

Re: VFDs, Noise, and RS-485

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2005-07/msg03487.html>

- *From:* "Nobody" <protospherex@xxxxxxxxxxxxxxxxxxxx>
 - *Date:* Thu, 28 Jul 2005 03:10:04 GMT
-

"Joerg" <notthisjoergsch@xxxxxxxxxxxxxxxxxxxx> wrote in message
[news:1DWFe.1249\\$IM7.227@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:news:1DWFe.1249$IM7.227@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx)

> Hello,

>

> Can you give us a first name?

>

>> 1. The noise problem is so bad that once the VFD starts running, it kills

>> the RS-485 signal.

>

> As Terry said it is probably a PWM signal that actually runs the drive
> and not just controls it. The ripple you see would then be the stuff
> that didn't get smoothed out in the output filters of the converter
> unit. One thing you could look at is filtering some more at the source
> but you may not be able or allowed to modify that, let alone get inside
> the converter.

>

>> 2. The noise problem also kills our ability to use a hall current probe
to

>> sense the current through one of the 3-phase output lines.

>

> I usually prefer current transformers. You can filter the output of
> these since you are then dealing with isolated and low level signals.
> Running the output of the current transformer differentially to the
> system where there would be another transformer may also be an option.
> But don't ever move the resistor away from the current transformer. Else
> havoc can happen should somebody disconnect the cable.

>

>> I've tried grounding everything. I'm using shielded cables and toroids
for

>> the communication and measurement lines.

>

> At these power levels you'd have to be a real RF expert to get it
> running as is. Or hire one ;-)

>

>> On the RS-485 end, we've tried isolated and non-isolated devices (with
>> proper termination resistors) on the PC.

>

- > This situation really calls for transformer isolated transmission, not
- > just differential receivers/drivers. The required transformers would be
- > pretty small and in a pinch can be made by hand. Toroids, no pot cores
- > and the like. Making your own transformers instead of relying on some
- > "isolation device" or transformer in a can has the advantage that you
- > know how good and symmetrical it is.
- >
- > Regards, Joerg
- >
- > <http://www.analogconsultants.com>

I'm definitely NOT an RF guy. I'm just a poor firmware coder who got hoodwinked into this VFD fiasco.

When you mention transformer isolation, you are suggesting that use one transformer at each end, correct? I'll try that tomorrow.

As far as current transformers... I think we tried using a current transformer and combined it with various types of LPFs. The problem we were having was that the DMM we were using would pick up the VFD noise. Noise Noise Noise! Argh!

– Phillip

• *Follow-Ups:*

- ◆ **Re: VFDs, Noise, and RS-485**
 ◇ *From:* Joerg
- ◆ **Re: VFDs, Noise, and RS-485**
 ◇ *From:* Terry Given

• *References:*

- ◆ **VFDs, Noise, and RS-485**
 ◇ *From:* Nobody
- ◆ **Re: VFDs, Noise, and RS-485**
 ◇ *From:* Joerg

- Prev by Date: **Re: unlock car door over cell phone**
- Next by Date: **Re: unlock car door over cell phone**
- Previous by thread: **Re: VFDs, Noise, and RS-485**
- Next by thread: **Re: VFDs, Noise, and RS-485**
- Index(es):
 - ◆ **Date**
 - ◆ **Thread**