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IEEE

THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

Volume 63—No. 5 May 2017

IN THIS SIGNAL:

Participation in FWCS Events

As a member of the Florida West Coast Section, you are part of one of the most active sections in the country. Events are held every month, ranging from seminars to help you increase your technical skills, stay current with new technologies, meet other professionals with interests similar to yours, and earn CEHs for license renewal to tours of various local venues, many of which you would be unable to visit any other way.

Arranging these activities requires a considerable amount of effort, and is all done by volunteers. Often, meals are included as part of these events, which requires an accurate headcount of attendees prior to the meeting. When a member registers for an event and does not attend (or cancel his reservation), the section can experience a financial loss, particularly if catering is involved. And showing up with no reservation can also be problematic, as an insufficient quantity of food could be the result.

Please keep these facts in mind and be sure to reserve your place at events, and cancel if your schedule changes and can no longer attend. And if you are interested in helping to organize a FWCS event, please contact an Executive Committee member (see Page 2 of this Signal). Thank you!

SoutheastCon 2017

USF Students Compete in Region 3 Conference

This year's Region 3 conference, held at the Embassy Suites Hotel in Charlotte/Concord North Carolina, was attended by many FWCS members, including a contingent of over a dozen students from the University of South Florida, many of whom participated in student competitions.

The hardware (robot) team, in spite of a good design and a tremendous amount of hard work by the entire team, suffered an unrecoverable setback during the practice session, when a circuit failure during calibration proved to be more than could be repaired in the available time. The software team had much better luck in the 12-hour hackathon. At the awards banquet, the USF team (L-R in photo: Ivan Chekerov, Diego Serrano Reinel, and Victoria Leppold) was announced as placing third in the software competition, being edged out by Southern Mississippi and Tennessee Tech. The Ethics team, made up of Karina Garcia, Mohammed Chehab, and Vanessa Forero, also placed in the top 6 with over 40 teams competing.

Many of the students attending the 2017 conference will be helping to organize and run the student program at the 2018 conference to be held right here in St. Petersburg. There will be plenty of opportunities to help in that monumental effort, from volunteering your time to sponsoring portions of the event. Participating in SoutheastCon is a great way to help support your local IEEE section—please consider pitching in to help the 2018 conference become a success.

Upcoming Meetings

EXCOM Meeting
Tuesday, May 2, 2017 5:30PM at TECO Plaza
Register online at http://time2meet.com/fwcs-excom/index.html
Open to all FWCS Members

PACE Meeting—Medical Marijuana
Wednesday, May 17, 2017 6:00PM at John F. Germany Library
Register online at https://events.vtools.ieee.org/m/45030
Details on Page 4

Mosaic Dragline Tour
Friday, May 26, 2017 2:30PM at Four Corners Mine
Register online at http://time2meet.com/fwcs-excom/index.html
Details on Page 5

THE SUNCOAST SIGNAL is published monthly by the Florida West Coast Section (FWCS) of the Institute of Electrical and Electronics Engineers, Inc. (IEEE). THE SUNCOAST SIGNAL is sent each month to members of the IEEE on Florida's West Coast. Annual subscription is included in the IEEE membership dues.

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Useful links:

http://www.ieee.org/benefits	Global Benefits Finder
http://www.ieee.org/discounts	Discounts Page

PE Corner

Art Nordlinger, PE, Senior Member

The Rule Change Process

The Department of Business & Professional Regulation (DBPR) is the state agency charged with licensing and regulating businesses and professionals in Florida; everything from Accounting to Veterinary Medicine. For each license type there is a Governor-appointed board that oversees that area of professional practice. The Florida Board of Professional Engineers (FBPE) is responsible for the practice of engineering under auspices of the DBPR.

The Florida Statutes are the laws that have been passed by the legislature including the practice of licensed professions. Chapter 471 of the Florida Statutes governs the practice of engineering in the state. In some areas, the Statutes are very specific, and maybe even prescriptive. For example, Section 471.017 F.S. contains the continuing education requirements for engineers' license renewal. This section specifies that the number of continuing education hours required for license renewal is 18, and the mix of those hours. The statute says (verbatim):

1. One hour must relate to this chapter and the rules adopted under this chapter.
2. One hour must relate to professional ethics.
3. Four hours must relate to the licensee's area of practice.
4. The remaining hours may relate to any topic pertinent to the practice of engineering.

Not atypical of the way our laws are written, however, it is up to the agency or board that administers that part of the law to craft detailed rules that put the law into practice. These rules constitute the Florida Administrative Code. In our case, the Florida Board of Professional Engineers (FBPE) is tasked with that responsibility. Chapter 61G15 FAC contains the rules governing the practice of engineering.

The rule creation process is not done in a vacuum but rather in a public forum with input invited from any interested party. Practice of Engineering rule changes may begin in a number of ways, including as a result of a change to the Florida Statutes, or from a suggestion from an engineer or other interested party. The Board often assigns a committee, chaired by a Board member and including participation from interested parties and Board staff, to review the suggested change and come up with new rule language as a starting point. Once the committee process is completed, a rule change is proposed to the full Board. This rule is then published for comment. The process is somewhat iterative, with the FBPE proposing changes to the rules, followed by a comment period, followed by more proposed changes, etc. until consensus is reached on a final new rule.

The Board is currently looking at a number of rule changes, two of which may directly affect IEEE members in their engineering practice. These include changes to the Electrical Rules, which are in Chapter 61G15-33 FAC and the Rules for Continuing Education, Chapter 61G15-22 FAC. Committees have been formed to review suggested changes to both of these rules and both are well on their way to proposing changes for consideration by the Board. Stay tuned!

Whether you are a PE looking to attain required CEHs, or an engineer looking to learn something new or keep current with the latest trends in the profession, IEEE has seminars that will meet your needs. Whether you are a PE looking to attain required CEHs, or an engineer looking to learn something new or keep current with the latest trends in the profession, IEEE has seminars that will meet your needs. Better start earning those CEHs now!

Nuclear Power Seminar

On April 7, Matt Lovitt, Chemistry and Environmental Manager at Tennessee Valley Authority's Sequoyah Nuclear Plant, presented an outstanding and comprehensive overview of the nuclear industry. The seminar started with an unplanned moderated roundtable discussion involving energy policy and the public's perception of nuclear power. This "unadvertised feature" became necessary due to some airline issues resulting in a two-hour delay in Matt's arrival.

Once Matt arrived, he began with a brief summary of nuclear's origins and history. One of the seminar attendees, John Luce, was employed by Westinghouse in the "early days" and shared some of his first-hand nuclear power experiences from the 1950s with the group.

Matt's presentation continued with an in-depth look at the pressurized water reactor technology used at Sequoyah and at many other facilities in service worldwide. He concluded with the outlook for the nuclear industry and a recap of careers in the business.

In spite of major setbacks like the Fukushima incident and the recent bankruptcy declaration of Westinghouse Nuclear, according to Matt the future for nuclear technology looks good. The technologies that have been used for over half a century are mature and well-understood. Many enhancements to improve safety, reliability, and economics have been introduced, making nuclear technology more appealing to many. But a sizable group still questions the safety and indeed the need for commercial nuclear power. These perceptions are best countered by studying the nuclear industry's outstanding performance record, particularly here in the U.S.

Managing the almost 100 reactors in operation in the U.S., bringing new units online, and retiring old units or extending their operating licenses will continue to provide many high-quality engineering jobs for decades. Better utilization of spent fuel, perhaps the biggest technical challenge facing the industry, will require a great deal of technical knowledge and innovation. This challenge alone should attract some of our brightest minds to the nuclear industry.

Free Audio E-Book

Based on the popularity of its e-books, IEEE-USA is releasing its first audio e-book — *Staying Sharp - Volume 1: Tips for Staying Sharp Inside Your Company* — **free for a limited time only!**

Global competitiveness is unforgiving, and if not sharpened regularly, an engineer's skills can obsolesce quickly. At this time of rapid change and shifting corporate strategies, complacency can easily threaten an engineering career.

The first in a two-part series, *Staying Sharp - Vol. 1: Tips for Staying Sharp Inside Your Company*, provides more than a dozen proven strategies engineers can easily put to work on the job. In this award-winning IEEE-USA eBook, veteran engineering professional and educator, Harry T. Roman, shares his thoughts about how engineers can enhance and hone their non-technical skills for career success.

Volume 1 is filled with tips about mentoring, starting project teams, working with schools and continuing education, among many other topics. In one section, Roman encourages readers to "do their R&D…a process that converts uncertainty into risk," for many companies. But he recommends getting involved with it, explaining that if you know the risk associated with a technological path, you can make educated investments for the future.

Roman also reminds us: "Never forget that during your "sharpening" process, the soft skills are just as important as the hard skills…. and that includes the people you lead and manage."

Stay sharp! Don't miss out! For a limited time only, download this special gift from IEEE-USA, free of charge at: http://shop.ieeeusa.org/documents/45937/662673/Staying-Sharp-V1/4493300b-e85e-46f3-8562-70738b1ab882

The companion e-book (non-audio) is also available for $7.99 for members, and $9.99 for non-members at: http://shop.ieeeusa.org/usashop/product/careers/125999.

Medical Marijuana Arrives in Florida

What's In It for Engineers?

Date:	Wednesday, May 17th
Time:	6:00pm—7:30pm
Cost:	Free! (as in *free beer*)
Speakers:	Catherine M. Zito, CEO of American Wellness, Inc. and Doug Fyvolent, Hydroponics Cultivator and Owner of Solaridy CropTowers
Location:	John F. Germany Public Library 900 N. Ashley Dr., Tampa, Florida 33602-3704
RSVP:	https://events.vtools.ieee.org/m/45030
Questions:	Jim Anderson — dr.james.anderson@gmail.com

Pot, Weed, Grass, Cannabis, Reefer – call it what you like, marijuana goes by many different names. Amendment 2 has been passed by voters in Florida and what that means is shortly medical marijuana will become available via dispensaries to residents with medical needs.

The estimated size of the legal U.S. marijuana industry (both medical and recreational) in 2016 was $7.1B– a boost of more than 25% over the year 2015. The market is forecasted to grow by 700% from 2016. This is going to be huge! The impact of planting, growing, harvesting, processing, distributing, and selling medical marijuana is going to be a very large brand new business.

This new market is going to require a great deal of engineering talent. Brand new legal growing operations are going to have to be set up. As the plants grow, they are going to have to be monitored, fed, watered, and cared for. Once they have matured, the plants wlll need to be harvested, processed, and then distributed. Due to the nature of this product, extensive security procedures will need to be put in place in order to track everything. The number of new engineering jobs that will be created is going to be enormous.

We have been able to get two of the movers and shakers in the Florida marijuana market to agree to share all of their secrets with us. Catherine M. Zito the CEO of American Wellness, Inc. and Doug Fyvolent, Hydroponics Cultivator and owner of Solaridy CropTowers. The have all of the answers about what is going on in the U.S. marijuana as well as what we can expect to happen here in Florida.

Your life is going to be impacted by the arrival of medical marijuana. No matter if you have need of this product, if your friends do, or if you'd be interested in working in this new industry that is going to need a lot of engineering talent in order to be successful, this is the IEEE PACE meeting that you are going to need to attend. The meeting will be held on Wednesday, May 17th from 6:00pm – 7:30pm at the John F. Germany Public Library which is located in downtown Tampa at: 900 N. Ashley Dr., Tampa, Florida 33602-3704.

Since I know how big of a deal this is for everyone, this PACE meeting is going to be free – as in *free beer*. Show up and find out everything that you need to know about what the arrival of medical marijuana in Florida is going to mean for you. Register online at: https://events.vtools.ieee.org/m/45030.

Mosaic Four Corners Mine Drag Line Tour

Date: Friday, May 26th

Time: Tour begins at 2:30 PM

Cost: Free for Members, $10 Non-Members and $5 for Students

Make checks payable to IEEE FWCS and mail a check in advance to IEEE PE/IA Chapter Treasurer:

Jim Howard
3133 W. Paris St.
Tampa, FL 33614-5964

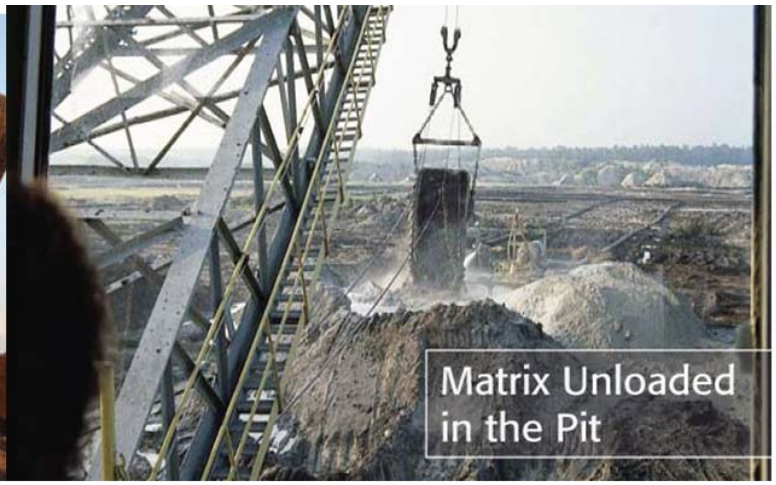
Speaker: Wayne A. Pilliner | Manager Maintenance Services, CRE, CMRP,Green Belt

Location: Mosaic Four Corners Mine; 21699 CR 39 South; Lithia, FL 33547

RSVP: Online at: http://time2meet.com/fwcs-pes1/index.html

Space limited to the first 25 registrants!!!

Wayne has offered to lead us in a tour of an out of service drag line to enable us to get close as he explains the process. Phosphate rock is usually found 15-50 feet beneath the ground in a mixture of phosphate pebbles, sand and clay known as phosphate "matrix." The sandy layer above the matrix, called the overburden, is removed using electrically operated draglines. Equipped with large buckets, these draglines remove the overburden, placing it in the previously mined voids, and excavate the matrix, depositing it into a shallow containment area or slurry pit. There, high-pressure water guns turn the material into a watery mixture called slurry, which is sent through pipelines to a processing facility, referred to as a beneficiation plant, where phosphate rock is physically separated from the sand and clay in the matrix.



Questions: Steve Antman at 863 701-4170 or steveantman@gmail.com

Substation Control & Protection Design AND *Analysis of Unbalanced Power Systems*

Date: **Monday, June 5, 2017**

Time: **Registration: 8:00AM – 12:00PM and 1:00PM – 5:00PM**

Speakers: Serge Beauzile, P.E., Manager of Substation Operations, Lakeland Electric

Ralph Fehr, Ph.D., P.E., Instructor II, University of South Florida Engineering Faculty

Location: **Sand Pearl Resort, 500 Mandalay Ave, Clearwater Beach**

In conjunction with Florida Electric Cooperative Association (FECA)

Cost: **$125 for Members, $175 Non-Members**

PDH Credits: **8 professional development hours will be awarded. Be sure to enter your name and PE number on your registration as it appears on your license. IEEE Florida Provider Number 3849.**

Morning Session

Substations are designed, constructed, and operated to meet customers' needs at the lowest possible cost to adequately provide the desired service reliability. This Seminar will cover detailed Protection and Control design requirements of a typical substation. You will gain a better understanding of following Control and Protection drawings

1) One-Line Diagram - Switching	2) One-Line Diagram - Functional Relaying	3) Three-Line Relay Diagram
4) Cable & Conduit Schedule	5) Conduit Layout	6) Control House
7) Station Service Diagrams AC and DC	8) Control Panels	9) Schematic and Detailed Wiring Diagrams

Speaker Bio: Mr. Beauzile earned his B.S.E.E degree from Manhattan College in New York, his M.S.E.E from Polytechnic, New York University. He has been employed in the electric power industry for over 27 years. He is currently the Manager of Substation Operations & System Protection at Lakeland Electric where he is responsible for overseeing and directing all functions relating to the, engineering, construction, maintenance and operation of electric substations. He is currently the chair of Chair of the Power and Energy Society and past chair of the IEEE Florida West Coast Section. He is a registered professional engineer in multiple states.

Afternoon Session

Power systems operating under unbalanced conditions, such as during a fault, are difficult to analyze using the analysis methods applied to balanced operation. The method of symmetrical components simplifies the mathematical process, but often the theory of symmetrical components is poorly understood by the engineer, as it is typically taught as an abstract mathematical procedure.

This seminar removes the mystery from symmetrical components by approaching the theory in a very logical manner, using a novel method developed by the presenter. The process of developing sequence networks, also an abstract concept to many engineers, is thoroughly examined, and a novel method for constructing the sequence networks is presented.

The level of understanding gained from this seminar will enable the participant to not only use symmetrical components and sequence networks to analyze short-circuit and open-circuit faults, but will also shed light on other aspects of power systems such as harmonics.

- Mathematics review: phasors and per-unit
- Symmetrical components
  - Physical example of vector components
  - Electrical characteristics of sequence currents
  - Application to three-phase power systems
  - Sequence analysis of delta-wye transformer
- Sequence networks
  - Positive-, negative-, and zero-sequence network construction
  - Thevenin reduction of the sequence networks
  - Sequence behavior of harmonics
  - Short-circuit and open-circuit fault modeling

Speaker Bio: Dr. Fehr earned his B.S.E.E. degree from the Pennsylvania State University, his M.E.E.E. concentrated in power from the University of Colorado at Boulder, and his Ph.D. from the University of South Florida (USF). He has been employed in the electric power industry for over 20 years, and has taught engineering courses at both the undergraduate and graduate levels since 1997. He currently serves on the Electrical Engineering faculty at USF. He also provides consulting and training services to the power industry, teaching short courses and seminars throughout the United States and worldwide. He is a senior member of IEEE, and a registered professional engineer in Florida and New Mexico.

Registration Form

FECA / IEEE Seminars on June 5, 2017

Substation Control & Protection Design (4 PDHs)

Presented by Serge Beauzile

8:00 am – 12:00 pm

Lunch on your own

Analysis of Unbalanced Power Systems (4 PDHs)

Presented by Dr. Ralph Fehr

1:15 pm – 5:00 pm

Sand Pearl Resort

Clearwater, FL

Name of Company_____

# of IEEE members attending @ $125 each: _____
# of Non - IEEE members attending @ $175 each: _____

Persons Attending (please list **Name as it appears on the PE License**, PE License # and/or IEEE Member #):

NAME(s) PE License # IEEE Membership Number

_____

_____

_____

_____

Prepared by:_____ Phone #_____

Please fax/email registration form and mail a check for registrations payable to FECA. All registration fees must be prepaid in order to attend the conference. Cancellations must be received by June 2, 2017 in order to receive a refund. We are unable to accept credit cards.

Mail to: **Raymond G. Trusik** **rtrusik@feca.com**
Florida Electric Cooperatives Association, Inc.
2916 Apalachee Parkway
Tallahassee, Florida 32301
850-877-6166 Ext. 5 **Fax to: (850) 656-5485**

Hotel Information:
Sand Pearl Resort **Telephone**
500 Mandalay Ave. **727-441-2425**
Clearwater, FL 33767 **http://www.sandpearl.com**

For directions see
http://www.sandpearl.com/Location_Directions_Hotel_Resort_Clearwater_SandPearl.asp

FWCS PES UTILITY USERS GROUP MEETING

GENERATOR / TRANSFORMER PROTECTION

Date: Friday, July 14, 2017 Registration: 8:00AM – 8:30AM Time: 8:30AM – 3:30PM
Speaker: Wayne Hartmann VP, Protection and Smart Grid Solutions Beckwith Electric

Location: 13031 Wyandotte Road, Apollo Beach, FL 33572

CEH Credits: 6 Continuing Education Hours (CEH) will be awarded.
Be sure to enter your name and PE number on the signup website as it appears on your license.
IEEE Florida Provider Number is 3849.

Cost: $50 Members, $100 Non-Members, $10 Students. Includes Breakfast, Lunch.

RSVP: Online at: http://time2meet.com/fwcs-pes2/index.html

Make checks payable to: IEEE FWCS
Send checks to: Jim Howard, IEEE FWCS Treasurer; 3133 W. Paris Street; Tampa, FL 33614-5964
Questions: Tom Blair at 813-228-1111, ext 48179 or tom_blair@ieee.org

Your IEEE PES West Coast Chapter Utility Users Group is meeting in July and will cover generator and transformer protection systems. The course will cover aspects of IEEE C37.102, IEEE Guide for AC Generator Protection and IEEE C37.91, IEEE Guide for Protecting Power Transformers.

Our distinguished speaker will be Mr. Wayne Hartmann VP, Protection and Smart Grid Solutions Beckwith Electric. Mr. Hartmann provides customer and industry linkage to Beckwith Electric's solutions, contributing expertise for application engineering, training and product development. Before joining Beckwith Electric, Wayne performed in application, sales and marketing management capacities with PowerSecure, General Electric, Siemens Power T&D and Alstom T&D. During the course of Wayne's participation in the industry, his focus has been on the application of protection and control systems for electrical generation, transmission, distribution, and distributed energy resources.

Who Should attend this course? Power plant and substation protection engineers and technicians, as well as power plant operators and protection generalists who desire a deeper background on the subject of generator & transformer protection at utility generation and substation locations. Topics to be covered will be:

Generator & transformer construction and operation - Grounding and connections - IEEE standards for generator and transformer protection - Generator and power system interaction - Generator & transformer protection element review - Internal faults vs External faults - Tripping considerations and sequential tripping - Discuss tactics to improve reliability - Redundancy concepts - Lessons learned from NE Blackout (2003) - Explore Setting, Commissioning and Event Investigation Tools

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Should You Be a Senior IEEE Member?

The Florida West Coast Section is looking to assist Members in elevating their grade to Senior Membership. If you know of someone who you feel is qualified then please encourage them to contact Claude Pitts (claude.pitts@ieee.org) or Herman Amaya (hamaya@tampabay.rr.com). If you have desired to become a Senior Member but not sure what to do or need references, then please know your Section can help you in making the next steps towards Senior Membership.

To be eligible for application or nomination, candidates must:

* be engineers, scientists, educators, or technical executives;

* have experience reflecting professional maturity;

* have been in professional practice for at least ten years;

* show significant performance for at least five years.

Senior member is the highest grade for which IEEE members can apply. IEEE members can self-nominate, or be nominated, for Senior member grade. Have you been in engineering for over 10 years? If so, you may qualify for Senior Level membership in IEEE. There is no additional fee to apply for senior member grade.

Advertising Section

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The CTs, actuators, and wiring harness from the original AC-PRO® can be used with the AC-PRO-II®.

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RS485 Modbus RTU communications is standard.

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Settings are programmed using the OLED multi-line display and "smart" buttons that change their function according to the information displayed. All of the settings are entered using simple parameters (no percentages or multipliers required).

OLED Multi-Line Display

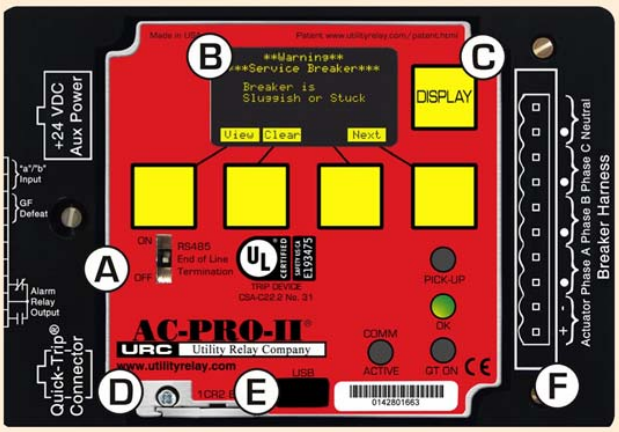
The easy to read multi-line display provides real time monitoring of 3-phase, neutral, and ground fault currents. The display unit can be rotated to allow the trip unit to fit in a variety of different breaker configurations.

Last Trip Data

The trip units retain all of the trip data for the last 8 trip events. This data includes the date, time stamp & waveforms of each event using the integrated real-time clock.

USB Port

The electrically isolated front mounted USB port allows for easy access of trip data and protection settings. It can also be used to upload the trip unit settings, making commissioning the trip unit much faster.



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B EASY TO READ OLED MULTI-LINE DISPLAY

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E ELECTRICALLY ISOLATED USB CONNECTOR

F BACKWARDS COMPATIBLE WITH THE ORIGINAL AC-PRO® ACTUATOR & HARNESS CONNECTION

MADE IN THE USA

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The green LED indicates that the trip unit is operating properly. This feature:

- ❑ Continuously monitors the trip unit
- ❑ Verifies that the actuator is connected
- ❑ Monitors the software routines
- ❑ Monitors the micro-controller

50 Hz or 60 Hz Operation

The AC-PRO-II® is user selectable for 50 Hz or 60 Hz applications.

Construction

- ❑ Conformal coated circuit boards
- ❑ Contamination resistant membrane keypad
- ❑ All metal nickel plated enclosure

Warranty

All AC-PRO-II®'s come with a 2-year limited warranty.

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May 2017 Calendar of Events (For more information see P. 1) *in this Signal…*

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	**2** *EXCOM Meeting* *5:30 TECO Plaza*	**3**	**4**	**5**	**6**
7	**8**	**9**	**10**	**11**	**12**	**13**
14	**15**	**16**	**17** *Medical Marijuana* Details-see P. 4	**18**	**19**	**20**
21	**22**	**23**	**24**	**25**	**26** *Mosaic Four Corners Drag Line Tour* Details—See P. 5	**27**
28	**29**	**30**	**31**			