



FEATURES

MEETS DEMANDING HART APPLICATIONS

- Complies with HART physical layer specification HCF_SPEC-54, Rev 8.1
- Operating temperature range -40C to +85C
- Interoperable with competitive HART modems

SMALLER FOOTPRINT

- Available in 28 pin SOIC, 28 lead SSOP, and DIP packages
- Requires only 4 external components to interface with 4-20mA loop driver/receiver
- More than 50% smaller than competitive parts

LOWEST TOTAL-COST SOLUTION

- Low HART modem part cost
- Fewer external components
- Lower assembly cost
- Single 3.3VDC or 5VDC supply required

BETTER FUNCTIONALITY

- Built-in standalone health-check
- Exceeds HART requirements for in-band network noise tolerance 500Hz to 10kHz

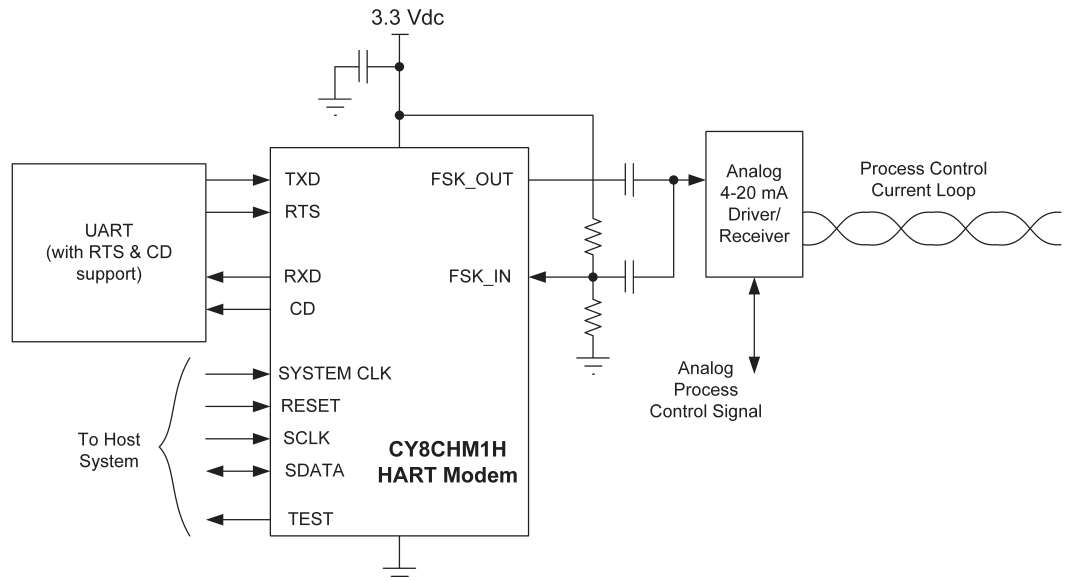
Complete, self-contained, HART Compatible FSK modem that requires minimal external components and delivers robust noise performance.

CY8CHM1H device is a fully integrated, self-contained HART modem. This device is compatible with the 1200 bps, FSK signaling protocols specified for industrial process-control devices communicating over HART networks.

CY8CHM1H device incorporates, on-chip, the required modulator circuitry to generate and control the required FSK signaling tones as well as the demodulator input filtering and signal conditioning circuitry for noise rejection and input signal amplitude tracking. Thus, the modem requires only minimal external support components.

The modem also incorporates diagnostic-check functions to periodically verify the integrity of the modem's programmable memories. A hardware status signal, designated TEST, indicates that diagnostic-check results.

System Block Diagram



KEY PRODUCT SPECIFICATIONS

CY8CHM1H Functional Overview

The CY8CHM1H device is a single, half-duplex modem supporting transmitter TxD (data input), RTS (Request to Send), receiver RxD (data output) and CD (Carrier Detection) signals. This device operates from 3.3 to 5 Vdc. The default state of the modem is the receive mode.

Receiver activity monitors the HART network signal for an in-band, valid carrier signal. The receiver asserts CD after carrier duration and amplitude threshold levels are reached. While CD is asserted, the HART network signal is demodulated as binary data. These are output as a serial bit stream on RxD. During operation, the Receiver's input filter suppresses out-of-band noise.

Transmitter activity is controlled by the host, by asserting the transmitter's RTS input. The host system applies the data to be transmitted to the TxD input. While RTS is asserted, the serial data stream applied to TxD is modulated onto the HART network through the appropriate network interface.

MODULATOR

- Binary phase-continuous transmitter signaling.
- Bit Rate: 1200 bps, NRZ format.
- Symbols: Mark, logic 1, 1200 Hz, Space, logic 0, 2200 Hz.
- Transmitter Request to Send (RTS) support.
- Carrier start, stop, decay times comply with HART specifications.
- Output drive: 500 mVpp (typ) with Vdd/2 DC bias.
- Output noise during silence: < 138 mVrms (DC-63 Hz), < 2.2 mVrms (500 Hz – 10KHz).

DEMODULATOR

- Input sensitivity: 120-1500 mVpp.
- Bit error rate: < 10⁻⁵ (typ), < 10⁻⁴ (max).
- Receiver Carrier Detect (CD) support: thresholds: < 80 mVpp no detect, > 120 mVpp detect.
- Noise tolerance: Complies with HART specifications, DC – 1MHz.

APPLICATIONS

- Modem is compatible with HART network high or low-impedance device designs.
- Applicable to HART network Primary or Secondary Masters; Transmitters (voltage or current outputs); Actuators (voltage or current inputs); DC-isolated bus devices.
- General purpose 1200 bps modem for wire-line or wireless tone-signaling designs.

Cypress Systems reserves the right to make changes to design and functionality of the product without notice.
HART is a registered trademark of the HART Communication Foundation



HEADQUARTERS

198 Champion Court
San Jose, CA 95134
(408) 943-2644
<http://www.cypress.com/systems>
systems@cypress.com

DESIGN CENTER

12230 World Trade Drive
Suite 200
San Diego, CA 92128

Cypress (with logo) is a trademark of Cypress Systems. The names of any other companies, products, or services mentioned herein are for identification purposes only and may be trademarks, registered trademarks, or service marks of or may be copyrighted by their respective holders. Cypress Systems assumes no responsibility for customer product design and assumes no responsibility for infringement of patents or rights of others that may result from Cypress Systems assistance, and no product licenses are implied. © Copyright 2007 Cypress Systems. All rights reserved.