

Approved Equals (2)
RFP #113 Cut Away Busses

5/01/2019

A request was made to add a Hanover Brand Digital Sign in place of a Twin Vision unit as is in the original RFP.

The request is granted.

Please sign here indicating that you received this Approved Equals, include the price difference, and send it along with your proposal.

Sincerely,



Brian Vander Hulst
Transit Specialist

Hanover Sign Option \$ _____

Signed: _____ Date: _____


MECHANICAL DATA

Case dimensions (excluding brackets):	44 ¹ / ₂ x 8 ¹ / ₄ x 2" / 1131 x 210 x 50mm (l x h x d)
Viewing area:	42 ¹ / ₂ x 6" / 1082 x 152mm (l x h)
Sign construction:	Punched and folded aluminum case (no welds), for increased strength, no louvers required. Matte black, powder coat finish.
Weight:	10lbs / 4.5kg
Cable exit points:	Top left, top right (to be specified at time of order)

DISPLAY DATA

Maximum character height:	6" / 152mm
Text format:	Static, paging or scrolling, 1 or 2 lines
Font options:	Hanover fonts as supplied with Helen programming software plus Windows™ fonts
Display technology:	High visibility LEDs (with integrated ambient light sensor control (full linear range from 10-100% range))
Communication interfaces:	RS485 (standard). J1708, RS232, IBIS, Ethernet (via display controller)

LED SPECIFICATION

Lifetime (to ½ brightness):	Approx. 100,000 hours dependent on temperature and current
Size and type:	1/8 x 5/32" / 3.2 x 4.0mm (w x h) oval through-hole
Dominant color wavelength:	Amber 588 - 594nm (typically 591nm)
Pitch:	Horizontal: 3/8" / 9.7mm - vertical: 13/32" / 10.2mm
Viewing angle (horizontal):	120°

ELECTRICAL DATA

Operating voltage (24Vdc & 12Vdc models):	24Vdc nominal (18-32V) / 12Vdc nominal (10-32V)
Typical power consumption (33% on at 100% brightness):	13 watts (0.54A measured at 24V – 1.08A measured at 12V)
Maximum power consumption (all on at 100% brightness):	23 watts (0.96A measured at 24V – 1.92A measured at 12V)
Electrical protection:	Anti-surge, reverse polarity
Display processor fuse rating:	5A quick blow

OPERATIONAL DATA

Temperature range (storage):	0 - 140°F (0 - 180°F) / -20° to +60°C (-20° to +80°C)
Humidity:	95% max

Product guaranteed for 12 years against faulty materials and/or workmanship.

Buy America compliant – Signs (including casework and PCB's) are all manufactured in the USA.

Hanover Displays LED signs meet Automotive EMC Directive ECE R10 as amended. Certificate N°E11 10R-046100.

Hanover Displays LED signs meet United Nations Automotive Burning Behaviour Directive ECE R118.

Certificate N°E11 118R11-021140.

ADA, Equality Act 2010, PSV Accessibility Regulations & Annexe 11 compliant.


MECHANICAL DATA

Case dimensions (excluding brackets):	32 ¹ / ₂ x 7 ⁷ / ₈ x 2" / 825 x 201 x 50mm (l x h x d)
Viewing area:	30 ⁵ / ₈ x 5 ⁷ / ₁₆ " / 779 x 138mm (l x h)
Sign construction:	Punched and folded aluminum case (no welds), for increased strength, no louvers required. Matte black, powder coat finish.
Weight:	8.8lbs / 4kg
Cable exit points:	Rear panel, top left, top right, bottom left, bottom right (to be specified at time of order)

DISPLAY DATA

Maximum character height:	5 ⁷ / ₁₆ " / 138mm
Text format:	Static, paging or scrolling, 1 or 2 lines
Font options:	Hanover fonts as supplied with Helen programming software plus Windows™ fonts
Display technology:	High visibility LEDs (with integrated ambient light sensor control (full linear range from 10-100% range))
Communication interfaces:	RS485 (standard). J1708, RS232, IBIS, Ethernet (via display controller)

LED SPECIFICATION

Lifetime (to ½ brightness):	Approx. 100,000 hours dependent on temperature and current
Size and type:	1 ¹ / ₈ x 5 ⁵ / ₃₂ " / 3.2 x 4.0mm (w x h) oval through-hole
Dominant color wavelength:	Amber 588 - 594nm (typically 591nm)
Pitch:	Horizontal: 5 ⁵ / ₁₆ " / 8.16mm - vertical: 3 ³ / ₈ " / 9.2mm
Viewing angle (horizontal):	120°

ELECTRICAL DATA

Operating voltage (24Vdc & 12Vdc models):	24Vdc nominal (18-32V) / 12Vdc nominal (10-32V)
Typical power consumption (33% on at 100% brightness):	10 watts (0.42A measured at 24V – 0.84A measured at 12V)
Maximum power consumption (all on at 100% brightness):	17 watts (0.69A measured at 24V – 1.38A measured at 12V)
Electrical protection:	Anti-surge, reverse polarity
Display processor fuse rating:	5A quick blow

OPERATIONAL DATA

Temperature range (storage):	0 - 140°F (0 - 180°F) / -20° to +60°C (-20° to +80°C)
Humidity:	95% max

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Hanover Displays LED signs meet Automotive EMC Directive ECE R10 as amended. Certificate N°E11 10R-046100.

Hanover Displays LED signs meet United Nations Automotive Burning Behaviour Directive ECE R118.

Certificate N°E11 118R11-021140.

ADA, Equality Act 2010, PSV Accessibility Regulations & Annexe 11 compliant.


MECHANICAL

Case dimensions (w x h x d):	4 ¹ / ₈ x 2 x 4 ³ / ₄ " / 105 x 48 x 121mm
Mounting cut-out dimensions (w x h):	3 ⁵ / ₈ x 1 ³ / ₄ " / 92 x 45mm
Mounting type:	Dashboard/panel using DIN clamps or screw fixing
Approximate weight:	1.1lbs / 0.5kg
Driver interface :	4 button function/navigation keypad

DISPLAY

Display size (w x h):	2 ³ / ₄ x 3 ³ / ₄ " / 71 x 19mm
Display format:	256 x 64 pixels, multi-line or graphics including sign mimic
Display technology:	High resolution amber OLED with automatic screen dimming

DATA STORAGE

Memory capacity:	8MB
Dual database capacity:	Timed update triggered by programmable real-time clock
Data loading:	USB storage device via front panel socket

COMMUNICATIONS, INPUT/OUTPUT

Sign communications:	RS485 (standard communications with Hanover signs)
Secondary communications:	J1708 (std), RS232, RS485, isolated RS485, IBIS (optional)
Digital input/output:	1x digital output 2x digital inputs
Piezo sounder:	Monophonic multi-note sounder

ELECTRICAL

Operating voltage:	9-36Vdc
Typical power consumption:	3.6 watts (0.15A measured at 24V in testing signs mode)
Electrical protection:	Reverse polarity and transient

OPERATIONAL

Temperature range (storage):	0 – 140°F (0-180°F) / -20° to +60°C (-20° to +80°C)
Humidity:	95% max

Product guaranteed for 12 years against faulty materials and/or workmanship.

Buy America compliant – Driver Consoles are all manufactured in the USA.

Hanover Displays DG3 meet Automotive EMC Directive/ ECE R10 as amended. Certificate N°E11 10R-045763.
 ADA, Equality Act 2010, PSV Accessibility Regulations & Annexe 11 compliant.