

TECHNICAL NOTE

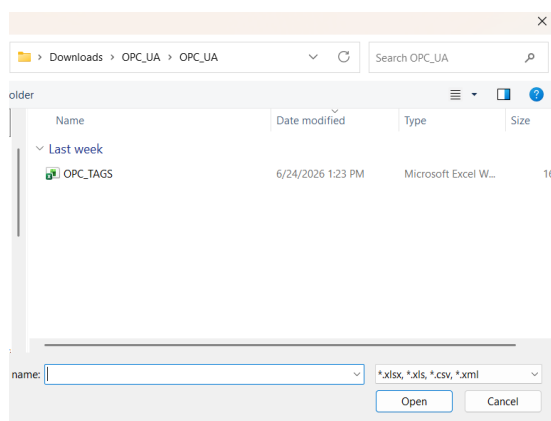
The MAGMA™ Advanced Pumping System Features: Communicating Via OPC UA to External Systems

Background

The MAGMA Advanced Pumping System (APS) can be paired with Open Platform Communications Unified Architecture (OPC UA) for optimal remote monitoring, control, and historization of data from the MAGMA APS. There are features embedded in the process control software code that enable this operation. PC software is required to configure network and connectivity details, and this has all been completed by CP Biotools. This feature enables the MAGMA APS to serve data to a client over a network.

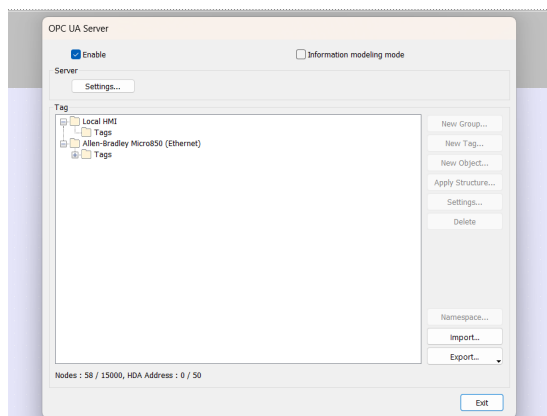
Detailed Information

CP Biotools uses PC software to pre-configure the controller & network settings. The PC software is connected to the pump controller via Ethernet. The customized data tags for OPC UA communications for all necessary controls and variables are pre-loaded onto the controller, and the names of the tags are available in an Excel workbook available by contacting CP Biotools.

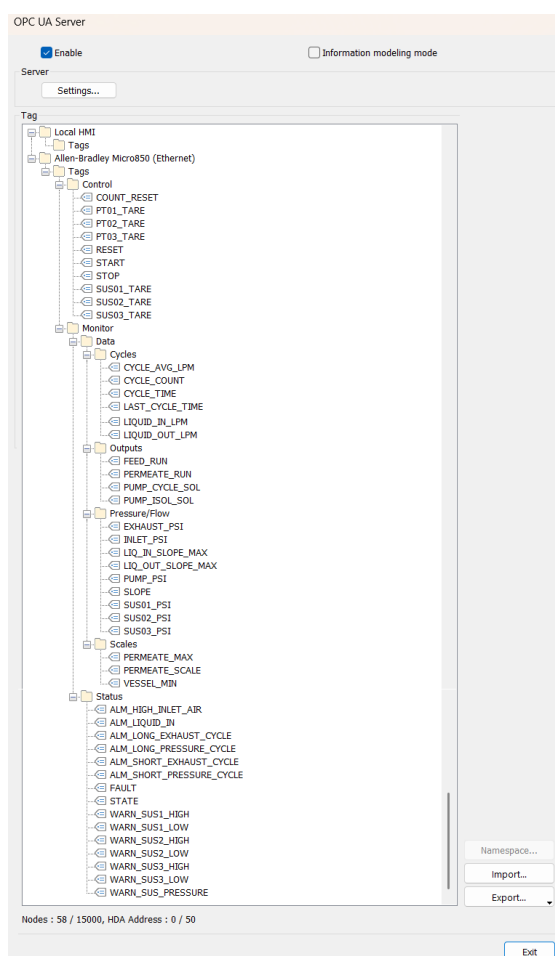


OPC UA Server Configuration

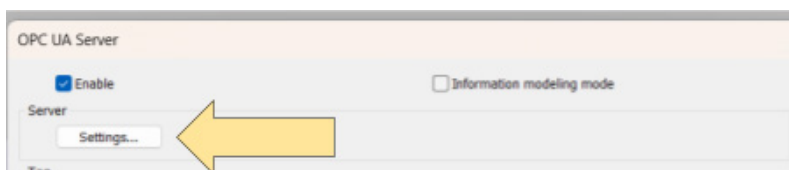
The following screen represents the configuration that has been already completed and installed on the controller. The tags are contained in the bottom folder.



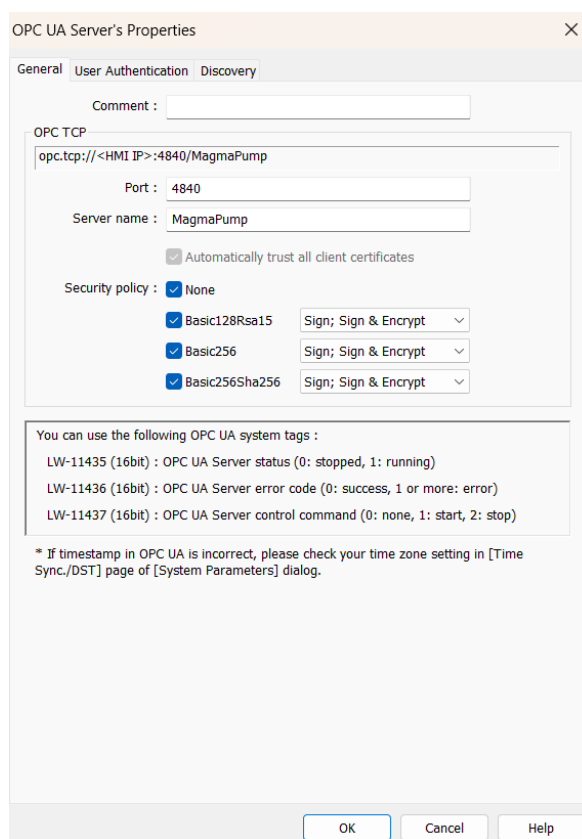
When the bottom folder is expanded, the tags appear with the tag names as illustrated below:



On the same OPC UA Server window, the settings button is clicked to show the Network Settings.

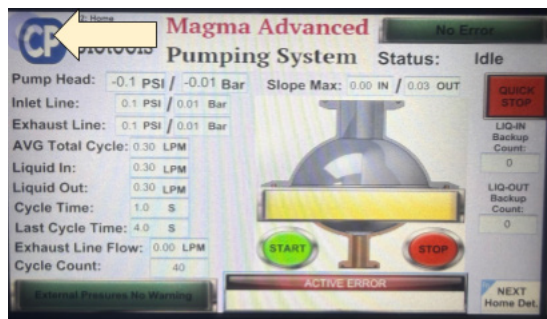


Below is a screenshot of the OPC UA server properties menu that has information needed to connect the server to an OPC UA client.

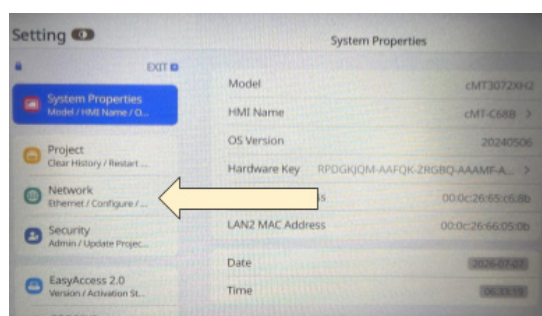


For clarification, this configuration has already been completed. Refer to the Excel workbook for tag names. The PC software is not required by the user; therefore, the Network Settings can be obtained via the HMI by the following method:

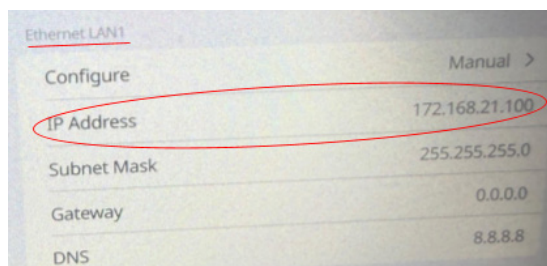
1. Tap the faint blue circle button in the top left corner of the home screen:



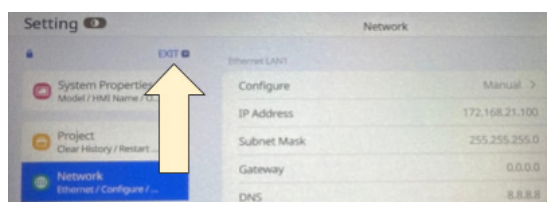
2. Press the Network button:



3. Here the IP Address used for network communications can be found under Ethernet LAN1:



4. Press the exit button to return to from the HMI settings menu:



OPC UA Client

The following is a representation of an OPC Client software that can read the data and send commands from the network. The software has been configured as noted above, and below is a representation of it populated with the data tags.

The screenshot shows the 'DATA ACCESS VIEW' tab of an OPC UA Client. It displays a list of 33 tags with columns for ID, NAME, DISPLAY NAME, VALUE, DATA TYPE, SOURCE TIMESTAMP, SOURCE TIMESTAMP, and STATUS. The tags are categorized into 'Control' and 'Data' groups. The 'START' tag is highlighted in green, indicating it is the selected tag.

ID	NAME	DISPLAY NAME	VALUE	DATA TYPE	SOURCE TIMESTAMP	SOURCE TIMESTAMP	STATUS
1	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
2	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
3	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
4	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
5	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
6	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
7	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
8	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
9	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
10	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
11	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
12	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
13	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
14	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
15	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
16	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
17	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
18	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
19	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
20	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
21	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
22	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
23	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
24	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
25	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
26	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
27	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
28	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
29	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
30	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
31	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
32	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good
33	USEVREGMTCO00	USEVREGMTCO00	True	Boolean	6/30/2023 10:00:00 AM	6/30/2023 10:00:00 AM	Good

The screenshot above has been populated by dragging the tags from Address Space to the Data access view tab.

Tags categorized as 'Control' tags can have their values written within the client to control the MAGMA APS controller remotely without directly using the controller's touch screen. Double-clicking on the cell that says 'false' in the START tag row displays an empty box:

Tags/Control/START START

This can be clicked to select it:

Tags/Control/START START ☒

Clicking away from the box or pressing the ENTER key on the keyboard makes the boolean value for the START tag true.

Tags/Control/START START true

This causes the MAGMA APS to start cycling.

This is an example of an OPC client. There are many products available to interface with the system because of its universal format.

Conclusion

This Technical Note describes the flexibility and the efficiency that can be achieved by interfacing the MAGMA APS to an external system over a network. This enables remote control of the system, reading of the data to trigger actions and responses from the external control system, and enables data to be collected into a historian. This dramatically enhances the utility of this system, and these features are all built-in to the product.