



IEC 61850 Integrating SEL into RA applications

Erik Syme

Director of Program Management


ProSoft[®]
TECHNOLOGY

Where Automation Connects.™

Our Solution to 61850

- ❖ IEC-61850 solution, what is it?
 - ❖ SEL hardware/software
 - ❖ SEL protective relay 751A
 - ❖ SEL Architect
 - ❖ SEL Quickset
 - ❖ ProSoft hardware/software
 - ❖ ProSoft PLX8x-EIP-61850
 - ❖ ProSoft Configuration Manager
 - ❖ PlantPax hardware/software
 - ❖ ControlLogix
 - ❖ FactoryTalk View
 - ❖ FactoryTalk Historian



Why use IEC 61850?

❖ Modbus “registers”

Register Address	Description
40421	Phase B Current Angle
40422	Phase C Current Angle
40423	Phase A Neutral-Side Angle
40424	Phase B Neutral-Side Angle
40425	Phase C Neutral-Side Angle
40426	Phase A Differential Angle
40427	Phase B Differential Angle

❖ DNP3 “objects & variations”

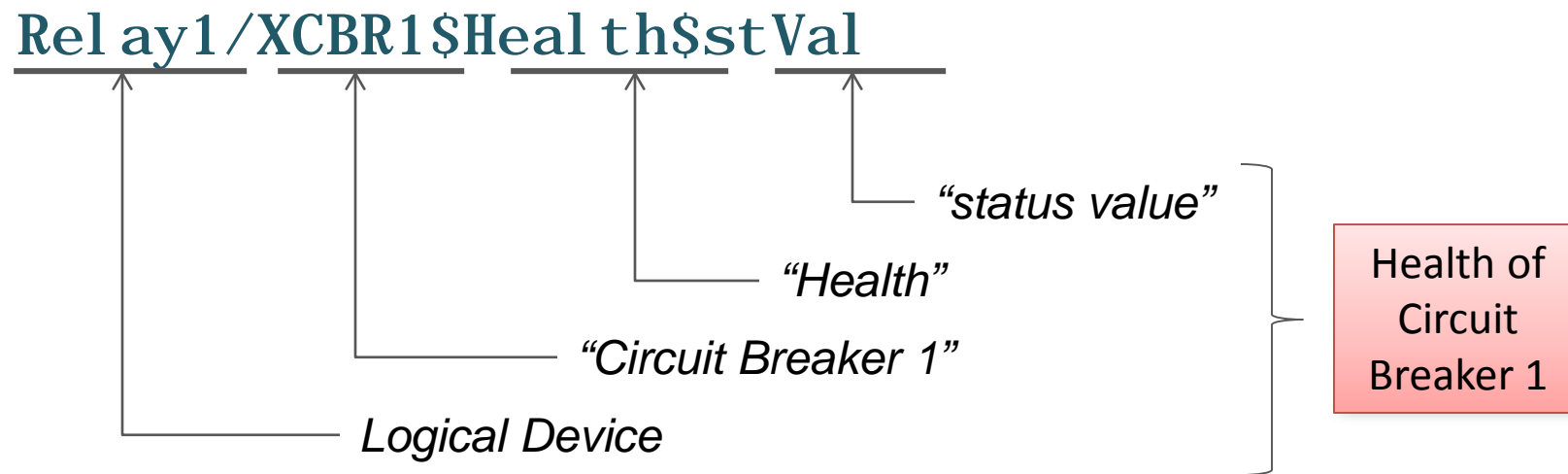
Object 30, Var 2, Index:	Description
1	Phase B Current Angle
2	Phase C Current Angle
3	Phase A Neutral-Side Angle
4	Phase B Neutral-Side Angle
5	Phase C Neutral-Side Angle
6	Phase A Differential Angle
7	Phase B Differential Angle



❖ Data address/index is not **self-descriptive**

IEC 61850 Data Model

- ❖ IEC 61850 uses Self-Descriptive Tags:



- ❖ DNP3: “Obj 30 Var 1 Index 3”
- ❖ Modbus: “Register 41003”

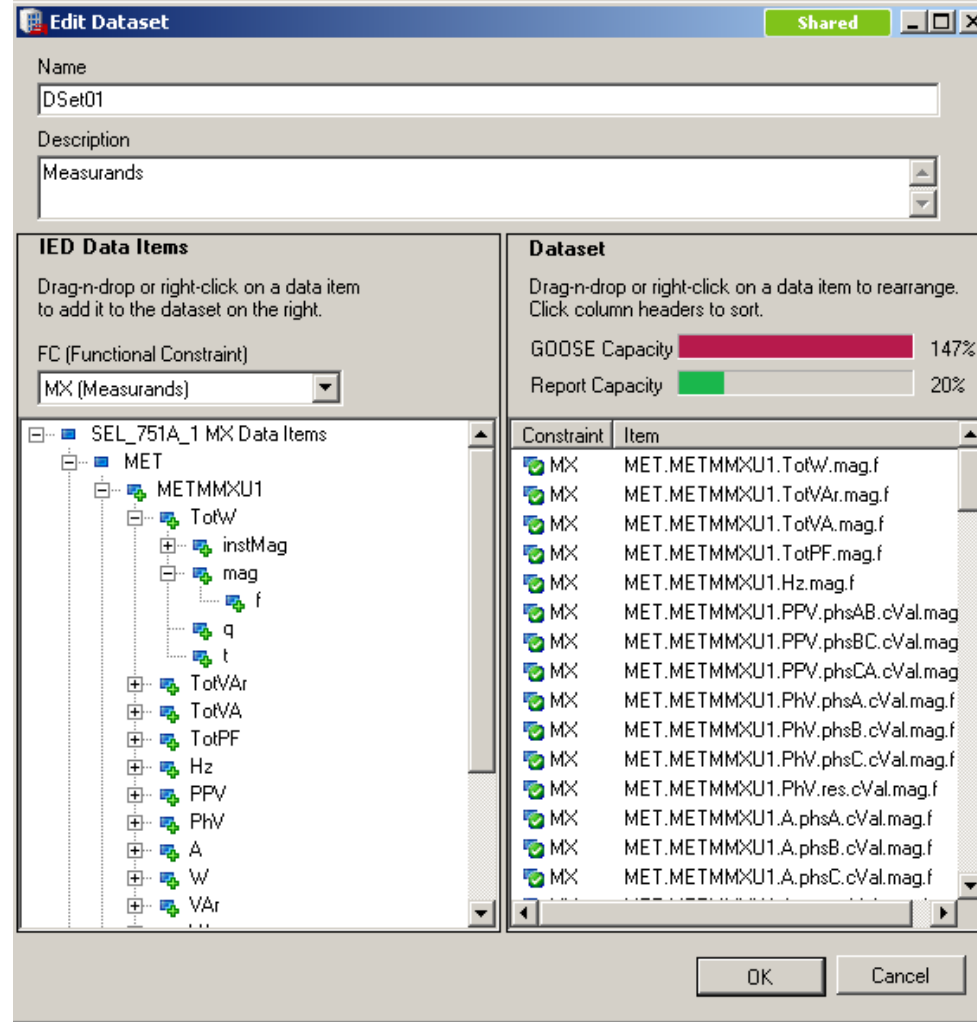


Intuitive Configuration

❖ ...and automatically imported into RSLogix 5000

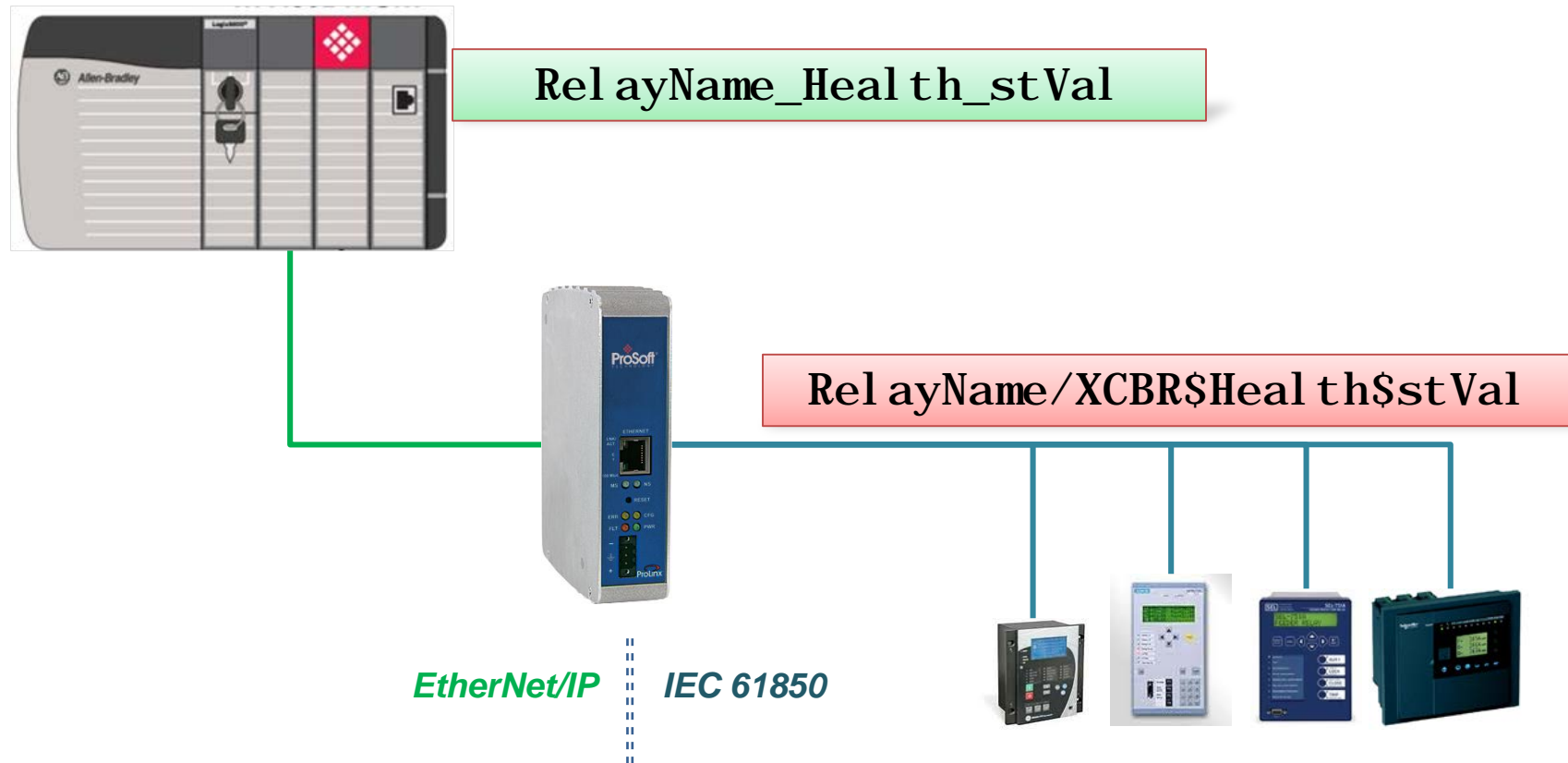
Name	Value	Style	Data Type
[-] SEL_700G_1	{...}		SEL_700G_1
[-] SEL_700G_1.MVGGIO12_MX_Anln01_instMag_f	0.0	Float	REAL
[-] SEL_700G_1.MVGGIO12_MX_Anln01_mag_f	0.0	Float	REAL
[+] SEL_700G_1.MVGGIO12_MX_Anln01_q	0	Decimal	INT
[-] SEL_700G_1.MVGGIO12_MX_Anln01_t	DT#1969-12-31-16:00:00.0000...	Date/Time	LINT
[-] SEL_700G_1.MVGGIO12_MX_Anln02_instMag_f	0.0	Float	REAL
[-] SEL_700G_1.MVGGIO12_MX_Anln02_mag_f	0.0	Float	REAL
[+] SEL_700G_1.MVGGIO12_MX_Anln02_q	0	Decimal	INT
[-] SEL_700G_1.MVGGIO12_MX_Anln02_t	DT#1969-12-31-16:00:00.0000...	Date/Time	LINT
[-] SEL_700G_1.MVGGIO12_MX_Anln03_instMag_f	0.0	Float	REAL
[-] SEL_700G_1.MVGGIO12_MX_Anln03_mag_f	0.0	Float	REAL
[+] SEL_700G_1.MVGGIO12_MX_Anln03_q	0	Decimal	INT
[-] SEL_700G_1.MVGGIO12_MX_Anln03_t	DT#1969-12-31-16:00:00.0000...	Date/Time	LINT
[-] SEL_700G_1.MVGGIO12_MX_Anln04_instMag_f	0.0	Float	REAL
[-] SEL_700G_1.MVGGIO12_MX_Anln04_mag_f	0.0	Float	REAL
[+] SEL_700G_1.MVGGIO12_MX_Anln04_q	0	Decimal	INT
[-] SEL_700G_1.MVGGIO12_MX_Anln04_t	DT#1969-12-31-16:00:00.0000...	Date/Time	LINT
[-] SEL_700G_1.MVGGIO12_MX_Anln05_instMag_f	0.0	Float	REAL
[-] SEL_700G_1.MVGGIO12_MX_Anln05_mag_f	0.0	Float	REAL

SEL Architect Report Definitions



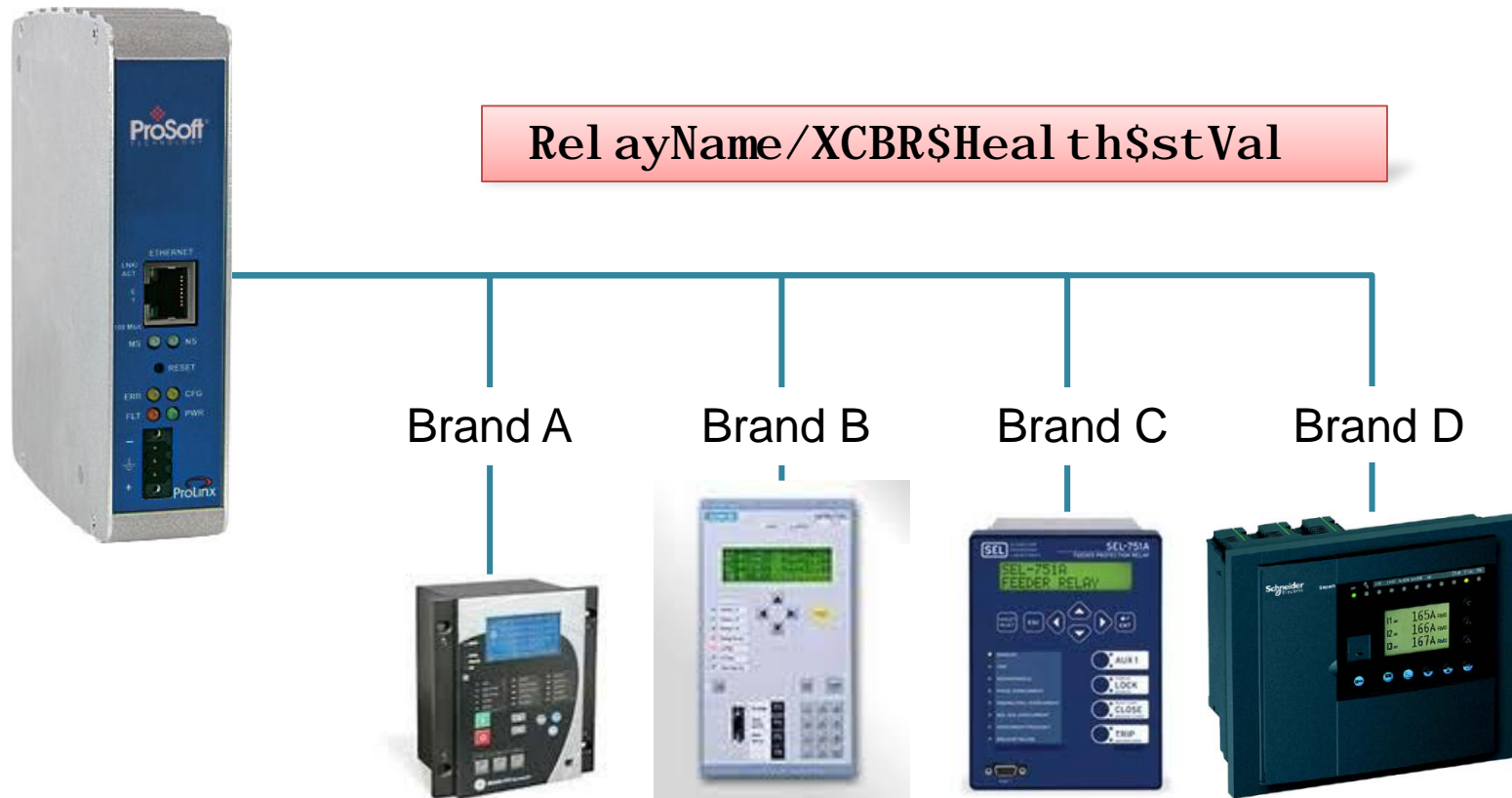
IEC 61850 Data Model

- ❖ ...and the naming convention is maintained at the PLC.
 - ❖ No more cryptic object numbers and indices!

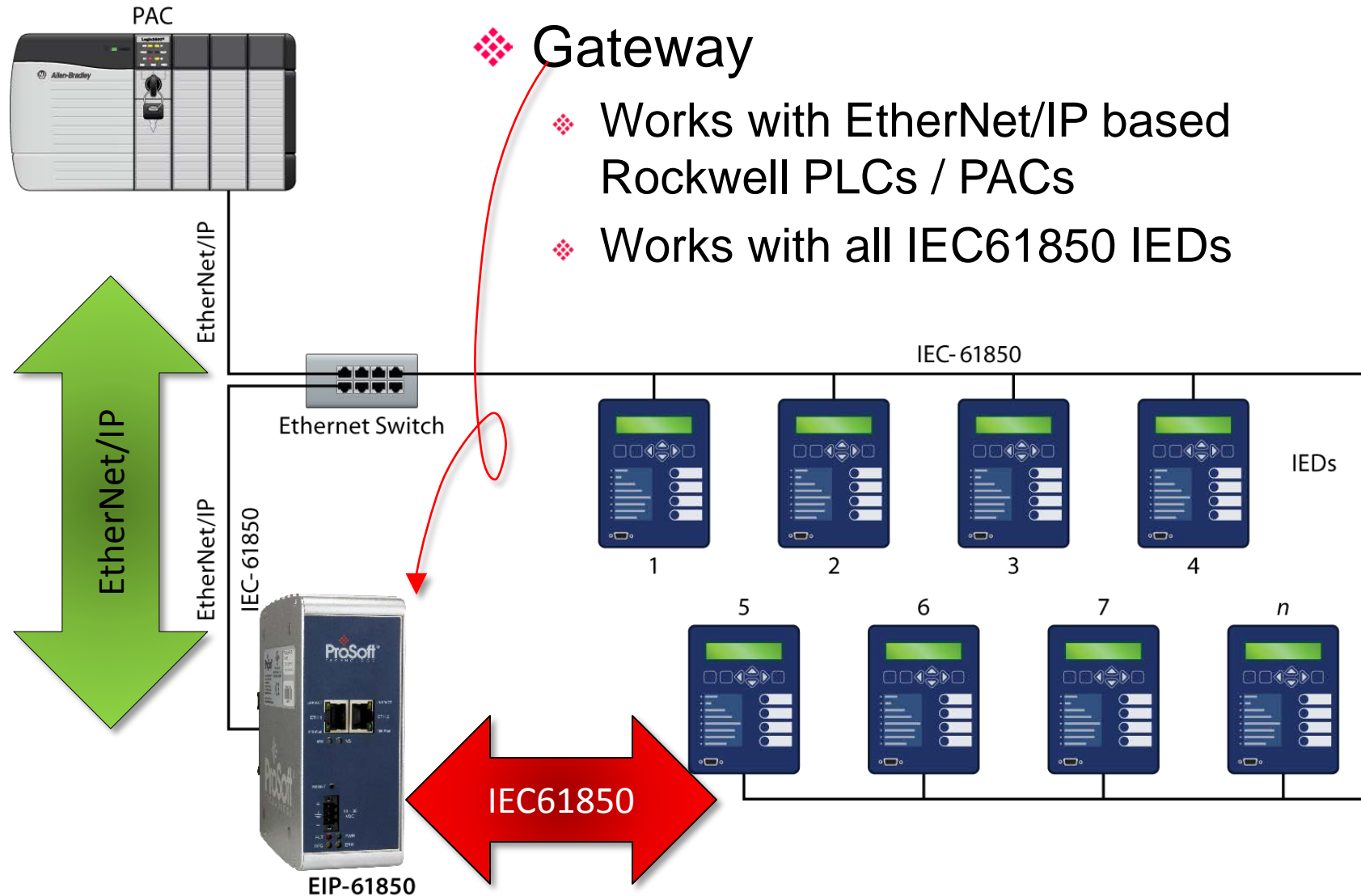


IEC 61850 Data Model

❖ Data point naming convention is similar for most vendors...

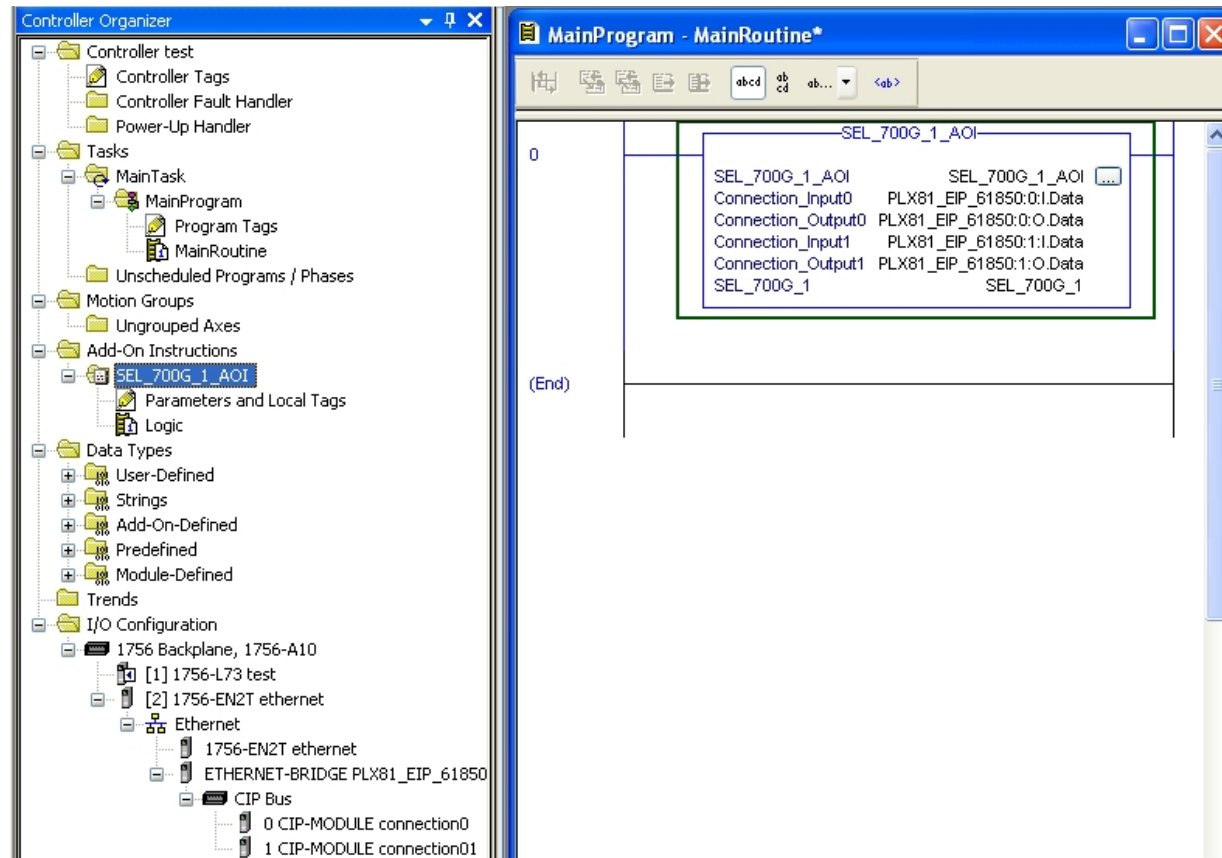


Rockwell PAC to IEC 61850 IEDs



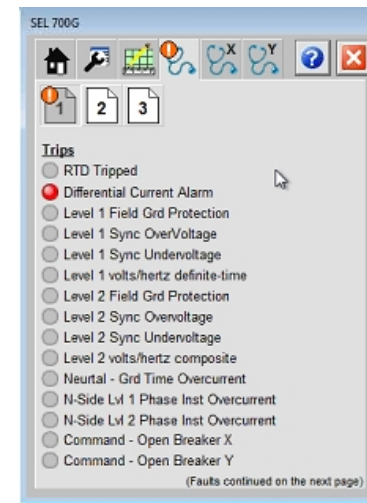
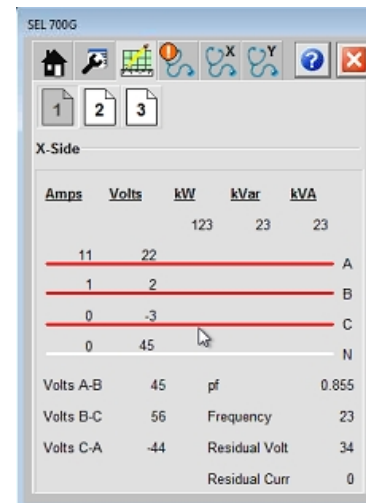
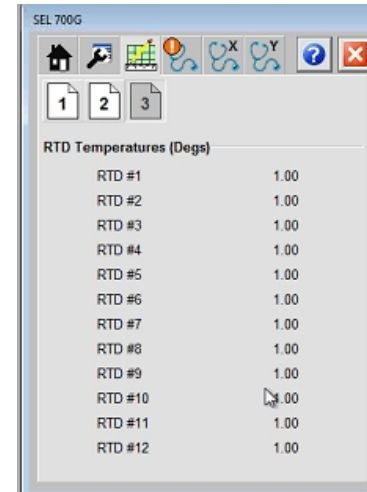
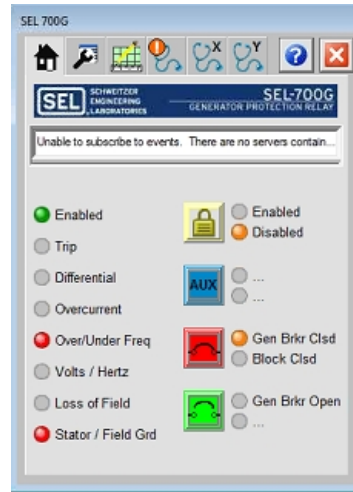
Custom AOI into Studio 5000

- ❖ Import AOI into Studio 5000
- ❖ Select AOI and configure tags
- ❖ Define PLX8x module in I/O Configuration tree



PlantPax faceplate

- ❖ PlantPax faceplate available to pull all data from custom .cid file for SEL equipment
- ❖ Faceplate ties directly to tag values defined in ProSoft generated Add-On Instruction and User-Defined data type



Questions?

If you have any questions or would like to talk about a specific application, please follow me over to our Energy demo and I would be happy to answer your questions