



To: All Customers

From: Chris Osetek – Technology Manager

Date: August 20, 2014

Subject: Upgrade Announcement- Implementation of ICADS System

We continue to evaluate our customers' suggestions for improvements and implement those which provide more useful data and increased productivity.

**Effective 1<sup>st</sup> shift, Monday August 25, 2014, we are pleased to announce the implementation of an additional data collection system called ICADS (In Car Analog Data System).**

ICADS is a standalone, data collection system for any 0-5 V and 0-10 V output measurement instrumentation mounted on the customers test vehicle.

System Features:

1. A total of 20 discrete channels are available via connection to the ICADS box.
  - a. Channels 1 – 10 provide customer supplied instrumentation with 12 V supply and a signal return of 0-10 V.
  - b. Channels 11 – 20 provide customer supplied instrumentation with 5 V supply and a signal return of 0-5 V.
2. Main power to the ICADS box is supplied from two DC (linear) power supplies, each with dedicated ground planes. Maximum amperage is 4A per supply source.
  - a. Channels 1-10 can use a COMBINED TOTAL of 4 A
  - b. Channels 11-20 can use a COMBINED TOTAL of 4 A
3. ICADS is supplied with 20 Deutsch Autosport, 5-pin female, ASL series connector (Part # ASL006-05SN-HE). To prevent accidentally connecting the wrong device to the wrong bank of channels, the pinouts for the 5 V devices and 10 V devices are not the same.

- a. Pinout for Channels 1 – 10 (12 V devices) is as follows:
    - P1 – 12 V Supply
    - P2 – Signal Out
    - P3 – NOT USED
    - P4 – Signal Ground
    - P5 – Power Ground
  - b. Pinout for Channels 11 – 20 (5 V devices) is as follows:
    - P1 – NOT USED
    - P2 – Signal Out
    - P3 – 5 V Supply
    - P4 – Signal Ground
    - P5 – Power Ground
4. A single power cable and a single Cat 5 communications cable will be routed up from the basement along the right front ram, into the engine compartment, through the firewall and connected to the ICADS box located inside the vehicle.

#### Recording of Data:

##### *Customer Sheet*

The Aerodyn Customer Sheet will record all 20 channels of data, for each data point, and two power supply voltages as follows:

1. Channel average voltage for 50 second sample, Columns NU - ON
2. 5 V power supply average voltage for 50 second sample, Column OO
3. 12 V power supply average voltage for 50 second sample, Column OP

If a unique Worksheet is used, the customer is responsible for updating the links to the data. Of course, Aerodyn will assist as necessary.

##### *Raw Data*

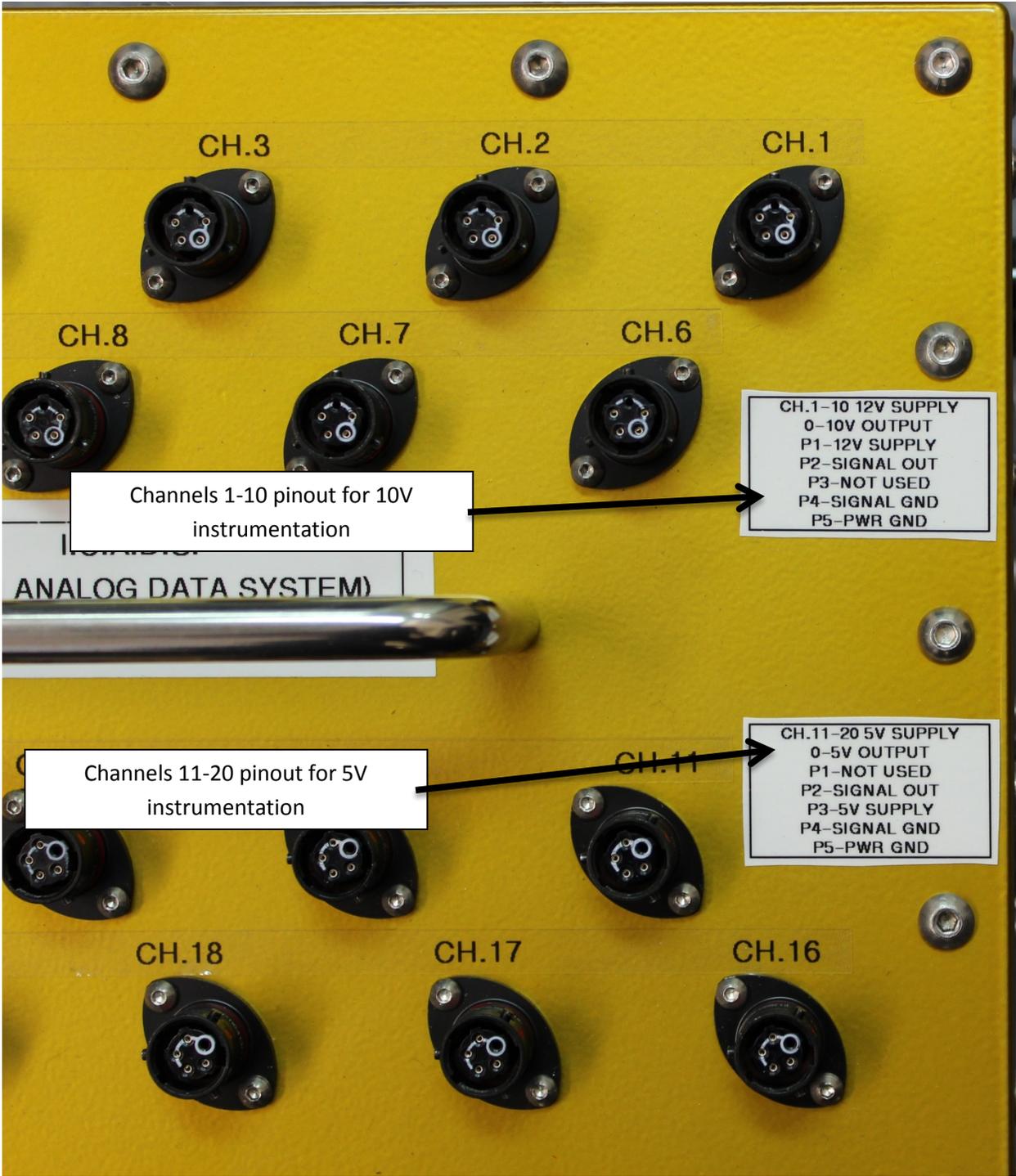
Due to the nature of using customer instrumentation, Aerodyn will provide the raw data to the customer after each run. This raw data will be 2000 samples (50 second sample at 40 Hz) stored in a .tdms binary spreadsheet format in the Customer Folder. The .tdms – Microsoft Excel converter will be installed on the Customer-PC. We also will provide the installer for customers wanting to have the .tdms file converter installed on their own PC.

#### Aerodyn Responsibilities:

1. Install the main control box inside the vehicle
2. Install and connect power and network connection cable to control box inside vehicle
3. Connect instrumentation leads to channels (only if this information is provided from the customer)
4. Disconnect, remove and store all Aerodyn equipment

Customer to provide the following:

1. Request the control box be installed by noting on the Vehicle Specification Sheet for the wind tunnel test
2. Provide a minimum 1" diameter hole thru the firewall, on the passenger side
3. Channel assignments for all instrumentation; this information should be provided on the Vehicle Specification Sheet or noted on the instrumentation leads
4. Individual instrument leads long enough to reach a central location inside the car
5. Ends of all instrumentation leads to be terminated with ASL006-05PN-HE (male) per the pinout diagrams – OR – an adapter provided



Channels 1-10 pinout for 10V instrumentation

CH.1-10 12V SUPPLY  
0-10V OUTPUT  
P1-12V SUPPLY  
P2-SIGNAL OUT  
P3-NOT USED  
P4-SIGNAL GND  
P5-PWR GND

Channels 11-20 pinout for 5V instrumentation

CH.11-20 5V SUPPLY  
0-5V OUTPUT  
P1-NOT USED  
P2-SIGNAL OUT  
P3-5V SUPPLY  
P4-SIGNAL GND  
P5-PWR GND

ANALOG DATA SYSTEM)



Input side to be connected with cables from basement (by AWT)

12VDC-FUSE 4A

5VDC-FUSE 4A

DATA

POWER

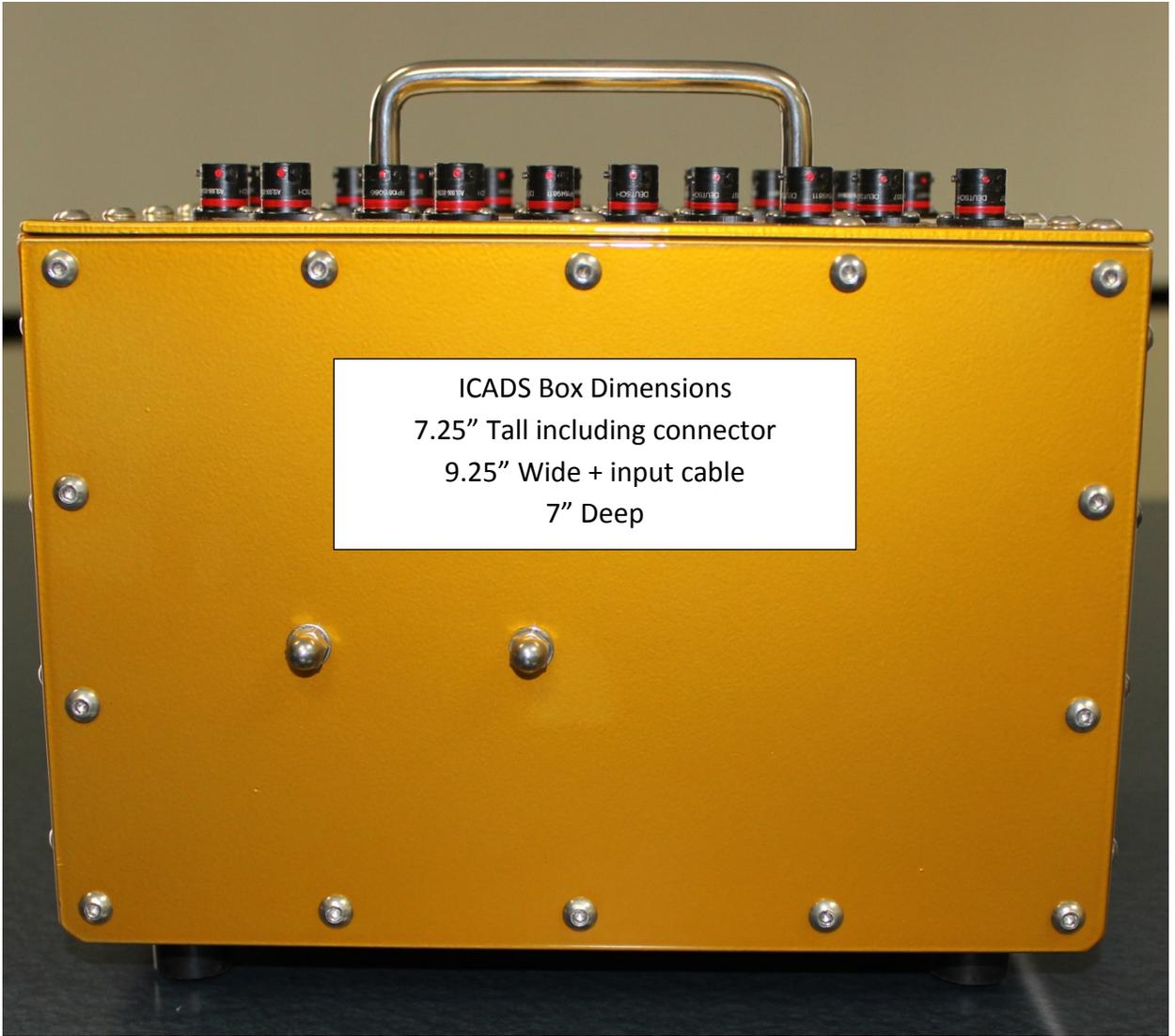


I.C.A.D.S.  
AKA: "THE GOLD BOX"

CH.1-10 12V SUPPLY  
0-10V OUTPUT  
P1-12V SUPPLY  
P2-SIGNAL OUT  
P3-NOT USED  
P4-SIGNAL GND  
P5-PWR GND

Top View of Box  
Input terminals grouped by voltage.  
20 Independent Channels sampled  
simultaneously

CH.11-20 5V SUPPLY  
0-5V OUTPUT  
P1-NOT USED  
P2-SIGNAL OUT  
P3-5V SUPPLY  
P4-SIGNAL GND  
P5-PWR GND



ICADS Box Dimensions  
7.25" Tall including connector  
9.25" Wide + input cable  
7" Deep