Proven, flexible data acquisition system to support flight hardware thermal vacuum tests

Dynavac's Thermal Data Acquisition System (TDAS) provides real-time temperature display, alarming, and process data recording from the flight hardware. The robust design platform supports various testing parameters, acquiring test article signals and collecting telemetry data from up to 1,000 input signals from the test article.

System highlights

- Dynavac's Thermal Data Acquisition System (TDAS) acquires test article signals and collects telemetry data from multiple types of input signals
- System is comprised of a main DAQ server, operator client system, and DAQ hardware
- Real-time data logging and retrieval capability
- Thermocouple patch boxes route signals from inside the Thermal Vacuum Chamber through chamber penetrations to the data acquisition system
- 128 to 1,000 thermocouple channels to meet data acquisition requirements

Dynavac



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Features

- Multiple data logging and alarm configurations can be set up, stored, recalled, edited, and reused
- Alarm conditions and alarm groups can be created for applicable test sequences
- Available Alarms: Hi-Hi, Hi, Lo, and Lo-Lo
- Ability to enable/disable alarm pop-up
- Configure, display, and log virtual channels
- Change multiple channel parameters through Dynavac's EZ Update menu trend screens with up to 10 channels each
- Picture screen to display images of test article, able to display 40 channels per picture

Hardware and software

- Robust COTS hardware:
 - PXI controller/ server
 - PXIe chassis
 - Thermocouple input modules
- Standard, widely used software:
 - National Instruments LabVIEW
 - Microsoft SQL database

LOSGING DATA		NEWTEST						TESTING CONFIGURATION 06:12:53 11										11/01/2022					
Devices		Index	Channel	Device	Description	Eng Units	Log	Alen Maste	e Hite	HEHE	H	HI Limit I	10	LO Limit	LOLO	LOLD	ROC Enable	ROC Limit	Analikie Enable	Property Institut	Wave Sound Fi	le	CONFIG DEVICES
CHILTC KILL	- 10	1	SA MIN		SOLAR ARRAY MIN	Deg C	ON	ON	ON	43.0	CIN	35.0	ON	30.0	ON	0.0	OFF	5.0	ON	ON T		100	[
CH2 TC KELL	- 10	2	SA MAX		SOLAR ARRAY MAX	DegC	ON	ON	ON	45.0	ON	35.0	ON	30.0	ON	0.0	OFF	5.0	ON	ON 1		and i	SET SET
CHO TC KELL	HU TC KELL CON HA TC KELL CODS	3	SAS	TC001	SOLAR ARRAY TODL	Deg C	ON	ON	ON	40.0	ON	35.0	ON	30.0	ON	0.0	OFT	5.0	ON	ON 1	C/(Windows)Medial,	-	
TC005		4	SA2	TC002	SOLAR ABRAY TO002	DegC	ON	ON	ON	40.0	ON	35.0	ON	30.0	ON	0.0	OFT	5.0	ON	ON 1	C/(Windows)Media)	200	SET ATTRIBUTES
TC007		5	SA3	TC003	SOLAR ARRAY TOOD	Deg C	ON	ON	ON	40.0	ON	35.0	ON	20.0	ON	0.0	OFF	5.0	ON	ON	C/(Windows)/Media).	100	INDEX NUMBER
TC029		6	SA4	TC004	SOLAR ARRAY TCOM	Deg C	ON	ON	ON	40.0	ON	35.0	ON	20.0	ON	0.0	OFF	5.0	ON	ON	C/(Windows) Medial	1001	From Index To Index
TC020		7	545	TC005	SOLAR ARRAY TCODS	Deg C	ON	ON	ON	40.0	ON	35.0	ON	30.0	ON	0.0	OFF		ON	ON		1001	g1 g17
TC022		8	546	TC006	SOLAR ARRAY TC006	Deg C	ON	ON	ON	43.0	ON	35.0	ON	10.0	ON	0.0	OFF	5.0	ON	ON		in i	Select Item
TC028		9	:40	TC007	SOLAR ARRAY TCOD?	Deg C	ON	ON	ON	40.0	ON	35.0	ON	30.0	ON	0.0	OFF	5.0	ON	ON		2001	ROC Limit 💿
TC025		10	548	TC008	SOLAR ARRAY TCOR	Deg C	ON	ON	ON	40.0	ON	35.0	ON	30.0	ON	0.0	OFF	50	ON	ON		-	a sur the
TC027		11	SAD	TC009	SOLAR AFRAY TCOD9	Deg C	ON	ON	ON	40.0	ON	25.0	ON	10.0	ON	0.0	OFF	50	ON	ON T		600 E	Land Value 35
TC028		12	\$440	TC010	SOLAR ARRAY TC000	Dea C	ON	ON	ON	40.0	ON	35.0	ON	10.0	ON	0.0	OFF	50	ON	ON T		ar i	Disable ON
TC030		13	\$411	TC011	SOLAR ARRAY TC011	Dea C	ON	ON	ON	42.0	ON	35.0	ON	20.0	ON	0.0	OFF	50	ON	ON ET		(art)	Way File
TC031		14	5412	TC012	SOLAR ARRAY TCOL2	Dea C	ON	ON	CON .	41.0	CIN	35.0	ON	10.0	ON	0.0	CEE	50	ON	ON IT		(and	1
TC033		15	5413	TC013	SOLAR ARRAY TCOLS	Deg C	ON	ON	CR	410	CIN	35.0	ON	10.0	ON	0.0	CEF	50	ON	ON IT	-	100-1	Eng. Units
TC034		16	5454	TC014	SOLAR ARRAY TC054	Dea C	ON	ON	ON	42.0	CIN	35.0	ON	10.0	ON	0.0	OFF	50	ON	ON T		20-1	[max
TC036		17	\$415	TC015	SOLAR ARRAY TCO15	Deg C	ON	ON	ON	42.0	CIN	35.0	ON	10.0	ON	0.0	OFF	50	ON	ON IT		20-1	WILL
TC037 TC038		-			Dea C	Den C	ion	lon	OIS		0.05	0.0	011	0.0	OIK	0.0	OFF		OIL	on		201	
TC039				-	Dep C	Den C	OIL	OFT			OFF				orr		OFT		OIT			201	UNDO
TC040 TC041					Dep C	Den C	OIT	OFT			011				ott				OIT			00	
TC042				-	Dead	Cen C	OT	L OFF			OFF			001	on		OFF		Lon			(and	ROW
TC043 TC044			-		Dep.C	Ora C																On I	INSERT DELETE
TCOIS					Des C	0.94	Lott															(m)	
TC040				-	DepC	long C	Low															Con I	PRINT PRINT
TCOIR					Dep C	Deg C																Gas	WINDOW REPORT
TC050				-	any c	Longic	1 100															Con L	
TC051				-	org c	Org C	TOIL															Con Li	EXIT
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TAG configuration screen

DATA DISPLAY			1	NEWT	EST		TEST	ING CO	ONFIG	06:	15:02	11/01/20						
R/A	POWER UP 2								T	ST 💽								PAGE
	CHANNEL	PV	ENG UNITS	(HIHI	ні		LOLO	ROC		CHANNEL	PV	ENG UNITS	Гни	ні	LIMITS	LOLO	ROC	1
	SA MAX	21.89	Deg C	40.00	35.00	10.00	0.00	5.00	21	SA10	22.02	Deg C	40.00	35.00	10.00	0.00	5.00	courseum
	SA MIN	21.59	Deg C	40.00	35.00	10.00	0.00	5.00	22	SA11	21.59	Deg C	40.00	35.00	10.00	0.00	5.00	DATA DISPLAY
	SAL	21.79	Deg C	40.00	35.00	10.00	0.00	5.00	23	SA12	21.63	Deg C	40.00	35.00	10.00	00.0	5.00	
	SA2	21.68	Deg C	40.00	35.00	10.00	0.00	5.00	24	\$A13	21.78	Deg C	40.00	35.00	10.00	00.0	5.00	
	SA3	21.89	Deg C	40.00	35.00	10.00	0.00	5.00	25	SA14	21.87	Deg C	40.00	35.00	10.00	00.0	5.00	
	SA4	21.59	Deg C	40.00	35.00	10.00	0.00	5.00	26	SA15	21.70	Deg C	40.00	35.00	10.00	0.00	5.00	
	SAS	21.87	Deg C	40.00	35.00	10.00	0.00	5.00	27		0.00		0.00	0.00	0.00	0.00	0.00	
	\$46	21.80	Deg C	40.00	35.00	10.00	0.00	5.00	28		0.00		0.00	00.0	0.00	0.00	0.00	
	SA7	21.69	Deg C	40.00	35.00	10.00	0.00	5.00	29		0.00		0.00	00.0	0.00	0.00	0.00	
0	\$43	21.52	Deg C	40.00	35.00	10.00	0.00	5.00	30		0.00		0.00	0.00	0.00	0.00	0.00	
1	\$49	21.56	Deg C	40.00	35.00	10.00	0.00	5.00	31		0.00		0.00	0.00	0.00	0.00	0.00	
2		0.00		0.00	0.00	0.00	0.00	0.00	32		0.00		0.00	00.0	0.00	00.0	0.00	
3		0.00		0.00	0.00	0.00	0.00	0.00	33		0.00		0.00	00.0	0.00	00.0	0.00	
14		0.00		0.00	0.00	0.00	0.00	0.00	34		0.00		0.00	0.00	0.00	0.00	0.00	PRINT
15		0.00		0.00	0.00	0.00	0.00	0.00	35		0.00		0.00	0.00	0.00	0.00	0.00	WINDOW
16		0.00		00.0	0.00	0.00	0.00	0.00	36		0.00		0.00	00.0	0.00	0.00	0.00	PRINT
17		0.00		0.00	0.00	0.00	0.00	0.00	37		0.00		0.00	0.00	0.00	00.0	0.00	REPORT
18		0.00		0.00	0.00	0.00	0.00	0.00	38		0.00		0.00	0.00	0.00	0.00	0.00	
9		0.00		0.00	0.00	0.00	0.00	0.00	39		0.00		0.00	0.00	0.00	0.00	0.00	FXIT
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Status display



Trends display

Test article and real time data display

Dynavac- creating the environment for your mission success