Appendice B

Stazione mobile del Dipartimento dell'Energia

Appendice B

Pannelli Fotovoltaici installati N°8

MODULI FOTOVOLTAICI

SEM 160 SERIE S

I moduli SEM 160 S sono realizzati con 72 celle 125 x 125 mm in silicio monocristallino, protette verso l'esterno da un vetro temprato ad altissima trasparenza e da un foglio in Tedlar, il tutto incapsulato sottovuoto ad alta temperatura tra due fogli di EVA (Ethylene/Vinyl/Acetate) ed una robusta cornice in alluminio anodizzato. Il processo di produzione SOLON S.p.A. garantisce alle celle fotovoltaiche la massima protezione anche se sottoposte alle più gravose condizioni di lavoro ed alle più difficili condizioni ambientali. Grazie all'affidabilità ed alle ottime prestazioni, i moduli SEM 160 S sono adatti all'utilizzo sia in impianti connessi a rete che in quelli ad isola con accumulatori. I moduli fotovoltaici sono prodotti nello stabilimento SOLON S.p.A. certificato ISO 9001/00. I moduli sono forniti di cavi ad innesto rapido tipo MC, lunghezza 100 cm.

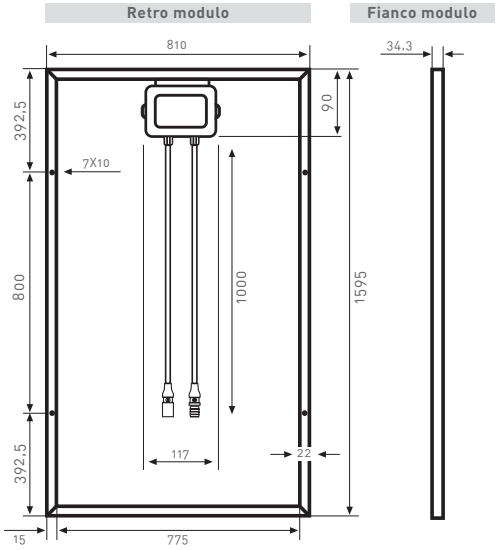
VERSIONI DISPONIBILI

SEM 160 S - L	Laminato (dim. 1590 x 805 x 4 ± 2mm)
SEM 160 S - LT	Laminato con Tedlar trasparente (dim. 1590 x 805 x 4 ± 2mm)
SEM 160 S - LG	Laminato in vetro-vetro (dim. 1590 x 805 x 8 ± 2mm)
SEM 160 S - LGC	Laminato in vetro-camera (dim. 1590 x 805 x 24 ± 2mm)

CARATTERISTICHE TECNICHE

Tipo modulo	Vetro - Tedlar (TPT)
Dimensione modulo (± 2mm)	1595 x 810 x 34 mm
Superficie modulo	1,292 m^2
Tipo celle	Silicio monocristallino
Dimensione celle	125 x 125 mm
Numero celle	72
Spessore vetro temprato	4 mm
Peso	16 Kg

DIMENSIONI*



*Valori espressi in millimetri

CARATTERISTICHE ELETTRICHE*

		SEM 160/160	SEM 160/165	SEM 160/170	SEM 160/175	SEM 160/180
Potenza di picco	[W]	160	165	170	175	180
Tensione al punto di max potenza (Vmp)	[V]	35,3	35,9	36,1	36,15	36,15
Corrente al punto di max potenza (Imp)	[A]	4,55	4,6	4,72	4,85	5
Tensione a circuito aperto (Voc)	[V]	43,9	44,2	44,7	44,9	45
Corrente in corto circuito (Isc)	[A]	4,9	5	5,1	5,3	5,4

- Coefficiente di temperatura di Isc: 2 mA/K
- Coefficiente di temperatura di Voc: -170 mV/K
- Coefficiente di temperatura di Pmax: -0,5 %/K
- NOCT: 50 °C
- Tensione massima di sistema: 1000 V
- Range termico di funzionamento: da -40 a + 85 °C
- Tolleranza nei parametri elettrici: ± 5%

TÜV NORD CE Electrical Protection Class II EUROPEAN COMMISSION Joint Research Centre

***STC** (Standard Test Conditions): 1000 W/m^2; 25 °C; AM 1.5;

Garanzia: 20 anni sulla potenza erogata ≥80% - 2 anni su difetti di fabbricazione (vedi Condizioni Generali di Vendita e Garanzia)

Appendice B

Piranometro

Sonde - Radiazione
Probes - Radiation

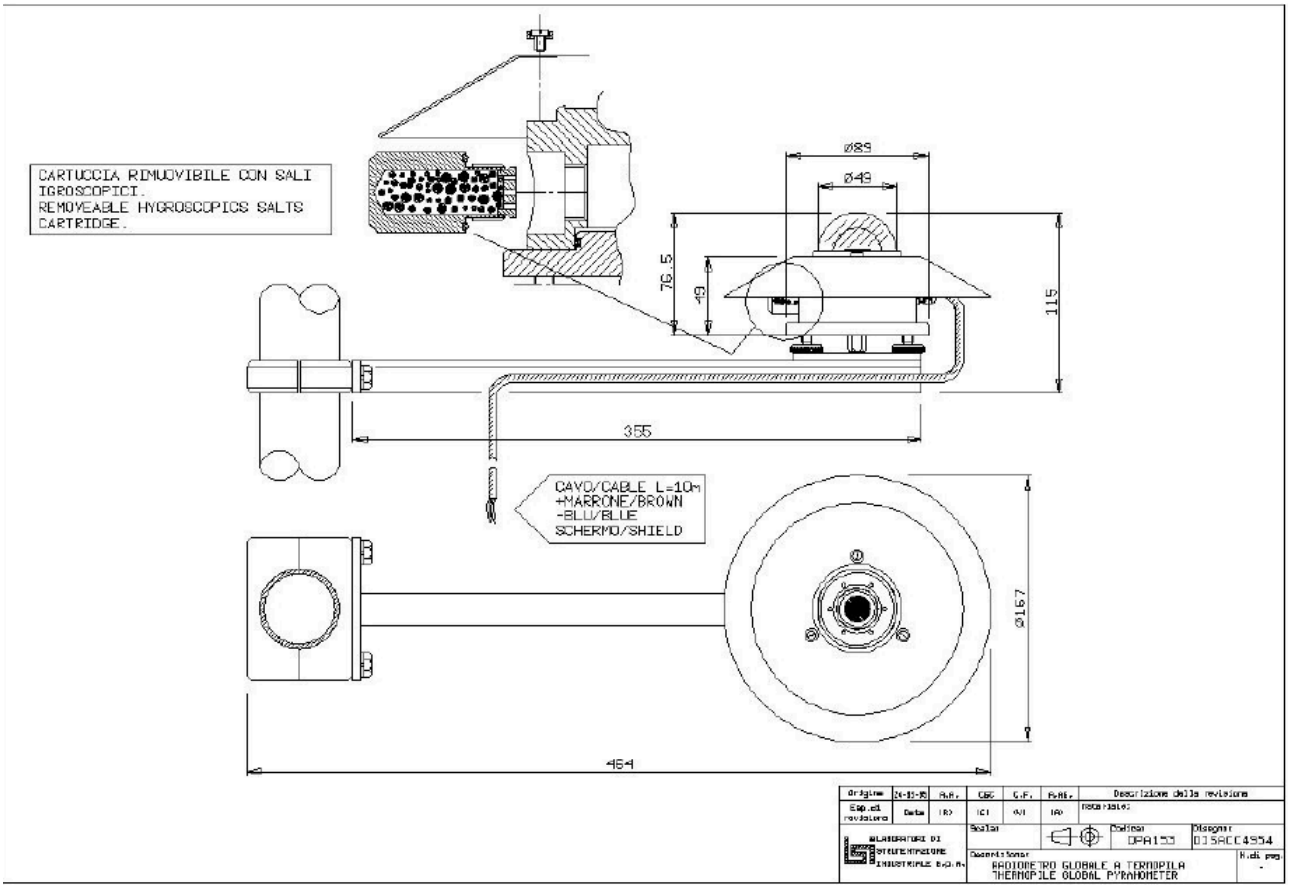
MW8501.8

Caratteristiche comuni (salvo diversamente indicato):
Numero di canali: n.1 (analogico).
Elemento sensibile: cella al silicio.
Limiti ambientali: -40...+80°C .
Utilizzo: su ripiano o su stativo BVA306.
Ricalibrazione: ogni 24 mesi.
Manutenzione: pulizia periodica del diffusore.
Cavo: 2 m in PVC (limite amb. -15...+70°C).
Consumo: 5 mA.

Common characteristics (unless otherwise indicated):
No. of inputs used: 1 (analogue).
Sensitive element: silicon cell.
Environmental range: -40...+80°C.
Use: on shelf or on stand BVA306.
Recalibration: every 24 months.
Maintenance: periodic cleaning of the diffuser.
Cable: 2 m in PVC (environmental range -15...+70°C).
Power consumption: 5 mA.

BSR153

Sonda per la misura della radiazione globale in classe 1 (ISO9060) a elemento termopila		*Type 1 (ISO9060) sensor to measure global radiation, thermopile sensitive element*
Campo di misura	0...1500 Wm^2	*Measurement range*
Accuratezza	0,5%VL +5 Wm^{-2}	*Accuracy*
Sensibilità spettrale	305....2800 nm	*Spectral range*
Elemento sensibile	Termopila / *Thermopile*	*Sensitive element*
Utilizzo	Su ripiano o a palo diam. 50 con supporti *DYA034+DYA051* *On surface or pole diam. 50 mm by means DYA034+DYA051 arms*	*Use*



LSI SpA - Loc. Dosso - 20090 Settala (MI) - Italy *www.lsi-lastem.it*

1) Caratteristiche tecniche / Technical features	
Il piranometro LSI è un misuratore della radiazione solare globale (diretta e diffusa) che raggiunge la superficie terrestre. Con il piranometro è possibile (vedi WMO n°8 6th ed.) misurare la radiazione globale, ma anche quella quella solare riflessa (albedometro) e la radiazione diffusa con uso della banda di occultazione. Il piranometro misura la radiazione compresa tra i 300 e 3000 nm, con una visuale di 2π steradianti. L'elemento di misura è una termopila con superficie esterna ricevente annerita con vernice nero opaco C10 Nextel che ha una riflessività < del 2% (ε>0.98) nel campo spettrale del sensore.	The LSI pyranometer is an instrument to measure the global sun radiation (direct and diffuse) which reaches the terrestrial surface. With this instrument it is possible (see WMO n°8 6th ed.) to measure not only the global radiation, but also the reflected sun radiation (albedometer) and the diffuse radiation by means of the occultation band. The solarimeter measures radiation values within 300 and 3000 nm, with a visibility of 2π steradians. The element used to for the measurement is a thermopile whose external surface has been darkened with matte black paint C10 Nextel bearing a reflecting power < than 2% (e>0.98) in the spectral area of the sensor.

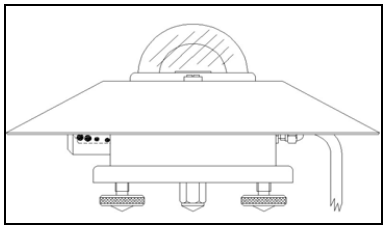


Fig.1

Appendice B

LSI SpA - Loc. Dosso - 20090 Settala (MI) - Italy www.lsi-lastem.it

Confronto con specifiche richieste per i piranometri in “first class” (ISO 9060) o in “good quality” (WMO n°8 6th ed.)	Comparison between the specifications required for the solarimeters in “first class” (ISO 9060) or in “good quality” (WMO n°8 6th ed.)

Parametri	Prescriz. ISO 9060 (1990)	Prescrizioni WMO n°8 6th ed. par 7	LSI	Parameters
Tempo di risposta 95% (sec)	< 30	< 30	T90 = 27	Response time 95% (sec)
Deriva termica W/m^2 (5 °C/h)	± 4	± 4	< ± 4	Thermal change W/m^2 (5 °C/h)
Stabilità (% change/year)	± 1.5	± 1.5	< ± 1.5	Stability (% change/year)
Errore direzionale (azimuth+coseno) W/m^2 (at 1000 W/m^2) 0 < θ <80 °	< ±20	< ±20	< ± 20	Directional (azimuth+cosine) error W/m^2 (at 1000 W/m^2) 0 < θ <80 °
Risposta alla temp. (campo di 50 K)	± 4%	± 4%	<4% (-10 + 40°C)	Temperature response (50 K range)
Non linearità % (at 1000 W/m^2)	± 1	± 1	< ± 1	Non linearity % (at 1000 W/m^2)
Incertezza 95% livello di confidenza. Totale giornaliero.	nd	< 5%	< 5%	Achievable uncertainty 95% confidential level. Daily totals.

Appendice B

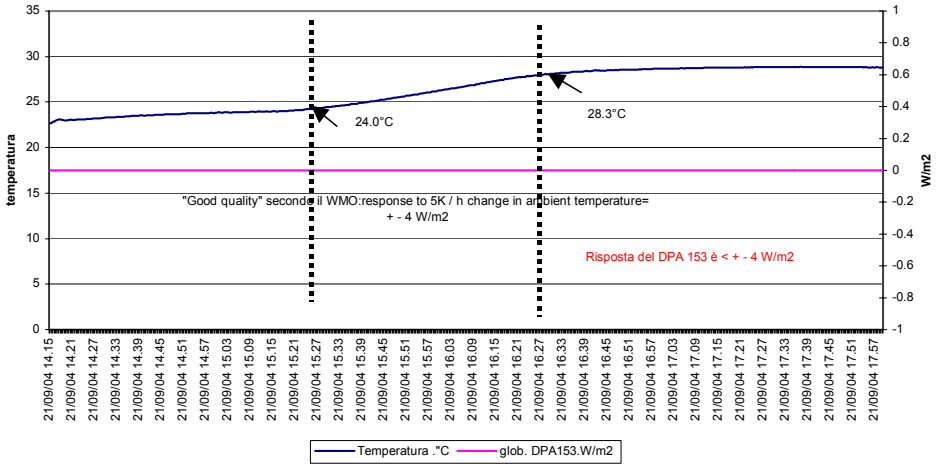
LSI SpA - Loc. Dosso - 20090 Settala (MI) - Italy www.lsi-lastem.it

Caratteristiche tecniche/Technical Features

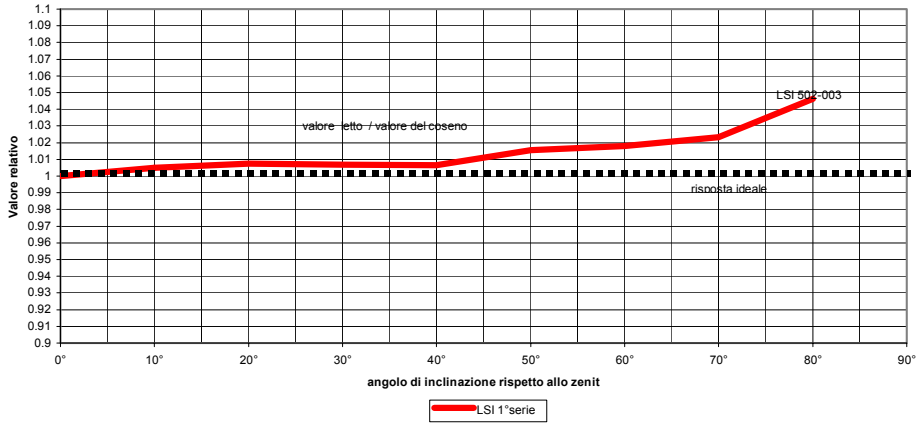
Normativa	Prescriz. ISO 9060 IS0 (1990)	Prescrizioni WMO Good quality	LSI	Standard
Risposta spettrale (nm)	300 - 3000	300 - 3000	300 - 3000	Spectral response (nm)
Impedenza (ohm)	nd	nd	1000-1300	Impedance (ohm)
Temperatura operativa (°C)	nd	nd	-40 + 80	Operative temperature (°C)
Rintracciabilità al WRC-WRR	si	si	Taratura con un sensore di riferimento certificato al WRC di Davos.	Traceability at the WRC-WRR
Sensibilità della bolla (gradi)	nd	nd	0.5	Bubble sensitivity (degrees)
Sensibilità radiometro ($\mu V/W/m^2$)	nd	nd	30 – 45	Radiometer sensitivity ($\mu V/W/m^2$)
Max irradianza W/m^2	nd	nd	2000	Max. irradiance W/m^2
N° di duomi	2	2	2	N° of small astrodomes
Vetro	nd	nd	Schott NK5	Glass
Schermo esterno	si	si	si	External screen
Peso DPA, BSR153	nd	nd	1,0 kg (con cavo 10 metri)	Weight DPA, BSR153
Peso DPA 554-559	nd	nd	1,7 kg (senza cavo)	Weight DPA 554-559
Essiccante	nd	nd	Gel di silice	Esiccating agent

LSI SpA - Loc. Dosso - 20090 Settala (MI) - Italy *www.lsi-lastem.it*

Misura dell'offset di un DPA 153 globale LSI a termopila. 1/10/04
Misura in camera climatica con programma " 5°C in 1 ora".
Delta = 4.3° C/ora

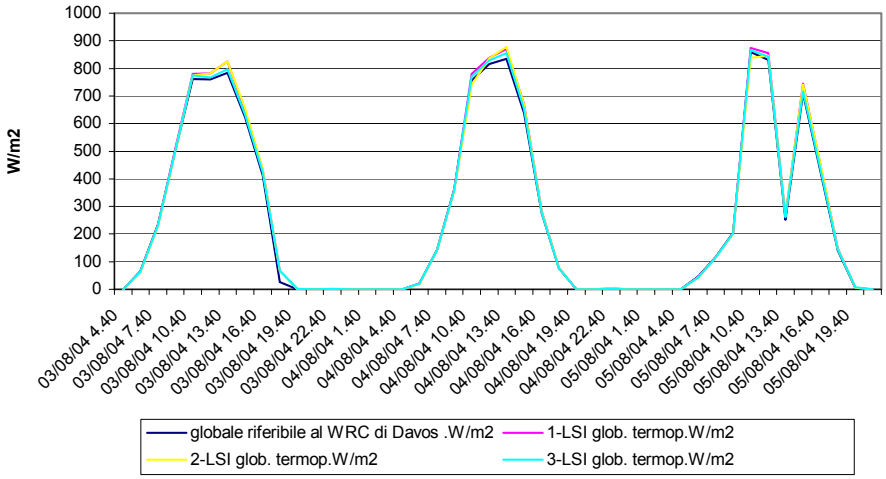


Risposta al coseno.
Misure in tunnel della luce di 1 rad. globale LSI a termopila. 22/02/05



Appendice B

Confronto in terrazza (Premenugo di Settala, MI) tra 3 glob. LSI a termopila e un globale riferibile al WRC di Davos. 3 - 5 agosto 2004.



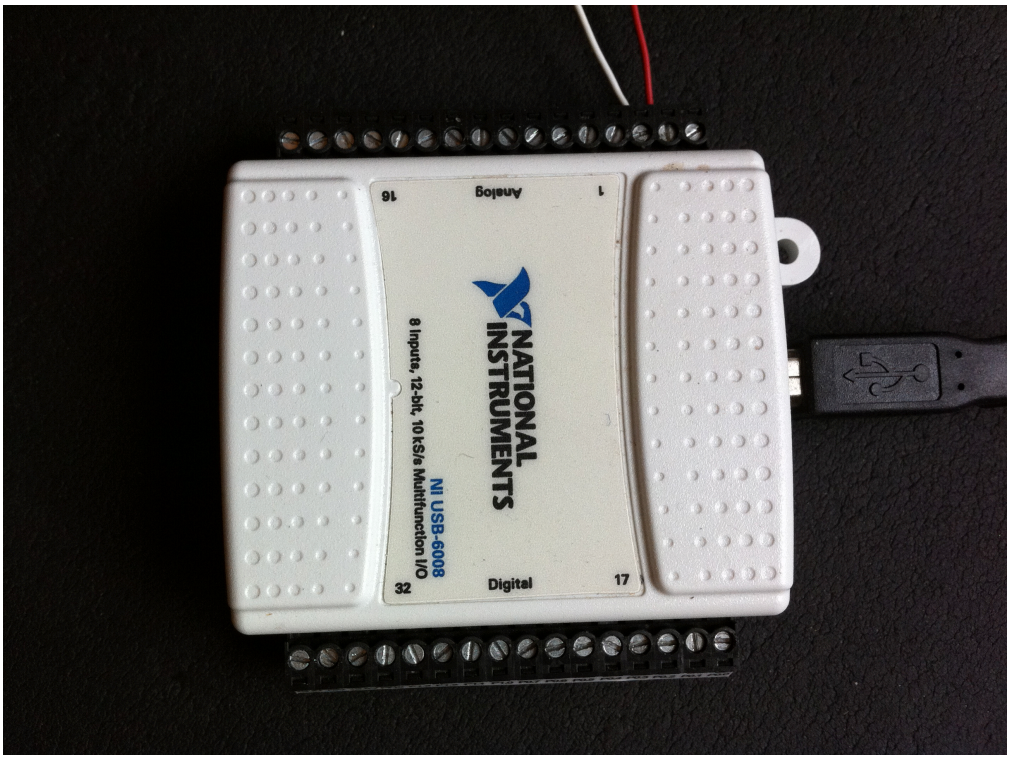
Energia totale giornaliera (daily)	globale riferibile al WRC di Davos .W/m^2	1-LSI glob. termop.W/m^2	2-LSI glob. termop.W/m^2	3-LSI glob. termop.W/m^2
Daily 3-agosto 05	22.54 MJ/m^2	23.48 MJ/m^2	23.38 MJ/m^2	23.03 MJ/m^2
Daily 4-agosto 05	21.16 MJ/m^2	21.81 MJ/m^2	21.58 MJ/m^2	21.5 MJ/m^2
Daily 5-agosto 05	19.43 MJ/m^2	20.05 MJ/m^2	19.78 MJ/m^2	19.65 MJ/m^2

Nella tabella sono inseriti i valori di radiazione globale al suolo nelle principali città italiane nei vari mesi dell'anno (i dati sono presi dal volume “la radiazione solare globale al suolo in Italia” – a cura dell'ENEA). I valori sono espressi in MJ/m 2 giorno.

Località	gen	feb	mar	apr	mag	giu	lug	ago	set	ott	nov	dic
Torino	5.0	8.1	13.3	17.1	20.0	22.4	22.2	18.8	14.1	9.8	6.1	4.4
Aosta	3.6	6.2	11.8	16.0	19.4	21.8	21.5	18.2	13.6	9.4	5.4	3.6
Milano	5.2	8.1	13.6	17.3	20.4	22.6	22.7	19.3	14.3	9.6	5.9	4.3

Appendice B

Schede di acquisizione



Appendice B

Technical Sales
Italy
02 41309.1 (Milano), 06 520871 (Roma)
ni.italy@ni.com

NI USB-6008

12-Bit, 10 kS/s Low-Cost Multifunction DAQ

- 8 analog inputs (12-bit, 10 kS/s)
- 2 analog outputs (12-bit, 150 S/s); 12 digital I/O; 32-bit counter
- Bus-powered for high mobility; built-in signal connectivity
- OEM version available
- Compatible with LabVIEW, LabWindows/CVI, and Measurement Studio for Visual Studio .NET
- NI-DAQmx driver software and NI LabVIEW SignalExpress LE interactive data-logging software

Overview

The National Instruments USB-6008 provides basic data acquisition functionality for applications such as simple data logging, portable measurements, and academic lab experiments. It is affordable for student use, but powerful enough for more sophisticated measurement applications. Use the NI USB-6008 with the included ready-to-run data logger software to begin taking basic measurements in minutes, or program it using LabVIEW or C and the included NI-DAQmx Base measurement services software for a custom measurement system.

To supplement simulation, measurement, and automation theory courses with practical experiments, NI developed a USB-6008 Student Kit that includes a copy of the LabVIEW Student Edition. These kits are exclusively for students, giving them a powerful, low-cost, hands-on learning tool. Visit the NI academic products page for more details.

For faster sampling, more accurate measurements, calibration support, and higher channel count, consider the NI USB-6210 and NI USB-6211 high-performance USB data acquisition devices.

Every USB data acquisition module includes a copy of NI LabVIEW SignalExpress LE so you can quickly acquire, analyze and present data without programming. In addition to LabVIEW SignalExpress, USB data acquisition devices are compatible with the following versions (or later) of NI application software – LabVIEW 7.x, LabWindows™/CVI 7.x, or Measurement Studio 7.x. USB data acquisition modules are also compatible with Visual Studio .NET, C/C++, and Visual Basic 6.

Specifications

Specifications Documents

- Specifications (3)
- Data Sheet

Specifications Summary

General	
Product Name	USB-6008

Appendice B

Product Family	Multifunction Data Acquisition
Form Factor	USB
Part Number	779051-01
Operating System/Target	Linux , Mac OS , Pocket PC , Windows
DAQ Product Family	B Series
Measurement Type	Voltage
RoHS Compliant	Yes
Analog Input	
Channels	4 , 8
Single-Ended Channels	8
Differential Channels	4
Resolution	12 bits
Sample Rate	10 kS/s
Throughput (All Channels)	10 kS/s
Max Voltage	10 V
Maximum Voltage Range	-10 V , 10 V
Maximum Voltage Range Accuracy	138 mV
Minimum Voltage Range	-1 V , 1 V
Minimum Voltage Range Accuracy	37.5 mV
Number of Ranges	8
Simultaneous Sampling	No
On-Board Memory	512 B
Analog Output	
Channels	2
Resolution	12 bits
Max Voltage	5 V
Maximum Voltage Range	0 V , 5 V
Maximum Voltage Range Accuracy	7 mV
Minimum Voltage Range	0 V , 5 V
Minimum Voltage Range Accuracy	7 mV
Update Rate	150 S/s

Appendice B

Current Drive Single	5 mA
Current Drive All	10 mA
Digital I/O	
Bidirectional Channels	12
Input-Only Channels	0
Output-Only Channels	0
Number of Channels	0 , 12
Timing	Software
Logic Levels	TTL
Input Current Flow	Sinking , Sourcing
Output Current Flow	Sinking , Sourcing
Programmable Input Filters	No
Supports Programmable Power-Up States?	No
Current Drive Single	8.5 mA
Current Drive All	102 mA
Watchdog Timer	No
Supports Handshaking I/O?	No
Supports Pattern I/O?	No
Maximum Input Range	0 V , 5 V
Maximum Output Range	0 V , 5 V
Counter/Timers	
Counters	1
Buffered Operations	No
Debouncing/Glitch Removal	No
GPS Synchronization	No
Maximum Range	0 V , 5 V
Max Source Frequency	5 MHz
Pulse Generation	No
Resolution	32 bits
Timebase Stability	50 ppm
Logic Levels	TTL

Appendice B

Physical Specifications	
Length	8.51 cm
Width	8.18 cm
Height	2.31 cm
I/O Connector	Screw terminals
Timing/Triggering/Synchronization	
Triggering	Digital
Synchronization Bus (RTSI)	No

Pricing

Special Offer: Free UPS Standard shipping for online Credit Card orders.
NEW! National Instruments now accepts credit card purchases. Pay online with a credit card and receive FREE UPS Standard shipping (limited time offer). All discounts are subject to final verification and approval by National Instruments.

Prices are quoted on standard Net 30 days payment from the date of invoice.

NI USB-6008 Complete Package

Each NI USB-6008 requires:

NI USB-6008	Software

Roll over icons above to learn why you need each item in the package.

NI USB-6008 and Accessories

Hardware Subtotal: € 171

NI USB-6008 - 779051-01	Qty	€ 171 each

Optional Accessories Hide

USB 6008/09 Accessory Kit - 779371-01	Qty	€ 39 each
USB 6000 Series Prototyping Accessory - 779511-01	Qty	€ 39 each

Software

Software Subtotal: € 0
Note : You should only purchase this device without software if you already own compatible application software. [View Full List]

NI LabVIEW SignalExpress Development System -	Qty	€ 1,059 each

Appendice B

779037-35

Change Software
Learn about all compatible software and get recommendations based on your needs.

Estimated Shipping Days: 1 - 2
Package Price: € 171

Add to Cart >>

Guarantee your price for 30 days (learn more) Instant Quote

Save for Later

You need software to interface with your hardware and to collect, analyze, present, and store your measurements. This board is compatible with a variety of programming languages, including LabVIEW, C/C++, Visual Basic, and .NET. LabVIEW provides the easiest integration with all of your NI hardware and is recommended to maximize your hardware investment.
You have selected **Italy** as the country where you will use the product(s) (change).

Resources

Additional Product Information

- Manuals (4)
- Dimensional Drawings
- Product Certifications

Related Information

- NI USB Data Acquisition for OEM
- Download NI Data Acquisition Drivers
- NI LabVIEW SignalExpress Interactive Data-Logging Software

Appendice B

Declaration of Conformity

according to ISO/IEC Guide 22 and BS 7514

Manufacturer:

National Instruments KTA
H-4031 Debrecen
Hatar ut 1/A Hungary

National Instruments
11500 North MoPac Expressway
Austin, Texas 78759-3504 USA

The manufacturer hereby declares that the product

Product Name: USB Data Acquisition Device

NI Model Numbers: USB-6008, NI USB-6008

CEC Model Numbers: CEC usbDAQ/108

Product Options: All

Product Category: Electrical equipment for measurement, control, and laboratory use.

conforms to the following directives, standards or other normative documents:

Council Directive 89/336/EEC, Electromagnetic Compatibility, EN 61326-1:1997 A2:2001

Emission: ISM Group 1, Class A (Referencing ANSI C63.4)

EN 55011:1998 Distance 10 meters, emissions < 1.0 GHz. (FCC Part-15 Class A > 1.0 GHz)

Immunity: Test Selection & Levels: EN 61326 Table 1 - Minimum Requirements. Performance Criteria: EN 61326 Table 2 - Continuous; Non-Monitored Operation

EN 61000-4-2: 1995	4.0 kV by Contact, 4.0 kV by Air
EN 61000-4-3: 1996	3.0 V/m, 80% AM with 1 kHz Sine, 80. 1000 MHz. 900 MHz, 200 Hz, Pulsed RF
EN 61000-4-4: 1995	1.0 kV AC Power Lines
EN 61000-4-5: 1995	0.5 kV Mains DM, 1.0 kV Mains CM[1]
EN 61000-4-6: 1996	3 V RMS, 80% AM with 1 kHz Sine, 0.15. 80 MHz AC Mains CM[2,]
EN 61000-4-11: 1994	AC Mains, 1 cycle/100% Interruption

[1]See EN 61326-1 for surge requirements for shielded cables and\or cables > 30 meters.

[2]Note that EN 61326-1 exempts the EN 61000-4-6 test for I/O ports that require screened (shielded) cable.

Council Directive 73/23/EEC, Low Voltage Safety, EN 61010-1

Meets the essential requirements for safety.

Supplementary Information

- This product has met the harmonized requirements of FCC Part 15, ICES-003, EN 55011 and Australian Communication Authority (ACA) requirements.

When and Where Issued
13 September, 2005
Austin, Texas
USA

Authorized Signature
Name: Patrick Webb
Position: Compliance Engineer

Marks of Compliance

CE

European Contact

National Instruments Corporation (U.K.) Ltd.
Measurement House
Newbury Business Park, London Road
Newbury, Berkshire RG14 2PS
Tel (44) 1635 523545 Fax (44) 1635 523154

Technical Sales
Italy
02 41309.1 (Milano), 06 520871 (Roma)
ni.italy@ni.com

NI 9211

4-Channel, 14 S/s, 24-Bit, ±80 mV Thermocouple Input Module

- 4 thermocouple or ±80 mV analog inputs
- 24-bit resolution; 50/60 Hz noise rejection
- Hot-swappable operation
- -40 to 70 °C operating range
- NIST-traceable calibration

Overview

The National Instruments NI 9211 thermocouple input module for use with NI CompactDAQ and CompactRIO chassis includes a 24-bit delta-sigma ADC, antialiasing filters, open-thermocouple detection, and cold-junction compensation for high-accuracy thermocouple measurements. The NI 9211 contains NIST-traceable calibration and channel-to-earth ground double isolation barrier for safety, noise immunity, and high common-mode voltage range.

Specifications

Specifications Documents

- Specifications
- Data Sheet

Specifications Summary

General	
Product Name	NI 9211
Product Family	Industrial I/O
Form Factor	CompactRIO , CompactDAQ
Part Number	779001-01
Operating System/Target	Real-Time , Windows
Measurement Type	Temperature , Thermocouple , Voltage
Isolation Type	Ch-Earth Ground Isolation
RoHS Compliant	Yes

Appendice B

Signal Conditioning	Cold-junction compensation
Analog Input	
Channels	4 , 0
Single-Ended Channels	0
Differential Channels	4
Resolution	24 bits
Sample Rate	14 S/s
Max Voltage	80 mV
Maximum Voltage Range	-80 mV , 80 mV
Minimum Voltage Range	-80 mV , 80 mV
Simultaneous Sampling	No
Analog Output	
Channels	0
Digital I/O	
Bidirectional Channels	0
Input-Only Channels	0
Output-Only Channels	0
Number of Channels	0
Counter/Timers	
Counters	0
Physical Specifications	
Length	9 cm
Width	2.3 cm
I/O Connector	Screw terminals
Minimum Operating Temperature	-40 °C
Maximum Operating Temperature	70 °C
Minimum Storage Temperature	-40 °C
Maximum Storage Temperature	85 °C
Timing/Triggering/Synchronization	
Triggers cDAQ Chassis	No

purchase, covering any repair costs for up to three years. In addition, they offer the following benefits:

- Significant cost savings compared to individual repair incidents
- Fault location, diagnostics, and repair by NI any time the system product fails
- All parts and labor costs covered as well as any adjustments needed to restore the hardware to manufacturing specifications

For more information about your warranty options:

- Learn More about Warranty Services [http://www.ni.com/services/warranty.htm]
- Talk to an Expert about Extended Warranties [javascript:openCallMeWindowCTA(document.referrer,%20'US')]
- View Warranty Repair Policies [http://www.ni.com/services/warranty_repair_policies.htm]

Calibration

NI recognizes the need to maintain properly calibrated devices for high-accuracy measurements. NI provides manual calibration procedures, services to recalibrate your products, and automated calibration software to calibrate many NI measurement products.

- Learn More about Calibration Services [http://www.ni.com/services/calibration.htm]

Training

NI training is the fastest, most certain route to productivity with NI tools and successful application development.

- Learn More about NI Training and Certification [http://www.ni.com/training/]
- Find a Course Near You and View Schedules [http://sine.ni.com/apps/utf8/nisv.custed]

Repair Services

Return your registered product under warranty at no additional labor and parts cost. NI offers fault location, diagnostics, and repair any time the system fails as well as any adjustments needed to restore the hardware to manufacturing specifications.

- Learn More about Repair Services [http://www.ni.com/services/warranty.htm]
- Contact NI to Obtain a Return Material Authorization (RMA) Form and Shipping Instructions [http://sine.ni.com/apps/utf8/nicc.call_me]
- View Your RMA Support Request Status Online [http://www.ni.com/support/servicereq/]
- Register Your Product [http://www.ni.com/register]

Technical Support

ni.com/support [http://www.ni.com/support/]

Resources

Additional Product Information

- Manuals (8)
- Dimensional Drawings
- Product Certifications

Related Information

- Learn More about CompactRIO
- Configure Your Complete CompactRIO System
- Learn More about NI CompactDAQ
- Configure Your Complete CompactDAQ System

Pricing

Prices are quoted on standard Net 30 days payment from the date of invoice.

Special Offer: Free UPS Standard shipping for online Credit Card orders.
NEW! National Instruments now accepts credit card purchases. Pay online with a credit card and receive FREE UPS Standard shipping (limited time offer). All discounts are subject to final verification and approval by National Instruments.

Part Number	Description	Est Ship	Euro*	Qty
NI 9211				
779001-01	NI 9211 4-Ch ±80 mV, 14 S/s, 24-Bit TC and Diff AI	1 - 2	€ 322.00	0
Accessories				
779017-01	NI 9932 Backshell with 10-pos connector block (qty 1)	5 - 10	€ 29.00	0
745690-J002	J-Type Thermocouples Wire, Fiberglass (32 deg F to 900 deg F) 2 m	10 - 15	€ 29.00	0
745690-K002	K-Type Thermocouples Wire, Fiberglass (32deg F to 900deg F) 2 m	10 - 15	€ 29.00	0

* You have selected Italy as the country where you will use the product(s). Pricing may have changed since you printed this document on 02/12/2012. Please visit *ni.com* to see current pricing.

Place Order or Obtain Quote

Order Online or by Fax

1 . Navigate to *ni.com/products* and select "Order by Part Number" found under the "Business Center" section.
2 . Once you have added your items to your cart, see the "Your Cart Options" section to place your order, obtain a quote, or print a fax form.

Order by Phone
Call 02 41309.1 (Milano), 06 520871 (Roma) to place your order or obtain a quote.

Services

System Assurance Programs

Reduce your setup time and total cost of ownership, and get a system you can use out of the box with National Instruments system assurance programs. System assurance programs include:

- Installation and integration test of all individual hardware
- Courtesy installation of system driver sets and application development environments
- Extended warranty and calibration coverage for up to five years
- Custom documentation plus a custom restore and startup utility

This service is only available for PXI, NI CompactRIO, and NI Compact FieldPoint systems.

- Learn More about System Configuration and Deployment Services [http://www.ni.com/services/configuration.htm]
- Customize Your CompactRIO System [http://ohm.ni.com/advisors/crio]
- Customize Your Compact FieldPoint System [http://ohm.ni.com/advisors/cfp]
- Customize Your PXI System [http://ohm.ni.com/advisors/pxi]
- Talk to an Expert about Custom System Configurations [javascript:openCallMeWindowCTA(document.referrer,%20'US')]

Extended Warranties

National Instruments designs and manufactures all products to minimize failures, however unexpected failures can still occur. Extended warranties provide a fixed economical price at the time of system

Appendice B

Technical Sales
Italy
02 41309.1 (Milano), 06 520871 (Roma)
ni.italy@ni.com

NI USB-9162

C Series USB Single Module Carrier

- For new designs, NI recommends the NI cDAQ-9171 one-slot NI CompactDAQ chassis.
- Support for subset of NI C Series modules
- Includes LabVIEW SignalExpress LE data-logging software
- Modules sold separately as NI 9xxx or in a kit with carrier as USB-9xxx
- Bus-powered carrier for portability
- See "Resources" tab for the C Series Compatibility Chart

Overview

The NI C Series USB single module carrier is a low-cost and highly portable solution for NI C Series modules. In addition to stand-alone application use, you can deploy the single module carrier as a debugging device for larger systems or use it to prototype sensor connections before you integrate modules into an NI CompactRIO system. You can use the modules that work with the NI USB single module carrier in any C Series chassis such as NI CompactDAQ, CompactRIO, or R Series expansion chassis.

NI has added new module support to the driver for the NI USB-9162 carrier. For the most recent module support, upgrade to the latest version of NI-DAQmx.

For complete details on module support, refer to the **C Series Compatibility Chart** in the "Resources" tab.

You receive the following:

USB-9162 single module carrier

USB cable

NI-DAQmx driver CD kit

Pricing

Prices are quoted on standard Net 30 days payment from the date of invoice.

Special Offer: Free UPS Standard shipping for online Credit Card orders.
NEW! National Instruments now accepts credit card purchases. Pay online with a credit card and receive FREE UPS Standard shipping (limited time offer). All discounts are subject to final verification and approval by National Instruments.

Part Number	Description	Est Ship	Euro*	Qty

NI USB-9162				
779471-01	USB Single Module Carrier for C Series Modules	5 - 10	€ 312.00	0

* You have selected Italy as the country where you will use the product(s). Pricing may have changed since you printed this document on 02/12/2012. Please visit *ni.com* to see current pricing.

Place Order or Obtain Quote

Order Online or by Fax

1 . Navigate to *ni.com/products* and select "Order by Part Number" found under the "Business Center" section.
2 . Once you have added your items to your cart, see the "Your Cart Options" section to place your order, obtain a quote, or print a fax form.

Order by Phone

Call 02 41309.1 (Milano), 06 520871 (Roma) to place your order or obtain a quote.

Resources

Additional Product Information

- Manuals
- Dimensional Drawings
- Product Certifications

Related Information

- NI C Series Compatibility Chart

Appendice B

Resistenze di precisione

Resistenza a rocchetto Engel

$R_0 = 1000\Omega$ a 20°C

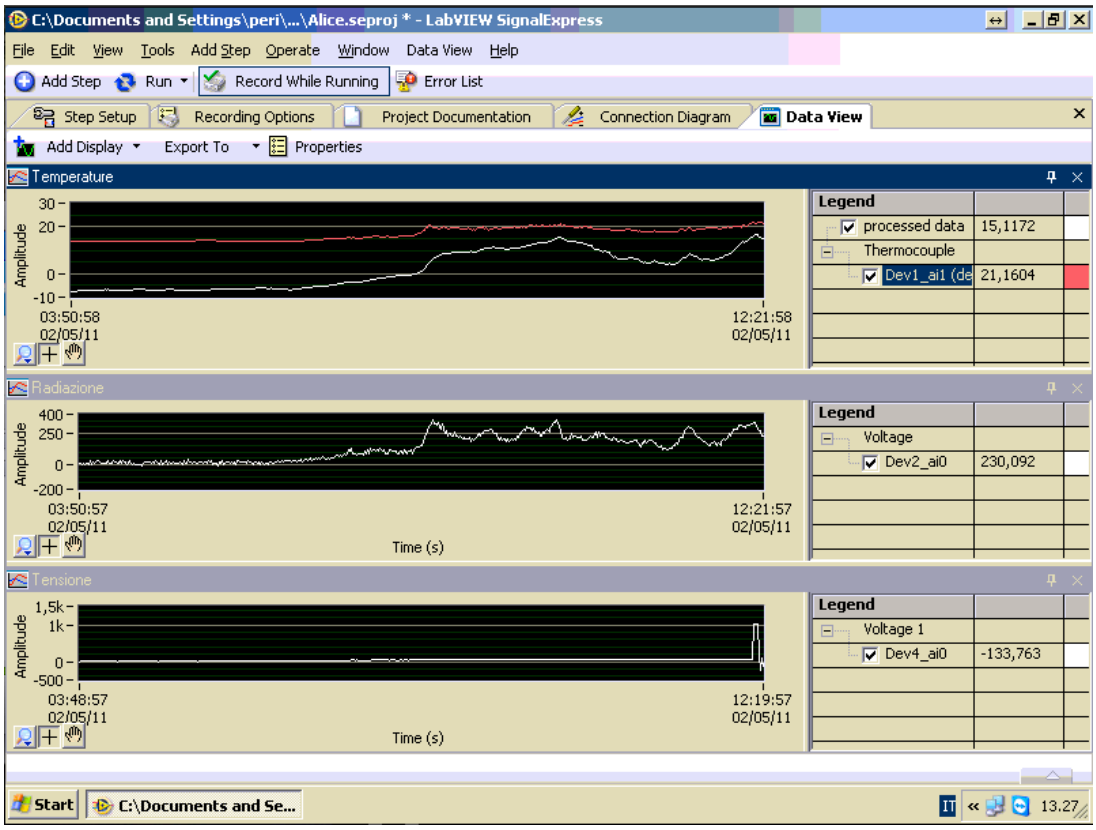
$R = R_0 - 0.3(t - 20)$

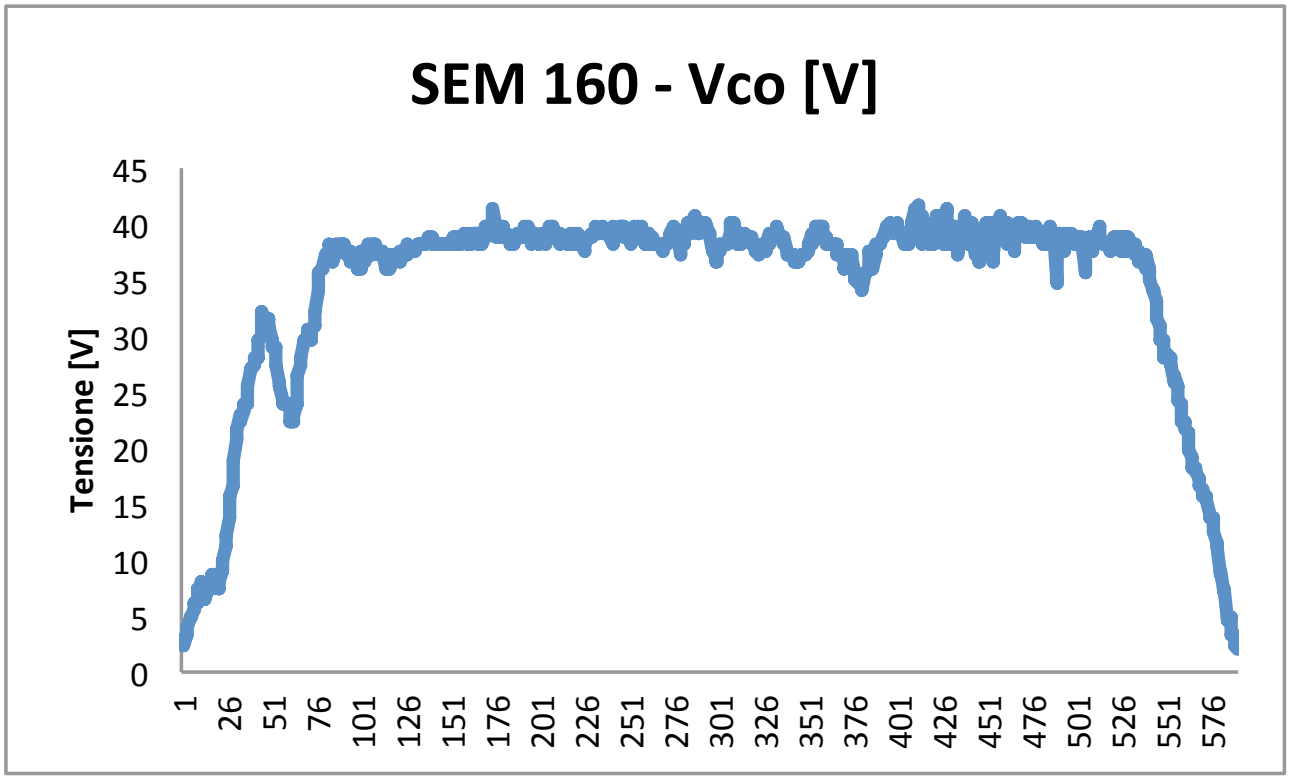
Resistenza Martman & Braun

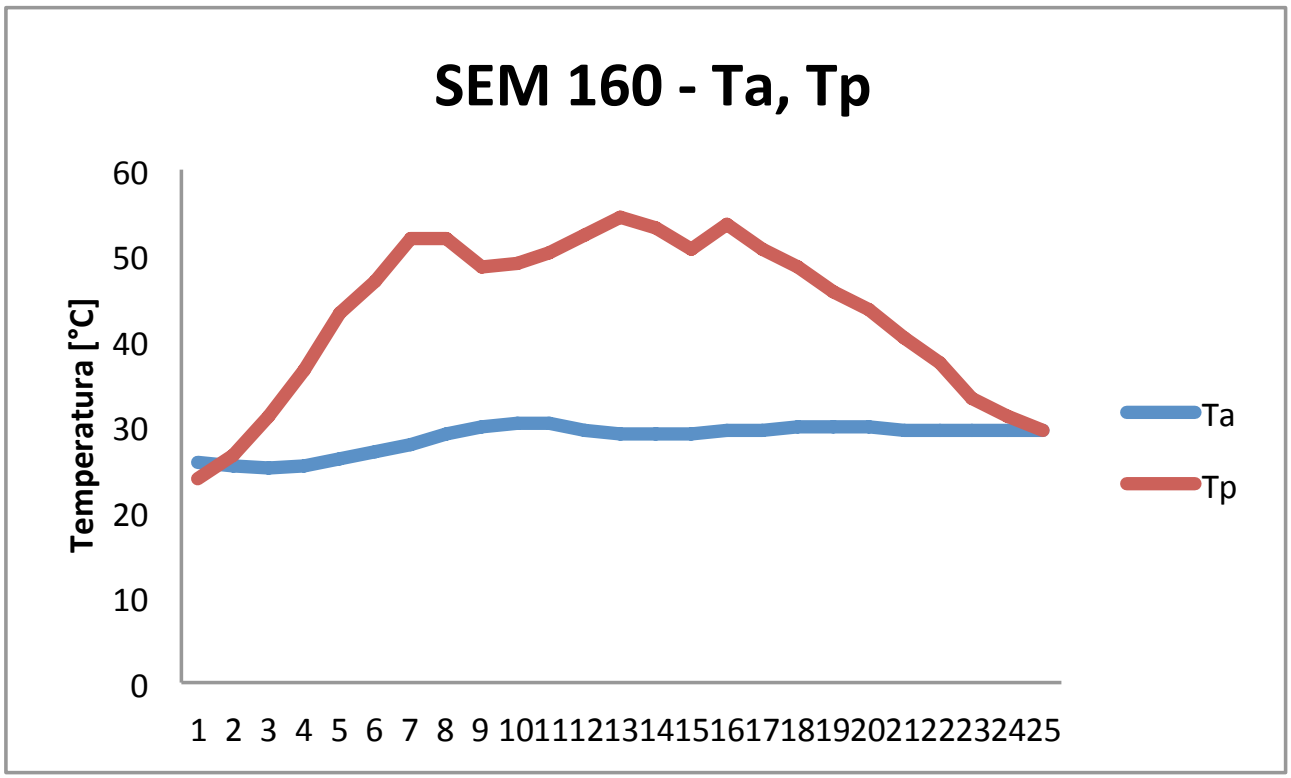
$1\Omega \pm 0.002\%$ a 20°C

Appendice B

Software di acquisizione LabWiew SignalExpres






SEM 160 - Ta, Tp
Temperatura [°C]
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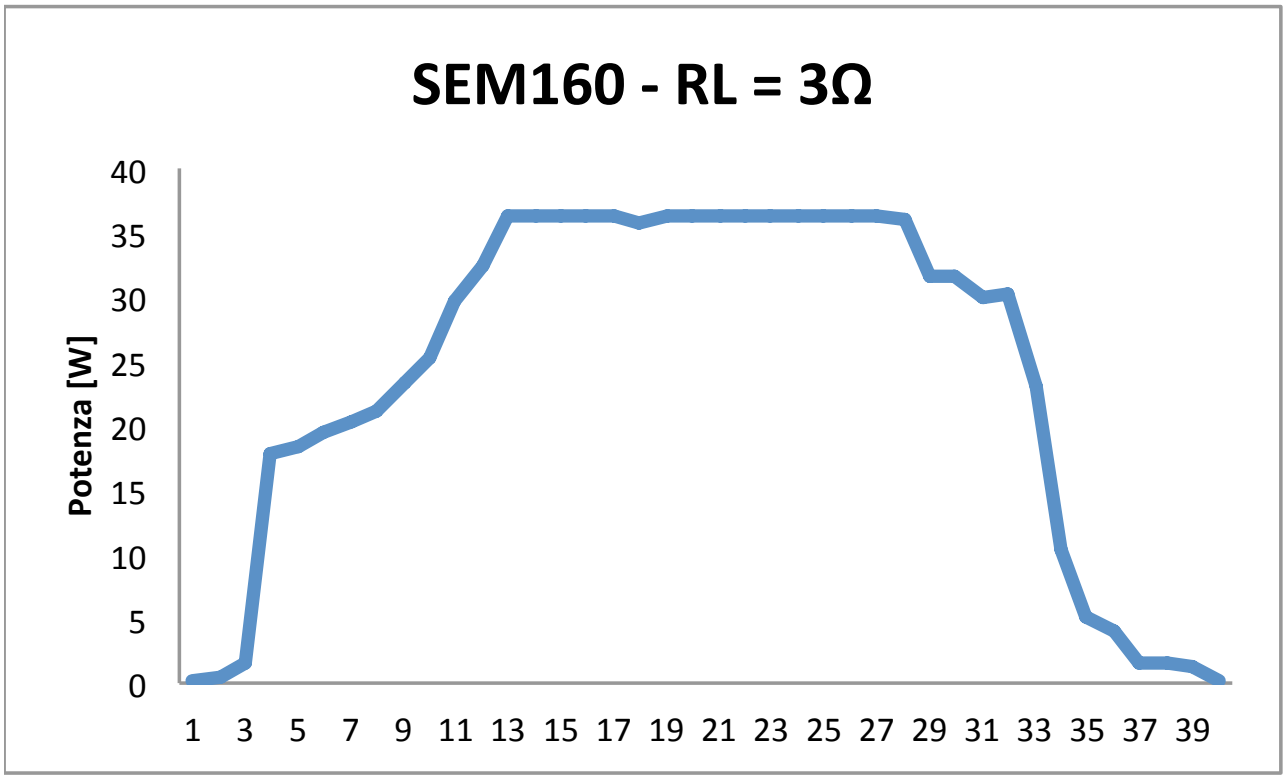
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10111213141516171819202122232425
Ta
Tp


SEM160 - RL = 3Ω
Potenza [W]
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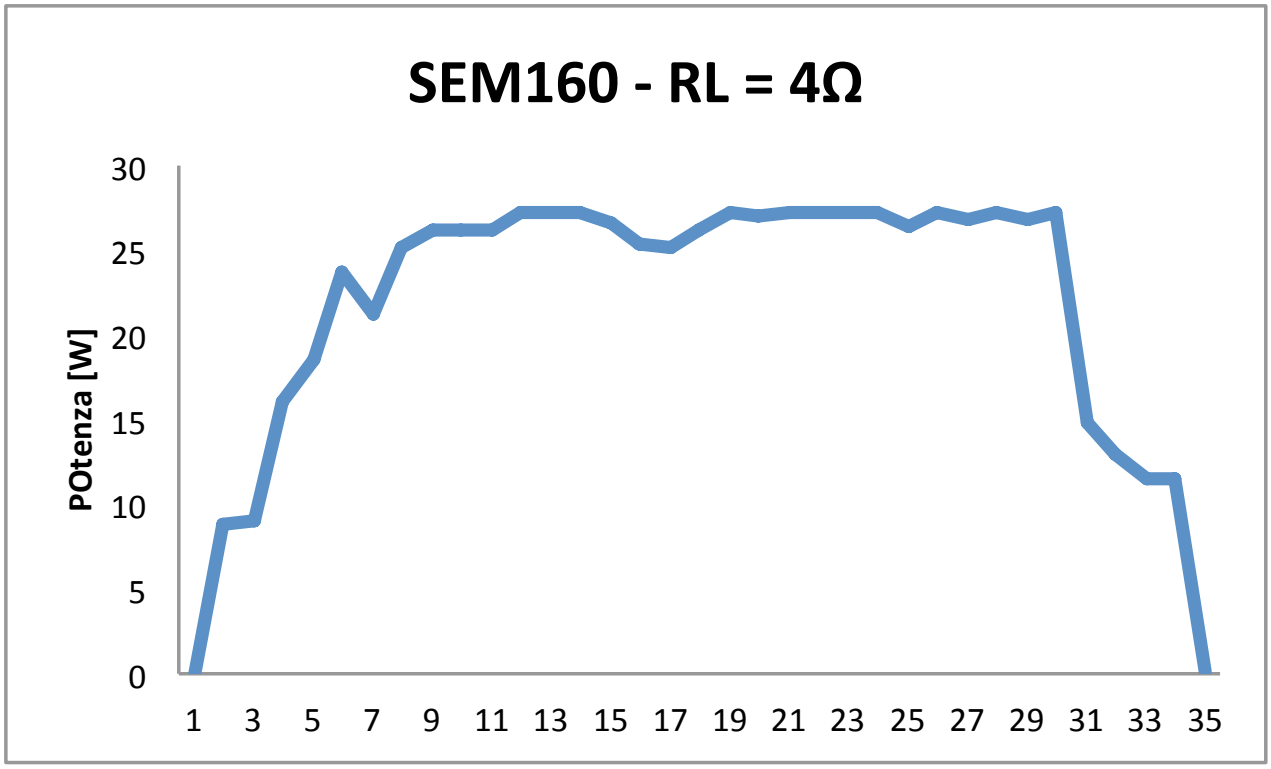
35
30
25
20
15
10
5
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39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POtenza [W]
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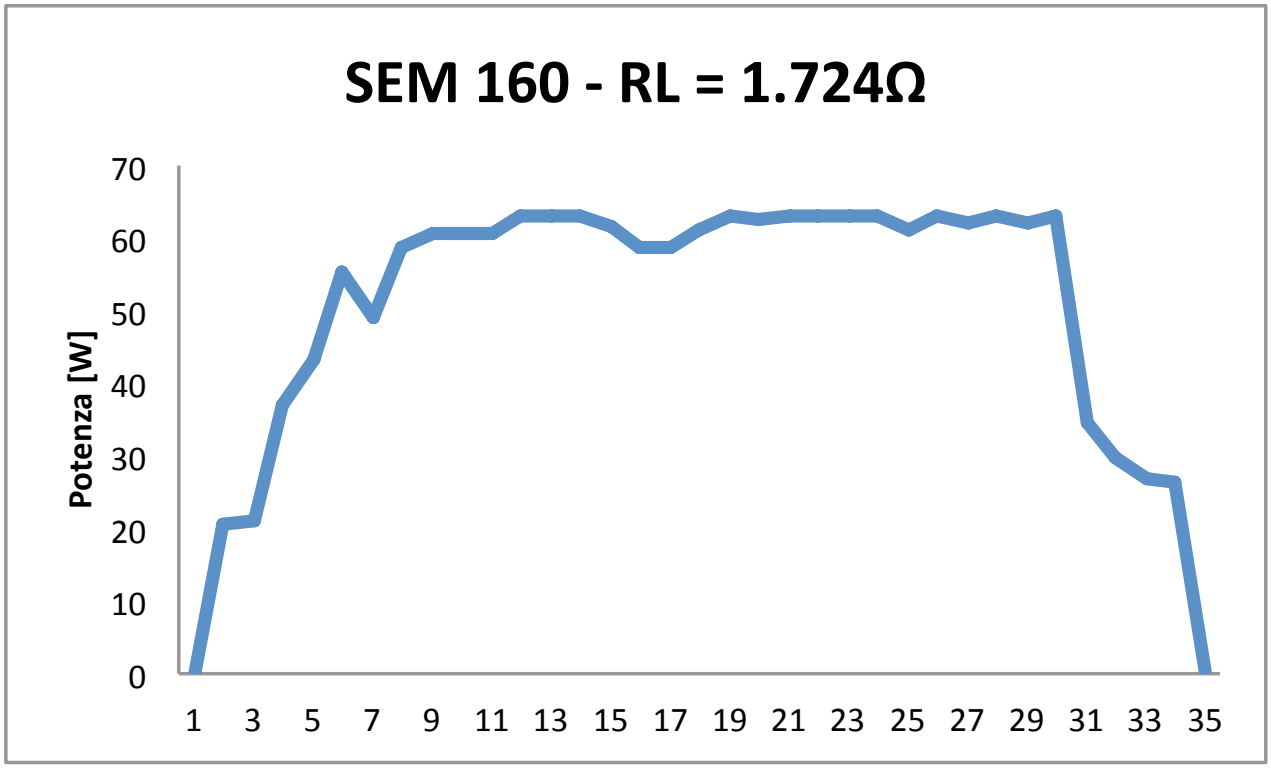
25
20
15
10
5
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35


SEM 160 - RL = 1.724Ω
Potenza [W]
70
60
50
40
30
20
10
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35