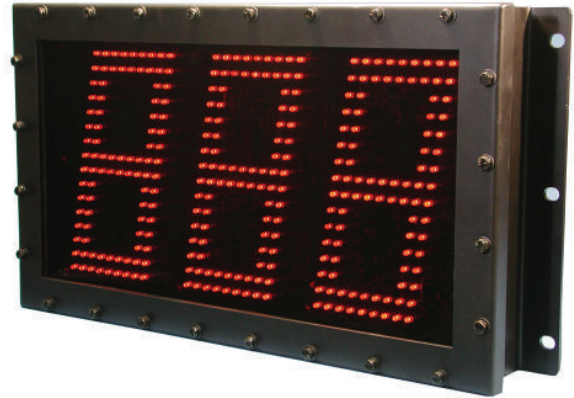
Remote Display

Features

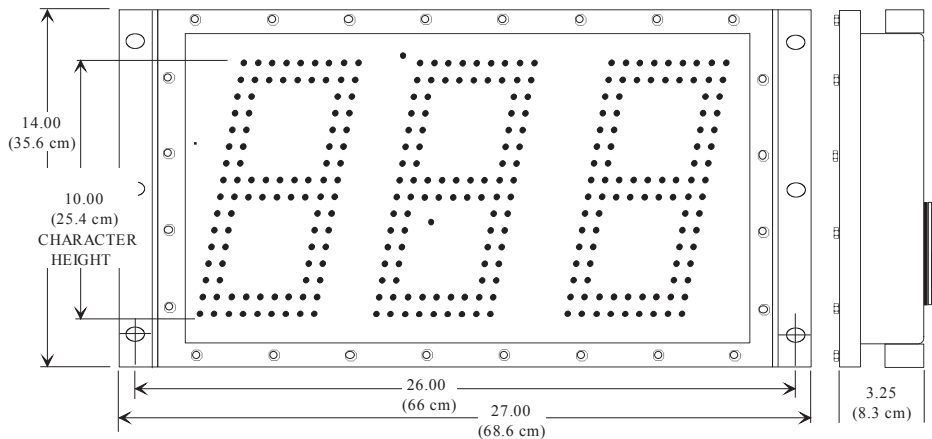
The Model 1033 Remote Display is an ultra-rugged LED electronic display designed for use on haul trucks used in open pit mining operations. This Display will withstand the vibration, dust, heat, and voltage spikes generated on large mining trucks. Typical applications include displaying the payload to the shovel operator as the truck is being loaded.

Operation

The Model A1033 Remote Display is designed to operate with any standard RS232 input to provide Remote numeric Display capabilities for an on-board truck computer. The computer passes three (3) digits and a carriage return (ASCII 13D), and then the numbers will be displayed on the Remote Display.



Microframe® Model 1033 Display



Model A1033 Remote Display with 12 GA Steel Outside Enclosure

Model 1033 Specifications

Remote Display	Rugged Mount 10-inch (25.4 cm) Character High Brightness LED Display
Power Input Requirements	18 to 200 Volts DC
Input Requirements	RS232, 8 Bits, 9,600 Baud, 1 Stop, No Parity
Number of Digits	3 Digits
Character Height	10 Inch
Fuse.....	No Fuse, Internal Shutdown
Character Viewing Distance	200 Feet in Bright Sunlight
Connectors	MS3106E14S-5S and 5P
Weight	55 Lbs
Operational Temperature Range	-40 to +60 Degrees C
Storage Temperature Range	-40 to +85 Degrees C
Enclosure Specifications	12 GA Cold Rolled Steel with .5 In Lexan Window

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1 INSTALLATION PROCEDURES

1.1 SIGNAL & POWER CONNECTION

The signal and power for the Remote Display is connected through the MS Male Connectors on the rear of the Remote Display. The Remote Display is expecting +18 to +40 volts on Pin E. The return ground should be connected to Pin A or B.

The signal ground from the computer or Telemetry System should be on Pin A or B. The transmit pin from the computer system signal should come into the Remote Display on Pin D of the input connector, which is the receive pin on the Remote Display. The transmit pin (Pin C) on the Remote Display connects the Remote Display's response back to the receive pin on the computer system. Pin D of the output connector supplies system data to the next Remote Display.

Each Remote Display has a transmit output which can connect to the next Remote Display. This connection is made through the MS Female Connector on the rear of the Remote Display. Both the 18-40 volts and the transmit signal is available on this connector for the next Remote Display.

1.2 PROCESSOR LED

This LED blinks when the power is applied and the processor is running. It blinks approximately once per second under normal conditions.

1.3 APPLYING POWER

When the power is first applied to the 1033 Remote Display, it will display the current

software revision number. It will do this as a self-check indicating the processor is alive and the fuse is **not** blown. This revision number will show even if the internal RS232 link to the computer is dead and cannot receive any data.

1.4 DATA RECEIVE LED

(May be difficult to see)

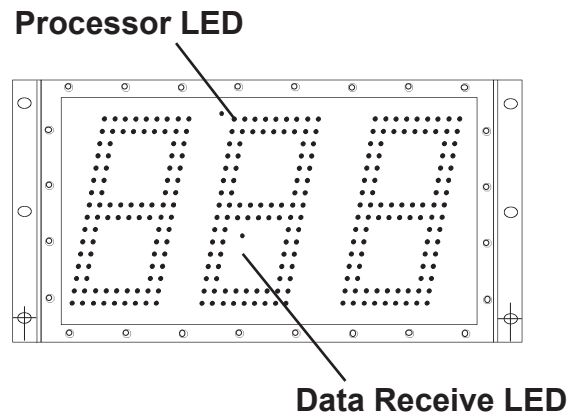
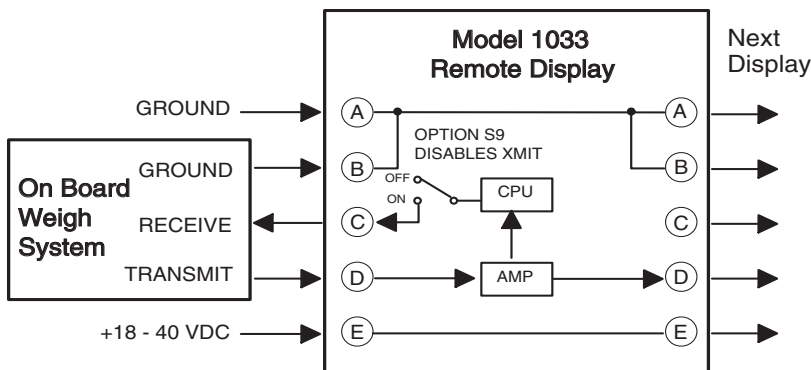
This LED blinks every time data is received. The LED is electrically connected to the receive pin of the Display. It will light only while data is physically present on the wire. Therefore the LED will blink when data is sent to the Display even if the data is the wrong baud rate or protocol.

1.5 HIGH IMPEDANCE LISTEN

Switch 10 OFF puts the Remote Display in high impedance mode to share the RS232 connection to the computer. In this mode the Display will present virtually no load to the RS232 connection for systems where a telemetry systems is connected.

1.6 CUT TRANSMIT

In this mode the Display will not transmit anything back to the computer system. This allows for other devices to communicate with the host computer if necessary.



2 OPERATION DESCRIPTION

2.1 ENTERING A NUMBER

A number may be entered by passing the number to the Display followed with a carriage return. Valid entries are:

234(CR) 5857(CR) 9876(CR)
1(CR)

If you enter more than 3 numbers, they will not be shown.

Entered	Shown
12345678(CR)	678
12345(CR)	345
123ert456m78(CR)	678

(CR) = Carriage Return = ASCII 13d = OD hex

Alpha characters mixed in with numbers will be ignored.

2.2 SELF-TEST

Self-test can be selected by using OPTION SWITCH 1 & 2. OPTION SWITCH 1 "ON" shows all "888." Switch both 1 & 2 "ON" and all numbers will count from "000" through "999" continuously. This allows for a visual check of all the LEDs.

2.3 LEADING ZERO SUPPRESSION

The Display can suppress leading zeros if OPTION SWITCH 3 is "OFF." Set OPTION SWITCH 3 "ON" to defeat leading zero suppression.

Entered	Shown
0001(CR)	1 Switch 3 "OFF"
0006(CR)	006 Switch 3 "ON"

2.4 OPTION SWITCH SUMMARY

Switch	Function
1	ON = Self-Test All "888"
1 & 2	ON = Self-Test All Count "000" to 999"
3	ON = Disable Leading Zero Suppression
4	Not Used
5	Not Used
6	Set Address
7	Set Address
8	Set Address
9	Disable/Enable Transmit On = Enable
10	High Z Mode/ On = Normal

2.5 UNIT ADDRESSING

The Microframe Displays can be addressed in the following manner: To enable the addressing mode, set OPTION SWITCH 6 "ON." Set OPTION SWITCH 7 and 8 as follows to select the Display address:

OPTION SWITCH			
8	7	6	
0	0	0	Display Address is 0 (Responds to all)
0	0	1	Display Address is 1
0	1	0	Display Address is 2
0	1	1	Display Address is 3
1	0	0	Display Address is 4
1	1	1	Display Address is 7

To enable Display address number 1, pass the following enable code:

ASCII	SO	0	1	ETX
HEX	0E	30	31	03

To disable Display address number 1, send the following code:

ASCII	SI	0	1	ETX
HEX	0F	30	31	03

0E Hex = Enable command

0F Hex = Disable command

03 Hex = Command string termination

Valid addresses 00, 01, 02, 03

Address 0 = Responds to all data

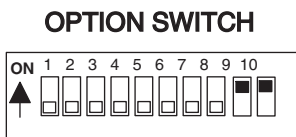
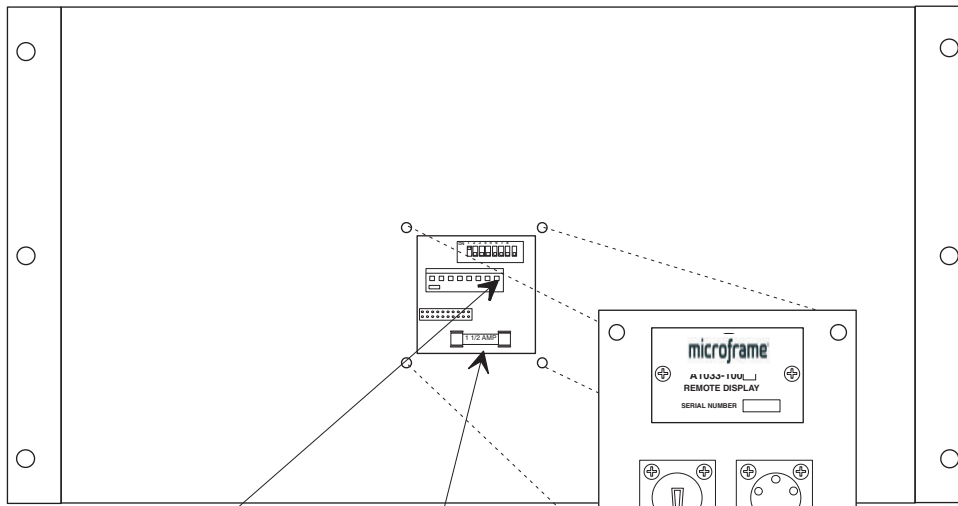
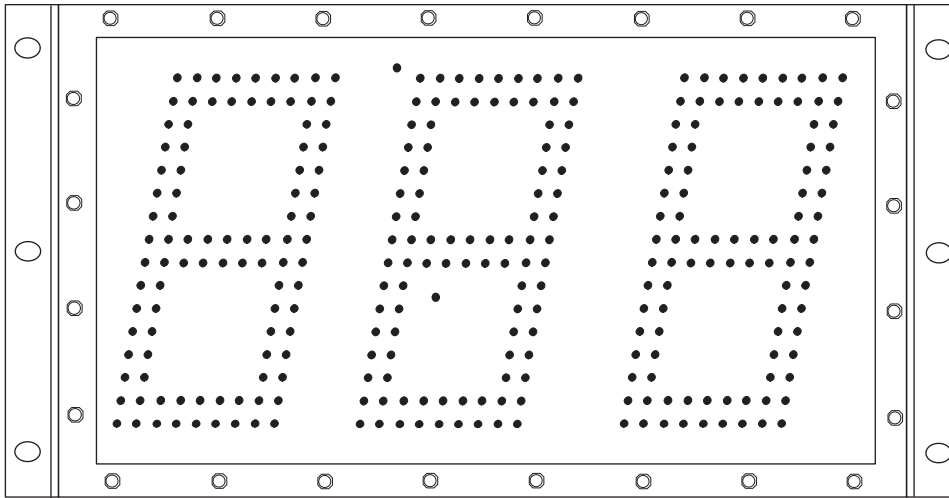
To enable Display 2 and send "234," then disable it, send the following.

0E	30	32	03	Enable
32	33	34(CR)		Send Data
0F	30	32	03	Disable

2.6 HIGH IMPEDANCE MODE

If the Remote Display System is to be used in conjunction with a Telemetry System, it must have its transmit disabled to allow the Telemetry System to communicate with the on-board truck computer. Also, the Remote Display, which is directly connected to the on-board truck computer, must be in high impedance mode so as not to load the on-board truck computer transmit signal since it was only designed to communicate with one system. Switch 9 OFF to disable the Remote Display transmit. Switch 10 OFF puts the Remote Display in high impedance mode to share the telemetry port.

OPTIONS

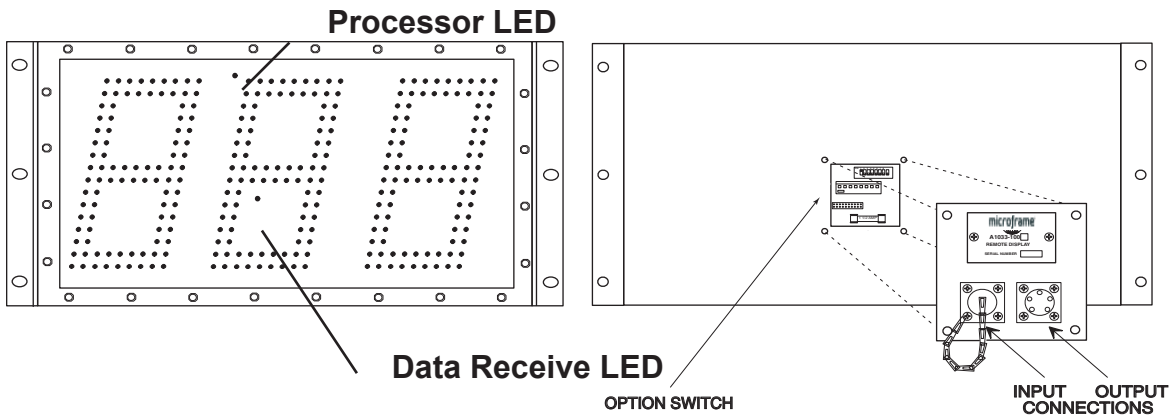


1 1/2 AMP F.B.
3 AG FUSE

INPUT OUTPUT
CONNECTIONS

- Off= High z Mode , On = Normal
- Off= Disable Transmit, On = Enable
- Set Address
- Set Address
- Set Address
- Not used
- Not used
- Leading Zero Suppression
- Off = Normal, 1 & 2 ON = COUNT UP
- Off = Normal, On = Display 888

3 TROUBLESHOOTING GUIDE



3.1 TROUBLESHOOTING

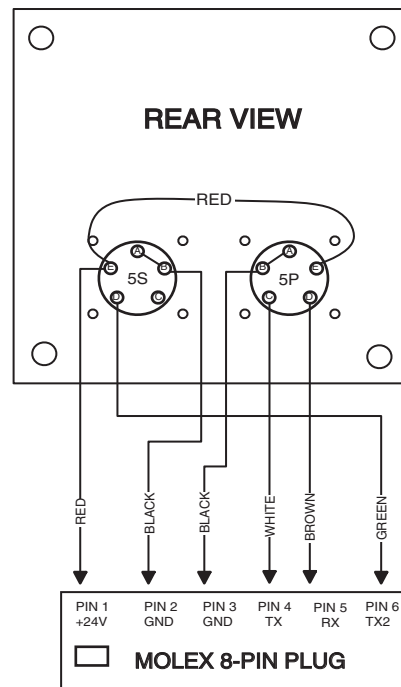
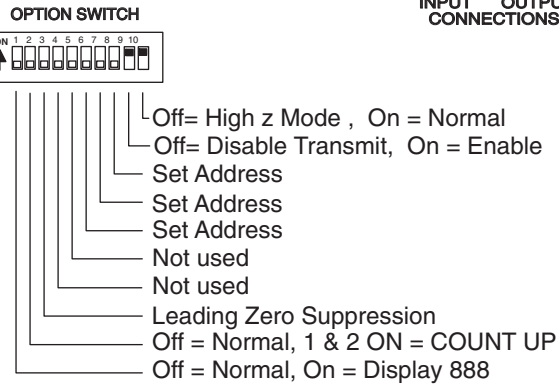
If your Remote Display does not operate properly, first check the **Processor LED** to see if there is any power to the Remote Display. Read the installation section on the theory of operation of the **Processor LED** and review the Troubleshooting Chart (see page 12).

3.2 NO RESPONSE

If there are no LEDs lit on the front panel including the **Processor LED** and the **Data Receive LED**, then you should remove the back panel and check the fuse. You should read 18-40 volts to chassis ground on your meter. If only one end of the fuse has 18-40 volts and the other end has nothing, then the fuse is blown. If the fuse is not blown and there is power on the Remote Display, then set the option switches to show all 8's (Option 1). If there is power but no 8's, then the Remote Display is dead and should be returned to the factory.

3.3 TEST NUMBERS

If there is power applied but no numbers or if you wish to test all the segments in all the numbers, set the **OPTION SWITCH 1** to ON. All 8's will be displayed. If you wish the Remote Display to count up, set the **OPTION SWITCH 1** and **2** to ON. Observe the numbers; look for missing or shorted segments to light up.



TROUBLESHOOTING CHART

SYMPTOM	POSSIBLE CAUSE	CURE
No numbers on Remote Display.	No power to Remote Display.	Turn power OFF and back ON. The Remote Display should show revision number (i.e. 012), or check to see if Processor LED is ON.
No Processor LED .	No power to Remote Display or Remote Display is dead.	Remove back panel and measure voltage on fuse. It should be 18-40 volts both sides. If fuse is blown, replace with 1.5 Amp 3AG fuse. If no voltage, then check supply voltage to Display. If voltage is present and fuse is OK, then set option 1 to test for all 8's. If this doesn't work, return to factory.
Processor LED blinks but no data displays.	No data being received or receive circuit in Remote Display is dead.	Check Data Receive LED . It should blink on each time the truck computer unit transmits to the Remote Display.
Data Receive LED blinks occasionally but numbers don't display.	Wrong data or receive circuit in Remote Display is dead.	Check to see if the OPTION SWITCHES are set to match the correct display address, or try selecting no address (000). Otherwise, if the correct data is received, the Remote Display input circuit may be dead.
Data Receive LED never blinks.	No connection from truck computer to Remote Display.	Check connections to the truck computer unit to see if they are connected and transmitting data.
Remote Display shows 888 all the time.	Option switches set to test position.	Turn OPTION SWITCHES 1 and 2 off.
First Remote Display works but second Remote Display does not work.	Cabling between displays is bad, or output from first Remote Display is dead or input to second Remote Display is dead.	First, check the cabling between the displays. Check if power and signal is arriving at second Display (see above). It could be the first Remote Display output, or the second Remote Display input is not working. First, check the Data Receive LED on the second Remote Display. It may be necessary to swap the two Remote Displays to determine the problem.
The system works but the Remote Display is off by 2 or 3 digits.	The truck computer unit is sending different data to the 1033 Remote Display than its own display.	The Remote Display is a "dumb" Display in that it only displays the numbers sent to it by the truck computer unit. The Remote Display does not calculate or measure the weight. There have been occasions where the truck computer unit sends data to the 1033 Remote Display different than what it displays on the internal cab display.
The system works until connected to a Telemetry System, then one or both units stop working.	The truck computer RS232 port is loaded by having 2 devices connected to its output.	See explanation in the installation section on setting the switch for use with a Telemetry System.

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