IDEAgri
GROWING THE FUTURE

Test Interface

(prototype)

USER MANUAL

Powered by

FONDAZIONE
REI

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Introduction

this document is to describe the operation and functionality of the IDEAGRI test interface

References

ISO/FDIS 11783 documents

Terms and Definitions

SUT system under test

AEF agricultural electronic Industry Foundation

Package Contents

IDEAGRI test interface “BOX”
• **max 12V – 15A** • It is recommended to use **harness** for connection to the panel, to avoid wearing out the connectors with counterparts that have interference tolerances.

General Description

The IDEAGRI test interface is designed to supply automatically the power to the SUT and measure automatically the power from the SUT in case of a TECU, in the way to perform in a smart way the ISOBUS test with the AEF tool SW (National Instrument and Canoe).

BOX panel connectors definition

(1) Main connector, supply power from PS
(Max 15[A] 12[V])

(11) USB C to be connected to laptop for I/O manage in remote mode

ATTENTION! USB_C to USB_C cable may have a specific orientation, if it does not work, try reversing the plug inserction.

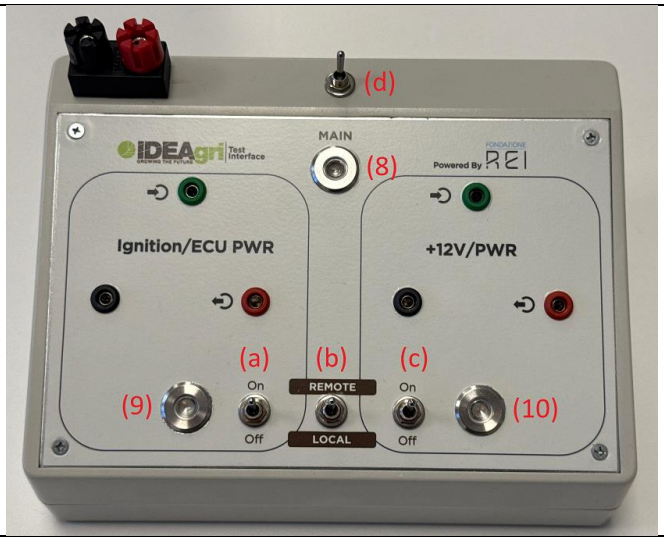
TECU testing

(2) Input for testing ECU_PWR output from TECU
(3) Input for testing PWR output from TECU
(4) ECU_GND* (same of GND)
(5) Output for testing TECU ignition supply for TECU
(6) GND* (same of ECU_GND)
(7) Output for testing TECU 12V supply for TECU

ECU testing

(2) Not used for ECU
(3) Not used for ECU
(4) ECU_GND* (same of GND)
(5) Output for testing ECU – ECU_PWR for ECU
(6) GND* (same of ECU_GND)
(7) Output for testing ECU - PWR for ECU

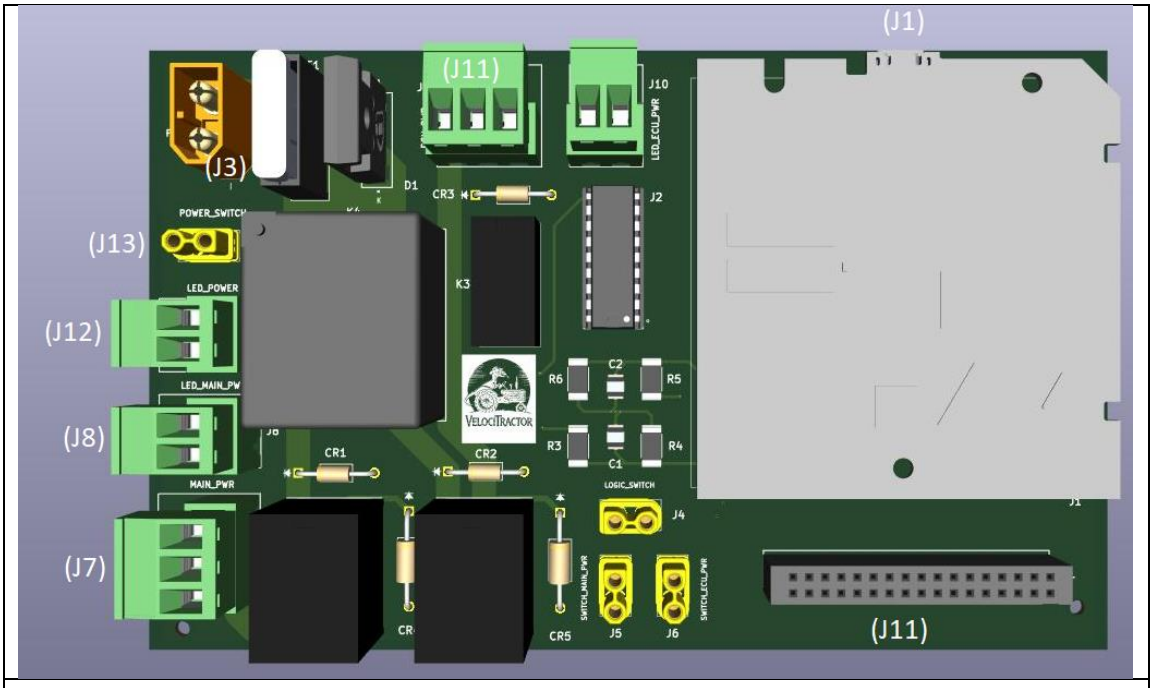
BOX Switch and Led



(a) on/off ECU_PWR/ Ignition in local mode
(b) define the supply of power to ECU_PWR/ Ignition and PWR/12V is local (from switch “a” and switch “b”) or remote (from CT tool by USB C)
(c) on/off PWR/12V on local mode
(d) on/off main power

(8) main power
(9) on/off ECU_PWR/ Ignition, It may not shut down immediately if the SUT discharges current
(10) on/off PWR/12V,

Internal Chassis PCB Layout



NI USB 6000 – PCB powered

J1 NI6000 connector
J3 main power connector
J13 main power switch
J12 main power led
J8 +12V/PWR led
J7 +12V/PWR banana panel connectors (I/O)
J9 ignition/ECU_PWR banana panel connectors (I/O)
J10 ignition/ECU_PWR led
J1 connector for NI6000 USB
J11 connector for eventually other NI6000 USB pin
J4 switch local/remote
J5 switch +12V/PWR
J6 switch ignition/ECU_PWR

Software Drivers

Download the drivers from NI web site (NI DAQMX and ITI_HardwareDriver) refer for installation to TIM_Conformance_Test_User_Manual from AEF database, considering that the NI boards is the NI USB 6000.

NI max settings

Taken from the CANoe Help to CANoe 11.0.81 (SP3):

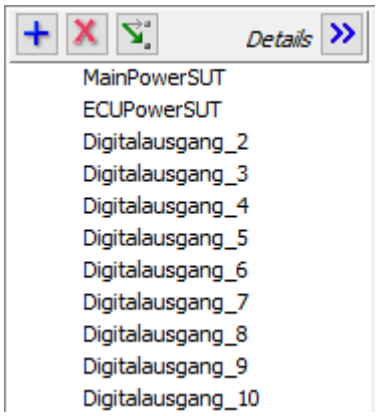
Step by Step Procedure: Installation

1. Install the NI-DAQmx driver.
2. Open the NI Measurement and Automation Explorer (NI MAX).
3. Create one or more Measurement Tasks. ** see additional description below*
4. Save your settings and close NI MAX.
5. Start CANoe and open the Configuration dialog (Other in Hardware ribbon tab).
6. Click on [I/O Device Drivers...].
7. Activate the pl_nidaqmx.dll I/O device driver and close the dialog with [OK].
8. Now the configuration dialog shows all available NI tasks and ports. You can now use these ports in CANoe via system variables (namespace IO).

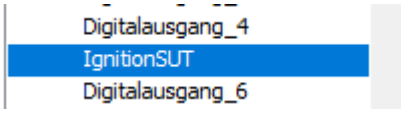
*For Step 3 please do the following steps:

a) Right click on Data **Neighborhood**
b) Create New..
c) NI-DAQmx Task
d) Next
e) Depending on PlugBox type:
   a. for NI-6000: Select Generate signals → Digital Output → **Port Output**
   b. for NI-6008: Select Generate signals → Digital Output → **Line Output**
f) Next
g) Depending on PlugBox type:
   a. for NI-6000: Select the supported physical port.
   b. for NI-6008: Select all supported lines.
h) Next
i) Rename the Task to **DigitalOutputTask**
j) Finish

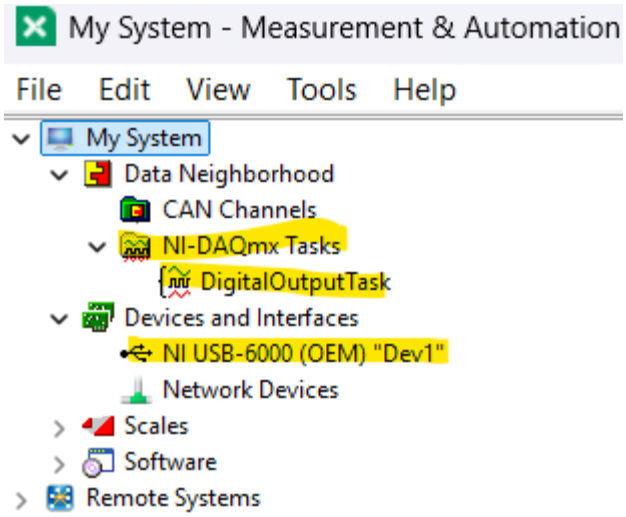
⚠ ***Important*:** The name of the Task shall be set to **DigitalOutputTask**. After the measurement task is created, if NI-6008 hardware is used, rename the channel that corresponds to your SUT's Main power supply to **MainPowerSUT**, rename the channel corresponding to your SUT's ECU power to **ECUPowerSUT**.



If the NI-6000 hardware is used within the PlugBox (e.g. IDEAGRI BOX/ ITC Box), there shall be a channel responsible for both Main and ECU Power. In that case, it shall be renamed to **IgnitionSUT**.



In NI_MAX, for now in NI environment you can have more than one task and more that one device, in CANOE environment for now you cannot have more than one task named **"DigitalOutputTask"**



Test Environment configuration example

Indicare NI6000 e il CAN USB adaptor del brand posseduto (e.g. peak/vector)

E indicare il pin out sotto, il Dev2 può variare a seconda di come è stato chiamato il device su NImax

Digital Signal Assignments

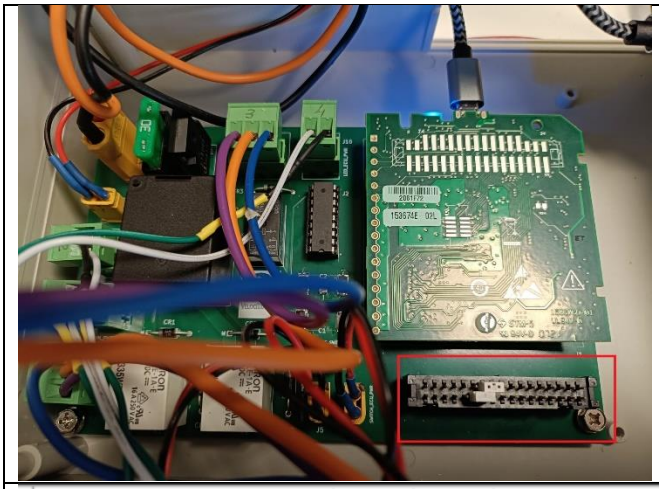
	Signal Name	Input	Output	Path
▶	Power Supply	☐	☑	Dev2/Port0/line0
	Ignition Switch	☐	☑	Dev2/Port0/line1

	Signal Name	Input	Output	Path
	Ignition Switch	☐	☑	Dev2/Port0/line1
	PS01	☑	☐	Dev2/Port0/line2
	IS01	☑	☐	Dev2/Port0/line3

Analog Signal Assignments

	Signal Name	Input	Output	Path
▶	Power Supply Voltage	☑	☐	Dev2/ai1
	ECU Power Supply Voltage	☑	☐	Dev2/ai0
*		☐	☐	

Finchè rimangono hardcoded i pin sul tool vector da mantenere la configurazione sopra, una volta sbloccata da rimuovere il connettore sotto la scheda NI e applicare la configurazione sotto per i soli output.



Signal Name	Input	Output	Path
Power Supply	☐	☑	Dev2/Port0/line2
Ignition Switch	☐	☑	Dev2/Port0/line3