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XPOW7300 Driver Manual

Power Measurement 7300/7330 ION Protocol Driver

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XPOW7300 technical specifications

General information

XPOW7300 driver allows you to connect with POWER MEASUREMENT 7300 ION and 7330 ION Power Meter Series.

The link is established using the 7300/7330 ION/Modicon Modbus Serial Communications Protocol using the ION/Modbus Register Map. The 7300/7330 ION performs Modbus communications by emulating the Modicon 984 Programmable Controller. The purpose of this driver is to allow measured data to be efficiently transferred between a 7300/7330 ION and your application. The 7300/7330 ION is capable of communication on both the RS-232C and the RS-485 serial communication standards. The RS-485 medium allows for multiple devices on a multi-drop network, whereas RS-232C allows for only a single device. The 7300/7330 ION Modbus protocol is identical for both environments.

All communications on the communications loop conforms to a MASTER/SLAVE scheme. In this scheme, information and data is transferred between this driver and up to 32 SLAVE monitoring devices for RS-485 and only one SLAVE device for RS-232C.

This driver includes one global command that can be used to read the most relevant variables from the PML 7300/7330 ION. If you need to read other parameters or write any information to the device, consider using the XMODBUS driver (modbus binary protocol) which is also supported by this Power Measurement family.

Command list

Commands

Read Real-Time Measured Data from 7300

Description of this command:

This command retrieves up to 56 of the most relevant measured values from the 7300 ION real-time memory.

THIS COMMAND APPLIES ONLY TO A 7300 ION DEVICE WHICH HAS BEEN FACTORY-INITIALIZED. ANY SETUP CHANGES TO THE MODBUS SLAVE MODULES NEGATES THE VALIDITY OF THE MODBUS-EQUIVALENT REGISTER MAP AND THUS, THE VALIDITY OF THE VALUES TRANSFERRED BY THIS COMMAND.

Methods used to run this command:

Analog Input

Number of points accepted by this command:

1-56

Meaning of the DriverP0 parameter:

Unit Address (1-247)

Meaning of the DriverP1 parameter:

0

Meaning of the DriverP2 parameter:

Optional Modbus start register address. If empty or 0, 40011 is assumed.

Important note:

Some implementations might need you to subtract 40001 to the actual address, meaning that you should try '10' instead of '40011'.

Values that are returned:

Value in PointValue (0) = Van
Value in PointValue (1) = Vbn
Value in PointValue (2) = Vcn
Value in PointValue (3) = Vln avg
Value in PointValue (4) = Vab
Value in PointValue (5) = Vbc
Value in PointValue (6) = Vca
Value in PointValue (7) = VII avg

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Value in PointValue (8) = Ia
Value in PointValue (9) = Ib
Value in PointValue (10) = Ic
Value in PointValue (11) = I avg
Value in PointValue (12) = V unbal
Value in PointValue (13) = I unbal
Value in PointValue (14) = Freq
Value in PointValue (15) = Phase Rev
Value in PointValue (16) = kWa
Value in PointValue (17) = kWb
Value in PointValue (18) = kWc
Value in PointValue (19) = kW tot
Value in PointValue (20) = kVARa
Value in PointValue (21) = kVARb
Value in PointValue (22) = kVARc
Value in PointValue (23) = kVAR tot
Value in PointValue (24) = kVAa
Value in PointValue (25) = kVAb
Value in PointValue (26) = kVAc
Value in PointValue (27) = kVA tot
Value in PointValue (28) = pf signed a
Value in PointValue (39) = pf signed b
Value in PointValue (30) = pf signed c
Value in PointValue (31) = pf signed avg
Value in PointValue (32) = kW tot TD
Value in PointValue (33) = kVAR tot TD
Value in PointValue (34) = kVA tot TD
Value in PointValue (35) = kW tot TD Max
Value in PointValue (36) = kVAR tot TD Max
Value in PointValue (37) = kVA tot TD Max
Value in PointValue (38) = VIn avg Max
Value in PointValue (39) = I avg Max
Value in PointValue (40) = kW tot Max
Value in PointValue (41) = kVAR tot Max
Value in PointValue (42) = kVA tot Max
Value in PointValue (43) = Freq Max
Value in PointValue (44) = VIn avg Min
Value in PointValue (45) = I avg Min
Value in PointValue (46) = Freq Min
Value in PointValue (47) = kWh import
Value in PointValue (48) = kWh export
Value in PointValue (49) = kWh tot
Value in PointValue (50) = kWh net
Value in PointValue (51) = kVARh import
Value in PointValue (52) = kVARh export
Value in PointValue (53) = kVARh tot
Value in PointValue (54) = kVARh net
Value in PointValue (55) = kVAh tot

Read Real-Time Measured Data from 7330

Description of this command:

This command retrieves up to 62 of the most relevant measured values from the 7330 ION real-time memory.

THIS COMMAND APPLIES ONLY TO A 7330 ION DEVICE WHICH HAS BEEN FACTORY-INITIALIZED. ANY SETUP CHANGES TO THE MODBUS SLAVE MODULES NEGATES THE VALIDITY OF THE MODBUS-EQUIVALENT REGISTER MAP AND THUS, THE VALIDITY OF THE VALUES TRANSFERRED BY THIS COMMAND.

Methods used to run this command:

Analog Input

Number of points accepted by this command:

1-62

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Meaning of the DriverP0 parameter:

Unit Address (1-247)

Meaning of the DriverP1 parameter:

0

Meaning of the DriverP2 parameter:

Optional Modbus start register address. If empty or 0, 40011 is assumed.

Important note:

Some implementations might need you to subtract 40001 to the actual address, meaning that you should try '10' instead of '40011'.

Values that are returned:

Value in PointValue (0) = Van
Value in PointValue (1) = Vbn
Value in PointValue (2) = Vcn
Value in PointValue (3) = Vln avg
Value in PointValue (4) = Vab
Value in PointValue (5) = Vbc
Value in PointValue (6) = Vca
Value in PointValue (7) = Vll avg
Value in PointValue (8) = Ia
Value in PointValue (9) = Ib
Value in PointValue (10) = Ic
Value in PointValue (11) = I avg
Value in PointValue (12) = V unbal
Value in PointValue (13) = I unbal
Value in PointValue (14) = Freq
Value in PointValue (15) = Phase Rev
Value in PointValue (16) = kWa
Value in PointValue (17) = kWb
Value in PointValue (18) = kWc
Value in PointValue (19) = kW tot
Value in PointValue (20) = kVARa
Value in PointValue (21) = kVARb
Value in PointValue (22) = kVARc
Value in PointValue (23) = kVAR tot
Value in PointValue (24) = kVAa
Value in PointValue (25) = kVAb
Value in PointValue (26) = kVAc
Value in PointValue (27) = kVA tot
Value in PointValue (28) = pf signed a
Value in PointValue (29) = pf signed b
Value in PointValue (30) = pf signed c
Value in PointValue (31) = pf signed avg
Value in PointValue (32) = kW tot TD
Value in PointValue (33) = kVAR tot TD
Value in PointValue (34) = kVA tot TD
Value in PointValue (35) = kW tot TD Max
Value in PointValue (36) = kVAR tot TD Max
Value in PointValue (37) = kVA tot TD Max
Value in PointValue (38) = Vln avg Max
Value in PointValue (39) = I avg Max
Value in PointValue (40) = kW tot Max
Value in PointValue (41) = kVAR tot Max
Value in PointValue (42) = kVA tot Max
Value in PointValue (43) = Freq Max
Value in PointValue (44) = Vln avg Min
Value in PointValue (45) = I avg Min
Value in PointValue (46) = Freq Min
Value in PointValue (47) = kWh import
Value in PointValue (48) = kWh export
Value in PointValue (49) = kWh tot
Value in PointValue (50) = kWh net
Value in PointValue (51) = kVARh import

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Value in PointValue (52) = kVARh export
Value in PointValue (53) = kVARh tot
Value in PointValue (54) = kVARh net
Value in PointValue (55) = kVAh tot
Value in PointValue (56) = V1 THD max
Value in PointValue (57) = V2 THD max
Value in PointValue (58) = V3 THD max
Value in PointValue (59) = I1 THD max
Value in PointValue (60) = I2 THD max
Value in PointValue (61) = I3 THD max
[Factory Settings] Modbus Slave Modules must match this factory settings in order for this driver to work properly.

Factory Settings

Modbus Slave Module #1

Format: Unsigned 16 bit Base Address: 40011 Scaling: Yes In Zero, In Full: 0, +6553 Out Zero, Out Full: 0, +65530

Input / Modbus Register / Parameter:

- Source #1 / 40011 / Van
- Source #2 / 40012 / Vbn
- Source #3 / 40013 / Vcn
- Source #4 / 40014 / Vln avg
- Source #5 / 40015 / Vab
- Source #6 / 40016 / Vbc
- Source #7 / 40017 / Vca
- Source #8 / 40018 / VII avg
- Source #9 / 40019 / Ia
- Source #10 / 40020 / Ib
- Source #11 / 40021 / Ic
- Source #12 / 40022 / I avg
- Source #13 / 40023 / V unbal
- Source #14 / 40024 / I unbal
- Source #15 / 40025 / Freq
- Source #16 / 40026 / Phase Rev

Modbus Slave Module #2

Format: Signed 32 bit Base Address: 40027 Scaling: Yes In Zero, In Full: -214748364, +214748364 Out Zero, Out Full: -2147483640, +2147483640

Input / Modbus Register / Parameter:

- Source #1 / 40027 to 40028 / kWa
- Source #2 / 40029 to 40030 / kWb
- Source #3 / 40031 to 40032 / kWc
- Source #4 / 40033 to 40034 / kW tot
- Source #5 / 40035 to 40036 / kVARa
- Source #6 / 40037 to 40038 / kVARb
- Source #7 / 40039 to 40040 / kVARc
- Source #8 / 40041 to 40042 / kVAR tot
- Source #9 / 40043 to 40044 / kVAa
- Source #10 / 40045 to 40046 / kVAb
- Source #11 / 40047 to 40048 / kVAc
- Source #12 / 40049 to 40050 / kVA tot
- Source #13 / 40051 to 40052 / pf signed a
- Source #14 / 40053 to 40054 / pf signed b
- Source #15 / 40055 to 40056 / pf signed c
- Source #16 / 40057 to 40058 / pf signed avg

Modbus Slave Module #3

Format: Signed 32 bit Base Address: 40059 Scaling: Yes In Zero, In Full: -214748364, +214748364 Out Zero, Out Full: -2147483640, +2147483640

Input / Modbus Register / Parameter:

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- Source #1 / 40059 to 40060 / kW tot TD
- Source #2 / 40061 to 40062 / kVAR tot TD
- Source #3 / 40063 to 40064 / kVA tot TD
- Source #4 / 40065 to 40066 / kW tot TD Max
- Source #5 / 40067 to 40068 / kVAR tot TD Max
- Source #6 / 40069 to 40070 / kVA tot TD Max
- Source #7 / 40071 to 40072 / VIn avg Max
- Source #8 / 40073 to 40074 / I avg Max
- Source #9 / 40075 to 40076 / kW tot Max
- Source #10 / 40077 to 40078 / kVAR tot Max
- Source #11 / 40079 to 40080 / kVA tot Max
- Source #12 / 40081 to 40082 / Freq Max
- Source #13 / 40083 to 40084 / VIn avg Min
- Source #14 / 40085 to 40086 / I avg Min
- Source #15 / 40087 to 40088 / Freq Min
- Source #16 / (unused) / (unused)

Modbus Slave Module #4

Format: Signed 32 bit-MFP Base Address: 40089 Scaling: No

Input / Modbus Register / Parameter:

- Source #1 / 40089 to 40090 / kWh import
- Source #2 / 40091 to 40092 / kWh export
- Source #3 / 40093 to 40094 / kWh tot
- Source #4 / 40095 to 40096 / kWh net
- Source #5 / 40097 to 40098 / kVARh import
- Source #6 / 40099 to 40100 / kVARh export
- Source #7 / 40101 to 40102 / kVARh tot
- Source #8 / 40103 to 40104 / kVARh net
- Source #9 / 40105 to 40106 / kWh tot
- Source #10 / (unused) / (unused)
- Source #11 / (unused) / (unused)
- Source #12 / (unused) / (unused)
- Source #13 / (unused) / (unused)
- Source #14 / (unused) / (unused)
- Source #15 / (unused) / (unused)
- Source #16 / (unused) / (unused)

Error messages

The following list shows the possible error messages that can be returned by the driver during a failed communication in the 'Status' property.

- [1005] DRIVER (Internal): Invalid driver stage
- [1300] PROTOCOL (Timeout): No answer
- [1421] PROTOCOL (Format): Negative acknowledge received from device
- [2001] CONFIG (DataType): Analog outputs are not supported by this driver
- [2002] CONFIG (DataType): Digital inputs are not supported by this driver
- [2003] CONFIG (DataType): Digital outputs are not supported by this driver
- [2290] CONFIG (NumValues): Too many values (max=247)
- [2292] CONFIG (NumValues): Too many values requested (max=62)
- [3509] CONFIG (P1): Invalid command (0 only)
- [4007] CONFIG (P2): Invalid address (0-65535)
- [8013] CONFIG (Remote): Acknowledge
- [8034] CONFIG (Remote): Busy (rejected message)
- [8138] CONFIG (Remote): Failure in associated device
- [8168] CONFIG (Remote): Illegal data address
- [8170] CONFIG (Remote): Illegal data value
- [8172] CONFIG (Remote): Illegal function
- [8347] CONFIG (Remote): Unknown error

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Supported devices

This driver can communicate with these devices, but is not necessarily limited to this list:

POWER MEASUREMENT 7300 ION Power Meter
POWER MEASUREMENT 7330 ION Power Meter

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