

# TAO

## Total Automation of Spacecraft C2 Operations

MISSIONDATA/mptc/xproc/1\_tao.ssp\_2016-098-18:42:34.252088 - TAO



Step	Position	Instruction	Telemetry	Operation	Result
		Access the battery voltage and store in a number variable.	BAT1_AVG_CELL_VOLT 1.51	label(top) assignNumber(#batvolnum#, getPointNumber("BAT1_AVG_BAT_VOLT")) if(#batvolnum#<0) alertUser("The value should never be negative. Call manager immediately!") endif	
		querying the value of battery volt	BAT2_TEMP_1	assignString(%batvolt%, getPointString("BAT1_AVG_BAT_VOLT"))	

  

Time	Event	Priority	#	TOP
16-098-18 43:27:812	VWR:taonm PSEUDO SET THRST_2A_LV_STATUS 0	NORMAL	0	
16-098-18 43:27:812	VWR:taonm PSEUDO SET THRST_2A_AUTO_STATUS 1	NORMAL	0	
16-098-18 43:27:812	VWR:taonm PSEUDO SET THRST_3A_LV_STATUS 0	NORMAL	0	
16-098-18 43:27:812	VWR:taonm PSEUDO SET THRST_3A_AUTO_STATUS 1	NORMAL	0	
16-098-18 43:27:812	VWR:taonm PSEUDO SET THRST_4A_LV_STATUS 0	NORMAL	0	
16-098-18 43:27:812	VWR:taonm PSEUDO SET THRST_4A_AUTO_STATUS 1	NORMAL	0	

### Overview

TAO is an automation language that executes procedures and scripts. It supports telemetry or instrument value checking, command and directive transmission, user prompts, master/shadow functionality, and extension functions. TAO has three components: TAO Server, TAO Client, and TAO Simulator.

TAO Server executes procedures and supports a service provider interface to allow it to communicate with the EPOCH® Server. TAO Client is composed of several applications that provide the full lifecycle of a procedure – creation, modification, review, approval, execution, response verification, and analysis. Finally, TAO Simulator provides the ability to test TAO procedures by executing them without requiring a full server environment. Integrated with Kratos Integral Systems International's Cactus security software, TAO's major capabilities are also protected against unauthorized access.

### Features

- Create and edit procedures consisting of spacecraft directives, telemetry points, expressions, and control structures
- Receive telemetry, transmit directives, and review executing procedures at the operational level
- Control a procedure in Master mode or observe the live actions of another in Shadow mode
- Set checkpoints, pause, and resume procedures
- Test procedures without the need for a full TAO Server/EPOCH environment
- Restrict capabilities per user access privileges via Cactus security software
- Define frequently used procedures for all spacecraft, a spacecraft family, or a single spacecraft
- Review procedure revision reports and approve several procedures simultaneously
- Compare two procedures and display differences between them
- Play back procedures off-line for analysis
- Create custom functions and dialogs to extend TAO's capabilities and user interface beyond the original design
- Define custom variables within procedures that can be substituted by external applications, such as a mission planning system

