

Sony Develops Technology to Facilitate both Internal Data Transmission & Power Supply with a Single Cable

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Sony Corp. has developed 'single wire interface technology', a hybrid transmission technology which facilitates both data and power transmissions through a single cable.

This technology enables the internal wiring of a mobile device to be streamlined through a single cable (copper wire). Conventionally, the video, audio and control signals as well as the power transmission were spread out over several dozen cables within the movable mechanisms of mobile devices, such as hinges or rotating parts. Sony aims to promptly implement this technology to improve design flexibility, reliability and durability for mobile devices with movable mechanisms.

In recent years, mobile devices have become ever more sophisticated in terms of advanced functionality and high resolution displays. As a result, more wiring connections have been used to accommodate the increasing volume of data being transmitted within devices. Accordingly, new problems began to emerge as connectors in devices became larger and it became more difficult to bend the connecting cables.

Sony's newly-developed 'single wire interface technology' has achieved bi-directional transmission of several kinds of signals, including video, audio and control signals, by using time division duplex and multiplex. In addition, the dc power is supplied on the same signal cable. Sony's unique encoding technology with dc balance enables both dc power supply and high speed data to be transmitted within a limited frequency bandwidth.

In order to swiftly begin practical implementation of this technology, Sony has teamed up with **ROHM Co., Ltd.** ('ROHM'), which has a track record in peripheral technologies, for the joint development and technical validation for the analog portion of the test chip. Hereafter, Sony will grant ROHM a license for the IP of the digital portion of this newly-developed technology in order to advance the development of a single chip which includes both the analog and digital portions.

Main points of development:

1. Time division duplex and multiplex have enabled bi-directional transmission of multiple types of data over a single transmission cable.

Sony developed a unique time division duplex and multiplex method that enable packets of data, including video (display, camera), audio, and control signals to be transmitted over a single cable. Furthermore, Sony has enabled the bi-directional

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Published on Electronic Component News (<http://www.ecnmag.com>)

transmission of different signals, such as display and camera signals, by incorporating a mechanism that retains individual synchronization.

2. Unique multi-level encoding technology has enabled higher transmission rates within the limited signal frequency bandwidth. The newly-developed hardware is composed of (1) a digital portion that performs multi-level encoding, (2) an analog portion that transmits and receives signals, and (3) another portion that combines signals with dc power or separates signals from dc power. A unique multi-level encoding that has no dc component enables both high speed transmission with limited frequency bandwidth and dc power supply on a single common cable. Sony has demonstrated that high transmission speeds (940Mbps) can be achieved.

Technical specifications (tentative values) of the demonstration system include: a power consumption of 10-80mW (0-940Mbps) during transmission, 0.3mW when on stand-by; power supply voltage for analog IC: 1.5V/3.0V; a transmission distance of 60cm; a supplied current value of 600mA; and an operating ambient temperature range of -20 to +85°C.

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