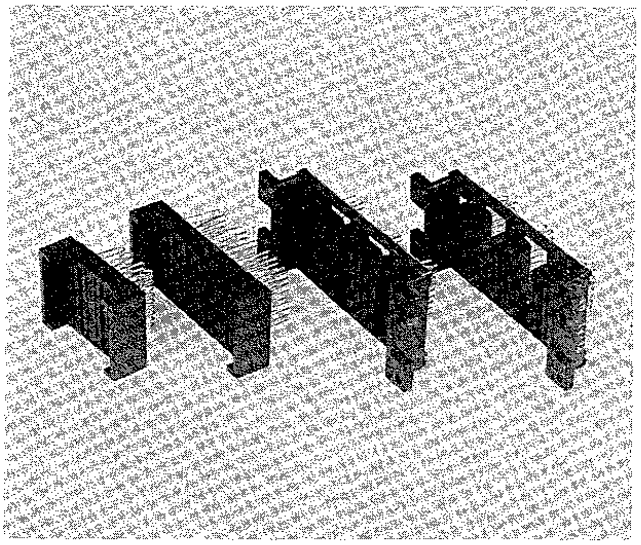
DISPLAY SOCKET/ DECODER ASSEMBLIES

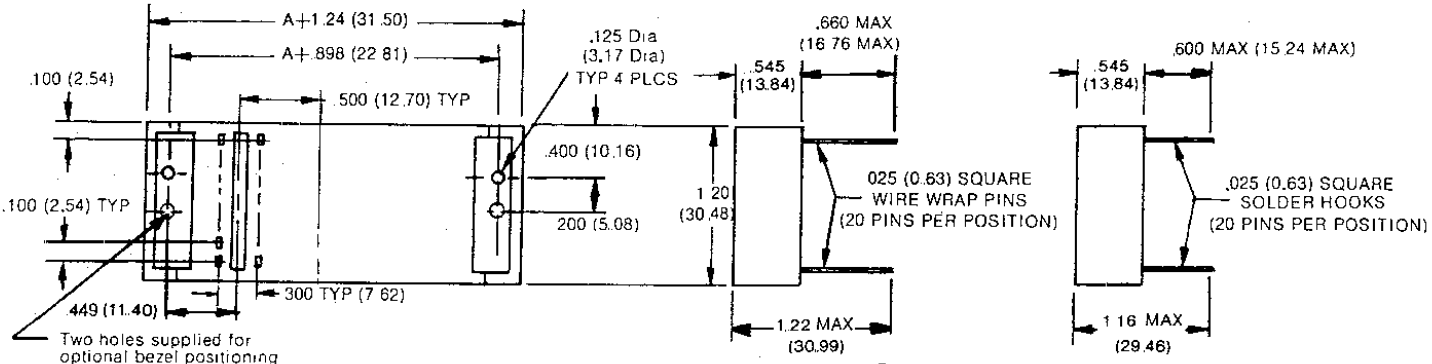
→ DMH22464
DMH24038
DMH24131
DMH25002

FEATURES

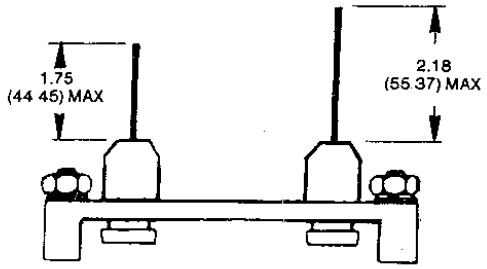
- DECODED OR NON-DECODED INPUTS
- WIREWRAP OR SOLDER HOOK TERMINALS
- BCD LATCH/DECODER/DRIVER (LED)
- PULSE COUNTER WITH LATCH/DECODER/DRIVER (LED)
- ACCEPTS .3" OR .6" PIN ROW SPACING DIP TYPE DISPLAYS
- MULTIPLE WIDTH UNITIZED ASSEMBLIES
- LOGIC CIRCUIT INTERFACES WITH POPULAR DISPLAYS (SEE GROUP LISTINGS)
- USES DMD1760 SERIES ELECTRONIC MODULE



PACKAGE DIMENSIONS



DMH22464-XX → DMH22464-OX DMH22464-3X



DMH22464-6X or -8X DMH22464-7X or -9X

DIMENSIONAL CHART

**Width	A	
	(inches)	(mm)
1	N.A.	N.A.
2	0.500	12.70
3	1.000	25.40
4	1.500	38.10
5	2.000	50.80
6	2.500	63.50
7	3.000	76.20
8	3.500	88.90

GROUP CODES

GROUP 1 Decoder/Driver Series 1760-01,-02			
IEE	HEWLETT-PACKARD	LITRONIX	T.I.
1352G	HDSP-3400	DL-10	TIL-302
1362E	HDSP-3530	DL-10A	TIL312
1372R	HDSP-4030	DL-307	TIL-314
1382Y	HDSP-4036	DL-707	TIL-316
1737R	HDSP-3730	DL-707R	
1800R	5082-7610	DL-741	MONSANTO
1804R	5082-7620	DLG-7670	MAN 52A
1806R	5082-7630	DLY-7660	MAN 3620A
7610R	5082-7650	DLO-7650	MAN 72A
7620Y	5082-7660	DL-7750	MAN 82A
7630G	5082-7670	DL-847	MAN 1
7650R	5082-7730	DL-747	MAN 1A
7660Y	5082-7750		MAN 10
7670G			MAN 10A
7730R			
7750R			

GROUP 2 Decoder/Driver Series 1760-03,-04			
IEE	7651R	5082-7671	MONSANTO
1351G	7661Y	5082-7731	MAN 51A
1361E	7671G		MAN 3610A
1371R	7731R	LITRONIX	MAN 71A
1381Y	7751R	DL-7751	MAN 81A
1451G		DLO-7651	MAN 4510A
1461E	HEWLETT-PACKARD	DLG-7671	MAN 4610A
1471R	HDSP-3531	DLY-7661	MAN 4710A
1481Y	HDSP-4031		MAN 4810Y
1720R	HDSP-3731	T.I.	
1737R	HDSP-4130	TIL-312	
1808R	HDSP-4131	TIL-314	
1812R	5082-7611	TIL-316	
1814R	5082-7621		
7611R	5082-7631		
7621Y	5082-7651		
7631G	5082-7661		

All dimensions in inches and (millimeters).
Specifications subject to change without notice

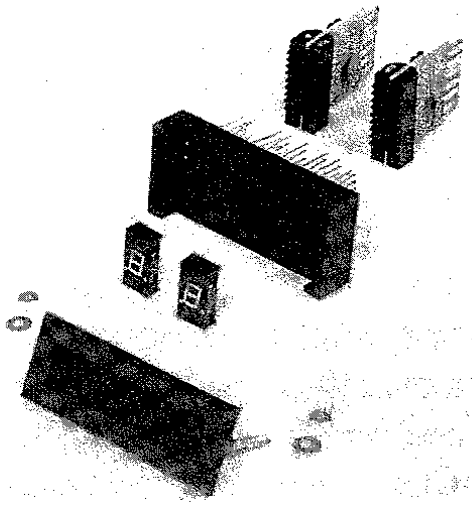
MOUNTING HARDWARE/ DECODER ASSEMBLIES

For 0.27″ (6.86mm) or 0.30″ (7.62mm) character height displays with 0.30″ (7.62mm) standard DIP spacing

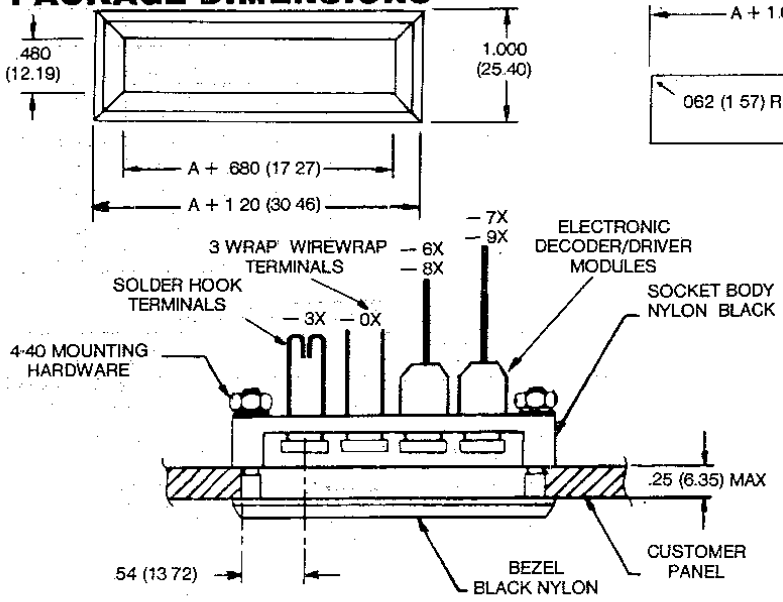
DMH1750 SERIES

FEATURES

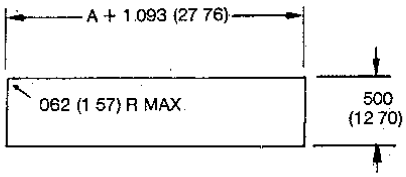
- COMPLETE BEZEL/SOCKET ASSEMBLY FOR DECODED OR NON-DECODED INPUTS
- ONE-PIECE CONSTRUCTION — NO SEAMS OR ASSEMBLY
- SELF-ALIGNING MOUNTING IN SIMPLE RECTANGULAR CUTOUT
- SIX FILTER COLORS - .48 INCH HIGH WINDOW
- BCD LATCH/DECODER/DRIVER OPTION
- PULSE COUNTER LATCH/DECODER/DRIVER OPTION
- MULTIPLE WIDTHS — 2 THRU 8 DIGITS
- WIREWRAP OR SOLDER HOOK TERMINATIONS
- CONSISTS OF DMH22463 BEZEL, DMH22464 SOCKET AND OPTIONAL DMD1760 SERIES ELECTRONIC MODULE



PACKAGE DIMENSIONS



PANEL CUTOUT



DIMENSIONAL CHART

**Width	A	
	(inches)	(mm)
1	N.A.	N.A.
2	0.500	12.70
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7	3.000	76.20
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GROUP CODES

GROUP 1 Decoder/Driver Series 1760-01,-02			
IEE	HEWLETT-PACKARD	LITRONIX	T.I.
1352G		DL-10	TIL-302
1362E	HDSP-3400	DL-10A	TIL312
1372R	HDSP-3530	DL-307	TIL-314
1382Y	HDSP-4030	DL-707	TIL-316
1737R	HDSP-3730	DL-707R	
1800R	5082-7610	DL-741	MONSANTO
1804R	5082-7620	DLG-7670	MAN 52A
1806R	5082-7630	DLY-7660	MAN 3620A
7610R	5082-7650	DLO-7650	MAN 72A
7620Y	5082-7660	DL-7750	MAN 82A
7630G	5082-7670	DL-647	MAN 1
7650R	5082-7730	DL-747	MAN 1A
7660Y	5082-7750		MAN 10
7670G			MAN 10A
7730R			
7750R			

GROUP 2 Decoder/Driver Series 1760-03,-04			
IEE	7651R	5082-7671	MONSANTO
1351G	7661Y	5082-7731	MAN 51A
1361E	7671G		MAN 3610A
1371R	7731R	LITRONIX	MAN 71A
1381Y	7751R	DL-7751	MAN 81A
1451G		DLO-7651	MAN 4510A
1461E	HEWLETT-PACKARD	DLG-7671	MAN 4610A
1471R		DLY-7661	MAN 4710A
1481Y	HDSP-3531		MAN 4810Y
1720R	HDSP-4031	T.I.	
1737R	HDSP-3731	TIL-312	
1808R	HDSP-4130	TIL-314	
1812R	HDSP-4131	TIL-316	
1814R	5082-7611		
7611R	5082-7621		
7621Y	5082-7631		
7631G	5082-7651		
	5082-7661		

ORDERING INFORMATION

DMH1750 X — XX

FILTER COLOR
R - RED POLARIZED
P - RED PLEX
A - AMBER POLARIZED
G - GREEN PLEX
M - MAGENTA PLEX
N - NEUTRAL POLARIZED
C - CLEAR PLEX
J - NEUTRAL PLEX
K - NO SCREEN

TYPE INPUT
0 - WIREWRAP
3 - SOLDER HOOK
6 - L/D/D TYPE 1760-1 FOR GROUP 1 DISPLAYS
7 - C/L/D/D TYPE 1760-02 FOR GROUP 1 DISPLAYS
8 - L/D/D TYPE 1760-03 FOR GROUP 2 DISPLAYS
9 - C/L/D/D TYPE 1760-04 FOR GROUP 2 DISPLAYS

****WIDTH**
2 THRU 8

NOTES: IEE can provide mounting hardware complete with LED readouts installed by IEE; please use the forms provided on pages 21 & 22 to order. There is no extra charge for this service. The factory will assign and record a part number for this completed assembly for future reference.

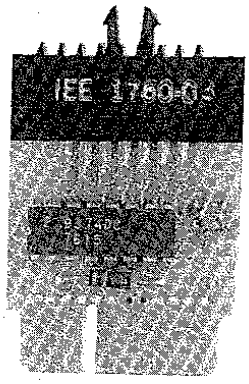
Magenta (M) filter recommended for red LED displays.

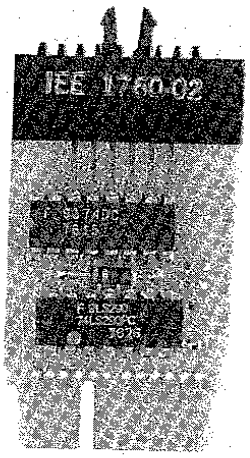
DECODER/DRIVERS

DMD1760 SERIES

FEATURES

- MOUNTS EASILY ON BACK OF IEE DISPLAY MOUNTING HARDWARE (WIREWRAP TERMINAL MODELS)
- ACCEPTS EITHER FOUR LINE BCD OR SERIAL, PULSE COUNT INPUTS
- ALL MODELS INCORPORATE AN INHERENT MEMORY CAPABILITY
- MODEL DMD 1760-01,-03 DECODER/DRIVER WITH MEMORY
- MODEL DMD 1760-02,-04 DECODER/DRIVER WITH MEMORY AND COUNTER
- DMD1760 SERIES DECODER/DRIVERS ARE DESIGNED TO OPERATE WITH COMMON ANODE LED READOUTS ONLY.

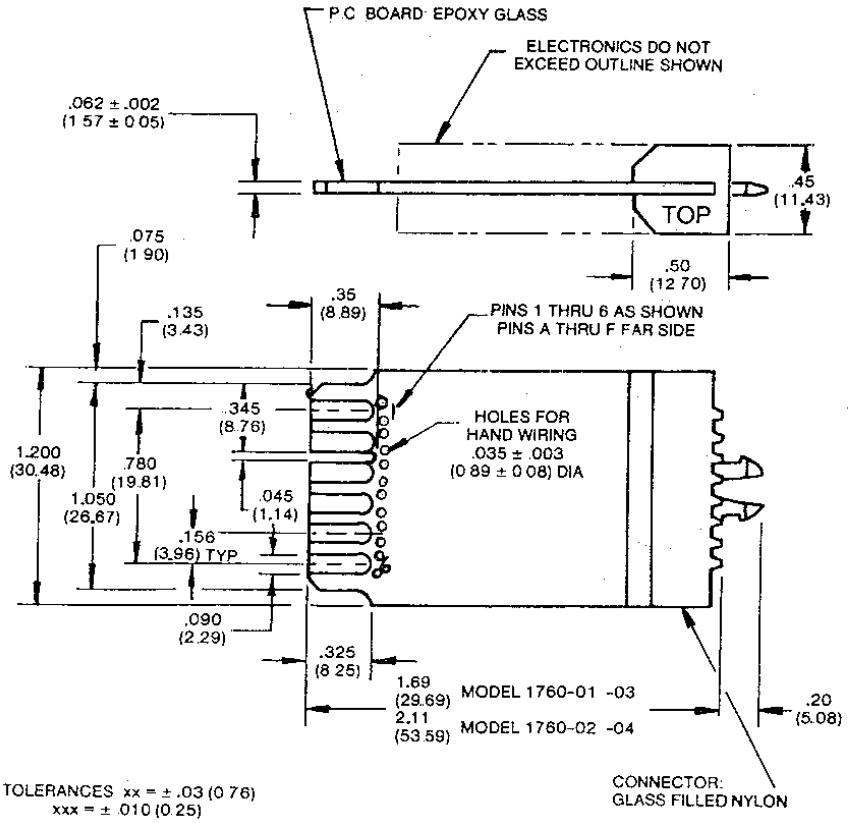




PACKAGE DIMENSIONS

DECODER/DRIVER

DMD1760-01, -03 DMD1760-02, -04



TOLERANCES xx = ± .03 (0.76)
xxx = ± .010 (0.25)

NOTE: The following connectors can be used with IEE DMD 1760 Series of Decoder/Drivers.

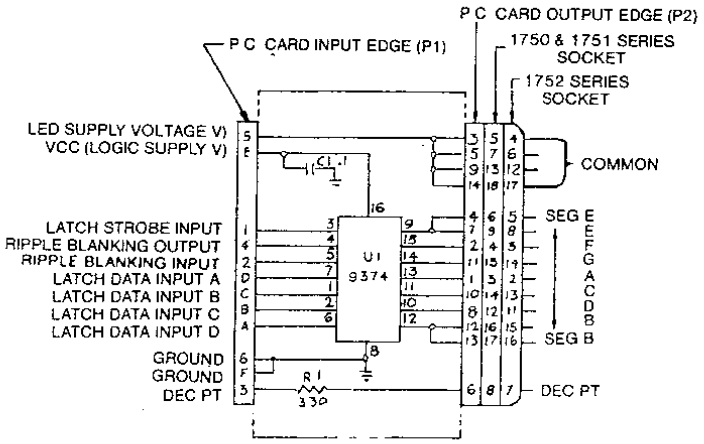
Viking Connector: 2VH6/1AN5 (has pierced tail) (Use 091-002 polarizing insert)

Masterite: S014GR6-DR-H-X (has pierced tail) (Use 091-0040-000 polarizing insert)

EDAC Inc: 307-012-500-202 (has pierced tail) (Use polarizing insert #307-240-318)

All dimensions in inches and (millimeters). Specifications subject to change without notice.

DRIVE SYSTEM
DECODER/DRIVER DMD1760-01
WITH LEFT HAND DECIMAL POINT



PIN ASSIGNMENT
SERIES DMH1750 & DMH 1751 SOCKET
AS VIEWED FROM FRONT

FUNCTION	PIN NO.	PIN NO	FUNCTION
"	1	20	"
"	2	19	"
Seg A	3	18	Common
Seg. F	4	17	Seg B
Common	5	16	Seg B
Seg. E	6	15	Seg G
Common	7	14	Seg. C
Dec. Pt	8	13	Common
Seg E	9	12	Seg D
*	10	11	*

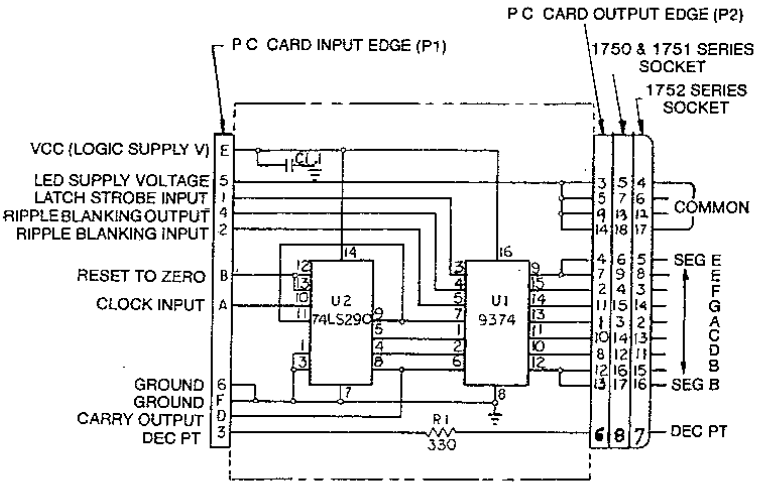
"PINS NOT USED BY DISPLAY OR DECODER

PIN ASSIGNMENT
SERIES DMH1752 SOCKET
AS VIEWED FROM FRONT

FUNCTION	PIN NO.	PIN NO.	FUNCTION
"	1	18	"
Seg A	2	17	Common
Seg. F	3	16	Seg B
Common	4	15	Seg B
Seg. E	5	14	Seg G
Common	6	13	Seg. C
Dec. Pt	7	12	Common
Seg E	8	11	Seg D
*	9	10	*

"PINS NOT USED BY DISPLAY OR DECODER

DRIVE SYSTEM
DECODER/DRIVER DMD1760-02
WITH LEFT HAND DECIMAL POINT



PIN ASSIGNMENT
SERIES DMH1750 & 1751 SOCKET
AS VIEWED FROM FRONT

FUNCTION	PIN NO.	PIN NO	FUNCTION
"	1	20	"
"	2	19	"
Seg A	3	18	Common
Seg. F	4	17	Seg B
Common	5	16	Seg B
Seg E	6	15	Seg G
Common	7	14	Seg C
Dec Pt	8	13	Common
Seg E	9	12	Seg D
*	10	11	*

"PINS NOT USED BY DISPLAY OR DECODER

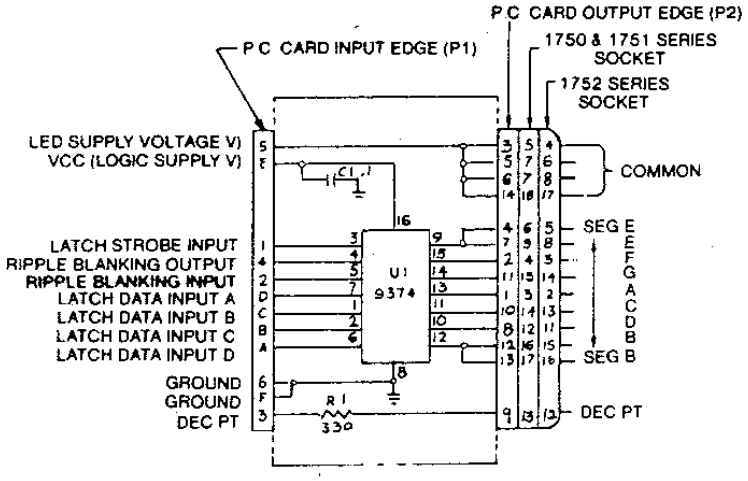
PIN ASSIGNMENT
SERIES DMH1752 SOCKET
AS VIEWED FROM FRONT

FUNCTION	PIN NO.	PIN NO	FUNCTION
"	1	18	"
Seg A	2	17	Common
Seg. F	3	16	Seg. B
Common	4	15	Seg B
Seg E	5	14	Seg G
Common	6	13	Seg. C
Dec. Pt	7	12	Common
Seg E	8	11	Seg D
*	9	10	*

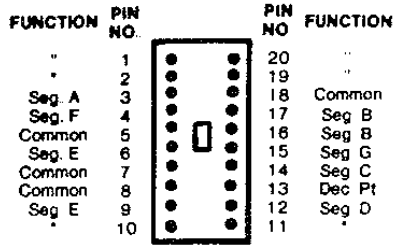
"PINS NOT USED BY DISPLAY OR DECODER

Specifications subject to change without notice.

DRIVE SYSTEM
DECODER/DRIVER DMD1760-03
WITH RIGHT HAND DECIMAL POINT

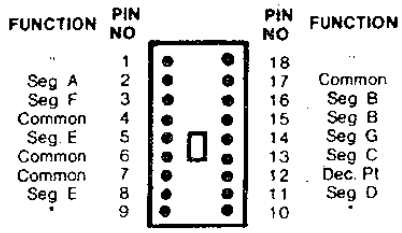


PIN ASSIGNMENT
SERIES DMH1750 & DMH1751 SOCKET
AS VIEWED FROM FRONT



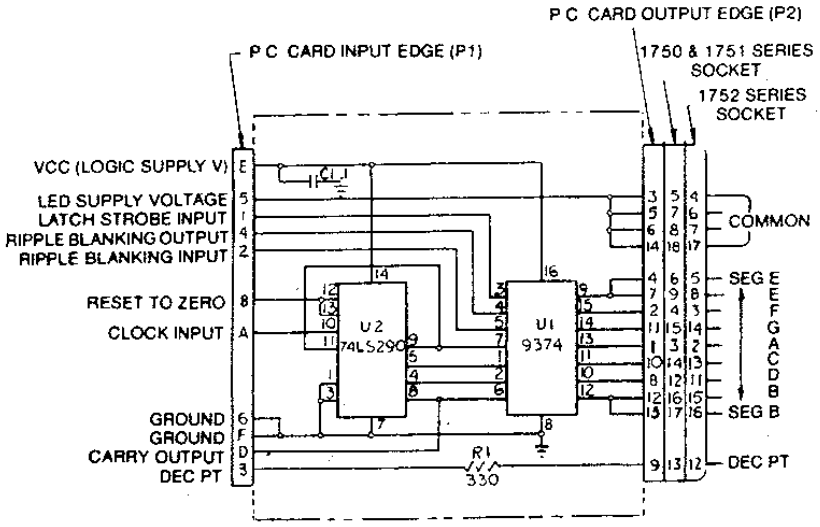
"PINS NOT USED BY DISPLAY OR DECODER

PIN ASSIGNMENT
SERIES DMH1752 SOCKET
AS VIEWED FROM FRONT

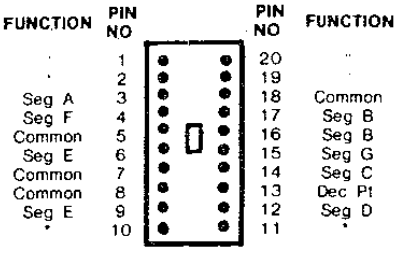


"PINS NOT USED BY DISPLAY OR DECODER

DRIVE SYSTEM
DECODER/DRIVER DMD1760-04
WITH RIGHT HAND DECIMAL POINT

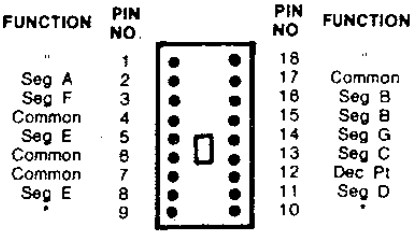


PIN ASSIGNMENT
SERIES DMH1750 & DMH1751 SOCKET
AS VIEWED FROM FRONT



"PINS NOT USED BY DISPLAY OR DECODER

PIN ASSIGNMENT
SERIES DMH1752 SOCKET
AS VIEWED FROM FRONT



"PINS NOT USED BY DISPLAY OR DECODER

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

PARAMETER	UNIT
Continuous Supply Voltage VCC	5 5 VDC
Non repetitive Peak Supply Voltage tw 100ms	7V
Data input voltage	−0 5 VDC to +5 5VDC
LED supply voltage	7 0 VDC
Storage temperature	−55°C to +125°C
Operating temperature	0°C to +70°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C) SERIES 1760-01, -03

SYMBOL	CHARACTERISTICS	LIMITS MIN	LIMITS TYP*	LIMITS MAX	UNITS	CONDITIONS
V_{IH}	Input HIGH Voltage	2.0			V	Guaranteed Input HIGH Voltage for All Inputs
V_{IL}	Input LOW Voltage			0.8	V	Guaranteed Input LOW Voltage for All Inputs
V_{CD}	Input Clamp Diode Voltage			−1.5	V	V_{CC} = MIN, I_{IN} = −12mA, T_A — +25°C
V_{OH}	Output HIGH Voltage RBO	2.4	3.5		V	V_{CC} = MIN, I_{OH} = −40µA
V_{OL}	Output LOW Voltage RBO		0.25	0.4	V	V_{CC} = MIN, I_{OL} = 0.8mA
I_{ON}	Segment Current	12	15	18	mA	V_{CC} = 5.0V V_{OL} = 3.0V
			14		mA	V_{CC} = 5.0V, V_{OL} = 0.5V
I_{IH}	Input HIGH Current Data		10	40	µA	V_{CC} = MAX V_{IN} = 2 4V
	RBI & EL		5	20	µA	
	Input HIGH Current			1.0	mA	V_{CC} = MAX, V_{IN} = 5 5V
I_{IL}	Input LOW Current EL & RBI		−0 25	−0.4	mA	V_{CC} = MAX V_{IN} = 0 4V
	Data (Latch Enable LOW)		−0 25	−0.4	mA	
	Data (Latch Enable HIGH)		±0.01	−0.06	mA	
	RBO (Used as an Input)		−0.7	−1.2	mA	
I_{CC}	Power Supply Current	35	35	50	mA	V_{CC} = MAX V_{IN} = 0.0V, V_{OUT} = 3.0V

Power savings can be obtained by operating the LEDS on a separate supply.

$V_{LED} = V_F$ (max) + V_{SAT} (Driver)
V_{LED} = LED Supply voltage
V_F (max) = Max fwd voltage of LED
V_{SAT} = 0 5V

*Typical limits are at V_{CC} = 5.0V at T_A = +25°C and with maximum loading

ELECTRICAL CHARACTERISTICS (Ta = 25°C) SERIES 1760-02, -04

SYMBOL	CHARACTERISTICS		LIMITS MIN	LIMITS TYP**	LIMITS MAX	UNITS	CONDITIONS
V_{IH}	High-level input voltage		2			V	
V	Low-level input voltage				0.8	V	
V_I	Input clamp voltage				−1 5	V	V_{CC} = MIN, I_I = 18mA
V_{OH}	High-level output voltage						V_{CC} = MIN, V_{IH} - 2V.
			2.7	3.4		V	V_{IL} = V_{IL}max I_{OH} = 400µA
V_{OL}	Low-level output voltage			0.25	0.4	V	V_{CC} = MIN, V_{IH} - 2V, I_{OL} ≡ 4mA
				0.36	0.5		V_{IL} = V_{IL}max I_{OL} = 8mA
I_I	Input current at maximum input voltage	reset			0.1	mA	V_{CC} = MAX, V_I = 7V
		A input			0.4		
		Strobe			0.8		V_{CC} = MAX, V_I = 5 5V
I_{IH}	High-level input current	reset			20	µA	
		A input			80		
		Strobe			160		V_{CC} = MAX V_{CC} = MAX V_I = 2 7V
I_{IL}	Low-level output current	reset			-0.4	mA	V_{CC} = MAX V_I = 0 4V
		A input			−2 4		
		Strobe			−1.6		
I_{OS}	Short-circuit output current***		−5		−42	mA	V_{CC} = MAX
I_{CC}	Supply current			44	66	mA	V_{CC} = MAX,

For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

**All typical values are at V_{CC} = 5V T_A = 25°C

***Not more than one output should be shorted at a time

Specifications subject to change without notice.

INPUT DATA DESCRIPTION

DECODER/DRIVER DMD1760-01, -03

FUNCTION	PIN NO. (P1)	DESCRIPTION
latch strobe input	1	When low, the data in the latches follow the data on the latch inputs. When high, the data in the latches are held constant and are unaffected by new data on the latch input
latch data inputs ABCD	D C B A	Data on these inputs are entered into the latches under control of the latch strobe input. The binary weights of the inputs are A=1, B=2, C=4, D=8
DP	3	When pulled to ground the decimal point will light. The driver must be capable of sinking 10mA
RBI	2	When the ripple blanking input and inputs A, B, C & D are low the display will blank and the ripple blanking output (pin 4) will go low
RBO	4	When the RBO pin is used as an input a low will unconditionally blank the display. When used as an output leading zero suppression will be effected

DECODER/DRIVER DMD1760-02, -04

FUNCTION	PIN NO. (P1)	DESCRIPTION
reset input	B	When high resets and holds counter at 0. Must be low for normal counting
clock input	A	Each negative-going transition will increment the counter provided that the reset input is low
carry output	D	Will go low when the counter increments from 9 to 0. Should be tied to the clock input of the next most significant stage for a multi-decade counter
latch strobe input	1	When low data in the latches follow the data in the counter. When high, the data in the latches are held constant, and the counter operates independently
decimal point	3	When pulled to ground the decimal point will light. The external driver must be capable of sinking 10mA
RBI	2	When the ripple blanking input is low and the counter is at zero the display will blank and the blanking output (pin 4) will go low
RBO	4	When the RBO pin is used as an input a low will unconditionally blank the display. When used as an output leading zero suppression may be effected

SWITCHING CHARACTERISTICS V_{cc} = 5V; Ta = 25°C

DECODER/DRIVER DMD1760-02, 04

TABLE II

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
f max	A	Q_A	CL = 15pF, RL = 400Ω	32	42		MHz
t PLH	CLOCK	CARRY			32	48	ns
t PHL					34	50	
t PHL	Set-to-0	Any			26	40	ns
t_s(H)	Set-up Time HIGH Data to Latch Enable			75			ns
T_h(H)	Hold Time HIGH Data to Latch Enable			0			ns
t_s(L)	Set-up Time LOW Data to Latch Enable			30			ns
t_h(L)	Hold Time LOW Data to Latch Enable			0			ns
t_w(EL)	Latch Enable Pulse Width			85	50		ns

f max = maximum count frequency

t PLH = propagation delay time, low-to-high-level output

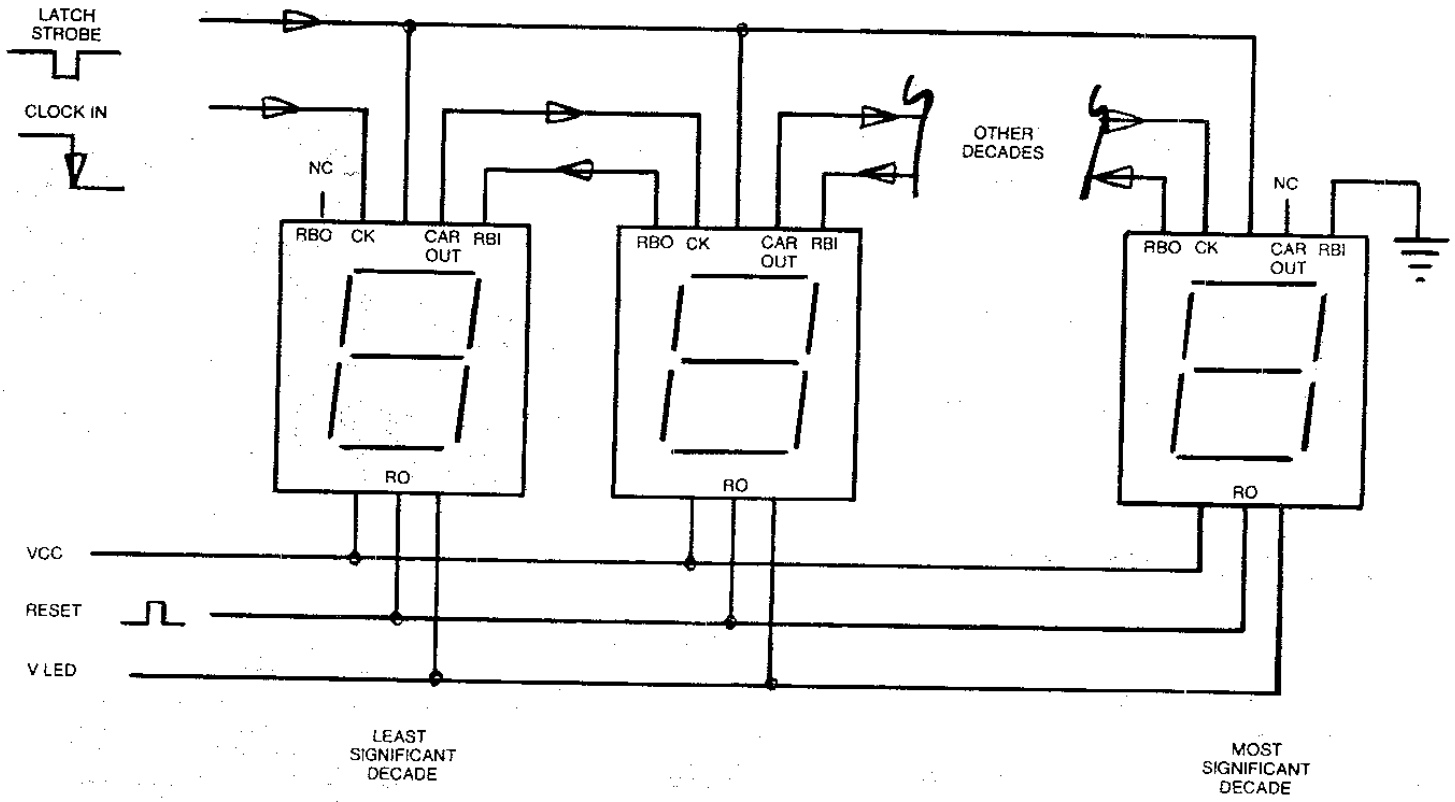
t PHL = propagation delay time, high-to-low-level output

Set-up time: t_s is defined as the time required for the logic level at the Data Input prior to the Enable transition from LOW to HIGH in order for the latch to recognize and store the new data

Hold time: t_h is defined as the minimum time following the Enable transition from LOW to HIGH that the logic level must be maintained at the data input in order to ensure continued recognition. A negative Hold Time indicates that the correct logic level may be released prior to the Enable transition from LOW to HIGH and still be recognized

Specifications subject to change without notice.

TYPICAL APPLICATION DECADE COUNTER CHAIN
SERIES DMD1760-02, -04



TRUTH TABLE
SERIES DMD1760-01,-03

FUNCTION	LATCH INPUTS D	C	B	A	STB	RBI	RBO	DISPLAY
Latched	X	X	X	X	H	*	H	STABLE
0	L	L	L	L	L	L	L	NONE
0	L	L	L	L	L	H	H	0
1	L	L	L	H	L	X	H	1
2	L	L	H	L	L	X	H	2
3	L	L	H	H	L	X	H	3
4	L	H	L	L	L	X	H	4
5	L	H	L	H	L	X	H	5
6	L	H	H	L	L	X	H	6
7	L	H	H	H	L	X	H	7
8	H	L	L	L	L	X	H	8
9	H	L	L	H	L	X	H	9
10	H	L	H	L	L	X	H	10
11	H	L	H	H	L	X	H	11
12	H	H	L	L	L	X	H	12
13	H	H	L	H	L	X	H	13
14	H	H	H	L	L	X	H	14
15	H	H	H	H	L	X	H	15
X	X	X	X	X	X	X	L**	BLANK

*The RBI will blank the display only if a binary zero is stored in the latches.
**RBO used as an input overrides all other input conditions