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**NVE Accolades**

For the fourth consecutive year, NVE was named one of the top 25 **fastest-growing public companies** in Minnesota by the *Minneapolis/St. Paul Business Journal*.

**Spin Back**

Daylight Saving Time ends Sunday, November 6. Spin your clocks back an hour.

**Scary Music**

Our telephone [background music](#) is currently Bach's Toccata in D minor, the quintessential scary Halloween.

And toccatas are fast and precise like NVE sensors and isolators.

**Scary Music**

NVE will be closed Thursday and Friday, November 24 and 25.

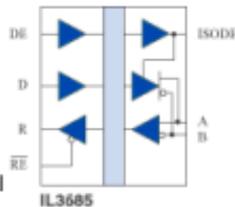
**Featured Product**

**Isolated PROFIBUS Transceiver**



The IL3685 is a galvanically isolated, high-speed differential bus transceiver, designed for bidirectional data communication on balanced transmission lines. The device uses NVE's patented IsoLoop spintronic Giant Magnetoresistance (GMR) technology.

The IL3685 is fully PROFIBUS compliant, including the rigorous PROFIBUS differential output voltage specifications (see the [Application Corner](#) below). The device is compatible with 3.3 V as well as 5 V input supplies, allowing interface to standard microcontrollers without additional level shifting.



Current limiting and thermal shutdown features protect against output short circuits and bus contention that may cause excessive power dissipation. Receiver inputs feature a "fail-safe if open" design, ensuring a logic high R-output if A/B are floating.

**Features**

- PROFIBUS Compliant
- Meets ANSI RS-485 and ISO 8482:1987(E)
- UL1577 and IEC 61010-2001 Approved
- 3.3 V / 5 V Input Supply
- 40 Mbps Data Rate
- 5 ns Pulse Skew
- Low EMC Footprint
- 15 kV bus ESD Protection
- Thermal Shutdown Protection
- Unlimited Barrier Life
- 16-pin SOIC Package

**Applications**

- PROFIBUS DP and FMS Networks
- Factory Automation
- Gaming Systems
- Security Networks
- Building Environmental Controls

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\$9.95 shipping

**Halloween Application Corner**

**PROFIBUS Compliance Doesn't Have to Be Scary**



Many designers don't realize that PROFIBUS standards limit transceiver differential output voltage, which rules out many transceivers on the market.

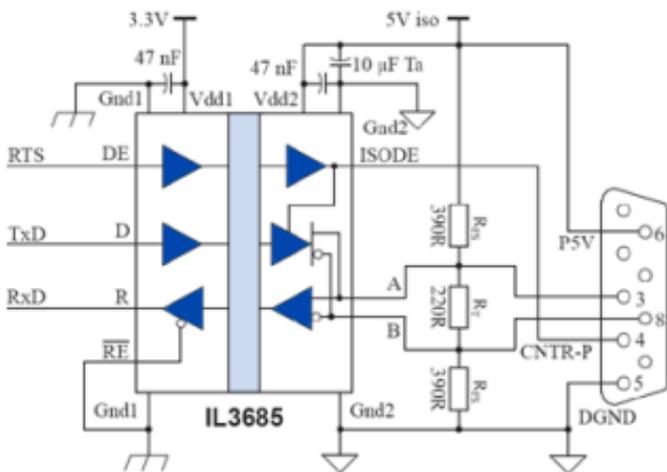
That's frightening.

A key PROFIBUS specification is, "The differential voltage between A- and B-line shall be a minimum of 4 V and a maximum of 7 V." But most RS-485 transceivers don't specify bus voltages that way. They specify a maximum and a minimum differential voltage between A and B, and it's almost always quoted with a single output state under low and high loads. Furthermore, the PROFIBUS specification has to be met at the maximum power supply voltage (5.5 V).

Most manufacturers comply with the 4 volt minimum, but miss the less obvious 7 volt maximum, perhaps in the mistaken belief that maximizing differential output voltage must be a good thing.

That's a nasty trick that will get your product rejected.

But NVE has a PROFIBUS compliance treat—the PROFIBUS compliant IL3685 transceiver. Here's a proven circuit:



**A True PROFIBUS-Compliant Circuit**

The IL3685 guarantees the 7 V maximum differential specification. Additionally, the 220 ohm termination resistor, along with one on the other end of the bus, matches the bus impedance to minimize reflections. The 390 ohm "fail-safe" resistors guarantee a known state with no active transceivers.

Now that wasn't so scary, was it?

[<Download the PROFIBUS Hardware Design Guide \(.pdf\)>](#)