

IEC60870-5-104

straton user guide – Rev. 5

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straton



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1. Overview

This document describes how to start with the straton IEC60870-5-104 client.

2. Requirement and setup

The IEC60870-5-104 client is supported for straton version higher than 8.6.

The IEC60870-5-104 client driver need to be integrated in the straton runtime.

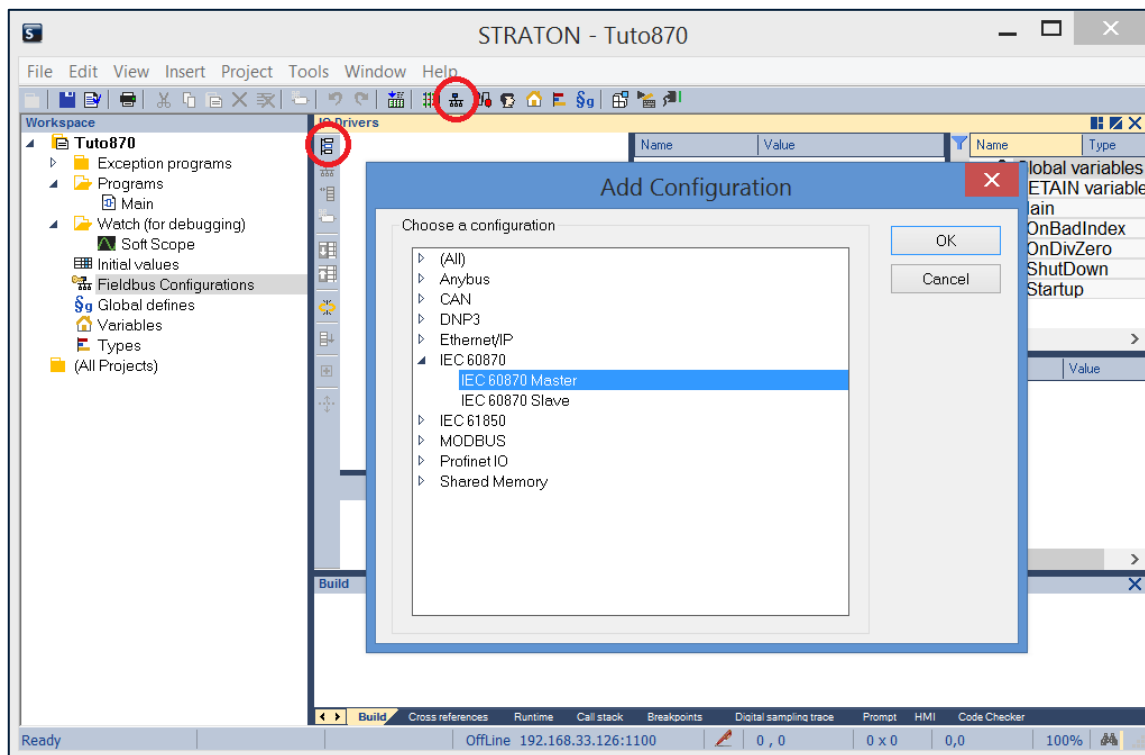
Download and install from <https://straton-plc.com/telechargements/>

3. Create and configure an application

3.1. Create configuration in straton Editor

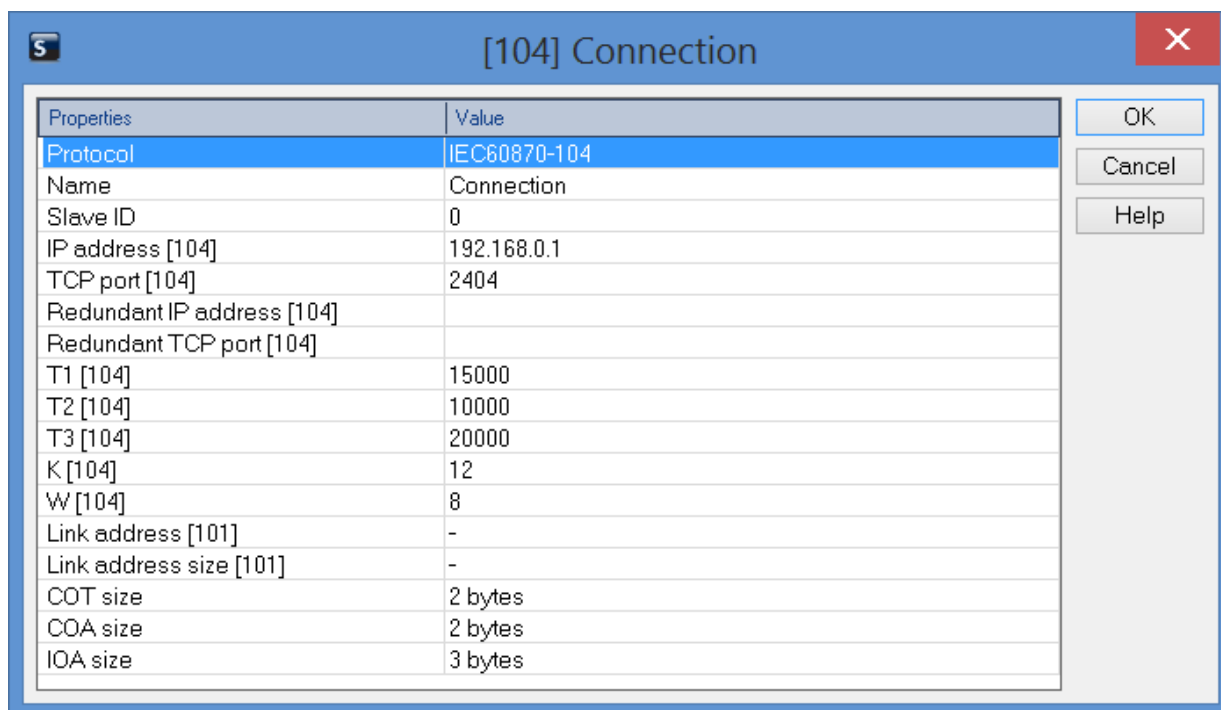
Open the straton IDE and create a new project: Menu File > Add New Project

Open the IO Drivers window (), insert a configuration () and select the IEC60870 Master:



Create and configure an application


Insert a connection () or Menu > Insert > Insert Master/Port and choose the IEC60870-104

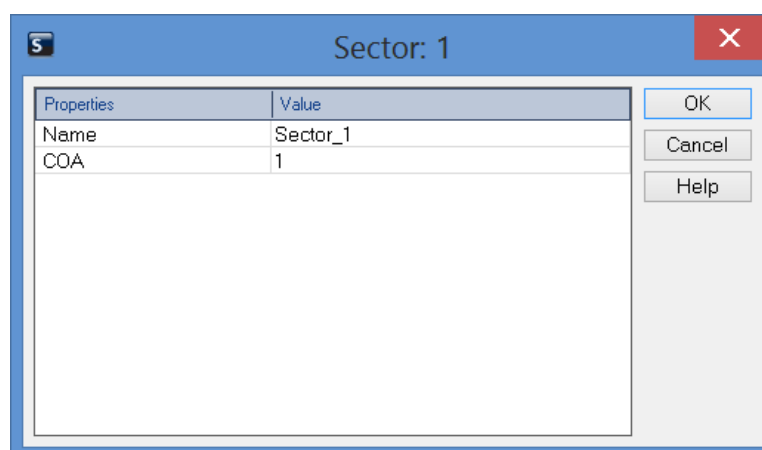


Properties	Value
Protocol	IEC60870-104
Name	Connection
Slave ID	0
IP address [104]	192.168.0.1
TCP port [104]	2404
Redundant IP address [104]	
Redundant TCP port [104]	
T1 [104]	15000
T2 [104]	10000
T3 [104]	20000
K [104]	12
W [104]	8
Link address [101]	-
Link address size [101]	-
COT size	2 bytes
COA size	2 bytes
IOA size	3 bytes

Set the IP address of the slave device.

Set the TCP port: Default port is 2404.

Insert some sectors () or Menu > Insert > Insert Slave/Data block



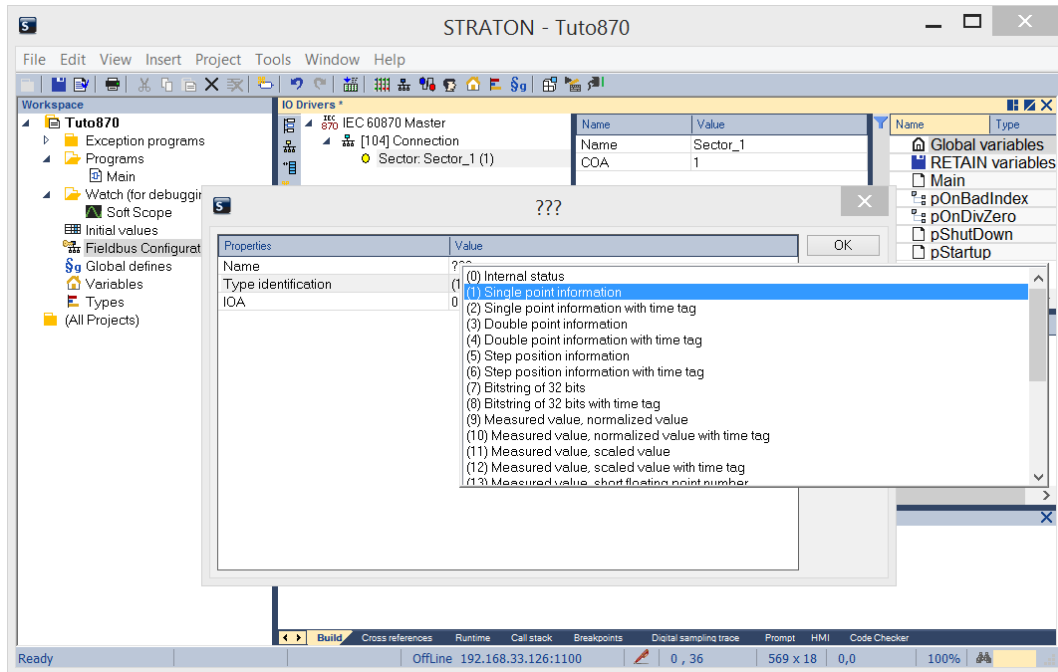
Properties	Value
Name	Sector_1
COA	1

Set the name of the sector

Set its COA

Insert variables () or Menu > Insert > Insert Variables

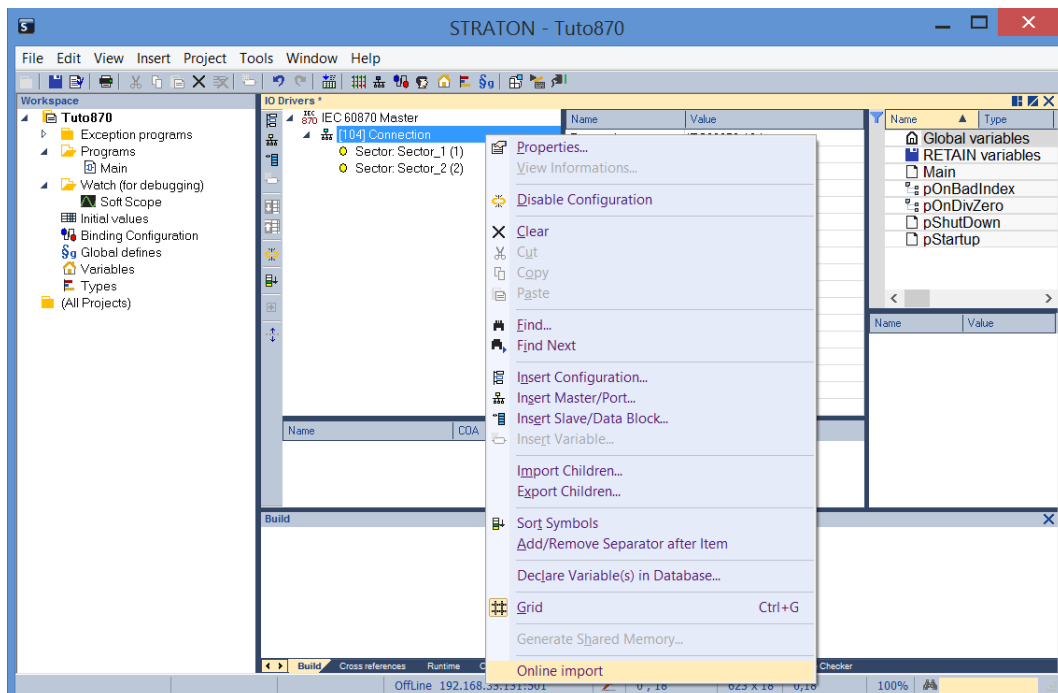
Select the corresponding type according to IEC60870:



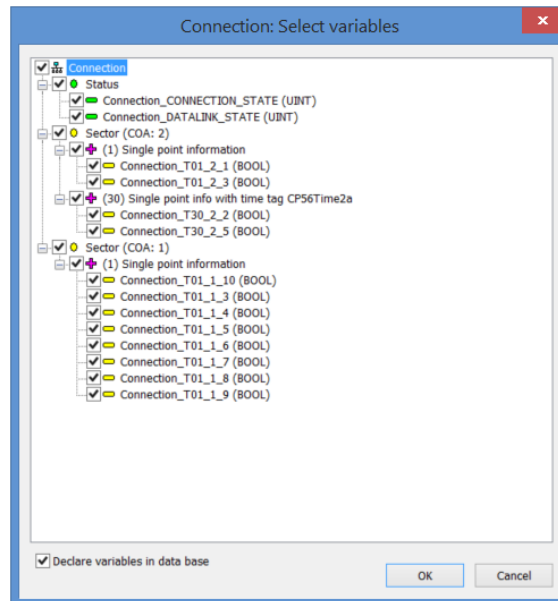
Note: Variables can also be imported from a running 60870 Slave (see next chapter).

3.2. Online Import

The driver can do online import of the variables for the different sectors, each sector need to be declared first.



Then select the variables from the list.



3.3. Download and start application

Go online with the straton Editor (): Menu > Project > Online

IO Drivers

- IEC 870 IEC 60870 Master
 - [104] Connection
 - Sector: Sector_1 (1)
 - Connection_T01_1_10 = FALSE
 - Connection_T01_1_3 = TRUE
 - Connection_T01_1_4 = FALSE
 - Connection_T01_1_5 = TRUE
 - Connection_T01_1_6 = FALSE
 - Connection_T01_1_7 = FALSE
 - Connection_T01_1_8 = FALSE
 - Connection_T01_1_9 = FALSE
 - Sector: Sector_2 (2)
 - Connection_T01_2_1 = TRUE
 - Connection_T01_2_3 = TRUE
 - Connection_T30_2_2 = TRUE
 - Connection_T30_2_5 = TRUE
 - Status
 - Connection_CONNECTION_STATE = 5
 - Connection_DATAINK_STATE = 3

Name	Value
Name	Connection_CONNECTION_STAT...
Type identification	(0) Internal status
IOA	0

3.3.1. Connection state

Via a UINT variable of the type "internal state" (T00), COA 0 and IOA 0, it is possible to request the current connection state to the control. If the value of this variable equals to 5, a running connection exist and the general interrogation was completed successfully.

3.3.2. State of the DL layers

Via a variable of the type "internal state" (T00), COA 0 and IOA 1, the state of the data link layer connection to the control can be read. The variable refers to the data link layer and both connections of the redundancy, if the secondary connection was defined in the driver configuration.

Bit	Description
0	Connection state of the primary connection.
1	Shows whether the primary connection is active (is used at the communication)
4	Connection state of the secondary connection.
5	Shows whether the secondary connection is active (is used at the communication)

4. Command

IEC60870_SELECT

Inputs:

- ENABLE (BOOL): Activating the command; reacts on rising flank.
- CANCEL (BOOL): Deactivating the Select; reacts to rising flank.
- SLAVEID (UDINT): ID of the slave connection as set in the driver configuration.
- TYPE (USINT): Type ID (IEC60870 type identification).
- COA (UINT): Common Address of ASDU.
- IOA (UDINT): Information Object Address.
- QUALIFIER (USINT): Qualifier of Command or Qualifier of Interrogation.
- VALUE (ANY): Value.

Outputs:

- PN (BOOL): Positive/negative bit (P/N Bit as received from the slave);
1 = negative
- COT (USINT): Cause of transmission (as received from the slave).

IEC60870_EXEC (EXECUTE)

Inputs:

ENABLE (BOOL):	Activating the command; reacts on rising flank.
SLAVEID (UDINT):	ID of the slave connection as set in the driver configuration.
TYPE (USINT):	Type ID (IEC60870 type identification)
COA (UINT):	Common Address of ASDU.
IOA (UDINT):	Information Object Address.
QUALIFIER (USINT):	Qualifier of Command or Qualifier of Interrogation.
VALUE (ANY):	Value.

Outputs:

PN (BOOL):	Positive/negative bit (P/N Bit as received from the slave); 1 = negative
COT (USINT):	Cause of transmission (as received from the slave).

QUALIFIER:

- 0: No additional qualifier
- 1: Short Pulse
- 2: Long Pulse
- 3: Persistent

5. Frequently Asked Questions

I GET THE MESSAGE NO CONNECTION?

Check that the straton runtime is started and check the communication IP and port.

THE ONLINE IMPORT FINDS SOME ITEMS BUT DOES NOT STOP SEARCHING.

It appends if some Sectors are created on the Master side but does not exist on the Slave side.