+/- 10V Analog Input Module
HE800ADC010 / HE800ADC110
HE-ADC010* / HE-ADC110*
12-Bit Resolution
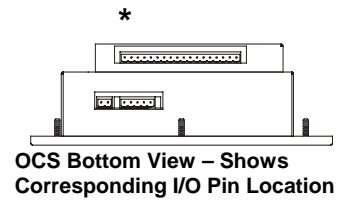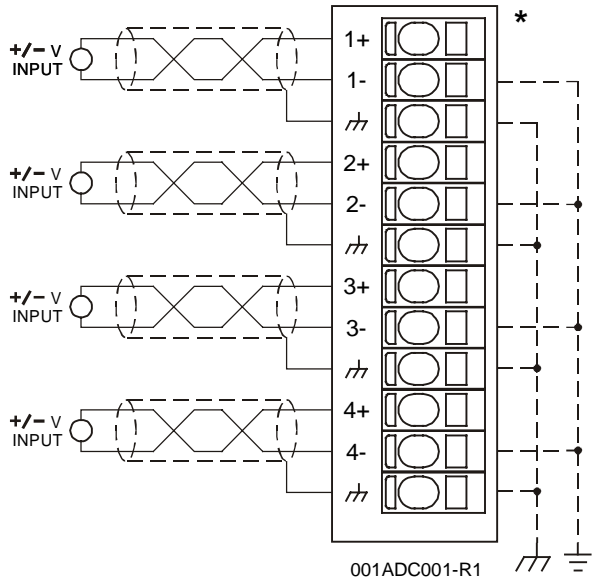*** HE-denotes plastic case.**

This datasheet also covers products starting with IC300.

1   SPECIFICATIONS

	ADC010	ADC110		ADC010	ADC110
Number of Channels	2	4	Analog Inputs Input Points Required	2	4
Input Ranges (Including over-range)	±10.23VDC; ±5.11, 0 - +10.23, 0 - +5.11		External Power Supply	None	
Resolution	12-Bits		Converter Type	Successive Approximation	
Input Impedance	10Meg Ohm <12VDC or 6Meg Ohm >12VDC Nom.		Operating Temperature	0° to 60° Celsius	
			Additional error for temperatures other than 25°C	0.005% / °C	
Maximum Error at 25°C	0.05% Full Scale		Conversion Time (PLC Update Rate)	Set by PLC Scan Time	
Required Power (Steady State)	.09W (4.1mA @ 24VDC)		Relative Humidity	5 to 95% Non-condensing	
Required Power (Inrush)	Negligible		Terminal Type	Spring Clamp, Removable	
Maximum Over-Voltage	350VDC Max.		Weight	9 oz. (256 g)	
Digital Filtering	Yes				
CE	See Compliance Table at http://www.heapg.com/Support/compliance.htm				
UL					

Information is subject to change without notice.   SmartStack is a trademark of Horner APG, LLC.

2   WIRING

001ADC001-R1

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

	Signal	
	ADC110	**ADC010**
1+	Channel 1+	Channel 1+
1-	Common	Common
⏚	Shield	Shield
2+	Channel 2+	Channel 2+
2-	Common	Common
⏚	Shield	Shield
3+	Channel 3+	
3-	Common	
⏚	Shield	
4+	Channel 4+	
4-	Common	
⏚	Shield	

3   INTERNAL CIRCUIT SCHEMATIC
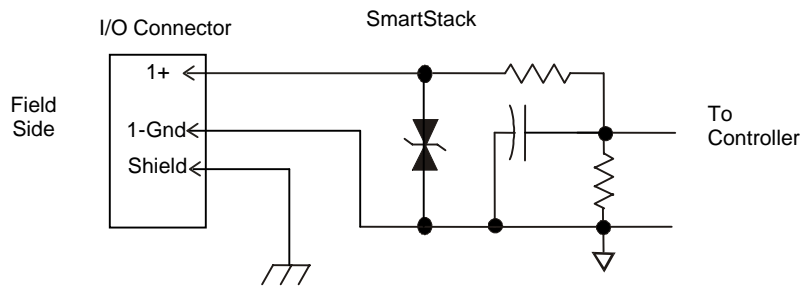
4   CONFIGURATION

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

Preliminary configuration procedures that apply to SmartStack™ Modules are contained in the hardware manual of the controller you are using. Refer to the **Additional References** section in this data sheet for a listing of hardware manuals.

Selecting the **I/O Map** tab provides information about the I/O registers, which are assigned to a specific SmartStack™ Module and where the module is located in the point map. The I/O Map is determined by the model number and location within the SmartStack™. The I/O Map is not edited by the user.

Module Setup Tab
a. Input range for each channel may be selected independently.
b. Filter Constant sets the level of digital filtering according to the following chart.
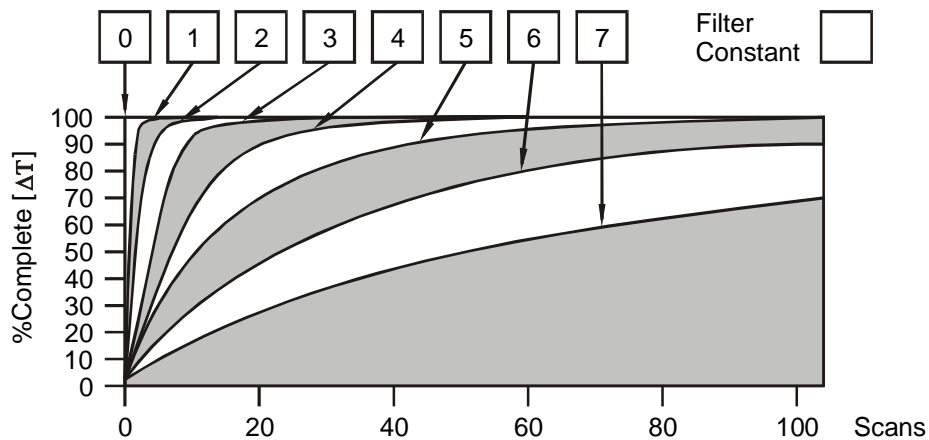
Digital Filtering. The illustration above demonstrates the effect of digital filtering (set with Filter Constant) on module response to a temperature change.

5   INPUT CONVERSION FACTOR

The following table describes how real-world inputs are scaled into the controller. Given a known input voltage, the data value is configured by using the conversion factor from the table. The following formula is used: **Data = Voltage In (Vin) / Conversion Factor**

Example: The user selects a voltage range of 0 to +5 VDC:

1.   The known input voltage is 3 VDC.
2.   Using the table, the conversion factor for the voltage range of 0 to +5 VDC
          is .00015625.
3.   To determine the data value, the formula is used: Data = Vin / Conversion Factor
                                                        19200 = 3 VDC / 0.00015625

Conversion of Real-World Inputs into Controller			
Selected Voltage Range	Voltage In (Vin) VDC	Data Out	Conversion Factor
0 to +5.00 VDC	+5.11	32704	0.00015625
	+5.00	32000	
	0.00	0	
	NA	NA	
	NA	NA	
0 to +10.00 VDC	+10.23	32736	0.0003125
	+10.00	32000	
	0.00	0	
	NA	NA	
	NA	NA	
+/-5.00 VDC	+5.11	32704	0.00015625
	+5.00	32000	
	0	0	
	-5.00	-32000	
	-5.11	-32704	
+/-10.00 VDC	+10.23	32736	0.0003125
	+10.00	32000	
	0	0	
	-10.00	-32000	
	-10.23	-32736	

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.

a. All applicable codes and standards should be followed in the installation of this product.
b. Shielded, twisted-pair wiring should be used for best performance.
c. Shields may be terminated at the module terminal strip.
d. In severe applications, shields should be tied directly to the ground block within the panel.
e. Use the following wire type or equivalent: Belden 8441.

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.

7   ADDITIONAL REFERENCES

For detailed installation and a <u>handy checklist</u> that covers panel box layout requirements and minimum clearances, refer to the hardware manual of the controller you are using. (See the **Technical Support** section in this document.)

Additional References	
Controller	**Manual Number**
Operator Control Station Hardware (OCS, OCX) e.g., OCS1XX / 2XX; Graphic OCS250	MAN0227
Remote Control Station Hardware (RCS [except RCS116], RCX) e.g., RCS210, RCS250	
Color Touch OCS Hardware e.g., OCS300, OCS301,OCS350, OCS351 e.g., OCS451, OCS551, OCS651	MAN0465
OCS LX Series Hardware e.g., LX280 / LX300; RCS116	MAN0755
MiniOCS / MiniRCS / MiniOCX / MiniRCX Hardware e.g., HE500OCSxxx	MAN0305
Other Useful References	
Cscape Programming and Reference	MAN0313
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

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

NOTES