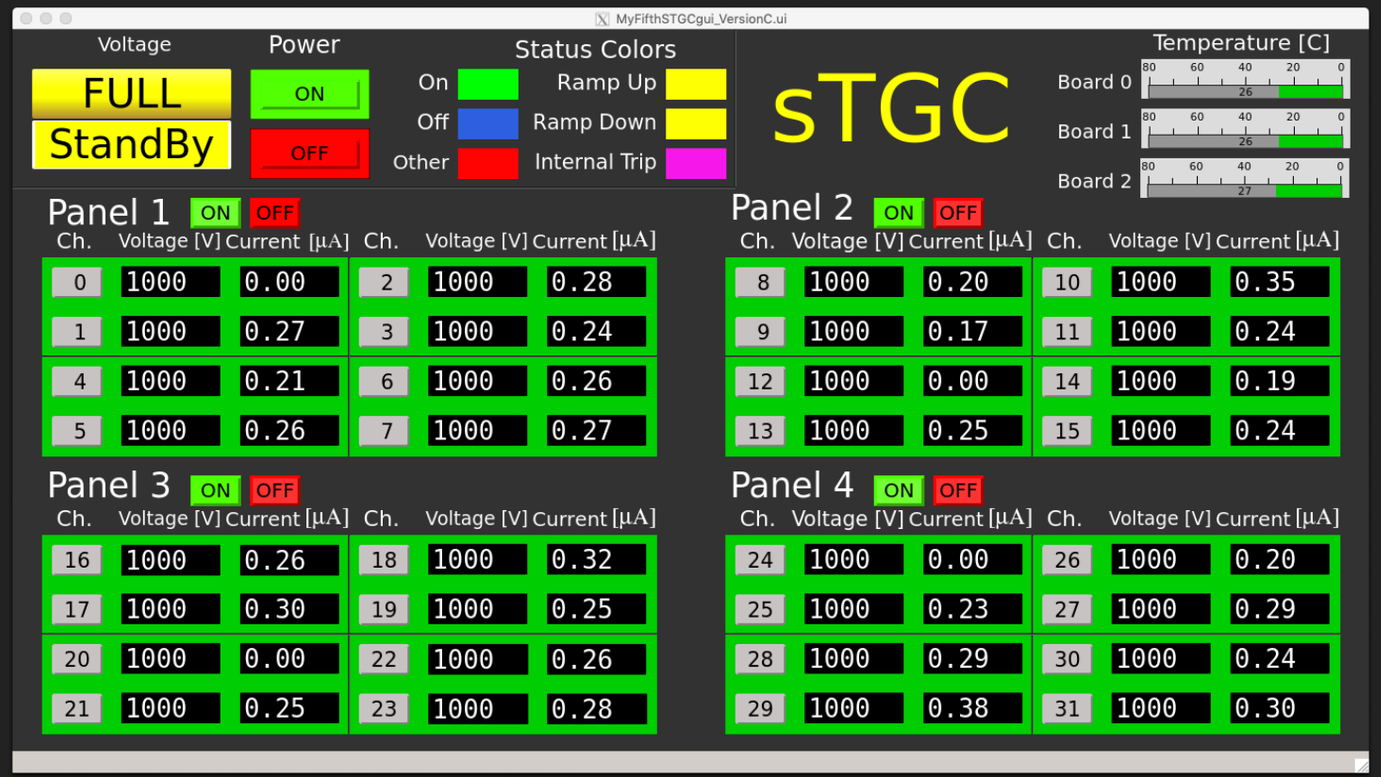
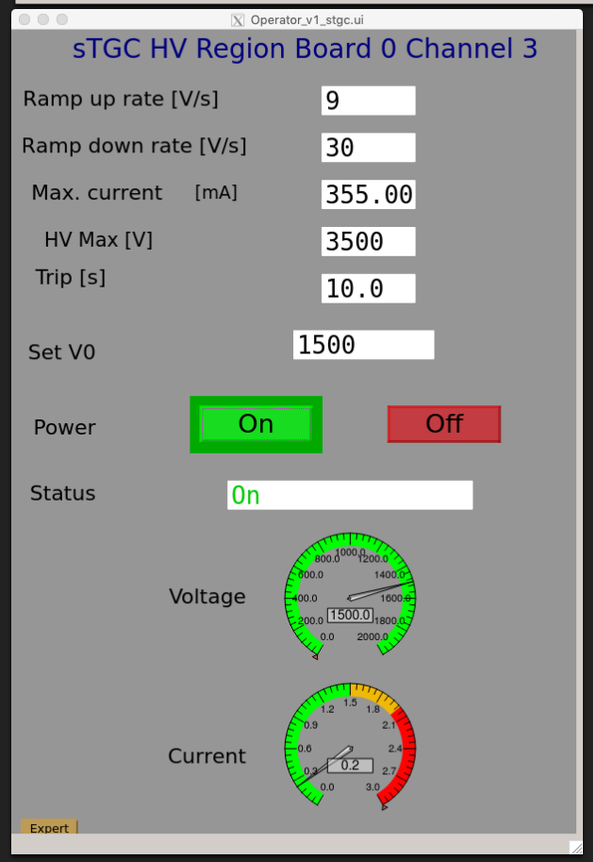
DAVID TLUSTY (AFF. W. CREIGHTON)
PAUL NORD (VALPARAISO)
XU SUN (UIC)
YU HU (UIC)
LUKAS HOLUB (CTU)
JAROSLAV ADAM (BNL)
CHRISTOPHER ANSON (AFF. W CREIGHTON)
EMMA DUFRESNE (CREIGHTON)
REBECCA POWERS (CREIGHTON)

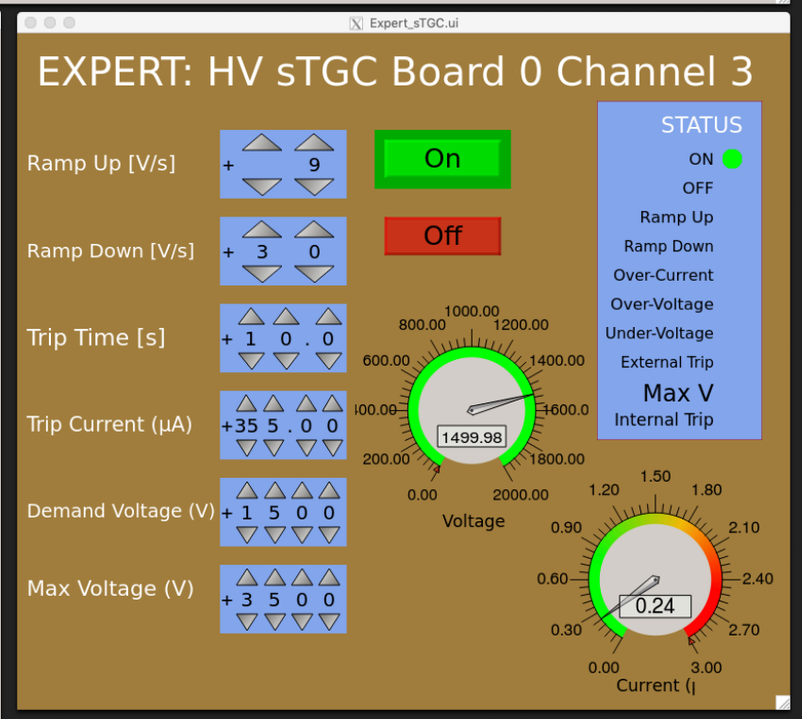
FORWARD UPGRADE SLOW CONTROLS

STGC HIGH VOLTAGE

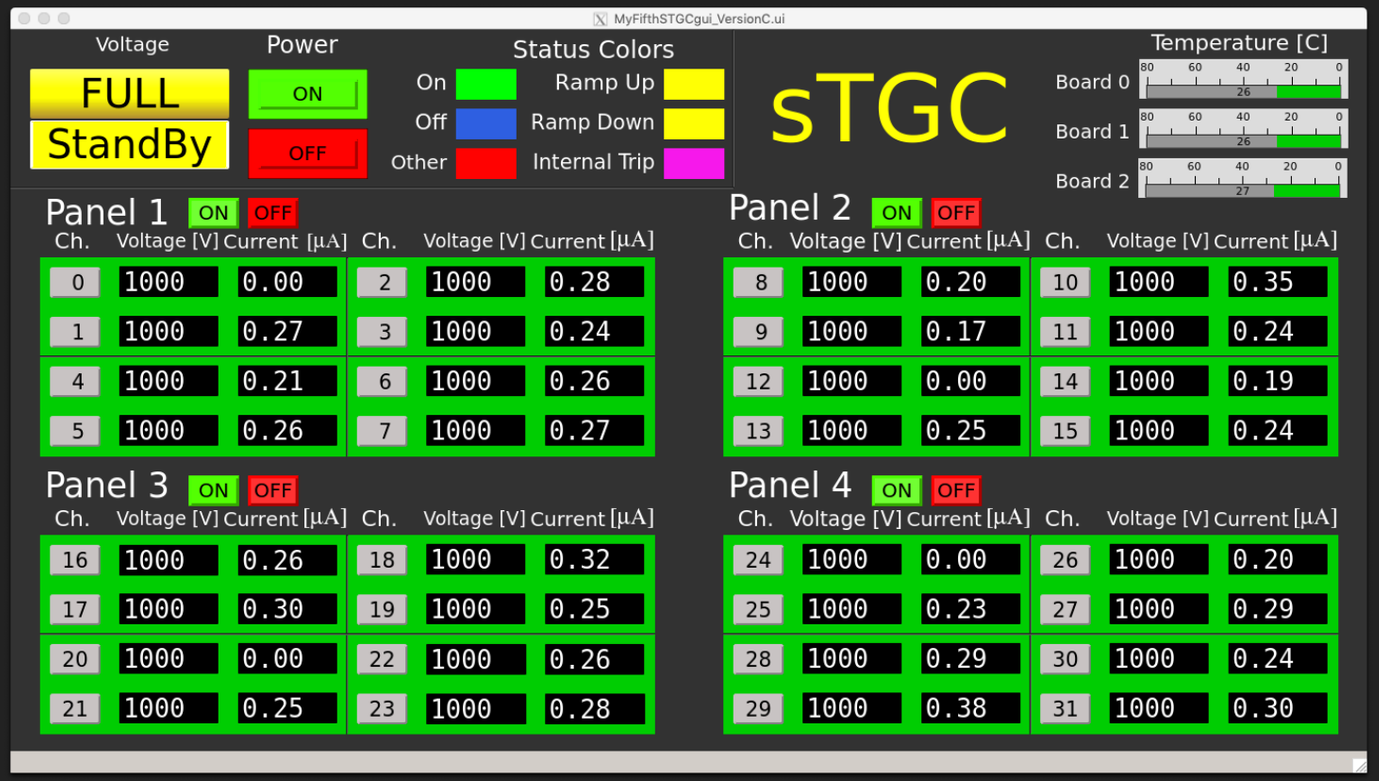
- IOC ready for operations
  - running on forward-cr computer
    - to start type “stgcHVIOC”
    - code in /home/u/stgc/iocTop/sTGC_HV/
  - controlling CAEN SY5527 power supply (IP ADD 130.199.60.244)
- GUI ready for operations
  - forward-cr machine (type “sTGC_DM”)
- remaining work - monitoring HV interlock







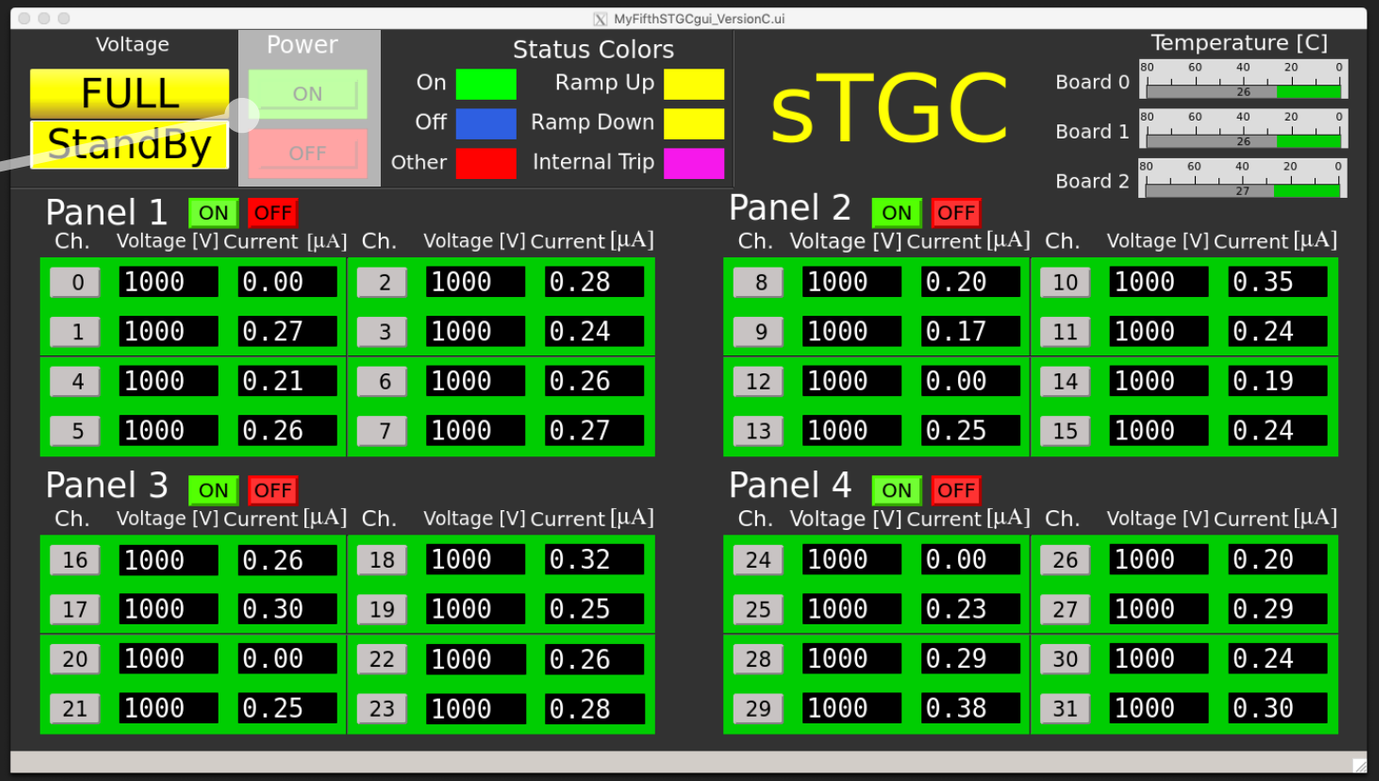
STGC HIGH VOLTAGE



STGC HIGH VOLTAGE

Turn all Channels ON/OFF

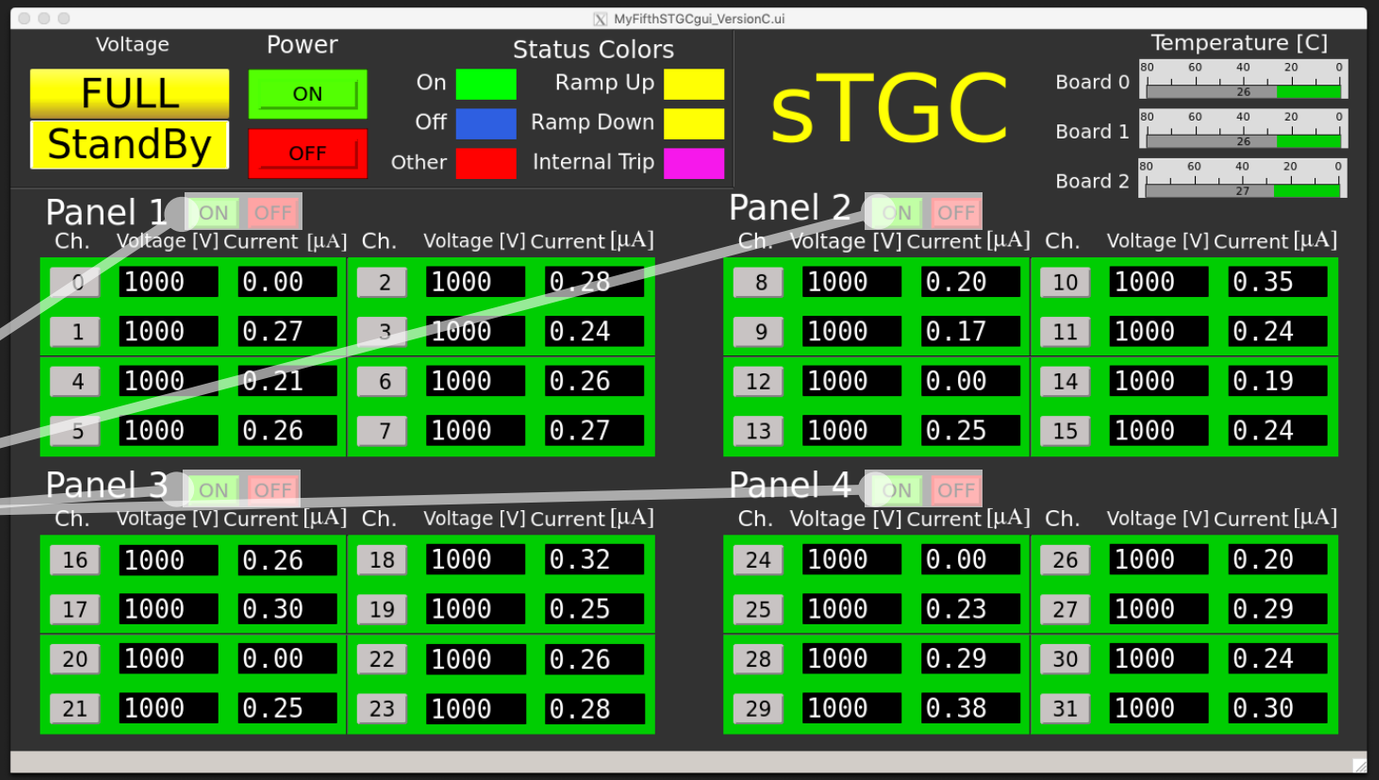
Color indicates status of channels (see the legend “Status Colors”)



STGC HIGH VOLTAGE

Color indicates status of channels
(see the legend “Status Colors”)

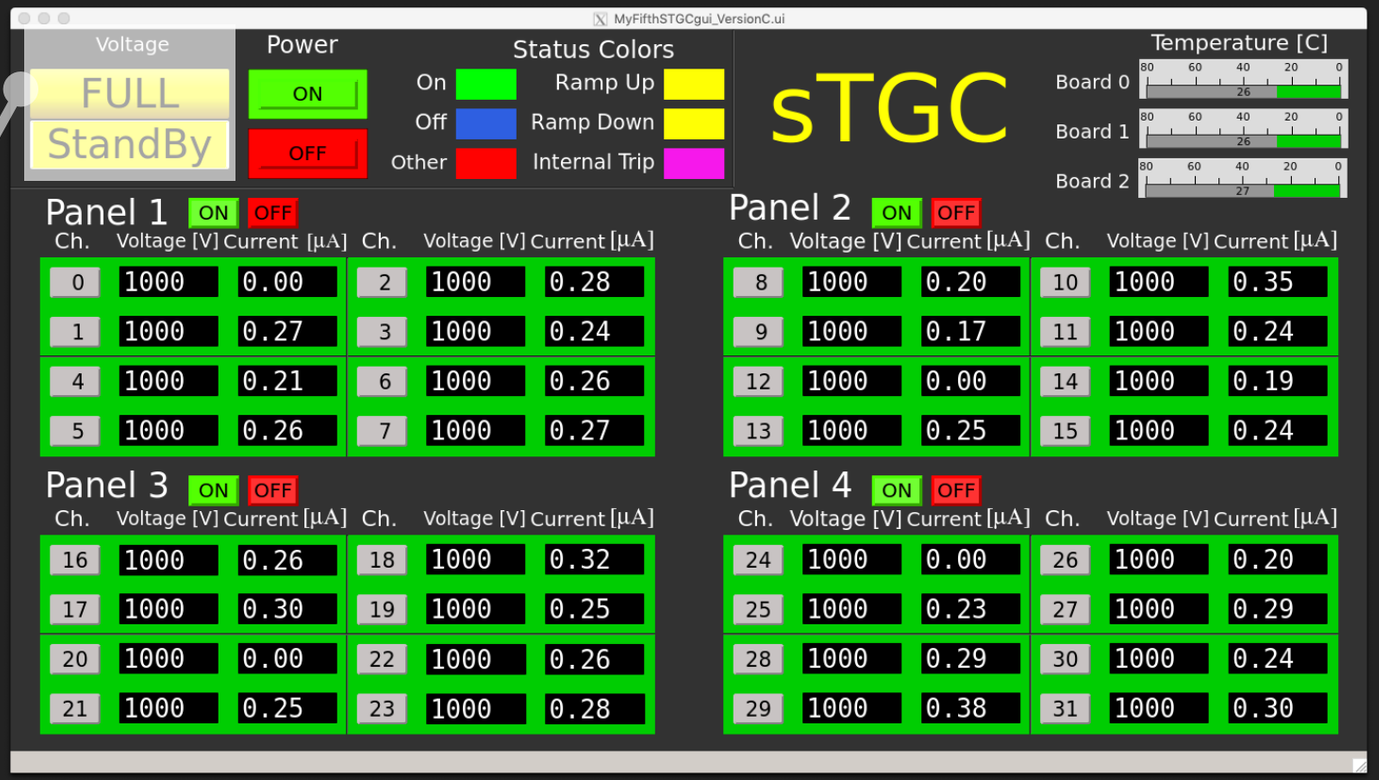
Turn a group of channels ON/OFF



STGC HIGH VOLTAGE

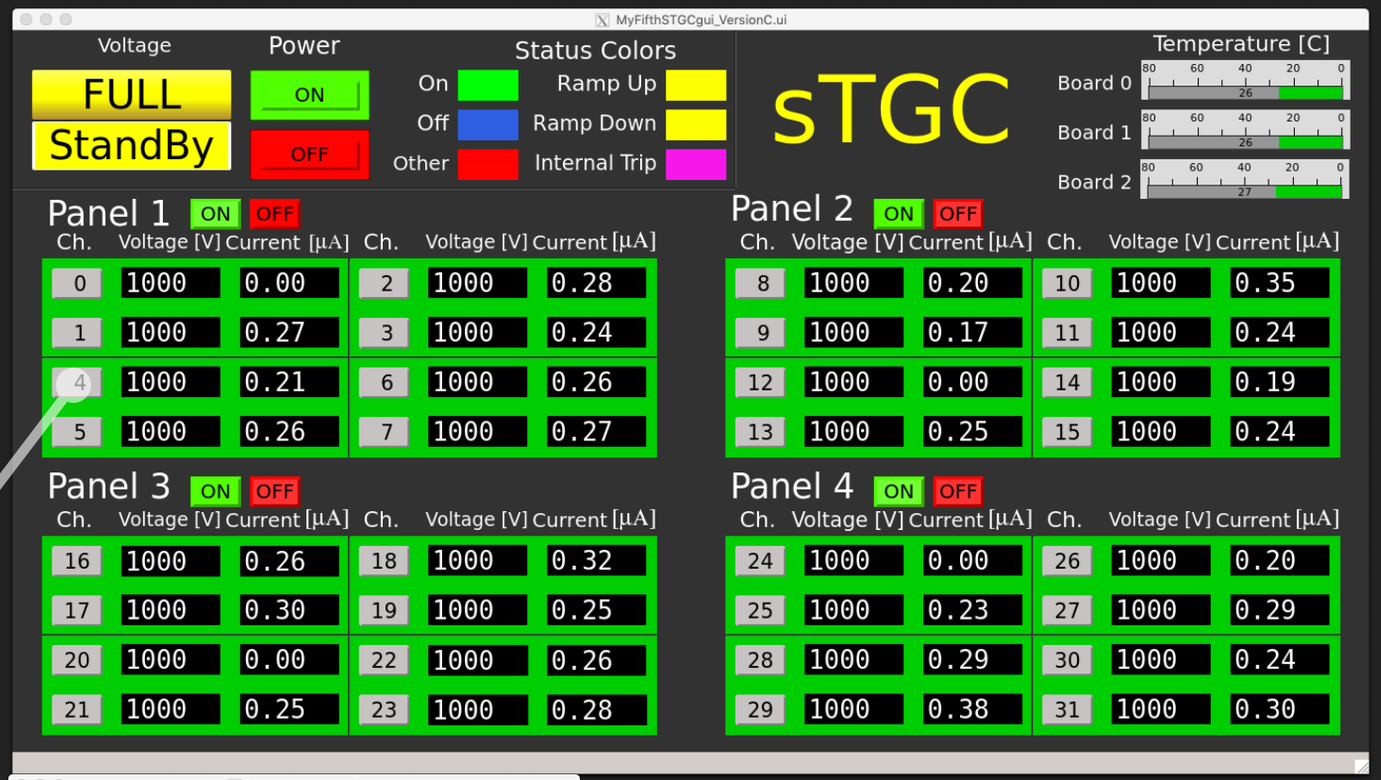
Color indicates status of channels (see the legend “Status Colors”)

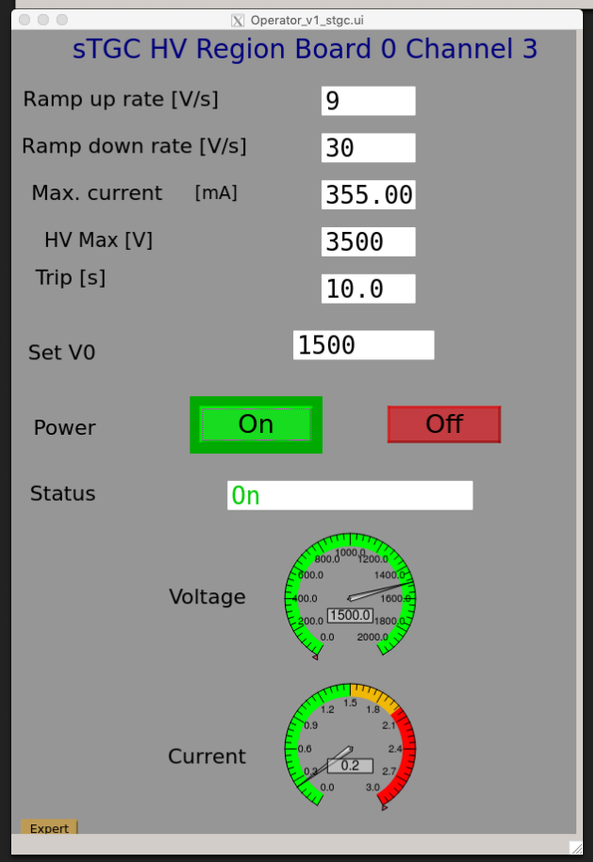
Set Voltages to all channels at Full / Standby levels



STGC HIGH VOLTAGE

Bring GUI for an individual channel
Possible to check main parameters and turn it ON/OFF

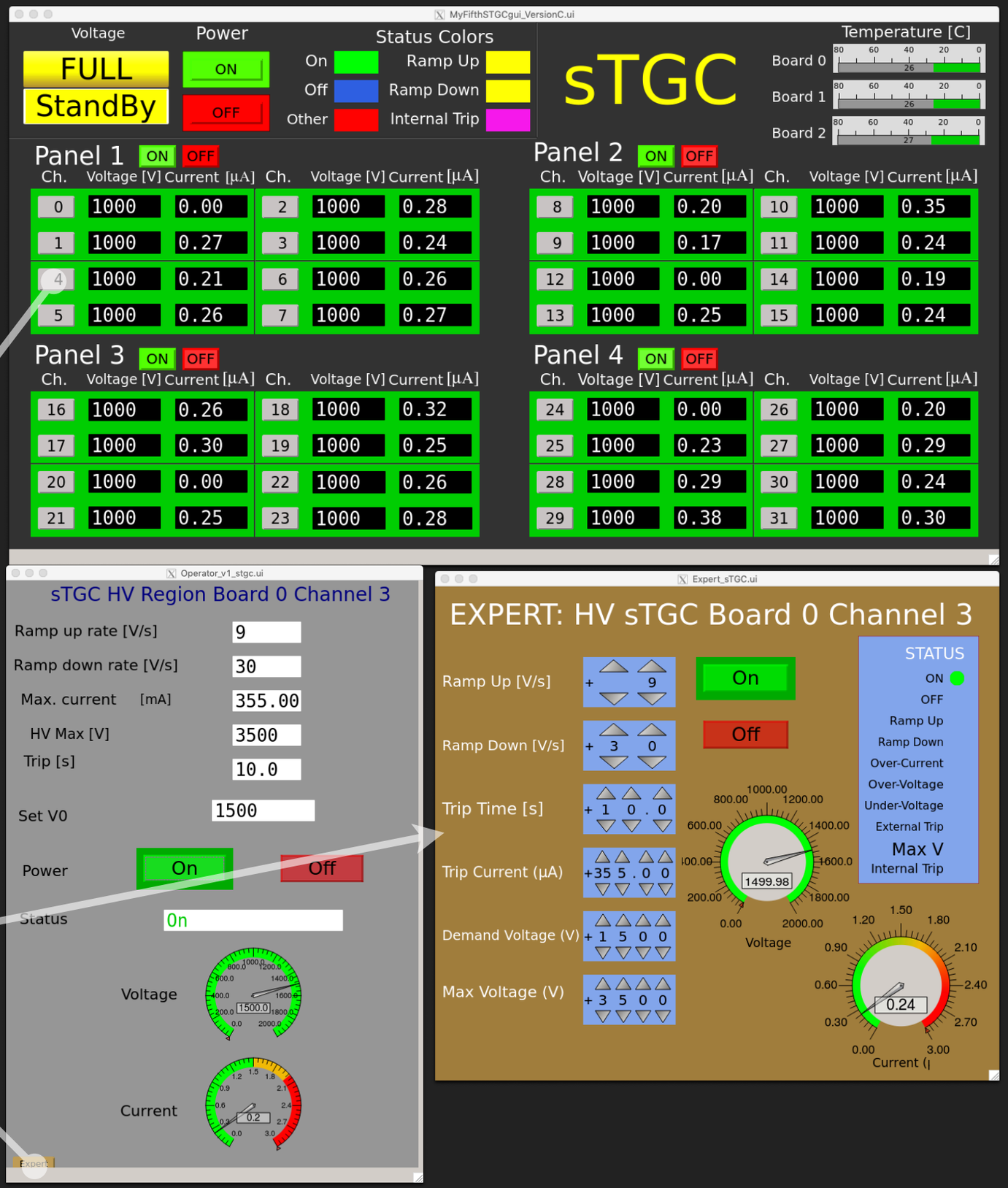




STGC HIGH VOLTAGE

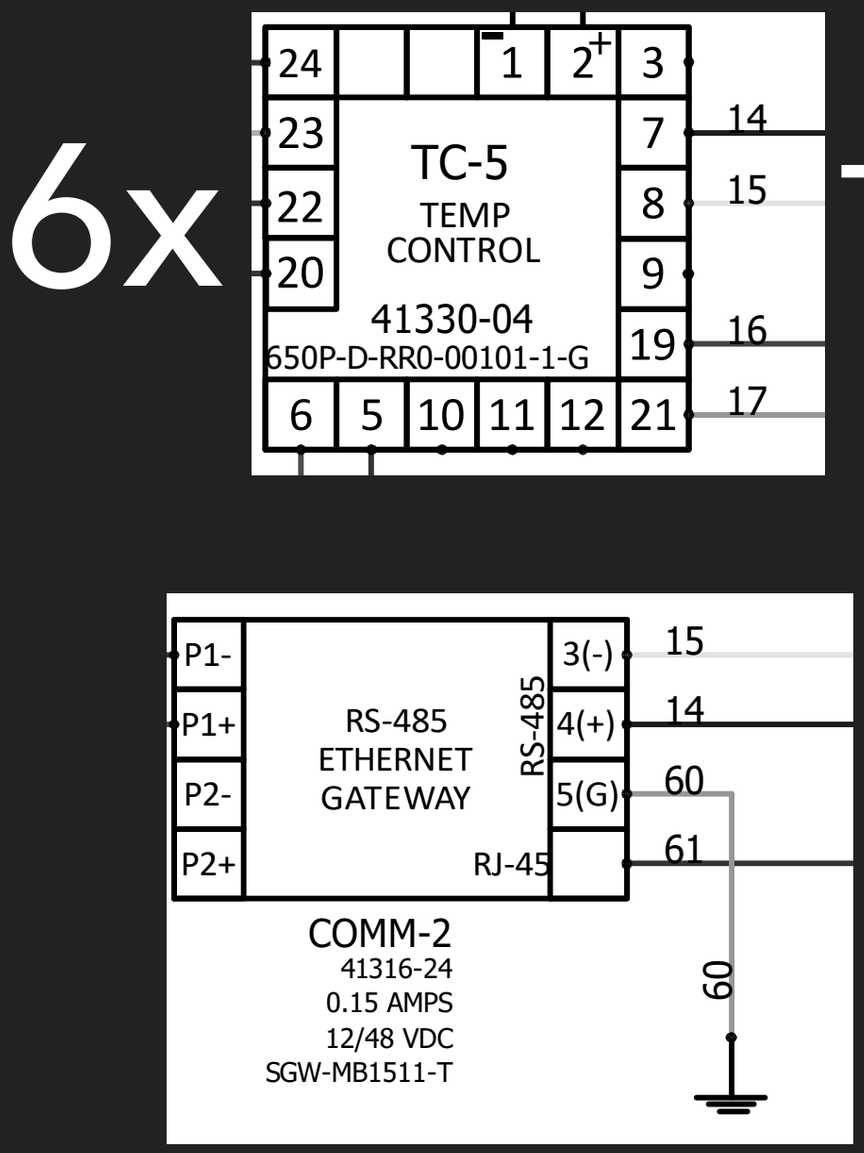
Bring GUI for an individual channel
Possible to check main parameters and turn it ON/OFF

Bring "Expert" GUI for the individual channel to set main parameters and monitor the channel status in detail



BRISK HEAT TAPE CONTROLLER

- client connected via ethernet (RJ45) to the Stride RS-485 Ethernet Gateway
- the Gateway connected to Modbus chain of 6 Gefran Temperature controllers
- Tested the connection using pyModbusTCP ModbusClient
  - Client is open, recognizes ID and MODE, but getting CRC error in the return message
  - neet to
    - check the connection - probably after the current run



PENTANE SNIFFERS AND HEAT DETECTORS, AND BRONCKHORST FLOWMETERS

- need to be connected through RS-485 to Moxa Gateway 130.199.60.185 (Server 1)
  - part of the gas cabinet
- using pyModbusTCP ModbusClient
  - configuration ongoing

FST Crate Slow Control

- Re-use of old IST slow control.
  - FST use the same crate and readout system as IST => a natural choice to re-use old IST slow control system.
- IOC for FST
  - The base of EPICs, ASYN and Sequencer (same as GMT) are compiled on softioc4.
  - Updated the old IST databases and configuration to FST setup.
  - Updated the old IST sequencer to FST setup.
  - **Successfully updated IOC to FST setup and fst-mpod02 is currently running at softioc4 for further development.**
- GUI for Shift Crew
  - Operation is based on a set of shell script => already updated to FST setup and tested at BNL/UIC/FNAL test stand.
  - Monitor and alarm are though sequencer.
  - Need to modify old IST GUI for FST => adjust naming and pictures.
- GUI for Expert
  - Operation, monitor and alarm are all based on sequencer.
  - Need to modify old IST GUI for FST => adjust naming and pictures.

Shift Crew GUI

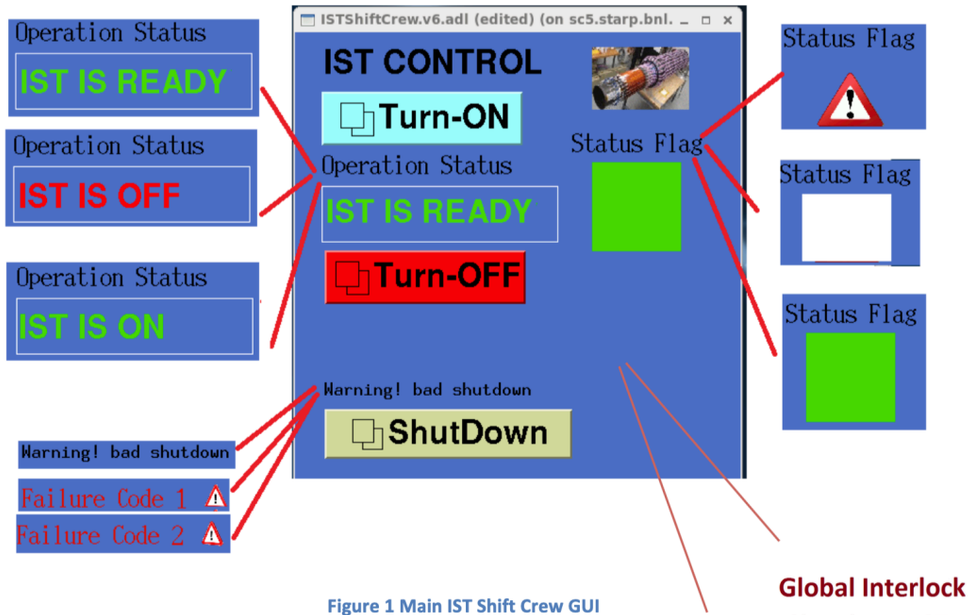
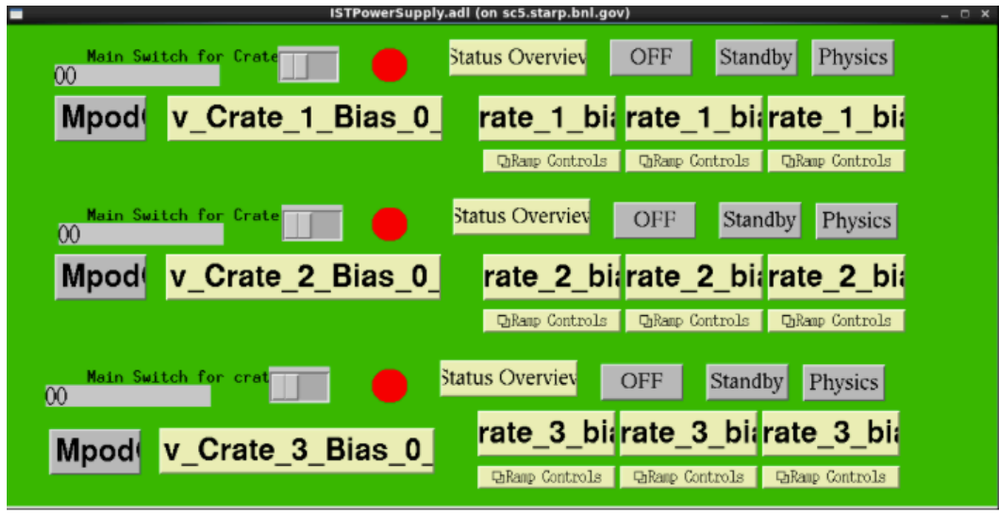


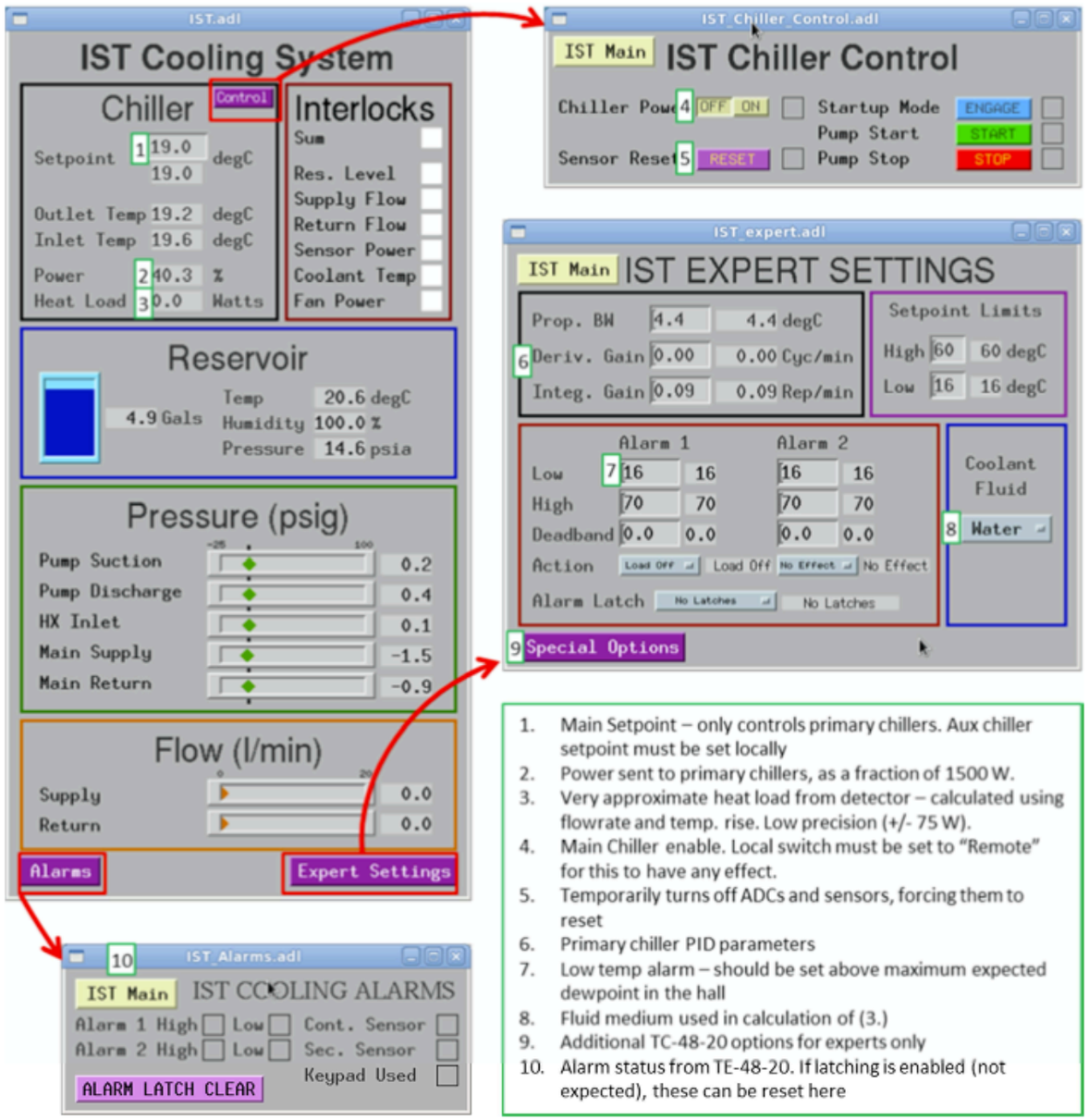
Figure 1 Main IST Shift Crew GUI

Expert GUI



FST Cooling Slow Control

EPICS Interface



1. Main Setpoint – only controls primary chillers. Aux chiller setpoint must be set locally
2. Power sent to primary chillers, as a fraction of 1500 W.
3. Very approximate heat load from detector – calculated using flowrate and temp. rise. Low precision (+/- 75 W).
4. Main Chiller enable. Local switch must be set to "Remote" for this to have any effect.
5. Temporarily turns off ADCs and sensors, forcing them to reset
6. Primary chiller PID parameters
7. Low temp alarm – should be set above maximum expected dewpoint in the hall
8. Fluid medium used in calculation of (3.)
9. Additional TC-48-20 options for experts only
10. Alarm status from TE-48-20. If latching is enabled (not expected), these can be reset here

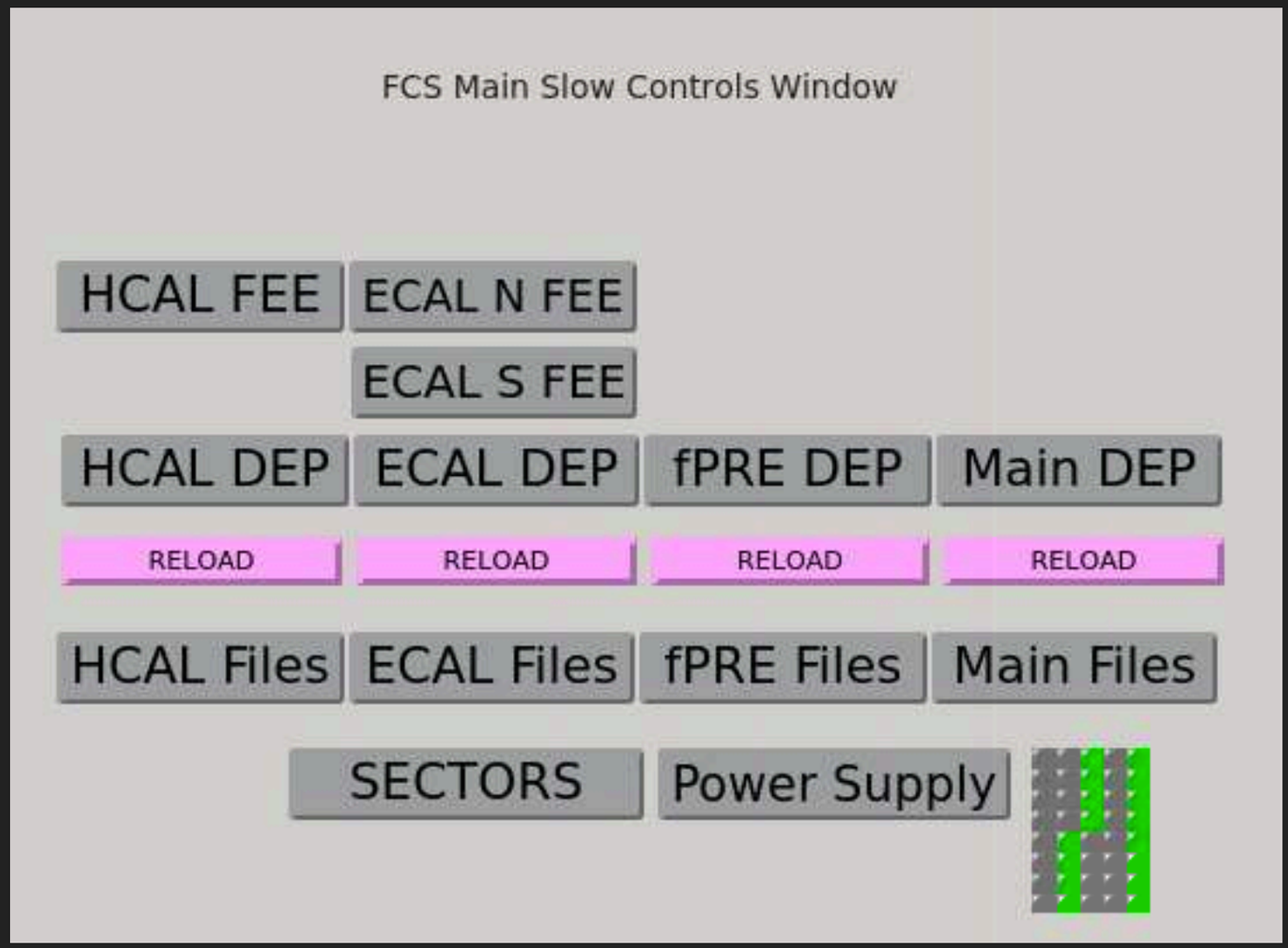
- Re-use of old IST cooling slow control.
  - FST use the same cooling system as IST => a natural choice to re-use old IST cooling slow control system.
- GUI for Expert
  - Operation, monitor and alarm are all based on sequencer.
  - Need to modify old IST sequencer for FST setup => adjust flow speed limits.
  - Need to modify old IST GUI for FST => adjust naming and pictures.
- Updates will start after the cooling system back online.

FST COOLING SYSTEM STATUS

- work on the cooling system is ongoing
- IP addresses are being put back to starp network
  - got them from Mike Capotosto

- Expert Screens
  - FEE Boards
    - HCAL
    - ECAL North
    - ECAL South
  - DEP Boards
    - HCAL
    - ECAL
    - fPRE
    - Main
- Configuration Files
- Sectors
- Power Supply

FCS SLOW CONTROLS



RECENT SOFTWARE ADDITIONS

- Corrected FEE temperature calculations
  Created display of FEE Temperatures by Row/Col (physical detector map)
- Power Supply status added to online logs
  Use “GroupsSwitch” command rather than “OutputSwitch”
  Setup EPICS Alarms for Power Supply Status
  Added Strip Chart display for Power Supply I, V, Temp
  Alarm status summary added to Power Supply Control screen
- Requested STAR Alarms indication for Power Supply
  Requested addition of HCAL FEE variables to online log

PLANNED FCS SLOW CONTROLS ADDITIONS

- ECAL FEE variables to STAR Cassandra Archiver added
  - documentation ongoing
- Consider adding alarms for FEE, and DEP board status (current, temp, other?)
- Review SC documentation with Donald Isenhower
- Make non-expert status and control screens for shift crew (2022, sooner?)

MISC SCREENS

FCS:HCAL:ND0 CLOSE

alive	1
temp_c	40.6
ht_rate	5822755.0000
time	01/14/2021, 12:09:33
rts_id	30
fee_state	PHYSICS
1wire_id	0x00674F76
firmware	
clock	TCD
sector	4
rdo	1
mask	0x1FFFFFFFFll

0x00674F76

HCAL DEP Boards

ND0 ND1 ND2 ND3 ND4 ND5 ND6 ND7 ND8

SD0 SD1 SD2 SD3 SD4 SD5 SD6 SD7 SD8

Temp Rate Sector 1wire_id Mask time fee_state rdo

HCAL_S_MAP.ui <@forward-cr.starp.bnl.gov>

21.88	21.85	21.87	21.91	21.90	21.65	21.90	21.97	21.79	21.71	21.94	21.59	21.61
21.77	21.67	21.86	21.79	21.84	21.72	21.85	22.01	21.90	22.12	21.94	21.72	21.44
21.76	21.82	21.80	21.63	21.57	21.70	21.68	21.82	21.76	21.71	21.54	21.52	21.31
21.75	21.53	21.62	21.50	21.55	21.66	21.55	21.74	21.70	21.58	21.62	21.60	21.37
21.68	21.58	21.69	21.56	21.54	21.51	21.55	21.61	21.48	21.43	21.46	21.44	21.29
21.60	21.49	21.63	21.68	21.64	21.54	21.56	21.62	21.50	21.45	21.30	21.39	21.22
21.43	21.41	21.35	21.58	21.57	21.55	21.54	21.45	21.46	21.42	21.38	21.37	21.25
21.38	21.44	21.62	21.51	21.53	21.59	21.51	21.46	21.40	21.38	21.28	21.44	21.09
21.28	21.37	21.50	21.38	21.43	21.43	21.40	21.46	21.31	21.27	21.23	21.19	21.07
21.25	21.12	21.46	21.37	21.23	21.41	21.37	21.41	21.29	21.29	21.24	21.22	20.93
21.16	21.17	21.16	21.27	21.35	21.33	21.07	21.15	21.19	21.25	21.17	21.14	21.04
21.01	21.20	21.20	21.24	21.36	21.33	21.25	21.09	21.25	21.07	21.17	21.02	20.95
21.15	21.14	21.14	21.19	21.16	21.15	21.21	21.17	21.12	21.15	20.92	21.01	20.94
20.98	20.91	20.97	21.02	20.92	21.07	21.17	21.10	21.05	20.87	21.00	20.95	20.71
21.03	20.96	20.96	21.03	20.95	20.95	20.98	21.04	20.98	20.98	20.87	20.83	20.85
20.86	20.77	20.79	20.89	20.94	20.88	20.89	21.00	20.87	20.80	20.71	20.88	20.86
20.84	20.64	20.87	20.77	20.95	20.85	20.86	20.80	20.93	20.90	20.84	20.71	20.79
20.74	20.76	20.76	20.73	20.74	20.80	20.71	20.82	20.84	20.80	20.68	20.72	20.69
20.52	20.47	20.61	20.64	20.76	20.69	20.62	20.72	20.67	20.66	20.62	20.49	20.59
20.51	20.50	20.52	20.54	20.57	20.48	20.59	20.71	20.62	20.57	20.58	20.43	20.56

HCAL_N_MAP.ui <@forward-cr.starp.bnl.gov>

21.31	21.36	21.62	21.62	21.74	21.85	21.64	21.75	21.81	21.82	21.79	21.68	22.07
21.31	21.54	21.66	21.62	21.67	21.72	21.59	21.76	21.70	21.73	21.80	21.93	21.79
21.36	21.59	21.60	21.53	21.52	21.74	21.65	21.74	21.64	21.57	21.64	21.85	21.73
21.19	21.38	21.41	21.48	21.41	21.61	21.54	21.48	21.51	21.59	21.47	21.78	21.73
21.13	21.38	21.32	21.46	21.43	21.59	21.45	21.50	21.42	21.52	21.25	21.61	21.70
21.05	21.20	21.33	21.32	21.37	21.51	21.31	21.40	21.36	21.42	21.34	21.64	21.73
21.11	21.22	21.19	21.26	21.34	21.40	21.32	21.36	21.17	21.40	21.37	21.47	21.56
20.84	21.12	21.14	21.14	21.16	21.26	21.17	21.27	21.22	21.21	21.24	21.37	21.47
20.95	21.03	21.14	21.02	21.25	21.24	21.06	21.11	21.28	21.19	21.10	21.38	21.46
20.79	20.94	21.06	21.06	21.07	21.17	20.94	21.02	21.13	21.16	21.06	21.09	21.38
20.76	21.01	20.97	20.88	21.05	20.96	21.02	20.88	21.05	21.04	21.07	21.10	21.14
20.72	20.92	20.79	20.79	21.01	21.05	20.98	21.04	20.96	20.80	20.85	20.92	21.19
20.69	20.90	20.89	20.76	20.83	20.95	20.94	20.89	20.90	20.77	20.88	20.97	21.13
20.72	20.80	20.75	20.78	20.86	20.80	20.76	20.72	20.78	20.58	20.76	20.76	21.09
20.56	20.73	20.71	20.63	20.76	20.92	20.76	20.70	20.71	20.60	20.70	20.73	20.83
20.46	20.76	20.57	20.65	20.68	20.86	20.65	20.61	20.74	20.53	20.67	20.59	20.63
20.39	20.67	20.54	20.61	20.66	20.69	20.66	20.50	20.46	20.49	20.69	20.48	20.55
20.23	20.49	20.40	20.48	20.56	20.65	20.61	20.50	20.47	20.41	20.50	20.51	20.51
20.29	20.40	20.37	20.47	20.47	20.43	20.41	20.45	20.36	20.24	20.33	20.31	20.35
20.27	20.33	20.19	20.43	20.36	20.30	20.35	20.26	20.22	20.14	20.14	20.14	20.19

ROW

COLUM

ND6aF0

HCAL DEP Boards - temp

40.6	38.4	36.2	35.0
ND0	ND1	ND2	ND3
42.9	40.8	36.7	37.6
SD0	SD1	SD2	SD3

ON OFF ECAL N | ON OFF HCAL N | ON OFF ECAL S | ON OFF HCAL S | ON OFF ALL

MAIN ON

EXPERT CONTROLS

Activity

Slot 0 | Slot 1 | Slot 2 | Slot 3 | Slot 4

FCS LV STAR

	Uninhibit Switch	Status	Sense V	Term V	Current	Temp.	
u0	0	00	0.000	0.000	0.000	30	Ecal North PPB1
u1	0	00	0.000	0.000	0.000	31	Ecal North PPB1
u2	0	00	0.000	0.000	0.000	30	Ecal North PPB3
u3	0	00	0.000	0.000	0.000	30	Ecal North PPB3
u4	0	00	0.000	0.000	0.000	30	Ecal North PPB4
u5	0	00	0.000	0.000	0.000	30	Ecal North PPB4
u6	0	00	0.000	0.000	0.000	30	Ecal North PPB5
u7	0	00	0.000	0.000	0.000	29	Ecal North PPB5

Chart Chart Chart Chart

FCS:ECAL:ND5aF4

gain 0
vslope 3366

0x340000016298D970 CLOSE

	vset	vcmp	imon	rmon	mon	ROW	COL	ID
0	15066	20893	7	41627	46581	11	9	228
1	0	21315	0	47326		11	10	229
2	0	20815	0	47400	34391	12	9	250
3	15068	20758	10	41693	29671	12	10	251

0	1.0031	1.3911	0.0438	3.1767	6.1138
1	0.0000	1.4192	0.0000	3.6116	-102936.6353
2	0.0000	1.3859	0.0000	3.6172	81.2731
3	1.0032	1.3821	0.0625	3.1817	