INGECON SUN 1Play/3Play

DATOS DE MONITORIZACIÓN / MONITORING DATA

ES
EN

Tabla de contenido

1. INTRODUCCIÓN

En este documento se muestran los registros utilizados para monitorizar los datos en tiempo real de los inversores INGECON SUN 1PLAY/3PLAY.

Los números se describen en formato decimal cuando se describe un número, por ejemplo 12. En el caso de emplear formato hexadecimal, se coloca el prefijo 0x, por ejemplo, ese mismo número 12 se indicará como 0xC.

En el documento siempre se va a indicar la dirección modbus del registro de acuerdo al protocolo. En caso de usar dispositivos que requieran el direccionamiento MODICON de PLC, habrá que añadir a la dirección del protocolo MODBUS el offset correspondiente a los registros tipo Holding. Este offset viene definido en la literatura con el valor decimal 40001.

2. DATOS DE MONITORIZACIÓN

2.1 MONITORIZACIÓN MEDIANTE MODBUS-TCP

El inversor se puede monitorizar desde la aplicación web, tanto de forma local como remota. Esto se hace a través del Dongle.

Dado que el Dongle de este inversor utiliza el protocolo Modbus-TCP, los sistemas SCADA pueden comunicarse con el Dongle a través de Ethernet o Wi-Fi si utilizan el protocolo Modbus-TCP.

El sistema SCADA puede leer el valor de los registros descritos en el siguiente apartado. En ese caso, Ingeteam recomienda un único cliente conectado al puerto 502 y con un periodo de petición Modbus-TCP a la unidad no inferior a 1 segundo.

2.2 FUNCIÓN 3 (0x3): LECTURA REGISTROS TIPO HOLDING

Todos los registros de este documento son holdings de solo lectura.

La función 0x03 permite la lectura de los registros del inversor.

	Byte	Description
Modbus Address	1	1 (by default)
Function Code	1	0x03
Register start address	2	[0x0000, 0xFFFF]
Register number	2	1, 124
CRC code	2	

2.3 DATOS DE MONITORIZACIÓN EN TIMEPO REAL

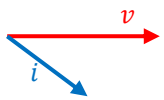
Dirección Modbus (Hex)	Descripción		Tipo
0x1001	Vac1	[V x 10]	UINT16
0x1002	Iac1	[A x 100]	UINT16
0x1003	Pac1	[W x 10]	INT32
0x1005	Frecuencia1	[Hz x 100]	UINT16
0x1006	Vac2	[V x 10]	UINT16
0x1007	Iac2	[A x 100]	UINT16
0x1008	Pac2	[W x 10]	INT32
0x100A	Frecuencia2	[Hz x 100]	UINT16
0x100B	Vac3	[V x 10]	UINT16
0x100C	Iac3	[A x 100]	UINT16
0x100D	Pac3	[W x 10]	INT32
0x100F	Frecuencia3	[Hz x 100]	UINT16

0x1010	Vmppt1	[V x 10]	UINT16
0x1011	Imppt1	[A x 100]	INT16
0x1012	Pmppt1	[W x 10]	UINT32
0x1014	Vmppt2	[V x 10]	UINT16
0x1015	Imppt2	[A x 100]	INT16
0x1016	Pmppt2	[W x 10]	UINT32
0x1018	Vmppt3	[V x 10]	UINT16
0x1019	Imppt3	[A x 100]	INT16
0x101A	Pmppt3	[W x 10]	UINT32
0x101C	Temperatura interna	[ºC]	INT16
0x101D	Estado del inversor	[Nota 3]	UINT16
0x101E	Código de Evento 1	[Nota 1]	UINT16
0x101F	Código de Evento 2	[Nota 1]	UINT16
0x1020	Código de Evento 3	[Nota 1]	UINT16
0x1021	Energía total	[Wh x 10]	UINT32
0x1023	Tiempo de generación	[Horas]	UINT32
0x1025-0x1036	Reservado	-	-
0x1037	P potencia activa total de salida	[W x 10]	INT32
0x1039	Q potencia reactiva total de salida	[Q x 10] [Nota 2]	INT32
0x103B	Potencia pico de generación	[W x 10]	UINT32
0x103D	Coseno de Phi	[PF x 1000]	INT16
0x103E	Vmppt4	[V x 10]	UINT16
0x103F	Imppt4	[A x 100]	INT16
0x1040	Pmppt4	[W x 10]	UINT32
0x1041-0x1050	Reservado	-	-
0x1051	Istring1	[A x 100]	INT16
0x1052	Vstring1	[V x 10]	UINT16
0x1053	Istring2	[A x 100]	INT16
0x1054	Vstring2	[V x 10]	UINT16
0x1055	Istring3	[A x 100]	INT16
0x1056	Vstring3	[V x 10]	UINT16
0x1057	Istring4	[A x 100]	INT16
0x1058	Vstring4	[V x 10]	UINT16
0x1059	Istring5	[A x 100]	INT16
0x105A	Vstring5	[V x 10]	UINT16
0x105B	Istring6	[A x 100]	INT16

0x105C	Vstring6	[V x 10]	UINT16
0x105D	Istring7	[A x 100]	INT16
0x105E	Vstring7	[V x 10]	UINT16
0x105F	Istring8	[A x 100]	INT16
0x1060	Vstring8	[V x 10]	UINT16
0x1061	Istring9	[A x 100]	INT16
0x1062	Vstring9	[V x 10]	UINT16
0x1063	Istring10	[A x 100]	INT16
0x1064	Vstring10	[V x 10]	UINT16
0x1065	Istring11	[A x 100]	INT16
0x1066	Vstring11	[V x 10]	UINT16
0x1067	Istring12	[A x 100]	INT16
0x1068	Vstring12	[V x 10]	UINT16
0x1069	Istring13	[A x 100]	INT16
0x1069	Istring13	[A x 100]	INT16
0x106A	Vstring13	[V x 10]	UINT16
0x106B	Istring14	[A x 100]	INT16
0x106C	Vstring14	[V x 10]	UINT16
0x106D	Istring15	[A x 100]	INT16
0x106E	Vstring15	[V x 10]	UINT16
0x106F	Istring16	[A x 100]	INT16
0x1070	Vstring16	[V x 10]	UINT16
0x1071	Istring17	[A x 100]	INT16
0x1072	Vstring17	[V x 10]	UINT16
0x1073	Istring18	[A x 100]	INT16
0x1074	Vstring18	[V x 10]	UINT16
0x1074 - 0x107F	Reservado	-	-
0x1080	Vmppt5	[V x 10]	UINT16
0x1081	Imppt5	[A x 100]	INT16
0x1082	Pmppt5	[W x 10]	UINT32
0x1084	Vmppt6	[V x 10]	UINT16
0x1085	Imppt6	[A x 100]	INT16
0x1086	Pmppt6	[W x 10]	UINT32
0x1088	Vmppt7	[V x 10]	UINT16
0x1089	Imppt7	[A x 100]	INT16
0x108A	Pmppt7	[W x 10]	UINT32
0x108C	Vmppt8	[V x 10]	UINT16
0x108D	Imppt8	[A x 100]	INT16

0x108E	Pmppt8	[W x 10]	UINT32
0x1090	Vmppt9	[V x 10]	UINT16
0x1091	Imppt9	[A x 100]	INT16
0x1092	Pmppt9	[W x 10]	UINT32

Nota 1: Más información en el documento ACL0000IMC01 de descripción de estados y eventos.
Nota 2: Criterio de signos para la potencia reactiva.

Tipo de corriente	**Efecto en la red**	**Signo de reactiva**	**Signo de tangente/coseno**	**Diagrama fasorial**
La corriente está retrasada con respecto a la tensión.	Aumento de la tensión de red.	Q > 0	Positivo	
La corriente está adelantada con respecto a la tensión.	Disminución de la tensión de red	Q < 0	Negativo	

Nota 3: Estado de inversor.

Value	**Description**
0x0	Estado por defecto de fábrica
0x1	Inversor desconectado de red.
0x3	Inversor conectado a red.

3. HISTORIAL DE REVISIÓN

Revisión	Fecha	Descripción del cambio	Autor
_		Documento inicial	I.B.V.

Contents

1 INTRODUCTION

This document shows the registers used to monitor the real time data of the INGECON SUN 1PLAY/3PLAY inverters.

Numbers are described in decimal format when describing a number, for example 12. In the case of using hexadecimal format, the prefix 0x is placed, for example, the same number 12 will be indicated as 0xC.

The modbus address of the register will always be indicated in the document according to the protocol. In case of using devices that require PLC MODICON addressing, it will be necessary to add to the MODBUS protocol address the offset corresponding to the Holding type registers. This offset is defined in the literature with the decimal value 40001.

2 MONITORING DATA

2.1 MONITORING VIA MODBUS-TCP

The inverter can be monitored from the web application, either locally or remotely. This is done through the Dongle.

Since the Dongle of this inverters uses the Modbus-TCP protocol, SCADA systems can communicate with the Dongle via Ethernet or Wi-Fi if the Modbus-TCP protocol is used.

The SCADA system can read the value of the registers described above. In that case, Ingeteam recommends a single client connected to port 502 and with a Modbus-TCP request period to the unit of no less than 1 second.

2.2 FUNCTION 3 (0x3): READING HOLDING REGISTERS

All the registers are read-only holding registers.

Function 0x03 allows the reading of the registers from the inverter.

	Byte	Description
Modbus Address	1	1 (by default)
Function Code	1	0x03
Register start address	2	[0x0000, 0xFFFF]
Register number	2	1, 124
CRC code	2	

2.3 REAL TIME MONITORING DATA

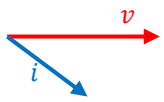
Modbus Address (Hex)	Description		Type
0x1001	Vac1	[V x 10]	UINT16
0x1002	Iac1	[A x 100]	UINT16
0x1003	Pac1	[W x 10]	INT32
0x1005	Frequency1	[Hz x 100]	UINT16
0x1006	Vac2	[V x 10]	UINT16
0x1007	Iac2	[A x 100]	UINT16
0x1008	Pac2	[W x 10]	INT32
0x100A	Frequency2	[Hz x 100]	UINT16
0x100B	Vac3	[V x 10]	UINT16
0x100C	Iac3	[A x 100]	UINT16
0x100D	Pac3	[W x 10]	INT32
0x100F	Frequency3	[Hz x 100]	UINT16
0x1010	Vmppt1	[V x 10]	UINT16

0x1011	Imppt1	[A x 100]	INT16
0x1012	Pmppt1	[W x 10]	UINT32
0x1014	Vmppt2	[V x 10]	UINT16
0x1015	Imppt2	[A x 100]	INT16
0x1016	Pmppt2	[W x 10]	UINT32
0x1018	Vmppt3	[V x 10]	UINT16
0x1019	Imppt3	[A x 100]	INT16
0x101A	Pmppt3	[W x 10]	UINT32
0x101C	Inner Temp	[ºC]	INT16
0x101D	Inverter state	[Nota 3]	UINT16
0x101E	AlarmCode1	[Note 1]	UINT16
0x101F	AlarmCode2	[Note 1]	UINT16
0x1020	AlarmCode3	[Note 1]	UINT16
0x1021	Total Energy	[Wh x 10]	UINT32
0x1023	Generation time	[Hours]	UINT32
0x1025-0x1036	Reserved		
0x1037	P total active power	[W x 10]	INT32
0x1039	Q total reactive power	[VAr x 10] [Note 2]	INT32
0x103B	Power generation peak	[W x 10]	UINT32
0x103D	Cosine of Phi	[PF x 1000]	INT16
0x103E	Vmppt4	[V x 10]	UINT16
0x103F	Imppt4	[A x 100]	INT16
0x1040	Pmppt4	[W x 10]	UINT32
0x1041-0x1050	Reserved		
0x1051	Istring1	[A x 100]	INT16
0x1052	Vstring1	[V x 10]	UINT16
0x1053	Istring2	[A x 100]	INT16
0x1054	Vstring2	[V x 10]	UINT16
0x1055	Istring3	[A x 100]	INT16
0x1056	Vstring3	[V x 10]	UINT16
0x1057	Istring4	[A x 100]	INT16
0x1058	Vstring4	[V x 10]	UINT16
0x1059	Istring5	[A x 100]	INT16
0x105A	Vstring5	[V x 10]	UINT16
0x105B	Istring6	[A x 100]	INT16
0x105C	Vstring6	[V x 10]	UINT16

0x105D	Istring7	[A x 100]	INT16
0x105E	Vstring7	[V x 10]	UINT16
0x105F	Istring8	[A x 100]	INT16
0x1060	Vstring8	[V x 10]	UINT16
0x1061	Istring9	[A x 100]	INT16
0x1062	Vstring9	[V x 10]	UINT16
0x1063	Istring10	[A x 100]	INT16
0x1064	Vstring10	[V x 10]	UINT16
0x1065	Istring11	[A x 100]	INT16
0x1066	Vstring11	[V x 10]	UINT16
0x1067	Istring12	[A x 100]	INT16
0x1068	Vstring12	[V x 10]	UINT16
0x1069	Istring13	[A x 100]	INT16
0x106A	Vstring13	[V x 10]	UINT16
0x106B	Istring14	[A x 100]	INT16
0x106C	Vstring14	[V x 10]	UINT16
0x106D	Istring15	[A x 100]	INT16
0x106E	Vstring15	[V x 10]	UINT16
0x106F	Istring16	[A x 100]	INT16
0x1070	Vstring16	[V x 10]	UINT16
0x1071	Istring17	[A x 100]	INT16
0x1072	Vstring17	[V x 10]	UINT16
0x1073	Istring18	[A x 100]	INT16
0x1074	Vstring18	[V x 10]	UINT16
0x1074 - 0x107F	Reserved		
0x1080	Vmppt5	[V x 10]	UINT16
0x1081	Imppt5	[A x 100]	INT16
0x1082	Pmppt5	[W x 10]	UINT32
0x1084	Vmppt6	[V x 10]	UINT16
0x1085	Imppt6	[A x 100]	INT16
0x1086	Pmppt6	[W x 10]	UINT32
0x1088	Vmppt7	[V x 10]	UINT16
0x1089	Imppt7	[A x 100]	INT16
0x108A	Pmppt7	[W x 10]	UINT32
0x108C	Vmppt8	[V x 10]	UINT16
0x108D	Imppt8	[A x 100]	INT16
0x108E	Pmppt8	[W x 10]	UINT32
0x1090	Vmppt9	[V x 10]	UINT16

0x1091	Imppt9	[A x 100]	INT16
0x1092	Pmppt9	[W x 10]	UINT32

Note 1: Check ACL0000IMC01. Events and status description.
Note 2: Sign criteria for reactive power.

Type of current	**Effect on the grid**	**Reactive sign**	**Tangent / Cosine sign**	**Phasor diagram**
The current is delivered lagging from the voltage	The grid voltage goes up.	Q > 0	Positive	
The current is delivered leading from the voltage	The grid voltage goes down.	Q < 0	Negative	

Note 3: Inverter status.

Value	**Description**
0x0	Factory default mode
0x1	Inverter off-grid
0x3	Inverter on-grid

3 REVISION HISTORY

Revision	Date	Change Description	Author
_		Initial document	I.B.V.