



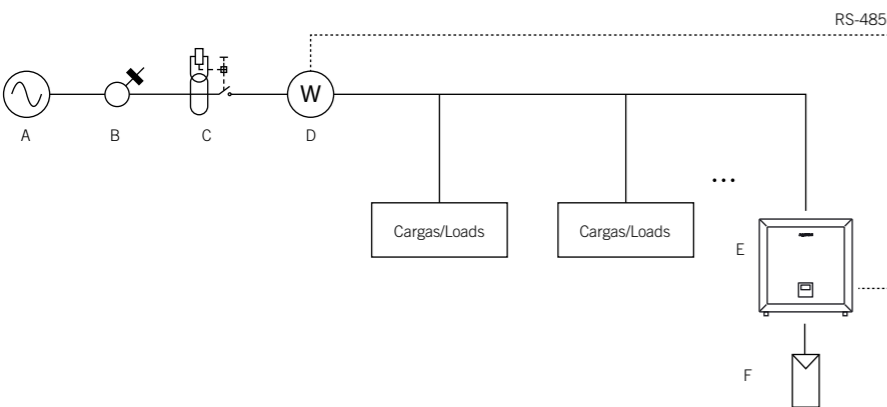
ES Kit de autoconsumo instantáneo para INGECON SUN 3Play

EN Instant self-consumption kit for INGECON SUN 3Play

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- ES**
- A. Red
 - B. Interruptor de Control de Potencia (ICP)
 - C. Diferencial
 - D. Vatímetro A65/A65+
 - E. INGECON SUN 3Play
 - F. Paneles solares

- EN**
- A. Grid
 - B. Circuit breaker switch
 - C. Residual current device
 - D. Wattmeter A65/A65+
 - E. INGECON SUN 3Play
 - F. Solar panels

W

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Conexión del vatímetro

Todas las conexiones se deberán realizar sin tensión.

El vatímetro se debe instalar sobre carril DIN. Es importante instalar el vatímetro en el punto de conexión de la instalación después del Interruptor de Control de Potencia (ICP) y del resto de protecciones, y antes de que el cableado se bifurque a todas las cargas y al inversor, tal y como muestra el esquema anterior.

Para realizar las conexiones quitar las dos tapas protectoras de las conexiones para tener acceso a las mismas.

Conectar el vatímetro, según la configuración escogida, tal y como muestran los esquemas de este apartado.

Con el vatímetro se adjunta la tarjeta de comunicaciones necesaria, las guías para instalar la tarjeta y un prensaestopa. Insertar las guías en la tarjeta de potencia en el lugar indicado con la inscripción INGECON Connect, conectar la tarjeta de comunicaciones y realizar el cableado según la tabla T1 (ver figura F1).

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Connecting the Wattmeter

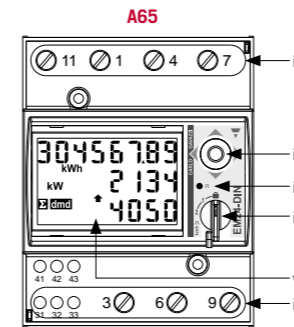
All the connections must be made without voltage.

The Wattmeter must be installed on the DIN rail. The Wattmeter should be installed at the connecting point of the installation after the circuit breaker switch and the remaining protections, and before the wiring of the installation is branched off to all the loads and to the inverter, as shown in the previous diagram.

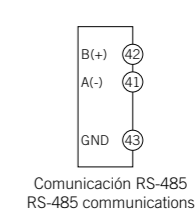
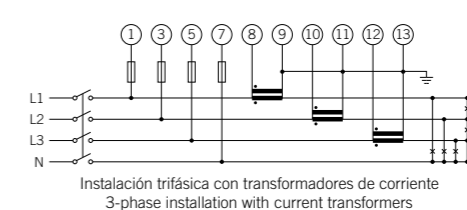
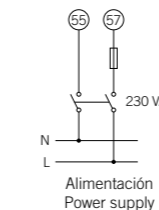
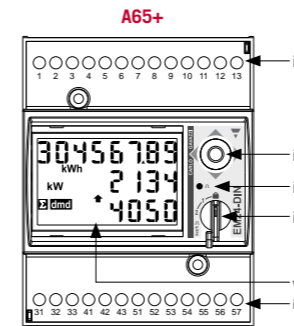
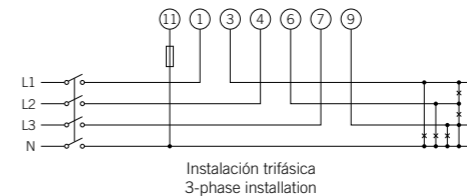
To make the connections, get access to the connections by removing the two protective caps.

Connect the Wattmeter, in accordance with the selected configuration, as shown in the diagrams of this section.

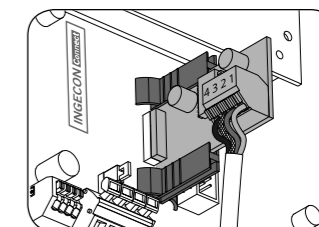
Attach the required communications card, the guides to install the card and a packing gland to the Wattmeter. Insert the guides into the power card in the place indicated with the inscription INGECON Connect. Connect the communications card and connect the wiring in accordance with the table T1 (see Figure F1).



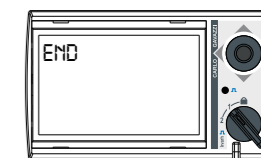
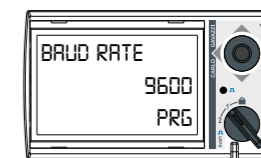
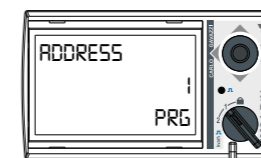
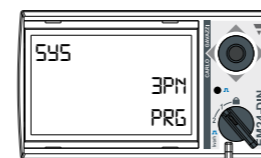
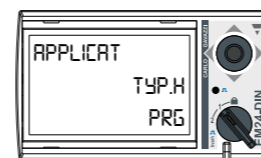
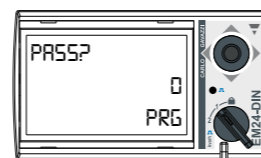
- i. Conexiones Connections
- ii. Joystick Joystick
- iii. LED LED
- iv. Selector Selector
- v. Display Display



| Tarjeta de comunicaciones Communications card | |
|--|---|
| Pin | Señal Signal |
| 1 | RS-485 (B+) |
| 2 | RS-485 (A-) |
| 3 | Pantalla de protección Protection shield |
| 4 | (GND) |



Config



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Configuración del vatímetro

El vatímetro está configurado de serie para funcionar junto a inversores INGECON SUN 1Play, por lo que será necesario configurarlo para su uso con inversores INGECON SUN 3Play.

Para configurar el vatímetro seguir los siguientes pasos:

1. Alimentar el vatímetro desde la red eléctrica.
2. Mediante el selector elegir la posición 1.
3. Acceder al menú de configuración presionando el joystick durante 3 segundos. Se solicitará una clave de acceso. Por defecto, esta clave es 0. Una vez introducida la clave pulsar una vez el joystick para aceptar. Ver D1.
4. Al aceptar se accede a la pantalla de configuración de la contraseña CNG PASS. Se recomienda no modificar el valor y desplazar el joystick hacia la derecha para pasar a la siguiente pantalla.
5. Pantalla de tipo de aplicación APPLICAT. En esta pantalla se debe seleccionar la aplicación tipo H. Para ello pulsar el joystick una vez. En la parte inferior del display aparece PRG, indicativo de que es posible modificar el valor. Desplazar el joystick en cualquiera de los 4 sentidos hasta que aparezca TYP.H. Presionar una vez el joystick para aceptar. Ver D2.
6. Avanzar hasta la pantalla de selección del tipo de sistema SYS mediante el joystick. Presionar el joystick una vez (aparecerá en la parte inferior del display la indicación PRG). Desplazar el joystick en cualquiera de los cuatro sentidos hasta llegar a 3PN. Pulsar el joystick una vez para aceptar. Ver D3.
7. Avanzar hasta la pantalla de número de nodo ADDRESS mediante el joystick. Presionar el joystick una vez (aparecerá en la parte inferior del display la indicación PRG). Desplazar el joystick en cualquiera de los 4 sentidos para que el número seleccionado sea el mismo que el número de nodo del inversor asociado (este número se puede consultar en el display del inversor; más información en el manual de instalación de INGECON SUN 3Play). Pulsar el joystick una vez para aceptar. Ver D4.

Al aceptar se accede a la pantalla de configuración del BAUD RATE. Pulsar nuevamente el joystick (aparecerá en la parte inferior del display la indicación PRG). Desplazar el joystick en cualquiera de los cuatro sentidos para seleccionar 9600 bps. Pulsar el joystick una vez para aceptar. Ver D5.

8. Avanzar hasta la pantalla END. Presionar el joystick una vez para salir a la pantalla principal.
9. Volver a elegir la posición de bloqueo mediante el selector.

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Wattmeter configuration

The Wattmeter is factory configured to work alongside INGECON SUN 1Play inverters so it is necessary to reconfigure it in order to work with INGECON SUN 3Play inverters.

Follow these steps to configure the Wattmeter:

1. Supply power to the Wattmeter from the electrical grid.
2. Choose position 1 using the selector.
3. Access the Configuration menu by pressing the joystick for 3 seconds. A passkey will be requested. By default, this key is 0. Once you have entered the key press the joystick once to accept. See D1.
4. Accepting this gains access to the password configuration screen CNG PASS. It is recommended that you do not modify the value and move the joystick right to move to the next screen.
5. APPLICAT application type Screen. Select the application type H in this screen. To do this press the joystick once. At the bottom of the display PRG appears, indicating that it is possible to modify the value. Move the joystick in any of the 4 directions until TYP.H appears. Press the joystick once to accept. See D2.
6. Move to the SYS system type selection screen using the joystick. Press the joystick once (the PRG indication will appear on the bottom of the display). Move the joystick in any of the 4 directions until 3PN appears. Press the joystick once to accept. See D3.
7. Move to the ADDRESS node number screen using the joystick. Press the joystick once (the PRG indication will appear on the bottom of the display). Move the joystick in any of the 4 directions so that the selected number is the same as the node number of the associated inverter (you can see this number on the inverter display. More information is available in the INGECON SUN 3Play installation manual). Press the joystick once to accept. See D4.

Accepting this gains access to the BAUD RATE configuration screen. Press the joystick again (the PRG indication will appear on the bottom of the display). Move the joystick in any of the 4 directions to select 9600 bps. Press the joystick once to accept. See D5.

8. Move to the ENG screen. Press the joystick once to exit to the main screen.
9. Set the lock position using the selector.



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Para ampliar información sobre las conexiones RS-485 consultar el manual de accesorios de comunicación vía RS-485.

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For more information on RS-485 connections, see the RS-485 communication accessories manual.



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Current transformer parameters for three-phase installations with current transformers (A65+ Wattmeter)

The parameters indicated below must be considered in order to select the correct current transformer:

Ip: Nominal primary current (A)

The nominal current on the primary must be greater than or equal to the maximum current per system phase.

Is: Nominal secondary current (A)

Nominal current value on the current transformer secondary.

The nominal current of the Wattmeter to be connected to the transformer secondary is In = 5 A and its maximum current is Imax = 10 A.

To ensure the Wattmeter measures precisely, at least one current transformer with a nominal secondary current of Is = 5 A must be used.



Ingeteam does not guarantee the precision and correct functioning of the installed self-consumption system when transformers with a nominal secondary current (Is) of less than 5 A are used.

Transformers with a nominal secondary current that is higher than the maximum current of the Wattmeter (i.e. 10 A) may not be used.

K_N: Transformation ratio (A)

Ratio between the nominal current of the primary and the nominal current of the secondary.

This is expressed as a fraction. Example: K_N = (150 A / 5 A)

CI: Precision class

The precision class is the percentage current error limit when operating at nominal current.

Ingeteam requires a current transformer precision class of 0.5 (CI 0.5).

Current transformers with a precision class that allows for current measurement with an error below that established by precision class 0.5 are also accepted.

Sn: Precision power (VA)

This parameter describes the capacity of the transformer to make the current run around the secondary through a load, maintaining the precision class. The power consumed in the current transformer secondary must be calculated in VA (bear in mind the sum of wiring and the A65+Wattmeter in this calculation).

The standardised power closest to that calculated should be selected. The standardised power must be higher than that calculated.

The following ratio must be met for correct operations:

$$S_n \geq S_c + S_w$$

(See application note)

Ingeteam does not guarantee the precision and correct functioning of the installed self-consumption system if this ratio is not met.

Isolation level

Current transformers providing an isolation level of ≥ 1 kV must be used.



Bear the environmental operating conditions of the installation in mind in the parameters defining the features of a current transformer.

The secondary circuit of an operational current transformer must never remain open-circuited.

Application note

Sw: Power consumed in the A65+ Wattmeter expressed in VA. The power dissipated by the Wattmeter for a nominal current In = 5 A is Sw = 0.3 VA per phase.

For currents other than 5 A, the power consumed by the Wattmeter associated to the measurement can be obtained as:

$$S_w = I^2 \times Z_w, \text{ where } Z_w = 0.3 \text{ VA} / (5 \text{ A})^2 = 12 \text{ m}\Omega$$

Sc: Power consumed by the wiring in the current transformer secondary in VA. This can be calculated as:

$$S_c = I^2 \times Z_c$$

The cable impedance is considered at an ambient temperature of less than 40 °C.

Config

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Configuración del INGECON SUN 3Play⁽¹⁾

Tras la instalación y conexión del vatímetro habrá que configurar el inversor INGECON SUN 3Play para su correcto funcionamiento. Para realizar esta configuración el inversor debe estar alimentado.

Para la configuración del autoconsumo se debe introducir previamente la contraseña de instalador (3725) dentro de *Menú principal* > *Ajustes avanzados*.

Acceder al menú *Menú principal* > *Ajustes* > *Autoconsumo* > *Modo* para seleccionar el modo de autoconsumo. Elegir *Auto-limitado CG EM24*⁽²⁾.

También habrá que configurar el balance de potencia que se desea en la instalación. Existen tres opciones:

- Balance positivo: el inversor determinará que, siempre que las cargas sean suficientes, exista un consumo de la magnitud fijada.
- Balance 0.
- Balance negativo: el inversor determinará que, siempre que la potencia generada por el campo fotovoltaico sea suficiente, exista una inyección de potencia de la magnitud fijada.

Para configurar el balance acceder a *Menú principal* > *Ajustes* > *Autoconsumo* > *Consigna de potencia*. Seleccionar la potencia deseada mediante las teclas \wedge o \vee . Pulsar OK para confirmar.

Si el autoconsumo instantáneo se ha configurado correctamente aparecerá el símbolo luciendo de forma continua junto al inversor en la pantalla principal. En el caso de que este símbolo no aparezca se deberá volver a configurar correctamente.

Si dicho símbolo apareciese parpadeando significa que existe un fallo de comunicación del cable RS-485. Revisar las conexiones y conectar correctamente hasta que desaparezca el fallo.

⁽¹⁾ Si el país seleccionado en el inversor dentro del menú *Menú principal* > *Ajustes avanzados* > *País normativa* es España, la opción de *Autoconsumo* vendrá configurada de serie y no será posible modificarla, cumpliendo de este modo la normativa propia del país. Para el resto de países sí será posible modificar esta configuración.

⁽²⁾ Una vez seleccionado el modo *Auto-limitado CG EM24* de *Autoconsumo* no será posible activar el modo *MPPT*. En caso de querer activar el modo *MPPT* contactar con el SAT de Ingeteam.

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Configuring the INGECON SUN 3Play⁽¹⁾

After installing and connecting the Wattmeter it is necessary to set up the INGECON SUN 3Play inverter for it to operate correctly. The inverter must be powered to carry out this configuration.

In order to configure the unit, an installer password (3725) must be introduced in *Main menu* > *Advanced settings*.

Access the *Main menu* > *Settings* > *Self-consumption* > *Mode* to select the self-consumption mode. Select *Self-limiting CG EM24*⁽²⁾.

It is also necessary to configure the power balance that you require in the installation. There are three options:

- Positive Balance: the inverter will establish, provided that the loads are sufficient, that the consumption is at the set value.
- Balance 0.
- Negative Balance: the inverter will establish, provided that the power generated by the photovoltaic array is sufficient, that there is an injection of power to match the set value.

To configure the balance access the *Main menu* > *Settings* > *Self-consumption* > *Power setpoint*. Select the desired power using the keys \wedge or \vee . Press OK to confirm.

If the instantaneous self-consumption has been correctly configured the symbol appears continuously together with the inverter on the main screen. In the event that this symbol does not appear it is necessary to re-configure the balance.

If the symbol appears flashing, this means that there is a communication failure in cable RS-485. Check the connections and connect the cable correctly until the fault disappears.

⁽¹⁾ If the country selected in the inverter under the *Main menu* > *Advanced settings* > *Country regulations* is Spain, the *Self-consumption* option will come factory configured and it will not be possible to modify it, thus complying with the country's legislation. For the remaining countries it will be possible to modify this configuration.

⁽²⁾ Once you have selected *Self-limiting CG EM24* mode in *Self-consumption* it will not be possible to enable *MPPT* mode. If you want to enable *MPPT* mode, contact the Ingeteam Technical Service.