



# High Speed Counter

## HE800HSC600 / HE-HSC600\*

### High Speed Counter Inputs

### Sinking Pulse Outputs

\* HE- denotes plastic case.



This datasheet also covers products starting with IC300. This product also has a detailed supplement (SUP0265) available.

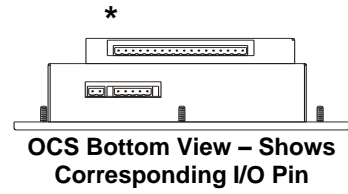
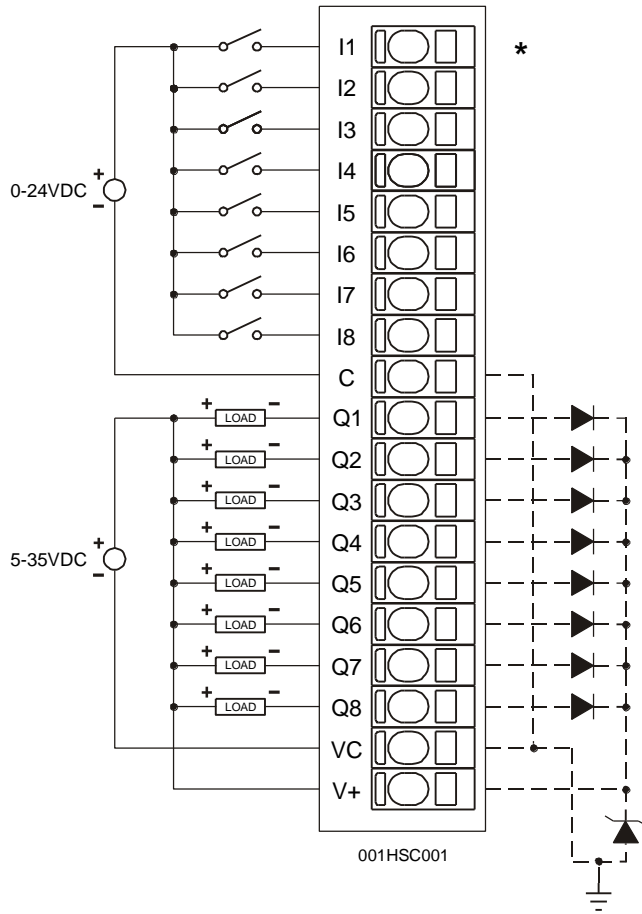
## 1 SPECIFICATIONS

| INPUT                             | HSC600           |             |        |        | HSC600             |                        |
|-----------------------------------|------------------|-------------|--------|--------|--------------------|------------------------|
| Inputs per Module                 | 8                |             |        |        | Commons per Module | 1                      |
| Minimum Pulse Width               | 250 ns           |             |        |        | Minimum Period     | 500 ns                 |
| Maximum Frequency                 | 2 MHz            |             |        |        |                    |                        |
| Programmable Input Voltage Ranges | Zero Crossing    | TTL / 5 VDC | 12 VDC | 24 VDC | Input Type         | Positive Logic         |
|                                   | ON Voltage Level | + 0.1       | + 2    | + 8    | + 16               | Peak Voltage           |
| OFF Voltage Level                 | - 0.1            | + 0.8       | + 4    | + 8    | Input Impedance    | 10 K $\Omega$          |
|                                   |                  |             |        |        | Input Filter       | 500 KHz, 50 KHz, 5 KHz |

| OUTPUT                  | HSC600   |  |  |  | HSC600                          |  |
|-------------------------|--|--|--|--|---------------------------------|--|
| Outputs per Module      | 8  |  |  |  | Output Protection               | Short Circuit  |
| Commons per Module      | 1  |  |  |  | Maximum Leakage Current         | 100 $\mu$ A  |
| Operating Voltage       | 5–35 VDC                                       |  |  |  | Maximum Inrush Current          | 600 mA. per channel                                      |
| Output Type             | Sinking / 10 K Pull-Up Negative Logic          |  |  |  | Minimum Load                    | None   |
| Peak Voltage            | 35 VDC Max.                                    |  |  |  | OFF to ON Response              | 0.3 $\mu$ S.   |
| Output Characteristics  | Current Sinking                                |  |  |  | ON to OFF Response              | 2 $\mu$ S.   |
| ON Voltage Level        | 1.5 VDC Max. @ 500 mA<br>0.7 VDC Max. @ 250 mA |  |  |  | Maximum Load Current per Output | 0.5 A  |
| Minimum PWM Pulse Width | 10 $\mu$ S                                     |  |  |  | Maximum PWM Frequency           | 50 KHz @ 50% duty cycle (10 $\mu$ S ON + 10 $\mu$ S OFF) |
| Minimum PWM Frequency   | 153 KHz @ any duty cycle                       |  |  |  |                                 |  |

| General Specifications        |  |                       |                      |
|-------------------------------|--|-----------------------|----------------------|
| Required Power (Steady State) | 0.29 W (12.43 mA @ 24 VDC)   | Relative Humidity     | 5–95% Non-condensing |
| Required Power (Inrush)       | 0.44 W (18.4 mA @ 24 VDC)  | Operating Temperature | 0°–60° Celsius       |
|                               |  | Weight                | 9.5 oz. (270 g)      |
| CE                            | See Compliance Table at <a href="http://www.heapg.com/Support/compliance.htm">http://www.heapg.com/Support/compliance.htm</a>                                    |                       |                      |
| UL                            | Operating Temperature Code T4A;<br>See Compliance Table at <a href="http://www.heapg.com/Support/compliance.htm">http://www.heapg.com/Support/compliance.htm</a> |                       |                      |

2 WIRING

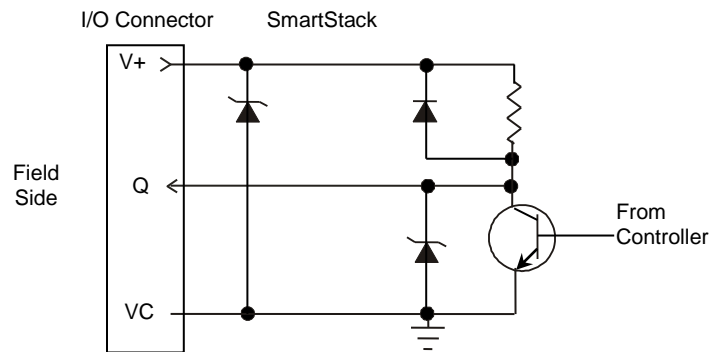
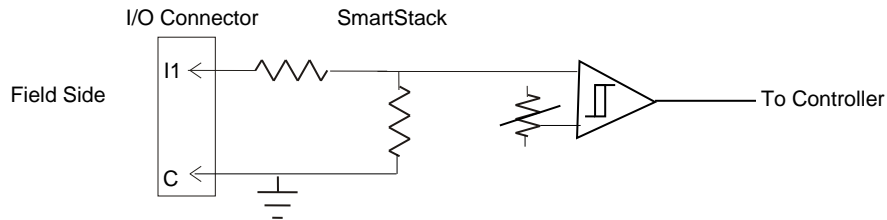


| Pin | Signal<br>HSC600    |
|-----|---------------------|
| I1  | Input 1             |
| I2  | Input 2             |
| I3  | Input 3             |
| I4  | Input 4             |
| I5  | Input 5             |
| I6  | Input 6             |
| I7  | Input 7             |
| I8  | Input 8             |
| C   | Common <sup>1</sup> |
| Q1  | Output 1            |
| Q2  | Output 2            |
| Q3  | Output 3            |
| Q4  | Output 4            |
| Q5  | Output 5            |
| Q6  | Output 6            |
| Q7  | Output 7            |
| Q8  | Output 8            |
| VC  | Common <sup>1</sup> |
| V+  | Load Voltage +      |

<sup>1</sup> Internally Connected

**Warning:** Wiring the positive side of the DC source to loads connected to outputs 1 through 8 and the negative side of the DC source to the output common(s) would create a Negative Logic condition, which may be considered an unsafe practice under CE directives.

### 3 INTERNAL CIRCUIT SCHEMATIC



Specification for transient voltage suppressors (transorbs) used on output circuitry is 36 VDC, 300 W.

### 4 CONFIGURATION AND MODES

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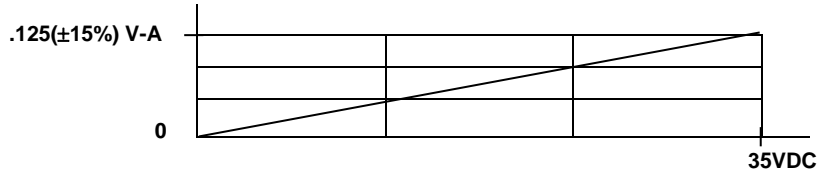
**Note:** The status of the I/O can be monitored in Cscape Software.

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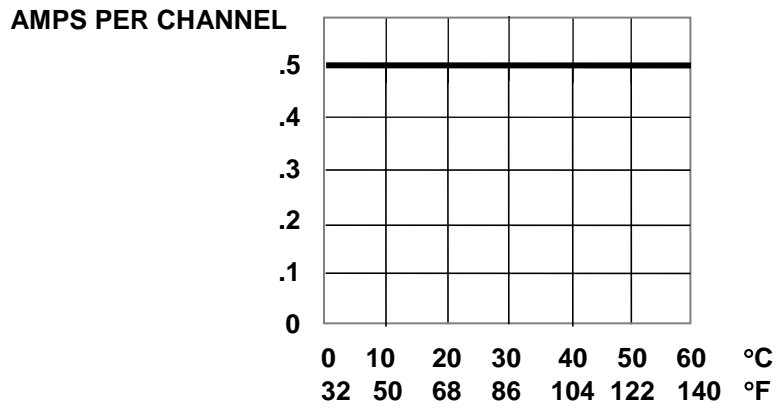
See the Supplement for the High Speed Counter Supplement (SUP0265) for detailed information covering configuration and input/output modes.

## 5 INPUT / OUTPUT CHARACTERISTICS

Digital Input Chart



Derating Chart



## 6 INSTALLATION / SAFETY

**Warning:** Remove power from the OCS controller, CAN port, and any peripheral equipment connected to this local system before adding or replacing this or any module.

Use the following wire type or equivalent:

- Belden 8917
- 16 AWG or larger

For detailed installation and a handy checklist that covers panel box layout requirements and minimum clearances, refer to the hardware manual of the controller you are using. (See the [Additional References](#) section in this document.).

When found on the product, the following symbols specify:



**Warning:** Consult user documentation.



**Warning:** Electrical Shock Hazard.

**WARNING:** To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.

**WARNING:** To reduce the risk of fire, electrical shock, or physical injury it is strongly recommended to fuse the voltage measurement inputs. Be sure to locate fuses as close to the source as possible.

**WARNING:** Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.

**WARNING:** In the event of repeated failure, do not replace the fuse again as a repeated failure indicates a defective condition that will not clear by replacing the fuse.

**WARNING:** Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

For detailed installation and a handy checklist that covers panel box layout requirements and minimum clearances, refer to the hardware manual of the controller you are using. (See the [Additional References](#) section in this document.):

- All applicable codes and standards need to be followed in the installation of this product.
- For I/O wiring (discrete), use the following wire type or equivalent: Belden 9918, 18 AWG or larger.

Adhere to the following safety precautions whenever any type of connection is made to the module.

- Connect the green safety (earth) ground first before making any other connections.
- When connecting to electric circuits or pulse-initiating equipment, open their related breakers. Do not make connections to live power lines.
- Make connections to the module first; then connect to the circuit to be monitored.
- Route power wires in a safe manner in accordance with good practice and local codes.
- Wear proper personal protective equipment including safety glasses and insulated gloves when making connections to power circuits.
- Ensure hands, shoes, and floor are dry before making any connection to a power line.
- Make sure the unit is turned OFF before making connection to terminals. Make sure all circuits are de-energized before making connections.
- Before each use, inspect all cables for breaks or cracks in the insulation. Replace immediately if defective.

## 7 ADDITIONAL REFERENCES

The following information serves as a *general* listing of Horner controller products and other references of interest and their corresponding manual numbers. Visit our website listed in the [Technical Support](#) section to obtain user documentation and updates.

| <b>Note:</b> This list is <u>not</u> intended for users to determine which products are appropriate for their application; controller products differ in the features that they support. If assistance is required, see the <b>Technical Support</b> section in this document. |                      |
|--|----------------------|
| <b>Controller</b>  | <b>Manual Number</b> |
| XLE Series (e.g., HE-XExxx)  | MAN0805              |
| QX Series (e.g., HE-QXxxx)   | MAN0798              |
| NX Series (e.g., HE-NXxxx)   | MAN0781              |
| LX Series (e.g., LX-xxx; also covers RCS116)   | MAN0755              |
| Color Touch OCS (e.g., OCSxxx)   | MAN0465              |
| OCS (Operator Control Station) (e.g., OCS1xx / 2xx; Graphic OCS250)  | MAN0227              |
| Remote Control Station (e.g., RCS2x0)  |                      |
| MiniOCS (e.g., HE500OCSxxx, HE500RCSxxx)   | MAN0305              |
| <b>Other Useful References</b>   |                      |
| CAN Networks   | MAN0799              |
| Cscape Programming and Reference   | MAN0313              |
| Wiring Accessories and Spare Parts Manual  | MAN0347              |
| DeviceNet™ Implementation  | SUP0326              |
| Wiring Accessories and Spare Parts Manual  | MAN0347              |

## 8 TECHNICAL SUPPORT

For assistance and manual up-dates, contact Technical Support at the following locations:

**North America:**

(317) 916-4274

[www.heapg.com](http://www.heapg.com)

**Europe:**

(+) 353-21-4321-266

[www.horner-apg.com](http://www.horner-apg.com)