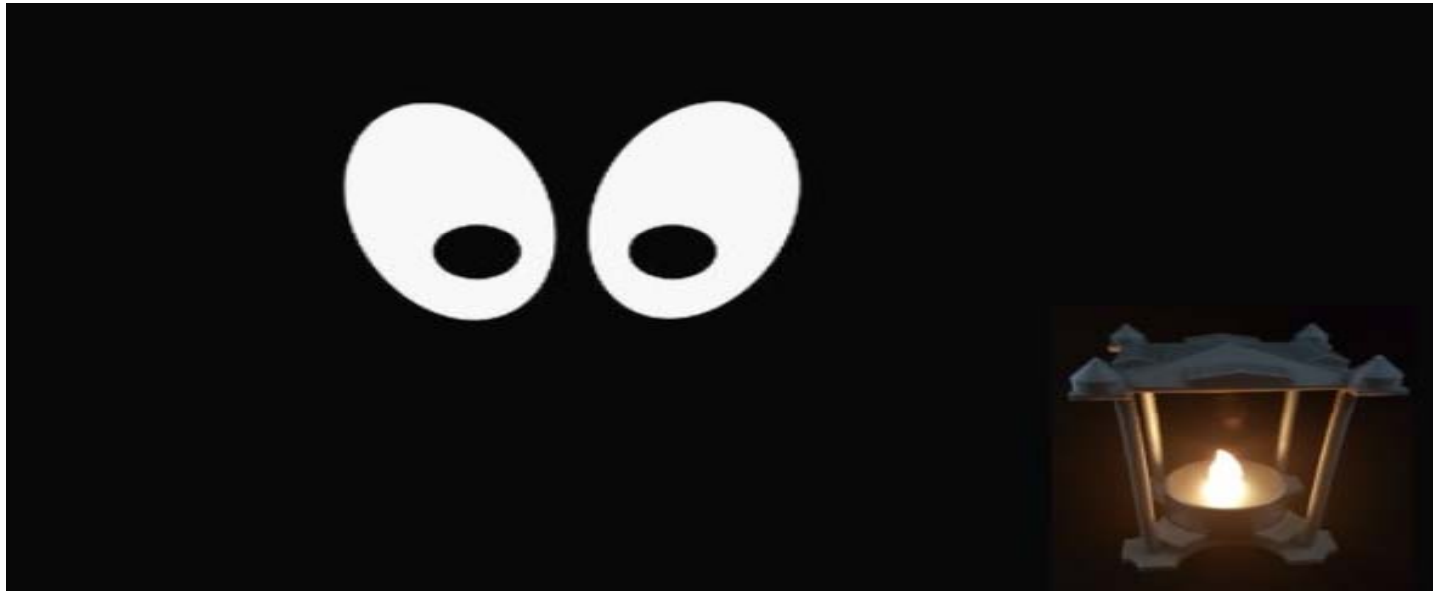
ARCTEQ

RELAYABLE POWER

Load shedding solution by F215

30.1.2015

AQ F215 for Intelligent Load Shedding Solution



AQ F215 for Intelligent Load Shedding Solution

Why load shedding (PQVIF) :

The deliberate shutdown of **electric power** in a part or parts of a **power**-distribution system, generally to prevent the failure of the entire system when the demand strains the capacity of the system.

ARCTEQ provides Intelligent , flexible and programmable LD via verity of parameters.

AQ F215 for Intelligent Load Shedding solution

Sample solution for Intelligent LD Selecting feeders with priority

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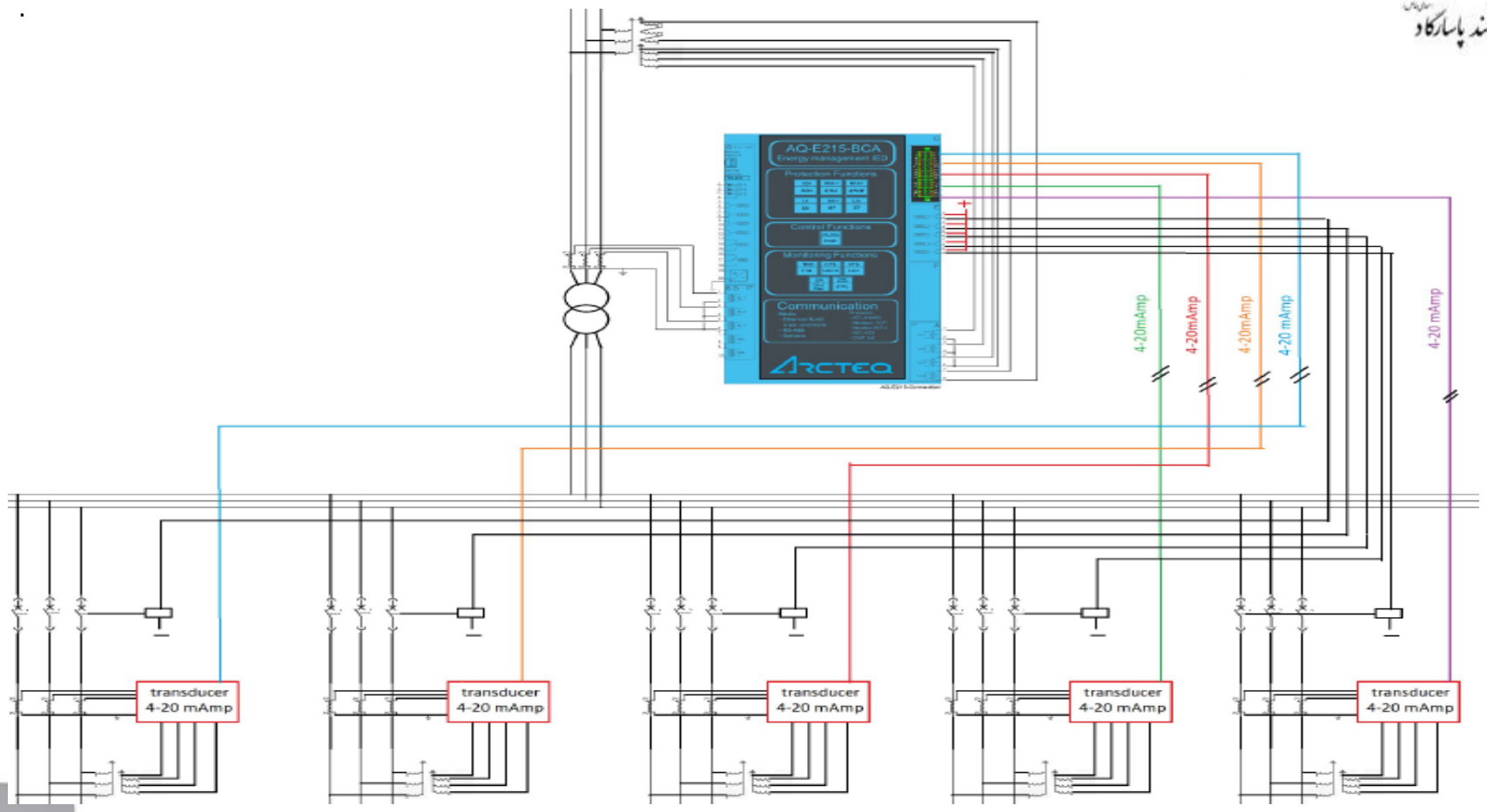

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AQ F215 for Intelligent Load Shedding solution

Three-phase overcurrent, 4 stages INST, DT or IDMT (50/51)
Earth-fault (sensitive), 4 stages INST, DT or IDMT (50/51N)
Directional overcurrent, 4 stages INST, DT or IDMT (67)
Directional earth-fault, 4 stages INST, DT or IDMT (67N)
Transient earth-fault (67NT)
Harmonic overcurrent / inrush blocking, 4 stages INST, DT or IDMT (50/51H, 68)
Current unbalance / broken conductor, 4 stages INST, DT or IDMT 46/46R/46L)

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AQ F215 for Intelligent Load Shedding solution

High/low impedance restricted earth fault / cable end differential * (87N)
Cable thermal protection (49L)
Overvoltage, 4 stages INST, DT or IDMT (59)
Undervoltage, 4 stages INST, DT or IDMT (27)
Zero sequence overvoltage, 4 stages INST, DT or IDMT (59N)
Negative/positive sequence overvoltage, 4 stages INST, DT or IDMT (47)
Vector jump, 1 stage (78) Over/under frequency, 8 stages INST or DT (81O/81U)

AQ F215 for Intelligent Load Shedding solution

Rate of change of frequency, 8 stages INST or DT or IDMT (81R)

Over/Under/Reverse power (32/37/32R)

Breaker failure protection (50BF/52BF)

Arc protection (option) (50ARC/50NARC)

AQ F215 for Intelligent Load Sheddingsolution

Controllable objects: 5
Synchro-check (25)
Autorecloser (79)
Cold-load pick-up block
Switch onto fault logic
8 setting groups

AQ F215 for Intelligent Load Sheddingsolution

Phase and residual currents (IL1, IL2, IL3, I01, I02)
Voltage measurements (UL1-UL3, U12-U31, U0, SS)
Current and voltage THD and harmonics (up to 31st)
Frequency (f)
Power (P, Q, S, pf)
Energy (E+, E-, Eq+, Eq-)
Circuit breaker wear (CBW)

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AQ F215 for Intelligent Load Shedding solution

Disturbance recorder (3.2 kHz)
Current transformer supervision (CTS)
Fuse failure (VTS)
Trip circuit supervision (TCS)
EVENT RECORDING
Non-volatile disturbance records: 100
Non-volatile event records: 15000

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AQ F215 for Intelligent Load Sheddingsolution

Current inputs: 5
Voltage inputs: 4
Digital inputs: 3 (standard)
Output relays: 5+1 (standard)
OPTIONS (3 SLOTS)
Digital inputs optional: +8/16/24
Digital outputs optional: +5/10/15
Arc protection (12 sensors +2xHSO +BI)
2 x mA input + 6-8 x RTD input
Communication media (specified below)

AQ F215 for Intelligent Load Shedding solution

RJ 45 Ethernet 100Mb (front standard)
RJ 45 Ethernet 100Mb and RS 485 (rear standard)
Double LC Ethernet 100Mb (option)
RS232 + serial fibre PP/PG/GP/GG (option)
COMMUNICATION PROTOCOLS
IEC 61850
IEC 60870-5-103/101/104
Modbus RTU, Modbus TCP/IP
DNP 3.0, DNP 3.0 over TCP/IP
SPA

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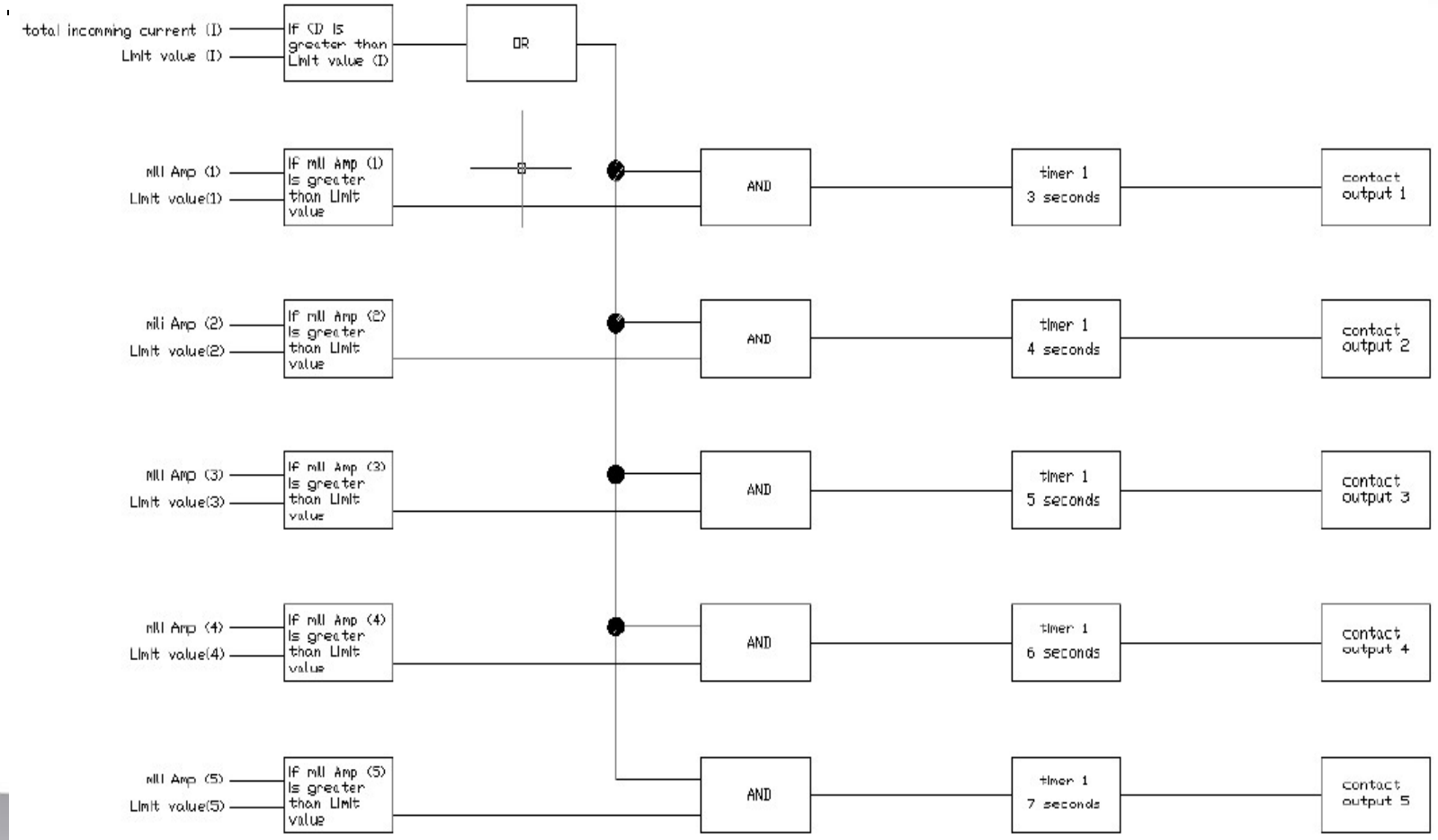
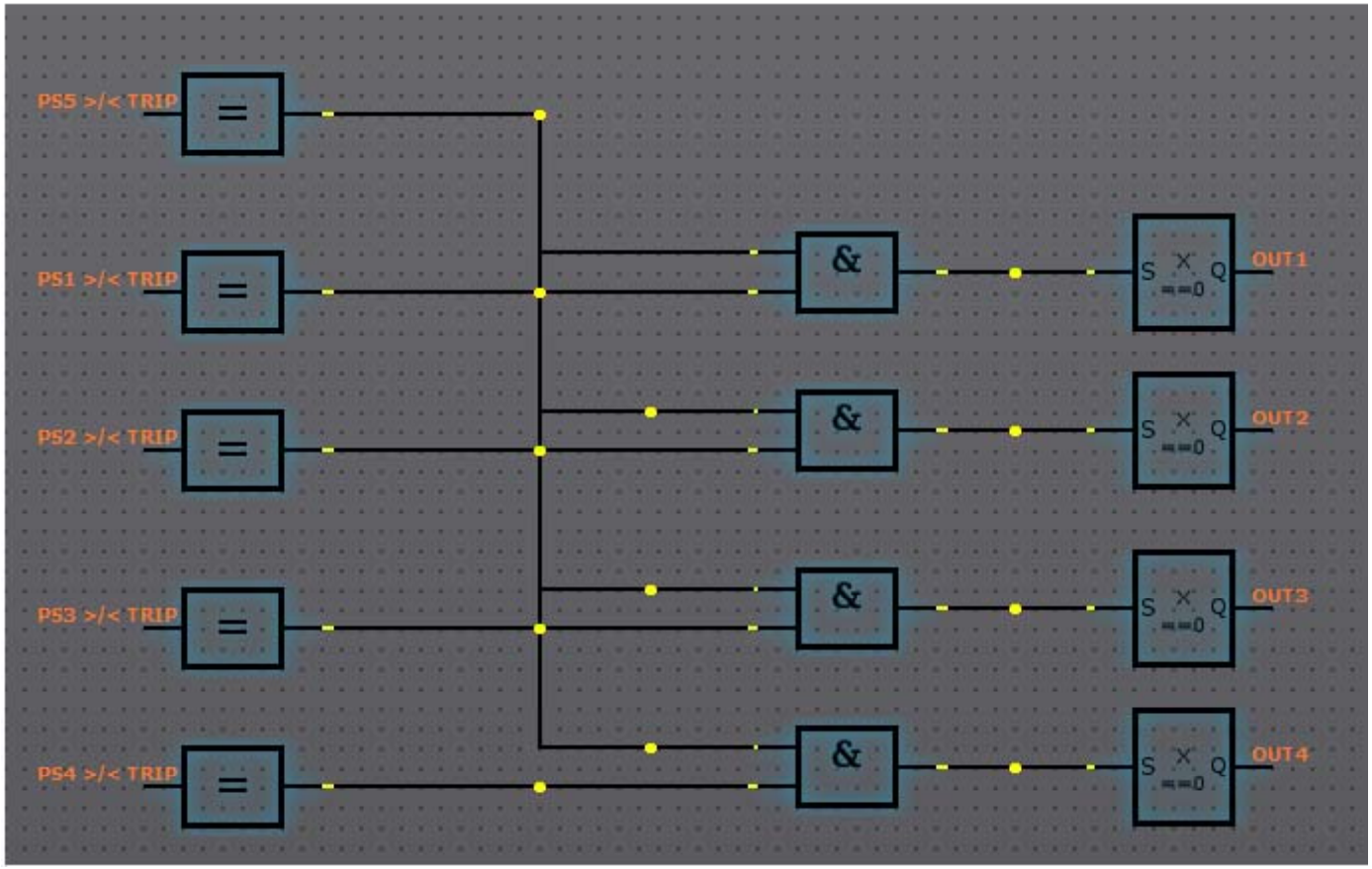
AQ F215 for Intelligent Load Shedding solution

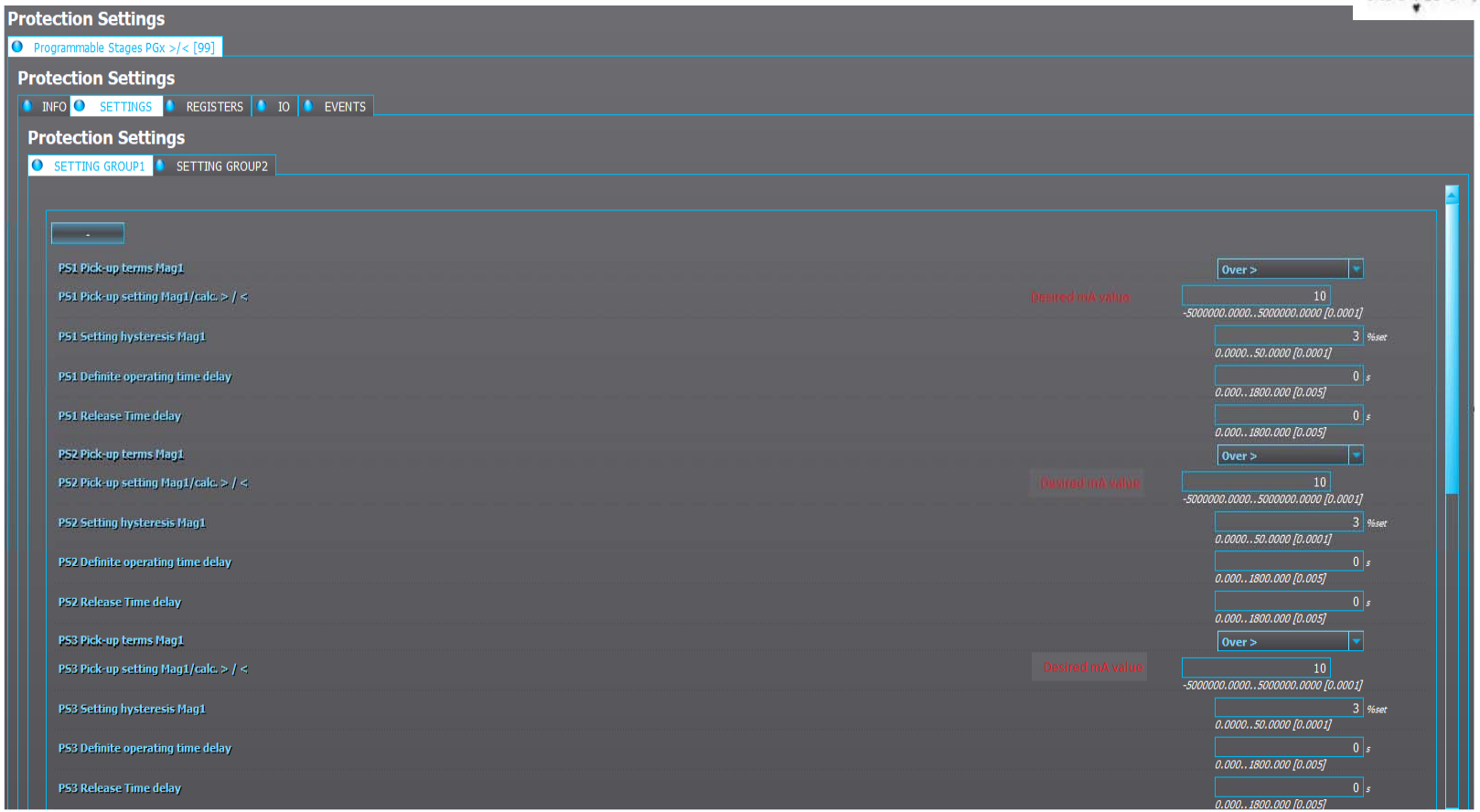
Flexible Logic mA or BI for preparing Logic



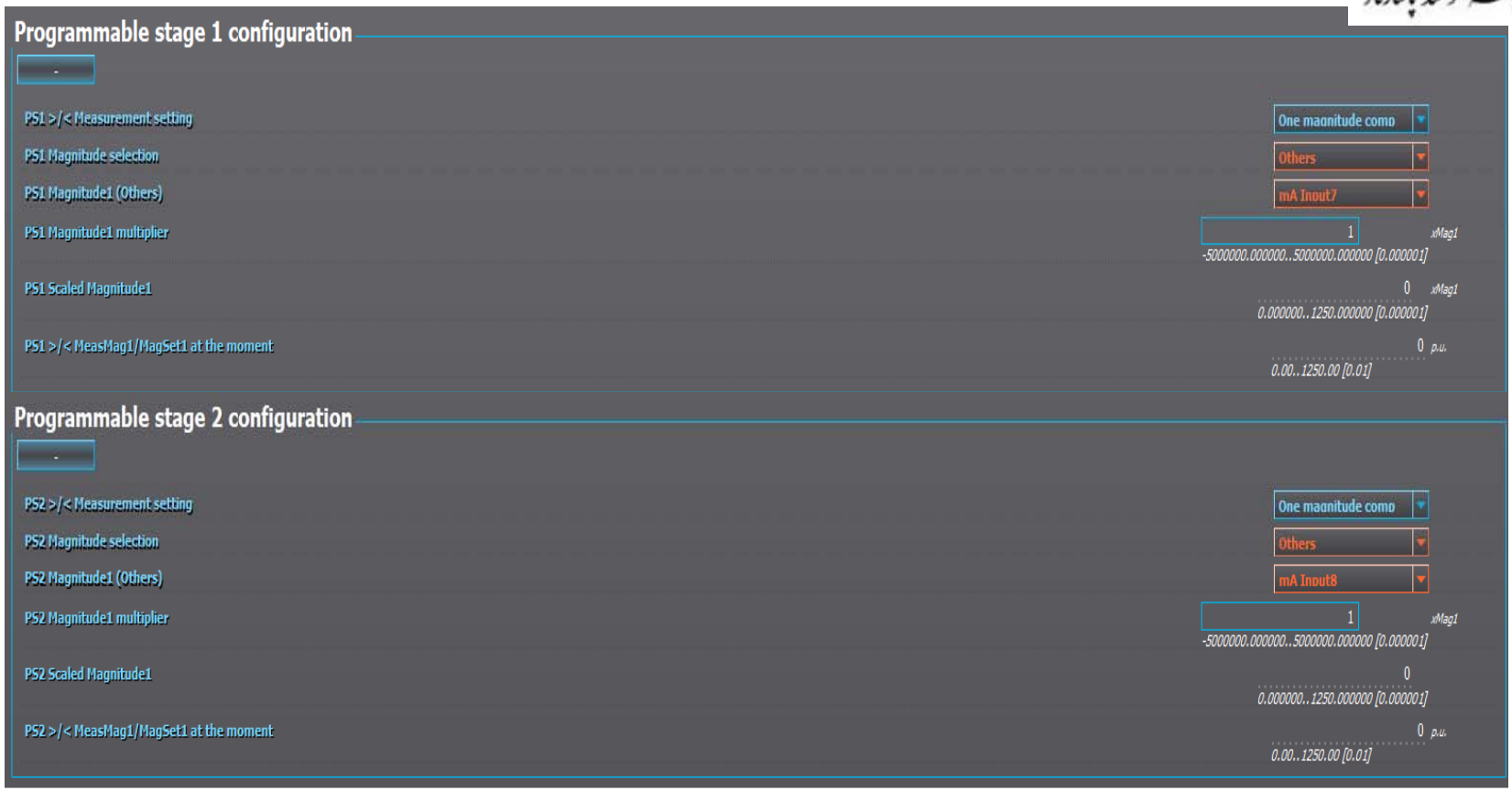
AQ F215 for Intelligent Load Shedding solution



AQ F215 for Intelligent Load Sheddingsolution



AQ F215 for Intelligent Load Shedding solution



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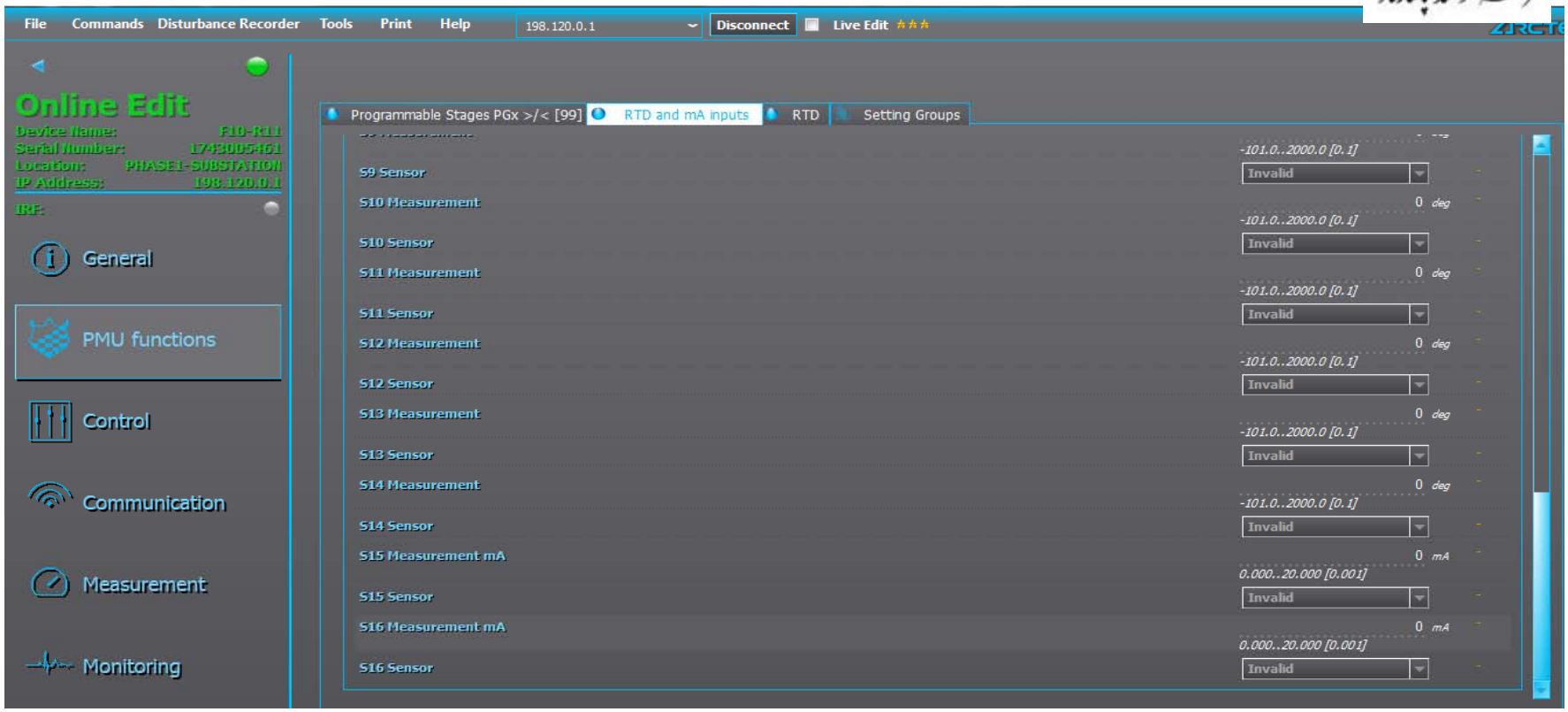

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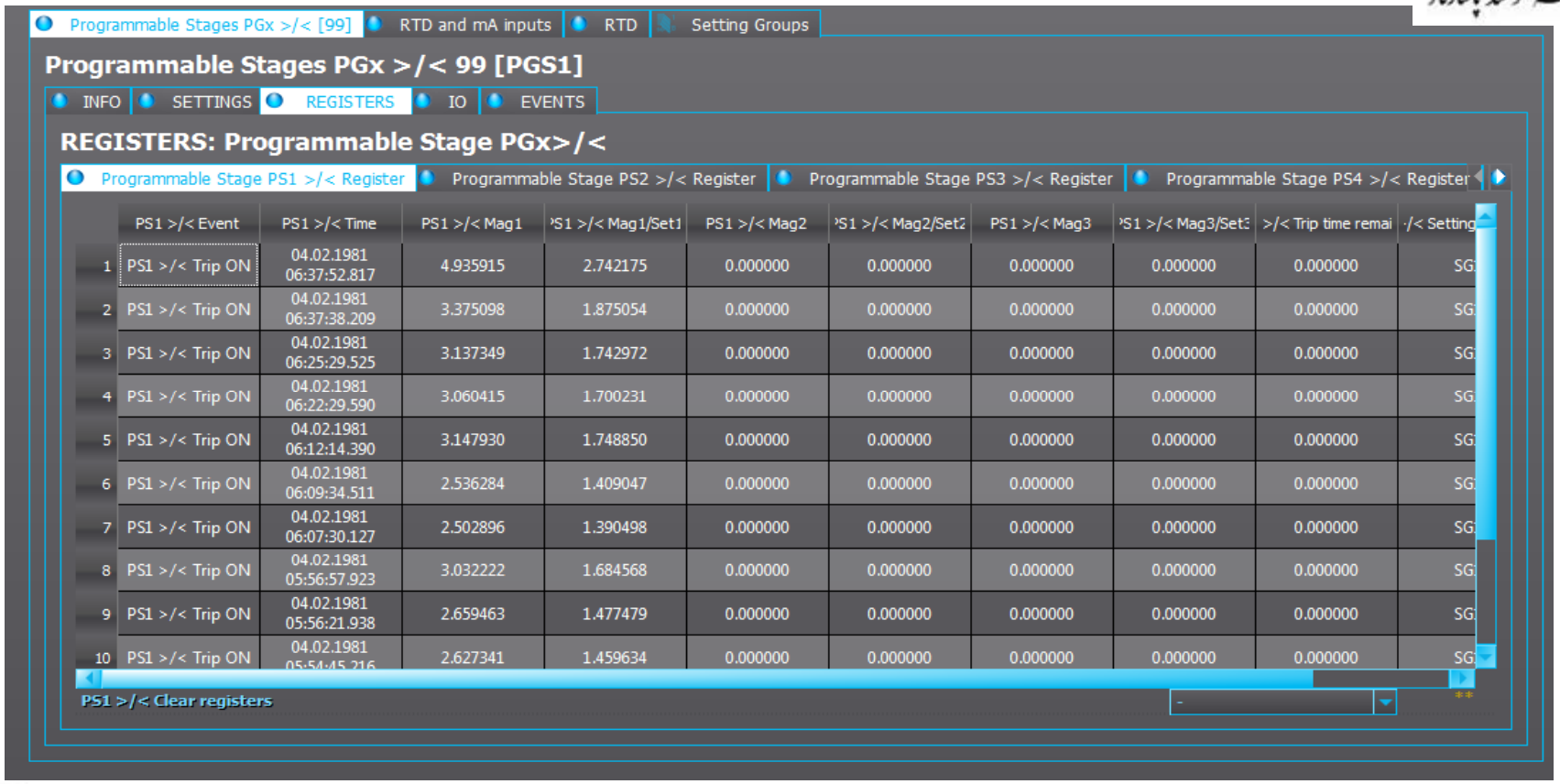
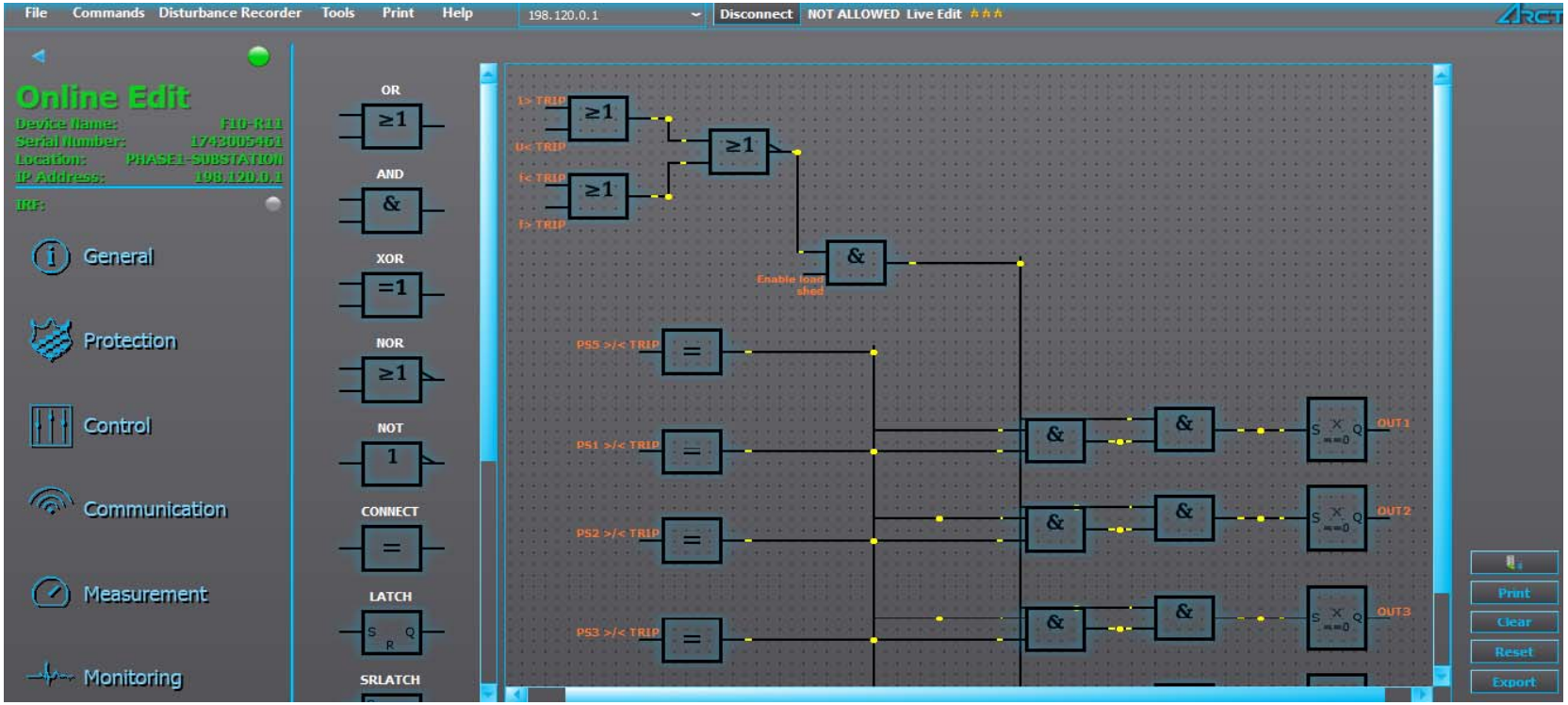


	PS1 >/< Event	PS1 >/< Time	PS1 >/< Mag1	PS1 >/< Mag1/Set1	PS1 >/< Mag2	PS1 >/< Mag2/Set2	PS1 >/< Mag3	PS1 >/< Mag3/Set3	>/< Trip time remai	>/< Setting
1	PS1 >/< Trip ON	04.02.1981 06:37:52.817	4.935915	2.742175	0.000000	0.000000	0.000000	0.000000	0.000000	SG
2	PS1 >/< Trip ON	04.02.1981 06:37:38.209	3.375098	1.875054	0.000000	0.000000	0.000000	0.000000	0.000000	SG
3	PS1 >/< Trip ON	04.02.1981 06:25:29.525	3.137349	1.742972	0.000000	0.000000	0.000000	0.000000	0.000000	SG
4	PS1 >/< Trip ON	04.02.1981 06:22:29.590	3.060415	1.700231	0.000000	0.000000	0.000000	0.000000	0.000000	SG
5	PS1 >/< Trip ON	04.02.1981 06:12:14.390	3.147930	1.748850	0.000000	0.000000	0.000000	0.000000	0.000000	SG
6	PS1 >/< Trip ON	04.02.1981 06:09:34.511	2.536284	1.409047	0.000000	0.000000	0.000000	0.000000	0.000000	SG
7	PS1 >/< Trip ON	04.02.1981 06:07:30.127	2.502896	1.390498	0.000000	0.000000	0.000000	0.000000	0.000000	SG
8	PS1 >/< Trip ON	04.02.1981 05:56:57.923	3.032222	1.684568	0.000000	0.000000	0.000000	0.000000	0.000000	SG
9	PS1 >/< Trip ON	04.02.1981 05:56:21.938	2.659463	1.477479	0.000000	0.000000	0.000000	0.000000	0.000000	SG
10	PS1 >/< Trip ON	04.02.1981 05:54:45.216	2.627341	1.459634	0.000000	0.000000	0.000000	0.000000	0.000000	SG

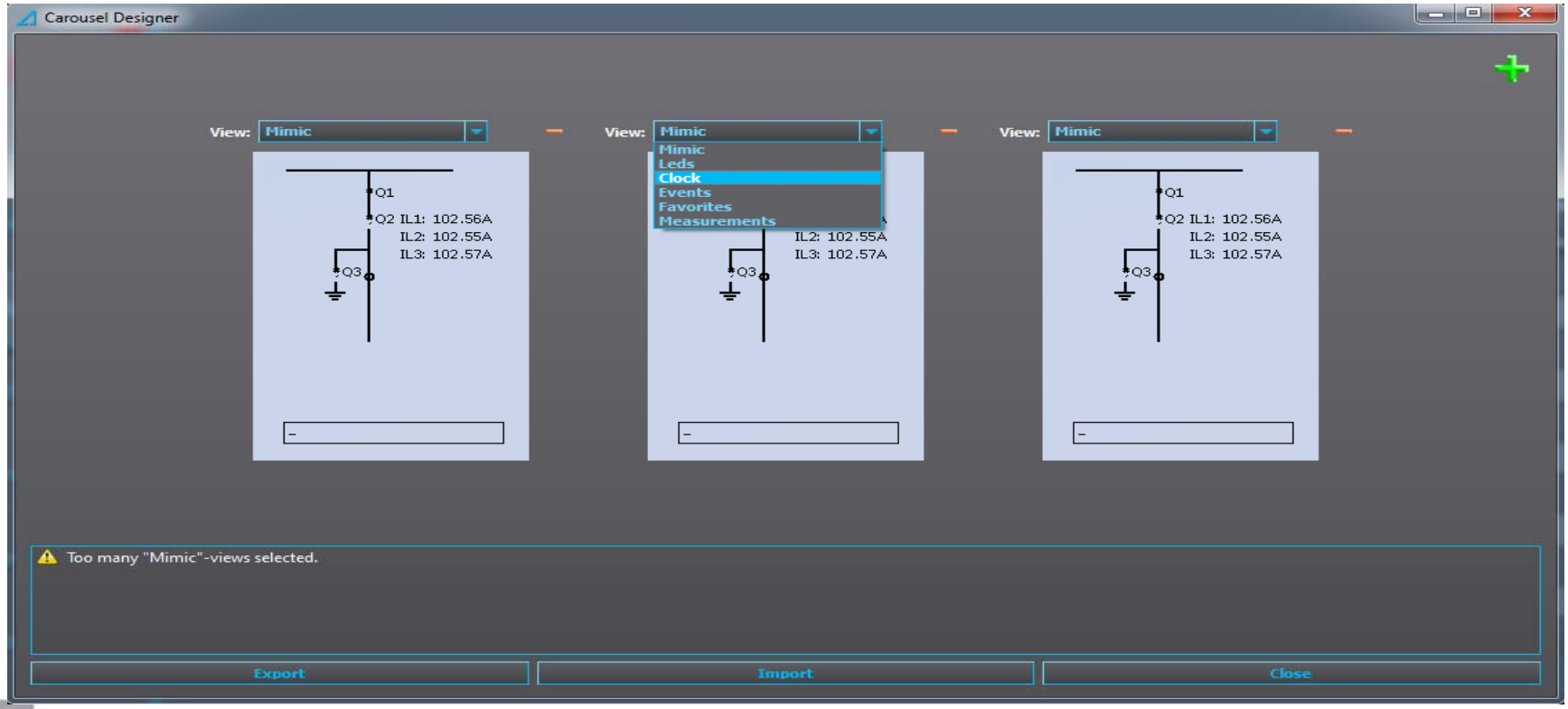
Aqtivate 200 Setting & Configuration Software

Felexible Logic



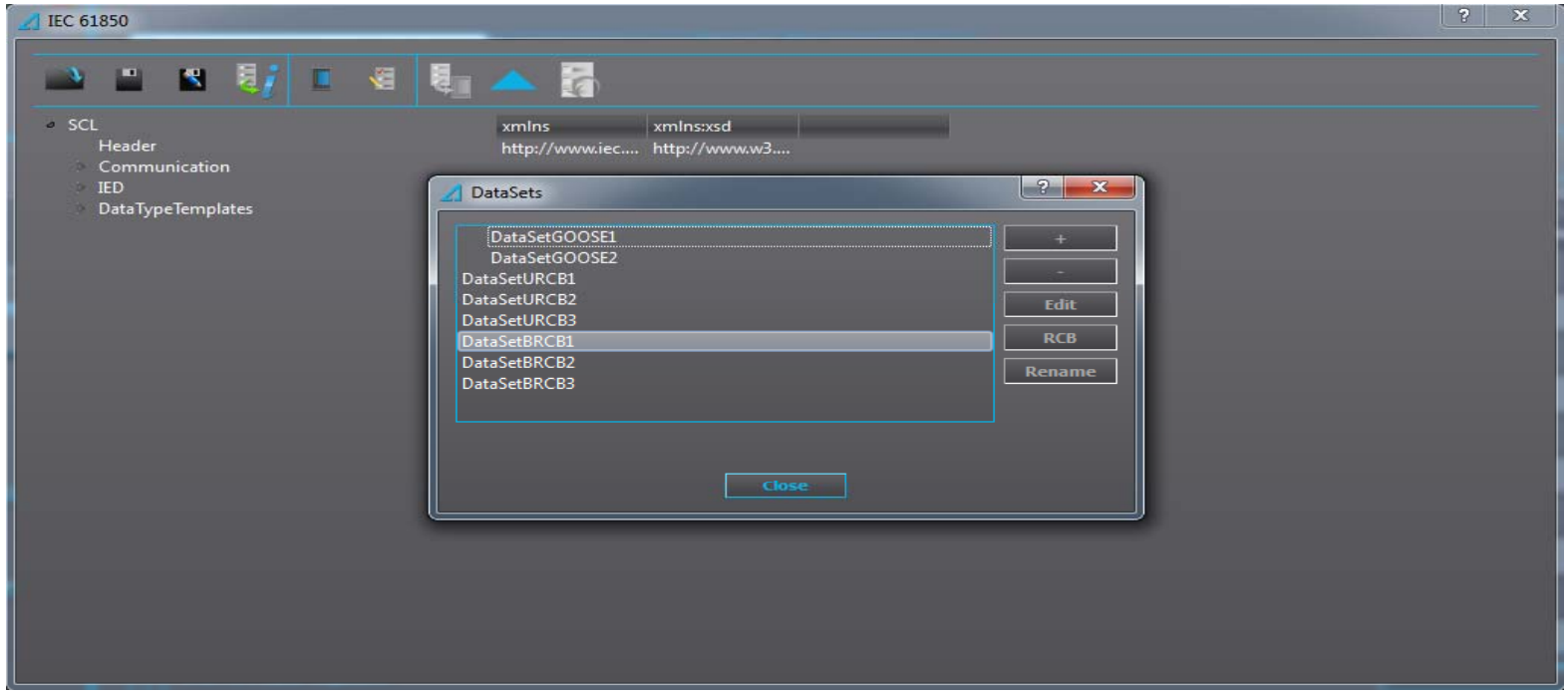
Aqtivate 200 Setting & Configuration Software

HMI in several pages



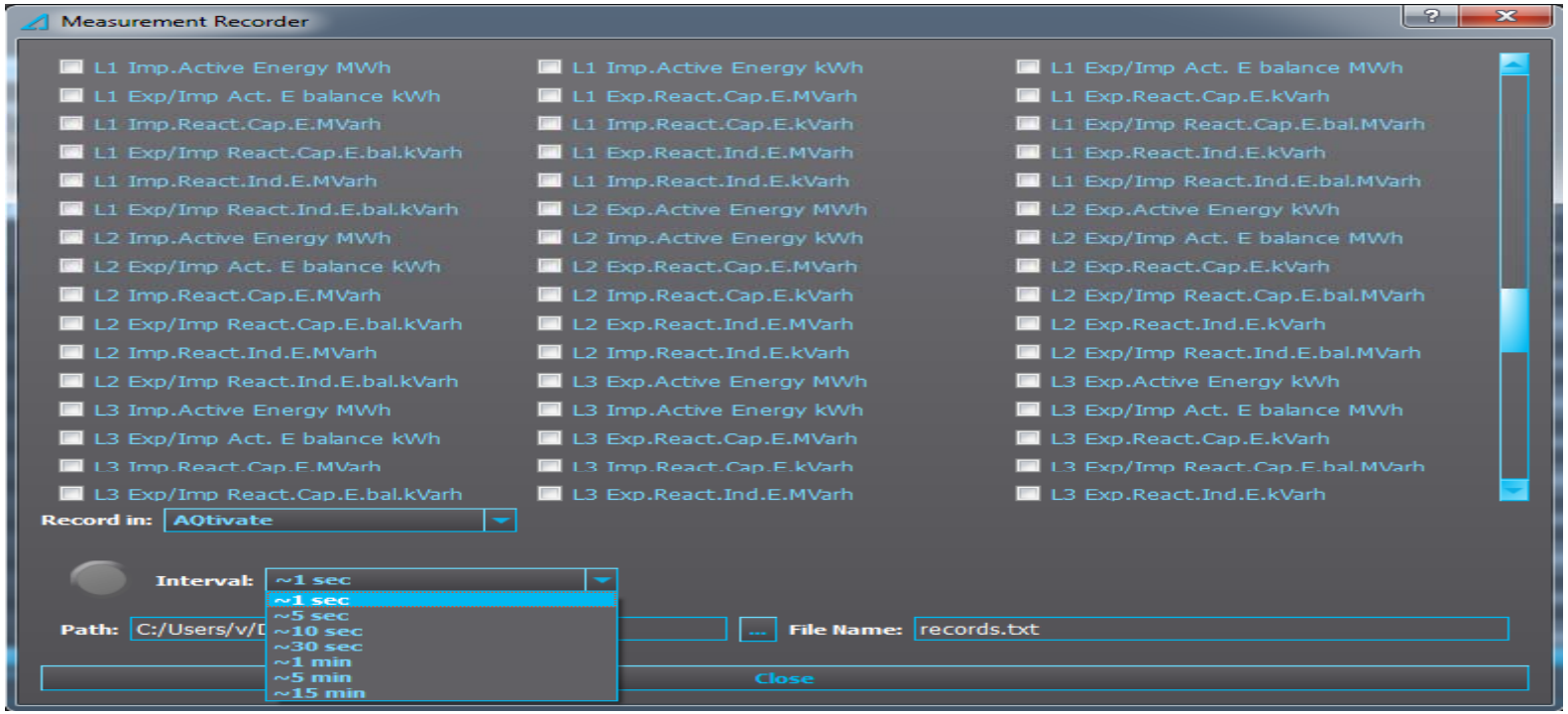
Aqtivate 200 Setting & Configuration Software

Bufffered and unbuffered SAS signals



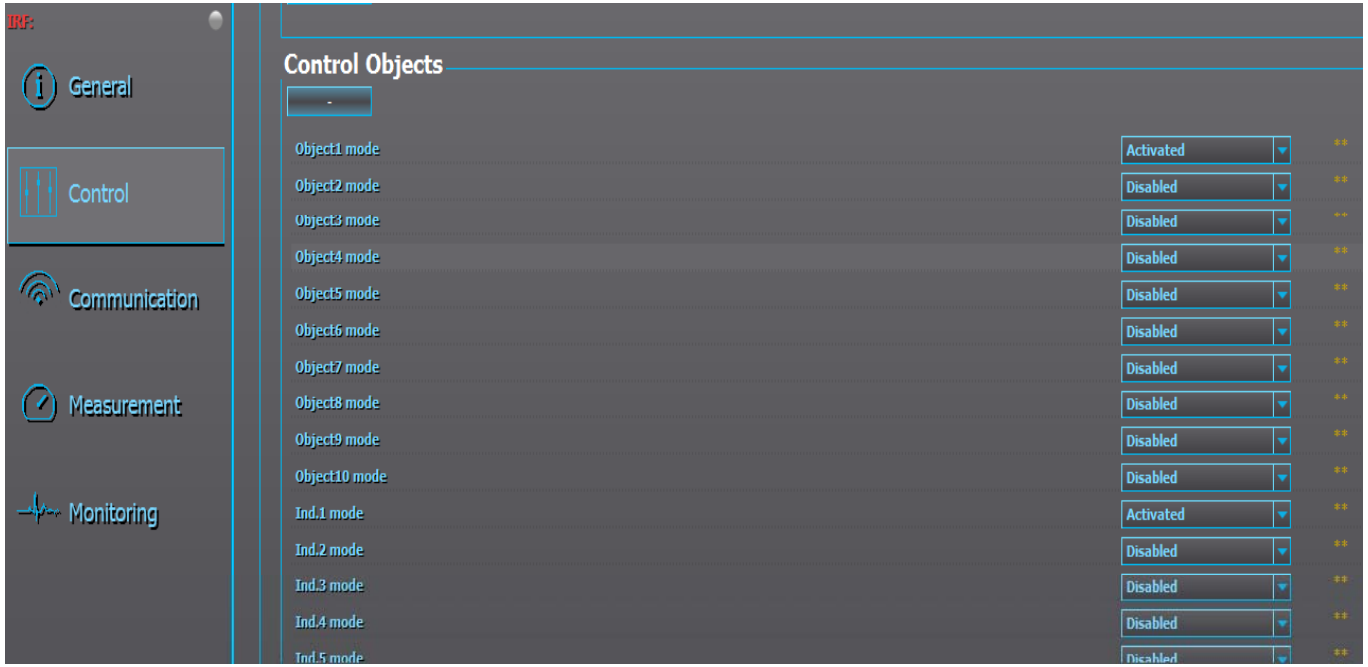
Aqtivate 200 Setting & Configuration Software

Default Daily report Archives



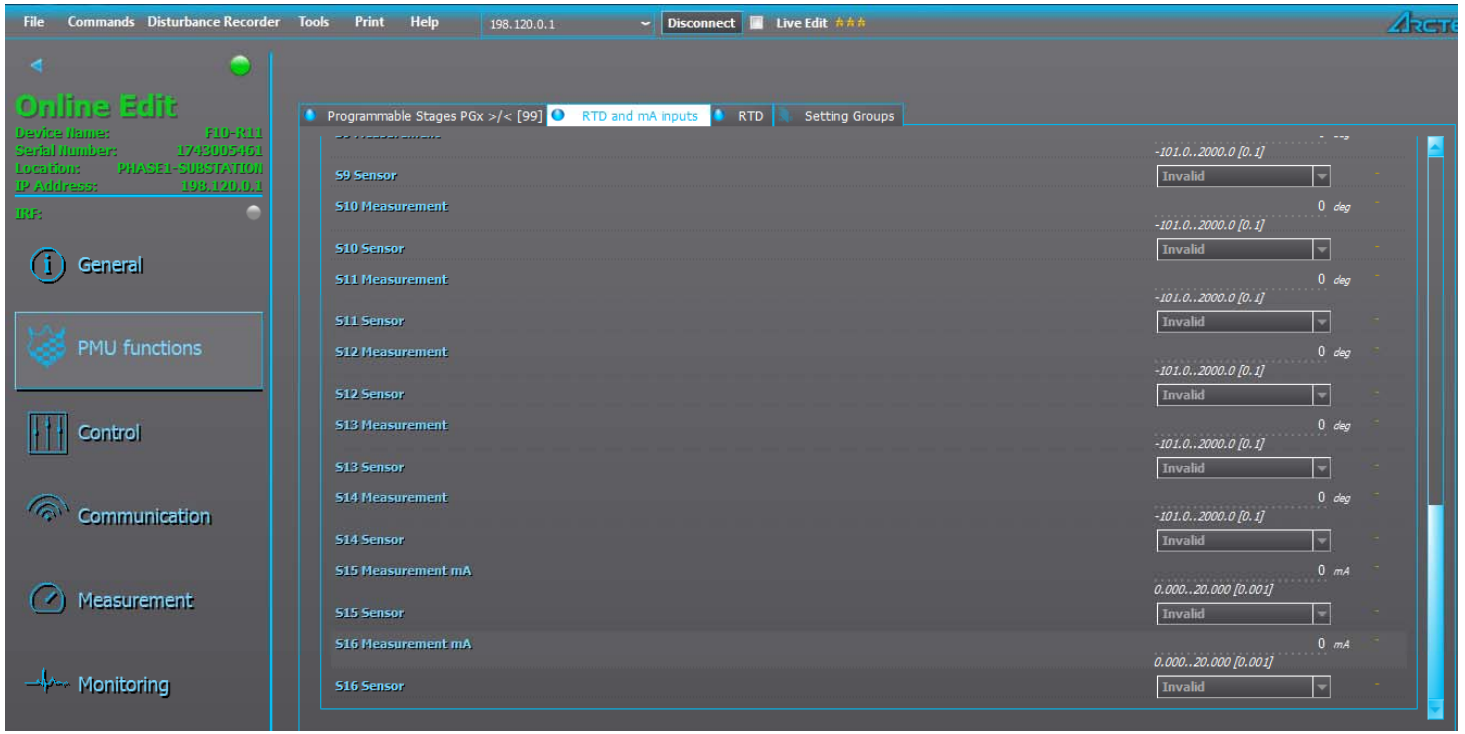
Aqtivate Control and Monitoring Devices

10 DI Command+5 DI Ppsition



Aqtivate 200 Setting & Configuration Software

Analogue input in Flex Logic



AQ F215 for Intelligent Load Shedding solution

-DCS/SMS Solution for conventional SS
- Monitoring
- Command
- HMI
- Synchronizing
- Fault/Event Recorder
- Flexible Logice
- Several HMI pages
- Fault recorder
- Online changes
- Connecting to SAS Systems
- Several Default Standard Protocols
- Simple Software
- Protection and Control Functions
- Analogue Inputs
- Frequency Independent Behavior

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