Modernising Undergraduate Renewable Energy Education: EU Experience for Jordan
MUREE
Project Number: 530332-TEMPUS-1-2012-1-JO-TEMPUS-JPCR
Services Adaptation to Connect Remote Labs to VLE

Annex I: List of laboratories Parameters

Wind and Solar Trainer Inputs					
NI-Hardware	**Name**	**Location on Diagram**	**Description**	**Unit**	**Measured/ Calculated**
NI-9208 Channel AI 0	Solar Cell Current	At Point 29	Solar Cell Raw Current	Milliampere (mA)	Measured
NI-9208 Channel AI 0	Solar Cell Current	At Point 29	Solar Cell Calculated Current	Ampere (A)	Calculated
NI-9208 Channel AI 1	Solar Cell Voltage	At Point 28	Solar Cell Raw Voltage	Milliampere (mA)	Measured
NI-9208 Channel AI 1	Solar Cell Voltage	At Point 28	Solar Cell Calculated Voltage	Volt (V)	Calculated
NI-9208 Channel AI 2	DC-Load Current	At Point 27	DC-Load Raw Current	Milliampere (mA)	Measured
NI-9208 Channel AI 2	DC-Load Current	At Point 27	DC-Load Calculated Current	Ampere (A)	Calculated
NI-9208 Channel AI 3	DC-Load Voltage	At Point 26	DC-Load Raw Voltage	Milliampere (mA)	Measured
NI-9208 Channel AI 3	DC-Load Voltage	At Point 26	DC-Load Calculated Voltage	Volt (V)	Calculated
NI-9208 Channel AI 4	Wind Turbine Current	At Point 25	Wind Turbine Raw Current	Milliampere (mA)	Measured
NI-9208 Channel AI 4	Wind Turbine Current	At Point 25	Wind Turbine Calculated Current	Ampere (A)	Calculated
NI-9208 Channel AI 5	Wind Turbine Voltage	At Point 24	Wind Turbine Raw Voltage	Milliampere (mA)	Measured
NI-9208 Channel AI 5	Wind Turbine Voltage	At Point 24	Wind Turbine Calculated Voltage	Volt (V)	Calculated
NI-9208 Channel AI 6	AC-Load Current	At Point 23	AC-Load Raw Current	Milliampere (mA)	Measured
NI-9208 Channel AI 6	AC-Load Current	At Point 23	AC-Load Calculated Current	Ampere (A)	Calculated

NI-9208 Channel AI 7	AC-Load Voltage	At Point 22	AC-Load Raw Voltage	Milliampere (mA)	Measured
NI-9208 Channel AI 7	AC-Load Voltage	At Point 22	AC-Load Calculated Voltage	Volt (V)	Calculated
NI-9208 Channel AI 8	Radiation Sensor	At Point 21	Radiation Sensor Raw Value	Milliampere(mA)	Measured
NI-9208 Channel AI 8	Radiation Sensor	At Point 21	Radiation Sensor Calculated Value	Watt per Meter Square (W/m^2)	Calculated
NI-9208 Channel AI 9	Ambient Temperature	At Point 20	Ambient Raw Temperature	Milliampere(mA)	Measured
NI-9208 Channel AI 9	Ambient Temperature	At Point 20	Ambient Calculated Temperature	Siliceous Degree (C^o)	Calculated
NI-9208 Channel AI 10	Wind Speed	At Point 19	Wind Raw Speed	Milliampere(mA)	Measured
NI-9208 Channel AI 10	Wind Speed	At Point 19	Wind Calculated Speed	Mile per Hour(mph)	Calculated
NI-9208 Channel AI 11	Surface Temperature	At Point 18	Surface Raw Temperature	Milliampere(mA)	Measured
NI-9208 Channel AI 11	Surface Temperature	At Point 18	Surface Calculated Temperature	Siliceous Degree (C^o)	Calculated

Wind and Solar Outputs			
NI-Hardware	**Name**	**Location on Diagram**	**Description**
NI-9263 Channel AO 0	Fan Speed	At Point 17	Control the speed of the Fan by giving it Analogue Value.
NI-9375 Channel DO 0	Solar Cell to Load Box	At Point 4	True: Solar Cell Voltage to the Load Box. False: Solar Cell Voltage Out.
NI-9375 Channel DO 1	DC-Load	At Point 3	True: DC-Load Connect to the Charge controller. False: DC-Load Disconnect to the Charge controller.
NI-9375 Channel DO 2	Enable Variable Frequency Drive	At Point 15	True: Enable Variable Frequency Drive. False: Disable Variable Frequency Drive.

NI-9375 Channel DO 3	Batteries to inverter	At Point 14	True: Battery Connected to the Inverter. False: Battery Disconnected to the Inverter.
NI-9375 Channel DO 4	Light Source 2	At Point 2	True: Light Source Two is ON. False: Light Source Two is OFF.
NI-9375 Channel DO 5	Light Source 1	At Point 1	True: Light Source One is ON. False: Light Source One is OFF.
NI-9375 Channel DO 6	Inverter Power	At Point 5	True: Inverter is ON. False: Inverter is OFF.
NI-9375 Channel DO 7	Variable Frequency Drive Power	At point 16	True: Variable Frequency Drive is ON. False: Variable Frequency Drive is OFF.
NI-9375 Channel DO 8	Short Circuit Resistor	At point 6	True: Voltage of the device to the Short Circuit Resistor. False: Voltage of the device Open Circuit.
NI-9375 Channel DO 9	1 Ohm Resistor	At Point 7	True: Voltage of the device to the 1 Ohm Resistor. False: Voltage of the device Open Circuit.
NI-9375 Channel DO 10	5 Ohm Resistor	At Point 8	True: Voltage of the device to the 5 Ohm Resistor. False: Voltage of the device Open Circuit.