

USB Flash Drive Interface with internal memory

USB-FDI-M

Version 1.4

Introduction

Congratulations on your purchase of the **USB-FDI-M** a USB Flash Drive Interface unit with integrated memory to allow the unit to record data without the drive inserted, and later allow transfer of all data to the drive. This unit can be attached to most weighing scales and indicators.

Once the USB-FDI-M is setup all data is saved to memory and at any time the supervisor may simply plug in a USB stick to offload the data in CSV format for direct viewing with Microsoft Excel.

The USB-FDI-M has its own clock allowing automatic time / date stamping of all data as standard.

Full integration with the weighing indicator is provided by means of a simple protocol.

The system has 1000V isolation on both the power and serial lines, providing maximum noise immunity.

Contents : This Manual, USB-FDI-M, Memory stick.

Connecting the USB-FDI-M to the Weighing equipment

The only thing required to be known initially is the weighing equipments serial communication parameters options are:

Baud rate: 1200, 2400, 9600, 19200

Parity: NONE – 8 bits, ODD – 7 bits, EVEN – 7 bits

Two files now need to be created on the stick:

1. SETUP.TXT -
2. COMMAND.TXT

SETUP.TXT file

This file allows the USB-FDI-M to pick out data from one or two fixed serial strings and saves the data on the WEIGHTS.CSV file.

You now need to create a file called **SETUP.txt** on the supplied flash drive, by doing the following:

Insert your USB flash drive to your PC and allow your PC to find the drive.

Open up a new file using Windows NOTEPAD, do NOT use any other program such as Word etc.

Create a file exactly as below (*With your serial format!*)

```
BAUD 9600
PARITY NONE
SEQUENTIAL YES
TIME YES
DATE YES
IDENT 0 ,
T1
T2
T3
T4
T5
T6
T7
T8
SIZE
IDENT 0 ,
T1
T2
T3
T4
T5
T6
T7
T8
SIZE
END
```

These first two lines MUST be set up correctly. as per your weighing equipment's serial format. It is VERY important that only ONE space is between BAUD and 9600 etc otherwise the file may not be read correctly, also **no hidden characters** at the end of each line.

This file should now be saved to the flash drive as follows:

| | |
|---------------|-------------------------------|
| File name: | SETUP |
| Save as type: | Text Documents (*.txt) |
| Encoding: | ANSI |

COMMAND.TXT file

This file instructs the USB-FDI-M to perform a command immediately the stick is inserted. The possible commands are:

| | | |
|------------------------------------|---|---------------------------|
| Setup the real time clock | - | CLOCK hh:mm MM DD/MM/YYYY |
| Sample the indicator serial stream | - | SAMPLE |
| Reset the sequential number | - | SEQUENTIAL |
| Dump the memory contents | - | DUMP |
| Factory reset | - | FACTORY |

Each of these tasks will be discussed in detail later, but the most important one to get the USB-FDI-M connected to the weighing instrument is to sample the data. In the same way as SETUP.TXT was created now create a file called COMMAND.TXT with one line containing the word SAMPLE.

This file should also be saved to the USB stick. Do NOT insert the stick at this time.

Power Connections

Any **noise free** power supply between 9 volts and 36 volts DC capable of supplying 200mA may be used to power the unit.

The two way terminal block is used to provide power to the unit:

0V

9 – 36V dc @ 200mA

RS232 Serial connections

The serial interface should be connected to the weighing instrument as below:

Weighing Instrument

USB-FDI-M

Transmit OUT

→

Receive IN (R1)

GND

Ground (GND)

Receive IN

←

Transmit OUT (T1)

Typically the weighing equipment should be set up to send out a serial string at the desired baud rate and parity each time the PRINT key is pressed.

We now want to use the USB-FDI-M to **SAMPLE** a typical output to allow us to configure the rest of the **SETUP.txt** file.

In the same way the net weight would be set to: **T2 16,24**

and the count would be set to: **T3 27,38**

Up to eight different parameters may be set up for recording.

The **SIZE** parameter is the total sample length (In this case 40), and word **END** must be the last line.

As mentioned previously there is an internal clock with **TIME** and **DATE**, these may be recorded with every weighing or may not be required if there is a clock output already in the data stream from the weighing instrument, so the **DATE** and **TIME** may be set as desired.

A sequential number is also generated internally and may be switched **ON** or **OFF** as desired.

The **SETUP.txt** file should now be edited using **ONLY** notepad as before and would be as follows if the string above was captured:

```
BAUD 9600  
PARITY NONE  
SEQUENTIAL YES  
TIME YES  
DATE YES  
IDENT 3,XYZ  
T1 7,15  
T2 16,24  
T3 27,38  
T4  
T5  
T6  
T7  
T8  
SIZE 40  
IDENT 0,  
T1  
T2  
T3  
T4  
T5  
T6  
T7  
T8  
SIZE  
END
```

Once the **SETUP.txt** file is correct it should be saved back to the flash drive.

The COMMAND.TXT file MUST now be deleted or renamed on the stick, otherwise the system will always go into sample mode!

COMMAND list

Setup the real time clock - **CLOCK*hh:mm*DD/MM/YYYY**

Where hh:mm and DD/MM/YYYY is the time to be set
(and * is a space)

Sample the indicator serial stream - **SAMPLE**

Samples indicator data - as done above

Reset the sequential number - **SEQUENTIAL**

Sequential number is reset to 0001

Dump the memory contents - **DUMP**

Dump all memory to a file DUMP.TXT

Factory reset - **FACTORY**

Resets system to factory defaults, and clears memory

When the command is completed successfully the lamp will light GREEN, and will light RED if there is a problem with the command. The lamp goes out when the stick is removed.

After any command is performed the COMMAND.TXT file MUST be removed or renamed on the stick, otherwise the system will execute the command each time the stick is inserted.

Normal Operation

Each time the unit is powered on the lamp will light very dimly RED for about 5 seconds and then go out. The unit should NOT be used until initialisation is complete.

If the SETUP.TXT file is correct and the clock and sequential number have been set then the system is ready for operation.

Each PRINT key push will cause the lamp to flash GREEN and the data will be stored automatically to the internal memory in the USB-FDI-M

At any time a supervisor may inset the USB stick and transfer all new data to the stick. The lamp will light GREEN when all data has been transferred (Usually within a few seconds).

The cap should be put back on the USB socket to protect it.

When it is desired to view the data on the PC simply plug into an unused USB port and use Microsoft Excel to view the file WEIGHTS.CSV

In the event of a problem where the new data can not be read (or stick lost or damaged) it is possible to use the DUMP command to dump out the complete memory to a DUMP.TXT file (Takes approx 1 minute)

Appendix A (BREAK delay)

It is possible to add two additional lines

Break Delay - This is the time where a break in the data transmission will be tolerated.

Excel Separator - This is the excel column separator

BREAK delay

The break delay is any four digit number from 0000 to 9999
(e.g. 120mS would be 0120)

This sets the time in milliseconds after incoming data has stopped for the unit to accept the data.

If this line is not put in the default is 0100 ie (0.1 of a second)

Three possible situations exist:

Correct string - P is replied immediately

First part of string - After delay – no reply

Second correct part of string - P is replied

First part of string - After delay – no reply

Second incorrect part of string - F is replied

Excel Separator

This is the separator for Excel to decide if a new column should be started

The character to be used for the separator must be between < and >

For UK (default) this line should be <>

For other countries (eg Spain) this line should be <>

If this line is required a break delay line must also be entered before it

Appendix B – Communication format

After power is applied to the unit it should be left for 5 seconds to initialise (Dim RED lamp)

When data is sent to the unit it will reply:

| | | |
|---|---|----------------------------------|
| P | - | pass if data stored ok |
| L | - | low (data stored but memory low) |
| F | - | fail (data NOT stored) |

Ideally the indicator should read these replies, and inform the operator if the data is not saved or memory is low.

Memory low is flagged when 90% of the memory is used.

Appendix C – System Specifications:

| | | |
|------------------|---|--|
| Power Input | - | 10 - 36 V DC 200mA (1000V Optoisolated) (300mA resettable fuse) |
| Serial Interface | - | Optoisolated RS232 with various baud rates and parity. |
| USB Interface | - | USB 1.1 or USB 2.0 compatible |
| USB connector | - | IP68 socket |
| Pen drive | - | Up to 4 Gbytes (Max) |
| Indicator | - | RED / GREEN - Data transfer light |
| PC compatibility | - | Windows 98SE (with drivers) and all later O.S |
| Internal memory | - | 64 – 256Kbyte |