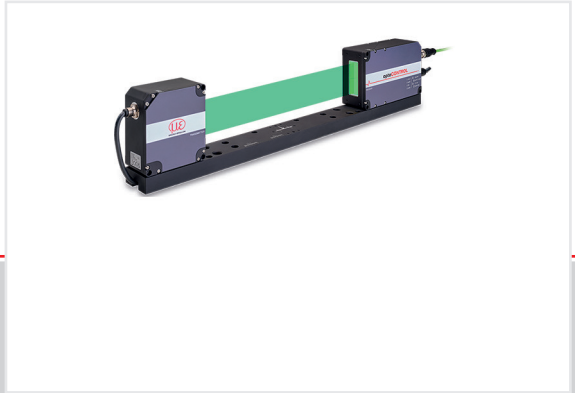
MICRO-EPSILON



Quick Manual

optoCONTROL 2700
EtherNet/IP

ODC2700-10

ODC2700-40

ODC2700-40(002)

Laser micrometer

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ODC2700 Set-up for Ethernet/IP

The ODC2700-40 and the ODC2700-10 can be purchased as Ethernet/IP compatible models. (Article numbers 4321037 and 4321040 respectively). This allows for data from the ODC to be accessed via an Allen Bradley PLC via a direct RJ45 connection with no gateway or external module.

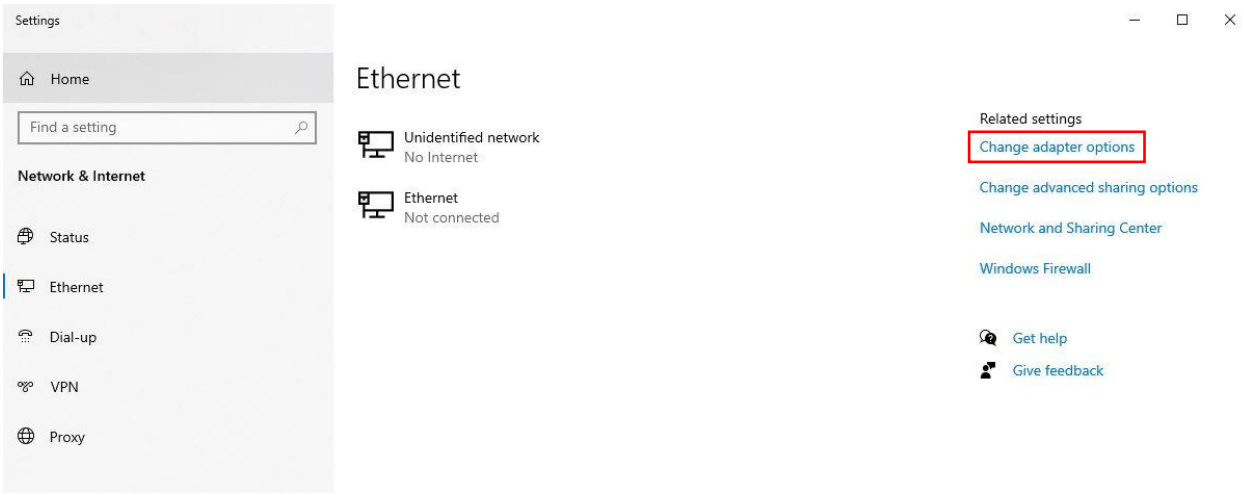
When the unit is first received, it will come with the network parameters set up as DHCP. The first step is to set up the unit with a static IP address that fits within the subnet of the Ethernet/IP master. For this example we'll use 5069-L306ER Allen Bradley PLC. This tech note will assume you have already set up the firmware on the PLC and set up the relevant port addresses so do this first if you haven't already.

For this example, the port A2 on the PLC where we plug in the unit is set up for an IP address of 169.250.160.202 and a subnet mask of 255.255.255.0. This means that we need to configure the ODC2700 to have an IP address that fits within 169.250.160.xxx and a subnet of 255.255.255.0. To achieve this and set this as a static IP address we will use the BootP DHCP Ethernet/IP Tool. This tool is available for free through Rockwell's website below:

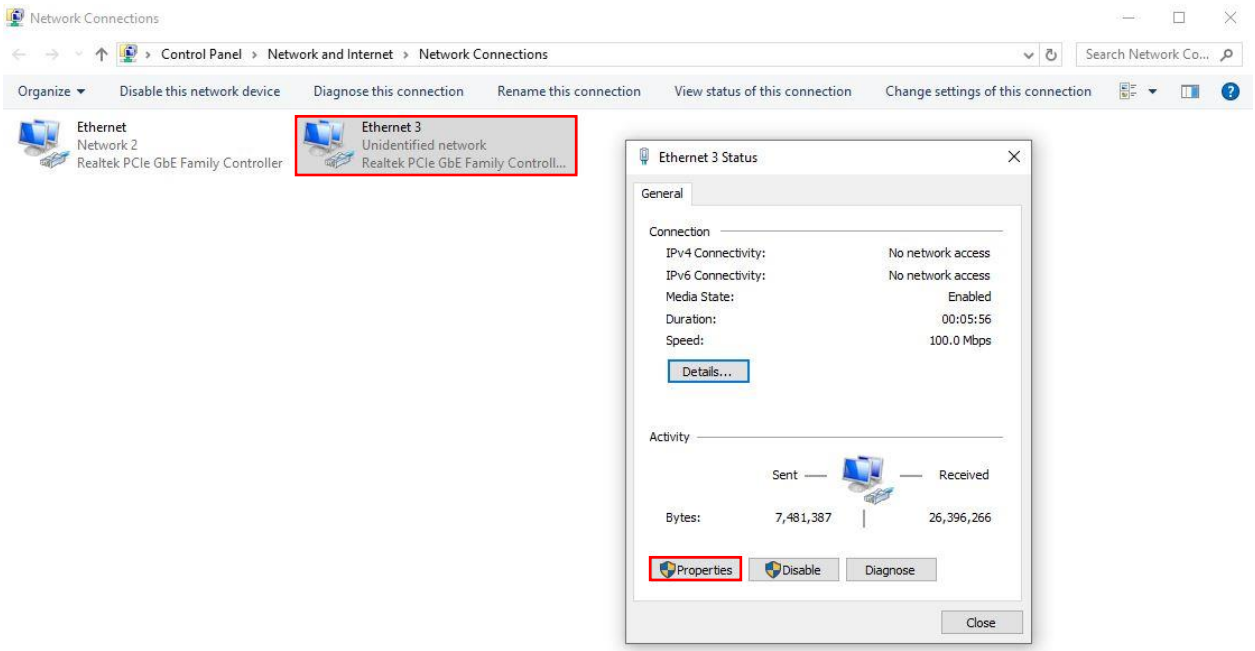
https://compatibility.rockwellautomation.com/Pages/ProductReplacement.aspx?crumb=101&restore=1&vid=59657

Before running the tool, we first need to connect the ODC2700-x to a computer and set up the Ethernet adapter we are going to use to connect it. Open up the Ethernet Adapter options menu in Windows to configure the IP and subnet of the adapter. We will configure this to mimic the port of the PLC so it will be in the correct subnet when we switch over the connection.

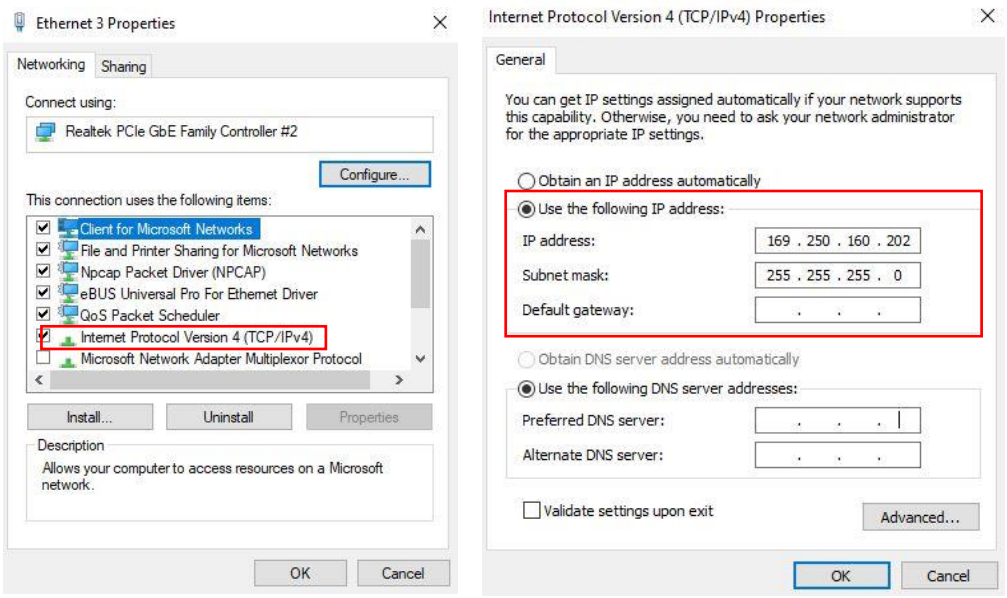
Open up the Ethernet settings in the Windows search bar and select change adapter options.



Select the Ethernet adapter which the ODC2700 is connected to and click on “properties”.

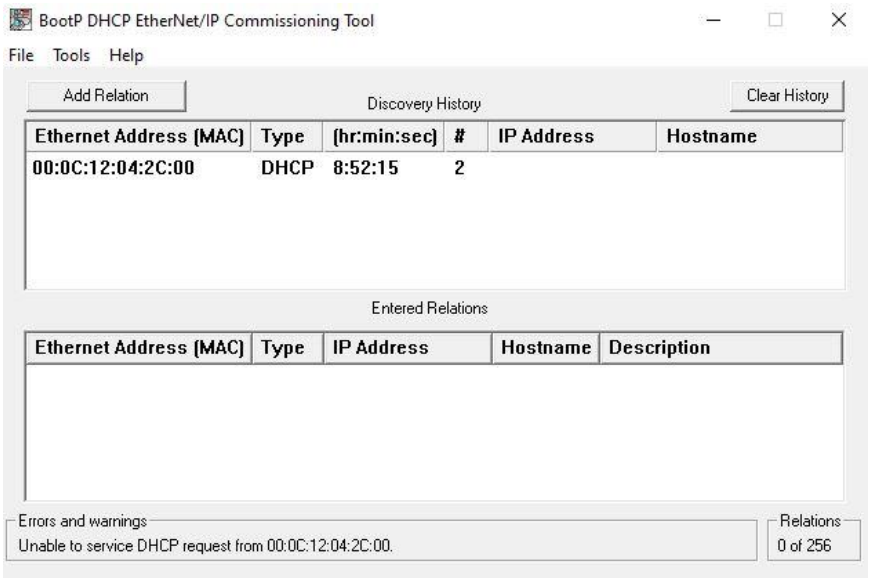


In the adapter properties select the IPV4 settings and set up the Server IP address and subnet to mimic that of the PLC adapter where we will ultimately connect the ODC2700.

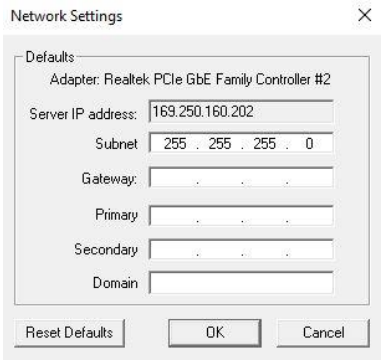


Hit okay, then okay again, and then close to back out of the menu to confirm the changes.

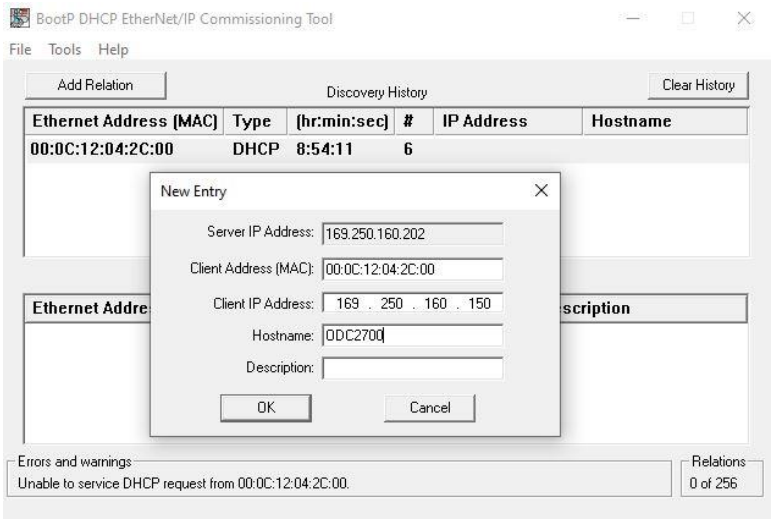
Once this set-up is complete, open up BootP. You should see something like the menu below. Before doing anything, go up to tools and click network settings.



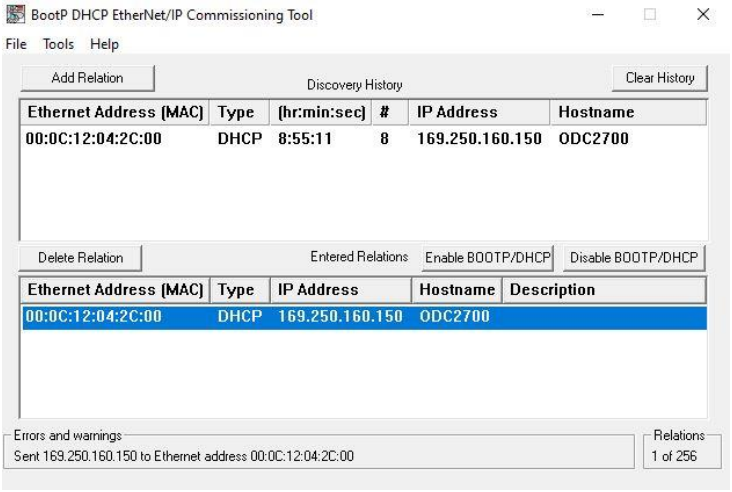
This will open up a menu like below. Make sure that the subnet is set correctly to match what we want the devices subnet to be. In the case of this example we have set it to 255.255.255.0.



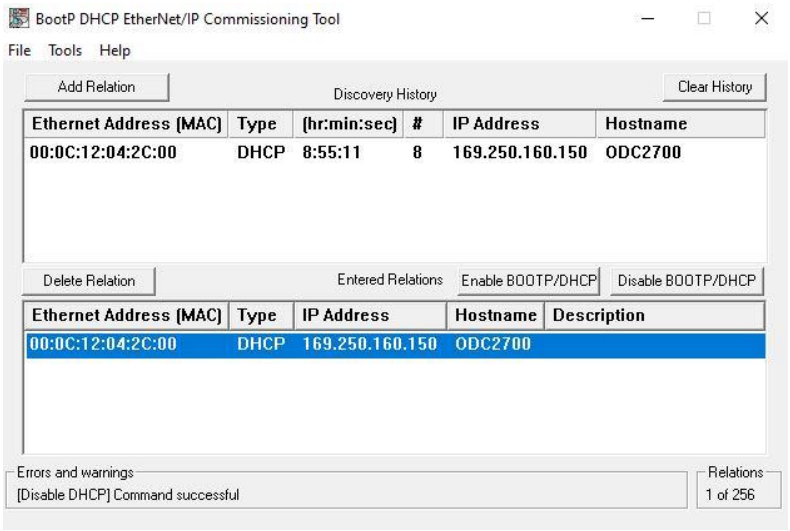
Hit okay to apply the changes and close out of the network settings. If the subnet was not already what it was supposed to be set to, close out and reopen BootP. At this point once BootP is open, unplug the ODC2700 and replug it into the Ethernet adapter. DHCP packets are sent by the device to discover the IP, but over time they are sent less and less frequently. By replugging, the DHCP packets are received immediately and a device should populate in the top section of the program. Make sure that the mac address of the device matches with the sensor you have, and then set the IP address you want to set the device to. Give it a name and hit okay.



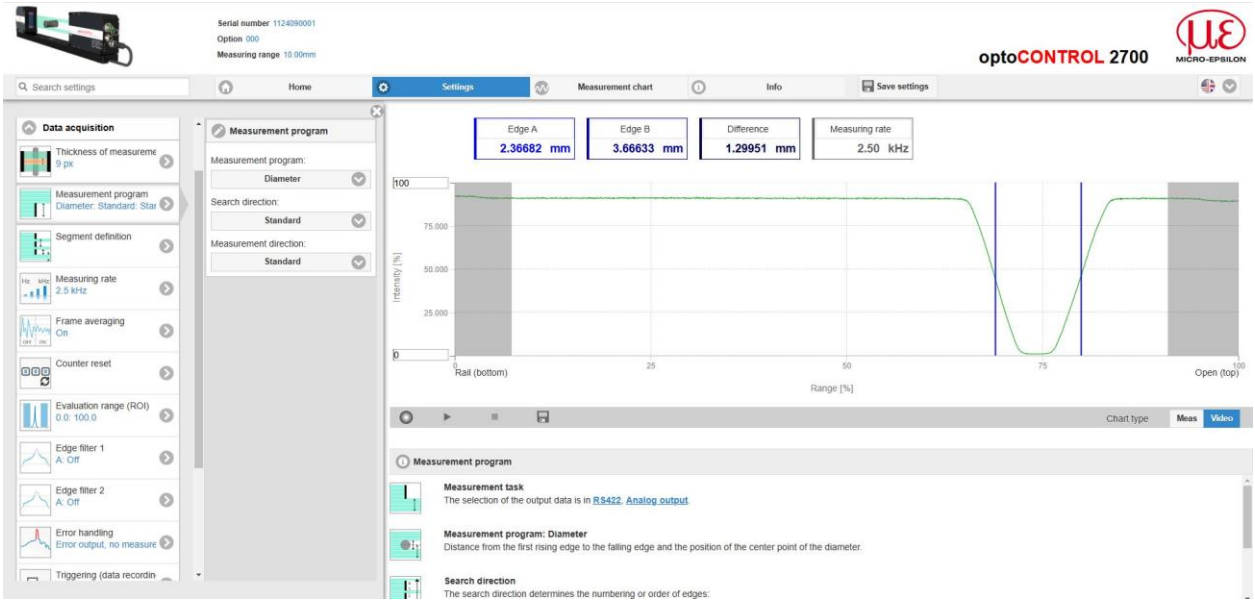
This will then populate a device in the lower section of the software. Click on the device in the lower section and select Disable BOOTP/DHCP.



Occasionally BootP will fail to do this. If it does, don't fret, just click the button again and it should succeed on the second try. The device is officially set to a static IP once BootP gives the message [Disable DHCP] Command successful.

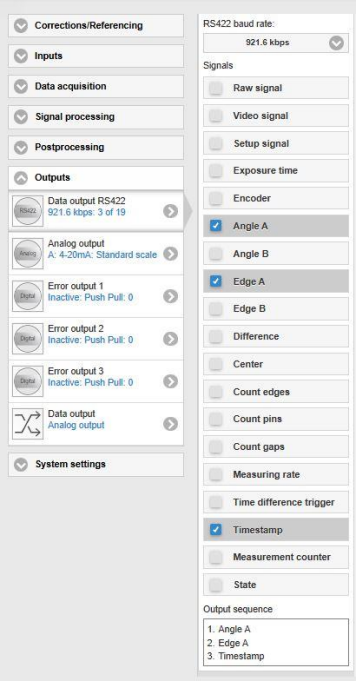


At this point we are close to getting to the PLC set-up, but there is one more step to handle while we're plugged into the PC directly. Go to your web browser of choice, and type in the IP address you just set the ODC2700 to. This will pull up the web page for the sensor that allows us to set up the sensor settings.



Most settings here do not apply to the Ethernet/IP signal, but one very important setting is the measuring program. The measuring program must match how we set up in the PLC, so it is important to know at this point what program you need to use to get out the data you want.

It is best to set it up in the web page for general familiarity of data. For the purposes of this example we will select Diameter as this is the information we want to get out of the sensor.



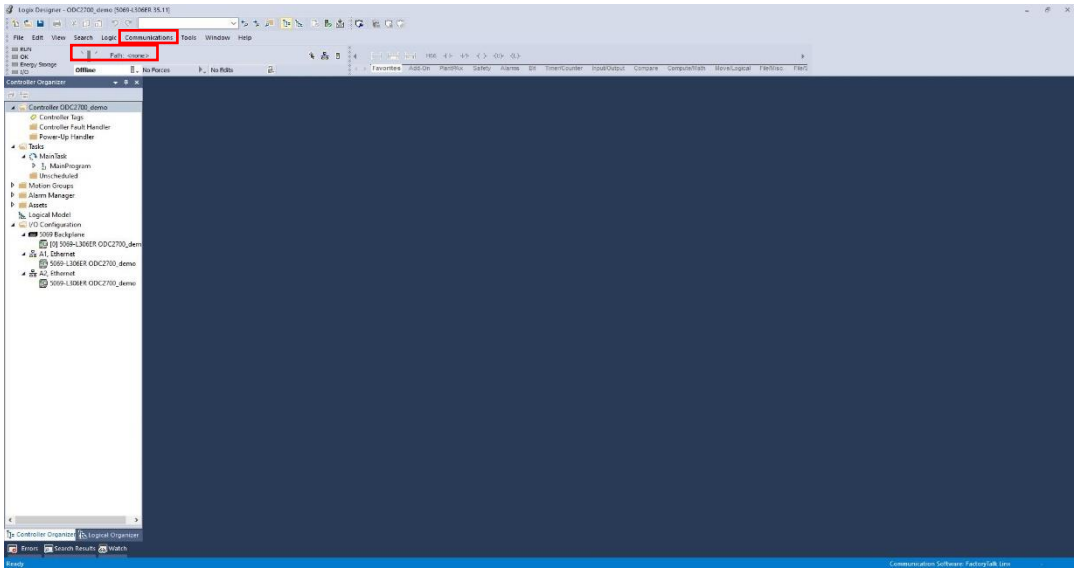
If there is ever confusion on what program to use, it is of course possible to look in the output settings of the web interface to see what data is possible to obtain for each program. For example, by selecting the diameter program, we have access to many outputs shown on the left, but the Difference parameter is the key item here for the diameter measurement. The diameter program though has no segment information etc… so depending on what set-up you want and what data you want you will need to properly select the program.

It is important to note that the outputs in the web interface DO NOT set the outputs for Ethernet/IP, so there is no need to check certain outputs within the web interface, it only acts as a tool to show you which data is accessible for which program set. The selection of measurement values is set up later within the PLC itself.

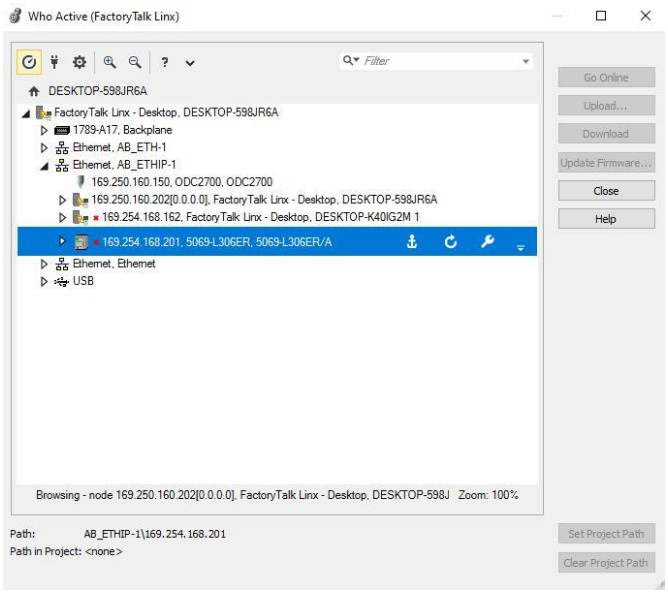
Once the static IP is set and the set-up for the measuring program is complete, we can begin set-up on the PLC. Change back the Ethernet adapter settings if necessary to communicate with the PLC and reconnect the PLC to the computer and connect the ODC2700 to the port on the PLC (in our case port A2). Then start Rockwell's Studio5000 program. Select new project if you don't already have one, or open your existing project.

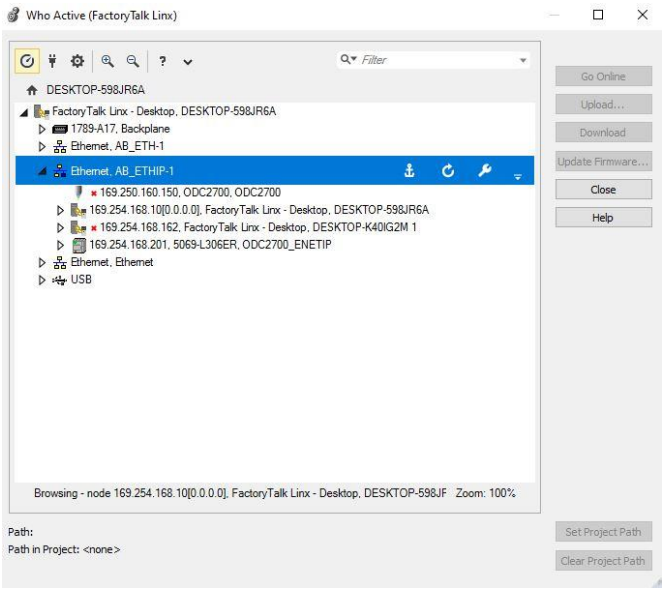
If making a new project:

Set a file name and location for the project and continue through the prompt until it opens to your project page. At this point there is no project path set, so we will need to go to the communications tab and select “who active”.



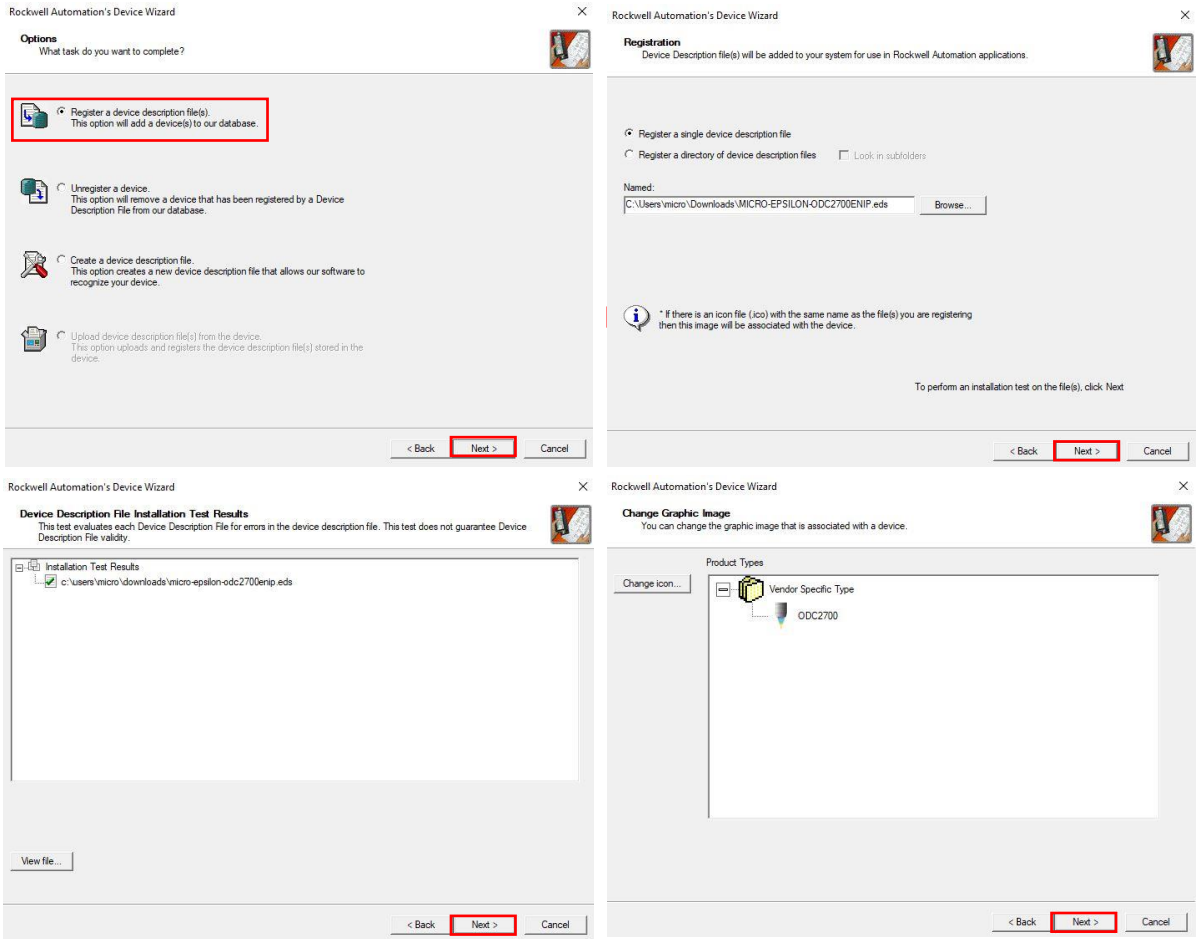
This will take us to a page where we can select the PLC. Here we can see the PLC that appears in the who active menu. If there is a red X next to it check your IP settings for the connection.



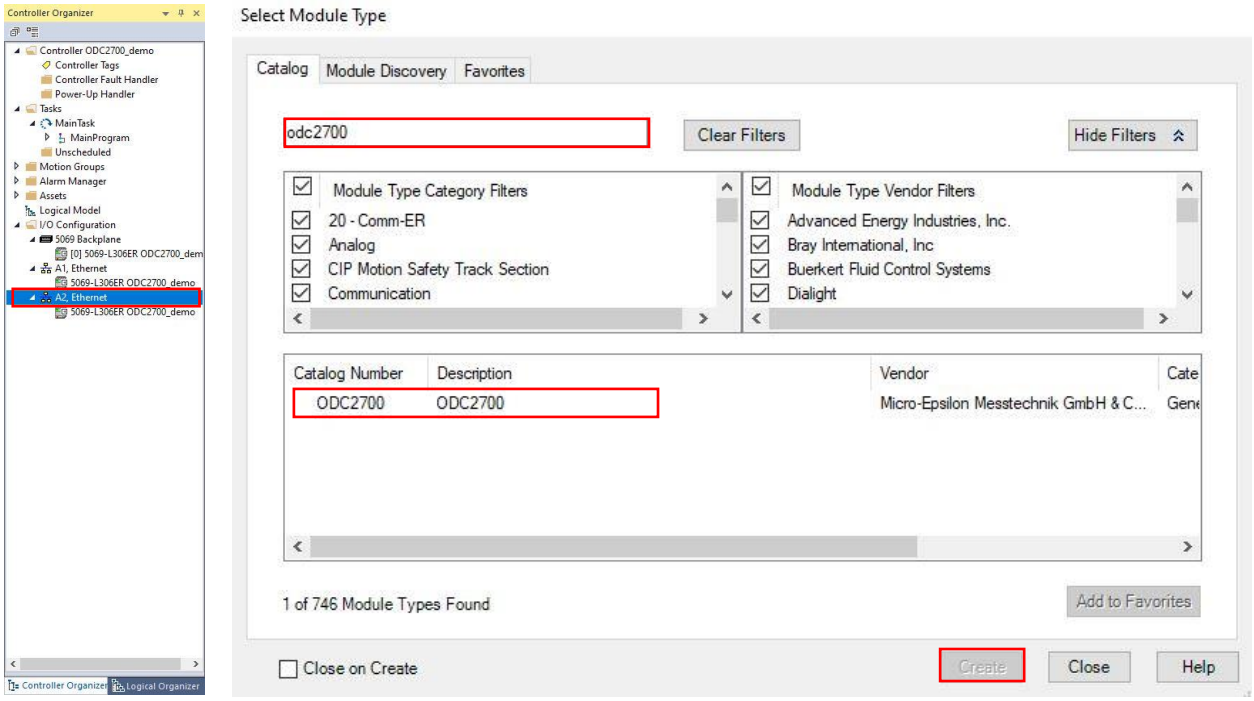


Select the PLC within this menu and select “Set Project Path”. This will define what PLC we download programs and data to when we start setting up the project.

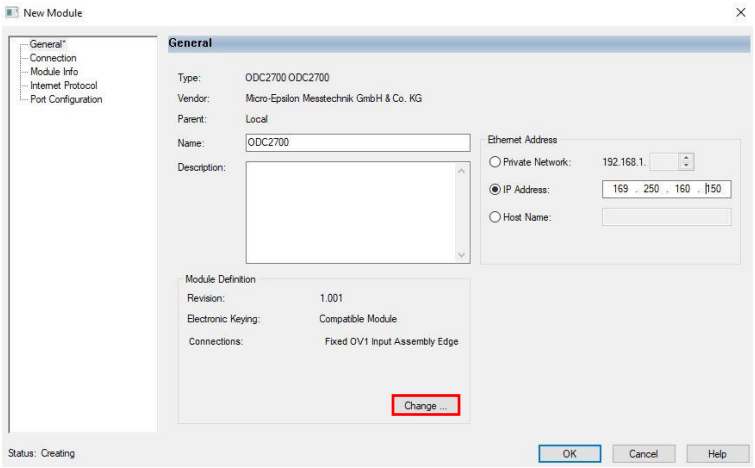
If you haven’t already, you will need to add the ODC2700 through the EDS hardware installation tool in Studio5000. To do this go to Tools -> EDS Hardware Installation Tool and follow the prompts to register the ODC2700 as a device. If you haven’t already, reach out to your local Micro-Epsilon branch to get the EDS description file for the unit. Download the EDS file, and through the EDS Hardware Installation Tool, point Studio5000 to the correct description file. In the wizard, select register a device description file, then next, then point to the file and click next, click next on the installation test results. Optional select an icon, and follow through the summary and finalization of the install wizard.



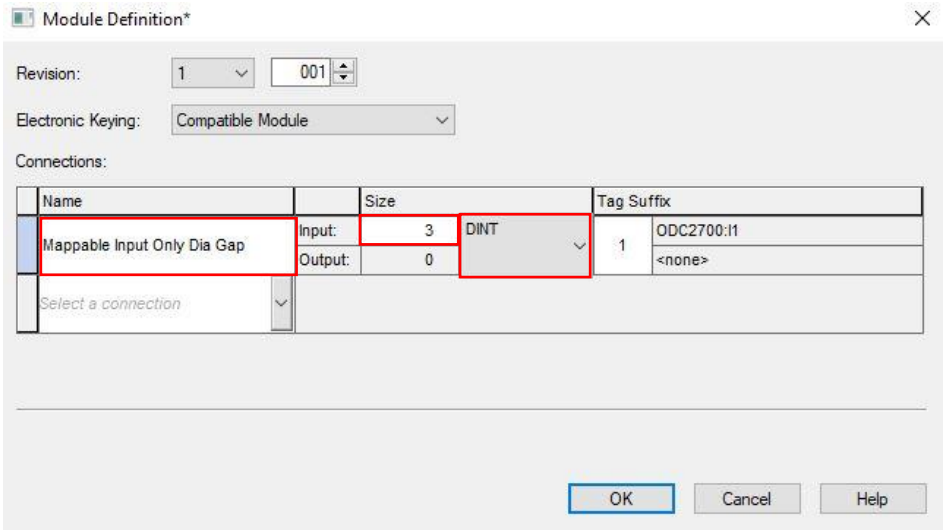
Once we've installed the EDS we can add it as a module to our project. Right click the adapter you plugged the ODC into and select "new module". Since we installed the ODC2700 through the hardware installation tool, we can now search for ODC2700, select it, and click "create"



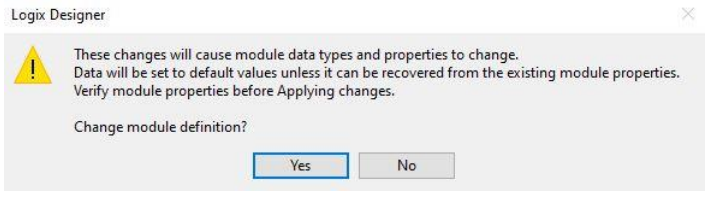
You should now have an ODC2700 module showing in the Controller Organizer tree. Right click this module and select "properties". Then select the "Change…" button to configure the sensor data.



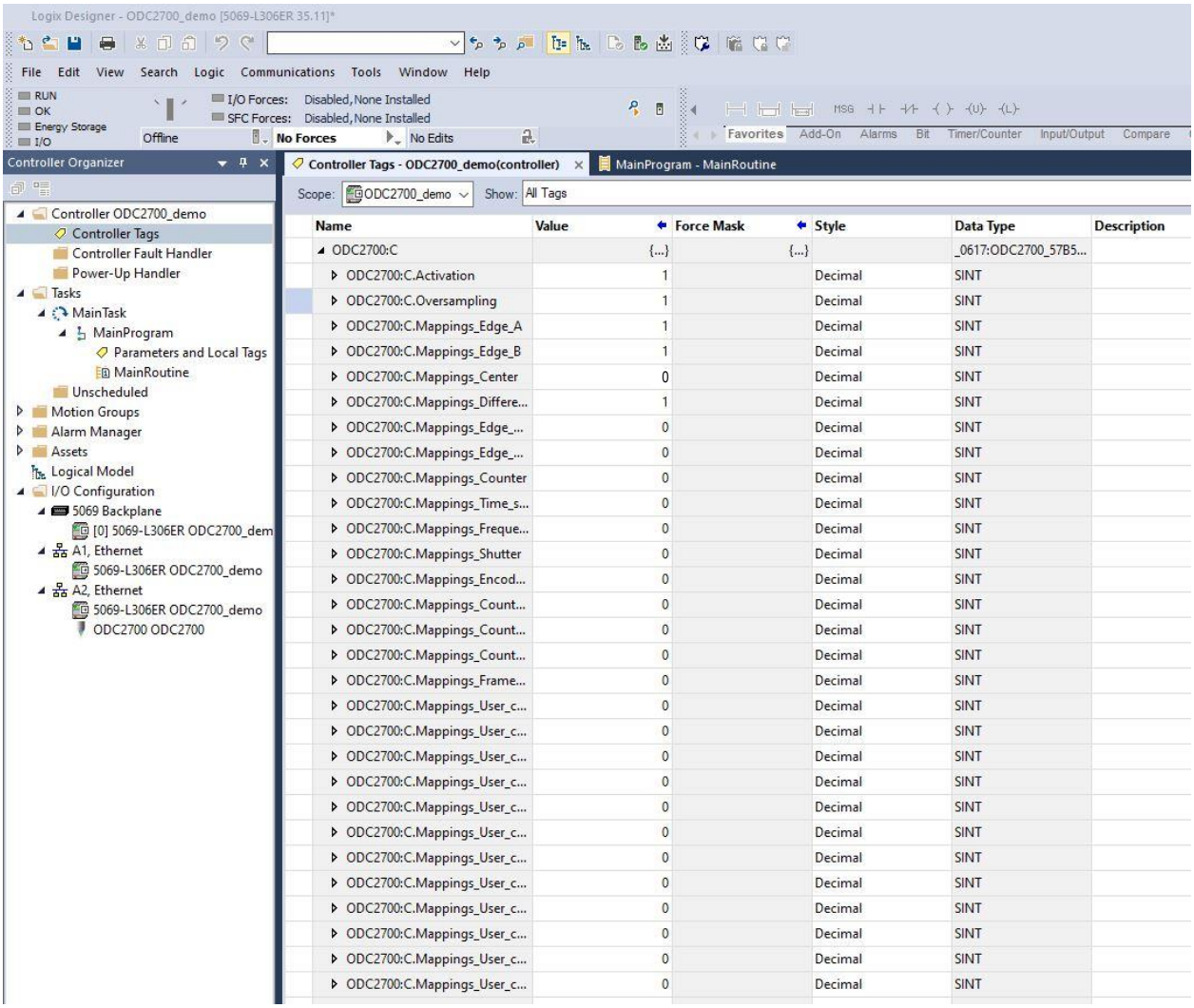
Here we need to configure 3 things. The data type should be set to DINT for convenience rather than SINT, the size should be set to the number of data frames desired from the sensor, and the "name" field should be set to the mappable input only options which matches the program type we set earlier in the web interface. The unit can be set into edge, diameter/gap or segment programs and the selected option here must match what is currently active on the unit. Set this to whatever program type you set the ODC to in the web interface. The size parameter should also be set to the amount of expected data per measurement. For example, if we run the diameter program, the unit is capable of outputting many things like the diameter, both edges, timestamp, counter, etc… If you wanted all 5 of these as outputs, then this size should be set to 5. If you only wanted the diameter it should be set to 1. For this example we will collect the first edge, second edge and diameter so it is set to 3. Hit ok and apply the changes.



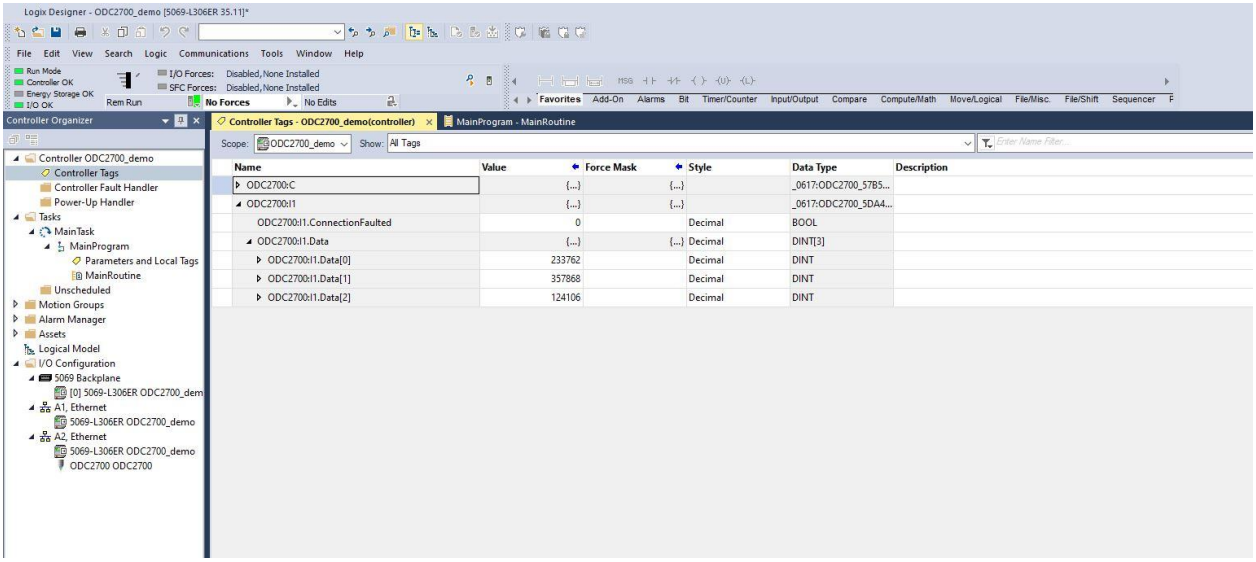
The software will then warn you that it will cause module data types and properties to change. Hit yes and continue.



Head over to the Controller Tags section in the Controller Organizer. Here we should see two arrays for the ODC2700 (by default if you didn't change the names ODC2700:I and ODC2700:C. Open the C array and make sure that the .Activation parameter and .Oversampling parameter is set to 1. This C array is where you can enable or disable sending of certain measuring values from the sensor. Here for this example since we enabled diameter mode, we will simply set the Mappings_Difference signal to 1 along with the Mappings_Edge_A and Mappings_Edge_B. Everything else set to 0. This will populate then our 3 data points we set for the data array with the 3 signals we have enabled.



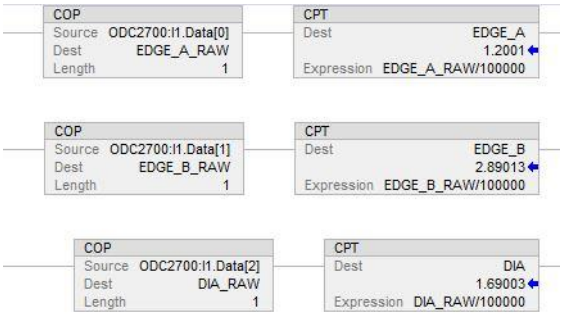
Then if we go online with the PLC and click “download” to transfer our program to the PLC, we can see data populating in the I array as DINTs.



For the ODC2700, position data is transferred as a signed integer value which represents 10nm steps within the range. The center of the measuring range is defined as 0. To get a value in millimeters for example, then we need to divide the signed integer by 100,000. To do this we can set up for each value a copy node and a compute node (COP and CPT). To set up this program, first go offline.

The COP node copies an address in memory into a separate tag and the compute allows us to run math operations on the tag and save it to another. Create a COP node and set the source to the data location from the ODC. Create a new tag name in the destination, then right click and say new tag. Make the type DINT. Then in the CPT node, create a new tag the same way for the destination and in the expression point to the tag we made for the destination of the COP node. Add the /100000 expression and then save.

At this point we can duplicate the rung twice more and make sure that the COP node is pulling from the correct locations in the ODC data array. After saving, the PLC can be brought back online, the program downloaded, and then set to remote run mode. In this mode you can see the nodes update and the data appear scaled in millimeters.



Object-Indexes

Identity

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Reset	1	0x0001	0	UINT8		rw
Vendor ID	1	0x0001	1	UINT16		ro
Device Type	1	0x0001	2	UINT16		ro
Product code	1	0x0001	3	UINT16		ro
Revision	1	0x0001	4	UINT16		ro
Status	1	0x0001	5	UINT16		ro
Serial Number	1	0x0001	6	UINT32		ro
Prodct name	1	0x0001	7	STRING(32)		ro
State	1	0x0001	8	UINT8		ro

Assembly object

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Assembly object data	104	0x0004	3	See here		rw
Assembly object size	104	0x0004	4	UINT16		ro
Assembly object data	105	0x0004	3	See here		rw
Assembly object size	105	0x0004	4	UINT16		ro
Assembly object data	106	0x0004	3	See here		rw
Assembly object size	106	0x0004	4	UINT16		ro

Time Sync

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Time Sync Parameters	1	0x0043	768	sync0_interval UINT32, sync0_offset UINT32, sync1_interval UINT32, sync1_offset UINT32, pulse_length UINT32		rw

Sensor information

Hardware version

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Hardware version	1	0x0064	0	STRING(32)		ro

Software version

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Software version	1	0x0064	256	STRING(32)		ro

Controller info

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
DeviceName	1	0x0064	512	STRING(32)		ro
Serial number	1	0x0064	516	STRING(38)		ro
Option	1	0x0064	517	STRING(10)		ro
ArticleNumber	1	0x0064	519	STRING(38)		ro
Measuring range	1	0x0064	520	FLOAT		ro

Sensor error

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
ErrorNumber	1	0x0064	768	UINT16		ro
Error description	1	0x0064	769	STRING(235)		ro

Brightness correction / pollution detection

Brightness correction

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Brightness correction Start	1	0x0066	0	UINT8	0 - complete range 1 - ROI range only 2 - overwrite, even if pollution	wo
Brightness correction Process	1	0x0066	1	UINT8	0 - ready 1 - in progress 2 - error	ro
Brightness correction Status	1	0x0066	2	UINT8	0 - clean 1 - clean with restriction 2 - dirty 3 - not available	ro

Pollution detection

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Pollution detection Start	1	0x0066	256	UINT8	0 - complete range 1 - ROI range only 2 - ignore measurement objects 3 - ROI range and ignore measurement objects	wo
Pollution detection Process	1	0x0066	257	UINT8	0 - ready 1 - in progress 2 - error	ro
Pollution detection Status	1	0x0066	258	UINT8	0 - clean 1 - clean with restriction 2 - dirty 3 - not available	ro

Inputs

Synchronization

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Synchronization	1	0x0068	0	UINT8	0 – inaktiv 1 – Master 2 – Slave Sync/Trig 3 – Slave TrigIn 4 – Master alternierend	rw
Terminating resistor	1	0x0068	1	BIT	0 - off 1 - on	rw

Eingänge Einstellungen

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Input level	1	0x0068	256	UINT8	0-TTL, 1-HTL	rw
Assignment of digital inputs	1	0x0068	257	UINT8	0-ABT, 1-ATB, 2-BAT, 3-BTA, 4-TAB, 5-TBA, 6-ABT, 7-ABT, 8-ABR, 9-ARB, 10-BAR, 11-BRA, 12-RAB, 13-RBA, 14-ABT, 15-ABT	rw

Encoder

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Effect of the reference track	1	0x0068	512	UINT8	0 - no effect 1 - set once 3 - always set at marker	rw
Interpolation (Depth)	1	0x0068	513	UINT8	1-1 2-2 3-4	rw
Set on value	1	0x0068	514	UINT32	0 … 4294967294	rw
Maximum value	1	0x0068	515	UINT32	0 … 4294967295	rw
Set Encoder value per Software	1	0x0068	516	UINT8	1-SET	wo
Reset the detection of the first reference mark	1	0x0068	517	UINT8	1-RESET	wo

Trigger-Setup

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Effect of triggering	1	0x0068	768	UINT8	0 – triggert die Messwertaufnahme 1 – triggert die Messdatenausgabe	rw
Source	1	0x0068	769	UINT8	0 – inactive 1 – Sync/Trig 2 – TrigIn 3 – Software 4 – Encoder	rw
Type	1	0x0068	770	UINT8	0 – Flank 1 – Level	rw
Level	1	0x0068	771	UINT8	0 - LOW / falling flank 1 - HIGH / rising flank	rw
Number of measured values – Type	1	0x0068	772	UINT8	0-INFINITE, 1-VALUE, 2-NONE	rw
Number of measured values – manual selection	1	0x0068	773	UINT16	0 – End trigger 1 … 65535	rw
Triggering	1	0x0068	774	BIT	Trigger event, for Source software	wo

Encoder – Lower limit	1	0x0068	775	UINT32	0 … 4294967295	rw
Encoder – Upper limit	1	0x0068	776	UINT32	0 … 4294967295	rw
Encoder – Step size	1	0x0068	777	UINT32	0 … 4294967295	rw

Data recording

Measurement settings

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Measurement program	1	0x006A	0	UINT8	0 - falling edge 1 - rising edge 2 - diameter 3 - gap 4 - Segment	rw
Measuring direction	1	0x006A	1	UINT8	0 - standard 1 - reverse	rw
Search direction	1	0x006A	2	UINT8	0 - standard 1 - reverse	rw
Measuring rate	1	0x006A	3	FLOAT	0.1 ... 5.0 kHz	rw
Measuring line width	1	0x006A	4	UINT8	1-1, 3-3, 5-5, 7-7, 9-9, 11-11, 13-13	rw
Segment 1 – Edge A	1	0x006A	16	UINT16	0 ... 252	rw
Segment 1 – Edge B	1	0x006A	17	UINT16	0 ... 252	rw
Segment 2 – Edge A	1	0x006A	32	UINT16	0 ... 252	rw
Segment 2 – Edge B	1	0x006A	33	UINT16	0 ... 252	rw
Segment 3 – Edge A	1	0x006A	48	UINT16	0 ... 252	rw
Segment 3 – Edge B	1	0x006A	49	UINT16	0 ... 252	rw
Segment 4 – Edge A	1	0x006A	64	UINT16	0 ... 252	rw
Segment 4 – Edge B	1	0x006A	65	UINT16	0 ... 252	rw
Segment 5 – Edge A	1	0x006A	80	UINT16	0 ... 252	rw
Segment 5 – Edge B	1	0x006A	81	UINT16	0 ... 252	rw
Segment 6 – Edge A	1	0x006A	96	UINT16	0 ... 252	rw
Segment 6 – Edge B	1	0x006A	97	UINT16	0 ... 252	rw

Segment 7 – Edge A	1	0x006A	112	UINT16	0 ... 252	rw
Segment 7 – Edge B	1	0x006A	113	UINT16	0 ... 252	rw
Segment 8 – Edge A	1	0x006A	128	UINT16	0 ... 252	rw
Segment 8 – Edge B	1	0x006A	129	UINT16	0 ... 252	rw

Counter reset

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
ResetCounter	1	0x006A	256	UINT8	0-TIMESTAMP, 1-MEASCNT	wo

ROI

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
ROI – Range start	1	0x006A	512	UINT16	0 … 2046	rw
ROI – Range end	1	0x006A	513	UINT16	1 … 2047	rw

Edge filter

Available Signals

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Selectable signals 1/6	1	0x006A	1024	STRING(235)	Adjustable signal names	ro
Selectable signals 2/6	1	0x006A	1025	STRING(235)	Adjustable signal names	ro
Selectable signals 3/6	1	0x006A	1026	STRING(235)	Adjustable signal names	ro
Selectable signals 4/6	1	0x006A	1027	STRING(235)	Adjustable signal names	ro
Selectable signals 5/6	1	0x006A	1028	STRING(235)	Adjustable signal names	ro
Selectable signals 6/6	1	0x006A	1029	STRING(235)	Adjustable signal names	ro

Filter 1

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Filter 1 – Status	1	0x006A	1280	BIT	0 – off 1 – on	rw
Filter 1 – Lower limit	1	0x006A	1281	FLOAT	Unit mm	rw
Filter 1 – Upper limit	1	0x006A	1282	FLOAT	Unitt mm	rw
Filter 1 – Replace values	1	0x006A	1283	UINT16	0 – off 1…65535 – Number of ignored values	rw

Filter 2

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Filter 2 – Staus	1	0x006A	1536	BIT	0 – off 1 – on	rw
Filter 2 – Lower limit	1	0x006A	1537	FLOAT	Unit mm	rw
Filter 2 – Upper limit	1	0x006A	1538	FLOAT	Unit mm	rw
Filter 2 – Replace values	1	0x006A	1539	UINT16	0 – off 1…65535 – Number of ignored values	rw

Error handling

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Error handling type	1	0x006A	1792	UINT8	0 - Error output, no measured value 1 - hold last value a certain number of times 2 - hold last value indefinitely	rw
Error handling - number of held values	1	0x006A	1793	UINT32	1 … 1024	rw

Signal processing

Inclination correction

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Inclination correction	1	0x006C	0	BIT	0 – off 1 – on	rw

Calculation

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
1 – Type	1	0x006C	256	UINT8	0 - inactive 1 - moving averaging 2 - recursive averaging 3 - median 4 - calculation 8 - Thickness 9 - Duplicate	rw
1 – Name	1	0x006C	257	STRING(32)	Name of the calculation, available at 4 - Calculation, 8 - Thickness and 9 - Duplicate.	rw
1 – Signal 1	1	0x006C	258	STRING(32)	Signal	rw

1 – Signal 2	1	0x006C	259	STRING(32)	Signal, available at 4 - Calculation 8 - Thickness	rw
1 – Factor 1	1	0x006C	260	FLOAT	Factor for signal 1, -32768.0 ... 32767.0, available for 8 - Calculation	rw
1 – Factor 2	1	0x006C	261	FLOAT	Factor for signal 2, -32768.0 ... 32767.0, available for 8 - Calculation	rw
1 – Offset	1	0x006C	262	FLOAT	Offset for calculation, -2147.0 … 2147.0, available for 8 - Calculation	rw
1 – Parameters	1	0x006C	263	UINT32	Parameters for selected averaging, for 1 - moving averaging 2 ... 4096, for 2 - recursive averaging 2 ... 32767, for 3 - median 3|5|7|9	rw
1 – available signals 1/6	1	0x006C	271	STRING(235)	Adjustable signal names	ro
1 – available signals 2/6	1	0x006C	272	STRING(235)	Adjustable signal names	ro
1 – available signals 3/6	1	0x006C	273	STRING(235)	Adjustable signal names	ro
1 – available signals 4/6	1	0x006C	274	STRING(235)	Adjustable signal names	ro
1 – available signals 5/6	1	0x006C	275	STRING(235)	Adjustable signal names	ro
1 – available signals 6/6	1	0x006C	276	STRING(235)	Adjustable signal names	ro
2 – Type	1	0x006C	512	UINT8	0 - inactive 1 - moving average 2 - recursive averaging 3 - median 4 - calculation 8 - Thickness 9 - Duplicate	rw

2 – Name	1	0x006C	513	STRING(32)	Name oft he calculation, available at 4 - Calculation, 8 - Thickness and 9 - Duplicate.	rw
2 – Signal 1	1	0x006C	514	STRING(32)	Signal	rw
2 – Signal 2	1	0x006C	515	STRING(32)	Signal, available at 4 - Calculation 8 - Thickness	rw
2 – Factor 1	1	0x006C	516	FLOAT	Factor for signal 1, -32768.0 ... 32767.0, available for 8 - Calculation	rw
2 – Factor 2	1	0x006C	517	FLOAT	Factor for signal 2, -32768.0 ... 32767.0, available for 8 - Calculation	rw
2 – Offset	1	0x006C	518	FLOAT	Offset for calculation, -2147.0 ... 2147.0, available for 8 - Calculation	rw
2 – Parameters	1	0x006C	519	UINT32	Parameters for selected averaging, for 1 - moving averaging 2 ... 4096, for 2 - recursive averaging 2 ... 32767, for 3 - median 3|5|7|9	rw
2 – available signals 1/6	1	0x006C	527	STRING(235)	Adjustable signal names	ro
2 – available signals 2/6	1	0x006C	528	STRING(235)	Adjustable signal names	ro
2 – available signals 3/6	1	0x006C	529	STRING(235)	Adjustable signal names	ro
2 – available signals 4/6	1	0x006C	530	STRING(235)	Adjustable signal names	ro
2 – available signals 5/6	1	0x006C	531	STRING(235)	Adjustable signal names	ro
2 – available signals 6/6	1	0x006C	532	STRING(235)	Adjustable signal names	ro

3 – Type	1	0x006C	768	UINT8	0 - inactive 1 - moving average 2 - recursive averaging 3 - median 4 - calculation 8 - Thickness 9 - Duplicate	rw
3 – Name	1	0x006C	768	UINT8	Name of the calculation, available at 4 - Calculation, 8 - Thickness and 9 - Duplicate.	rw
3 – Signal 1	1	0x006C	769	STRING(32)	Signal	rw
3 – Signal 2	1	0x006C	770	STRING(32)	Signal, available at 4 - Calculation 8 - Thickness	rw
3 – Factor 1	1	0x006C	771	STRING(32)	Factor for signal 1, -32768.0 ... 32767.0, available for 8 - calculation	rw
3 – Factor 2	1	0x006C	772	FLOAT	Factor for signal 2, -32768.0 ... 32767.0, available for 8 - Calculation	rw
3 – Offset	1	0x006C	773	FLOAT	Offset for calculation, -2147.0 ... 2147.0, available for 8 - Calculation	rw
3 – Parameters	1	0x006C	774	FLOAT	Parameters for selected averaging, for 1 - moving average 2 ... 4096, for 2 - recursive averaging 2 ... 32767, for 3 - median 3|5|7|9	rw
3 – available signals 1/6	1	0x006C	775	UINT32	Adjustable signal names	ro
3 – available signals 2/6	1	0x006C	783	STRING(235)	Adjustable signal names	ro
3 – available signals 3/6	1	0x006C	784	STRING(235)	Adjustable signal names	ro
3 – available signals 4/6	1	0x006C	785	STRING(235)	Adjustable signal names	ro

3 – available signals 5/6	1	0x006C	786	STRING(235)	Adjustable signal names	ro
3 – available signals 6/6	1	0x006C	787	STRING(235)	Adjustable signal names	ro
4 – Type	1	0x006C	1024	UINT8	0 - inactive 1 - moving average 2 - recursive averaging 3 - median 4 - calculation 8 - Thickness 9 - Duplicate	rw
4 – Name	1	0x006C	1025	STRING(32)	Name of the invoice, available at 4 - Calculation, 8 - Thickness and 9 - Duplicate.	rw
4 – Signal 1	1	0x006C	1026	STRING(32)	Signal	rw
4 – Signal 2	1	0x006C	1027	STRING(32)	Signal, available at 4 - Calculation 8 - Thickness	rw
4 – Factor 1	1	0x006C	1028	FLOAT	Factor for signal 1, -32768.0 ... 32767.0, available for 8 - Calculation	rw
4 – Factor 2	1	0x006C	1029	FLOAT	Factor for signal 2, -32768.0 ... 32767.0, available for 8 - Calculation	rw
4 – Offset	1	0x006C	1030	FLOAT	Offset for calculation, -2147.0 ... 2147.0, available for 8 - Calculation	rw
4 – Parameters	1	0x006C	1031	UINT32	Parameters for selected averaging, for 1 - moving average 2 ... 4096, for 2 - recursive averaging 2 ... 32767, for 3 - median 3|5|7|9	rw
4 – available signals 1/6	1	0x006C	1039	STRING(235)	Adjustable signal names	ro
4 – available signals 2/6	1	0x006C	1040	STRING(235)	Adjustable signal names	ro
4 – available signals 3/6	1	0x006C	1041	STRING(235)	Adjustable signal names	ro
4 – available signals 4/6	1	0x006C	1042	STRING(235)	Adjustable signal names	ro
4 – available signals 5/6	1	0x006C	1043	STRING(235)	Adjustable signal names	ro
4 – available signals 6/6	1	0x006C	1044	STRING(235)	Adjustable signal names	ro

5 – Type	1	0x006C	1280	UINT8	0 - inactive 1 - moving average 2 - recursive averaging 3 - median 4 - calculation 8 - Thickness 9 - Duplicate	rw
5 – Name	1	0x006C	1281	STRING(32)	Name of the calculation, available at 4 - Calculation, 8 - Thickness and	rw
5 – Signal 1	1	0x006C	1282	STRING(32)	Signal	rw
5 – Signal 2	1	0x006C	1283	STRING(32)	Signal, available for 4 - Calculation 8 - Thickness	rw
5 – Factor 1	1	0x006C	1284	FLOAT	Factor for signal 1, -32768.0 ... 32767.0, available for 8 - Calculation	rw
5 – Factor 2	1	0x006C	1285	FLOAT	Factor for signal 2, -32768.0 ... 32767.0, available for 8 - Calculation	rw
5 – Offset	1	0x006C	1286	FLOAT	Offset for calculation, -2147.0 ... 2147.0, available for 8 - Calculation	rw
5 – Parameters	1	0x006C	1287	UINT32	Parameters for selected averaging, for 1 - moving average 2 ... 4096, for 2 - recursive averaging 2 ... 32767, for 3 - median 3|5|7|9	rw
5 – available signals 1/6	1	0x006C	1295	STRING(235)	Adjustable signal names	ro
5 – available signals 2/6	1	0x006C	1296	STRING(235)	Adjustable signal names	ro
5 – available signals 3/6	1	0x006C	1297	STRING(235)	Adjustable signal names	ro
5 – available signals 4/6	1	0x006C	1298	STRING(235)	Adjustable signal names	ro
5 – available signals 5/6	1	0x006C	1299	STRING(235)	Adjustable signal names	ro
5 – available signals 6/6	1	0x006C	1300	STRING(235)	Adjustable signal names	ro
6 – Type	1	0x006C	1536	UINT8	0 - inactive 1 - moving average 2 - recursive averaging 3 - median 4 - calculation 8 - Thickness 9 - Duplicate	rw

6 – Name	1	0x006C	1537	STRING(32)	Name of the calculation, available at 4 - Calculation, 8 - Thickness and 9 - Duplicate.	rw
6 – Signal 1	1	0x006C	1538	STRING(32)	Signal	rw
6 – Signal 2	1	0x006C	1539	STRING(32)	Signal, available for 4 - Calculation 8 - Thickness	rw
6 – Factor 1	1	0x006C	1540	FLOAT	Factor for signal 1, -32768.0 ... 32767.0, available for 8 - Calculation	rw
6 – Factor 2	1	0x006C	1541	FLOAT	Factor for signal 2, -32768.0 ... 32767.0, available for 8 - Calculation	rw
6 – Offset	1	0x006C	1542	FLOAT	Offset for calculation, -2147.0 ... 2147.0, available for 8 - Calculation	rw
6 – Parameters	1	0x006C	1543	UINT32	Parameters for selected averaging, for 1 - moving average 2 ... 4096, for 2 - recursive averaging 2 ... 32767, for 3 - median 3|5|7|9	rw
6 – available signals 1/6	1	0x006C	1551	STRING(235)	Adjustable signal names	ro
6 – available signals 2/6	1	0x006C	1552	STRING(235)	Adjustable signal names	ro
6 – available signals 3/6	1	0x006C	1553	STRING(235)	Adjustable signal names	ro
6 – available signals 4/6	1	0x006C	1554	STRING(235)	Adjustable signal names	ro
6 – available signals 5/6	1	0x006C	1555	STRING(235)	Adjustable signal names	ro
6 – available signals 6/6	1	0x006C	1556	STRING(235)	Adjustable signal names	ro
7 – Type	1	0x006C	1792	UINT8	0 - inactive 1 - moving average 2 - recursive averaging 3 - median 4 - calculation 8 - Thickness 9 - Duplicate	rw
7 – Name	1	0x006C	1793	STRING(32)	Name of the calculation, available at 4 - Calculation, 8 - Thickness and 9 - Duplicate	rw
7 – Signal 1	1	0x006C	1794	STRING(32)	Signal	rw

7 – Signal 2	1	0x006C	1795	STRING(32)	Signal, available for 4 - Calculation 8 - Thickness	rw
7 – Factor 1	1	0x006C	1796	FLOAT	Factor for signal 1, -32768.0 ... 32767.0, available for 8 - Calculation	rw
7 – Factor 2	1	0x006C	1797	FLOAT	Factor for signal 2, -32768.0 ... 32767.0, available for 8 - Calculation	rw
7 – Offset	1	0x006C	1798	FLOAT	Offset for calculation, -2147.0 ... 2147.0, available for 8 - Calculation	rw
7 – Parameter	1	0x006C	1799	UINT32	Parameters for selected averaging, for 1 - moving average 2 ... 4096, for 2 - recursive averaging 2 ... 32767, for 3 - median 3|5|7|9	rw
7 – available signals 1/6	1	0x006C	1807	STRING(235)	Adjustable signal names	ro
7 – available signals 2/6	1	0x006C	1808	STRING(235)	Adjustable signal names	ro
7 – available signals 3/6	1	0x006C	1809	STRING(235)	Adjustable signal names	ro
7 – available signals 4/6	1	0x006C	1810	STRING(235)	Adjustable signal names	ro
7 – available signals 5/6	1	0x006C	1811	STRING(235)	Adjustable signal names	ro
7 – available signals 6/6	1	0x006C	1812	STRING(235)	Adjustable signal names	ro
8 – Type	1	0x006C	2048	UINT8	0 - inactive 1 - moving average 2 - recursive averaging 3 - median 4 - calculation 8 - Thickness 9 - Duplicate	rw
8 – Name	1	0x006C	2049	STRING(32)	Name of the calculation, available at 4 - Calculation, 8 - Thickness and 9 - Duplicate.	rw
8 – Signal 1	1	0x006C	2050	STRING(32)	Signal	rw
8 – Signal 2	1	0x006C	2051	STRING(32)	Signal, available for 4 - Calculation 8 - Thickness	rw
8 – Factor 1	1	0x006C	2052	FLOAT	Factor for signal 1, -32768.0 ... 32767.0, available for 8 - Calculation	rw

8 – Factor 2	1	0x006C	2053	FLOAT	Factor for signal 2, -32768.0 ... 32767.0, available for 8 - Calculation	rw
8 – Offset	1	0x006C	2054	FLOAT	Offset for calculation, -2147.0 ... 2147.0, available for 8 - Calculation	rw
8 – Parameters	1	0x006C	2055	UINT32	Parameters for selected averaging, for 1 - moving average 2 ... 4096, for 2 - recursive averaging 2 ... 32767, for 3 - median 3|5|7|9	rw
8 – available signals 1/6	1	0x006C	2063	STRING(235)	Adjustable signal names	ro
8 – available signals 2/6	1	0x006C	2064	STRING(235)	Adjustable signal names	ro
8 – available signals 3/6	1	0x006C	2065	STRING(235)	Adjustable signal names	ro
8 – available signals 4/6	1	0x006C	2066	STRING(235)	Adjustable signal names	ro
8 – available signals 5/6	1	0x006C	2067	STRING(235)	Adjustable signal names	ro
8 – available signals 6/6	1	0x006C	2068	STRING(235)	Adjustable signal names	ro
9 – Type	1	0x006C	2304	UINT8	0 - inactive 1 - moving average 2 - recursive averaging 3 - median 4 - calculation 8 - Thickness 9 - Duplicate	rw
9 – Name	1	0x006C	2305	STRING(32)	Name of the invoice, available at 4 - Calculation, 8 - Thickness and 9 - Duplicate.	rw
9 – Signal 1	1	0x006C	2306	STRING(32)	Signal	rw
9 – Signal 2	1	0x006C	2307	STRING(32)	Signal, available for 4 - Calculation 8 - Thickness	rw
9 – Factor 1	1	0x006C	2308	FLOAT	Factor for signal 1, -32768.0 ... 32767.0, available for 8 - Calculation	rw
9 – Factor 2	1	0x006C	2309	FLOAT	Factor for signal 2, -32768.0 ... 32767.0, available for 8 - Calculation	rw

9 – Offset	1	0x006C	2310	FLOAT	Offset for calculation, -2147.0 ... 2147.0, available for 8 - Calculation	rw
9 – Parameters	1	0x006C	2311	UINT32	Parameters for selected averaging, for 1 - moving average 2 ... 4096, for 2 - recursive averaging 2 ... 32767, for 3 - median 3|5|7|9	rw
9 – available signals 1/6	1	0x006C	2319	STRING(235)	Adjustable signal names	ro
9 – available signals 2/6	1	0x006C	2320	STRING(235)	Adjustable signal names	ro
9 – available signals 3/6	1	0x006C	2321	STRING(235)	Adjustable signal names	ro
9 – available signals 4/6	1	0x006C	2322	STRING(235)	Adjustable signal names	ro
9 – available signals 5/6	1	0x006C	2323	STRING(235)	Adjustable signal names	ro
9 – available signals 6/6	1	0x006C	2324	STRING(235)	Adjustable signal names	ro
10 – Type	1	0x006C	2560	UINT8	0 - inactive 1 - moving average 2 - recursive averaging 3 - median 4 - calculation 8 - Thickness 9 - Duplicate	rw
10 – Name	1	0x006C	2561	STRING(32)	Name of the calculation, available at 4 - Calculation, 8 - Thickness and 9 - Duplicate.	rw
10 – Signal 1	1	0x006C	2562	STRING(32)	Signal	rw
10 – Signal 2	1	0x006C	2563	STRING(32)	Signal, available for 4 - Calculation 8 - Thickness	rw
10 – Factor 1	1	0x006C	2564	FLOAT	Factor for signal 1, -32768.0 ... 32767.0, available for 8 - Calculation	rw
10 – Factor 2	1	0x006C	2565	FLOAT	Factor for signal 2, -32768.0 ... 32767 Factor for signal 2, -32768.0 ... 32767.0,	rw
10 – Offset	1	0x006C	2566	FLOAT	Offset for calculation, -2147.0 ... 2147.0, available for 8 - Calculation	rw

10 – Parameters	1	0x006C	2567	UINT32	Parameters for selected averaging, for 1 - moving average 2 ... 4096, for 2 - recursive averaging 2 ... 32767, for 3 - median 3|5|7|9	rw
10 – available signals 1/6	1	0x006C	2575	STRING(235)	Adjustable signal names	ro
10 – available signals 2/6	1	0x006C	2576	STRING(235)	Adjustable signal names	ro
10 – available signals 3/6	1	0x006C	2577	STRING(235)	Adjustable signal names	ro
10 – available signals 4/6	1	0x006C	2578	STRING(235)	Adjustable signal names	ro
10 – available signals 5/6	1	0x006C	2579	STRING(235)	Adjustable signal names	ro
10 – available signals 6/6	1	0x006C	2580	STRING(235)	Adjustable signal names	ro

Postprocessing

Zero setting /Master – Available signals

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
available signals 1/6	1	0x006E	0	STRING(235)	Adjustable signal names	ro
available signals 2/6	1	0x006E	1	STRING(235)	Adjustable signal names	ro
available signals 3/6	1	0x006E	2	STRING(235)	Adjustable signal names	ro
available signals 4/6	1	0x006E	3	STRING(235)	Adjustable signal names	ro
available signals 5/6	1	0x006E	4	STRING(235)	Adjustable signal names	ro
available signals 6/6	1	0x006E	5	STRING(235)	Adjustable signal names	ro

Zero setting /Master

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
1 – Status	1	0x006E	256	BIT	0 – off 1 - on	rw
1 – Master signal	1	0x006E	257	STRING(32)	Signal	rw
1 – Set/ Reset	1	0x006E	258	BIT	0 – inactive 1 – set	rw
1 – Master value	1	0x006E	259	FLOAT	-2147.0 … 2147.0 mm	rw

2 – Status	1	0x006E	512	BIT	0 – off 1 - on	rw
2 – Master signal	1	0x006E	513	STRING(32)	Signal	rw
2 – Set/ Reset	1	0x006E	514	BIT	0 – inactive 1 – set	rw
2 – Master value	1	0x006E	515	FLOAT	-2147.0 … 2147.0 mm	rw
3 – Status	1	0x006E	768	BIT	Signal	rw
3 – Master signal	1	0x006E	769	STRING(32)	0 – inactive 1 – set	rw
3 – Set/ Reset	1	0x006E	770	BIT	-2147.0 … 2147.0 mm	rw
3 – Master value	1	0x006E	771	FLOAT	0 – off 1 – on	rw
4 – Status	1	0x006E	1024	BIT	0 – off 1 - on	rw
4 – Master signal	1	0x006E	1025	STRING(32)	Signal	rw
4 – Set/ Reset	1	0x006E	1026	BIT	0 – inactive 1 – set	rw
4 – Master value	1	0x006E	1027	FLOAT	-2147.0 … 2147.0 mm	rw
5 – Status	1	0x006E	1280	BIT	0 – off 1 - on	rw
5 – Master signal	1	0x006E	1281	STRING(32)	Signal	rw
5 – Set/ Reset	1	0x006E	1282	BIT	0 – inactive 1 – set	rw
5 – Master value	1	0x006E	1283	FLOAT	-2147.0 … 2147.0 mm	rw
6 – Status	1	0x006E	1536	BIT	0 – off 1 - on	rw
6 – Master signal	1	0x006E	1537	STRING(32)	Signal	rw
6 – Set/ Reset	1	0x006E	1538	BIT	0 – inactive 1 – set	rw
6 – Master value	1	0x006E	1539	FLOAT	-2147.0 … 2147.0 mm	rw
7 – Status	1	0x006E	1792	BIT	0 – off 1 - on	rw
7 – Mastersignal	1	0x006E	1793	STRING(32)	Signal	rw
7 – Set/ Reset	1	0x006E	1794	BIT	0 – inactive 1 – set	rw
7 – Master value	1	0x006E	1795	FLOAT	-2147.0 … 2147.0 mm	rw

8 – Status	1	0x006E	2048	BIT	0 – off 1 - on	rw
8 – Master signal	1	0x006E	2049	STRING(32)	Signal	rw
8 – Set/ Reset	1	0x006E	2050	BIT	0 – inactive 1 – set	rw
8 – Master value	1	0x006E	2051	FLOAT	-2147.0 … 2147.0 mm	rw
9 – Status	1	0x006E	2304	BIT	0 – off 1 - on	rw
9 – Master signal	1	0x006E	2305	STRING(32)	Signal	rw
9 – Set/ Reset	1	0x006E	2306	BIT	0 – inactive 1 – set	rw
9 – Master value	1	0x006E	2307	FLOAT	-2147.0 … 2147.0 mm	rw
10 – Status	1	0x006E	2560	BIT	0 – off 1 - on	rw
10 – Master signal	1	0x006E	2561	STRING(32)	Signal	rw
10 – Set/ Reset	1	0x006E	2562	BIT	0 – inactive 1 – set	rw
10 – Master value	1	0x006E	2563	FLOAT	-2147.0 … 2147.0 mm	rw

Statistics – available signals

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
available signals 1/6	1	0x006E	2816	STRING(235)	Adjustable signal names	ro
available signals 2/6	1	0x006E	2817	STRING(235)	Adjustable signal names	ro
available signals 3/6	1	0x006E	2818	STRING(235)	Adjustable signal names	ro
available signals 4/6	1	0x006E	2819	STRING(235)	Adjustable signal names	ro
available signals 5/6	1	0x006E	2820	STRING(235)	Adjustable signal names	ro
available signals 6/6	1	0x006E	2821	STRING(235)	Adjustable signal names	ro

Statistics

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
1 – Status	1	0x006E	3072	BIT	0 – on 1 – off	rw
1 – Signal	1	0x006E	3073	STRING(32)	Signal	rw
1 – Depth type	1	0x006E	3074	BIT	0 - specified depth 1 - infinity	rw
1 – Depth	1	0x006E	3075	UINT16	2|4|8|16|32|… |2048|4096|8192	rw
1 – Reset	1	0x006E	3076	BIT	Reset values	wo
2 – Status	1	0x006E	3328	BIT	0 – on 1 – off	rw
2 – Signal	1	0x006E	3329	STRING(32)	Signal	rw

2 – Depth type	1	0x006E	3330	BIT	0 - specified depth 1 - infinity	rw
2 – Depth	1	0x006E	3331	UINT16	2|4|8|16|32|… |2048|4096|8192	rw
2 – Reset	1	0x006E	3332	BIT	Reset values	wo
3 – Status	1	0x006E	3584	BIT	0 – on 1 – off	rw
3 – Signal	1	0x006E	3585	STRING(32)	Signal	rw
3 – Depth type	1	0x006E	3586	BIT	0 - specified depth 1 - infinity	rw
3 – Depth	1	0x006E	3587	UINT16	2|4|8|16|32|… |2048|4096|8192	rw
3 – Rücksetzen	1	0x006E	3588	BIT	Reset values	wo
4 – Status	1	0x006E	3840	BIT	0 – on 1 – off	rw
4 – Signal	1	0x006E	3841	STRING(32)	Signal	rw
4 – Depth type	1	0x006E	3842	BIT	0 - specified depth 1 - infinity	rw
4 – Depth	1	0x006E	3843	UINT16	2|4|8|16|32|… |2048|4096|8192	rw
4 – Rücksetzen	1	0x006E	3844	BIT	Reset values	wo
5 – Status	1	0x006E	4096	BIT	0 – on 1 – off	rw
5 – Signal	1	0x006E	4097	STRING(32)	Signal	rw
5 – Depth type	1	0x006E	4098	BIT	0 - specified depth 1 - infinity	rw
5 – Depth	1	0x006E	4099	UINT16	2|4|8|16|32|… |2048|4096|8192	rw
5 – Reset	1	0x006E	4100	BIT	Reset values	wo
6 – Status	1	0x006E	4352	BIT	0 – on 1 – off	rw
6 – Signal	1	0x006E	4353	STRING(32)	Signal	rw
6 – Depth type	1	0x006E	4354	BIT	0 - specified depth 1 - infinity	rw
6 – Depth	1	0x006E	4355	UINT16	2|4|8|16|32|… |2048|4096|8192	rw
6 – Reset	1	0x006E	4356	BIT	Reset values	wo
7 – Status	1	0x006E	4608	BIT	0 – on 1 – off	rw
7 – Signal	1	0x006E	4609	STRING(32)	Signal	rw
7 – Depth type	1	0x006E	4610	BIT	0 - specified depth 1 - infinity	rw
7 – Depth	1	0x006E	4611	UINT16	2|4|8|16|32|… |2048|4096|8192	rw
7 – Reset	1	0x006E	4612	BIT	Reset values	wo
8 – Status	1	0x006E	4864	BIT	0 – on 1 – off	rw
8 – Signal	1	0x006E	4865	STRING(32)	Signal	rw
8 – Depth type	1	0x006E	4866	BIT	0 - specified depth 1 - infinity	rw
8 – Depth	1	0x006E	4867	UINT16	2|4|8|16|32|… |2048|4096|8192	rw
8 – Reset	1	0x006E	4868	BIT	Reset values	wo

9 – Status	1	0x006E	5120	BIT	0 – on 1 – off	rw
9 – Signal	1	0x006E	5121	STRING(32)	Signal	rw
9 – Depth type	1	0x006E	5122	BIT	0 - specified depth 1 - infinity	rw
9 – Depth	1	0x006E	5123	UINT16	2|4|8|16|32|… |2048|4096|8192	rw
9 – Reset	1	0x006E	5124	BIT	Reset values	wo
10 – Status	1	0x006E	5376	BIT	0 – on 1 – off	rw
10 – Signal	1	0x006E	5377	STRING(32)	Signal	rw
10 – Depth type	1	0x006E	5378	BIT	0 - specified depth 1 - infinity	rw
10 – Depth	1	0x006E	5379	UINT16	2|4|8|16|32|… |2048|4096|8192	rw
10 – Reset	1	0x006E	5380	BIT	Reset values	wo

Data reduction

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Reduction to analog output	1	0x006E	5632	BIT	0 – off 1 – on	rw
Reduction to RS422	1	0x006E	5633	BIT	0 – off 1 – on	rw
Reduction factor	1	0x006E	5634	UINT32	1 … 3000000	

Name eines Benutzersignals (User calcs)

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
User calc 1	1	0x006E	5888	STRING(40)		ro
User calc 2	1	0x006E	5889	STRING(40)		ro
User calc 3	1	0x006E	5890	STRING(40)		ro
User calc 4	1	0x006E	5891	STRING(40)		ro
User calc 5	1	0x006E	5892	STRING(40)		ro
User calc 6	1	0x006E	5893	STRING(40)		ro
User calc 7	1	0x006E	5894	STRING(40)		ro
User calc 8	1	0x006E	5895	STRING(40)		ro
User calc 9	1	0x006E	5896	STRING(40)		ro
User calc 10	1	0x006E	5897	STRING(40)		ro
User calc 11	1	0x006E	5898	STRING(40)		ro
User calc 12	1	0x006E	5899	STRING(40)		ro
User calc 13	1	0x006E	5900	STRING(40)		ro
User calc 14	1	0x006E	5901	STRING(40)		ro
User calc 15	1	0x006E	5902	STRING(40)		ro
User calc 16	1	0x006E	5903	STRING(40)		ro
User calc 17	1	0x006E	5904	STRING(40)		ro
User calc 18	1	0x006E	5905	STRING(40)		ro
User calc 19	1	0x006E	5906	STRING(40)		ro
User calc 20	1	0x006E	5907	STRING(40)		ro
User calc 21	1	0x006E	5908	STRING(40)		ro
User calc 22	1	0x006E	5909	STRING(40)		ro
User calc 23	1	0x006E	5910	STRING(40)		ro
User calc 24	1	0x006E	5911	STRING(40)		ro

User calc 25	1	0x006E	5912	STRING(40)		ro
User calc 26	1	0x006E	5913	STRING(40)		ro
User calc 27	1	0x006E	5914	STRING(40)		ro
User calc 28	1	0x006E	5915	STRING(40)		ro
User calc 29	1	0x006E	5916	STRING(40)		ro
User calc 30	1	0x006E	5917	STRING(40)		ro
User calc 31	1	0x006E	5918	STRING(40)		ro
User calc 32	1	0x006E	5919	STRING(40)		ro
User calc 33	1	0x006E	5920	STRING(40)		ro
User calc 34	1	0x006E	5921	STRING(40)		ro
User calc 35	1	0x006E	5922	STRING(40)		ro
User calc 36	1	0x006E	5923	STRING(40)		ro
User calc 37	1	0x006E	5924	STRING(40)		ro
User calc 38	1	0x006E	5925	STRING(40)		ro
User calc 39	1	0x006E	5926	STRING(40)		ro
User calc 40	1	0x006E	5927	STRING(40)		ro

Outputs

RS422 Output

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Baudrate	1	0x0072	0	UINT32	Unit baud 9600|115200|230400|460800| 691200|921600|2000000| 3000000|4000000	rw
RS422-Output	1	0x0070	1536	BIT	0 – inactive 1 – active	rw
Add a signal	1	0x0070	0	STRING(32)	Add output signal to RS242 output	wo
Delete a signal	1	0x0070	1	STRING(32)	Delete output signal to RS242 output	wo
Reset a signal	1	0x0070	2	BIT	Delete all output signals	wo
available signals 1/10	1	0x0070	15	STRING(235)	adjustable signal names	ro
available signals 2/10	1	0x0070	16	STRING(235)	adjustable signal names	ro
available signals 3/10	1	0x0070	17	STRING(235)	adjustable signal names	ro
available signals 4/10	1	0x0070	18	STRING(235)	adjustable signal names	ro
available signals 5/10	1	0x0070	19	STRING(235)	adjustable signal names	ro
available signals 6/10	1	0x0070	20	STRING(235)	adjustable signal names	ro
available signals 7/10	1	0x0070	21	STRING(235)	adjustable signal names	ro
available signals 8/10	1	0x0070	22	STRING(235)	adjustable signal names	ro
available signals 9/10	1	0x0070	23	STRING(235)	adjustable signal names	ro

available signals 10/10	1	0x0070	24	STRING(235)	adjustable signal names	ro
Output information 1/8	1	0x0070	31	STRING(235)	Signals set for output	ro
Output information 2/8	1	0x0070	32	STRING(235)	Signals set for output	ro
Output information 3/8	1	0x0070	33	STRING(235)	Signals set for output	ro
Output information 4/8	1	0x0070	34	STRING(235)	Signals set for output	ro
Output information 5/8	1	0x0070	35	STRING(235)	Signals set for output	ro
Output information 6/8	1	0x0070	36	STRING(235)	Signals set for output	ro
Output information 7/8	1	0x0070	37	STRING(235)	Signals set for output	ro
Output information 8/8	1	0x0070	38	STRING(235)	Signals set for output	ro

Analog output

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Analog output	1	0x0070	1537	BIT	0 – inactive 1 – active	rw
Output range	1	0x0070	256	STRING(32)	1 – 0-5V 2 – 0-10V 5 – 4-20mA	rw
Output signal	1	0x0070	257	UINT8	Signal	rw
Scaling	1	0x0070	258	FLOAT	0 - Standard 1 - Two-point scaling	rw
Range start	1	0x0070	259	FLOAT	Unit mm -2147.0 ... 2147.0, available with 1 - two-point scaling	rw
Range end	1	0x0070	260	STRING(235)	Unit mm -2147.0 ... 2147.0 available with 1 - two-point scaling	rw
available signals 1/6	1	0x0070	271	STRING(235)	adjustable signal names	ro
available signals 2/6	1	0x0070	272	STRING(235)	adjustable signal names	ro
available signals 3/6	1	0x0070	273	STRING(235)	adjustable signal names	ro
available signals 4/6	1	0x0070	274	STRING(235)	adjustable signal names	ro
available signals 5/6	1	0x0070	275	STRING(235)	adjustable signal names	ro
available signals 6/6	1	0x0070	276	UINT8	adjustable signal names	ro

Switching outputs

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Switching outputs - Output	1	0x0070	1538	BIT	0 – inactive 1 – active	rw

Expected number of edges	1	0x0070	512	UINT8	0 … 255	rw
1 – Switching level	1	0x0070	768	UINT8	0 – Push Pull 1 – Push Pull negated 2 – PNP 3 – NPN	rw
1 – Source	1	0x0070	769	UINT8	0 – inactive 1 – Range limits 2 – expected number of edges	rw
1 – Signal	1	0x0070	770	STRING(32)	Signal, available at 1 – Range limits	rw
1 – lower limit	1	0x0070	771	FLOAT	Unit mm, -2417.0 … 2417.0, available at 1 – Range limits	rw
1 – upper limit	1	0x0070	772	FLOAT	Unit mm, -2417.0 … 2417.0, available at 1 – Range limits	rw
1 – Range test	1	0x0070	773	UINT8	1 - only lower limit 2 - upper limit only 3 - both limits	rw
1 – mind. Output	1	0x0070	774	UINT16	Unit in ms, 0 … 6535	rw
1 – available signals 1/6	1	0x0070	783	STRING(235)	adjustable signal names	ro
1 – available signals 2/6	1	0x0070	784	STRING(235)	adjustable signal names	ro
1 – available signals 3/6	1	0x0070	785	STRING(235)	adjustable signal names	ro
1 – available signals 4/6	1	0x0070	786	STRING(235)	adjustable signal names	ro
1 – available signals 5/6	1	0x0070	787	STRING(235)	adjustable signal names	ro
1 – available signals 6/6	1	0x0070	788	STRING(235)	adjustable signal names	ro
2 – Switching level	1	0x0070	1024	UINT8	0 – Push Pull 1 – Push Pull negated 2 – PNP 3 – NPN	rw
2 – Source	1	0x0070	1025	UINT8	0 – inactive 1 - Range limits 2 - expected number of edges	rw
2 – Signal	1	0x0070	1026	STRING(32)	Signal, available at 1 – Range limits	rw
2 – lower limit	1	0x0070	1027	FLOAT	Unit mm, -2417.0 … 2417.0, available at 1 – Range limits	rw
2 – upper limit	1	0x0070	1028	FLOAT	Unit mm, -2417.0 … 2417.0, available at 1 – Range limits	rw
2 – Range test	1	0x0070	1029	UINT8	1 - only lower limit 2 - upper limit only 3 - both limits	rw
2 – mind. Output duration	1	0x0070	1030	UINT16	Unit in ms, 0 … 6535	rw

2 – available signals 1/6	1	0x0070	1039	STRING(235)	adjustable signal names	ro
2 – available signals 2/6	1	0x0070	1040	STRING(235)	adjustable signal names	ro
2 – available signals	1	0x0070	1041	STRING(235)	adjustable signal names	ro
2 – available signals 4/6	1	0x0070	1042	STRING(235)	adjustable signal names	ro
2 – available signals 5/6	1	0x0070	1043	STRING(235)	adjustable signal names	ro
2 – available signals 6/6	1	0x0070	1044	STRING(235)	adjustable signal names	ro
3 – Switching level	1	0x0070	1280	UINT8	0 – Push Pull 1 – Push Pull negated 2 – PNP 3 – NPN	rw
3 – Source	1	0x0070	1281	UINT8	0 – inactive 1 - Range limits 2 - expected number of edges	rw
3 – Signal	1	0x0070	1282	STRING(32)	Signal, available at 1 – Range limits	rw
3 – lower limit	1	0x0070	1283	FLOAT	Unit mm, -2417.0 … 2417.0, available at 1 – Range limits	rw
3 – upper limit	1	0x0070	1284	FLOAT	Unit mm, -2417.0 … 2417.0, available at 1 – Range limits	rw
3 – Range test	1	0x0070	1285	UINT8	1 - only lower limit 2 - upper limit only 3 - both limits	rw
3 – mind. Output duration	1	0x0070	1286	UINT16	Unit in ms, 0 … 6535	rw
3 – available signals 1/6	1	0x0070	1295	STRING(235)	adjustable signal names	ro
3 – available signals 2/6	1	0x0070	1296	STRING(235)	adjustable signal names	ro
3 – available signals	1	0x0070	1297	STRING(235)	adjustable signal names	ro
3 – available signals 4/6	1	0x0070	1298	STRING(235)	adjustable signal names	ro
3 – available signals 5/6	1	0x0070	1299	STRING(235)	adjustable signal names	ro
3 – available signals 6/6	1	0x0070	1300	STRING(235)	adjustable signal names	ro

System settings

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Loading device settings	1	0x0072	256	BIT	1 – read	wo
Save device settings	1	0x0072	257	BIT	1 – save	wo
Reset device settings	1	0x0072	258	BIT	1 – reset	wo

Preset mode	1	0x0072	512	UINT8	1 - static 2 - balanced 3 - dynamic	rw
available presets	1	0x0072	513	STRING(235)	for div. measuring tasks	ro
Loading preset	1	0x0072	514	STRING(32)	Loading preset, Overwrites current settings	wo
Current Setup/Preset	1	0x0072	768	STRING(32)		ro
Load setup	1	0x0072	769	STRING(32)	Load user-specific setup	wo
Save setup	1	0x0072	770	STRING(32)	Save user-specific setup	wo
Delete setup	1	0x0072	771	STRING(32)	Delete user-specific setup	wo
Favor setup	1	0x0072	772	STRING(32)	Load user-specific setup after restart	rw
available setups	1	0x0072	773	STRING(235)	saved users. Setups	ro
Reset setups	1	0x0072	774	BIT	Delete all setups, 1 - Delete	wo
Current User	1	0x0072	1024	UINT8	User level	ro
Log in	1	0x0072	1025	STRING(32)	Log in	wo
Log out	1	0x0072	1026	BIT	1 – Log out	wo
Standard user	1	0x0072	1027	UINT8	User level after restart 1 - User 2 - Professional	rw
Change password - old	1	0x0072	1028	STRING(32)	Password changes from the user Professional, Specification of the current password	wo
Change password – new	1	0x0072	1029	STRING(32)	Password change by the user Professional, specification of the new password	wo
Change password - repeat	1	0x0072	1030	STRING(32)	Password changes from the user Professional, new entry of the new password	wo
Restart	1	0x0072	1280	BIT	1 – Carry out	wo
Factory settings	1	0x0072	1536	BIT	Resetting the device to factory settings 1 – Carry out	wo
LED	1	0x0072	1792	BIT	0 – Off 1 – On	rw

TCP/IP Interface Object

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
TCP/IP Interface Configuration	1	0x00F5	5	Siehe hier		rw

Process data

Subobjectname	Instance-ID	Index	Subindex	Data type	Description	Access
Size	0	0x00C1	256	UINT16		ro
Current oversampling	0	0x00C1	257	UINT8		ro
Edge A	1	0x00C1	0	INT32		ro
Edge B	1	0x00C1	1	INT32		ro
Center	1	0x00C1	2	INT32		ro
Difference	1	0x00C1	3	INT32		ro
Edge A angle	1	0x00C1	4	INT32		ro
Edge B angle	1	0x00C1	5	INT32		ro
Seg1 edge A	1	0x00C1	10	INT32		ro
Seg1 edge B	1	0x00C1	11	INT32		ro
Seg1 center	1	0x00C1	12	INT32		ro
Seg1 difference	1	0x00C1	13	INT32		ro
Seg1 edge A angle	1	0x00C1	14	INT32		ro
Seg1 edge B angle	1	0x00C1	15	INT32		ro
Seg2 edge A	1	0x00C1	20	INT32		ro
Seg2 edge B	1	0x00C1	21	INT32		ro
Seg2 center	1	0x00C1	22	INT32		ro
Seg2 difference	1	0x00C1	23	INT32		ro
Seg2 edge A angle	1	0x00C1	24	INT32		ro
Seg2 edge B angle	1	0x00C1	25	INT32		ro
Seg3 edge A	1	0x00C1	30	INT32		ro
Seg3 edge B	1	0x00C1	31	INT32		ro
Seg3 center	1	0x00C1	32	INT32		ro
Seg3 difference	1	0x00C1	33	INT32		ro
Seg3 edge A angle	1	0x00C1	34	INT32		ro
Seg3 edge B angle	1	0x00C1	35	INT32		ro
Seg4 edge A	1	0x00C1	40	INT32		ro
Seg4 edge B	1	0x00C1	41	INT32		ro
Seg4 center	1	0x00C1	42	INT32		ro
Seg4 difference	1	0x00C1	43	INT32		ro
Seg4 edge A angle	1	0x00C1	44	INT32		ro
Seg4 edge B angle	1	0x00C1	45	INT32		ro
Seg5 edge A	1	0x00C1	50	INT32		ro
Seg5 edge B	1	0x00C1	51	INT32		ro
Seg5 center	1	0x00C1	52	INT32		ro
Seg5 difference	1	0x00C1	53	INT32		ro
Seg5 edge A angle	1	0x00C1	54	INT32		ro
Seg5 edge B angle	1	0x00C1	55	INT32		ro
Seg6 edge A	1	0x00C1	60	INT32		ro
Seg6 edge B	1	0x00C1	61	INT32		ro
Seg6 center	1	0x00C1	62	INT32		ro
Seg6 difference	1	0x00C1	63	INT32		ro
Seg6 edge A angle	1	0x00C1	64	INT32		ro
Seg6 edge B angle	1	0x00C1	65	INT32		ro
Seg7 edge A	1	0x00C1	70	INT32		ro

Seg7 edge B	1	0x00C1	71	INT32		ro
Seg7 center	1	0x00C1	72	INT32		ro
Seg7 difference	1	0x00C1	73	INT32		ro
Seg7 edge A angle	1	0x00C1	74	INT32		ro
Seg7 edge B angle	1	0x00C1	75	INT32		ro
Seg8 edge A	1	0x00C1	80	INT32		ro
Seg8 edge B	1	0x00C1	81	INT32		ro
Seg8 center	1	0x00C1	82	INT32		ro
Seg8 difference	1	0x00C1	83	INT32		ro
Seg8 edge A angle	1	0x00C1	84	INT32		ro
Seg8 edge B angle	1	0x00C1	85	INT32		ro
Counter	1	0x00C1	100	UINT32		ro
Timestamp	1	0x00C1	101	UINT32		ro
Frequency	1	0x00C1	102	UINT32		ro
Shutter	1	0x00C1	103	UINT32		ro
Encoder	1	0x00C1	104	UINT32		ro
Count edges	1	0x00C1	105	UINT32		ro
Count pins	1	0x00C1	106	UINT32		ro
Count gaps	1	0x00C1	107	UINT32		ro
Frame state	1	0x00C1	108	UINT32		ro
User calc 01	1	0x00C1	201	INT32		ro
User calc 02	1	0x00C1	202	INT32		ro
User calc 03	1	0x00C1	203	INT32		ro
User calc 04	1	0x00C1	204	INT32		ro
User calc 05	1	0x00C1	205	INT32		ro
User calc 06	1	0x00C1	206	INT32		ro
User calc 07	1	0x00C1	207	INT32		ro
User calc 08	1	0x00C1	208	INT32		ro
User calc 09	1	0x00C1	209	INT32		ro
User calc 10	1	0x00C1	210	INT32		ro
User calc 11	1	0x00C1	211	INT32		ro
User calc 12	1	0x00C1	212	INT32		ro
User calc 13	1	0x00C1	213	INT32		ro
User calc 14	1	0x00C1	214	INT32		ro
User calc 15	1	0x00C1	215	INT32		ro
User calc 16	1	0x00C1	216	INT32		ro
User calc 17	1	0x00C1	217	INT32		ro
User calc 18	1	0x00C1	218	INT32		ro
User calc 19	1	0x00C1	219	INT32		ro
User calc 20	1	0x00C1	220	INT32		ro
User calc 21	1	0x00C1	221	INT32		ro
User calc 22	1	0x00C1	222	INT32		ro
User calc 23	1	0x00C1	223	INT32		ro
User calc 24	1	0x00C1	224	INT32		ro
User calc 25	1	0x00C1	225	INT32		ro
User calc 26	1	0x00C1	226	INT32		ro
User calc 27	1	0x00C1	227	INT32		ro
User calc 28	1	0x00C1	228	INT32		ro

User calc 29	1	0x00C1	229	INT32		ro
User calc 30	1	0x00C1	230	INT32		ro
User calc 31	1	0x00C1	231	INT32		ro
User calc 32	1	0x00C1	232	INT32		ro
User calc 33	1	0x00C1	233	INT32		ro
User calc 34	1	0x00C1	234	INT32		ro
User calc 35	1	0x00C1	235	INT32		ro
User calc 36	1	0x00C1	236	INT32		ro
User calc 37	1	0x00C1	237	INT32		ro
User calc 38	1	0x00C1	238	INT32		ro
User calc 39	1	0x00C1	239	INT32		ro
User calc 40	1	0x00C1	240	INT32		ro

Data structures

Assembly	Data
Activation	UINT8
Oversampling	UINT8
Edge A	UINT8
Edge A angle	UINT8
Counter	UINT8
Time stamp	UINT8
Frequency	UINT8
Shutter	UINT8
Encoder1	UINT8
Count edge	UINT8
Frame state	UINT8
User calc 01	UINT8
User calc 02	UINT8
User calc 03	UINT8
User calc 04	UINT8
User calc 05	UINT8
User calc 07	UINT8
User calc 08	UINT8
User calc 09	UINT8
User calc 10	UINT8
User calc 11	UINT8
User calc 12	UINT8
User calc 13	UINT8
User calc 14	UINT8
User calc 15	UINT8
User calc 16	UINT8
User calc 17	UINT8
User calc 18	UINT8
User calc 19	UINT8
User calc 20	UINT8
User calc 21	UINT8
User calc 22	UINT8
User calc 23	UINT8
User calc 24	UINT8
User calc 25	UINT8
User calc 26	UINT8
User calc 27	UINT8
User calc 28	UINT8
User calc 29	UINT8
User calc 30	UINT8
User calc 31	UINT8
User calc 32	UINT8
User calc 33	UINT8
User calc 34	UINT8
User calc 35	UINT8
User calc 36	UINT8
User calc 37	UINT8
User calc 38	UINT8

User calc 39 UINT8
User calc 40 UINT8

TCP/IP Configuration Data

ip_address UINT32
network_mask UINT32
gateway UINT32
primary_name_server UINT32
secondary_name_server UINT32
default_domain_name CHAR

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