

American LED-gible®

Reducing Downtime Across the Nation!

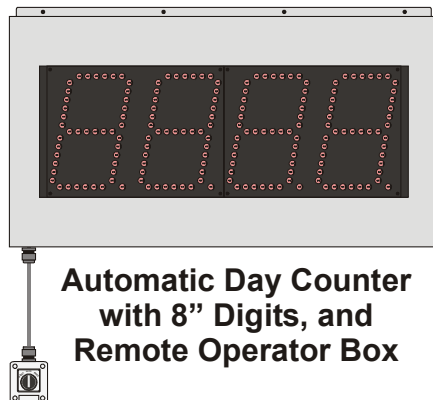
Automatic Day Counters

Numeric Marquees that Automatically Increment Once Every Twenty Four Hours

Firmware: PP-2110-461A Hardware: AB-2056-xxx



Automatic Day Counter with
8" Digits, Custom Labeling, and
Remote Operator Box



Automatic Day Counter
with 8" Digits, and
Remote Operator Box



Automatic Day Counter
with 4" Digits, and
Side Operator Switch

American LED-gible® Inc.
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Columbus, OH 43228
(614) 851-1100 Phone
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Manual PB-2149-515
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1.0 Getting Started

Thank you for your purchase of an AMERICAN LED-gible® product. We take pride in the equipment we build, and we appreciate your support. We will do everything we can to keep you happy with your purchase for many years to come. Please review this manual carefully, and if you have any questions, call, e-mail, or fax us and we will be glad to help you. American LED-gible support can be reached at:

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1.1 General Product Description

Automatic Day Counters (ADC) are special purpose numeric marquees that automatically increment once per day. ADCs are typically used to display the number of days elapsed since the “last loss time accident”, but can be used for any application where a real time running day count is required.

ADCs are “build to order” units, designed to solve customer specific application requirements. Some of the more typical variations include changing the digit height to accommodate various viewing distance requirements, changing the enclosure style to accommodate various environmental requirements, and adding custom labeling to the unit as required by the application.

ADCs either provide a RESET / AUTO / FAST INDEX selector switch, or RESET and FAST INDEX inputs. Activating RESET makes the ADC reset the days, hours, minutes, and seconds counters to zero. Activating FAST INDEX makes the ADC rapidly increment the day count, and reset the hours, minutes, and seconds counters to zero. If neither RESET nor FAST INDEX are activated, the ADC automatically counts days, hours, minutes, and seconds in real time.

ADCs use capacitor backed up ram to store the displayed day count, and the internal hours, minutes, and seconds counts. The capacitor will support the internal ram for up to one week without power, but the ADC will not accumulate days, hours, minutes, or seconds during a power outage. Unlike batteries, capacitors do not require special recharge circuitry, charge to full power within 60 seconds of power being applied to the ADC, never wear out, and never need to be replaced. When power is restored, the ADC will resume counting days, hours, minutes, and seconds.

1.2 Unpacking the ADC

Every ADC is carefully tested, both mechanically and electrically, before shipment. Inspect the unit for damage, which may have occurred in transit. If there is evidence of damage, file a claim with the shipper and notify American LED-gible®. Save the shipping materials for inspection.

If there are no signs of damage, carefully remove the ADC from the shipping carton. Then mount, hang, or set the ADC in a location where the unit is readily visible.

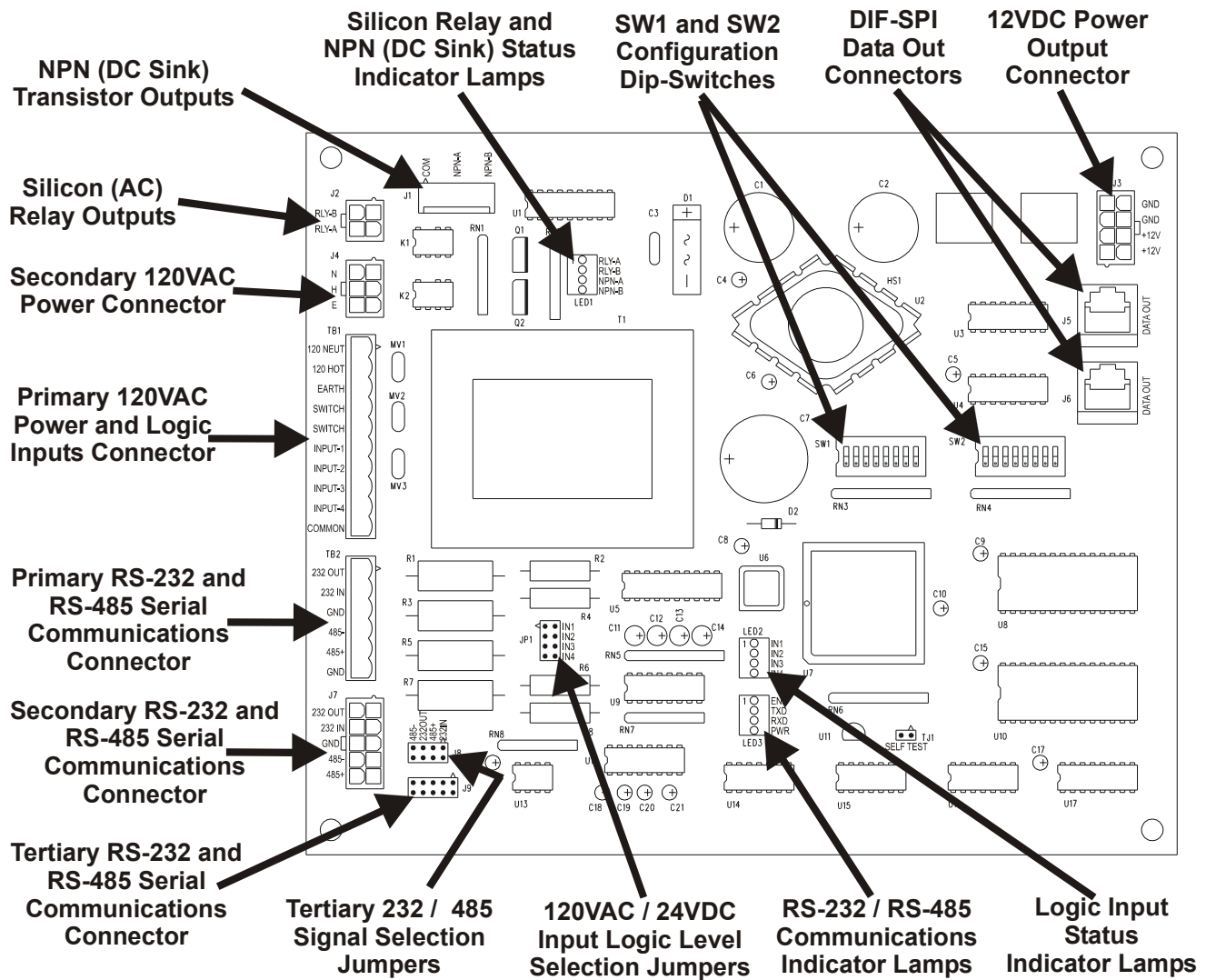
Automatic Day Counter Owners Manual



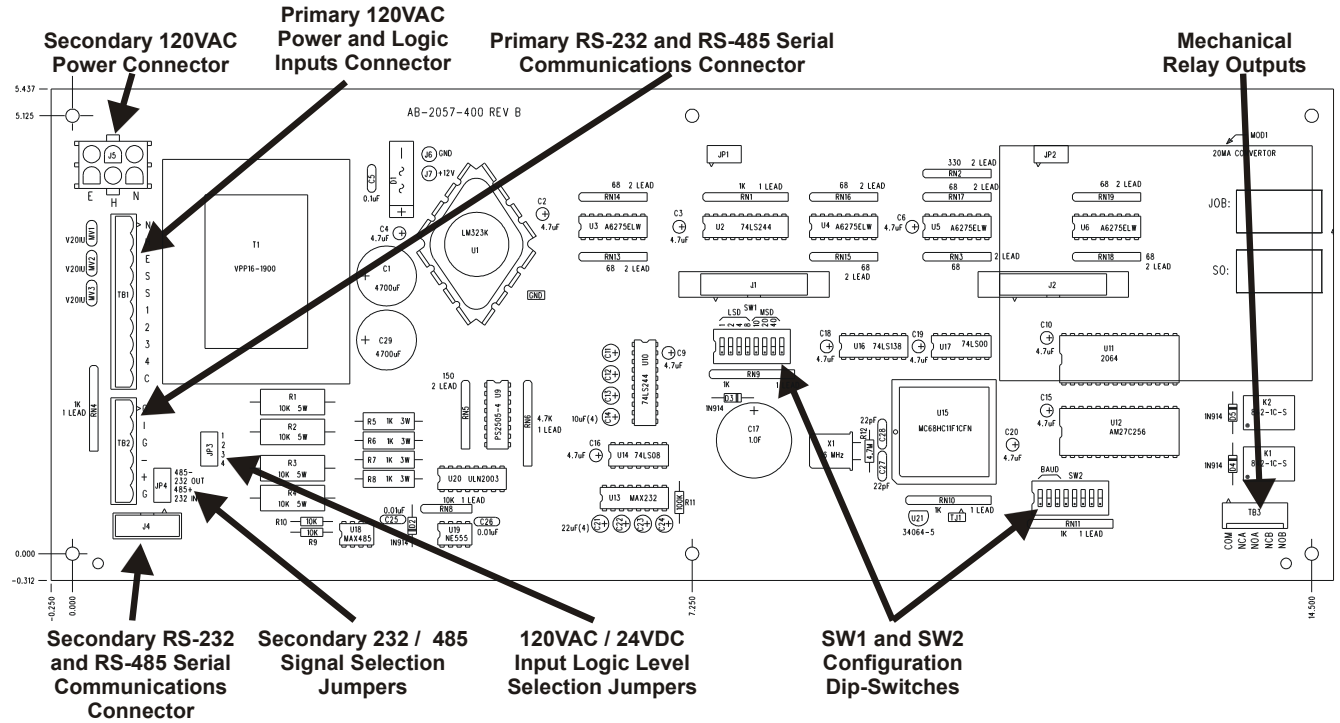
1.3 Introduction to the ADC Circuit Boards

Since ADC housings vary so widely from unit to unit, this manual will concentrate on describing the ADC circuit boards which are used in all ADC marquees regardless of the housing used. The ADC is available with 8.0", 4.0", and 2.3" tall digits. Each digit height has its own circuit board, but in all three versions, the 120VAC POWER, RESET, and FAST INDEX wiring is identical.

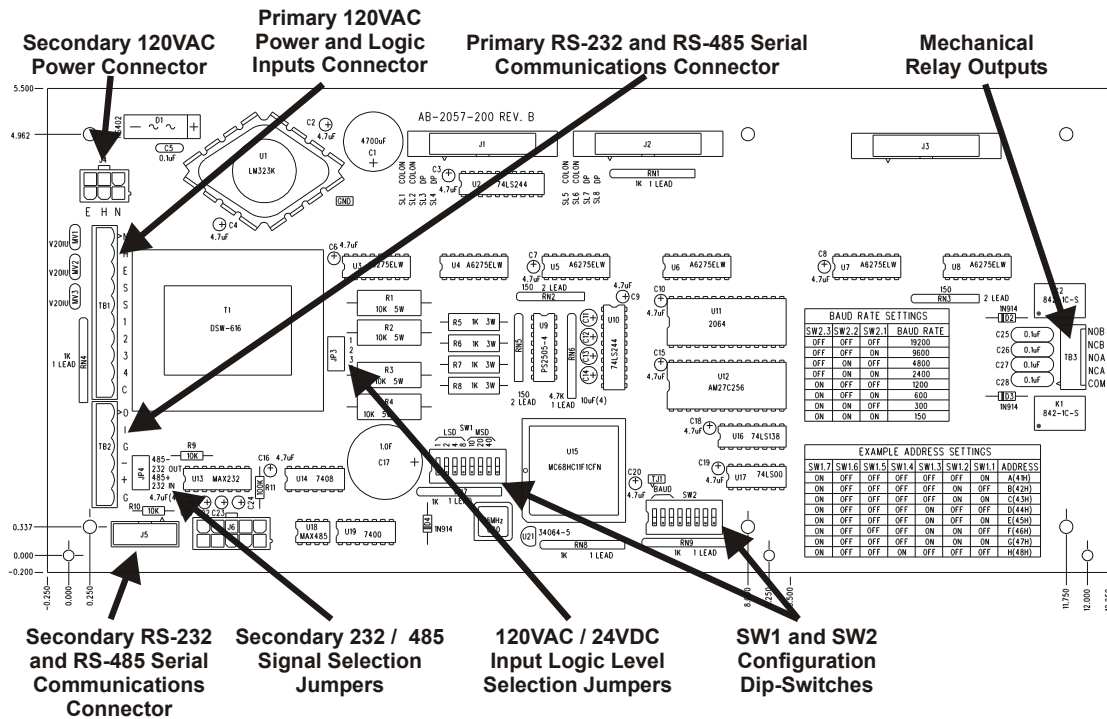
8" ADC Processor Board



4" ADC Display / Processor Board



2" ADC Display / Processor Board



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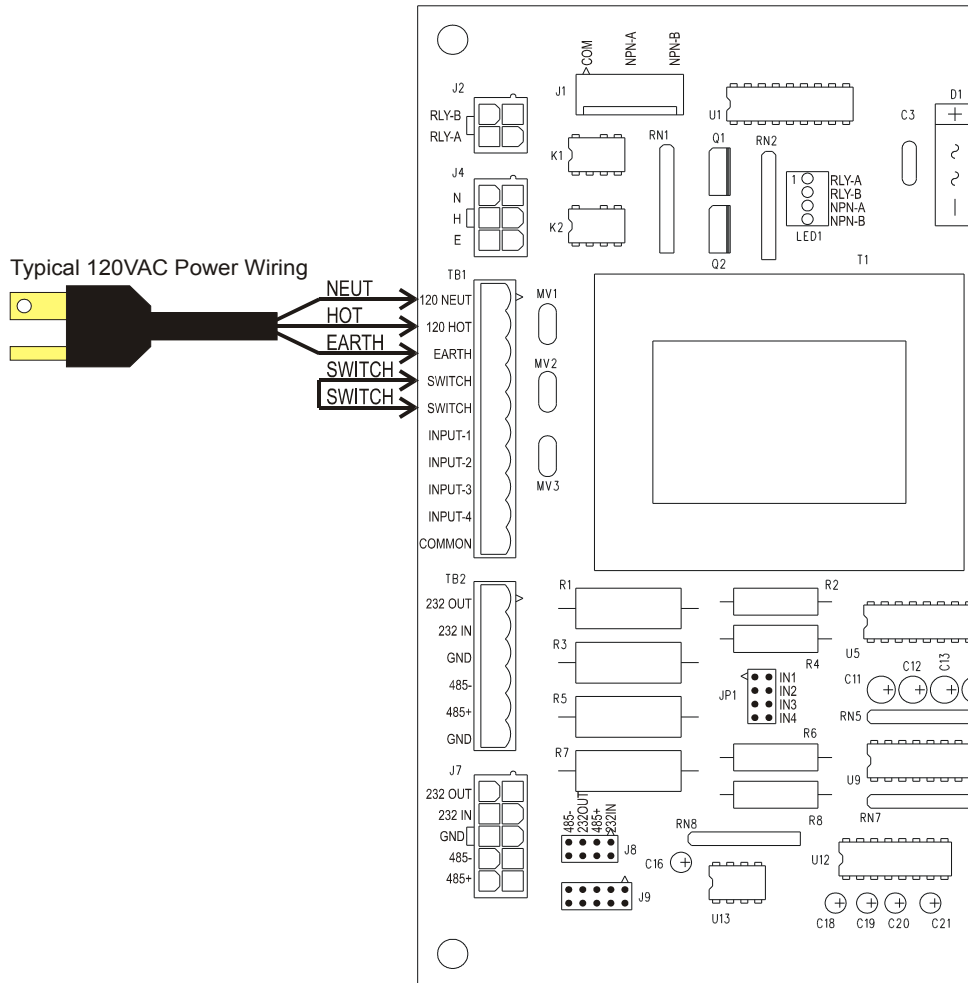


1.4 Power Installation

ADC units with the line cord option will simply need a standard 120VAC power receptacle located within five feet of the marquee.

ADCs purchased without the line cord option are shipped without external connections or holes in the enclosure. The installer will have to punch holes in the enclosure as appropriate. Power wiring is terminated within the unit on screw terminals appropriate for 16AWG wire. Typically you will need to connect 120VAC power to the ADC processor board, however in some custom ADC units, the factory will have provided either DIN rail barriers or cinch screw terminals elsewhere within the ADC enclosure.

Typical power wiring to the ADC primary power connector is shown below.

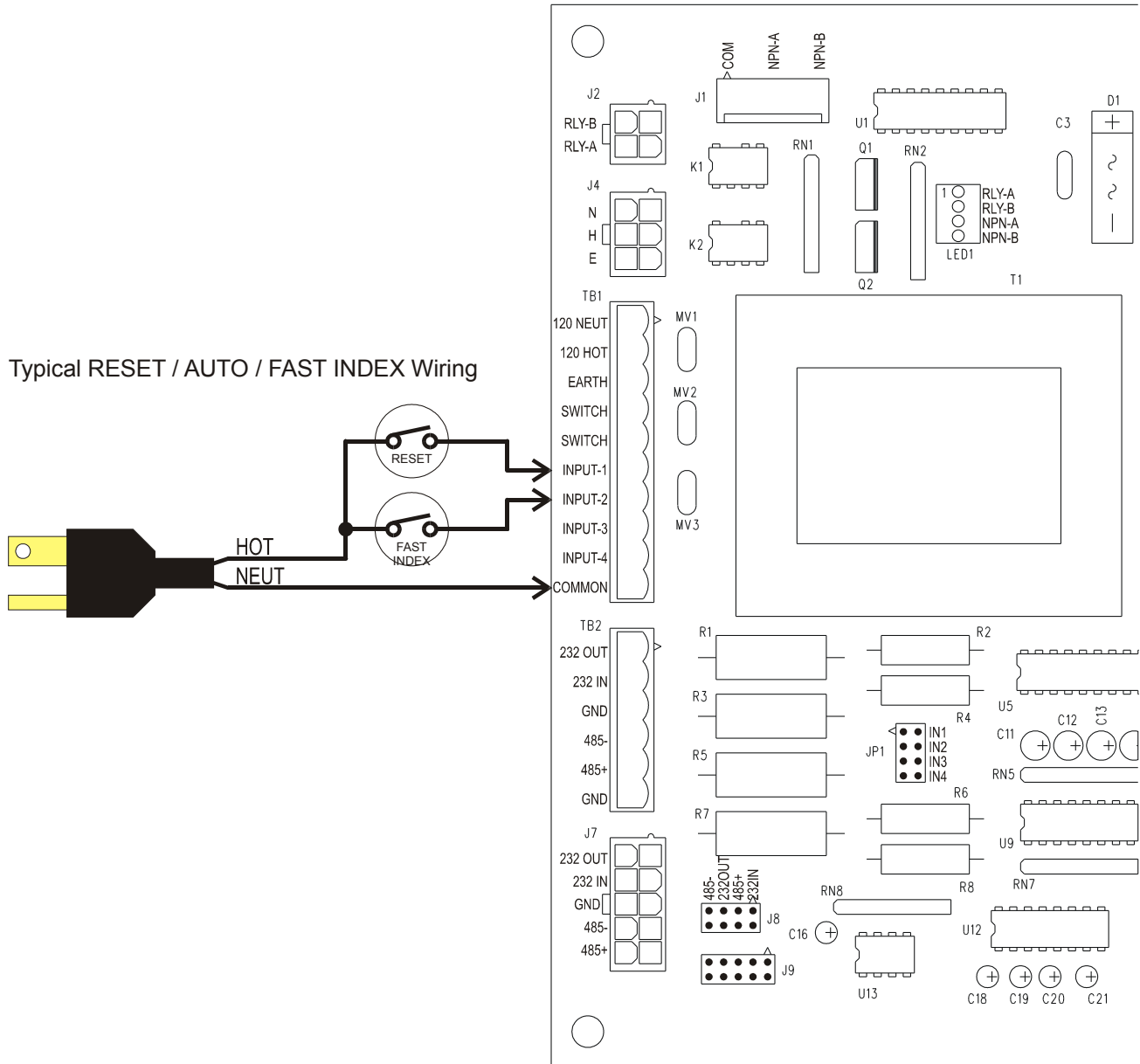


Connect 120VAC Neutral to pin 1, 120 VAC Hot to pin 2, and Earth Ground to pin 3. A switch suitable for 120VAC power may be connected across pins 4 and 5 to control 120VAC power to the marquee. Otherwise pins 4 and 5 of the power connector must be jumpered or the marquee will fail to operate.

Maximum power draw is 30W per four digit display field.

1.5 Reset / Auto / Fast Index Switch Wiring

ADC units with the factory installed operator switch will already have the following wiring installed. However if you purchased an ADC without the operator switch, you will need to supply a three position selector switch and connect it to the ADC as shown below.



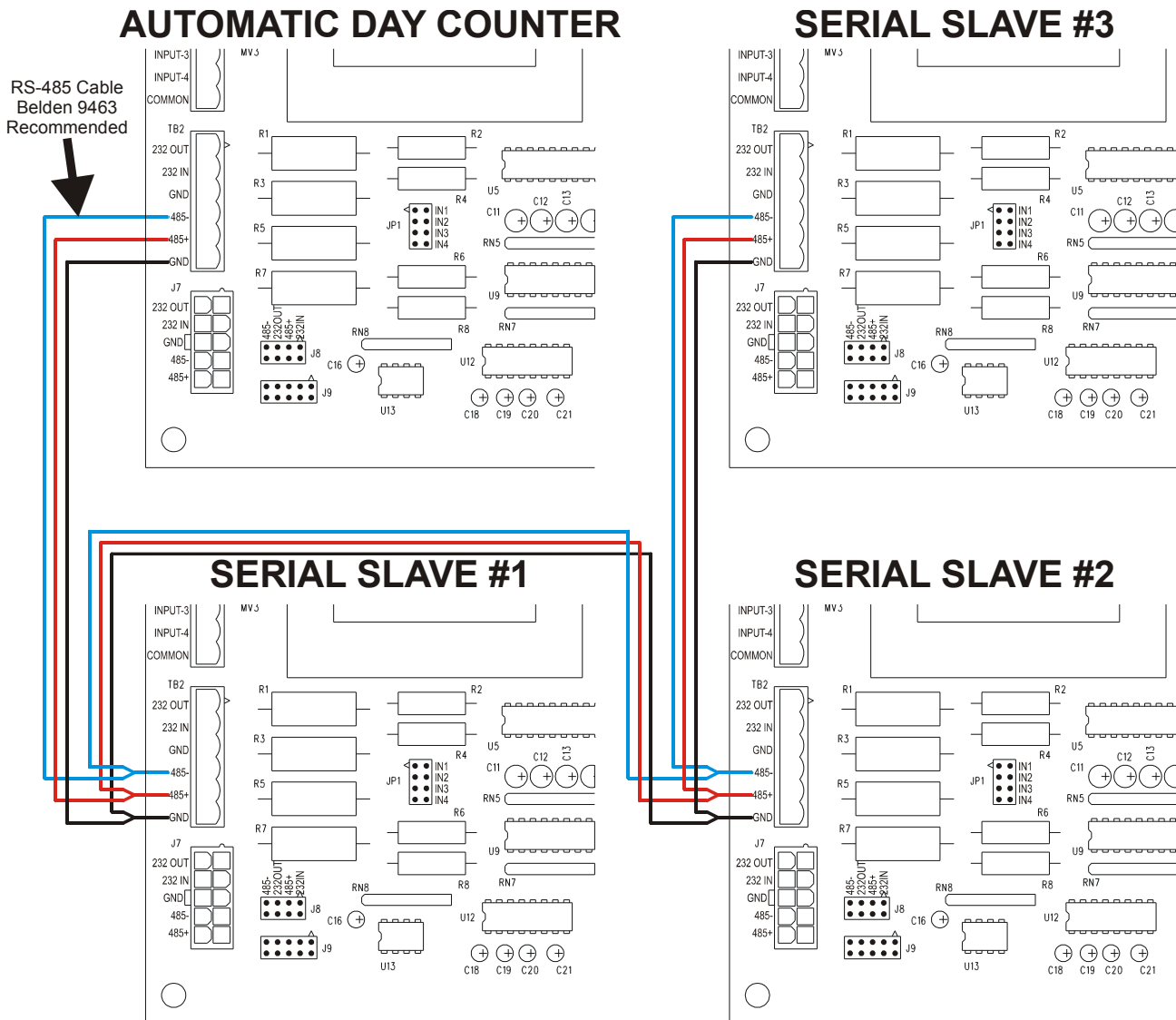
Applying 120VAC power to INPUT-1 (RESET) resets the ADC. Applying 120VAC to INPUT-2 (FAST INDEX) rapidly increments the ADC day count. If neither INPUT-1 nor INPUT-2 are activated, the ADC operates in automatic mode, counting days, hours, minutes, and seconds in real time.

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1.6 Serial Slave Wiring

ADCs transmit the real time day count out the RS-485 serial port four times per second. By connecting the ADC to serial slaves, the day count can be shown in up to sixty four locations separated out over a distance of up to four thousand cable feet.

Consult the serial slave manual for instructions on how to configure the slave for RS-485 communications at 19200 baud, with an address of 'A' (41h). Then connect the RS-485 screw terminals of the ADC to the RS-485 screw terminals of the slave marquees as shown below.



NOTE: RS-485 Cable must "chain" from unit to unit as shown above.
Total cable length may not exceed four thousand feet.
Total nodes may not exceed sixty four boards.

2.0 Operating the ADC

When you wish to reset the displayed days, and internal hours, minutes, and seconds counters to zero, simply activate RESET by rotating the operator switch to the RESET position or activate the RESET input for at least one second. If RESET is activated for less than one second, the ADC will ignore it, this is to prevent accidental resets.

To set the ADC to a specific day count, activate FAST INDEX by rotating the operator switch to the FAST INDEX position or activate the FAST INDEX input. When FAST INDEX is activated, the ADC will first reset the internal hours, minutes, and seconds counters to zero, and then FAST INDEX the day counter. Initially the ADC will fast index the day counter at a rate of one day per second, but the rate increase slowly up to one hundred days per second. This is to allow setting the day count to vary large numbers in a reasonable amount of time. When the day count approaches the correct number, release and then reactivate FAST INDEX to slow the index rate back down to one day per second.

Once the ADC has been RESET, or FAST INDEXED to the desired day count, release the operator switch to return it to the AUTO position, or deactivate the RESET and FAST INDEX inputs. Internally the ADC will begin counting seconds, minutes, and hours. Once twenty four hours have elapsed, the ADC will increment the day counter.

Because the ADC resets the internal hours, minutes, and seconds counters when it is RESET or FAST INDEXED, you need to set the ADC to the desired day count at the same time of day you wish the day count to increment.

For example, in a typical “days since last loss time accident” application, it is typically desirable for the day count to increment at the start of 1st shift. To accomplish this, set the day count using RESET and FAST INDEX as appropriate just before 1st shift begins.

2.1 Notes on Dealing with Power Outages

The ADC uses capacitor backed up ram to store the displayed day count, and the internal hours, minutes, and seconds counts. The capacitor will support the internal ram for up to one week without power, but the ADC will not accumulate days, hours, minutes, or seconds during the power outage.

If the power outage is short, the lost time will be insignificant and may be safely ignored. However if power is out for an extended time, you may need to use FAST INDEX mode to resynchronize the ADC day counter to your desired schedule as described in the previous section.

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3.0 In Case of Difficulties

Before contacting ALI for technical support, please review the manual sections covering installation and operation.

If the marquee does not power up, check the power indicator lamp. This indicator is connected directly to the 5VDC power supply. If it does not light the 120VAC power wiring is probably incorrect.

If the ADC does not respond to the logic inputs, please observe the input indicator lamps while attempting to operate the ADC. When an input is activated, the corresponding lamp will light.

If the ADC basic configuration operates, but the serial port is not working, first check all serial port wiring and dip-switch settings on slave marquees. There are several indicator lamps on the circuit boards to help troubleshoot serial communications problems.

- ENB Lights when the RS-485 transmitter is active.
- TXD Lights when the unit is transmitting serial data.
- RXD Lights when the unit is receiving serial data.

The above LED's should "flash" during serial communications because they only light during the transmission or reception of a character. When the serial data line is idle, all three LED's should remain off.

TJ1, the self-test jumper can be installed to check the numeric digits and erase the ADC memory.

3.1 Contacting American LED-gible® Inc.

If you need technical assistance, contact us by phone or fax and please have the model number, serial number, and a description of the problem available.

The serial number and model number of the marquee can be located on the right side of the unit imprinted on a SILVER ID TAG.

American LED-gible Inc.
(614) 851-1100
October 2006
Model # TL-2445-903
Serial # SO-8119-001

American LED-gible® technical support may be reached at:

American LED-gible® Inc.
1776 Lone Eagle St.
Columbus, OH 43228
(614) 851-1100 Phone
(614) 851-1121 Fax
www.ledgible.com www
ledgible@ledgible.com e-mail

4.0 Product Specifications

GENERAL:

Line Voltage	120VAC 60Hz or 50Hz
Power Consumption	No more than 30W per 4 Digits of Display
Operating Temperature	0° F to 135° F (-17° C to +50° C)
Operating Humidity	35% to 80%
Dimensions	Varies widely from unit to unit
Weight	Varies widely from unit to unit
Enclosure	Varies widely from unit to unit
Mounting	Varies widely from unit to unit

L.E.D. DISPLAY:

Digit Type	2.3", or 4.0", or 8.0" Tall Digits built with Red or Green L.E.D.
Digit Brightness	36mcd standard brightness
Lamp Life	100,000 Hours (11.4Years)
Viewing Distance	2.3" = 125 Feet, 4.0" = 200 Feet, 8.0" = 400 Feet

OPERATION:

Min / Max Day Count	0 to 9999 Days (0 to 27.3 Years)
Min / Max Index Rate	1 Day per Second to 100 Days per Second

LOGIC INPUTS:

Quantity	(4) RESET, FAST INDEX, and (2) spare
Logic Level	120VAC default, 24VDC by Installing Shorting Jumpers
Maximum Input Current	30mA per Input
Leakage Current Tolerance	3mA Maximum
Minimum Detectable Pulse	0.050 Seconds Minimum On Time, 0.050 Seconds Minimum Off Time.

COMMUNICATIONS:

Signaling	Full Duplex RS-232, or Half Duplex RS-485
Baud Rate	19200, 9600, 2400, 1200 switch selectable
Character Format	Eight Data Bits, No Parity, One Stop Bit

BACKUP MEMORY:

Memory Size	1024 Bytes
Minimum Retention	7 Days Without Power
Charge Time	Backup Cap Charges to 96% within 60 Seconds of Applying Power

RELAY OUTPUTS:

Quantity	(2) spare
AC Relay Rating	120VAC at ½ Amp Resistive Load
DC Contact Rating	24VDC at ½ Amp Resistive Load

5.0 Limited Warranty

We warrant to you that your AMERICAN LED-gible® BRAND MARQUEE, when purchased by you, will be free from defects in material and workmanship, under normal use, for one year from date of delivery. If your LED-GIBLE® BRAND MARQUEE should prove to be defective within the warranty period, we will repair it (or, if we think necessary, replace it) without charge to you.

To obtain service, please call our Customer Service Department at 1-614-851-1100 or write to:

AMERICAN LED-gible® Inc.
1776 LONE EAGLE STREET
COLUMBUS, OHIO 43228

We will furnish you with shipping instructions. This warranty covers merchandise returned to American LED-gible® (shipped prepaid) for repair, not in plant repairs. Should you need an in plant repair at your facility, American LED-gible® will schedule a trip. Rates are per diem, plus travel expenses.

ALI shall have the right of final determination as to the existence and cause of the defect. This warranty expressly excludes any defects or damages caused by accessories, replacement parts, or repair service, other than those which have been authorized by ALI. This warranty does not cover any damage caused by accident, misuse, shipment, or other than ordinary use.

This warranty excludes all incidental or consequential damages. Some states do not allow the exclusion of, or limitation of, incidental or consequential damages, so the foregoing exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. This warranty is in lieu of any other warranty, express, written, implied, or statutory, and no agreement extending or modifying it will be binding upon ALI, unless in writing and signed by duly authorized officer.

If your AMERICAN LED-gible® MARQUEE is outside the warranty period, please call our Customer Service Department as above. After you return the unit to American LED-gible®, we will estimate the repair charges, and contact you so a purchase order can be issued. Again, should you require in-house repair of your marquees, ALI rates are per diem, plus travel expenses. Please make sure to call, so a trip can be scheduled if this option is preferred.

LIMITATION OF LIABILITY:

If this product is not in good working order as warranted above, your sole remedy shall be repair or replacement as provided above. In no event will ALI be liable for special, indirect, or consequential damages, or any damages whatsoever resulting from loss of use, data, or profits arising out of, or in connection with this contract or the use or performance of ALI products, whether in an action of contract or tort, including negligence. ALI's liability for damage to property shall be limited to the cost of the product sold to the buyer.

6.0 ASCII Chart

ASCII CHARACTER	Hexadecimal Code	Decimal Code
CTRL-A	01h	1
CTRL-B	02h	2
CTRL-C	03h	3
CTRL-D	04h	4
CTRL-E	05h	5
CTRL-F	06h	6
CTRL-G	07h	7
CTRL-H	08h	8
CTRL-I	09h	9
CTRL-J	0Ah	10
CTRL-K	0Bh	11
CTRL-L	0Ch	12
CTRL-M	0Dh	13
CTRL-N	0Eh	14
CTRL-O	0Fh	15
CTRL-P	10h	16
CTRL-Q	11h	17
CTRL-R	12h	18
CTRL-S	13h	19
CTRL-T	14h	20
CTRL-U	15h	21
CTRL-V	16h	22
CTRL-W	17h	23
CTRL-X	18h	24
CTRL-Y	19h	25
CTRL-Z	1Ah	26
CTRL-[1Bh	27
CTRL-\	1Ch	28
CTRL-]	1Dh	29
CTRL-^	1Eh	30
CTRL-_ SPACE	1Fh 20h	31 32

ASCII CHARACTER	Hexadecimal Code	Decimal Code
!	21h	33
"	22h	34
#	23h	35
\$	24h	36
%	25h	37
&	26h	38
'	27h	39
(28h	40
)	29h	41
*	2Ah	42
+	2Bh	43
,	2Ch	44
-	2Dh	45
.	2Eh	46
/	2Fh	47
0	30h	48
1	31h	49
2	32h	50
3	33h	51
4	34h	52
5	35h	53
6	36h	54
7	37h	55
8	38h	56
9	39h	57
:	3Ah	58
;	3Bh	59
<	3Ch	60
=	3Dh	61
>	3Eh	62
?	3Fh	63
@	40h	64

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ASCII CHARACTER	Hexadecimal Code	Decimal Code
A	41h	65
B	42h	66
C	43h	67
D	44h	68
E	45h	69
F	46h	70
G	47h	71
H	48h	72
I	49h	73
J	4Ah	74
K	4Bh	75
L	4Ch	76
M	4Dh	77
N	4Eh	78
O	4Fh	79
P	50h	80
Q	51h	81
R	52h	82
S	53h	83
T	54h	84
U	55h	85
V	56h	86
W	57h	87
X	58h	88
Y	59h	89
Z	5Ah	90
[5Bh	91
\	5Ch	92
]	5Dh	93
^	5Eh	94
_	5Fh	95
'	60h	96

ASCII CHARACTER	Hexadecimal Code	Decimal Code
a	61h	97
b	62h	98
c	63h	99
d	64h	100
e	65h	101
f	66h	102
g	67h	103
h	68h	104
i	69h	105
j	6Ah	106
k	6Bh	107
l	6Ch	108
m	6Dh	109
n	6Eh	110
o	6Fh	111
p	70h	112
q	71h	113
r	72h	114
s	73h	115
t	74h	116
u	75h	117
v	76h	118
w	77h	119
x	78h	120
y	79h	121
z	7Ah	122
{	7Bh	123
	7Ch	124
}	7Dh	125
~	7Eh	126
DELETE	7Fh	127

7.0 Operator Notes