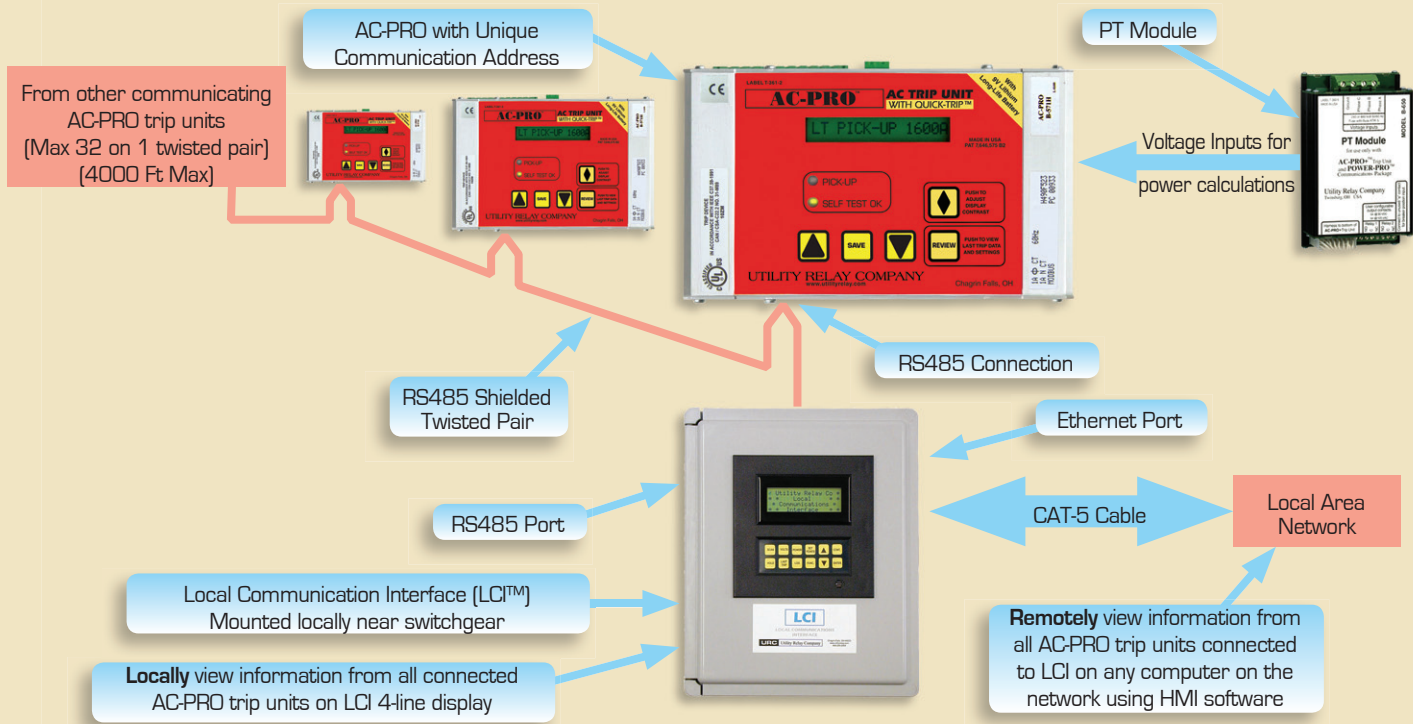


AC-PRO[®] COMMUNICATION

WITH STANDARD MODBUS RTU PROTOCOL



AC-PRO Communication Overview

AC-PRO trip units with the communication option have an RS485 port and use the industry standard Modbus RTU protocol.

Up to 32 trip units can be connected on one twisted pair. Each AC-PRO is programmed with a unique address. Data can be requested from the trip units and commands can be sent to the trip units from the HMI system.

A locally installed Local Communication Interface (LCI) can be used to view the data from each AC-PRO trip unit.

A host PC running a HMI application collects information from the communicating AC-PRO trip units. The Modbus driver in the HMI interrogates each trip unit individually and reports that information to the HMI application on a continual basis.

Commands sent from HMI system to any AC-PRO through communication

- New settings
- Clear last trip data, trip log & KWH
- Clear trip alarm
- Force trip breaker (if enabled in trip unit)
- Energize 2 user defined auxiliary relays

PT Module Function

- Provides voltage information for power calculations in the AC-PRO trip unit
- Allows the AC-PRO trip unit to communicate when there is less than 10% breaker current or when the breaker is open

LCI Function

- Provides local access to data from all connected AC-PRO trip units
- Provides an Ethernet port

Information available from each AC-PRO through communication links

- Currents, 3-Phase & Ground Fault
- Voltages, 3-Phase L-L & L-N
- KW, KVA & KWH
- Protective settings
- Alarm status
- Last trip data including currents
- Trip log
- Breaker open or closed status

System Requirements

Provided by URC

- AC-PRO retrofit kit with communication option and PT module
- LCI (or a 3rd party Modbus TCP to RTU converter)

Provided by Others

- Shielded twisted pair for RS485 connection
- CAT 5 cable for LAN connection
- HMI software

Call Toll Free: 888.289.2864

For additional information visit our website:
www.utilityrelay.com

10100 Queens Way, Chagrin Falls, OH 44023
Phone: 440-708-1000 Fax: 440-708-1177

URC

Utility Relay Company

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AC-PRO Compatibility with HMI Software

AC-PRO can be integrated into various industry-standard HMI systems that have a Modbus RTU driver.

A few examples are:

- Schneider Electric ION Enterprise™
- Schneider Electric SMS-3000™
- Wonderware's INTOUCH™
- Power Measurements PEGASYST™
- Siemens WinPM™

Breaker Status

Current

	Ph A	Ph B	Ph C	Total
Current	722	756	731	---
Voltage L-G	271	269	272	---
KW	182	191	189	562
KVA	196	203	199	598
Pwr Factor	0.93	0.94	0.95	0.94
Lead/Lag	LAG	LAG	LAG	LAG
Ground Current	Low			
Phase Unbalance (%)	Low			
Voltage A-B	473			
Voltage B-C	471			
Voltage C-A	470			
KW Hours	528513.8			<input type="button" value="Reset"/>

AC-PRO Demo Ver 2.1

Trip Unit Name: ACPRO_2
 Serial Number: 011240001A
 Comm Address: 2
 Reply Delay: 5 MSecs

Last Trip Data

Trip Cause: LT
 Trip Current - Ø A: 1449 Amps AC
 Trip Current - Ø B: 1470 Amps AC
 Trip Current - Ø C: 1467 Amps AC
 Ground Current: Low Amps AC
 Current Unbalance: Low %

Trip Log

Long-Time (LT): 3
 Short-Time (ST): 1
 Instantaneous: 0
 Ground Fault: 0
 Unbalanced: 0
 Forced: 1
 Ground Fault QT: 0
 Instantaneous QT: 0

Settings

Set Point	Actual	New
CT Rating	1600 Amps	
LT Pickup	1200 Amps	1200
LT Delay	8.0 Secs	8.0
ST Pickup	2400 Amps	2400
ST Delay	0.10 Secs	0.10
ST I sq T	OFF	OFF
I Pickup	7200 Amps	7200
GF Pickup	600 Amps	600
GF Delay	0.10 Secs	0.10
GF I sq T	ON	ON
UB Pickup	OFF %	OFF
UB Delay	--- Secs	
GF QT Pickup	400 Amps	
I QT Pickup	2400 Amps	
QT Switch	OFF	

Commands

Force Trip Breaker:

Clear Last Trip and Trip Log:

Energize Relay 1 for 100ms:

Energize Relay 2 for 100ms:

Alarms and Trip Status

Current > LT Pickup:

Unacknowledged Trip:

Actuator: Connected

Breaker Position (O/C): C

Memory Test: O.K.

A/D Operations: O.K.

Screen shot of a simple Excel spread sheet set up to demonstrate the communication capability of the AC-PRO trip unit

Using KEPServerEX OPC/DDE

Schneider Electric PowerLogic™ ION Enterprise™

Volts/Amps | Diagnostic |

KW Status

- KWA Positive
- KWB Positive
- KWC Positive
- KWH Positive

PF Status

- PFA Lagging
- PFB Lagging
- PFC Lagging

Alarms

- Alarm Trip
- Alarm Overload
- Alarm Actuator
- Alarm Memory
- Alarm Breaker
- Alarm A-D

Settings

CT Rating: 1,600 A
 LT pickup: 1,200.0 A
 LT delay: 8.0 sec
 ST pickup: 2,400 A
 ST delay: 0.10 sec
 I pickup: 7,200 A
 GF pickup: 600 A
 GF delay: 0.1 sec
 UB pickup: 0 %
 UB delay: 0 sec
 GF QT Pickup: 400 A
 I QT Pickup: 2,400 A

Device Info

Address: 2
 Reply Delay: 5
 Range Multiplier: 1.0

Last Trip

1449 A a
 1470 A b
 1467 A c
 0 A g
 0 % unbal

Trip Counts

Inst: 0
 LT: 3
 ST: 1
 GF: 0
 UB: 1
 GF QT: 0
 I QT: 0
 Forced: 1
 CF: 0

Last Trip Code

LT

Device Type: AC_PRO_PLUS

Schneider Electric's PowerLogic™ ION Enterprise™ driver for AC-PRO simplifies integration into their HMI system

ION-Enterprise™ screen shot with voltage, current, energy and power

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