Series 9 OPC UA Server

Supplement

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Issue B

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Proprietary Notice

Series 9 OPC UA Server Supplement

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Online Support

You can access the NDC Customer Support portal, my**NDC** at https://ndc.custhelp.com.

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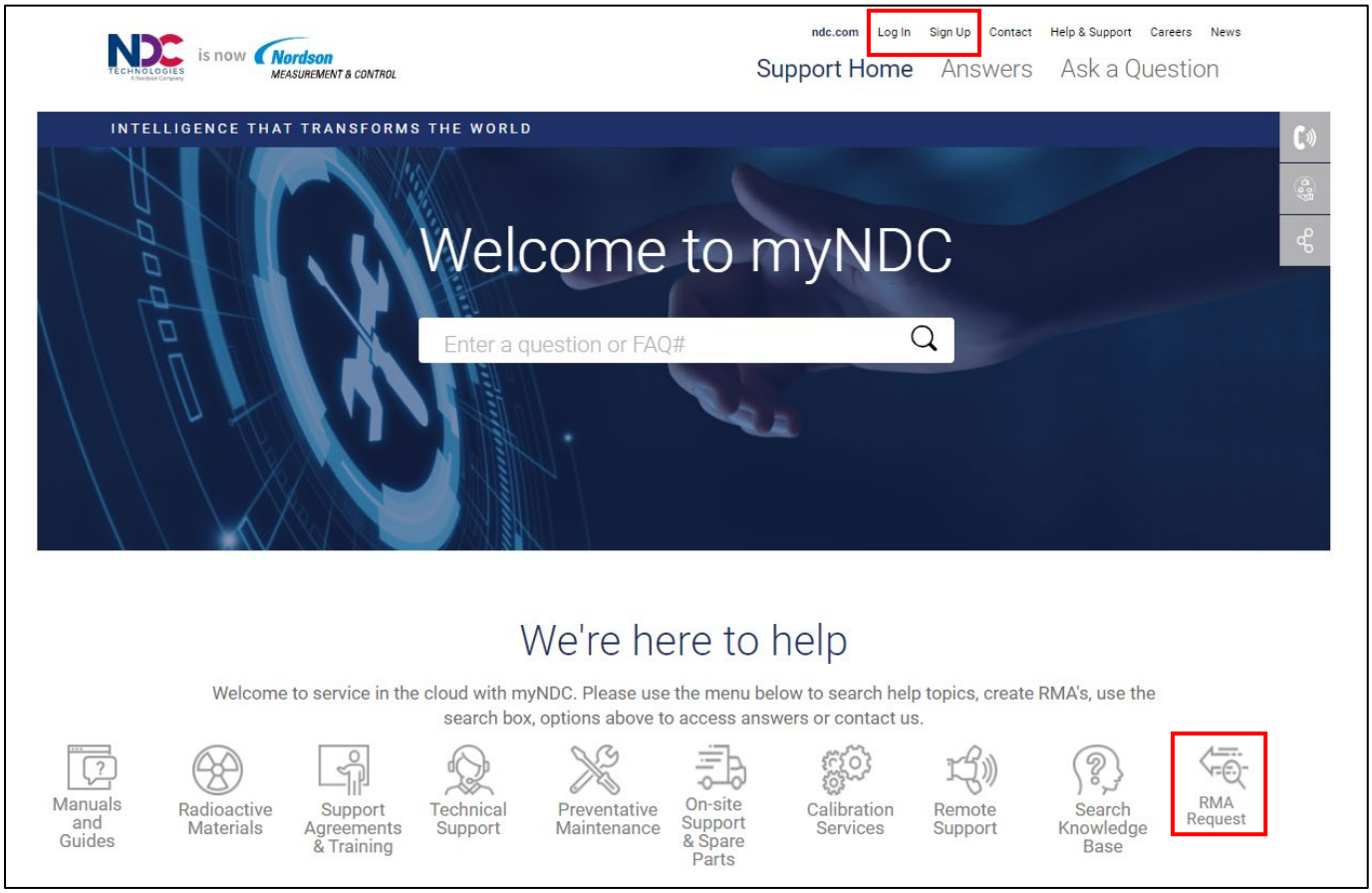
- To submit an RMA, click on **RMA Request** and follow the on-screen instructions.



NDC Contact Numbers

Please have your sales order number at hand before contacting NDC.

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	Italy: +39 0331 454 207
	All other countries (English speaking): +44 1621 852244 Please select option 2 to be connected to the service team

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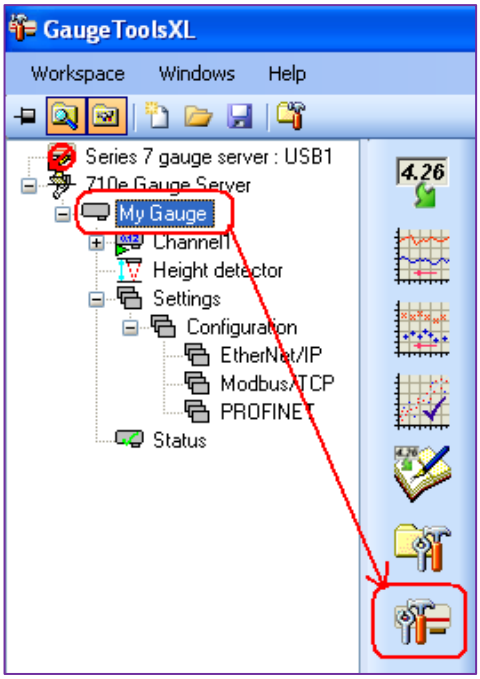
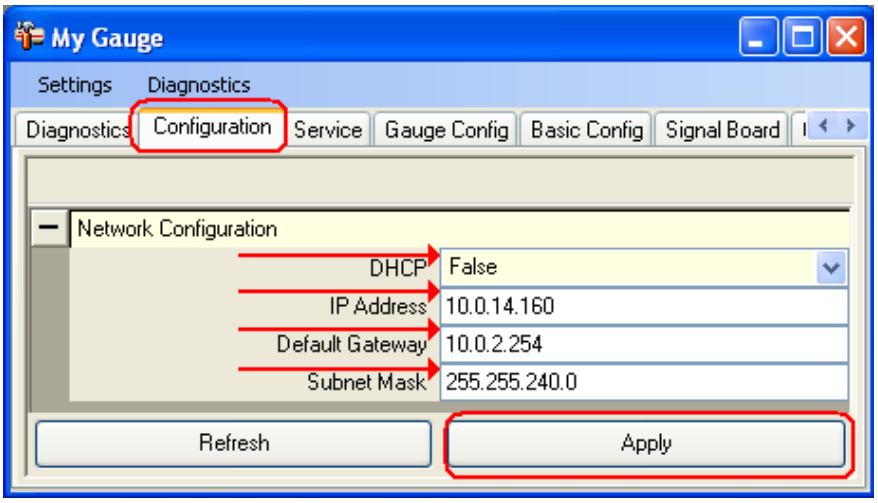
Setting the IP Address on the Series 9

The Series 9 IP address can be confirmed or changed through **GaugeToolsXL** as follows:

1. Start **GaugeToolsXL** and drag the Gauge node to the “Gauge Utility” icon.



2. Select the **Configuration** tab and enter the required values.



3. Click **Apply** to use the new settings.

Overview

The OPC UA communications functionality is a built-in service of the Series 9 gauge.

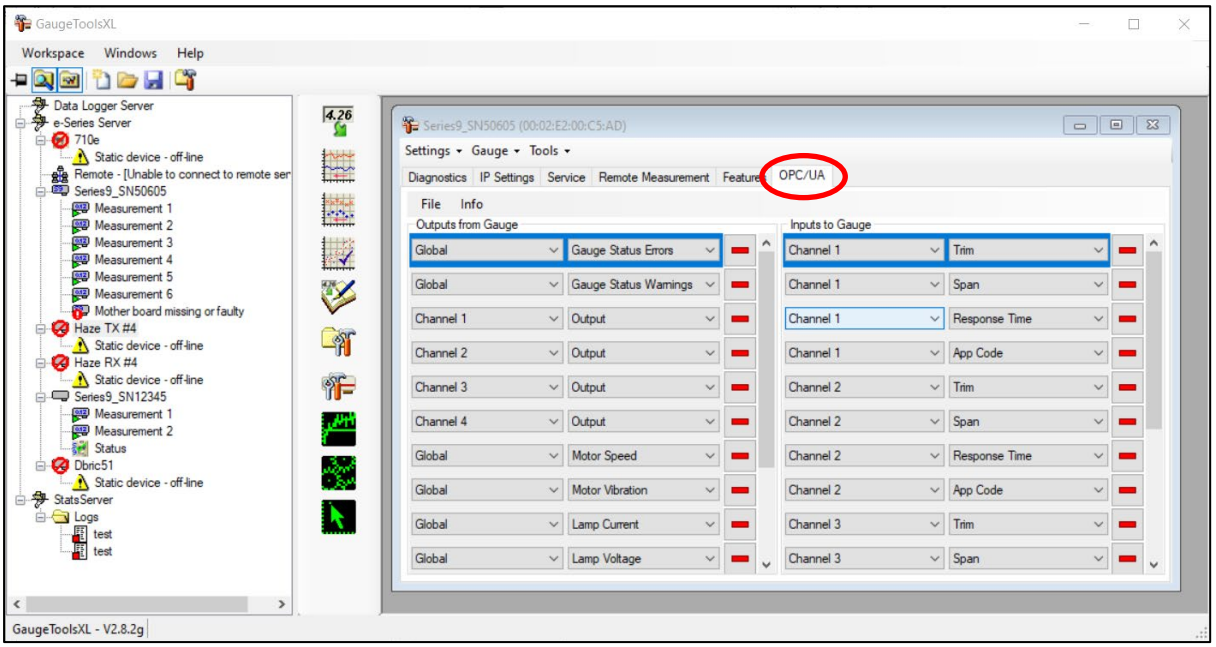
OPC UA utilizes the regular Ethernet network. The OPC UA service is started automatically by a system script.

The Series 9 OPC UA has the following properties:

- Uses the server/client role, and does not implement security
- Nano Embedded Device Server Profile

Configuration in GaugeToolsXL

OPC UA is configurable in GaugeToolsXL via the **OPC/UA** tab of the Utility tool.

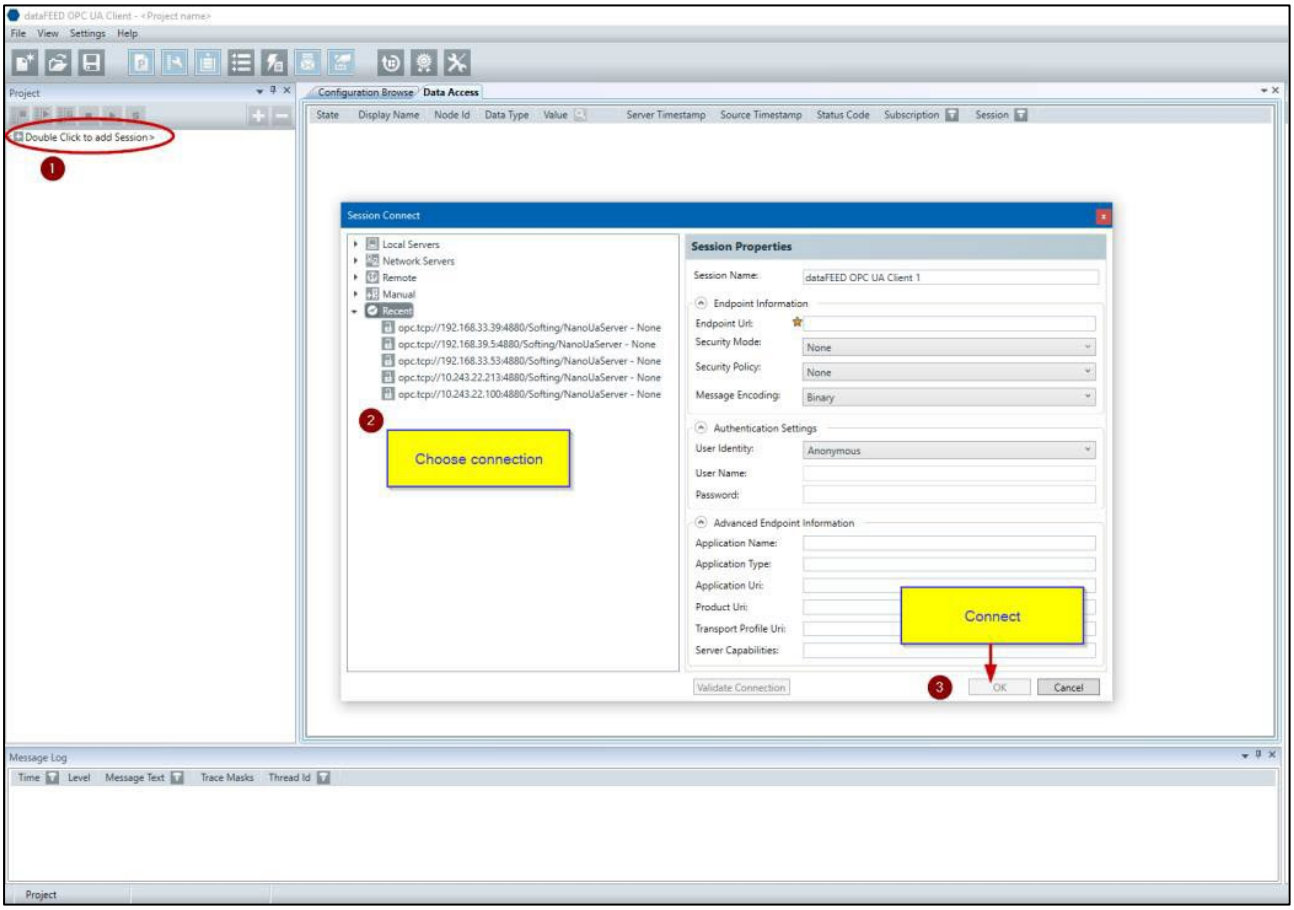


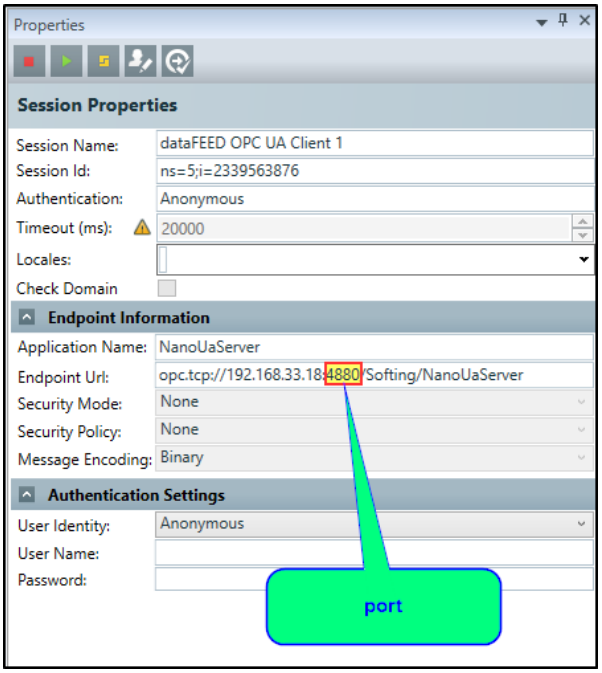
Note: This configuration does not affect the fixed set of parameters exposed by the server (listed in the OPC UA Parameters section). It only determines which OPC UA Server variables will provide live data.

For example, if the Motor Speed parameter is not configured in GaugeToolsXL, then an OPC UA client only receives 0 for the fixed Motor Speed variable.

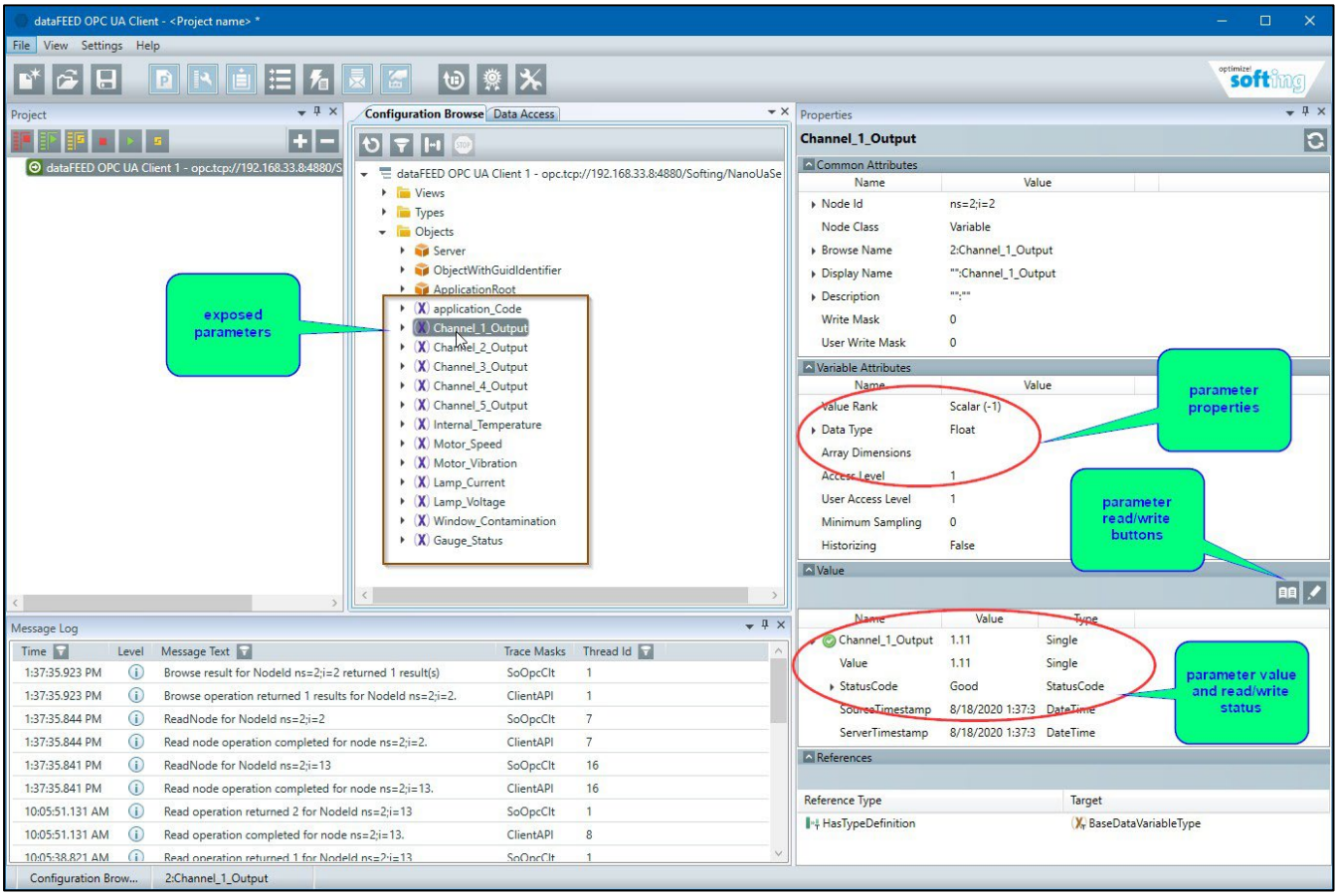
Connecting Via Softing OPC UA Client

The Series 9 OPC UA Server was tested using Softing's dataFEED OPC UA client
https://industrial.softing.com/products/opc-ua-and-opc-classic-sdks/opc-ua-demo-client.html

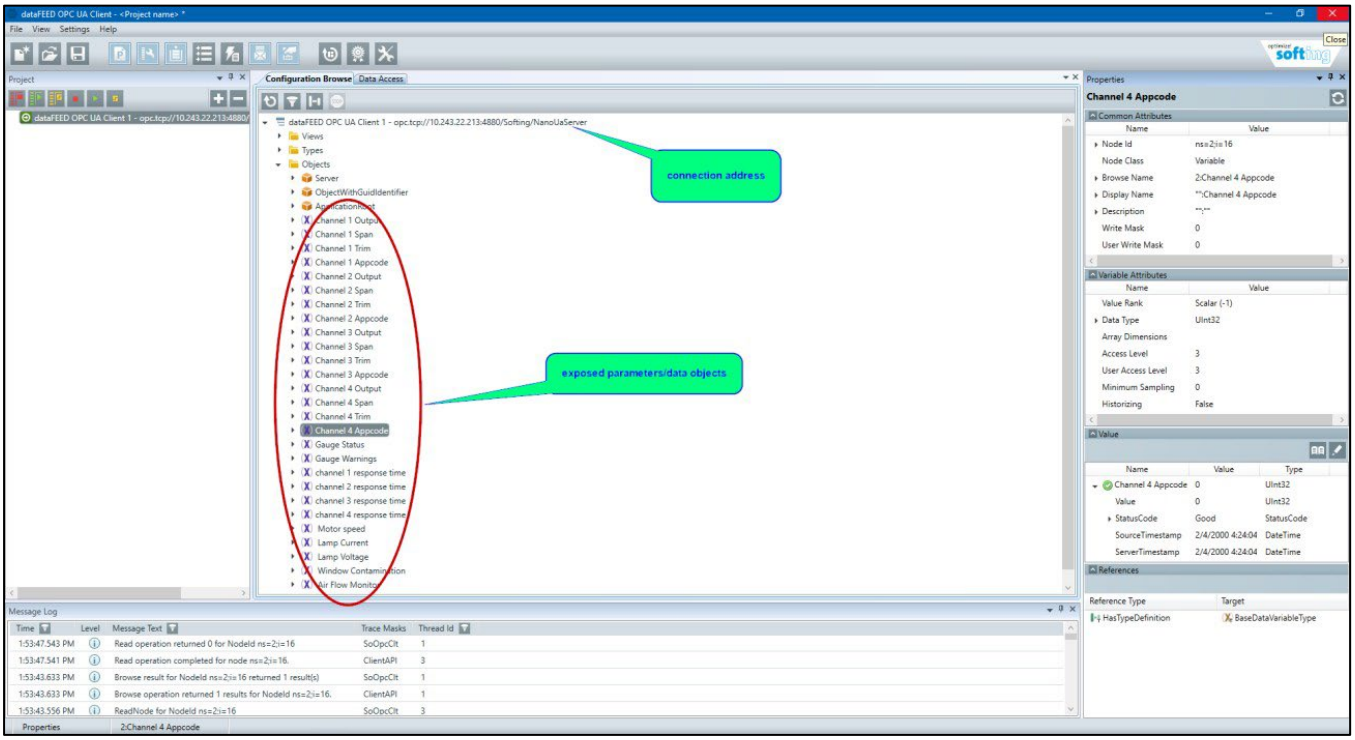




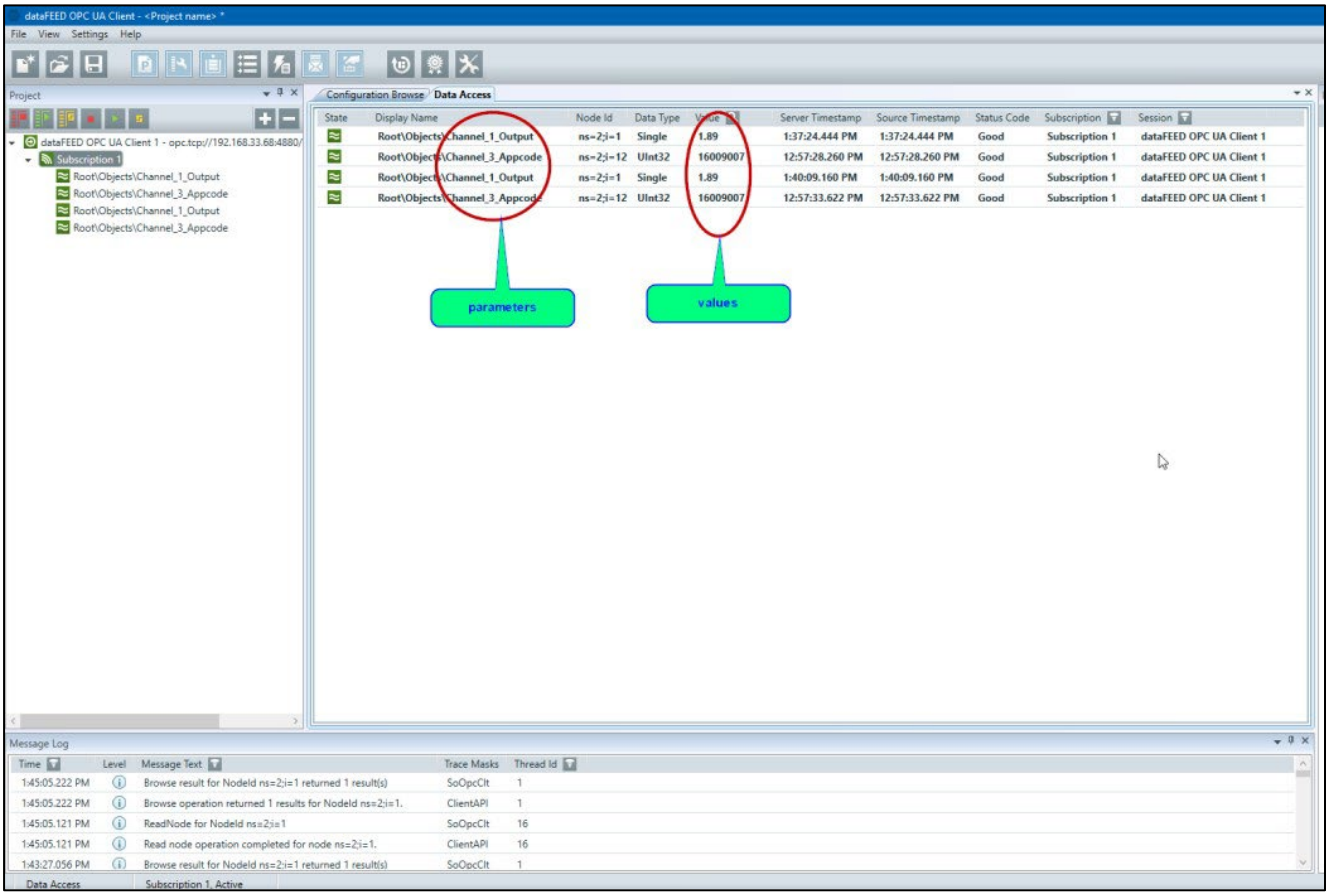
Below is a screenshot of a sample session.



Below is a screenshot of the parameters that are exposed via the OPC UA connection.



Below is a screenshot of another sample session.



OPC UA Parameters

The following is a description of parameters that are exposed by the OPC UA Server.

- **Output** (read only)

  Measurement value of the specified channel.

  The Units of the measured value depend on the target material and the application (e.g. moisture [%]).

- **Span**

  Multiplier factor for the output: **Output = (Span * X) + Trim**

  (where **X** is the raw measurement value).

  This parameter is available for all measurements, including temperature.

- **Trim**

  Offset for the output: **Output = (Span * X) + Trim**

  (where **X** is the raw measurement value).

  This parameter is available for all measurements, including temperature.

- **Application Code**

  This 32-bit integer code is used to select the appropriate algorithm in the gauge for the intended measurement − consult NDC for list of codes that can be used with the specific gauge.

  Note: An application code of zero will disable the channel measurements.

- **Response Time**

  Output smoothing using an exponential factor [0…3600].

- **Lamp Current [A]** (read only)

  Current through the lamp.

- **Lamp Voltage [V]** (read only)

  Voltage across the lamp.

- **Motor Speed [rpm]** (read only)

  The current speed of the Filter Wheel (motor) in the gauge.

- **Motor vibration** (read only)

  Vibration near the Filter Wheel (motor) in raw units.

- **Window Contamination** (read only)

  The Window Contamination level as seen by the user.

  (A clean window will be close to zero and a dirty window > 0.5.)

- **Air flow monitor** (if option fitted)

  The air flow to the Air Purge Window in Liters per minute.

- **Internal Temperature [degC]** (read only)

  The internal temperature of the gauge.

- **Gauge Status**[1] (read only)

  Bit encoded 32-bit word of status condition. See bit definitions below.

- **Gauge Warnings**[2] (read only)

  Bit encoded 32-bit word of warning condition. See bit definitions below.

[1]**Note: Status Output** is a bit-encoded word

Bit 0: STATUS_BIT_MOTOR: Fault with main filter wheel motor

Bit 1: STATUS_BIT_LAMP: Lamp error

Bit 2: STATUS_BIT_SIGNAL_LOW: Light signals received by gauge are too low to make a good reading

Bit 3: STATUS_BIT_SIGNAL_HIGH: Light signals received by gauge are too high to make a good reading

Bit 4: STATUS_BIT_WINDOW: Window is contaminated, error threshold of 1.0 reached

Bit 5: STATUS_BIT_TEMPERATURE: The internal temperature of the gauge has exceeded the error level. Can also be triggered for a low temperature error (i.e. gauge is too cold to operate correctly)

Bit 6: STATUS_BIT_INTERNALREF: The internal reference system has failed

Bit 7: STATUS_BIT_VOLTAGE: A bad voltage has been detected on one of the PCBs

Bit 8: STATUS_BIT_SLAVEHEAD: Unable to access slave head (only applies to double headed gauges like the Haze gauge)

Bit 9: STATUS_BIT_AIRFLOW: The air pressure is out of range, suggesting air flow to the air purge is incorrect

Bit 10: STATUS_BIT_SYNCPULSE: Unable to detect the synchronisation pulse (only applies to double headed gauges like the Haze gauge)

Bit 11: STATUS_BIT_AUTOSAMPLER: Auto sampler system has failed (only applies to gauges with PowderVision sampling enabled)

Bit 16: STATUS_BIT_SELF_TEST: General hardware error detected at start up

[2]**Note: Status Warnings** is a bit-encoded word

Bit 4: STATUS_BIT_WINDOW: Window is contaminated, warning threshold of 0.60 reached

Bit 5: STATUS_BIT_TEMPERATURE: The internal temperature of the gauge has exceeded the warning level. Can also be triggered for a low temperature warning (i.e. gauge is too cold to operate correctly)