

## 1. GENERAL

The SIG61 Independent I/O Slave Evaluation Board is a stand-alone solution allowing remote activation of the SIG61 IC device 8 inputs and 8 outputs over the power line. One SIG60 IC can control up to 16 SIG61 slaves. The SIG61 saves a micro controller in remote slave units. Multiple SIG61 modules can communicate with at least one SIG60 operating as a master over the DC power line. See an example in Figure 1.1.

The module contains all the required hardware for remotely reading its 8 input pins or writing to its 8 output pins by a SIG60 master. The hardware contains a line protection network, ceramic filters and a power supply. The Module performs an asynchronous UART protocol over DC power lines at predetermined bit rates. Each module can be configured to an ID address (0-15) by on board switches. The SIG61 respond to its master commands by either update its output pins or respond to a master command with a message containing its 8 input pins status. The SIG61 module can be interfaced directly to applications such as sensors or motors through its J1 I/O connector.

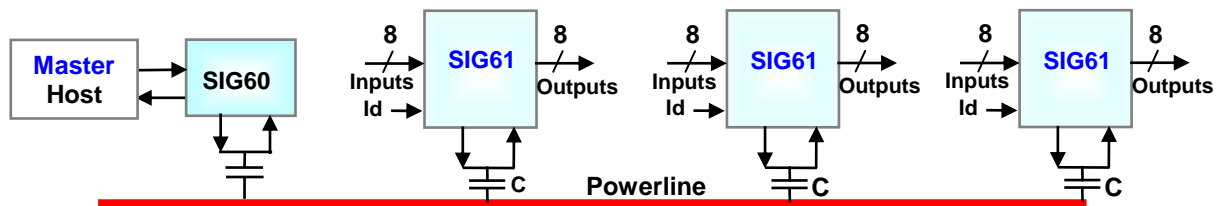
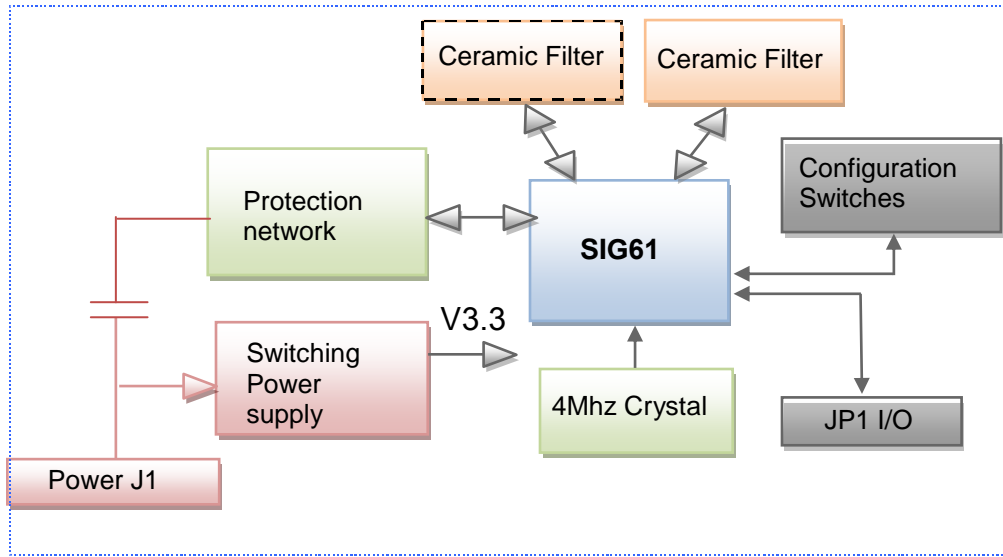


Figure 1.1 – SIG61s slave network example

## 2. Evaluation Board Description

### 2 .1. Block Diagram Description

The received data signal from the DC line passes a protection network, into RxIn input pin to a Rx amplifier. The amplified signal passes via F0B or F1B pins to an external ceramic filter and back into RxP input. Based on the decoded message, either data byte is transferred to the I/O connector output pins or the SIG61 respond with a message containing the status of the input pins on the I/O connector. The received message can be monitored on the HDO pin as an asynchronous bit stream. The module is described in the block diagram of Figure 2.1



**Figure 2.1 – SIG61 Board block diagram**

The communication parameters (frequency, bit rate, etc.) are determined by the installed ceramic filter(s) and by the on-board switches.

The SIG61 respond to a master command by generating and transmitting a message from the DTxO pin. The digitally modulated signal passes to the ceramic filter for shaping. The shaped signal enters the SIG61 via F0B or F1B pins into an output amplifier. The modulated data on TxO pin drives the DC line via the protection network.

The on board switching power supply provides the 3.3V voltage required for the SIG61 operation. The power supply operates in a wide input voltage range between 10V and 36V. The module current consumption is in the range of 30mA depends on supply voltage.

## 2 .2. Hardware features:

- Noise robust DC Power Line Communication
- 8 remotely controlled Inputs
- 8 remotely controlled Outputs
- 16 selectable IDs
- Controlled by UART serial protocol
- Selectable data rates.
- Selectable operating frequencies.
- Use of low cost ceramic filter(s)
- Switching power supply for 10V to 36V operating voltage.
- Status indication LEDs.
- Small size board (60mmx40mm).
- 4MHz crystal.

### Connectors:

J1- I/O connector for activation of local commands and reading sensors.

J2 - Power input and Test points.

### Display LEDs:

D4 - F1 indication LED. (On=F0)

D5 - Tx On LED indicates transmission.

D6 - Rx On LED, indicates a valid receive signal.

## 2 .3. Mechanical Data

Figure 2.2 show the module.

