

CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae **cannot exceed 4 pages**. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name	José Manuel		
Family name	Blanes Martínez		
Gender (*)	Male	Birth date	14/08/1974
ID number	33493455G		
e-mail	jmblanes@umh.es		
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-0082-4064		

(*) *Mandatory*

A.1. Current position

Position	Profesor Titular de Universidad (Associate Professor)		
Initial date	02/11/2017		
Institution	University Miguel Hernández of Elche		
Department	Materials Science, Optics and Electronic Technology		
Country	Spain	Teleph. number	0034 966658488
Key words	Space power electronics, DC-DC power conversion, DC power distribution and protection, Photovoltaic Modelling		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
2011 – 2017	Profesor Contratado Doctor / Universidad Miguel Hernández de Elche / Spain
2003 – 2011	Profesor Colaborador / Universidad Miguel Hernández de Elche / Spain
1999 – 2003	Ingeniero de Red / Vodafone / Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Master in Telecommunication Engineering	Polytechnic University of Valencia / Spain	1998
PhD in Telecommunication Engineering	Miguel Hernandez University of Elche	2011

Part B. CV SUMMARY (*max. 5000 characters, including spaces*)

My scientific activity has been developed at the Industrial Electronics Group of the University Miguel Hernandez of Elche since 2003. During all these years my main research areas have been space power electronics, industrial electronics and photovoltaic modelling. From all of them, I would like to highlight the scientific contribution in the field of space power electronics, this is a field mainly dominated by the industry and where only few university researchers participate. In 18 years working in this field many scientific contributions have been presented, some of them as result of my PhD thesis entitled “Optimization Of The Power Conditioning System For The Use Of Multijunction Photovoltaic Cells In Space Applications” and other as result of projects funded through competitive calls (Regional plans, National plans, European Space Agency Funded). During these years I have participated in 16 R&D projects funded through competitive calls (three of them as main researcher), most of them related with space electronics, I have published 39 papers in indexed journals and I have participated in more than 100 conference communications.

The scientific knowledge has been transferred to the society through 19 contracts and projects with private companies. These contracts can be divided in three main groups: contracts with international companies (as Airbus, Clyde Space, Emxys, Weinberg LTD) related with space



power electronics; contracts with regional companies, where different projects related with power electronics and instrumentation have been developed; and finally technical audits to space electronics R&D projects for international companies.

I have been supervisor of one PhD thesis related with space electronics (defended in 2020) and nowadays three more PhD thesis under my supervision are ongoing (all of them related with Space Power Systems). Besides I have supervised more than 70 Bachelors and Master final Thesis.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions)

P1. C. Torres, J. M. Blanes, A. Garrigós, D. Marroquí and J. A. Carrasco, "Single Point Failure Free Interleaved Synchronous Buck Converter for Microsatellite Electrolysis Propulsion," in IEEE Journal of Emerging and Selected Topics in Power Electronics, vol. 10, no. 5, pp. 5371-5380, Oct. 2022, doi: 10.1109/JESTPE.2022.3174358.

P2. A. Garrigós, D. Marroquí, C. Orts, C. Torres and J. M. Blanes, "Latching Current Limiter for Space Platform Power Distribution Using a Low-Voltage p-MOSFET and a Normally-ON SiC JFET," in IEEE Journal of Emerging and Selected Topics in Power Electronics, vol. 10, no. 5, pp. 5464-5473, Oct. 2022.

P3. E. Batzelis, J. M. Blanes, F. J. Toledo and V. Galiano, "Noise-Scaled Euclidean Distance: A Metric for Maximum Likelihood Estimation of the PV Model Parameters," in IEEE Journal of Photovoltaics, vol. 12, no. 3, pp. 815-826, May 2022.

P4. F. J. Toledo, M. V. Herranz, J. M. Blanes and V. Galiano, "Quick and Accurate Strategy for Calculating the Solutions of the Photovoltaic Single-Diode Model Equation," in IEEE Journal of Photovoltaics, vol. 12, no. 2, pp. 493-500, March 2022.

P5. D. Marroqui, A. Garrigós and J. M. Blanes, "LVDC SiC MOSFET Analog Electronic Fuse With Self-Adjusting Tripping Time Depending on Overcurrent Condition," in IEEE Transactions on Industrial Electronics, vol. 69, no. 8, pp. 8472-8480, Aug. 2022.

P6. F. J. Toledo; J. M. Blanes; V. Galiano; A. Laudani. "In-depth analysis of single-diode model parameters from manufacturer's datasheet Renewable Energy". 2021 Elsevier. 163, pp.1370-138.

P7. D. Marroquí; A. Garrigos; J.M. Blanes; R. Gutierrez. "Self-Powered 380V DC SiC Solid-State Circuit Breaker and Fault Current Limiter" IEEE Transactions on Power Electronics. 2019 IEEE. 34-10, pp.9600-9608.

P8. F.J. Toledo; J.M. Blanes; V. Galiano. "Two-Step Linear Least-Squares Method For Photovoltaic Single-Diode Model Parameters Extraction" IEEE Transactions On Industrial Electronics. 2018 IEEE. 65-8, pp.6301-6308.

P9. R. Gutierrez; J. M. Blanes; D. Marroquí; A. Garrigós; F. J. Toledo. "System-On-Chip For Real-Time Satellite Photovoltaic Curves Telemetry" IEEE Transactions On Industrial Informatics. 2017 IEEE. 14-3, pp.951-957

P10. J. M. Blanes (AC); R. Gutiérrez; A. Garrigós; J. L. Lizán; J. Martínez. "Electric vehicle battery life extension using ultracapacitors and a FPGA controlled interleaved buck-boost converter" IEEE Transactions on Power Electronics. 2013 IEEE. 28-12, pp.5940-5948

C.2. Congress, indicating the modality of their participation (invited conference, oral presentation, poster)

C1. A. Garrigós, C. Orts, D. Marroquí, J. M. Blanes, C. Torres, P. Casado, "Solar Array Regulation for High-Voltage Satellite Power Bus," IEEE Energy Conversion Congress and Exposition (ECCE), 2022. ORAL PRESENTATION



C2. C. Torres; A. Garrigós; J. M. Blanes; P. Casado; D. Marroquí; C. Orts, “Analog MPPT Comparison for Interplanetary Small Satellites Missions,” 24th European Conference on Power Electronics and Applications (EPE'22 ECCE Europe), 2022. POSTER

C3. Cristian Torres; José Manuel Blanes; Ausias Garrigós; David Marroquí; Carlos Orts; José Antonio Carrasco, “High-Reliability Solar Array Regulator Proposal for Harsh Environments,” IEEE 21st Mediterranean Electrotechnical Conference (MELECON), 2022. ORAL PRESENTATION

C4. D. Marroqui; A. Garrigos; J. M. Blanes; R. Gutiérrez; E. Maset, “Circuit proposals for high-voltage latching current limiters”, 12th European Space Power Conference (ESPC), 2019. ORAL PRESENTATION

C5. J. A. Carrasco, *et. al* “Micro-platform power system for scientific deep space exploration,” 12th European Space Power Conference (ESPC), 2019, POSTER.

C6. D. Marroqui; A. Garrigos; JM. Blanes; R. Gutierrez; E. Maset, “SiC Based Latching Current Limiter for High Voltage Space Power Distribution Systems,” IEEE Energy Conversion Congress and Exposition (ECCE), 2018, POSTER

C7. A. Garrigós; D. Marroquí; J. M. Blanes; R. Gutiérrez; M. Compadre; C. Clark, “An Analog Global Maximum Power Point Tracking for photovoltaic systems: Application to nanospacecraft,” 19th European Conference on Power Electronics and Applications (EPE'17 ECCE Europe), 2017. POSTER

C8. J. M. Blanes, *et. al*. “Evaluation of Gallium Nitride Transistors in Electronic Power Conditioners for TWTAs,” IEEE Aerospace Conference, 2015. ORAL PRESENTATION

C.3. Research projects, indicating your personal contribution. In the case of young researchers, indicate lines of research for which they have been responsible.

RP1 Desarrollo y validación de modelo de ingeniería del sistema de potencia de un microsatélite de exploración del espacio profundo a temperaturas extremadamente bajas.

Principal investigators: José Manuel Blanes Martínez / Ausias Garrigós Sirvent

Funding organization: Generalitat Valenciana - conselleria de innovación, universidades, ciencia y sociedad digital. Duration: Apr 2022 – March 2025. Funding: 284050€

Personal Contribution: Principal Investigator

RP2 Design and implementation of current-limiting power distribution switches for high-reliability.

Principal investigator: Ausias Garrigos Sirvent Funding organization: Ministry of Science, Innovation and Universities. Duration: Jan 2023 – Dec 2024. Funding: 85445 €

Personal Contribution: Reseacher, LCL design.

RP3 Power System for a Deep Space Micro Satellite Electrolysis Propulsion Thruster

Principal investigator: José Antonio Carrasco Hernández Funding organization: Ministry of Science, Innovation and Universities. Duration: Jan 2023 – Dec 2024. Funding: 72000€

Personal Contribution: Reseacher, Electrolyzer DC-DC converter design

RP4 High-voltage, high current latching current limiters and solid-state current breakers.

Principal investigator: Ausias Garrigos Sirvent Funding organization: European Space Agency. Duration: March 2021 – Feb 2022 Funding: 15877 € Personal

Contribution: Reseacher, LCL design

RP5 Active battery power conditioning system for space.

Principal investigator: José Antonio Carrasco Hernández Funding organization: Regional government – Education, Culture and Sports. Duration: Jan 2021 – Dec 2023 Funding: 90000 €

Personal Contribution: Reseacher, Battery BMS design



RP6 Power system Integration and test for the micro-plattform for deep space exploration.
Principal investigator: José Antonio Carrasco Hernández Funding organization: Ministry of Science, Innovation and Universities. Duration: Jan 2019 – Dec 2021 Funding: 60300 €
Personal Contribution: Reseacher, Micro-plattform PCDU design design

RP7 Power Hardware in the Loop (PHIL) test bench.
Principal investigator: Ausias Garrigos Sirvent Funding organization: Ministry of Science, Innovation and Universities. Duration: Jan 2019 –March 2022 Funding: 110.926,27
Personal Contribution: Researcher, PHIL validation

RP8 Title: High voltage solid state power controller using Silicon Carbide (SiC) devices and magnetoresistive current sensors for ion propulsion. Principal investigator: Ausias Garrigós Sirvent Funding organization: Ministry of Economy and Business. Duration: Jan 2016 – Dec 2018 Funding: 60500 € Funding organization: Ministry of Science and Innovation Personal Contribution: Researcher, LCL design

RP9 Use of WBG and magnetoresistive sensors for satellite TWT power conditioners.
Principal investigator: José Manuel Blanes Martínez Funding organization: Ministry of Economy and Business. Duration: Jan 2013 – Dec 2015, Funding: 58500 € Personal Contribution: Principal investigator

C.4. Contracts, technological or transfer merits, Include patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.) in which you have collaborated. Indicate: a) the order of signature of authors; b) reference; c) title; d) priority countries; e) date; f) Entity and companies that exploit the patent or similar information, if any

CT1. Title: Reduction of electromagnetic interference from power converters and filters
Funding organization: European Space Agency (Prime: EMXYS, Subco: UMH and ALTER)
Principal investigator: Ausias Garrigós Sirvent
Duration: May 2021 – Dec 2022 Funding: 119985€

CT2. Evaluation as Expert Technician of the project “Development of a Novel Electronic Front-End for the Flex Satellite”
Funding organization: DNV GL Business Assurance Spain
Principal investigator: Jose Manuel Blanes Martínez
Duration: July 2022 Funding: 650€

CT3. Evaluation as Expert Technician of the project “Development of a Power Subsystem for the Juice Satellite
Funding organization: DNV GL Business Assurance Spain
Principal investigator: Jose Manuel Blanes Martínez
Duration: July 2020, July 2021, July 2022 Funding: 1900€

CT4. WCA and PSA for a Power Conditioning Unit
Funding organization: Clyde Space LTD
Principal investigator: Ausias Garrigós Sirvent
Duration: Apr 2017 – Sept 2017 Funding: 12000€

CT5. WCA and PSA for a DC/DC converter
Funding organization: Clyde Space LTD
Principal investigator: Ausias Garrigós Sirvent
Duration: Sep 2016 Funding: 2400€

CT6. Supercapacitors and battery hybridization power system for proximity electrical vehicles
Funding organization: Comarth Engineering
Principal investigator: José Manuel Blanes Martínez
Duration: Jan 2011 – Dec 2011 Funding: 90530€