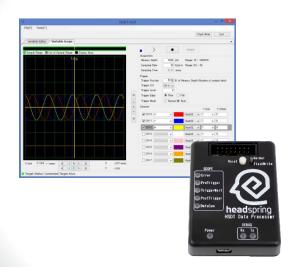


Power Bestronies R&D Toolset C Operation Library / GUT / Data Processer D

HSDT-KIT-B

Software Library, GUI and Data Processor Toolset to Enable Easy and Intuitive Development and Debug



Abstract

- Consist of Power Electronics Development Library (HSLib), Intuitive GUI (HSDT-GUI) and Data Processor for connection between PC and Controller Functions are Covered
- Used as Function Library of Common Part of Embedded Program and Mathematic Calculation for Power Electronics
- Real-time Oscilloscope "Variable Scope" and Real-time Parameter Editor "Variable Editor" by HSDT-GUI
- Real Time Debug Function with HSDT Data Processor by Exchanging Parameters between PC and HSDT-GUI

HSDT-GUI HSDT Data Processor Embedded Power Electronics Controller HSLib Voltage Sensor Current Sensor O-E Converter Current Sensor O-E Converter Circuit Block for Power Electronics

Features

Function Library for Development of Power Electronics Control

- Read Function of Hardware (microcontroller, etc) and Control Program from Library
- Library Linked with Headspring Controller (FPGA Access Function, etc)
- Real time Debug of Control Program by HSDT-GUI

Intuitive and Detailed GUI for Monitoring / Control

- Real Time Debug without Pausing Embedded Program
- Real-time Read/Write Function
- Write Function of Embedded Software by Flash Write

Easy Interface to PC by USB Connection

- Supporting general USB connector to PC (mini-B type)
- Designated Cable for Controller Side is Attached

HSLib Functions	
Functions	Description
Debug Com	Debug Function with Serial Com Port. Variable Editor Function and Flash Write Function of HSDT-GUI
Waveform Data Transmission	Waveform Data Transmission Function for Variable Scope of HSDT-GUI
Watchdog Timer	Implemented with CPU. Reset Signal Detection by Watchdog Timer with Function Program
Periodic Timer (2ch)	Timer Function to generate periodic interruption. Operated by 200MHz (same as CPU clock). Developer can measure software processing time by reading timer counter.
Asynchronous Serial Com Port (3ch)	Asynchronous Serial communication port using SCI function
CAN Port	125kbps~1Mbps Communication Total 32 Send/Receive Box
PWM Generator (12 port)	Complement PWM Generator with Dead-time Function. PWM generation is done by carrier comparison selected from sine-wave, saw-tooth-wave and reverse saw-tooth-wave. Multiple PWM can be synchronized.
AD Conversion (16ch)	12bit AD Conversion Function. 4ch Parallel Conversion Available. Setting Conversion Channel, Conversion Time, Triggering PWM and Periodic Timer Available.
DA Conversion (3ch)	12bit DA Conversion Function. Output voltage is calculated from digital input and reference voltage
Comparator (8ch)	Comparing input voltage with upper and lower threshold to activate Gate Block function. Threshold can be defined using Library.
Periodic Measurement	Time Counting Function by Detecting the Edge of Waveform of A-phase and B-phase
Multiplex interrupt	Real Time and Parallel interrupt Management by Setting Multiple Flagging such as Peripheral, External Signal, PIE.
External interrupt (5ch)	Interrupt Function using External Input Signal to GPIO
Digital In/Out	Send/Receive Function of Digital Input/Output. Parallel Operation Available
EEPROM	Read/Write Function of Each Platform

Circuit Board

Function	Description
PC Connection	Connection by USB (mini B) Cable
Controller Connection	Connection by Designated Cable (Attached)

Indicating the Status of Debug and

Waveform Data Transmission.

GUI Function

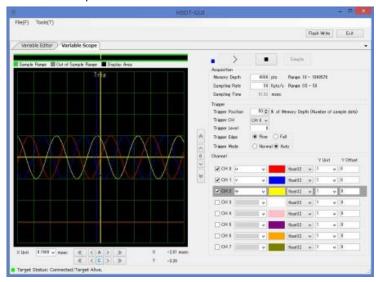
LED for Status Indication

Function	Description
Variable Scope	Waveform Display of Parameter in Control Program. Oscilloscope-like function such as Range Setting and Trigger Function Available
Variable Editor	Real Time Writing Function without Pausing the Program

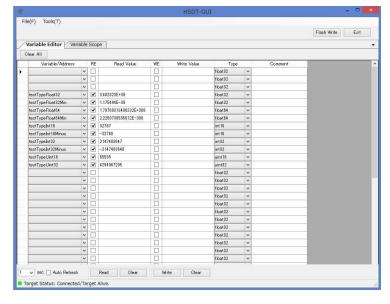
GUI Screenshot Sample

Data Processor Functions

Variable Scope



Variable Editor



 $\ast \, \text{Specifications}$ and Design are subject to change