

FlexPort Gage Interface

Models FP-2U, 4U and 8U

Connect any brand of gage / Output to any software



Configuration Guide

Version 5.0



Tel: 810-424-0060
Fax: 810-424-0066
sales@midwestflex.com

Table of Contents

General Description.....	3
Front and back panel features	
Installation.....	4
Ready to use right out of the box!	
Connecting FlexPort to computer – Easy as 1,2,3	4
Plug all cables and power and collect data immediately	
Firmware Configuration	5
HyperTerminal Software used to configure advanced features	
Setup advanced data collection, unmatched by any other interface!	
Gage types available:	6
Select devices connected and capture 1 to 20 readings from a single output string	
Data Send Options	8
Customize the flow of data from the FlexPort to your PC	
Option setup by port	11
Options to make data collection easier for special gaging	
Option setup for overall unit	12
Change how the FlexPort operates...speed of data collection, emulate other interfaces	
Pass-Thru Port.....	13
Added port for direct serial gaging or use to 'Backplane' multiple interfaces	
Appendix	15
Host commands	
Serial data collection outlined	
Software handshaking using the 'footswitch' commands	
FlexPort models available	

General Description

Your FlexPort comes complete with power supply and serial cable to connect directly to a PC serial port.

Note: See **USB Connection** in appendix for connecting your FlexPort output to USB ports on your PC.

Front Panel:

Input port: Industry standard 10-pin connector for gage input - 2, 4, or 8 inputs depending on model.

Footswitch jack: 2.5mm 'headphone' style jack - 2, 4, or 8 inputs depending on model. Operators use as footswitch or handswitch input to trigger readings. (Closing contacts will trigger reading).

LED: – 'Flashes' to signal data sending. LED turns on when data is requested, turns off when data is sent. The high-speed data communications of the FlexPort result in the LED visually looking like it is flashing on/off.

Back Panel:

RS232 Output: Serial port (DB25F) for RS232 data communications. Serial data is sent through this port to PC for data collection.

Pass-Thru Port: Additional input (DB9M) for extra gage or to connect multiple units to PC.

Note: See **Pass-Thru Port** in appendix for more details on connecting to this powerful input.

Power jack: Input for power supply. Each interface is shipped with a 7-9vdc power supply with center positive plug.

LED: Power LED will automatically light when power is applied.

Reset button: Pressing button will reset the internal CPU of the FlexPort to a known state.

Installation

Designed for use right out of the box, operators connect gage cables and power supply to the interface and begin collecting data immediately. The FlexPort does not use internal or external dipswitches but is controlled by firmware built into each FlexPort. This means there is no software you need to maintain or load onto your computer. Whether using the FlexPort in standard mode or utilizing one of the many advanced features available, all controls are built into every FlexPort.

Connecting FlexPort to computer – Easy as 1,2,3

1. Connect output of FlexPort to serial port on PC.
Using the RS232 serial cable (DB9F/25M) provided with your interface, connect the DB25M to the RS232 output on the back of the FlexPort Interface and the DB9F to an available port on your PC.

*Note: See **USB Connection** in appendix for connecting your FlexPort output to USB ports on your PC.*

2. The default input type for the FlexPort is Mitutoyo Digimatic Code. This gage output format is standard from most Mitutoyo brand gages and many other common gage types as well. Cables to connect to these and most other gage types are available from Midwest FlexSystems, Inc.

Connect gages to FlexPort.

- a: Using the appropriate gage cable, plug into the desired gage as required.
- b: Connect the other end of cable (10 pin) into the FlexPort front panel.

3. Connect power supply output to FlexPort and plug power supply into outlet.
Make sure all connections are secure and that computer and gages are powered.

That's it! Begin sending live gage readings to your PC immediately!

Note:

See **Firmware Configuration** to customize the FlexPort to match any data collection project.

Firmware Configuration

The FlexPort comes with built-in features unmatched by any other interface. The firmware inside the FlexPort allows standard data collection or customization that is unsurpassed by even dedicated hardware.

To setup advanced features of the FlexPort line of interfaces, you can simply use ANY terminal program to access the built-in configuration menu. (Microsoft includes Terminal in Win3.1 and HyperTerminal in Win 95/98/2000/NT/XP)

The firmware will allow you to configure the many options available in the FlexPort interface line. By configuring **Data Send** and **Options** for each port you can take the standard product and incorporate it into a custom data gathering system. Global settings for data format and speed are also configurable for complete customization.

Start HyperTerminal Software

Select the serial port the interface is physically attached to on the PC and set serial settings to match output settings of the FlexPort (printed on bottom of unit). The default settings of most units are 9600 baud, no parity, 8 data bits, 1 stop bit. The Flow control needs to be set to NONE.

Access FlexPort firmware

Type: SPC

The main menu of the FlexPort will be displayed in the window.

Follow on-screen instructions to setup

This setup routine allows advanced or custom features to be accessed.

Features to configure include gage type connected, data sending sequence, optional features for individual ports, and special features for the overall interface performance.

Example: FlexPort Main Menu Screen

FlexPort Universal Interface Setup			Version 5.0
Port#	Gage Type(G)	Data Send(D)	Options(O)
01	Mitutoyo	Individual	5v
02	Mitutoyo	Individual	5v
03	Mitutoyo	Individual	5v
04	Mitutoyo	Individual	5v
Pass-Thru Port (Default)			
Special Options (SO)			
Enter column and row to change: (e.g. To change Data Send on Port 2 = D02)			
Gage Type	=G##	About FlexPort Interface	=AB
Data Send	=D##	Exit and Save	=EX
Options	=O##	Exit without Saving	=QU
Pass-Thru Port	=PASS	Default Configuration	=CFG
Special Options	=SPL	Serial Decode	=SD
Enter Choice:			

Custom applications:

The FlexPort includes many features that are exclusive to the line as well as the ability to be customized in the field for special applications. Features can be combined to create a custom interface or if you want to create a special application; advanced functions can be programmed and added to the interface. Contact your FlexPort representative to inquire about special or custom applications.

Main Menu: (See detailed description and application notes)

Gage Type:	G##	(Change gage types)
Data Send:	D##	(Configure data sending)
Options:	O##	(Port settings)
Pass-Thru Port:	PASS	(Backplane or extra gage input)
Special options:	SPL	(Global settings)
About screen:	AB	(Contact info)
Exit and Save:	EX	(Exit menu)
Exit without Saving:	QU	(Escape any changes)
Default Configuration	CFG	(Factory settings)
Serial Decode:	SD	(locate readings in serial output)

The variety of options offered in the FlexPort line of interfaces have built in restrictions for features that are contradictory and cannot be used together. Error messages will inform users when attempting to combine non-compatible features.

Gage Type: G##

The Gage Type allows users to select the type of gage connected to the FlexPort. Each port can be individually configured to a different gage type, speed, format, etc.

Data is either requested from the FlexPort (via footswitch) or is sent to the FlexPort from the device unrequested (gage sends when ready, automatically). Data flow for requested data is controlled by the Data Send options. For unrequested readings, the data flow is controlled by Gage Type settings for response to incoming data.

After selecting Gage Type, you then select whether to send data to PC or just buffer readings.

Choices for response from data received:

- | | |
|----------------------|---|
| 1: No response | Do not send data to PC, buffer reading only |
| 2: Send single field | Send the output as configured |
| 3: Send ALL fields | Send all data fields |
- (Serial devices may send up to 20 fields of data in a single output string)

Gage types available:

No Gage

This option will turn off the port and the footswitch jack associated with this port. This is an optional setting and is not necessary for normal data collection. Most common use combines the No Gage and Global Data Send option on another port. When users set these options, the input is skipped during global data collection.

Mitutoyo

This is the default input type - Mitutoyo Digimatic Code. This output is standard for most Mitutoyo tools and is also compatible with many of our gage cables for other brands as well.

MTI - Hi-Res

This is the newest output format for Mitutoyo gages. This format allows for higher resolution gages to be connected to the interface.

Serial:

This is a customizable driver to decode (parse) incoming data. Each gage input can be configured to match a different output format. This allows different serial devices to be connected side by side in the interface. To configure, users enter the output parameters of the gage and the interface will capture the reading and pass it to the PC. The firmware will walk

FLEXPORT Gage Interface

users through setup by requesting device output format: baud rate, parity, stop and data bits and the End of Record Indicator. Up to 20 numeric fields can be captured and sent to the PC.

Note:

See ***Serial Gage Data Capture*** in the appendix for more details.

- Capture, store, clear, and send up to 20 numeric fields from a single gage reading
- Two-way communication can be sent from PC to connected gage

Opto-RS232:

This is a special driver to match the Opto-RS232 output offered by Fowler/Sylvac gage types.

Data Send: D##

The Data Send function is an optional feature that allows users to control the flow of data to the PC. This selection will allow users to control the function of the footswitch jack for each port.

Part of the power and flexibility of the FlexPort Gage Interface line is the control over data sending. Each input port includes a footswitch jack (some models offer toggle switch/footswitch jack combination) and can be configured by the interface to do a variety of tasks. The default setting is to send a single reading from the corresponding input.

Note:

The data send button on the gage or gage cable will still send that individual gage reading. The Data Send function only affects the footswitch jack (and toggle switch, when available).

Data send functions available:

Individual

Sends one reading from selected gage (Default Mode).

Global

Sends one reading from each port with a gage connected to it. If multiple interfaces are stacked together, the units will automatically request readings from all ports, up to 99 inputs

Individual TIR (Total Indicator Runout)

This popular feature will continually read input over a specified period of time and return the value for the MIN, MAX and TIR (difference between the MIN and MAX readings) for the gage requested.

The TIR mode offers 4 choices for output to the PC.

- 1: *MIN Only*: The minimum reading taken between data triggers.
- 2: *MAX Only*: The maximum reading taken between data triggers.
- 3: *TIR Only*: The difference between Min and Max readings taken between data triggers.
- 4: *MIN/MAX/TIR*: Sends out all three lines of output for the captured values.

This feature is turned on/off via the footswitch or host command. When a data send is issued, the FlexPort will monitor the port until the next data send is issued. When the FlexPort receives the second data send request, the MIN/MAX/TIR is calculated and sent to the PC.

Global TIR

Same features as the Individual TIR but will trigger readings from ports 1-4.

Individual continuous send:

This feature will continually read input and transfer the reading to the PC. This feature is turned on/off via the footswitch or host command. When a data send is issued, the FlexPort will begin sending readings from the port until the next data send is issued.

In applications where speed is greatest need, the FlexPort interface can be configured to output at 38.4k baud and reduce output characters by selecting the Reading Only output.

Global continuous send

Same as the Individual Continuous Send but will trigger readings from ports 1-4.

Signal trigger

This option is used to create software handshaking with a data collection program running on a PC. When using the Signal Trigger option, the user configures the PC (SPC software) to request a reading from the desired port when a footswitch is pressed.

This option allows for two data collection methods:

Method 1:

The default operation of this feature will output a RS232 string to the PC to indicate that a data request was received for a specific port. The interface will send the word 'FOOTSWITCH' in the reading field of the output string sent to PC and be tagged with the port ID so the software can decode which port had the request.

The Signal Trigger feature is affectionately known as the '*mind-reader*' feature. Software running on the PC will receive the message that a footswitch was pressed and respond by requesting data from ANY port required. For example, a footswitch is triggered on input #1, the software running on the PC is configured for the currently open part/characteristic to use the gage on port #3, so it will send out a request for a reading from port #3. This allows users to have only 1 footswitch and dynamically read the input required for the characteristic being measured.

Standard output format: 0001,FOOTSWITCH, ,01<CR><LF> (Data trigger on port #1)

Method 2:

When programmed for Signal Trigger the interface can accept a PRE-REQUEST for data. This feature will allow software on the PC to send a request for the input required BEFORE the footswitch trigger is activated. When the footswitch is triggered, the PRE-REQUESTED input is immediately sent to the PC.

This allows software to request the part/characteristic required for the NEXT reading. After each data event, the PRE-REQUEST is cleared. If multiple requests are received, only the LAST request for data is valid. If two or more commands are issued, only the last received command is executed when the footswitch is triggered.

If no PRE-REQUESTS are received, the interface will send the word FOOTSWITCH in the reading field.

Note:

See Appendix: **Host Commands - Signal Trigger** for additional notes and details.

Selective trigger

Allows users to collect readings from inputs via a single data request. Users can configure any footswitch jack to trigger readings for up to 10 ports at a time. When triggered, the selected ports will send data to the PC in the order selected. The data request will take place simultaneously for all ports.

To configure, you simply enter the port numbers required, separated by a comma.
(i.e. P01,P02,P04)

Step trigger

This feature allows users to select a data collection sequence. The interface will step through the sequence of ports - one per data request - each time you press the footswitch. This feature can be used to step through a measurement sequence on a part, taking readings from the port required as the part is measured.

To configure, you simply enter the port numbers required, separated by a comma.
(i.e. P01,P06,P04) The first press of the footswitch can take a reading on port number 1 then the next trigger of the same footswitch can be set to take a reading on port 6, then port number 4. You can select any sequence of ports to be read for up to 10 ports per input/footswitch.

Caution:

This is a sequence of events. The software and hardware need to be setup to collect in the same order. If a data send trigger is sent by accident or a reading needs to be re-taken, the sequence of readings will become out of sequence. To start the sequence over you will want to reset the interface or cycle through to the beginning of the sequence to start again.

This feature should be used with some software checks to verify that the sequences of data sending and receiving are at the same point. Best use of this feature is on a fixture where controlling the speed of data sending is the goal. We strongly recommend the Signal Trigger feature as the preferred solution.

Timed request

This feature allows the FlexPort to become part of an automated system for monitoring a process. The FlexPort will automatically request a reading based on a 24 hour timer (HH:MM:SS). This is helpful in monitoring a process variable such as temperature, humidity or any other variable that requires periodic measurements.

Input Options: O##

These are port specific options that can increase the control over the data collected and/or the process of how the data is collected.

Force output to inches or millimeters

To protect data integrity against output errors, or for gages that do not have the ability to change between inches and millimeters, the interface will force conversion to the desired format.

Note:

This is only valid with gages that send indication of original output format.

Supply 5 VDC

Optional 5VDC on pin 9 of connector (Default mode is ON). This is used to supply gages with power or gage cables with electronics built-in with the power for data transmission. This power output can be used or not, but can be turned off if power output on pin 9 is not desired.

Change output sign

The interface can flip-flop the gage output from negative to positive or positive to negative.

Continuous send

This will give users control over data capture from a serial gage that sends continuously. Some serial gages send readings continuously which can lead to data overload and make data analysis virtually impossible. The interface can ignore this stream of readings until instructed to capture a reading by the user. When a data request is received, the next reading is captured and sent to the computer.

This is a very useful option for serial gages that do not accept data requests. You can put the gage (weigh scales, etc.) in continuous output mode and the interface will ignore those readings until a data request is received. The result is enabling the use of a footswitch for data collection.

Command serial

Some serial devices require a read request to be sent to the gage to initiate a reading. The FlexPort can be configured to output up to 10 ASCII characters required to request a reading. Users enter the HEX code needed for a request. By using HEX code, any character can be sent including any control characters – i.e. <CTL-B>, <ESC>, <CR>, <CRLF> or other special commands/characters.

Gage time-out

This is a practical feature designed for the shop floor. This default for this option will wait for a gage to respond for $\frac{3}{4}$ of a second, but if no gage is present or is not ready to send, the interface will skip the gage, reset the port and go to the next requested port.

The time-out is configurable. Some gages respond very slowly as they calculate the measurements. By slowing down the time-out, the FlexPort can wait for a gage to complete it's measurement cycle before moving to the next requested port. Selection for time-out is from 1 to 999 seconds

This feature is helpful when a gage is removed from a collection plan (or errors out/dead battery) and data collection must continue with the remaining gages. The interface will skip the missing gage, reset the input and continue to collect data. When the gage is back on-line the next time a request is sent, the gage reading will be captured and sent to the PC.

Another typical use for this feature involves the MahrFederal indicators. When these indicators are out of their measurement range, the display is blanked. These indicators will not send data if not currently displaying a reading on the indicator. When a request is sent to the FlexPort, it will

try to capture a reading from the gage, when the gage does not respond, the FlexPort will return to a normal state and wait for the next request.

By using this feature to their advantage, operators capture data only from the gages that are actively measuring a part.

DTR control

This feature is used in conjunction with serial/RS232 gages. Although RS232 communication is standardized, actual practice has shown that various gages do not follow industry standard protocols. This feature will remove any control over the DTR (Data Transmit Ready) line of the serial input. This has been required for some older or obscure devices.

Special Options: SPL

The FlexPort firmware includes a section of global settings that affect how the interface communicates with the PC. If a change is made to these settings, every interface connected via the Pass-Thru Port is adjusted to match these settings.

Note: These settings are NOT changed by the CFG command (return to default mode).

Enable group count (Default is OFF) (Valid in FULL OUTPUT MODE only)

Each reading sent by the interface is tagged with a count field. This field is a running tally of the number of readings sent from the individual input. The Group Count feature increments the count based on ANY port sending data. All data sent via a request is tagged with the same count (i.e. a global trigger will send all ports with the same count number). This allows software to use this data to verify that all readings are from the same data request.

Select output format (Default is Full Output)

The data string sent to the PC is configurable. Different versions of the unit have pre-configured default output settings, but all formats are available regardless of the type of interface unit being used.

Count field: 4 digit tally count of readings sent from port
Reading: 10 digit field, including sign (?) if required
Mode: 5-character field for special use
ID: 2-digit field for port number, 01 – 99 valid ports

Full Output:

26 character output (Count, Reading, Mode, ID <CR><LF>)(24 characters plus <CR><LF>)

Format: #####,#####,#####,##<CR><LF>

Reading, ID:

15 character output (ID, Reading <CR><LF>)(13 characters plus <CR><LF>)

Format: #####,##<CR><LF>

Reading Only:

12 character output (Reading <CR><LF>)(10 digit reading plus <CR><LF>)

Format: #####<CR><LF>

MIG Output: (Since only 1 digit for ID, only ports 1-8 are valid)

11 character output. (ID: Plus/Minus Reading<CR>)(#: ? 7 characters plus <CR>)

Format: #:?#####<CR>

FLEXPORT Gage Interface

Select baud rate (Default is 9600)

The interface output can be configured to vary from 1200 to 38.4K baud. Default is 9600 baud. This change does not take effect until the configuration has been saved. After this change has been saved, any additional access to the FlexPort menu will be at the new baud rate.

Note: HyperTerminal and any data collection software will need to be changed to match new baud rate.

Sequence output (Default is ON)

The FlexPort offers control over the flow of readings sent to the PC by allowing readings to be sent sequentially. When this feature is enabled, the inputs are sent in numerical order, lowest ports sent first, then the next highest available port (i.e. Port 1, Port 2, Port 3, etc). When sequence output is turned off, the interface will send data in FIFO format (fastest gages first). This will allow faster data sending, but the order is controlled by the speed of the gages connected. (The default mode is sequence output enabled and seems to work best with most SPC software).

The sequence output enabled will also effect the overall output behavior. If a gage does not respond to a send request, the FlexPort will stop and wait for the gage, leaving the LED for the missing port powered on. This is helpful for monitoring gages that are hard to view.

Note: See ***Timeout feature*** for skipping locked gages.

Pass-Thru Port Settings: PASS

The FlexPort family includes an 'extra' port for connecting gages or to backplane units. To backplane units, simply connect the output of one FlexPort to the Pass-Thru Port of another and they will instantly be ready to send data. You may stack as many FlexPorts together as you need (up to 99 inputs).

Default

Ability to hook up multiple FlexPorts in any combination of 2,4,and 8 inputs up to 99 inputs.

Backplane

This is a special configuration of the default. When 2 FlexPorts are connected using this feature, they combine to act like a single unit. This is valid for up to 8 inputs. For configurations requiring more than 8 inputs, the units can be individually configured and then connected.

Serial

This is a great 'freebie'. The connector is standard DB9 and allows connection of one additional serial device using standard computer cables (i.e. inexpensive!). Connection for serial gage includes TX, RX and GND lines. (No handshaking lines present, if required, must connect to front panel input ports).

In serial mode, the Pass-Thru Port can capture up to 20 individual numeric fields from a single output. The FlexPort can be configured to send the readings when received or to store in buffer. Host commands can be used to access or clear readings from the buffer. Data output is the same format from all ports whether it is a caliper or one of multiple readings from a serial device (CMM, X-Y readout, etc.).

Note:

See ***Serial Gage Data Capture*** in the appendix for more details:

- Capture, store, clear, and send up to 20 numeric fields from a single gage reading
- Two-way communication can be sent from PC to connected gage

Light Bar

The FlexPort has a built-in driver for an external product, the **Light Bar**, available from Midwest FlexSystems, Inc. The FlexPort will flash an external light to indicate a successful data send.

Special host commands allow external lights to be turned RED or GREEN based on SPC status.

Additional products available that offer Pass/Fail/Error lights for external operator alerts – call Midwest FlexSystems, Inc. directly or contact your local MidwestFlex VAR.

Other Main Menu Options

SD: Serial Decode

This is a special feature of the FlexPort for setting up a parse of the incoming data, debugging serial communications and reading locations. The FlexPort can then program those settings to any port required.

Operators connect the serial device to Port 1 and enter the baud, parity, data and stop bit. When a reading is sent from the gage, it is displayed on the screen along with a character counter. Using the character counter, the location of the reading is found and entered by selecting the first and last character position of the reading. The FlexPort can then program those settings to any port desired. The new settings will allow data to be parsed and sent to the computer.

Note:

This feature is outdated and replaced by the new Multi-Serial gage type. This gage type detects output and captures all numeric fields for data collection.

Program FlexConnect:

This is a special feature to configure the FlexConnect II cables. These cables can be configured to capture reading from serial devices and then store parameters for future use.

Refer to FlexConnect II manual for more information

EX:

Exit setup and save new configuration

QU:

Exit setup **without** saving changes

CFG:

Resets the configuration to the default settings

Note:

The CFG command will reset the configuration, with one exception. The exception to this are the SPL settings, these do not change unless they are individually accessed.

AB:

Displays information about the FlexPort family of interfaces and contact information for Midwest FlexSystems, Inc.

Appendix

Host Commands16
 Commands to control data flow to Host

Serial Data Connection.....17
 Details on how to connect serial devices to FlexPort

Backplane FlexPort Units.....18
 Connecting multiple units to PC

USB Connection18
 Connect your FlexPort to a USB port for data collection

FlexPort models.....19
 Partial list of interfaces available

Host Commands

The FlexPort uses various Host Commands to make using the interface as easy as possible. The use of **Host Commands** enable users to control the data sent to the PC from the interface.

Current readings:

To create the most compatible interface on the market, the FlexPort accepts most data send commands used by previous versions and brands of interfaces and SPC software.

Action	Command	Response
Read an input (Ports 1–8)	#<CR>	Will return gage reading on port # (Replace # with 1-8 for desired port)
Read an input (Ports 1–99)	R##<CR>	Will return gage reading on port ## (Replace ## with 2 digit port ID for desired port)
Read an input (Ports 1–99)	!@R##	Will return gage reading on port ## (Replace ## with 2 digit port ID for desired port)
Read a FIELD from NEXT output string	!@R##F##	Will return NEXT reading for port and field selected. R## = port, F## = field (For Serial Gage Types Only)
Read ALL inputs	RG<CR>	Will read all gages connected

Stored readings:

The previous reading from each input are stored and can be retrieved. Serial gage types can store and retrieve up to 20 numeric fields. Readings are the last available output reading.

Action	Command	Response
Read stored reading	!@S##F##	Will return STORED reading on a port. S## = port, F## = field (For Serial Gage Types Only)
	!@S##<cr>	Will return ALL stored fields for a port
Clears all buffered fields	C#<cr> C##<cr>	Clears all fields on Port # or ##
Clears a specific field	C#F#<cr> C##F##<cr> C#F##<cr> C##F#<cr>	Clears field # or ## on Port # or ##
Clears all fields of all Multi-field Serial Gages	C<cr> CG<cr>	Clears all fields of all Multi-field Serial Gage types Also clears data on Pass-Thru Port

Note: If gage type is MTI, the last reading will be stored.

Flow Control using Signal Trigger

The FlexPort includes a feature to control the flow of data to the PC. By using Signal Trigger, (under Data Send functions) operators can pre-request a reading from the interface. This is called using the 'F' command. When an 'F' command is issued, the FlexPort will send the requested port number the next time a footswitch is pressed. The software can interact with the interface and allow the user to use only one footswitch and dynamically request the port required for the next characteristic.

If Signal Trigger is active, but no 'F' command was issued prior to the footswitch being pressed, the interface will send the word 'FOOTSWITCH' (in MIG mode it will send 'REQUEST') to the host. The software can then issue a standard READ command to read the appropriate port and continue to operate.

Action	Command	Response
The NEXT gage/port to be sent to PC	!@F##	Will return gage reading on port ## (Replace ## with 01-99 for desired port)

Reset the interface

FLEXPORT Gage Interface

This can be used to reset the interface to a known state. This will also reset the counter for each port that tracks the number of readings sent.

Action	Command	Response
Reset the unit	!@RST	Will reset the CPU of the FlexPort

Talk Mode to serial gages

The FlexPort allows direct communication with serial gages connected via the front panel or the Pass-Thru Port. This is very helpful for gages that need setup commands or configuration changes.

Action	Command	Response
Turn on/off Talk mode	!@T##	Will open or close direct communication to the port selected. Any characters sent to the FlexPort will be passed along to the port selected. This will continue until Talk Mode is turned off. Note: During Talk Mode, all data collection is paused.

Serial Data Connection

The power of the FlexPort allows users to connect directly to a serial output device and extract up to 20 numeric fields from a single output string. Each numeric field is captured and stored for data collection.

There are a wide variety of devices used in data collection, with a single measurement reading being the desired output. But some devices will output multiple numeric fields ...date, time, version #, reading, etc. The FlexPort can be configured to send one or all of these fields to the PC.

To setup you select Gage Type for Serial.

This will start a quick setup routine to connect to serial gages.

Enter output settings of device (Communication parameters):

- Baud Rate
- Parity
- Data bits
- Stop bits

Enter the End of Record Indicator (How will FlexPort 'know' reading output is completed?):

- Carriage Return <cr>
- Carriage Return/Line Feed <cr><lf>
- Reading Length Actual number count of characters in output...including spaces
- Time Out Time period to wait for the next character.

Next you select what to send as a reading from the device. With multiple fields captured from the output, you then select which field holds the reading desired from device.

- No Response Sends no data, just buffers readings
- Send Single Field Sends the numeric field selected as the reading
- Send All Fields Sends all numeric fields in output string

You have now setup a port for a serial device

Host commands can be used to access or clear readings from the buffer. Data output is the same format from all ports whether it is a caliper or one of multiple readings from a serial device (i.e. CMM, X-Y readout, etc.).

Backplane FlexPort Units

Each FlexPort includes all cable and power supplies required for connecting multiple units together.

Simply connect the output of one FlexPort and connect that to the Pass-Thru Port on another unit. The FlexPort connected directly to the PC will be ports 1-4 and the unit plugged into the Pass-Thru Port will automatically become ports 5-8. This can continue until there are 99 inputs.

FlexPorts stacks can be created from 2, 4, or 8 input units in any combination, up to 99 inputs. There is NO CONFIGURATION NEEDED to setup or remove multiple units.

USB Connection

The FlexPort family easily connects to the USB port on your PC. Serial communication is a standard protocol that allows safe and efficient data transfer between devices. The drawback has been the connector size and weight for today's PC's and laptops. The advent of the USB port has created a new process to connect devices and save on space and weight.

We offer a cable that will take the output of the FlexPort and convert it to USB connection for your PC. Since most SPC software, both custom and standard, is designed to read from a serial port, when connected to the PC, the USB cable will create a virtual comport. Data collection continues as before, but now the FlexPort is connected to the PC via a virtual comport using the USB port on your PC.

FlexPort models

FlexPort Models covered in this manual:

*FlexPort FP-2U Universal - 2 inputs plus Pass-Thru Port**
*FlexPort FP-4U Universal - 4 inputs plus Pass-Thru Port**
*FlexPort FP-8U Universal - 8 inputs plus Pass-Thru Port**

*USB to RS232 cable for connecting to PC available.

Alternate Gage Interface Models:

FlexPort FP-4M Mitutoyo Only - 4 inputs plus Pass-Thru Port
FlexPort FP-8M Mitutoyo Only - 8 inputs plus Pass-Thru Port

FlexPort FP-4A Analog – 4 analog inputs plus Pass-Thru Port
FlexPort FP-8A Analog – 8 analog inputs plus Pass-Thru Port

FlexPort FP-1M – 1 Mitutoyo input with data send
FlexPort FP-M29 – 1 Mitutoyo input direct to DB9

FlexWedge FW-1M – 1 Mitutoyo input to PS/2 keyboard input
FlexWedge FW-1USB – 1 Mitutoyo input to USB

Gage Interfaces with built-in Remote Displays

FlexDisplay FD-1M – 4 Mitutoyo inputs to a single readout display
FlexDisplay FD-1PLUS – 4 Mitutoyo inputs and 4 virtual ports to a single readout display
(basic math functions)
FlexDisplay FD-1ADV – 8 Mitutoyo inputs and 8 virtual ports to a single readout display
(advanced math functions)
FlexDisplay FD-2M – 2 Mitutoyo inputs and 2 readouts with Go/No Go status

Additional products, solutions, and support available upon request. Contact Midwest FlexSystems, Inc. or your local MidwestFlex Value Added Reseller (VAR) for details.