

Kepware Technologies

Kepware Technologies
400 Congress St., 3rd Floor
Portland, ME 04101

Phone 207 775 1660
Toll Free 888 KEPWARE
Fax 207 775 1799
www.kepware.com

U-CON Profile Development

Mettler Toledo IND780 Scale

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Overview

The purpose of this project is to provide an interface to Mettler Toledo IND780 Scale for the monitoring and collection of data.

Communications

Communications Parameters

This device uses individual RS-232 Serial or a single RJ-45 Ethernet interface.

RS-232

Each serial com port from the Mettler Toledo IND780 Scale can be set to continuously output values from a singular scale. Each serial port continuous output is setup within the IND780 in the Setup->Communication->Connections menu. The comm. parameters are variable.

RJ-45 Ethernet interface

The Ethernet port can be used to connect to the shared data server. This allows the processing of specific commands. First the user must log on using a predefined username and password which is set from within the Setup->Terminal->Users menu on the IND780. The logon can be processed through UCON after specifying the appropriate information. If the username/password is incorrect or UCON receives a "93 No Access" response from the IND780 then UCON will process the logout command "quit". After this, the user will need to re-login to have access.

Communications Settings

RS-232 serial (9600, 8, O, 1), No Flow

Ethernet (TCP/IP port 1701)

Communications Procedures

In this project we are concerned with following UCON tags listed below. These are separated between serial and Ethernet.

Tags - RS-232 Serial

SWA_Bit_0	SWA_Bit_1	SWA_Bit_2	SWA_Bit_3
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SWA_Bit_4	SWA_Bit_5	SWA_Bit_6	SWB_Bit_0
SWB_Bit_1	SWB_Bit_2	SWB_Bit_3	SWB_Bit_4
SWB_Bit_5	SWB_Bit_6	SWC_Bit_0	SWC_Bit_1
SWC_Bit_2	SWC_Bit_3	SWC_Bit_4	SWC_Bit_5
SWC_Bit_6	Indicated_Weight	Tare_Weight	

Tags - Ethernet

<u>User</u>			
Login	Logout	Username	Password
<u>Read</u>			
Gross	Net	Tare	Units
Transaction	Response	ScaleMode	ScaleID

The Profile

Profile Design

The following is an explanation of the profile design. The design takes into account that setup of the serial port is continuous output and the setup of the Ethernet port needs to login to the IND780 and use the Shared Data Server commands.

Channel and Device Configuration - RS-232 Serial

The serial Channel created in the Mettler Toledo IND780 UCON profile project will have a Channel named MT_Serial and a Device named IND780. The Tag Block where the tags are located is under Unsolicited. The Channel and Device can be renamed and copied. The Channel Communications settings will need to be changed to match the specific setup within your IND780 scale.

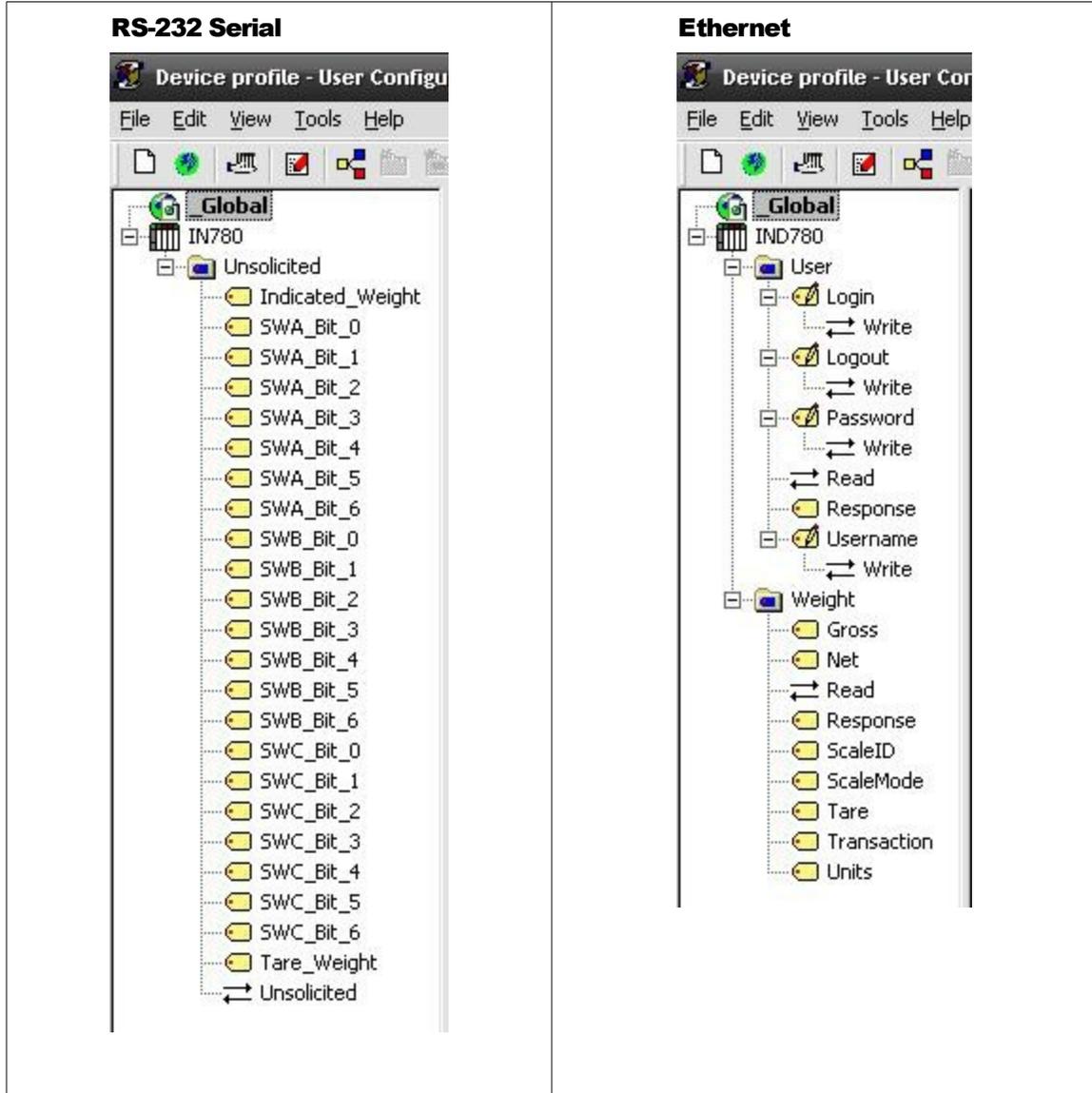
Channel and Device Configuration - Ethernet

The Ethernet Channel created in the Mettler Toledo IND780 UCON profile project will have a Channel named MT_IND780_Eth and a Device named for each scale 1-4. The Tag Block where the tags are located can be found under Weight and User. The Channel and Device can be renamed and copied. The Device Properties settings will need to be changed to match the specific setup within your IND780 scale. Specifically the IP Address can be found on the Ethernet Encapsulation tab of the Device Properties. Also, the Device ID needs to be changed to match the desired scale within the IND780.

Transaction Design

Each Device will contain a combination of tags and tag blocks.

Tags & Tag Blocks



RS-232 Serial

Tag Block - Unsolicited

Indicated_Weight – Long data type. Read Only.

Tare_Weight – Long data type. Read Only.

SWA_Bit_0 – Boolean data type. Read Only.

SWA_Bit_1 – Boolean data type. Read Only.

SWA_Bit_2 – Boolean data type. Read Only.

SWA_Bit_3 – Boolean data type. Read Only.

SWA_Bit_4 – Boolean data type. Read Only.

SWA_Bit_5 – Boolean data type. Read Only.

SWA_Bit_6 – Boolean data type. Read Only.

SWB_Bit_0 – Boolean data type. Read Only.

SWB_Bit_1 – Boolean data type. Read Only.

SWB_Bit_2 – Boolean data type. Read Only.

SWB_Bit_3 – Boolean data type. Read Only.

SWB_Bit_4 – Boolean data type. Read Only.

SWB_Bit_5 – Boolean data type. Read Only.

SWB_Bit_6 – Boolean data type. Read Only.

SWC_Bit_0 – Boolean data type. Read Only.

SWC_Bit_1 – Boolean data type. Read Only.

SWC_Bit_2 – Boolean data type. Read Only.

SWC_Bit_3 – Boolean data type. Read Only.

SWC_Bit_4 – Boolean data type. Read Only.

SWC_Bit_5 – Boolean data type. Read Only.

SWC_Bit_6 – Boolean data type. Read Only.

Ethernet

Tag Block - User

Login – Byte data type. When this tag receives a hex value of 0x01 it will process the user login and send the “user” command to the IND780.

Logout – Byte data type. When this tag receives a hex value of 0x01 it will process the user logout and send the “quit” command to the IND780.

Username – String data type. This tag needs to contain the registered username with access to the IND780.

Password – String data type. This tag needs to contain the registered password matching the username with access to the IND780.

Tag Block - Weight

Gross – Dword data type. Gross weight. Read Only.

Net – Dword data type. Net weight. Read Only.

Tare – Dword data type. Tare weight. Read Only.

Units – String data type. Unit value of the weight. Read Only.

Transaction – String data type. Transaction number. Read Only.

Response – String data type. Value returned from the “read” request command. Read Only. Used for reference only.

ScaleMode – String data type. This tag shows the scale mode which is either Gross or Net. Read Only.

ScaleID – String data type. This tag shows the scale number that the data is returned from. The device ID set under the Device Properties determines from which scale data is requested.

Using the Device in a Project

RS-232 Serial

To use this device profile in a product you will need to have each serial device on its own Channel. Only one Device per Channel. When creating a new Channel be sure to change the Com port.

Ethernet

The project is setup in such a way that the Channel is a single IND780 and each Device within the Channel is representative of each Scale (ie. Scale 1-4). Each Device request data from a particular scale which is defined by the Device ID located under the Device Properties -> General tab.

When logging into the IND780 Shared Data Server through Ethernet it makes no difference from which Device you perform this action. Because the username, password, login, logout information is stored in Global buffers it is available to each Device. This means that each Device will know that a user has logged in to the Shared Data Server and it is eligible to request data.