Technical Note

U-CON Profile Development — Mettler Toledo IND780 Scale

1. Overview

The purpose of this project is to provide an interface to the Mettler Toledo IND780 scale to monitor and collect data.

2. Communications

2.1 Communications Parameters

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

2.1.1 RS-232

Each serial communication port from the Mettler Toledo IND780 Scale can continuously output values from a singular scale. Each serial port continuous output is setup within the IND780 in the **Setup** | **Communication** | **Connections** menu. The communication parameters are variable.

2.1.2 RJ-45 Ethernet Interface

The Ethernet port can connect to the shared data server. This allows the processing of specific commands. Log on using a predefined username and password. (Usernames and passwords are set in the **Setup** | **Terminal** | **Users** menu on the IND780.) The logon is processed through UCON after specifying the appropriate information. If the username and password is incorrect or UCON receives a "93 No Access" response from the IND780, then UCON processes the logout command to quit. Log in again to gain access.

2.1.3 Communications Settings

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

Ethernet (TCP/IP port 1701)

2.2 Communications Procedures

This project is concerned with following UCON tags listed below.

2.2.1 Tags — RS-232 Serial

SWA_Bit_0	SWA_Bit_1	SWA_Bit_2	SWA_Bit_3
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	

2.2.2 Tags — Ethernet

User			
Login	Logout	Username	Password
Read			
Gross	Net	Tare	Units
Transaction	Response	ScaleMode	ScaleID

3. The Profile

3.1 Profile Design

The profile design accounts for the setup of a serial port (continuous output) and the setup of an Ethernet port (which logs in to the IND780 device and uses the Shared Data Server commands).

3.1.1 Channel and Device Configuration — RS-232 Serial

The serial channel created in the Mettler Toledo IND780 UCON profile project has 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 configuration needs to match the specific setup within the IND780 scale device.

3.1.2 Channel and Device Configuration — Ethernet

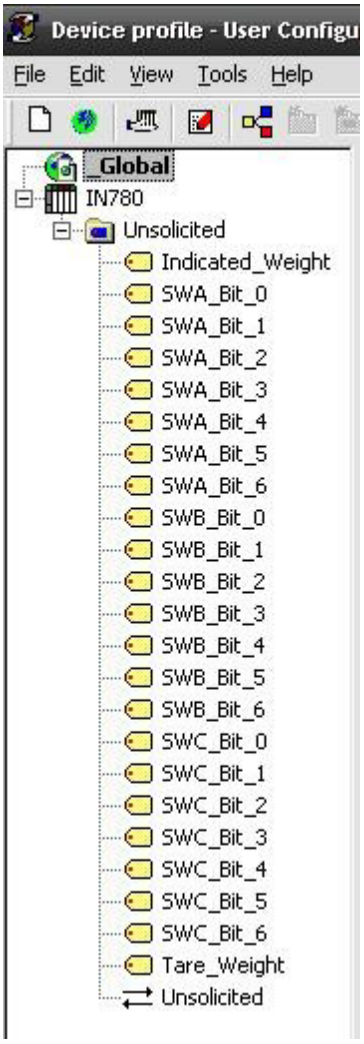
The Ethernet channel created in the Mettler Toledo IND780 UCON profile project has a channel named MT_IND780_Eth and a device named for each scale, 1-4. The tag block where the tags are located can be found under Weight and User. The channel and device can be renamed and copied. The device properties configuration needs to match the specific setup within the IND780 scale device; specifically, the IP address found in Device Properties — Ethernet Encapsulation. The Device ID needs to match the desired scale within the IND780.

3.2 Transaction Design

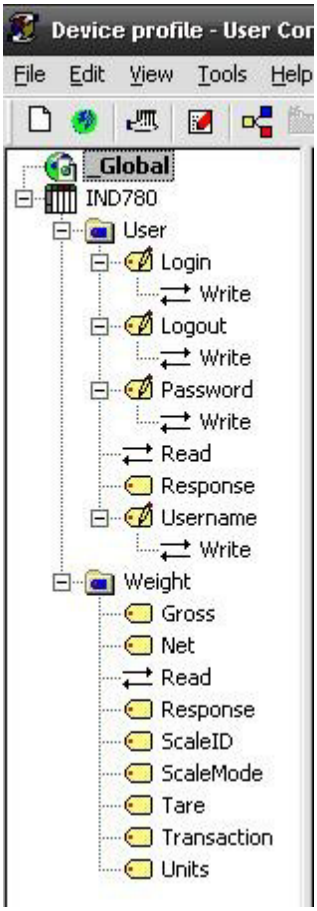
Each device contains a combination of tags and tag blocks.

3.3 Tags & Tag Blocks

RS-232 Serial



Ethernet



3.3.1 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.

3.3.2 Ethernet

Tag Block — User

Tag	Data Type	Description
Login	Byte	When a hex value of 0x01 is received, the user login is processed and the “user” command is sent to IND780.
Logout	Byte	When a hex value of 0x01 is received, the user logout is processed and the “quit” command is sent to IND780.
Username	String	Must contain the registered username with access to IND780.
Password	String	Must contain the registered password matching the username with access to IND780.

Tag Block — Weight

Tag	Data Type	Description
Gross	DWord	Gross weight. Read only.
Net	DWord	Net weight. Read only.
Tare	DWord	Tare weight. Read only.
Units	String	Unit of value of the weight. Read only.
Transaction	String	Transaction number. Read only.
Response	String	Value returned from the "read" request command. Read only.
ScaleMode	String	Shows the scale mode (either Gross or Net). Read only.
ScaleID	String	Shows the scale number the data is returned from.*

** The Device ID set in Device Properties determines from which scale data is requested.*

3.4 Using the Device in a Project

3.4.1 RS-232 Serial

To use this device profile in a product, each serial device needs its own channel. Only one device per channel is supported. When creating a new channel, be sure to update the communication port.

3.4.2 Ethernet

In this project, the channel is a single IND780 and each device within the channel is representative of each scale (i.e. scale 1-4). Each device requests data from a particular scale, which is defined by the Device ID in the Device Properties.