Stepper Positioning Module
HE800STP100 / HE-STP100*
* HE- denotes plastic case.

This datasheet also covers products starting with IC300.

This product has a detailed supplement (SUP0270) available.

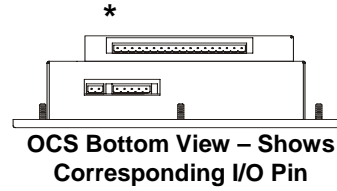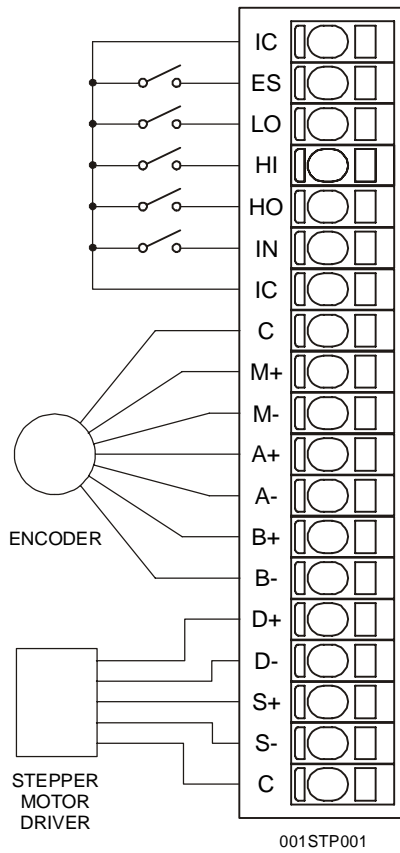# 1   SPECIFICATIONS

INPUT	STP100		STP100
ISOLATED INPUTS			
LOW LEVEL (+2mA)		**ISOLATION**	
Emergency Stop (ES)	0 - 9 VDC	Emergency Stop (ES)	500 VDC min.
Home (HO)		Home (HO)	
Index (IN)		Index (IN)	
High Limit (HILIM)		High Limit (HILIM)	
Low Limit (LOLIM)		Low Limit (LOLIM)	
DIFFERENTIAL INPUTS			
Encoder Frequency	0 - 1.0 MHz	Encoder Differential Threshold Low	-0.2 VDC min.
Encoder Single-Ended Threshold	1.2 – 1.6 VDC	Encoder Differential Threshold High	+0.2 VDC max.

OUTPUT	STP100		STP100
DIFFERENTIAL OUTPUTS			
Step Frequency	0 - 245 KHz	Direction Output Setup Time	2 ms. max.
Step Output High @ -20 mA	2.5 VDC min.	Direction Output High @ -20 mA	2.5 VDC min.
Step Output Low @ +20 mA	0.5 VDC max.	Direction Output Low @ +20 mA	0.5 VDC max.

| GENERAL SPECIFICATIONS			
Required Power (Steady State)	0.17W (7.15mA @ 24VDC)	Storage Temperature	-40° to +85° Celsius
Required Power (Inrush)	0.38W (16.2mA @ 24VDC)	Terminal Type	Spring Clamp, Removable
Relative Humidity	5 to 95% Non-condensing		
Operating Temperature	0° to 60° Celsius	Weight	9.5 oz. (270 g)
CE	See Compliance Table at http://www.heapg.com/Support/compliance.htm		
UL			

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2   WIRING

*

**OCS Bottom View – Shows
Corresponding I/O Pin**

001STP001

Pin	Signal	STP100 Description
ISOLATED		
1	IC	Isolated Common
2	ES	ESTOP+ Emergency Stop, Active High (Open), 24 Vdc Pull Up
3	LO	LOLIM- Lower limit, Active Low (Closed), 24 Vdc Pull Up
4	HI	HILIM- High limit, Active Low (Closed), 24 Vdc Pull Up
5	HO	HOME- Home, Active Low (Closed), 24 Vdc Pull Up
6	IN	INDEX- Index, Active Low (Closed), 24 Vdc Pull Up
7	IC	Isolated Common
NON-ISOLATED		
8	C	Common Connected internally to bus common
9	M+	MARK+ Encoder Marker Positive Input
10	M-	MARK- Encoder Marker Negative Input
11	A+	ENC A+ Encoder Channel A Positive Input
12	A-	ENC A- Encoder Channel A Negative Input
13	B+	ENC B+ Encoder Channel B Positive Input
14	B-	ENC B- Encoder Channel B Negative Input
15	D+	DIR+ Direction Positive Output
16	D-	DIR- Direction Negative Output
17	S+	STEP+ Step Positive Output
18	S-	STEP- Step Negative Output
19	C	Common Connected internally to bus common

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3   INTERNAL CIRCUIT SCHEMATICS

This circuit is typical of
ESTOP+ ,LOLIM-,
HILIM-, HOME-, and
INDEX- *inputs.*

To Controller

+
GND   ISOLATED
24VDC PWR

Pins 1 & 7
Common
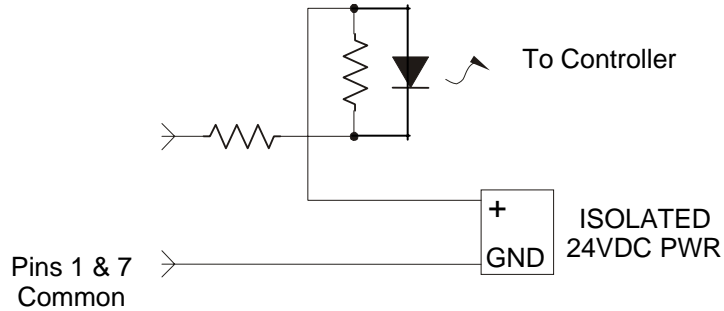
This circuit is typical of
Encoder A, Encoder B,
and Marker *inputs.*

+
-

To Controller
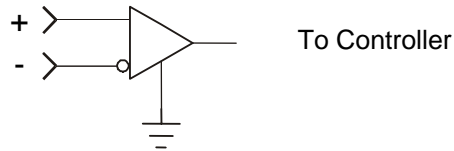
This circuit is typical of
STEP and **DIR o***utputs.*

+
-

From
Controller
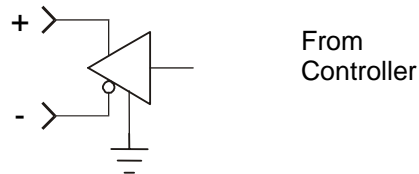
4   CONFIGURATION

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

See the Supplement for the Stepper Positioning Module (SUP0270) for detailed information covering configuration and input/output modes.

5   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.

a)   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 <u>not</u> 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.

6   ADDITIONAL REFERENCES

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

Note: 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 **Technical Support** section in this document.	
Controller	**Manual Number**
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
Other Useful References	
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

7   TECHNICAL SUPPORT

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

North America:
(317) 916-4274
www.heapg.com

Europe:
(+) 353-21-4321-266
www.horner-apg.com