



## **7TMODTCP**

### **IGSS Modicon Modbus TCP Driver**

#### **User's Manual**

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## CONTENTS:

1	INTRODUCTION.....	3
1.1	Software Requirements.....	3
1.2	Hardware Requirements .....	3
2	INSTALLATION.....	4
2.1	Automatic Installation .....	4
2.2	Manual Installation .....	4
3	CONFIGURING THE DRIVER.....	5
3.1	Configuring the Objects.....	8
4	PERFORMANCE AND THROUGHPUT .....	9
5	ERROR CODES .....	10

# **1 INTRODUCTION**

This document describes how to set up and troubleshoot the IGSS 7TMODTCP Interface Driver.

The driver implements the Modicon Modbus protocol stack over TCP.

## **1.1 SOFTWARE REQUIREMENTS**

None (see Hardware Requirements below).

The driver is designed to be used with IGSS version 7.0 and higher.

## **1.2 HARDWARE REQUIREMENTS**

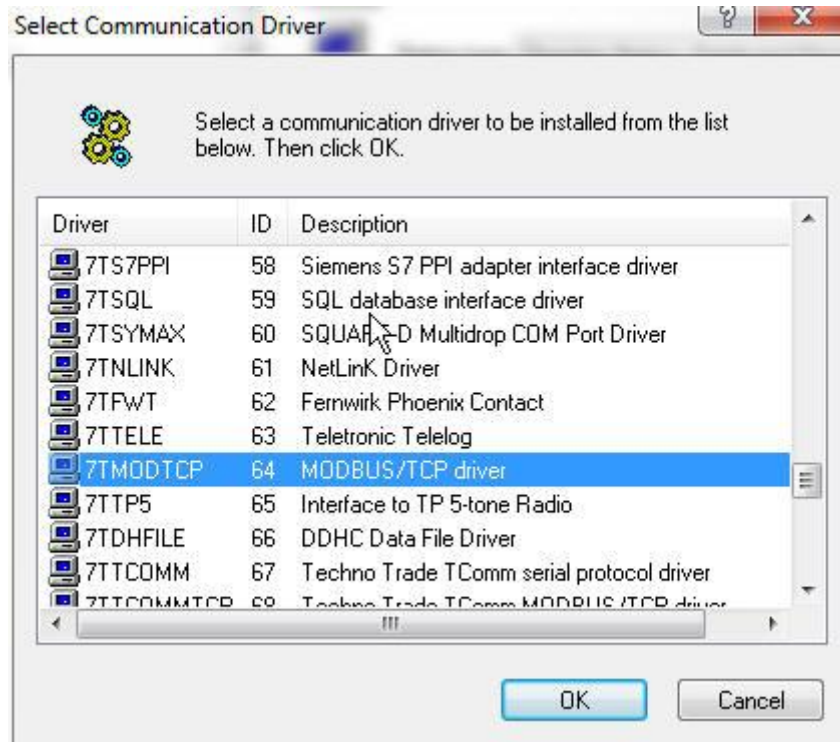
The driver requires a standard TCP connection between the IGSS pc and the PLC that support fixed IP address. While VPN, GPRS and such resemble a regular TCP transport, it cannot be guaranteed that the driver will work with them.

Please refer to the manufacturers manual for PLC setup.

## 2 INSTALLATION

### 2.1 AUTOMATIC INSTALLATION

The driver is normally installed automatically along with the rest of the IGSS system. To verify if the driver has been installed open the System Configuration (sysconfig.exe) and check if a driver with ID:81 is present in the list of available drivers:



If the driver is present then you can proceed to the next section: “Configuring the Driver”, otherwise install the driver using the manual installation procedure described below.

### 2.2 MANUAL INSTALLATION

Using the following step-by-step guide will install the driver manually on a PC where the IGSS system has already been installed. You need to stop the IGSS system prior to the installation and you need to be logged in with a user account with “Administrator” rights.

Step 1: Verify that the files:

7TMODTCP.DLL  
7TMODTCPc.DLL  
COMMDRV.REG (latest updated version)

exists in the GSS\ directory. If the files doesn't exist run the IGSSUpdateClient to get the files from the 7T WEB server – or contact 7T Support ([support@7t.dk](mailto:support@7t.dk)) to get the files via e-mail.

Step 2: Double-click on the COMMDRV.REG file to import the registry settings needed for the system to recognize the driver. (please notice that double-clicking on a .REG file in a 64 Bit Windows will NOT work, please contact 7T Support for instructions)

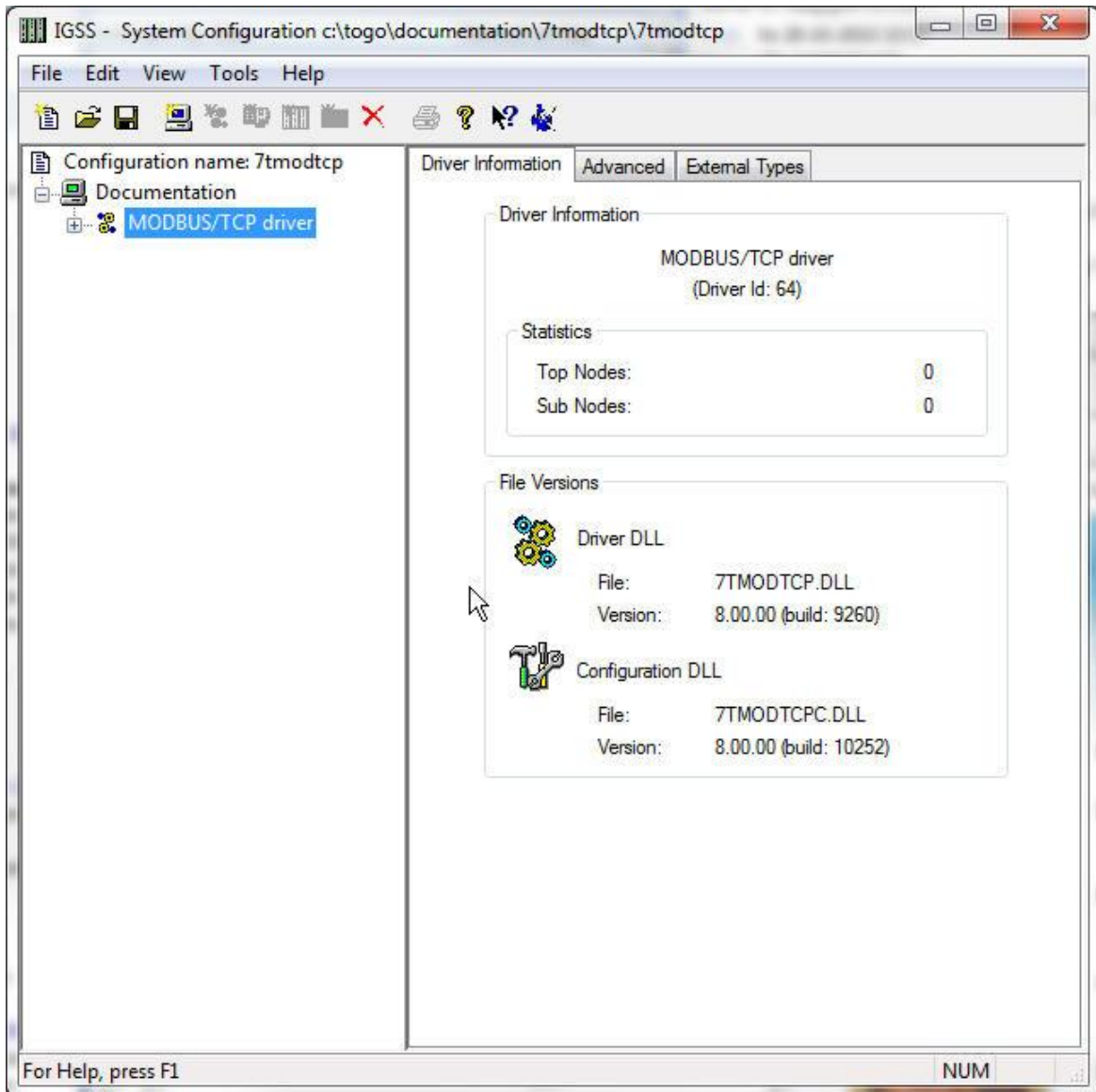
The driver is now installed.

C:\USERS\ICMA\DESKTOP\DRIVER DOCS\7TMODTCP.DOCX

### 3 CONFIGURING THE DRIVER

This section describes how to configure the driver parameters. All parameters must be configured by using the System Configuration (sysconfig.exe) application. Please note that **the IGSS system MUST be stopped and restarted** for the configured parameters to take effect.

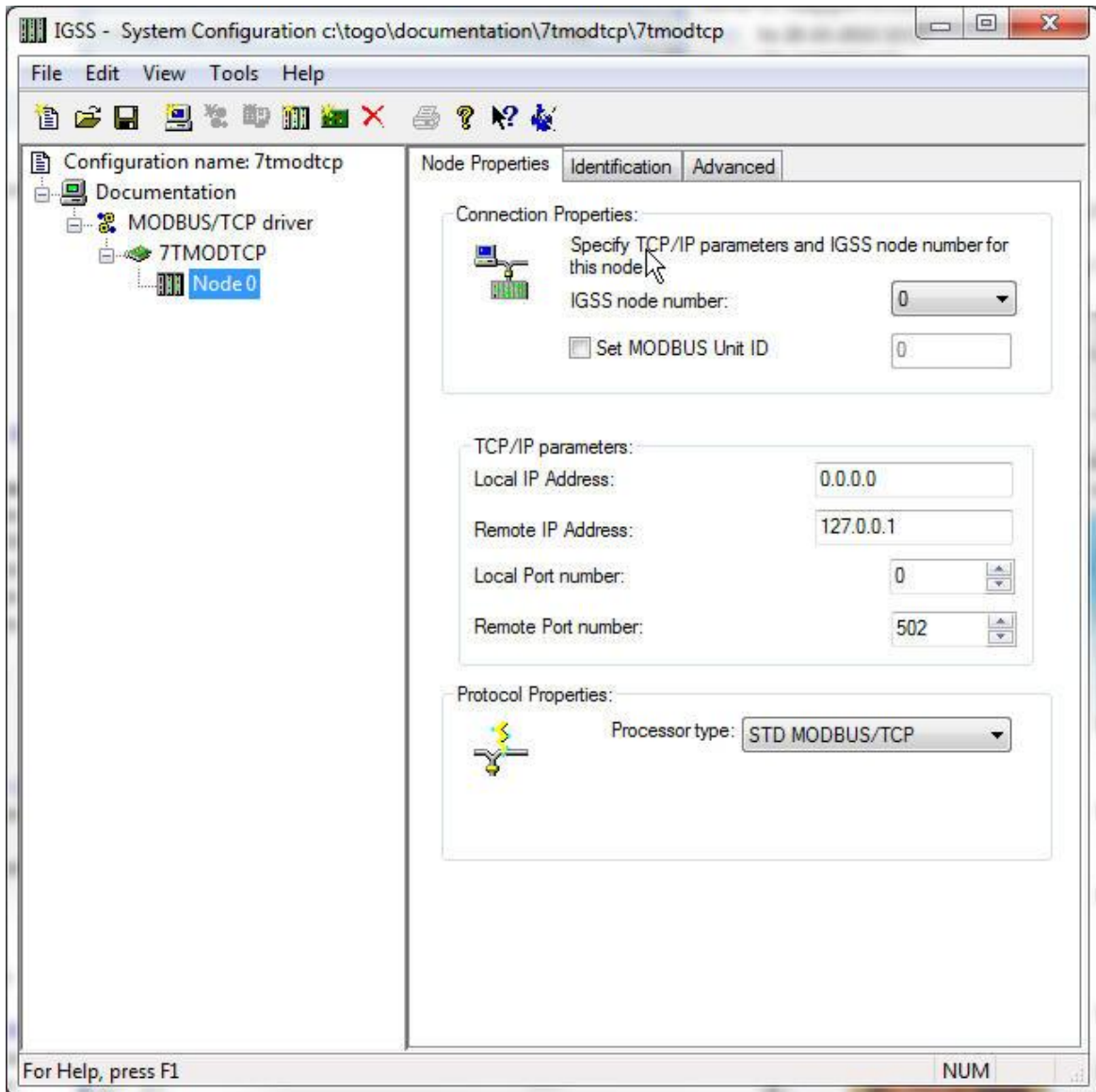
Start the System Configuration application and add the driver 7TMODTCP (ID:64) to the requested station.



When the driver has been added to the relevant station you are ready to add and set up the interface and PLC nodes.

Since an interface was automatically added when you added the driver, please proceed by right-clicking the interface in the left pane and select Add node .

## 7TMODTCP IGSS Modicon Modbus TCP driver



The Modicon Modbus TCP driver is designed to use one IP address for each node.

**IGSS node number**: This is the node number which IGSS uses to reference a unique PLC. This node number is required when binding and IGSS atom (tag) to a register in the PLC. Any number from the drop down list can be used.

**Modbus Unit ID**: This number corresponds to the Modbus ID of the PLC, please note that many Modbus PLCs won't respond if requests are sent using a wrong Modbus ID.

TCP/IP Parameters :

**Local IP Address** : is only used for multihomed setups, and should normally be left alone.

**Local Port number** : same as above.

**Remote IP Address** : The IP address of the PLC

**7TMODTCP**  
**IGSS Modicon Modbus TCP driver**

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**Remote Port number** : The port number of the PLC, standard is 502

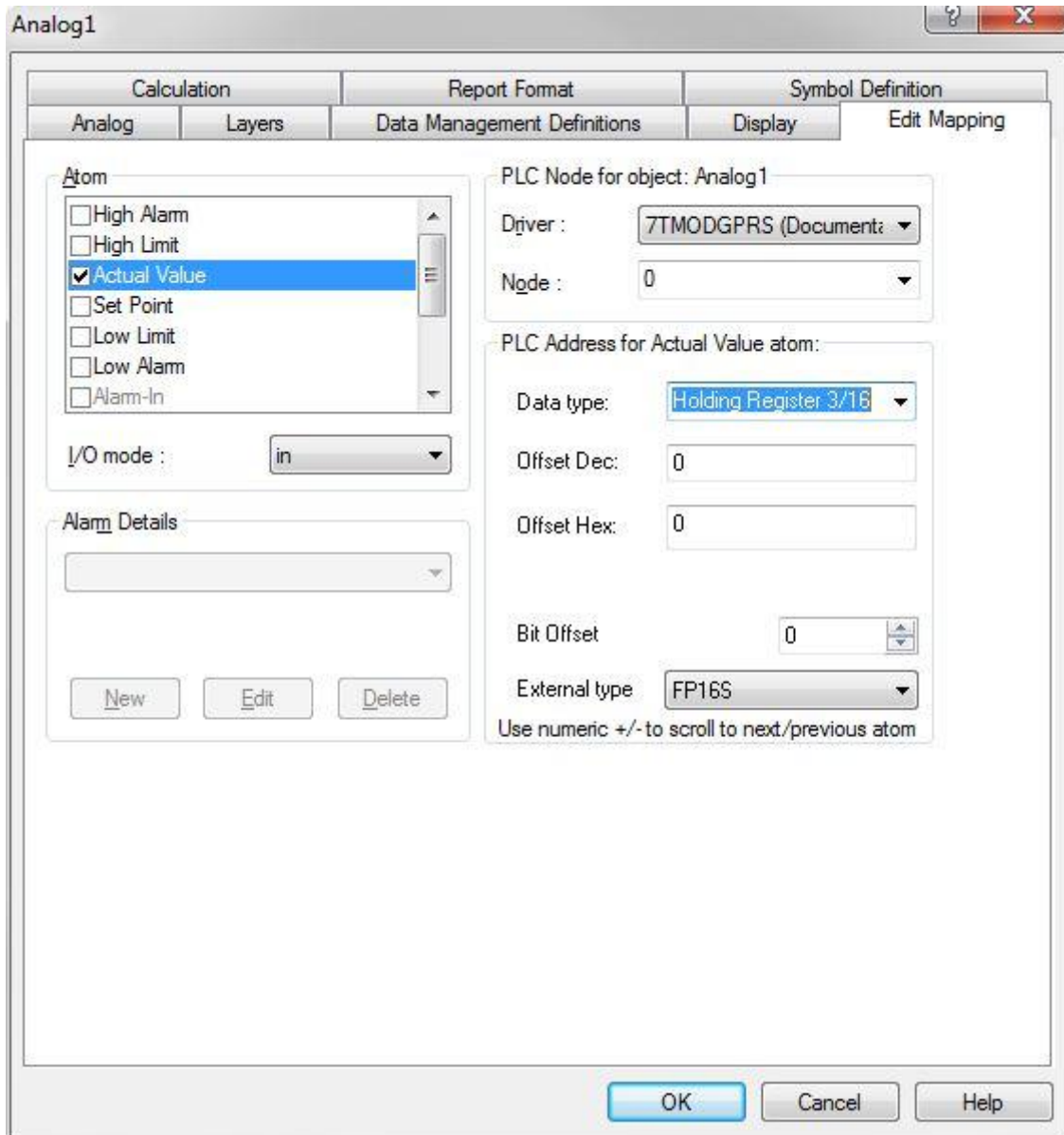
**Processor type**: Click this drop down box to select the PLC type (see screenshot above). STD Modbus/TCP are a generic Processor type and used in most cases, the rest is for specific hardware.



### 3.1 CONFIGURING THE OBJECTS

Once the driver and the PLC nodes have been defined, IGSS Objects and Atoms can be linked to process variable in the PLC. Various different types of PLC memory can be accessed for read/write operations using the driver.

By using the “Edit Mapping” tab in the object properties dialog you can specify the binding between the object’s atoms and the PLC process variables. Start by selecting an atom and select the 7TMODTCP driver in the “Driver” drop down list:



Now select the desired PLC node number and continue by setting the desired Device. Then specify the number (register number within the device type). Note that the corresponding Mnemonic is displayed and updated as you select the appropriate parameters. This is a help to make sure you always bind to the correct process variable.

Continue this process for each atom on the object and save the parameters by clicking the OK button when finished.

## **4 PERFORMANCE AND THROUGHPUT**

The driver is designed for maximum throughput on a TCP network. On a standard PC you should expect a throughput of 20+ request/response cycles pr. minute. Each PLC node is handled concurrent and independently. This means that if you add more PLC's to the system then the throughput pr. PLC should only be affected marginally provided that the TCP Modem throughput is sufficient.

**IMPORTANT NOTICE:** The IGSS communication engine optimizes communication throughput by seeking to group data whenever possible. This means that if the communication engine is required to read e.g. word offset 1 and word offset 31 then it will read data registers 1, 2, through to word offset 31 as a block. This is much more efficient than reading the two data registers using two separate read requests.

## **5 ERROR CODES**

This section describes the error codes specific to the IGSS 7TMODTCP interface driver.

While troubleshooting communication- or addressing problems the Driver Test Application might be useful to display error codes reported by the driver.

0x4001: `_7TTCP_OPEN_SOCKET_FAILED`

Cause: Unable to open a stream socket

Action: Check that WinSock is present

Subcode: windows errorcodes

0x4002: `_7TTCP_BIND_SOCKET_FAILED`

Cause: Unable to bind to socket

Action: Check if local IP address and port is used twice in the same configuration

Subcode: windows errorcodes

0x4003: `_7TTCP_CONNECT_SOCKET_FAILED`

Cause: Unable to connect to remote PLC.

Action: verify that the PLC IP Address and Port is correct and that it is online by pinging the device using the IP Address and Port supplied for the node in sysconfig.

Subcode: windows errorcodes

0x4004: `_7TTCP_SEND_SOCKET_FAILED`

Cause: Unable to send requests to PLC.

Action: verify that it is possible to ping the device

Subcode: windows errorcodes

0x4005: `_7TTCP_RECV_SOCKET_FAILED_FF`

Cause: Session closed by remote PLC

Action: None, the driver will try to reconnect.

Subcode: windows errorcodes

0x4006: `_7TTCP_RECV_SOCKET_FAILED_00`

Cause: Session closed by remote PLC

Action: None, the driver will try to reconnect.

Subcode: windows errorcodes

**7TMODTCP**  
**IGSS Modicon Modbus TCP driver**

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0x4007:    \_7TTCP\_RECV\_NO\_MSG

Cause: Messagepool empty

Action: Increase number of messages in Driver Setup

0x4008:    \_7TTCP\_RECV\_MSG\_TOO\_LONG

Cause: Message longer than 255 bytes received

Action: Reduce segment size in remote server

0x4009:    \_7TTCP\_RECV\_TIMEOUT       0x4009

Cause: PLC has not responded within the specified time.

Action: None, driver will retry. If the problem persists please contact 7T Support.