



Embedded I/O Datasheet

HART Technologies' Microprocessor and I/O boards are designed to meet the rigorous performance requirements of industrial, defense and aviation customers. Our Embedded I/O Chassis Modules and PC104 form factor products deliver high data rate input/output over a wide range of thermal and vibration profiles. All intelligent boards include our user modifiable code base to streamline customization to meet your unique embedded I/O requirements.

Patrick Chesnut
HART Technologies, Inc.
7060 Infantry Ridge Road
Manassas VA 20109
Mobile: (703) 366-2615 Ext. 318
Email: pchesnut@harttech.com
Web: www.harttech.com

• HT015010000 – Chassis with I/O Backplane

- 5U Base Embedded I/O Chassis
- Fits standard 19" Rackmount or optional ruggedized standalone format
- 8 I/O Module Slots with dedicated rear mounted external connectors
 - 55 Pin MIL-38999 (17/E Size) with 50 input/output or 25 differentially routed pairs
 - Mate: D389999/26WE35PN
 - 37 Pin MIL-38999 (15/D Size) with USB, Ethernet, Serial outputs
 - Mate: D389999/26WD35PN
 - Dedicated Power Slot with intelligent communication bus
 - 16 Pin MIL-38999 power in connector
 - Power In (2 pins / 13 amp)
 - Four Relay Input Pairs (2 pins ea.)
 - Mate: D38999/26WG16SN
 - 16 Pin MIL-38999 Relay out connector
 - Four Relay Output Pairs (2 pins ea. / 7.5 amps)
 - Mate: D38999/26WG16PN
 - Configurable SPI busing
 - Hour Meter
- Operating temperature range -30/+65C

• HT015030001 – Quad Channel Fiber Module

- Module for Embedded I/O Chassis
- 32 Bit ATMEL Processor
- Onboard interfaces
 - 4 Channel Fiber
 - TX / RX
 - ST Connector
 - 820nm wavelength
 - 2 SPI / TWI
 - 2 CAN Bus A/B
 - 1 USB Interface
 - 1 100BaseT Ethernet
 - 1 Ethernet LED Control
- Onboard I/O
 - 8 Opto-isolated discrete inputs
 - 8 Opto-isolated solid-state relays
 - 8 Channel single A/D convertor
- Board ID: 2 bits external strapping with 16 position internal selector
- 5v power input; 12 - 32v input optional for relay output
- Operating temperature range -30/+65C
- User modifiable code base via JTAG (IEE1149.1 Compliant)

• HT013100001 - Main Processor Board

- Requires Carrier Card for Chassis installation
- 32 Bit ATMEL Processor
 - Onboard interfaces
 - 2 configurable RS232/RS422/RS484/SSI ports
 - 1 RS422/RX485 / 2 SPI / 2 TWI
 - 2 CAN Bus A/B
 - 1 USB Interface
 - 1 100BaseT Ethernet
- Onboard I/O

- 8 Opto-isolated discrete inputs; 2.3v trigger (standard), 9v trigger (-01), Analog Input (-02)
- 8 Opto-isolated solid-state relays
- 8 Channel single A/D convertor
- 5v power input; 12v or 24v input optional for relay outputs
- Operating temperature range -30/+65C
- User modifiable code base via JTAG (IEE1149.1 Compliant)

• HT015030003B – Dual Channel Fiber Module

- Requires Carrier Card for Chassis installation
- 32 Bit ATMEL Processor
- Onboard interfaces
 - 2 Channel Fiber
 - TX / RX
 - ST Connector
 - 820nm wavelength
 - 2 configurable RS232/RS422/RS485
 - 2 SPI / TWI
 - 2 CAN Bus A/B
 - 1 USB Interface
 - 1 100BaseT Ethernet
 - 1 Ethernet LED Control
- Onboard I/O
 - 4 Opto-isolated discrete inputs
 - 4 Opto-isolated solid-state relays
 - 2 Channel single A/D convertor
- Board ID: 2 bits external strapping with 16 position internal selector
- 5v power input; 12 - 32v input optional for relay output
- Operating temperature range -30/+65C
- User modifiable code base via JTAG (IEE1149.1 Compliant)

• HT016100170 – E70 Main Processor Board

- Requires Carrier Card for Chassis installation
- 32 Bit Cortex-M7 processor, 300MHz, 64bit FPU
- Onboard interfaces
 - 2 configurable RS232/RS422/RS484/SSI ports
 - 1 RS422/RX485 / 1 SPI / 1 TWI
 - 1 CAN Bus A/B
 - 1 USB Interface
 - 1 100BaseT Ethernet
- Onboard I/O
 - 8 Opto-isolated discrete inputs; 2.3v trigger (standard)
 - 8x Optically isolated solid-state relays for discrete output, 8x jumper select 28v or GND
 - 8 Channel single A/D convertor
- 5v power input; 12v or 24v input optional for relay outputs
- Operating temperature range -30/+65C
- User modifiable code base via JTAG (IEE1149.1 Compliant)

• HT001100001 - General Purpose I/O Card (GPIO)

- Requires Carrier Card for Chassis installation
- XMEGA 8 bit processor
 - Interface: SPI, I2C, JTAG and RS232 debug
 - External sample rate up to 2KHz with all channels active
- 4 configurable RS232/485/422 Serial Ports
- 2 dedicated RS422 Ports
- 16 Opto-isolated Inputs; 2.3v trigger (standard), 9v trigger (-01), Analog Input (-02)
- 16 Opto-isolated 1A polyfused Outputs configurable to sourced input (5v, 24, gnd)
- Operating temperature range -30/+65C
- User modifiable code base via JTAG (IEE1149.1 Compliant)

• HT001100002 - Analog to Digital I/O Card (ADC)

- Requires Carrier Card for Chassis installation

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** Upon execution of Technical Data License Agreement

- XMega 8 bit processor
 - Interface: SIP, I2C, JTAG and RS232 debug
 - External sample rate up to 2Khz with all channels active
- Two banks of two bipolar 16 single ended / 8 differential inputs
 - +/-30v input, up to 30kSPS sample rate
- Operating temperature range -30/+65C
- User modifiable code base via JTAG (IEE1149.1 Compliant)

● HT001100003 - Digital to Analog I/O Card (DAC)

- Requires Carrier Card for Chassis installation
- XMega 8 bit processor
 - Interfaces: SIP, I2C, JTAG and RS232 debug
 - External sample rate up to 2Khz with all channels active
- Bipolar 16 channels / 16 bit analog outputs configuration with up to 4 fully differential outputs
 - +/-10v output
 - Output channels can be individually or simultaneously controlled
 - Output update rate up to 1Khz with all channels active
- Operating temperature range -30/+65C
- User modifiable code base via JTAG (IEE1149.1 Compliant)

● HT001100004 - Synchro Resolver Board (SYN/RES)

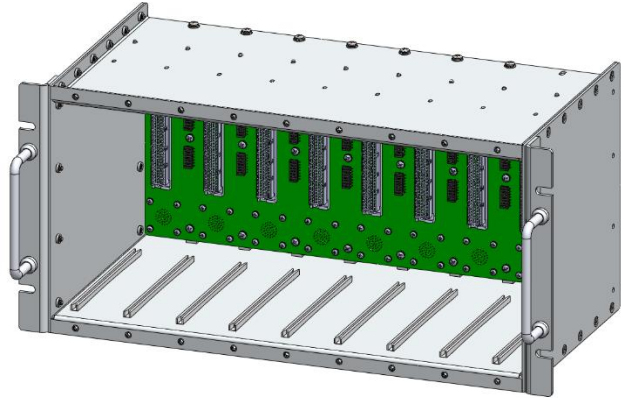
- Requires Carrier Card for Chassis installation
- XMega 8 bit processor
 - Interfaces: SIP, I2C, JTAG and RS232 debug
 - External output rate up to 2Khz
- Sin/Cos Resolver Emulator
 - Single channel / Differential out
 - Buffered Reference Output
 - Reference Input Range: 40Hz - 10K Hz
- 2 dedicated RS422 Ports
- Operating temperature range -30/+65C
- User modifiable code base via JTAG (IEE1149.1 Compliant)

● HT015030010 – Redundant Power Module

- Module for Embedded I/O Chassis
- Control Logic
 - Redundant output power with automated failover based on health of module
 - Dedicated current and Voltage sensors for each module
 - Status lights for each module
 - 2 Opto-isolated Power status I/O line outputs
- Input Power
 - 18-36VDC (with 12 VDC/15 VDC modules)
 - Protected by 3A circuit breaker
- Output Power
 - 18-28VDC (unregulated input voltage)
 - +5 VDC @ 6A
 - +/-15 VDC @ 3A expansion modules installed
- 8 Bit Atmel Processor
- 4 Solid-State Relays
 - Controlled by Main or GPIO Module
 - 7.5A each – protected by circuit breakers
- Onboard interfaces
 - SPI
 - TWI
- User modifiable code base via JTAG
- Operating temperature range -30/+65C

● HT001100005 - I/O Expander/Breakout Board

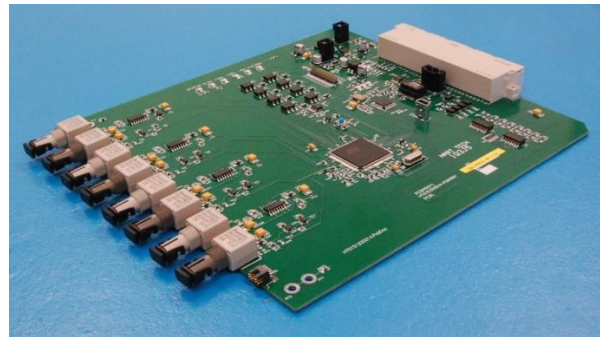
- For use with Embedded I/O Chassis
- 50 channel screw terminal
- 5 mechanical DPDT relays (50v) with NC, NO, Common terminal
- Operating temperature range -30/+65C



Chassis w/Backplane - HT015010000



Chassis with Modules Installed – RG Configuration



Quad Channel Fiber Module - HT015030001

Detailed schematics available after purchase upon request**

* Available on GSA Schedule 70 Contract No. GS-35F-0349T