

# DSG NPS Collaborators' Meeting Update

Aaron Brown and the Detector Support Group  
01/14/2021

# Contents

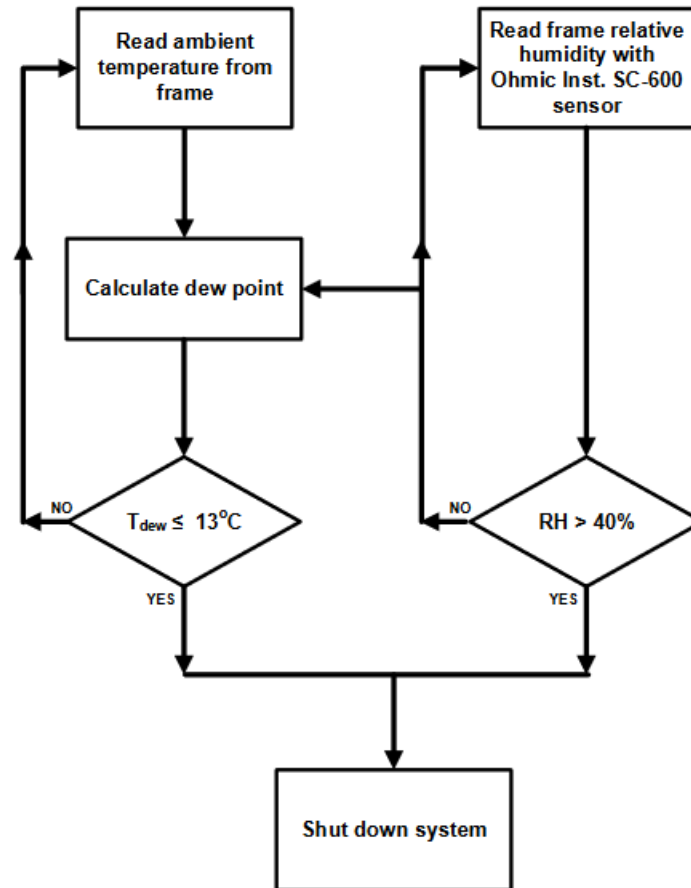
- Crystal Zone Temperature Sensors
- Fault Chart Development
- Hardware Interlock System Development
  - Temperature Scanning System
- HV Cable Fabrication
- CAEN HV Testing Analysis

# Crystal Zone Temperature Sensors

35	35	71	107	143	179	215	251	287	323	359	395	431	467	503	539	575	611	647	683	719	755	791	827	863	899	935	971	1007	1043	1079
	34	70	106	142	178	214	250	286	322	358	394	430	466	502	538	574	610	646	682	718	754	790	826	862	898	934	970	1006	1042	1078
	33	69	105	141	177	213	249	285	321	357	393	429	465	501	537	573	609	645	681	717	753	789	825	861	897	933	969	1005	1041	1077
	32	68	104	140	176	212	248	284	320	356	392	428	464	500	536	572	608	644	680	716	752	788	824	860	896	932	968	1004	1040	1076
	31	67	103	139	175	211	247	283	319	355	391	427	463	499	535	571	607	643	679	715	751	787	823	859	895	931	967	1003	1039	1075
30	30	66	102	138	174	210	246	282	318	354	390	426	462	498	534	570	606	642	678	714	750	786	822	858	894	930	966	1002	1038	1074
	29	65	101	137	173	209	245	281	317	353	389	425	461	497	533	569	605	641	677	713	749	785	821	857	893	929	965	1001	1037	1073
	28	64	100	136	172	208	244	280	316	352	388	424	460	496	532	568	604	640	676	712	748	784	820	856	892	928	964	1000	1036	1072
	27	63	99	135	171	207	243	279	315	351	387	423	459	495	531	567	603	639	675	711	747	783	819	855	891	927	963	999	1035	1071
	26	62	98	134	170	206	242	278	314	350	386	422	458	494	530	566	602	638	674	710	746	782	818	854	890	926	962	998	1034	1070
25	25	61	97	133	169	205	241	277	313	349	385	421	457	493	529	565	601	637	673	709	745	781	817	853	889	925	961	997	1033	1069
	24	60	96	132	168	204	240	276	312	348	384	420	456	492	528	564	600	636	672	708	744	780	816	852	888	924	960	996	1032	1068
	23	59	95	131	167	203	239	275	311	347	383	419	455	491	527	563	599	635	671	707	743	779	815	851	887	923	959	995	1031	1067
	22	58	94	130	166	202	238	274	310	346	382	418	454	490	526	562	598	634	670	706	742	778	814	850	886	922	958	994	1030	1066
	21	57	93	129	165	201	237	273	309	345	381	417	453	489	525	561	597	633	669	705	741	777	813	849	885	921	957	993	1029	1065
20	20	56	92	128	164	200	236	272	308	344	380	416	452	488	524	560	596	632	668	704	740	776	812	848	884	920	956	992	1028	1064
	19	55	91	127	163	199	235	271	307	343	379	415	451	487	523	559	595	631	667	703	739	775	811	847	883	919	955	991	1027	1063
	18	54	90	126	162	198	234	270	306	342	378	414	450	486	522	558	594	630	666	702	738	774	810	846	882	918	954	990	1026	1062
	17	53	89	125	161	197	233	269	305	341	377	413	449	485	521	557	593	629	665	701	737	773	809	845	881	917	953	989	1025	1061
	16	52	88	124	160	196	232	268	304	340	376	412	448	484	520	556	592	628	664	700	736	772	808	844	880	916	952	988	1024	1060
15	15	51	87	123	159	195	231	267	303	339	375	411	447	483	519	555	591	627	663	699	735	771	807	843	879	915	951	987	1023	1059
	14	50	86	122	158	194	230	266	302	338	374	410	446	482	518	554	590	626	662	698	734	770	806	842	878	914	950	986	1022	1058
	13	49	85	121	157	193	229	265	301	337	373	409	445	481	517	553	589	625	661	697	733	769	805	841	877	913	949	985	1021	1057
	12	48	84	120	156	192	228	264	300	336	372	408	444	480	516	552	588	624	660	696	732	768	804	840	876	912	948	984	1020	1056
	11	47	83	119	155	191	227	263	299	335	371	407	443	479	515	551	587	623	659	695	731	767	803	839	875	911	947	983	1019	1055
10	10	46	82	118	154	190	226	262	298	334	370	406	442	478	514	550	586	622	658	694	730	766	802	838	874	910	946	982	1018	1054
	9	45	81	117	153	189	225	261	297	333	369	405	441	477	513	549	585	621	657	693	729	765	801	837	873	909	945	981	1017	1053
	8	44	80	116	152	188	224	260	296	332	368	404	440	476	512	548	584	620	656	692	728	764	800	836	872	908	944	980	1016	1052
	7	43	79	115	151	187	223	259	295	331	367	403	439	475	511	547	583	619	655	691	727	763	799	835	871	907	943	979	1015	1051
	6	42	78	114	150	186	222	258	294	330	366	402	438	474	510	546	582	618	654	690	726	762	798	834	870	906	942	978	1014	1050
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	4	40	76	112	148	184	220	256	292	328	364	400	436	472	508	544	580	616	652	688	724	760	796	832	868	904	940	976	1012	1048
	3	39	75	111	147	183	219	255	291	327	363	399	435	471	507	543	579	615	651	687	723	759	795	831	867	903	939	975	1011	1047
	2	38	74	110	146	182	218	254	290	326	362	398	434	470	506	542	578	614	650	686	722	758	794	830	866	902	938	974	1010	1046
	1	37	73	109	145	181	217	253	289	325	361	397	433	469	505	541	577	613	649	685	721	757	793	829	865	901	937	973	1009	1045
0	0	36	72	108	144	180	216	252	288	324	360	396	432	468	504	540	576	612	648	684	720	756	792	828	864	900	936	972	1008	1044
	0				5					10					15						20							25		29

- 112 K-type thermocouples measure crystal zone temps
- Crystal numbering (shown from PMT side)

# Fault Chart Development



NPS Hardware Interlock System Fault Chart  
Frame Humidity and Dew Point

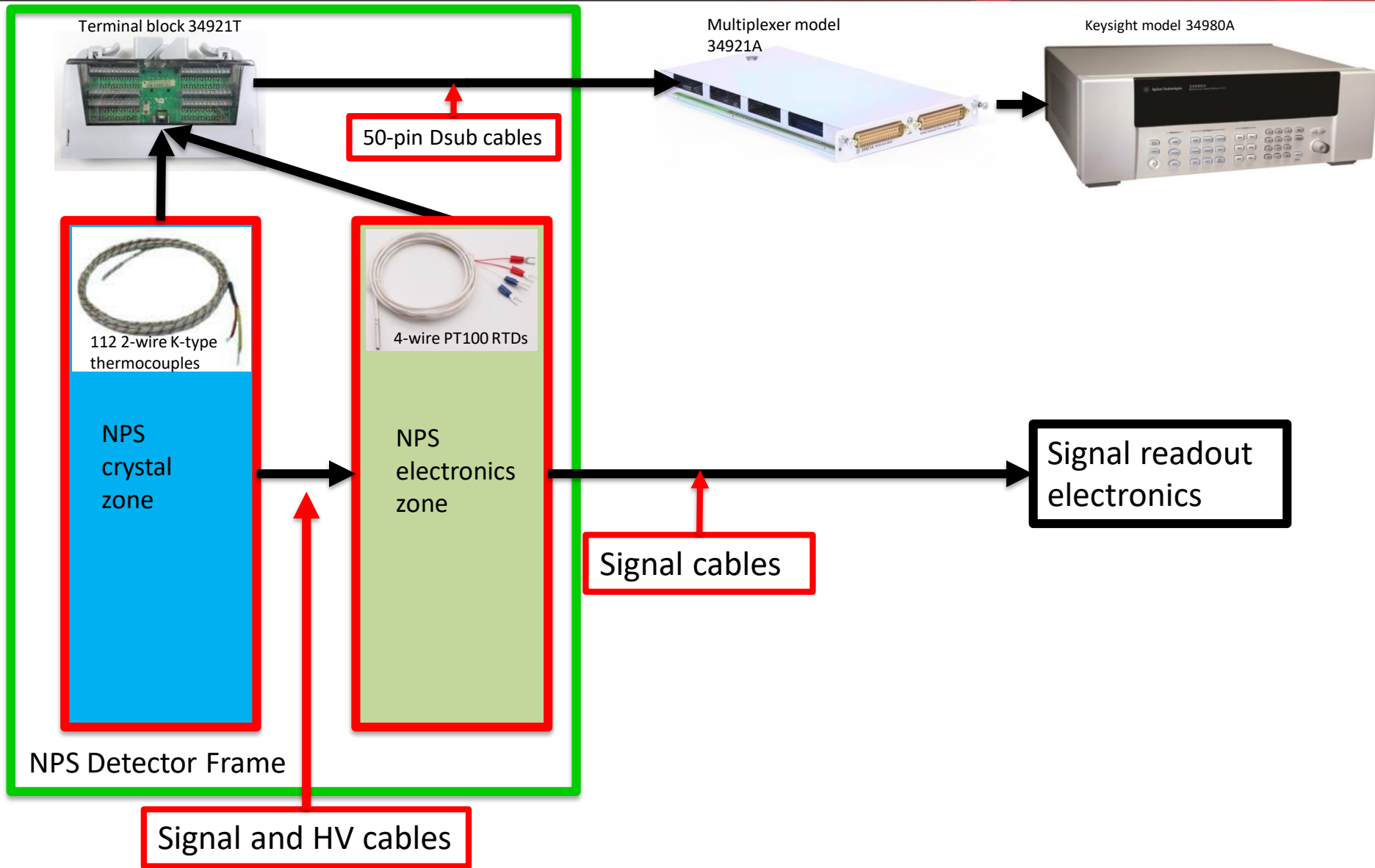
Mary Ann Antoniolli  
01/14/2021

- Chart shows fault conditions for temp and humidity in the frame volume

# Hardware Interlock System Development

- Spare Keysight temperature scanning system received
- System includes
  - 1 mainframe (model #34980A)
  - 2 multiplexer modules (model #34921A)
  - 2 terminal blocks (model #34921T)
  - 10 K-type thermocouples
- Developing a LabVIEW VISA based driver library
  - Controls & Monitoring of temperature scanning system

# Temperature Scanning System



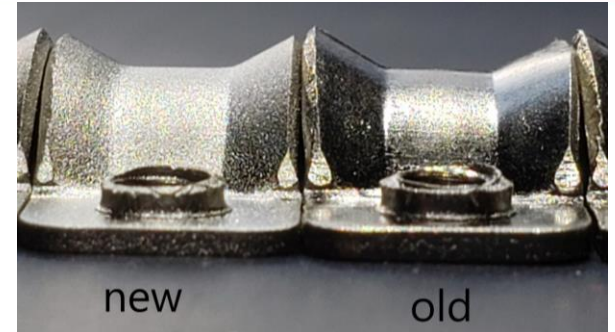


# HV Cable Fabrication

- Mindy Leffel is fabricating the 140' multi-conductor HV cables
- Loose screws for strain relief of Radiall 52-pin connector
- Reached out to CAEN for solution



Radiall 52-pin connectors: new (left) and old (right)



Strain relief: side view



Strain relief: top view

# CAEN HV Testing Analysis

- Mary Ann Antonioli completed analysis of [trip testing](#)
- Voltage ramp analysis in progress
- Detailed testing report forthcoming
- All analysis can be found on DSG Hall C [NPS Technical Documentation](#) webpage



# Thank You