4-20mA Analog Input Module

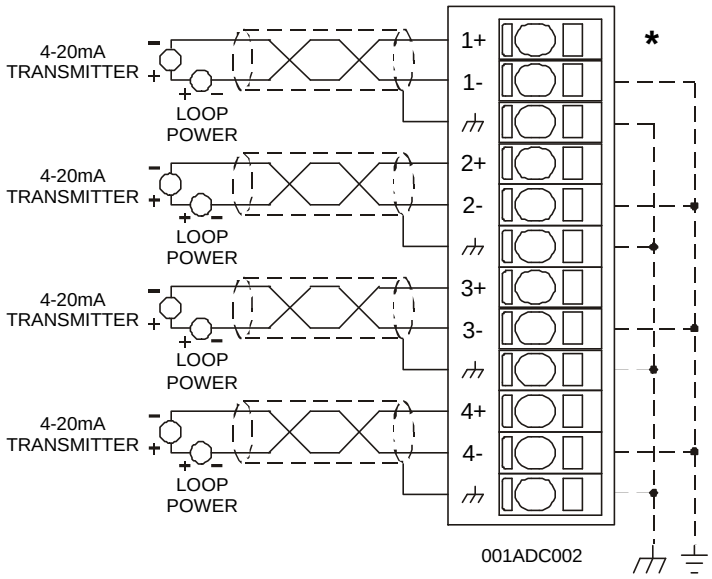
HE800ADC020 / HE800ADC120
HE820ADC020 / HE820ADC120*
12-Bit Resolution
*** HE820 denotes plastic case.**

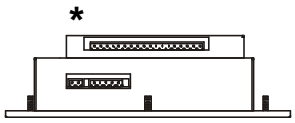
This datasheet also covers products starting with IC300 instead of HE800 or HE820.

1 SPECIFICATIONS

	ADC020	ADC120		ADC020	ADC120
Number of Channels	2	4	Converter Type	Successive Approximation	
Input Ranges (including over-range)	Nominal: 0-20.47mA, ±20.47mA,		Conversion Time (PLC Update Rate)	Set by PLC Scan Time	
Resolution	12-Bit		Terminal Type	Spring Clamp, Removable	
Maximum Error at 25°C	0.05% Full Scale		Additional error for temperatures other than 25°C	0.005% / °C	
Input Impedance	100 Ohm < 12VDC, Clamped @ 12VDC, 35mA Max. Continuous		Analog Inputs Input Points Required	2	4
Required Power (Steady State)	0.09W (4.1mA @ 24VDC)		Operating Temperature	0° to 60° Celsius	
Required Power (Inrush)	Negligible		Relative Humidity	5 to 95% Non-condensing	
Maximum Over-Current	35mA		Weight	9 oz. (256 g)	
External Power Supply	None				
CE UL	See Compliance Table at http://www.heapg.com/Support/compliance.htm				

2 WIRING

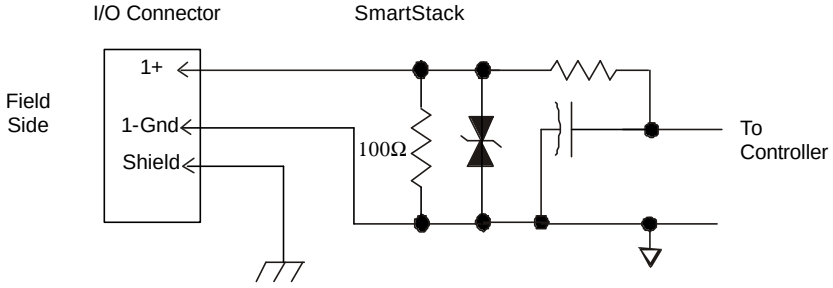




OCS Bottom View – Shows Corresponding I/O Pin

Pin #	ADC120	ADC020
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

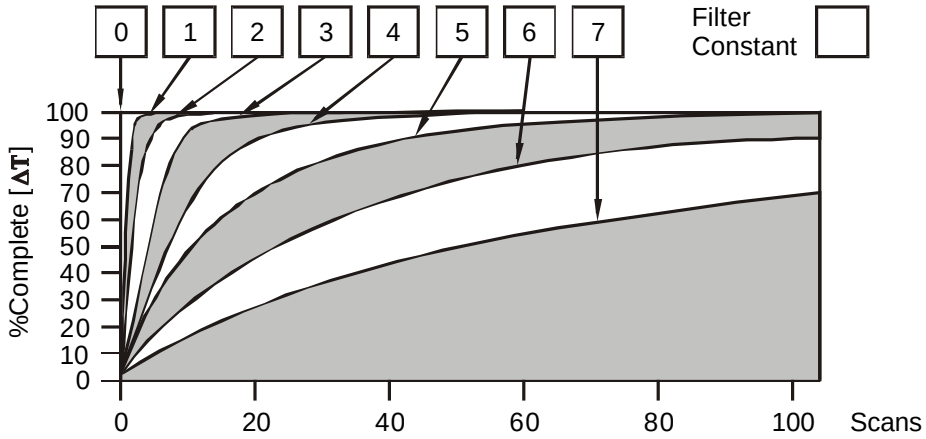
Note: The status of the I/O can be monitored in Cscape Software.

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 current, the data value is configured by using the conversion factor from the table. The following formula is used: **Data = Input Current (mA) / Conversion Factor**

Example: The user selects a current range of 0 to +20mA:

1. The known input current is 14mA..
2. Using the table, the conversion factor for the current range of 0 to +20 VDC is 0.000625.
3. To determine the data value, the formula is used: Data = Input Current (mA) / Conversion Factor
   22400 = 14mA / 0.000625

Conversion of Real-World Inputs into Controller			
Selected Current Range	**Input Current (mA)**	**Data**	**Conversion Factor**
0 to +20mA	+20.47	32752	0.000625
	+20.00	32000	
	0	0	
-20 to +20mA	-20.00	-32000	0.000625
	-20.47	-32752	

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, configuration and other information, refer to the hardware manual of the controller you are using. See the **Technical Support** section in this document for the web site address to download references and to obtain revised editions.

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

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