

High Speed Link- High Speed, Real Time Distributed I/O Systems

High Speed Link (HSL) is an innovative distributed I/O technology designed for automation applications requirement. HSL is based on an open standard, RS-422, which is designed for full/half-duplex, multi-drop serial transmission. The network employs standard CAT 5 cable for point-to-point connections between its major components and CRC-12 for error-correction. Sensors and controls at I/O points connect to the system through simple copper wires. In addition, I/O modules are hot swappable, thereby replacing failed modules in the field without having to power down the system. Since RS-422 operates through polling, data collisions are not a factor and message overhead is extremely low. HSL uses a 6Mbps transmission speeds and can scan 1000 I/O points per millisecond. Maximum scan rates of less than 2 milliseconds are sustained for 2,000 to 32,000 I/O points. A series of real-time I/O networking products including PCI-bus master cards and slave I/O modules up to 200m away from the PC. The slave units can be placed near the I/O points being monitored or controlled, reducing wire runs and minimizing potential noise and signal losses. For those who are seeking for the optimal solution for speedy, easy distributed I/O, HSL is definitely your best solution.

High speed

The master ASIC controller fully utilizes the 6Mbps transmission speed running on full/half-duplex RS-422. All the command response protocols are handling by the ASIC itself with full speed polling periodically.

Real time

The time period for a HSL master to scan all slave I/O modules is deterministic. It is exactly proportional to the number of slave address ID. For a HSL system with 30 slave I/O modules, the scanning time period is precisely $30 \times 30.1\mu\text{s} = 0.903 \text{ ms}$.

Easy wiring

The connection among the HSL master and all slave I/O modules requires merely the commercial Ethernet cables, which dramatically reduce the wiring effort. With just Ethernet cables, hundreds even thousands of I/O data can be transmitted between the HSL master and slave I/O modules. This is absolutely the easiest and most cost effective wiring solution.

Huge number of I/O points

There are at most 63 slave I/O modules in one HSL master, and there are at most 16 HSL master supported in one computer system (8 pieces of PCI-7852). That is, $63 \times 16 = 1008$ modules. Just choose all modules as HSL-DI16DO16-DB-NN, and the total number of I/O points is 16,128 DI and 16,128 DO.

Easy and flexible I/O expansion

To expand I/O points of add-on card needs not only the card itself but also a free PCI or ISA slot. What you need to do for HSL now is select the I/O type and module number by easy serial wiring, Clips an Ethernet cable with RJ45 between modules and master then everything is done.

