

SINGLE-PHASE TL INVERTER WITH A DOUBLE MPPT SYSTEM

2.8TL U M / 3.3TL U M / 5TL U M / 6TL U M

The INGECON® SUN 1Play TL U M inverters have been designed to maximize the power generation and also to facilitate user access to the PV plant. This solar inverter family is valid for low kilowatt residential applications, and also for decentralized commercial and utility-scale systems rated up to several hundred kilowatts. In domestic installations, this inverters present the great advantage of being compatible with 30 mA RCDs, the most commonly used to protect the people against fatal electric discharges.

High efficiency system

Ingeteam has developed its own technology to maximize the efficiency rates of the INGECON® SUN 1Play TL U M inverter family. Thanks to this high efficiency system and to the use of innovative electronic conversion topologies, values of up to 98.4% can be achieved. Furthermore, an advanced double-MPPT algorithm makes it possible to harness the maximum energy from the PV array at all times, even in difficult situations, such as scattered clouds and partial shadings.



Easy to install

Every country-specific configuration and language can be easily selected from the inverter screen. Moreover, the INGECON® SUN 1Play TL U M inverters are compatible with all the PV module technologies on the market.

Simple operation and maintenance

Ingeteam is at the forefront of innovative firmware. As a result, the INGECON® SUN 1Play TL U M inverters are extremely easy to operate. The menu displayed on the LCD screen has been designed so that it is simple and easy to use. These inverters feature an internal datalogger for several months data storage, accessible from a PC. Every inverter can be accessed from either a remote PC or on-site from the inverter front touch keypad through its LCD screen. The display also features a number of LEDs to indicate the inverter operating status. These LED indicators light up whenever any incident is detected, thereby simplifying and facilitating equipment maintenance tasks.

Firmware updating

The INGECON® SUN 1Play TL U M inverters allow the user to perform the firmware (FW) updating himself. It is as easy as to download the latest version of the firmware from the Ingeteam website: www.ingeteam.com, and update it using a simple SD memory card. These photovoltaic inverters feature a SD input slit to facilitate the firmware updating by the user.

Standard 10 year warranty, extendable for up to 20 years

2.8TL U M / 3.3TL U M / 5TL U M / 6TL U M

Monitoring and communication

The internal operating variables and the historical production data can be monitored through a number of media such as USB communications, supplied as standard. Also, RS-485, Ethernet, Bluetooth and GSM / GPRS communications are available upon demand. Included at no extra cost are the INGECON® SUN Manager, INGECON® SUN Monitor and its Smartphone version iSun Monitor -available on the App Store- for monitoring and recording the inverter data over the Internet.

Able to withstand extreme conditions

The INGECON® SUN 1Play TL U M inverter housing is suitable for outdoor use (NEMA 3R protection rating). Likewise, it can be used under extreme atmospheric conditions with temperature ranges from -13 °F to +149 °F, although its main cooling system is natural air convection.

SiC technology

This solar inverter presents silicon carbide (SiC) components. SiC technology allows

higher efficiency levels and also a more reliable, light and compact equipment.

Easy rooftop installation

Vertical or horizontal mounting, enabling compliance with NEC 2014 rapid shut-down requirements.

PROTECTIONS

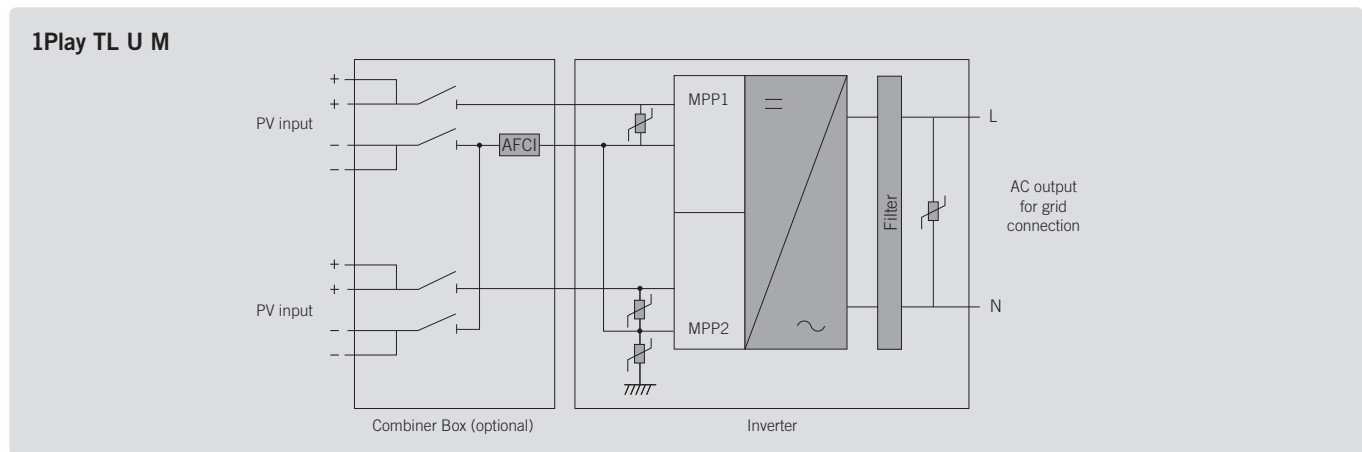
- Reverse polarity.
- Input and output overvoltages with type 3 surge arresters.
- Output shortcircuits and overloads.
- Anti-islanding with automatic disconnection.
- Insulation failures.

OPTIONAL ACCESSORIES

- Inverter communication via RS-485, Ethernet, Bluetooth or GSM / GPRS.
- Combiner Box with arc-fault circuit interruption and DC switch.
- INGECON® SUN WeatherBox for meteorological values measurement and registration.

MAIN FEATURES

- Compatible with 30 mA RCDs.
- Easy rooftop installation.
- Double-MPPT system.
- Available from 2.8 up to 6 kW.
- 98.4% maximum efficiency.
- SiC Technology inside.
- Inverter updating by the user through a SD memory card.
- USB communications supplied as standard.
- Software INGECON® SUN Manager for PV plant access and data registration.
- Software INGECON® SUN Monitor for PV plant monitoring.
- LCD Display.
- Easy maintenance.
- Suitable for indoor and outdoor installations (NEMA 3R).
- Display-configurable potential free contact, to indicate insulation fault or grid connection.
- Compact design.
- Plug & Play technology.



Combiner Box

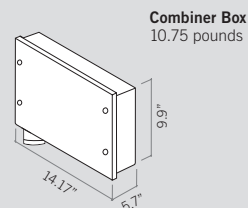
The Combiner Box is supplied with two inputs per MPPT, DC switch and an arc-fault circuit interrupter.

COMBINER BOX MAIN FEATURES

- DC switch.
- AFCI.
- 2 MPPTs (2 inputs per MPPT).
- Fuses not required, according to NEC 2014 690.9.



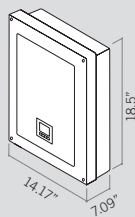
Size and weight (inches)



	2.8TL U M	3.3TL U M	5TL U M	6TL U M
Input (DC)				
Recommended PV array power range ⁽¹⁾	2.8 - 3.6 kW	3.4 - 4.3 kW	5.1 - 6.5 kW	6.1 - 7.8 kW
Voltage range MPP ⁽²⁾	125 - 750 V	125 - 750 V	125 - 750 V	125 - 750 V
Voltage range MPP2 ⁽²⁾⁽³⁾	90 - 750 V	90 - 750 V	90 - 750 V	90 - 750 V
Min. voltage for Pnom with parallel DC inputs	127 V	155 V	234 V	281 V
Maximum voltage ⁽⁴⁾	850 V	850 V	850 V	850 V
Maximum current (Input 1 / Input 2)	11 / 11 A	11 / 11 A	11 / 11 A	11 / 11 A
Inputs (Input 1 / Input 2)	1 / 1	1 / 1	1 / 1	1 / 1
MPPT	2	2	2	2
Output (AC)				
Rated power	2.8 kW	3.3 kW	5 kW	6 kW
Max. temperature at rated power ⁽⁵⁾	113 °F	113 °F	113 °F	113 °F
Maximum current	16 A	16 A	26.2 A	26.2 A
Rated voltage	208 / 240 V	208 / 240 V	208 / 240 V	240 V
Frequency	60 Hz	60 Hz	60 Hz	60 Hz
Phi Cosine	1	1	1	1
Phi Cosine adjustable	Yes. Smax=2.8 kVA	Yes. Smax=3.3 kVA	Yes. Smax=5 kVA	Yes. Smax=6 kVA
THD	<3%	<3%	<3%	<3%
Efficiency				
Maximum efficiency	98.4%	98.4%	98.4%	98.4%
CEC - Weighted efficiency	97.5%	97.5%	97.5%	97.5%
General Information				
Refrigeration system	Natural air convection			
Stand-by consumption ⁽⁶⁾	<10 W	<10 W	<10 W	<10 W
Consumption at night	0 W	0 W	0 W	0 W
Ambient temperature	-13 °F to 149 °F	-13 °F to 149 °F	-13 °F to 149 °F	-13 °F to 149 °F
Relative humidity (non-condensing)	0 - 100%	0 - 100%	0 - 100%	0 - 100%
Protection class	NEMA 3R	NEMA 3R	NEMA 3R	NEMA 3R
Marking	CE, ETL			
EMC & Security standards	UL1741, FCC Part 15, IEEE C37.90.1, IEEE C37.90.2			
Grid connection standards	IEC 62116, UL1741, IEEE1547, IEEE1547.1, NEC CODE			

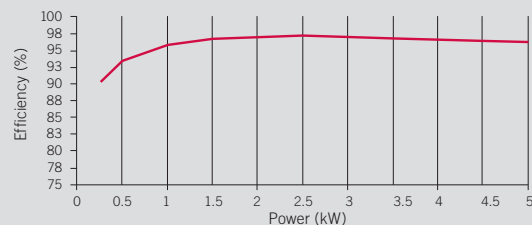
Notes: ⁽¹⁾ Depending on the type of installation and geographical location ⁽²⁾ The output power will be conditioned by the voltage and current configuration selected at each input ⁽³⁾ To drop to 90 V, the other input must be at least at 125 V ⁽⁴⁾ Must not be exceeded under any circumstances. Consider the voltage increase of the 'Voc' at low temperatures ⁽⁵⁾ The output power will be reduced at the rate of 1% for each 1 °F of increase ⁽⁶⁾ Consumption from PV field.

Size and weight (inches)



2.8TL U M / 3.3TL U M
44.1 pounds
5TL U M / 6TL U M
46.3 pounds

Efficiency INGECON® SUN 5TL U M V_{dc} = 680 V





Ingeteam

Ingeteam INC.

5201 Great American Parkway, Suite 320
SANTA CLARA, CA 95054 - USA
Tel.: +1 (415) 450 1869 / +1 (408) 524 2929 / Fax: +1 (408) 824 1327
e-mail: solar.us@ingeteam.com

Ingeteam INC.

3550 W. Canal St.
MILWAUKEE, WI 53208 - USA
Tel.: +1 (414) 934 4100 / +1 (855) 821 7190 / Fax: +1 (414) 342 0736
e-mail: solar.us@ingeteam.com

Ingeteam Power Technology, S.A.

Avda. Ciudad de la Innovación, 13
31621 SARRIGUREN (Navarra) - Spain
Tel.: +34 948 288 000 / Fax: +34 948 288 001
e-mail: solar.energy@ingeteam.com

Ingeteam S.r.l.

Via Emilia Ponente, 232
48014 CASTEL BOLOGNESE (RA) - Italy
Tel.: +39 0546 651 490 / Fax: +39 054 665 5391
e-mail: italia.energy@ingeteam.com

Ingeteam GmbH

Herzog-Heinrich-Str. 10
80336 MUNICH - Germany
Tel.: +49 89 99 65 38 0 / Fax: +49 89 99 65 38 99
e-mail: solar.de@ingeteam.com

Ingeteam SAS

La Naurouze C - 140 rue Carmin
31670 Labège - France
Tel: +33 (0)5 61 25 00 00 / Fax: +33 (0)5 61 25 00 11
e-mail: france@ingeteam.com

Ingeteam, a.s.

Technologická 371/1
70800 OSTRAVA - PUSTKOVEC
Czech Republic
Tel.: +420 59 732 6800 / Fax: +420 59 732 6899
e-mail: czech@ingeteam.com

Ingeteam Shanghai, Co. Ltd.

Shanghai Trade Square, 1105
188 Si Ping Road
200086 SHANGHAI - P.R. China
Tel.: +86 21 65 07 76 36 / Fax: +86 21 65 07 76 38
e-mail: shanghai@ingeteam.com

Ingeteam, S.A. de C.V.

Ave. Revolución, nº 643, Local 9
Colonia Jardín Español - MONTERREY
64820 - NUEVO LEÓN - México
Tel.: +52 81 8311 4858 / Fax: +52 81 8311 4859
e-mail: northamerica@ingeteam.com

Ingeteam Ltda.

Estrada Duílio Beltrami, 6975
Chácara Sao Bento
13278-078 VALINHOS SP - Brazil
Tel.: +55 19 3037 3773 / Fax: +55 19 3037 3774
e-mail: brazil@ingeteam.com

Ingeteam Pty Ltd.

Unit 2 Alphen Square South
16th Road, Randjiespark, Midrand 1682 - South Africa
Tel.: +2711 314 3190 / Fax: +2711 314 2420
e-mail: southafrica@ingeteam.com

Ingeteam SpA

Bandera, 883 Piso 211
8340743 Santiago de Chile - Chile
Tel.: +56 2 738 01 44
e-mail: chile@ingeteam.com

Ingeteam Power Technology India Pvt. Ltd.

2nd Floor, 431
Udyog Vihar, Phase III
122016 Gurgaon (Haryana) - India
Tel.: +91 124 420 6491-5 / Fax: +91 124 420 6493
e-mail: india@ingeteam.com

Ingeteam Sp. z o.o.

Ul. Koszykowa 60/62 m 39
00-673 Warszawa - Poland
Tel.: +48 22 821 9930 / Fax: +48 22 821 9931
e-mail: polska@ingeteam.com

Ingeteam Australia Pty Ltd.

Suite 5, Ground Floor, Enterprise 1
Innovation Campus, Squires Way
North Wollongong, NSW 2500 - Australia
e-mail: australia@ingeteam.com