Supplement for
SmartStack™ Modules

SmartStack™ Modules

PREFACE

This manual explains how to use SmartStack™ Modules.

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North America: (317) 916-4274 or visit our website at www.heapg.com.
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LIMITED WARRANTY AND LIMITATION OF LIABILITY

Horner APG, LLC.("HE-APG") warrants to the original purchaser that SmartStack™ Modules manufactured by HE-APG are free from defects in material and workmanship under normal use and service. The obligation of HE-APG under this warranty shall be limited to the repair or exchange of any part or parts which may prove defective under normal use and service within two (2) years from the date of manufacture or eighteen (18) months from the date of installation by the original purchaser whichever occurs first, such defect to be disclosed to the satisfaction of HE-APG after examination by HE-APG of the allegedly defective part or parts. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND OF ALL OTHER OBLIGATIONS OR LIABILITIES AND HE-APG NEITHER ASSUMES, NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR HE-APG, ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF THIS SmartStack™ Module. THIS WARRANTY SHALL NOT APPLY TO THIS SmartStack™ Module OR ANY PART THEREOF WHICH HAS BEEN SUBJECT TO ACCIDENT, NEGLIGENCE, ALTERATION, ABUSE, OR MISUSE. HE-APG MAKES NO WARRANTY WHATSOEVER IN RESPECT TO ACCESSORIES OR PARTS NOT SUPPLIED BY HE-APG. THE TERM "ORIGINAL PURCHASER", AS USED IN THIS WARRANTY, SHALL BE DEEMED TO MEAN THAT PERSON FOR WHOM THE SmartStack™ Module IS ORIGINALLY INSTALLED. THIS WARRANTY SHALL APPLY ONLY WITHIN THE BOUNDARIES OF THE CONTINENTAL UNITED STATES.

In no event, whether as a result of breach of contract, warranty, tort (including negligence) or otherwise, shall HE-APG or its suppliers be liable of any special, consequential, incidental or penal damages including, but not limited to, loss of profit or revenues, loss of use of the products or any associated equipment, damage to associated equipment, cost of capital, cost of substitute products, facilities, services or replacement power, down time costs, or claims of original purchaser's customers for such damages.

To obtain warranty service, return the product to your distributor with a description of the problem, proof of purchase, post paid, insured and in a suitable package.

ABOUT PROGRAMMING EXAMPLES

Any example programs and program segments in this manual or provided on accompanying diskettes are included solely for illustrative purposes. Due to the many variables and requirements associated with any particular installation, Horner APG cannot assume responsibility or liability for actual use based on the examples and diagrams. It is the sole responsibility of the system designer utilizing the SmartStack™ Module to appropriately design the end system, to appropriately integrate the SmartStack™ Module and to make safety provisions for the end equipment as is usual and customary in industrial applications as defined in any codes or standards which apply.

Note: The programming examples shown in this manual are for illustrative purposes only. Proper machine operation is the sole responsibility of the system integrator.

Revisions to This Manual

This version (SUP0246-05) of the SmartStack™ Modules Supplement contains the following revisions and additions:

1.   Added a **Safety Warning** in the *Installation/Safety* section of the data sheets to the modules that are listed after the warning.

> **Warning:**   Previous versions of this product provided internal fuses on the output circuits (relay contacts). Due to CE Low Voltage Directive (LVD) marking requirements, these fuses have been removed and replaced with solid wire. Therefore, it is now the responsibility of the user of this equipment to ensure that adequate fusing is installed *externally* on each relay output circuit.

Module	Revision (or higher)	Module	Revision (or higher)
HE800DIQ612	C	HE800DIQ712	C
HE800DIQ622	C	HE800DIQ722	C
HE800DIQ624	D	HE800DQM202	D
HE800DIQ627	AY	HE800DQM902	B

2.   Added a **Safety Warning** in the *Wiring* section of the data sheets to the modules that are listed after the warning. **Be sure to check each data sheet for the actual fuse size required**.

> **Warning:** To protect the module and associated wiring from load faults, use external fuse ( ) as shown.

Module	Revision (or higher)	Module	Revision (or higher)
HE800DIQ612	C	HE800DIQ712	C
HE800DIQ622	C	HE800DIQ722	C
HE800DIQ624	D	HE800DQM202	D
HE800DIQ627	AY	HE800DQM902	B

3.   Added a **Safety Warning** in the *Wiring* section of the data sheets to the modules that are listed after the warning. **Be sure to check each data sheet for the actual fuse size required**.

> **Warning:**   Connecting high voltage to any I/O pin may cause high voltage to appear at other I/O pins.

Module	Module
HE800DIM210	HE800DIQ722
HE800DQM202	HE800DIQ624
HE800DIQ612	HE800DIQ627
HE800DIQ712	HE800MIX963
HE800DIQ622	

4.   Added a **Safety Warning** in the *Wiring* section of the data sheets to the modules that are listed after the warning. Output pins are specified for each module.

Warning: Wiring the line side of the AC source to loads connected to outputs ( ) through ( ) and the neutral side of the AC source to the output common(s) would create a Negative Logic condition, which may be considered an unsafe practice.

Module	**Module**
HE800DQM202	HE800DIQ722
HE800DQM902	HE800DIQ624
HE800DIQ612	HE800DIQ627
HE800DIQ712	HE800MIX963
HE800DIQ622	

5.   Added a **Safety Warning** in the *Wiring* section of the data sheets to the modules that are listed after the warning. Output pins are specified for each module.

Warning: Wiring the positive side of the DC source to loads connected to outputs ( ) through ( ) 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.

Module
HE800DIQ611
HE800DIQ935
HE800HSC600

6.   Added a **Safety Warning** in the *Installation/Safety* section of the data sheets to *all* SmartStack modules.

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.

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7.   Added electro-mechanical relay compliance information in the *Internal Schematic Circuit* section of the data sheets to the following modules:

Module
HE800DQM202
HE800DQM902
HE800DIQ612
HE800DIQ712
HE800DIQ622
HE800DIQ722
HE800MIX963

8.   Added a statement in the *Internal Circuit Schematic* section of data sheets for modules containing transient voltage suppressors (transorbs) used on output circuitry.

Module	Module	Module	Module
HE800DQM202	HE800DIQ722	HE800MIX011/111	HE800DIQ611
HE800DQM306/406	HE800DIQ624	HE800MIX022/122	HE800DIQ711
HE800DQM902	HE800DIQ627	HE800MIX901	
HE800DIQ612	HE800DAC001/101	HE800MIX902	
HE800DIQ712	HE800DAC002/102	HE800MIX904	
HE800DIQ616	HE800DAC202	HE800MIX912	
HE800DIQ622	HE800HSC600	HE800MIX963	

9.   Added **Digital Input Chart** to the following SmartStack modules.

Module	Module	
HE800DIM210	HE800DIQ722	HE800DIQ616
HE800DIM310/410	HE800DIQ627	HE800DIQ716
HE800DIQ611	HE800DIQ935	
HE800DIQ612	HE800MIX901	
HE800DIQ622	HE800MIX902	
HE800DIQ624	HE800MIX904	
HE800DIQ711	HE800HSC600	
HE800DIQ712	HE800HSC601	

10.   Added A **Derating Output Chart** to the following SmartStack modules.

Module	Module
HE800DQM202	HE800DIQ722
HE800DQM902	HE800DIQ935
HE800DIQ611	HE800MIX901
HE800DIQ612	HE800MIX902
HE800DIQ616	HE800MIX904
HE800DIQ622	HE800MIX912
HE800DIQ624	HE800MIX963
HE800DIQ711	HE800HSC600
HE800DIQ712	HE800HSC601
HE800DIQ716	HE800DIQ627

11.   Added an **Output Operating Area Chart** to the following SmartStack modules.

Module	**Module**
HE800DAC002/102	HE800MIX904
HE800DAC202	HE800MIX912
HE800MIX022/122	HE800MIX963
HE800MIX902	

12.   Added a statement in the *Configuration* section of SmartStack module data sheets that the status of the I/O can be monitored in Cscape Software.

13.   Added safety symbols in the *Installation/Safety* section to the following SmartStack module data sheets.

Module	**Module**
HE800DQM202	HE800DIQ722
HE800DQM902	HE800DIQ624
HE800DIQ612	HE800DIQ627
HE800DIQ712	HE800MIX963
HE800DIQ622	

14.   Added information pertaining to applications in which two-wire proximity switches are used as sensors for discrete AC inputs.

HE800DIQ622
HE800DIQ624
HE800DIQ627
HE800DIQ722

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CHAPTER 1: INTRODUCTION

1.1   Scope

This supplement contains data sheets for the SmartStack I/O Option Modules. Wiring diagrams, specifications, and other pertinent information are provided. Installation and configuration procedures that are common to all SmartStack Modules are covered in the Control Station Hardware Manual (MAN0227). Table 1.1 contains a list of SmartStack Modules that are currently available.

Table 1.1 - SMARTSTACK™ MODULES		
DIGITAL INPUT MODULES		
12/24VDC Input	Positive or Negative Logic, 8 Channels	HE800DIM210
12/24VDC Input	Positive or Negative Logic, 16 / 32 Channels	HE800DIM310 / 410
DIGITAL OUTPUT MODULES		
Relay Output	4A Maximum, 8 Channels	HE800DQM202
Relay Output	2.5A Maximum, 20 Channels	HE800DQM902
Isolated Digital Output	24VDC, Positive Logic, 16 / 32 Channels	HE800DQM306/406
DIGITAL INPUT AND OUTPUT COMBINATION MODULES		
Mixed DC I/O	8 Channel, 12/24VDC (Isolated) Digital In, Positive/Negative Logic, 8 Channel, 24VDC Out, Negative Logic	HE800DIQ611
Mixed DC I/O	16 Channel, 12/24 VDC In, Positive/Negative Logic 12 Channel, 24 VDC Out, Negative Logic	HE800DIQ711
Mixed DC I/O	8 Channel, 12/24VDC In, (Isolated) Digital In, Positive/Negative Logic 8 Channel, 10-28VDC (Sourcing) Out, Positive Logic	HE800DIQ616
Mixed DC I/O	16 Channel, 12/24VDC In (Isolated) Digital In, Positive/Negative Logic 12 Channel, 10-28VDC (Sourcing) Out, Positive Logic	HE800DIQ716
Mixed I/O	8 Channel, 12/24VDC (Isolated) Digital In, Positive/Negative Logic, 6 Channel, 3A Relay Out	HE800DIQ612
Mixed I/O	14 Channel, 12/24VDC (Isolated) Digital In, Positive/Negative Logic, 10 Channel, 3A Relay Out	HE800DIQ712
Mixed I/O	8 Channel, 120 VAC In Positive Logic 6 Channel, 3A Relay Out	HE800DIQ622
Mixed I/O	14 Channel, 120 VAC In Positive Logic 10 Channel, 3A Relay Out	HE800DIQ722
AC Input / AC Output	8 Channel, 120VAC In, Positive Logic 8 Channel, 0-260VAC Out, Positive Logic	HE800DIQ624
AC Input / AC Output	8 Channel, 120-240VAC In, Positive Logic 8 Channel, 80-250VAC Out, Positive Logic	HE800DIQ627
High Density Mixed DC I/O	32 Channel, 12/24 VDC In, Positive Logic 40 Channel, 24Vdc Out, Negative Logic 50mA Maximum, Non-Inductive	HE800DIQ935

Table 1.1 Continued		
ANALOG INPUT MODULES		
+/-10VDC Analog Input	2 Channels, 12 Bit Resolution, +/-10VDC	HE800ADC010
	4 Channels, 12 Bit Resolution, +/-10VDC	HE800ADC110
4-20mA Analog Input	2 Channels, 12 Bit Resolution, 4-20mA	HE800ADC020
	4 Channels, 12 Bit Resolution, 4-20mA	HE800ADC120
Thermistor / Current/ Voltage Analog Input	12 Channels, 12 Bit Resolution, 4-20mA / 0-5VDC	HE800ADC920
RTD Input	2 Channels	HE800RTD000
	4 Channels	HE800RTD100
Thermocouple Input	2 Channels	HE800THM000
	4 Channels	HE800THM100
ANALOG OUTPUT MODULES		
+/-10VDC Analog Output	2 Channels, 14 Bit Resolution, +/-10VDC	HE800DAC001
	4 Channels, 14 Bit Resolution, +/-10VDC	HE800DAC101
4-20mA Analog Output	2 Channels, 14 Bit Resolution, 4-20mA	HE800DAC002
	4 Channels, 14 Bit Resolution, 4-20mA	HE800DAC102
0-10V or 0-20mA Analog Output	8 Channels, 12-Bit Resolution, 0-10V or 0-20mA	HE800DAC202
ANALOG INPUT AND OUTPUT COMBINATION MODULES		
+/-10VDC Analog I/O	1 Channel, 12 Bit Resolution, +/-10VDC In, 1 Channel, 12 Bit Resolution, +/-10VDC Out	HE800MIX011
	2 Channel, 12 Bit Resolution, +/-10VDC In, 2 Channel, 12 Bit Resolution, +/-10VDC Out	HE800MIX111
20mA Analog I/O	1 Channel, 12 Bit Resolution, 20mA In 1 Channel, 12 Bit Resolution, 20mA Out	HE800MIX022
	2 Channel, 12 Bit Resolution, 20mA In, 2 Channel, 12 Bit Resolution, 20mA Out	HE800MIX122
ANALOG / DIGITAL INPUT AND OUTPUT COMBINATION MODULES		
+/-10VDC Analog / Digital I/O	4 Channel, Analog Input, +/-10VDC In,12 Bit Resolution, 2 Channel Analog Output, +/-10VDC Out,12 Bit Resolution, 8 Channel, 24VDC Bipolar Digital Input 8 Channel, 10-28VDC, 0.5 Amp Sourcing Digital Output	HE800MIX901
4-20mA Analog / Digital I/O	4 Channel, Analog Input, 20mA In, 12 Bit Resolution, 2 Channel Analog Output, 20mA Out, 12 Bit Resolution, 8 Channel, 24VDC Bipolar Digital Input 8 Channel, 10-28VDC, 0.5 Amp Sourcing Digital Output	HE800MIX902
24VDC Bipolar Analog / Digital I/O	2 Channel, Analog Input, 20mA In 2 Channel Analog Output, 20mA Out 8 Channel, 24VDC Bipolar Digital Input 8 Channel, 24VDC Sinking Digital Output	HE800MIX904
24VDC Bipolar Analog / Digital I/O	4 Channel, Isolated Analog Input, 20mA In 2 Channel Isolated Analog Output, 20mA Out 8 Channel, 10-30VDC Bipolar Digital Input 8 Channel, 10-30VDC Sourcing Digital Output	HE800MIX912
Temperature I/O	2 Channel, Relay 2 Channel, Analog Output 2 Channel,SSR Driver 4 Channel Thermocouple/RTD	HE800MIX963
SPECIALTY MODULES		
AC Power Monitor	AC Power Monitor Voltage Inputs Current Inputs	HE800ACM200

ASCII BASIC Product also has a detailed Supplement (SUP0275) which is ordered separately.	3 High Speed Communication Ports	HE800ASC100
Ethernet Product also has a detailed Supplement (SUP0341) which is ordered separately.	Ethernet Communications	HE800ETN100
High Speed Counter Product also has a detailed Supplement (SUP0265) which is ordered separately. Covers HSC600 and HSC601.	High Speed Counter Inputs, Sinking Pulse Outputs	HE800HSC600
	High Speed Counter Inputs, Sourcing Pulse Outputs	HE800HSC601

1.2   Wiring Accessories and Spare Parts

A line of wiring accessories is available for use with various SmartStack Modules. For more information, refer to Horner's *Wiring Accessories and Spare Parts Manual* (MAN0347) at www.heapg.com.

1.3   Technical Support

For assistance, contact Technical Support at the following locations:

North America:

(317) 916-4274 or visit our website at www.heapg.com.

Europe:

(+) 353-21-4321-266

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