

# MICRO-AIDE



[www.micro-aide.com](http://www.micro-aide.com)

HIGHWAY PRODUCTS

LOW POWER MODEMS

LIMITED DISTANCE MODEMS

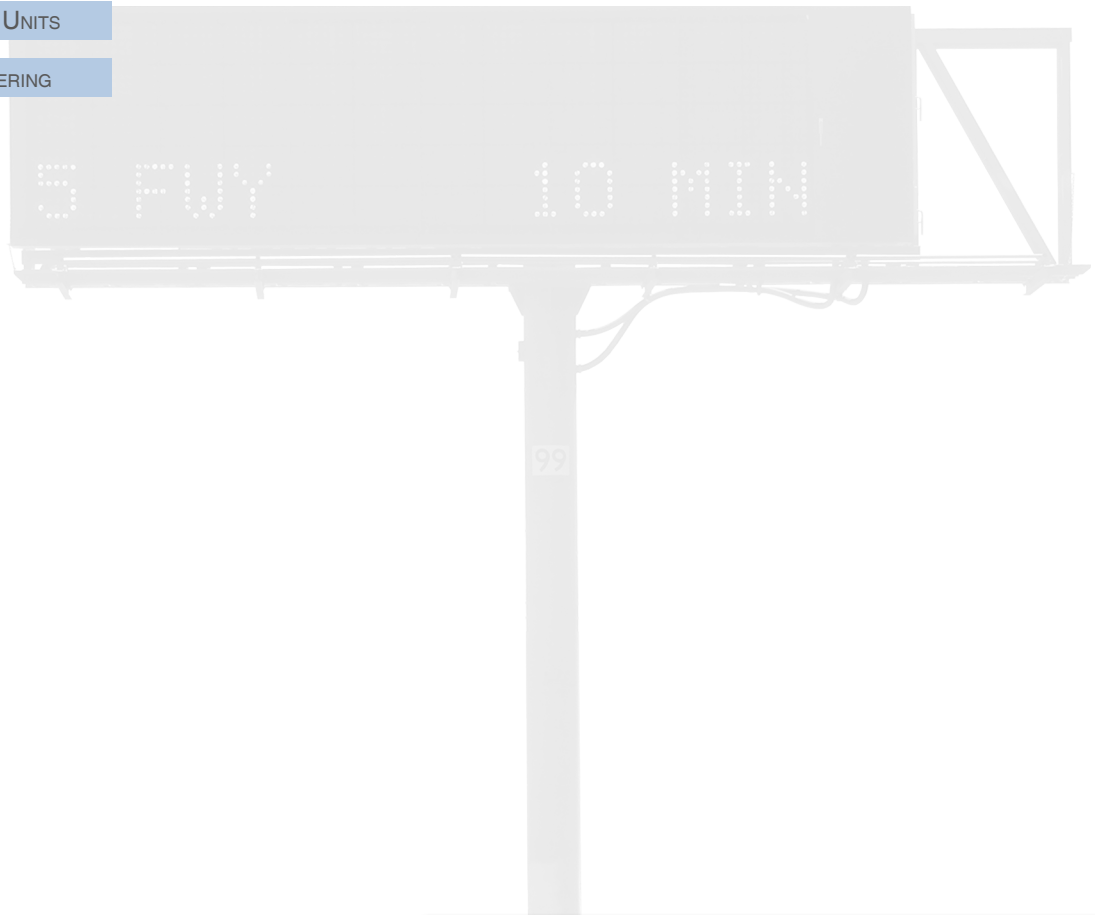
FAILED LED DETECTORS

LIGHT OUT DETECTORS

LOAD SWITCHES

LOCAL CONTROL UNITS

CUSTOM ENGINEERING



## PRODUCT CATALOG

July 1, 2016 – June 30, 2017

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*MICRO-AIDE was founded in 1981 and remains today a privately owned and operated company. We believe our “hands-on” practice of ownership and management has served our company well and ultimately the needs of our customers. It takes many disciplines to manage the affairs of a successful company. However, MICRO-AIDE’s philosophy is that financial management, sales, marketing and production activities represent crucial assets that are best utilized when they serve the needs of one over-arching concern. That concern is design and the pool of engineering expertise that underpins its success. MICRO-AIDE is, and will forever remain, an engineering-driven company decidedly interested in the technical needs of its customers and the industries that it serves.*

*Today MICRO-AIDE manufactures products that address the needs of several industries. The Highway sector has evolved into a key component of each year’s business plan. We have been designing ITS products since the mid-1980s. Over the years we’ve developed many innovative and successful products. However, our most successful products have been those that were initially conceived by our end users. We believe our engineering-driven philosophy provides us with an enhanced ability to appreciate the technical needs of our customers. It follows that we are better positioned to realize those needs in the form of useful products. Along with its customers, MICRO-AIDE shares an aversion for needless complexity and the degradation in performance, quality and product longevity that it frequently engenders. Technical efficiency is a hallmark of every MICRO-AIDE design.*

*Since its creation we have been located in the greater Los Angeles area. All of our design, manufacturing, testing, documentation and support activities share a factory facility in Covina, CA. We are enthusiastic supporters of, and participants in, the Buy America program. Our products are sold, supported and serviced directly by MICRO-AIDE. There are no agents, distributors or representatives who are authorized to act on our behalf.*

*Thank you for your continued interest in our products and the many contributions you have made that have supported our success.*



Ron P. Garcia  
Director of Marketing

P/N: LPM



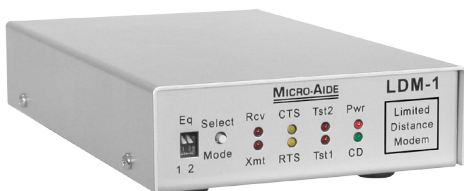
## APPLICATION

**Low Power Modem** ~ Specially engineered to operate in solar and battery powered applications where current draw must be minimal.

## DESCRIPTION

- ▶ Input power range of 5 to 36 Vdc (AC adapter available)
- ▶ Standby current draw of .5 mA at 12 Vdc
- ▶ Operating temperature range of -40°C to 72°C
- ▶ Small mounting footprint of 4.8" x 6.6"
- ▶ Supports all line signal speeds up to 33.6 bps
- ▶ Supports V.42 bis and V.44 data compression standards
- ▶ Supports error correction V.42 and MNP 2-5 standards
- ▶ Mounted inside an all-aluminum housing
- ▶ 6 front panel LEDs indicate modem status
- ▶ Peek ADR profile is available
- ▶ Comes with MICRO-AIDE's easy-to-use ModemConfig application for saving and creating specialized profiles

P/N: LDM-1



## APPLICATION

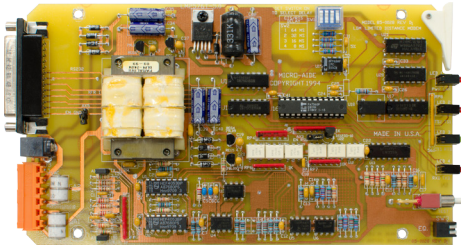
**LIMITED DISTANCE MODEM** ~ Used to provide communications among two or more RS-232 devices that are separated by thousands of cable feet.

## DESCRIPTION

- ▶ Designed for use in 4-wire copper networks
- ▶ Supports point-to-point and multi-drop communications
- ▶ Operating temperature range of -20°C to 70°C
- ▶ Operates as a data transparent and asynchronous device
- ▶ Supports Baud rates of 75 to 19,200 bps
- ▶ Supports cable lengths of several miles at 9600 bps
- ▶ 4 equalization settings compensate for cable gauge, distance and transmission characteristics
- ▶ 8 front panel LEDs indicate modem status
- ▶ Includes several diagnostic self-test modes
- ▶ Nominal input power of 24 Vac/dc (AC adapter provided)
- ▶ Small mounting footprint of 5.3" x 8.6"



P/N: LDM-1 PI



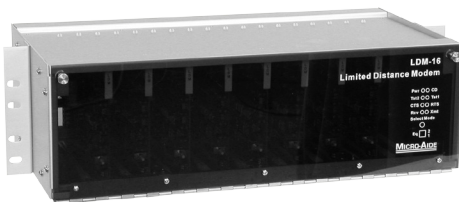
## APPLICATION

**LIMITED DISTANCE MODEM** ~ PCB-only version of the LDM-1 standalone unit.

## DESCRIPTION

- ▶ Plug-in PCB, installed inside LDM-16 Nest
- ▶ Power provided by LDM-16 Nest
- ▶ Designed for use in 4-wire copper networks
- ▶ Supports point-to-point and multi-drop communications
- ▶ Operating temperature range of -20°C to 70°C
- ▶ Operates as a data transparent and asynchronous device
- ▶ Supports Baud rates of 75 to 19,200 bps
- ▶ Supports cable lengths of several miles at 9600 bps
- ▶ 4 equalization settings compensate for cable gauge, distance and transmission characteristics
- ▶ 8 front panel LEDs indicate modem status
- ▶ Includes several diagnostic self-test modes

P/N: LDM-16



## APPLICATION

**LIMITED DISTANCE MODEM NEST** ~ Chassis used to mount LDM-1 PI.

## DESCRIPTION

- ▶ Chassis is designed to be mounted in a typical 19" equipment rack
- ▶ As many as 8 LDM-1 PI PCBs can be installed
- ▶ Typically used when multi-drop configurations of several LDM-1 PI PCBs are required
- ▶ Anodized aluminum design (except front panel)
- ▶ Semi-opaque front panel allows observation of LEDs that indicate LDM-1 PI status
- ▶ Internal transformer allows direct power connection to 120 Vac source
- ▶ Comes with multi-connector power cable
- ▶ Convenient rear panel access to transmit/receive terminals of each LDM-1 PI



## LIGHT OUT DETECTORS

P/N: HACS



### APPLICATION

**HEAD ASSEMBLY CURRENT SENSOR** – Designed to detect power supply failures in LCS head assemblies that use LEDs.

### DESCRIPTION

- ▶ Passive design, uses Hall-effect sensor to detect current
- ▶ Unique filter characteristic designed to monitor current into energy-efficient switching power supplies
- ▶ Input current range of .02 to .15 Aac
- ▶ Adjustable current Limit Value
- ▶ Includes transient filtering
- ▶ LED indicates adequate current flow
- ▶ Open-collector output connects directly to any LCU input
- ▶ Powered from nominal 24 Vdc source as available in local control panel
- ▶ Operating temperature range of -40°C to 72°C
- ▶ Mounting footprint conforms to Opto-22 G1 standard

P/N: LOD-1



### APPLICATION

**LIGHT OUT DETECTOR** – Detects lamp failures in LCS head assemblies that use halogen bulbs. Dual Limit Values support head assemblies with auto-dim feature.

### DESCRIPTION

- ▶ Passive design, uses Hall-effect sensor to detect current
- ▶ Input current range of .2 to 1.5 Aac
- ▶ Limit Value for single lamp failure
- ▶ Separate Limit Value for two lamp failures
- ▶ Both Limit Values are adjustable separately
- ▶ Includes transient filtering
- ▶ Dual LEDs indicate adequate current flow
- ▶ Open-collector output connects directly to any LCU input
- ▶ Powered from nominal 24 Vdc source as available in local control panel
- ▶ Operating temperature range of -40°C to 72°C
- ▶ Mounting footprint conforms to Opto-22 G1 standard

## LOAD SWITCHES

P/N: RLS



### APPLICATION

**RELAY LOAD SWITCH** - Designed to operate as a typical load switch in applications involving low current.

### DESCRIPTION

- ▶ Three load switches per module
- ▶ Design uses three separate relays
- ▶ Non-triac design enhances usage in very low current applications
- ▶ LEDs used to indicate status of each load switch
- ▶ Load current rating of 1 Aac at 125 Vac
- ▶ Designed to be controlled by typical LCU outputs
- ▶ Powered from nominal 24 Vdc source as available in local control panel
- ▶ Operating temperature range of -40°C to 72°C
- ▶ Adheres to std. load switch mounting footprint
- ▶ Mounts into std. 10-blade Cinch Jones connector



P/N: TLCU



## APPLICATION

**LOCAL CONTROL UNIT** ~ Designed to the specific requirements of the Texas Department of Transportation.

## DESCRIPTION

- ▶ Designed to interface with LCS head assemblies, light out detectors, load switches and ITS sensors
- ▶ Includes 120 opto-isolated inputs
- ▶ Includes 72 opto-isolated outputs
- ▶ Fully implemented Communications Port configured for DTE and RS-232 operation
- ▶ Fully implemented Diagnostic Port configured for DTE and RS-232 operation
- ▶ Equipped with EPROM and dual EEPROMs
- ▶ Addressable as 1 of 16 units
- ▶ Easily accessible via fiber optic and copper cable networks
- ▶ Approved for use by TxDOT

## ACCESSORIES & SPARES

### MODEM ACCESSORIES

P/N	Description
LPM-AC	Wall mount transformer for powering LPM from 120 Vac outlet, 12 Vac output
LDM-AC	Wall mount transformer for powering LDM-1 from 120 Vac outlet, 24 Vac output

### TLCU SPARE PARTS

P/N	Description
80-0023	Spare opto-isolated Input PCB, 24 Vdc inputs
80-0026	Spare CPU PCB with blank EPROM, RAM and dual EEPROMs
80-0030	Spare opto-isolated Output PCB, 24 Vdc outputs
80-0041	Spare Power Supply assembly
80-0042	Spare Watchdog Timer PCB
80-0086	Spare Switch Interface assembly, with cables
MK-TLCU	Spare maintenance kit, includes one each of PCBs listed above
TLCU-Cable	One set of I/O looping test cables

## PRODUCT ORDERING INFORMATION

- ▶ All prices are USD, exclusive of delivery charges, freight insurance, taxes and duties
- ▶ Terms are 0% discount, net 30 days
- ▶ Are prices will be increased 2% when buyer payment terms are 31 to 60 days
- ▶ Substantial discounts based upon volume are available
- ▶ VISA® and MasterCard® are accepted
- ▶ Unless otherwise acknowledged, freight is FOB factory, Covina CA
- ▶ Unless otherwise acknowledged, freight is handled on a prepay-and-add basis
- ▶ Unless otherwise acknowledged, UPS Ground service will be used for all shipments
- ▶ Purchaser must advise MICRO-AIDE if freight insurance is required
- ▶ Highway Products include a 5-year limited warranty (3 years for LPM, LDM-1 and LDM-1 PI)
- ▶ Detailed product information is available at: [www.micro-aide.com/support/documentation.html](http://www.micro-aide.com/support/documentation.html)
- ▶ Related software can be downloaded at: [www.micro-aide.com/support/downloads.html](http://www.micro-aide.com/support/downloads.html)