

SINGLE-PHASE TL INVERTER WITH A DOUBLE MPPT SYSTEM

2.5TL M / 3TL M / 3.3TL M / 3.68TL M / 4.6TL M / 5TL M / 6TL M

The INGECON®SUN 1Play TL 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 industrial systems rated up to several hundred kilowatts.

In domestic installations, these inverters present the great advantage of being compatible with 30 mA RCDs, the most commonly used to protect the people against electric discharges.

High efficiency system

Ingeteam has developed its own technology to maximize the efficiency rates of the INGECON®SUN 1Play TL M inverter family.

Thanks to this *High efficiency system* and to the use of innovative electronic conversion topologies, values of up to 98% 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

The INGECON®SUN 1Play TL M inverters feature fast-on connectors on the DC side (type 4) and the AC side for a fast and easy connection to the system. Every country-specific configuration and language can be easily selected from the inverter screen. Moreover, the INGECON®SUN 1Play TL M inverters are compatible with all the PV module technologies on the market.

Simple operation and maintenance

Ingeteam is at the forefront of innovative firm-ware. As a result, the INGECON®SUN 1Play TL 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 onsite from the inverter front touch key-pad 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.



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Firmware updating

The INGECON® SUN 1Play TL 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.

Monitoring and communication

The internal operating variables and the internal datalogger can be monitored through a number of media such as USB communications, supplied as standard. Also, RS-485, Ethernet, Wi-Fi, and 3G 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 M inverter housing is suitable for outdoor use (IP65 protection rating). Likewise, it can be used under extreme atmospheric conditions with temperature ranges from -25 °C to +65 °C, although its main cooling system is 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.

Long life expectancy

Ingeteam takes every care in the selection and sizing of the electronic components used for its inverters. The 1Play inverters have been designed to guarantee a long life expectancy, as demonstrated as demonstrated by the stress tests they are subjected to.

Standard 5 year warranty, extendable for up to 25 years

OPTIONAL ACCESSORIES

- Inverter communication via RS-485, Ethernet, Wi-Fi or 3G.
- DC switch.
- INGECON® SUN WeatherBox for meteorological values measurement and registration.
- Four additional digital inputs.
- Self-consumption kit.

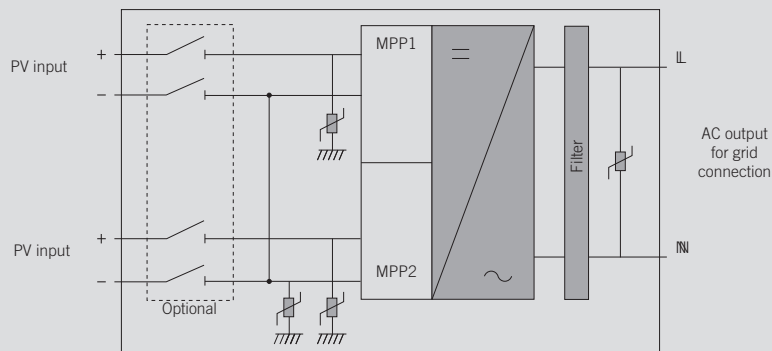
PROTECTIONS

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

MAIN FEATURES

- Compatible with 30 mA RCDs.
- Double-MPPT system.
- Available from 2.5 up to 6 kW.
- 98% maximum efficiency.
- SiC Technology inside.
- Inverter updating by the user through a SD memory card.
- USB communications supplied as standard.
- Two digital inputs 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 (IP65).
- Display-configurable potential free contact, to indicate insulation fault or grid connection.
- Compact design.
- Language and Country Code, rated voltage configurable by display.

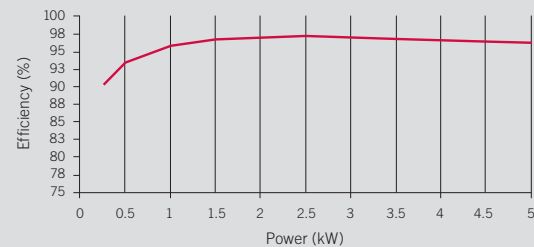
1Play TL M



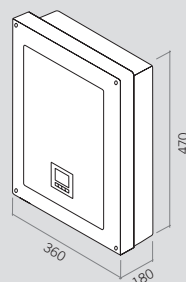
	2.5TL M	3TL M	3.3TL M	3.68TL M	4.6TL M	5TL M	6TL M
Input (DC)							
Recommended PV array power range ⁽¹⁾	2.8 - 3.3 kWp	3.2 - 4 kWp	3.8 - 4.4 kWp	3.9 - 4.8 kWp	5.2 - 6 kWp	5.7 - 6.5 kWp	6.3 - 7 kWp
Voltage range MPP1 ⁽²⁾	125 - 750 V						
Voltage range MPP2 ⁽²⁾⁽³⁾	90 - 750 V						
Maximum voltage ⁽⁴⁾	850 V						
Maximum current (Input 1 / Input 2)	11 / 11 A						
Inputs (Input 1 / Input 2) ⁽⁵⁾	1 / 1						
MPPT	2						
Output (AC)							
Rated power	2.5 kW	3 kW	3.3 kW	3.68 kW	4.6 kW	5 kW	6 kW
Max. temperature at rated power ⁽⁶⁾	60 °C	55 °C	52 °C	50 °C	58 °C	55 °C	45 °C
Maximum current	16 A	16 A	16 A	16 A	26.2 A	26.2 A	26.2 A
Rated voltage	230 V						
Voltage range	122 - 265 V						
Frequency	50 / 60 Hz						
Power Factor	1						
Power Factor adjustable	Yes. Smax=2.5 kVA	Yes. Smax=3 kVA	Yes. Smax=3.3 kVA	Yes. Smax=3.68 kVA	Yes. Smax=4.6 kVA	Yes. Smax=5 kVA	Yes. Smax=6 kVA
THD	<3%						
Efficiency							
Maximum efficiency	97.6%	97.7%	97.7%	97.8%	97.9%	98%	98%
Euroefficiency	97.3%	97.4%	97.4%	97.5%	97.5%	97.6%	97.6%
General Information							
Refrigeration system	Air convection						
Stand-by consumption ⁽⁷⁾	<10 W						
Consumption at night	0 W						
Ambient temperature	-25 °C to +65 °C						
Relative humidity (non-condensing)	0 - 100%						
Protection class	IP65						
Marking	CE						
EMC & Security standards	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12, EN 62109-1, EN 62109-2, IEC62103, EN 50178, FCC Part 15, AS3100						
Grid connection standards	RD1699/2011, DIN V VDE V 0126-1-1, EN 50438, CEI 0-21, VDE-AR-N 4105:2011-08, G59/2, G83/2 ⁽⁸⁾ , P.O.12.3, AS4777.2, AS4777.3, IEC 62116, IEC 61727, UNE 206007-1, ABNT NBR 16149, ABNT NBR 16150, South African Grid code, Chilean Grid Code, Romanian Grid Code, Ecuadorian Grid Code, Peruvian Grid code, IEEE 929, Thailand MEA & PEA requirements, DEWA (Dubai) Grid Code, Jordan Grid 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⁾ Optionally, the DC inputs could be duplicated ⁽⁶⁾ For each °C of increase, the output power will be reduced at the rate of 1.8% ⁽⁷⁾ Consumption from PV field ⁽⁸⁾ Related only inverters up to 16 A.

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



Size and weight (mm)



2.5TL M / 3TL M / 3.3TL M / 3.68TL M
20 kg.

4.6TL M / 5TL M / 5.5TL M / 6TL M
21 kg.



Ingeteam

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 SAS

La Naurouze B - 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 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, 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, n° 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.

Rua Estácio de Sá, 560
Jd. Santa Genebra
13080-010 Campinas/SP - Brazil
Tel.: +55 19 3037 3773
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

Los militares 5890, Torre A, oficina 401
7560742 - Las Condes
Santiago de Chile - Chile
Tel.: +56 2 29574531
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 112, Level 1, Mike Codd Building 232
Innovation Campus, Squires Way
North Wollongong, NSW 2500 - Australia
Tel.: +61 499 988 022
e-mail: australia@ingeteam.com

Ingeteam Panama S.A.

Calle Manuel Espinosa Batista, Ed. Torre Internacional
Business Center, Apto./Local 407 Urb.C45 Bella Vista
Bella Vista - Panama
Tel.: +50 761 329 467

Ingeteam Service S.R.L.

Bucuresti, Sector 2, Bulevardul Dimitrie Pompeiu Nr 5-7
Cladirea Hermes Business Campus 1, Birou 236, Etaj 2
Romania
Tel.: +40 728 993 202

Ingeteam Philippines Inc.

Office 2, Unit 330, Milelong Bldg.
Amorsolo corner Rufin St.
1230 Makati
Gran Manila - Philippines
Tel.: +63 0917 677 6039