

Heating as a result of power consumption by sensors and DAS is unavoidable. While this is true for all data acquisition systems—on-board, off-board, iDummy, WorldSID—it is of particular concern in the restricted, heat-retaining environment inside a dummy. As new products and technologies have become available, DTS has continued to enhance and improve the TDAS G5 design by reducing the power required, thereby reducing internal heating. DTS has implemented a three-step process to provide these enhanced features.

Step one – Your TDAS G5 Distributor must contain the low-power Ethernet switch. This component draws ~1/5 the power of its predecessor. This upgrade can only be performed by DTS.

Step two – Update the version of your TDAS G5 DAS firmware. The latest firmware controls CPU speed, excitation outputs and other components to reduce power consumption and heating. This update can be performed by the user.

Step three – Implement the “low power arm mode” supported within TDAS CONTROL. This enables comprehensive power management logic that greatly reduces power consumption of the TDAS G5 DAS and connected sensors, thereby significantly reducing the internal temperature of the dummy. This mode can be implemented by the user. The background and implementation procedure are discussed below.

CAUTION:

After implementing low power mode, run several simulations to ensure you are familiar and comfortable with the hardware and software before performing any destructive testing.

Background

TDAS CONTROL has two modes of data collection: CIRCULAR BUFFER and RECORDER. Both modes calibrate, test and arm the system. Circular buffer mode then allows an armed system to receive a trigger at an unassigned/unexpected time. The drawback to this mode is that the system must stay fully armed and powered while waiting for the trigger input. This mode is very common but uses the most power.

When using recorder mode, an armed system waits for a “Start Record” input from either the software or hardware. Once the start record signal is received, the DAS begins recording for the length of time specified by the user. (The system will record data for the specified test time regardless of whether a trigger/event signal (T=0) is received between the ‘start record’ and the ‘end of test’ time.) Because the system knows it must receive a start record signal to initiate data collection, the firmware increases the sleep cycle of the DAS and decreases power to the sensors until the time

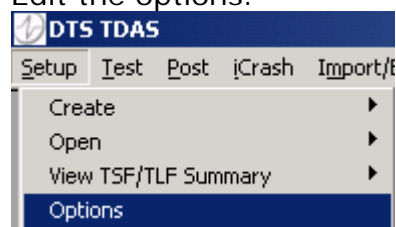
Using Low Power Mode with TDAS G5

the system receives a start record signal. Immediately, all systems are fully powered and after a brief stabilization period, the sensors are re-zeroed. Once the system passes all diagnostic checks, the STATUS signal will turn on indicating that the system is collecting data.

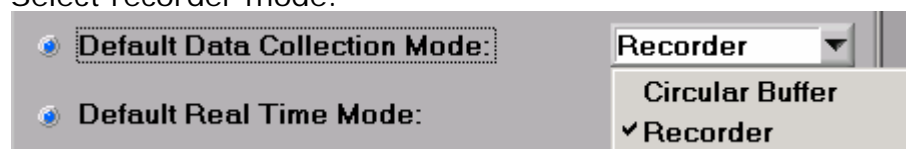
How to set-up Low Power Mode

- You must be using TDAS CONTROL version 6.81a or later
- You must be using 01S9 firmware or later
- You must be using recorder mode

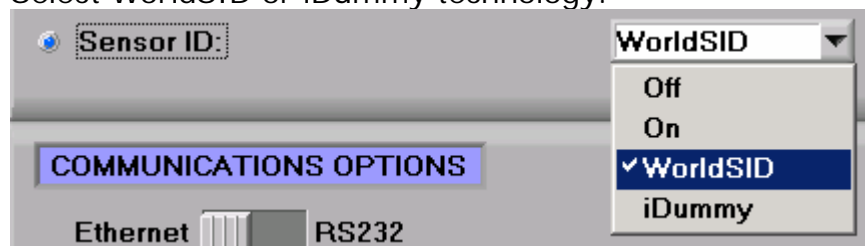
Edit the options:



Select recorder mode:



Select WorldSID or iDummy technology:



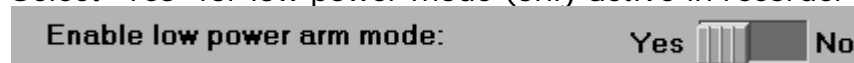
Select advanced settings:



Select "Yes" for software trigger (this turns on start record button):



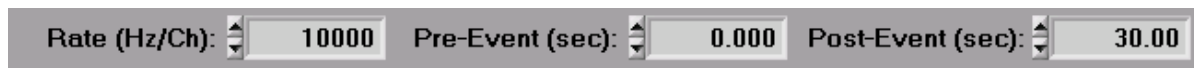
Select "Yes" for low power mode (only active in recorder mode):



Exit all set-up options. *It is always a good idea to exit the software and restart so that all the settings can be read into the software during start-up.*

Building a Test

Since recorder mode typically increases the length of recorded pre-event data, it is a good idea to collect more data than you might normally when using circular buffer mode—you do not want to miss recording the event because the specified data collection window was too short. (Note: You cannot set a negative time using recorder mode. Since the trigger comes in after the DAS begins recording, pre-event data is still collected.)



WARNING!

If the data collection window is not set long enough to capture the event, it will occur outside the recording window. Data will be lost!

During the arming stage of the collect data screen, a "Start Record" button will appear that allows you to send a start record signal before the test begins. (If you would like to input a hardware start record signal, pin assignments for the WorldSID Status Box and TDAS PLUS Mini Distributor are identified on the following page.)



Following receipt of the start record signal, the system and sensors are powered up and several diagnostic checks are performed including:

- Verification that there is sufficient power,
- Verification that an event signal (T=0) has not been received,
- Verification that the system has begun collecting data.

If any of these checks return a fault, *the test should be aborted.*

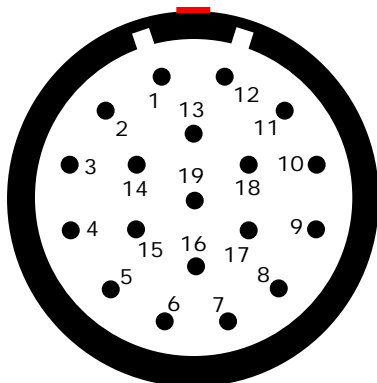
Once the system is completely powered up and passes all diagnostic checks, the STATUS signal will turn on (e.g., record light on the WorldSID Status Box) indicating that the system is collecting data. (To the user, this power up and verification of the system occurs almost instantaneously.) The software's test progress indicator will also show that the recording has started by movement in the graphic.

Downloading Data

Upon download, if the user has identified a "Region of Interest" (a portion of data that contains the test event), the software will automatically download only the subset of data contained within that region. (The complete data set is also available for download if desired.) Note: The data is centered around the trigger/event input and not the start record signal.

Pin Assignments

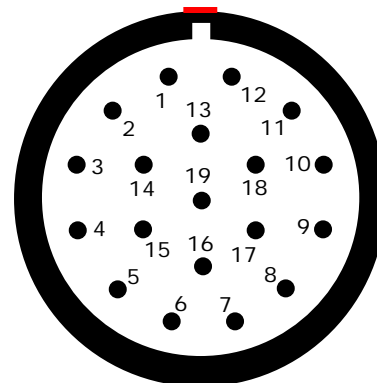
WorldSID Status Box
19-pin ATD connector
 (EGA.2B.319.CLL)



(panel view)

Suggested cable connector P/N:
 FGA.2B.319.CLADxx

TDAS PLUS Mini Distributor
19-pin TDAS SYSTEMS connectors
 (ECG.2B.319.CLL)



(panel view)

Suggested cable connector P/N:
 FGG.2B.319.CLADxx

Pin	Function
1	Main power to DAS, +15 VDC
2	Main power to DAS, +15 VDC
3	Ethernet Tx-
4	Main power ground
5	Ethernet Rx+
6	Ethernet Rx-
7	Ethernet Tx+
8	Main power ground
9	+Event, contact closure to pin 10
10	-Event, contact closure to pin 9
11	Arm status (RS232 level, +V = armed)
12	Power on (short to ground = on)
13	+Status from DAS (5 V = OK)
14	+Start record to DAS, (i.e., 5 V)
15	No connection
16	No connection
17	No connection
18	No connection
19	No connection

Pin	Function
1	Power on (short to ground = ON)
2	No connection
3	Shield (ground)
4	+Start record to DAS, (i.e., 5 V)
5	Signal ground
6	+Status to DAS (5 V = OK)
7	+Status from DAS (5 V = OK)
8	Main power to DAS, +15 VDC
9	Main power to DAS, +15 VDC
10	System active signal
11	Ethernet Rx-
12	Ethernet Rx+
13	Ethernet Tx-
14	Ethernet Tx+
15	+Event, contact closure to pin 19
16	Common for start record and status input (ground)
17	Main power ground
18	Main power ground
19	-Event, contact closure to pin 15