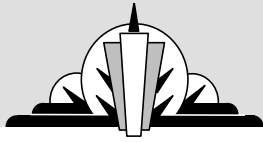


Utility Relay News

December, 1999



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URC's Sales Surge

Encapsulated CTs

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ZERO-Hertz DC Trip Unit Redesigned. Shunt Input and RS-485 Port Added.

Utility Relay Company's ZERO-Hertz DC trip unit has been redesigned for 1999. More available features have been added to better meet the needs of their customer's wide ranging applications.

Most notably, the ZERO-Hertz is now available with an optional shunt input. The terminal block on the bottom, right-hand side of the trip unit allows for direct connection to either a 50mV or 100mV DC shunt while providing 3750 VDC isolation.

The maximum recommended continuous operating system voltage is 1000 VDC.

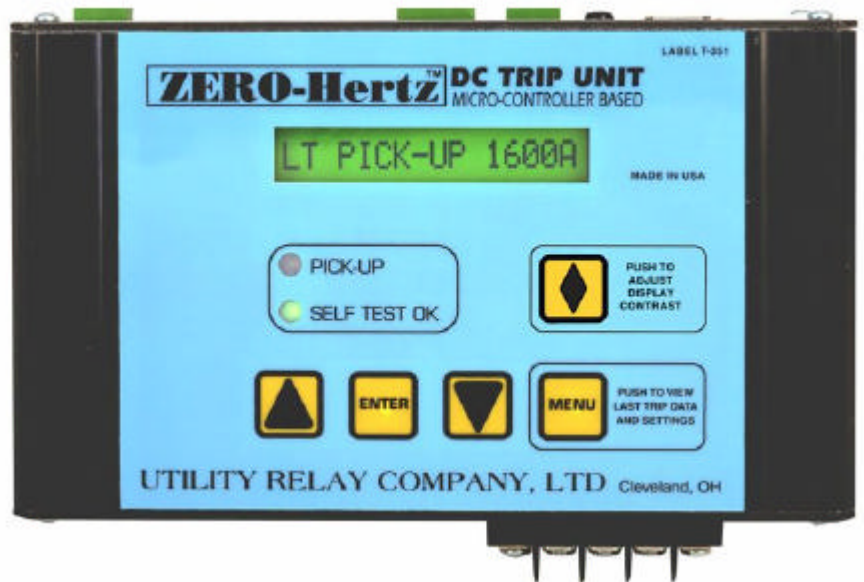
An RS-485 communications port has also been added and is available as an option. This communications port allows a number of trip units to be daisy-chained together on a single shielded twisted pair wire.

The ZERO-Hertz communicates using the industry standard MODBUS protocol which means that no additional hardware or translation modules are required when communicating with a MODBUS-based

system such as Square D's PowerLogic System Manager, Power Measurement's PEGASYS, Siemen's ACCESS or Wonderware's InTouch.

trip units can communicate directly across a Local Area Network (LAN) providing many additional benefits.

Like all of URC's communications products, the



Information available from the ZERO-Hertz includes: DC Current, Last Trip Data, Trip Counter, and Alarm Conditions.

The ZERO-Hertz also features remote programmability which allows trip settings to be reprogrammed remotely from a PC.

With the addition of a URC Network Bridge, ZERO-Hertz

ZERO-Hertz can share the same communications twisted pair wire with AC-PRO+ trip units and virtually any other device which communicates using MODBUS RTU.

For more information on the new ZERO-Hertz Trip Unit with Communications, look up URC on the web and download a complete data sheet and Instruction Manuals.

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ZERO-Hertz DC trip units are installed to protect a major expansion at an Australian copper Refinery.

Earlier this year, Copper Refineries pty, LTD (CRL) in Australia completed the installation of four ZERO-Hertz DC trip units as part of a major expansion and upgrade to their DC distribution system. The project involved installing three new 25kA FUJI rectifiers, 1 new 30kA AMPCONTROL rectifier, new buswork and protective relaying.

The ZERO-Hertz was included in CRL's protection scheme because it was the only relay capable of providing the Hi-Speed Instantaneous trip protection needed on the load side of the new rectifiers at the critical moment of switching.

As CRL explained, "The existing instantaneous overcurrent protection relays are supplied from secondary CTs, but because the initial inrush current causes tripping, they are bridged out initially by time delay contacts. This means that if a fault exists prior to switching the 11kV OCB (feeding the rectifiers) there is no Instantaneous protection. Severe damage has occurred to the old bus system when such faults have been present. With the newly installed bus bar system, the consequential damage from similar faults would be catastrophic... It is imperative that the Instantaneous overcurrent protection is operational at the instant of closing the 11kV OCB."

LK Technical Services (Wangi Wangi, NSW, AUSTRALIA) worked with Utility Relay Company on the project to help coordinate the details of this unique application of the ZERO-Hertz.

Initially, both CRL and LK Technical Services expressed concerns regarding the transducers that are supplied with the ZERO-Hertz. "The ZERO-Hertz Manual states that the Hi range sensor [transducer] goes to 12,000 amps. Yet [CRL] needs them to work up to 30kA rated. [CRL] said that they had recently bought a DC calibration instrument able to go up to 30kA and that it cost them \$AUS36,000. Hence [they] doubt that a 'simple' URC sensor

will work accurately and will handle up to 30kA."

URC explained that the transducers are rated for use on 12,000 amp circuit breakers with a maximum Instantaneous trip setting of 6 times. This means that



the transducers will produce an accurate output on a DC bus with currents up to 72,000 amps! Considering that CRL needed an Instantaneous trip pick-up setting at 35,000 amps, the ZERO-Hertz trip unit and transducer appeared to be the perfect solution for their application.

But CRL still had concerns regarding the URC transducers because the DC bus was rather complex with several individual DC circuits located in close proximity to one another. CRL explained that they had poor experiences in the past with "yoke type" DC transducers because the magnetic fields from nearby conducts interacted with the iron laminations in the transducer yoke and produced inaccurate readings.

URC explained that the design and construction of their transducer virtually eliminated false and inaccurate readings commonly associated with older style transducers. The URC transducer does not use a yoke, just a simple Hall Effect crystal and some rather unique circuitry all packaged in a small 2-1/2" X 1-1/2" X 1" block. The transducer mounts directly on the DC conductor using a single 8-32 stainless steel screw through the center.

Strong magnetic fields also concerned CRL with regard to the physical location of the ZERO-Hertz trip unit. The control panel containing the relays sits just 2 meters above multiple DC buses carrying 9,000 to 30,000 amps. The DC buses can be individually energized and produce significant electro-magnetic transients during switching.

URC reassured CRL that the ZERO-Hertz has been designed to operate in harsh environments and great attention has been paid to proper shielding and grounding.

With CRL comfortable in the design of the ZERO-Hertz and transducer, and all of the necessary trip timing tests complete, it came time to energize the system. As expected, URC received the first positive reports the following day. The system was a success!

CRL provided the following readings which were taken when the system was first energized. LK Technical Services reported that "[CRL] is still shocked at the accuracy of the sensors. [They] quoted a variation in the accuracy of 0.4 to 4% over 10 to 25 kA."

#2 Rectifier Ammeter Display	Zero-Hertz Ammeter Display	% Error
16,300	16,000	1.84%
18,300	18,000	1.64%
19,300	19,000	1.55%
20,300	20,000	1.48%
21,180	21,000	0.85%
22,250	22,000	1.12%
23,200	23,000	0.86%
23,480	23,500	-0.09%
25,120	25,000	0.48%
10,800	10,400	3.70%
11,120	11,120	0.00%
25,120	25,120	0.00%
23,480	23,500	-0.09%

URC begins shipping fully encapsulated CTs with AC-PRO retrofit kits.

In October, Utility Relay Company began shipping their first fully encapsulated CTs in certain AC-PRO retrofit kits. Although electrically similar to the older tape wrapped CTs, the encapsulated design provides a more finished look to a retrofit, and should offer additional protection for the CT windings.

The new individually serialized CTs also have larger labels which will be easier to read when installed on a breaker.

The first CT to be encapsulated was a 600/300-1A CT used in URC's most popular retrofit kits. This CT is now provided in kits for the following breakers:

shipping their first fully encapsulated 1600/800-1A CT. This CT will be included with AC-PRO retrofit kits for the following breakers:

AK-50 AKR-50 KC-1600

and several other 1600 amp frame breakers.

3000/1500-1A and 4000/2000-1A encapsulated CT designs are in the works. These will fit the majority of

larger frame size breakers.

URC will continue to offer tape wrapped CTs on certain retrofit kits which have unusual shape or size restrictions. In addition, tape wrapped CTs allow URC the ability to provide custom size, multi-tapped CTs for virtually any breaker type or neutral bus application in 1 to 2 weeks.



**AE-25 AE-1B AK-25
DBL-25 DK-25 K-600
LA-25 G-25 FP-25
KB-600 KC-600 Steel**

FM-50

By the first part of next year, URC will be working on a 1600/800-1A encapsulated CT design which will be used in retrofit kits for DB-50, K-1600

Rush orders can usually be delivered in under 1 week.

URC also has over 100 different AC-PRO retrofit kits available in stock for immediate shipment.

URC believes that this unparalleled

By February, 2000 URC will begin

Win a set of Calloway BIG BERTHA Drivers! Enter Utility Relay Company's Raffle on-line.

It's almost Summer and wouldn't it be great to hit the links this year with a brand new set of Calloway Big Bertha Drivers.

Everyone at Utility Relay sure thinks so. Unfortunately, no one here has any time to play golf because we are busy manufacturing and shipping all of your AC-PRO and ZERO-Hertz retrofit kit orders.

So, we have decided to raffle off a brand new set of Calloway Big Bertha

Drivers to someone who may be able to get away for an afternoon and enjoy 9 or 18 holes.

To enter, simply fill out the on-line entry form on Utility Relay Company's website:

www.utilityrelay.com

The drawing will be held during the 2000 NETA Technical Conference, March 16, at the Adams Mark Hotel in

Dallas, TX.

Do not worry if you cannot make it to the Conference, you do not need to be present to win.

While your on the Utility Relay Company website, be sure to look at all of the recent additions. Datasheets and Instruction Manuals can now be downloaded directly to your computer and emailed to your customers. Getting information where it needs to be has never been easier or faster.