



24VDC Bipolar Digital In
10-28VDC, 0.5A Sourcing Digital Out
0-20mA Sourcing Analog In/ Out
HE800MIX906 / HE-MIX906*



* HE- denotes plastic case.

This datasheet also covers products starting with IC300.

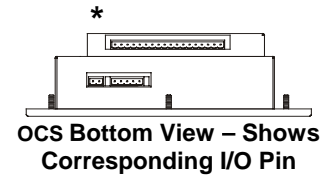
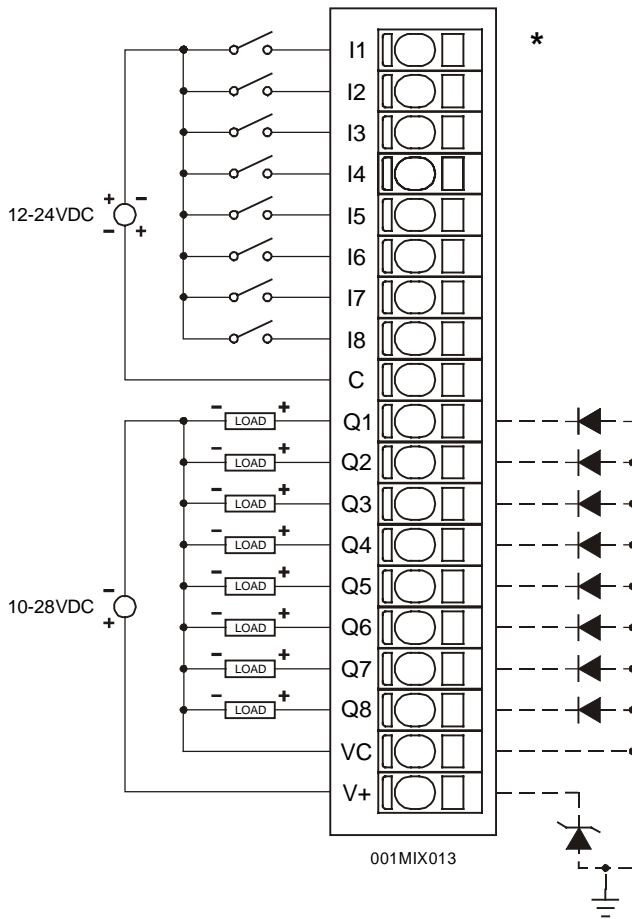
1 SPECIFICATIONS

ANALOG INPUT		MIX906	MIX906	
Number of Channels	4		Analog Inputs Input Points Required	4
Input Range (including over-range)	Nominal: 0-20.47mA		Conversion Time (PLC Update Rate)	Set by PLC Scan Time
Resolution	12-Bit		Converter Type	Successive Approximation
Input Impedance	200 Ohms < 12VDC, Clamped @ 12VDC, 35mA Max. Continuous		Additional error for temperatures other than 25°C	0.01% / °C
Maximum Error at 25°C	0.1% of Full Scale		Maximum Over-Current	35mA
DIGITAL INPUT		MIX906	MIX906	
Inputs per Module	8		Input Characteristics	Bidirectional
Commons per Module	1		Input Impedance	10K Ohms
Input Voltage Range	12-24VDC		Minimum ON Current	1mA
Peak Voltage	35VDC Max.		Maximum OFF Current	200µA
Isolation (Channel to Ground)	500VDC		OFF to ON Response	1ms.
ON Voltage Level	9VDC		ON to OFF Response	1ms.
OFF Voltage Level	3VDC			
ANALOG OUTPUT		MIX906	MIX906	
Number of Channels	2		Analog Outputs; Output Points Required	2
Output Ranges (including over-range)	0-20.47mA; 10VDC Compliance		Additional error at temperatures other than 25°C	0.01% / °C
Resolution	12 Bits		Maximum Error at 25°C	0.1% of Full Scale
Max. Output Voltage	10VDC		Maximum Error @ 0mA	0.75%
			Maximum Load Resistance	500 Ohms
DIGITAL OUTPUT		MIX906	MIX906	
Outputs per Module	8		Maximum Inrush Current	650mA
Commons per Module	1		Minimum Load Current	None
Operating Voltage	10 - 28VDC		OFF to ON Response	1ms.
Output Type	Sourcing / 10K Pull- Down		ON to OFF Response	1ms.
Peak Voltage	28VDC Max.		Output Characteristics	Current Sourcing
Maximum Load Current per Output	0.5A Max.		Output Protection	Short Circuit

General Specifications			
	MIX906		MIX906
Required Power (Steady State)	1.2W (50mA@24VDC)	Operating Temperature	0° to 60° Celsius
Required Power (Inrush)	Negligible	Terminal Type	Spring Clamp, Removable
Relative Humidity	5 to 95% Non-condensing	Weight	9.5 oz. (270 g)
CE	See Compliance Table at http://www.heapg.com/Support/compliance.htm		
UL			

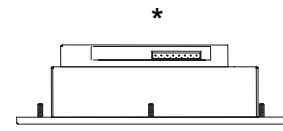
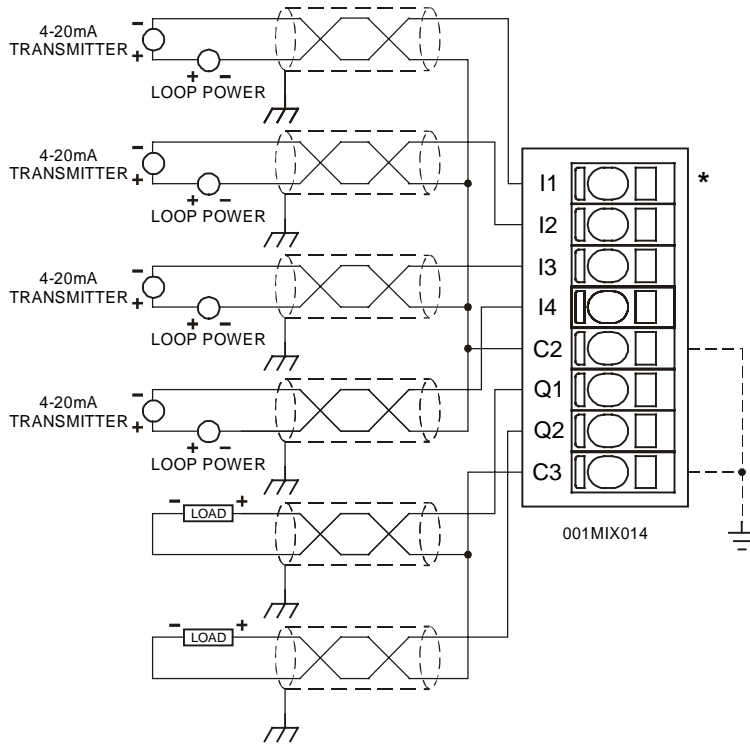
2 WIRING

2.1 Digital Input / Output (P1)



Pin	Digital Input / Output
	MIX906 - P1
I1	Input 1
I2	Input 2
I3	Input 3
I4	Input 4
I5	Input 5
I6	Input 6
I7	Input 7
I8	Input 8
C1	Common (Isolated)
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	Load Power Common
V+	Load Voltage +

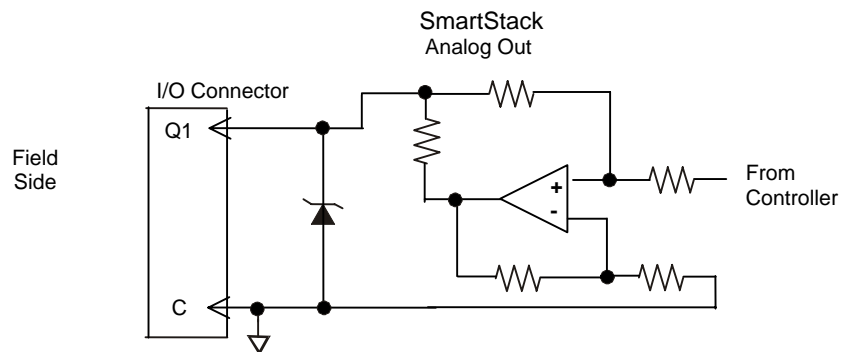
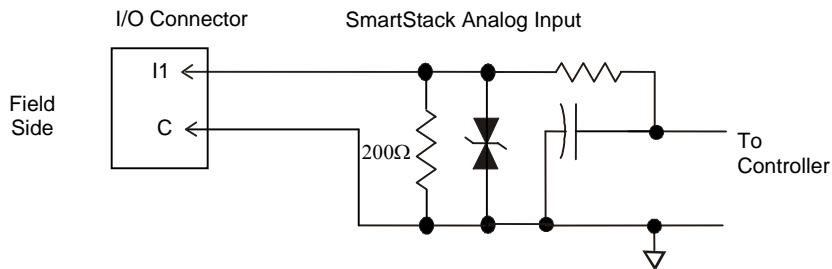
2.2 Analog Input / Output (P2)



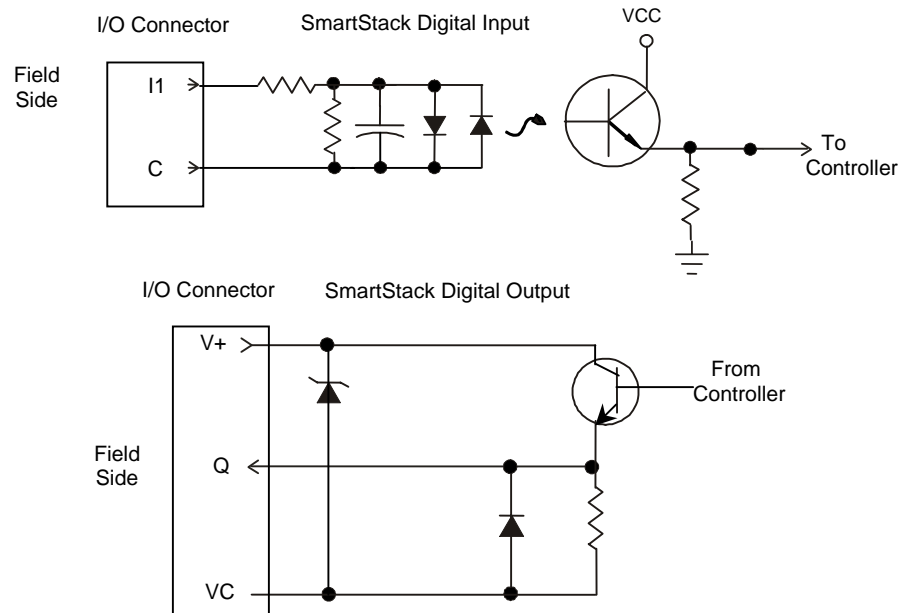
OCS Top View – Shows Corresponding I/O Pin

Pin	Analog In and Out
	MIX906 P2
I1	Input 1
I2	Input 2
I3	Input 3
I4	Input 4
C2	Input Common
Q1	Output 1
Q2	Output 2
C3	Output Common

3 INTERNAL CIRCUIT SCHEMATIC



Specification for transient voltage suppressors (transorbs) used on output circuitry is 15V, 300W.



Specification for transient voltage suppressors (transorbs) used on output circuitry is 33V, 300W.

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.

Module Setup Tab

The **Module Setup** is used in applications where it is necessary to change the default states or values of the outputs when the controller (e.g., OCS100) enters idle/stop mode.

1. For Digital Outputs: The default turns the outputs OFF when the controller enters idle/stop mode. By selecting the Module Setup tab, each output can be set to either turn ON, turn OFF or to hold the last state. Generally, most applications use the default settings.

Warning: The default turns the digital outputs OFF when the controller enters idle/stop mode. To avoid injury of personnel or damages to equipment, exercise extreme caution when changing the default settings.

2. For Analog Outputs: The default sets the output values to zero when the controller enters idle/stop mode. By selecting the Module Setup tab, each output can be set to a specific value or hold the last value. Generally, most applications use the default settings.

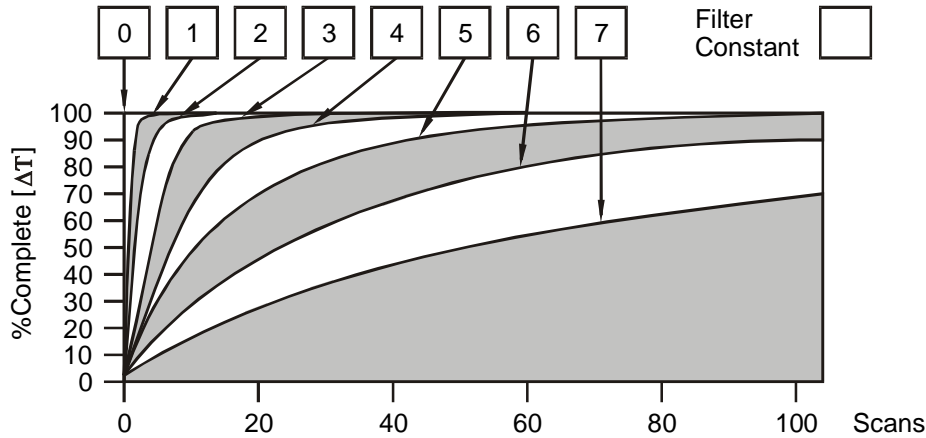
Warning: The default sets the output values to zero when the controller enters idle/stop mode. To avoid injury of personnel or damages to equipment, exercise extreme caution when changing the default setting using the **Module Setup** tab.

3. For Analog Inputs:

Filter Constant sets the level of digital filtering according to the following chart.

I/O Map Tab

The I/O Map describes which I/O registers 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.



Digital Filtering. The illustration above demonstrates the effect of digital filtering (set with Filter Constant) on module response to a temperature change.

5 ANALOG 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 +20mA is 0.000625.
3. To determine the data value, the formula is used:

$$\text{Data} = \text{Input Current (mA)} / \text{Conversion Factor}$$

$$22400 = 14\text{mA} / 0.000625$$

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	

6 ANALOG OUTPUT CONVERSION FACTOR

The following table describes how program data values are scaled to real-world analog voltage outputs by the module. Given a desired output current, the data value is converted by using the conversion factor from the table. The following formula is used: **Data = Output Current (mA) / Conversion Factor**

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

1. The desired output current is 12mA.
2. Using the table, the conversion factor for the current range of 0 to +20 mA is 0.000625.
3. To determine the data value, the formula is used:

$$\text{Data} = \text{Output Current (mA)} / \text{Conversion Factor}$$

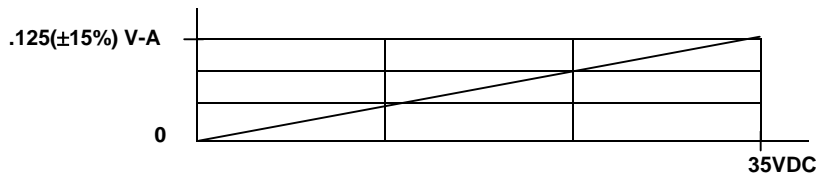
$$19200 = 12\text{mA} / 0.000625$$

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

7 DIGITAL INPUT / OUTPUT CHARACTERISTICS

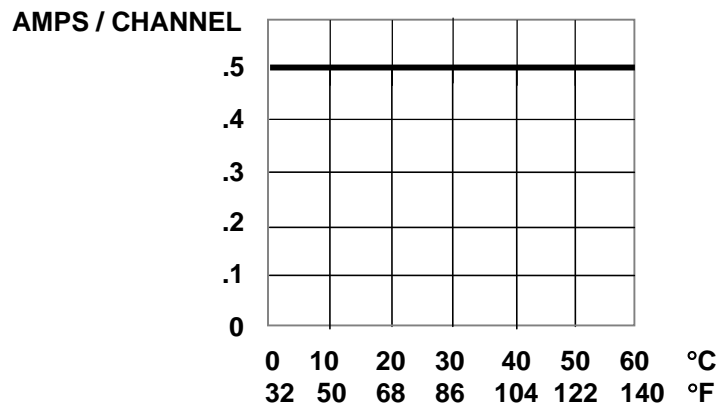
7.1 Digital Input

Digital Input Chart

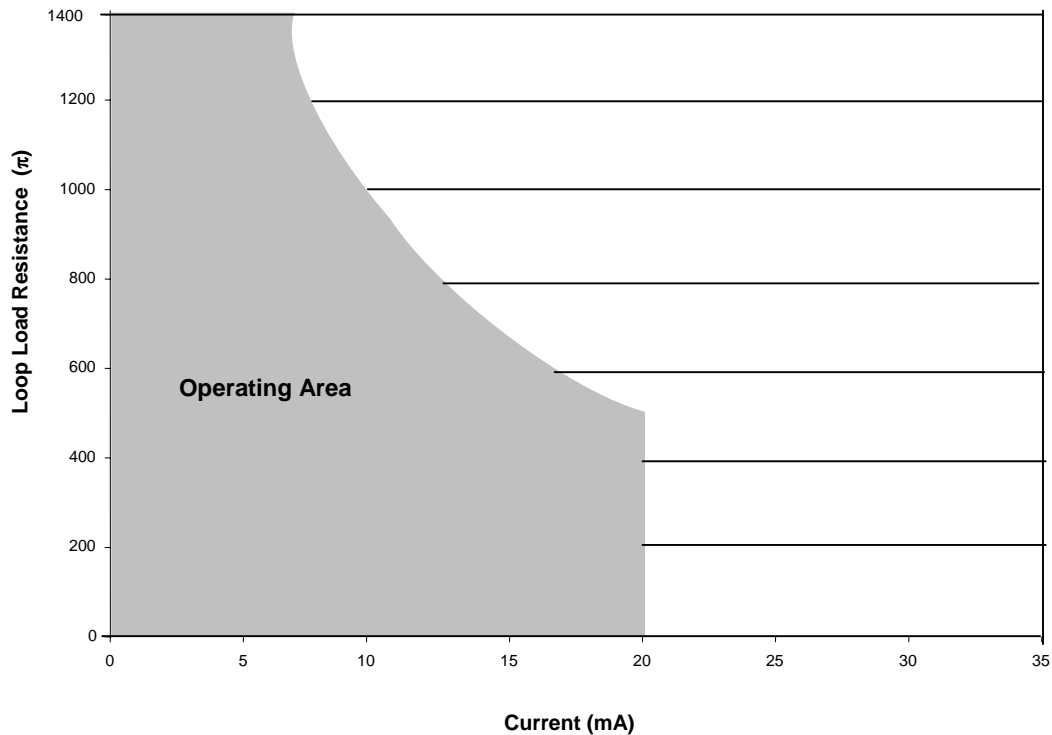


7.2 Digital Output

Derating Chart



8 ANALOG OUTPUT OPERATING AREA



9 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.

- All applicable codes and standards should be followed in the installation of this product.
- Shielded, twisted-pair wiring should be used for best performance.
- In severe applications, shields should be tied directly to the ground block within the panel.
- 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.

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