

5202D™ Scanner

2D Omni-Directional Bar Code Scanner



Worth Data®

5202D

2D Bar Code Scanner

USB & Serial Output



www.worthdata.com

Owner's Manual



Warning: This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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PROPOSITION 65 WARNING: This product, its packaging, and/or components may contain chemicals known to the state of California to cause cancer or birth defects or other reproductive harm



Worth Data Inc.

USA Headquarters

623 Swift Street
Santa Cruz, CA 95060
USA
Phone: 1-800-345-4220 • 831-458-9938
Fax: 831-458-9964
Email: wds@barcodehq.com

Worth Data, Inc.

European Distribution Office

The Burnaby Buildings, Unit 3
Church Road
Greystones, Co. Wicklow
IRELAND
Phone: 353 1 287 0032
Fax: 353 1 287 0060
Email: wortheur@iol.ie

US Toll Free 1-800-345-4220

UK FreeFone: 0800 393 213
Irish FreeFone 1800 210 700
France FreeFone 0800 90 65 47
Germany FreeFone: 0800 1 815 084
Swiss FreeFone: 0800 55 7337
Belgium FreeFone 0800 71016

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Introduction

Worth Data's LZ520-2D is a versatile bar code reader that can attach to any PC or Mac USB port. It can also be used as an external reader for the Worth Data T7000 series of RF Terminals or T5000 series of TriCoders. The USB keyboard interface provides bar code input data to any host computer program exactly as if the data had been typed at the keyboard, including function and control key support.

LZ520-2D reader features include:

• Bar codes

The LZ520-2D automatically reads and discriminates between Code 39, Full ASCII Code 39, Interleaved 2 of 5, Industrial 2 of 5, Matrix 2 of 5, Chinese Post Matrix 2 of 5, Codabar, Code 128, EAN-13, EAN-8, UPC (with or without supplements), GS1 DataBar, MSI, Code 93, Code 11, Plessey, S-Code, POSTNET, Intelligent Mail Bar Code, Korean Postal Authority, IATA, Tri-Optic, Telepen, JPN (Customer Bar Code), PDF417, Micro PDF417, Maxi Code, QR Code, Micro QR, Aztec Code, Aztec Runes, Data Matrix, Codablock F and Chinese Sensible Code.

• PC Attachment

The LZ520-2D provides an easy-to-use USB keyboard interface for the PC or Mac. Scanned data is displayed on the PC as keyboard data - transparent to the host application. No additional software is required for operation or configuration.

• TriCoder / Terminal Attachment

When the LZ520-2D is configured with a serial cable it can be connected to a Worth Data T5000 series TriCoder or T701 series Terminal. The Terminal or TriCoder will need to be configured to supply power and accept data from the external LZ520-2D scanner. Refer to the TriCoder or Terminal manual for more information on using the LZ520-2D scanner with these devices.

• Configuration is easy

The LZ520-2D reader is easily configured for your system by scanning a bar coded Setup Menu. Refer to the LZ520-2D Setup Guide for detailed setup information. In most cases, the LZ520-2D will do what you need without any changes to it's configuration.

Chapter 1

Installation

Components of LZ520-2D Reader

In the event the shipping box shows damage on arrival, please note the damage on the carrier's receipt log. Open the box and inspect the contents for damage. If there is visible damage, or if the unit fails to work, contact us with the details of the trouble; we will be happy to send you a replacement.

The contents of your LZ520-2D reader shipment should include the following:

1. An LZ520-2D reader with either USB or serial cable attached.
2. A scanner holder.
3. A Utilities CD-ROM with Manuals & Setup Menus in PDF Format.

• USB Interface (PC and Mac)

The LZ520-2D reader is attached directly to the USB port of the computer. The Windows® or Macintosh® operating systems provide the software required to access the USB port. Data coming from the scanner through the USB port appears as keyboard data in your application. No power supply is required for the USB interface. **Simply plug the USB cable into any available USB port on your PC or powered HUB and the LZ520-2D should power-up and be ready to use in a few seconds. It is not recommended to use non-powered hubs due to the high power requirements of the LZ520-2D.**

• Serial Interface (T5000 TriCoder and T701 Terminal)

The LZ520-2D can be used as an external reader with the Worth Data T5000 series of TriCoders and T701 series of RF Terminals. On the TriCoder, the input device will need to be modified to instruct the T5000 to power up the LZ520-2D reader and input data from the external reader. On the RF Terminal, the prompt will need to be modified to power up the LZ520-2D and input data from the external reader. Refer to the T5000 and T701 manuals for specific information.

Chapter 2

Configuration

Configuration of the LZ520-2D Reader

The LZ520-2D is configured using the setup bar codes found in Appendix A. Most commands are of the single entry type and only require a single command to enable or disable a feature or function. To change the configuration of a setting start by scanning the “Start Setup” bar code followed by the bar code for the setting(s) you wish to change and then the “End Setup” bar code. You will notice that once you read the “Start Setup” bar code the LZ520-2D will enter setup mode and stay on until you scan the “End Setup” bar code.

When scanning setup bar codes (or just about any bar code for that matter) follow these tips for best results:

- 1) Since the LZ520-2D functions like a camera, holding the scanner steady will improve scanning results.
- 2) When more than one bar code is in the visible area of the scanner it is a good idea to cover the “unwanted” bar codes to prevent them from being read by accident.
- 3) If you scan a setup code by accident and the scanner is not working properly but you're not sure what you changed, it's best to scan the “Reset All Settings to Default” bar code and start over.
- 4) You will find that most bar codes read better when the scanner is angled slightly so that the light reflected from the bar code does not “blind” the scanner. It's just like if you were to try to take a flash picture of a piece of paper, when you do it straight on the flash bounces back and you get a lot of glare but if you do it at a slight angle you get a nice picture.
- 5) Reading of high-resolution bar codes may require you to move the scanner closer to the bar code to get a good read.
- 6) When reading a poor quality bar codes it is a good idea to put tighter limits on what the bar code reader will allow to prevent errors in reading.
- 7) The LZ520-2D is an “Omnidirectional” bar code reader so bar codes can be read with any orientation or rotation relative to the reader.

Warning: The setup codes in the LZ520-2D Setup Guide are for the LZ520-2D only. Do not use these codes to setup the 2D scanner on a 2D integrated Terminal or TriCoder. Use the internal menu to configure those units.

Appendix A

1D Codes:

| Code Type | Enabled by Default | Additional Setup Info |
|----------------------------|---------------------------|------------------------------|
| | | |
| UPC | yes | page A-4 |
| EAN | yes | page A-5 |
| EAN-13 | yes | page A-5 |
| EAN-8 | yes | page A-5 |
| Code 39 | yes | page A-7 |
| Codabar | yes | page A-8 |
| Code 128 | yes | page A-10 |
| Code 93 | yes | page A-11 |
| Code 11 | no | page A-12 |
| Industrial 2 of 5 | yes | page A-13 |
| Interleaved 2 of 5 | yes | page A-13 |
| S-Code | yes | page A-13 |
| Matrix 2 of 5 | no | page A-13 |
| Chinese Post Matrix 2 of 5 | no | page A-13 |
| MSI/Plessey | yes | page A-14 |
| UK/Plessey | yes | page A-15 |
| POSTNET | no | page A-16 |
| Intelligent Mail Bar Code | no | page A-17 |
| GS1 DataBar | yes | page A-18 |
| Korean Postal Authority | no | page A-19 |
| IATA | yes | page A-20 |
| Tri-Optic | yes | page A-21 |
| Telepen | yes | page A-22 |
| JPN (Customer Bar Code) | no | page A-23 |

2D codes:

| Code Type | Enabled by Default | Additional Setup Info |
|---------------------------|---------------------------|------------------------------|
| | | |
| PDF417 | yes | page A-24 |
| Micro PDF417 | yes | page A-25 |
| Maxi Code | yes | page A-26 |
| QR Code | yes | page A-27 |
| Micro QR | yes | page A-28 |
| Aztec Code | yes | page A-29 |
| Aztec Runes | no | page A-30 |
| Data Matrix (ECC 200) | yes | page A-31 |
| Data Matrix (ECC 000-140) | no | page A-31 |
| Codablock F | no | page A-32 |
| Chinese Sensible Code | no | page A-33 |
| All Codes | no | page A-34 |

Other Options:

| Item | Setup Info |
|--------------------------------------|-------------------|
| | |
| Number of Characters | page A-35 |
| Composite Codes | page A-36 |
| String Options (preamble, postamble) | page A-37 |
| String Options (prefix, suffix) | page A-38 |
| String Options (code identification) | page A-41 |
| Collective Reading | page A-43 |
| Read Mode | page A-45 |
| Imager Settings | page A-49 |
| Indicator Settings | page A-50 |

Warning: These setup codes are for the LZ520-2D only. Do not use these codes to setup the 2D scanner on a 2D integrated Terminal or TriCoder. Use the internal menu to configure those units.

Note: Use caution when reading setup codes such that unwanted codes are not read.

Set to factory default:

To set the scanner to factory defaults, scan one of the codes below.

Set USB I/F and Reset All Settings to Default



Set RS-232 I/F and Reset All Settings to Default



Note: The RS-232 I/F setting applies to the LZ520-2D when used as an **external** scanner attached to portable devices such as the Terminal and TriCoder.

Warning: These setup codes are for the LZ520-2D only. Do not use these codes to setup the 2D scanner on a 2D integrated Terminal or TriCoder. Use the internal menu to configure those units.

UPC

Start Setup



End Setup



UPC-A Settings:

| | | | |
|---|--|---------|--|
| UPC-A leading zero check digit transmission | UPC-A, no leading zero, transmit check digit | default | |
| | UPC-A, no leading zero, not transmit check digit | | |
| | UPC-A, leading zero, transmit check digit | | |
| | UPC-A, leading zero, not transmit check digit | | |

UPC-E Settings:

| | | | |
|---|--|---------|--|
| UPC-E leading zero check digit transmission | UPC-E, no leading zero, transmit check digit | default | |
| | UPC-E, no leading zero, not transmit check digit | | |
| | UPC-E, leading zero, transmit check digit | | |
| | UPC-E, leading zero, not transmit check digit | | |
| UPC-A,E conversion | transmit UPC-E | default | |
| | transmit as UPC-A | | |
| UPC-E1 conversion | disable UPC-E1 | default | |
| | enable UPC-E1 | | |

UPC Supplement Settings:

| UPC Symbologies | Exclusive | Enable | Disable |
|---|-----------|--------|---------|
| UPC without supplement (default enable) | | | |
| UPC with 2-digit supplement | | | |
| UPC with 5-digit supplement | | | |

note: setting any symbology to exclusive will disable all other symbologies

EAN

Start Setup



End Setup



EAN Settings:

| | | | |
|---|--|---------|--|
| EAN-13 and EAN-8 Check Digit Transmission | not transmit EAN-13 check digit | | |
| | transmit EAN-13 check digit | default | |
| | not transmit EAN-8 check digit | | |
| | transmit EAN-8 check digit | default | |
| EAN-13 and EAN-8 ISBN Conversion | disable ISBN conversion | default | |
| | enable ISBN conversion | | |
| | enable ISBN if possible | | |
| EAN-13 and EAN-8 ISSN Conversion | disable ISSN conversion | default | |
| | enable ISSN conversion | | |
| | enable ISSN if possible | | |
| EAN-13 and EAN-8 ISMN Conversion | disable ISMN conversion | default | |
| | enable ISMN conversion | | |
| | enable ISMN if possible | | |
| EAN-13 Forced Add-On 1 | enable EAN forced add-on when EAN13 starts with 378 / 379 / 529 | | |
| | disable EAN forced add-on when EAN13 starts with 378 / 379 / 529 | default | |
| EAN-13 Forced Add-On 2 | enable EAN forced add-on when EAN13 starts with 434 / 439 / 414 / 419 / 977 / 978 | | |
| | disable EAN forced add-on when EAN13 starts with 434 / 439 / 414 / 419 / 977 / 978 | default | |

EAN Supplement Settings:

| EAN Symbologies | Exclusive | Enable | Disable |
|------------------------------------|---|--|---|
| EAN no supplement (default enable) |  |  |  |
| EAN with 2-digit supplement |  |  |  |
| EAN with 5-digit supplement |  |  |  |

note: setting any symbology to exclusive will disable all other symbologies

EAN-13 Supplement Settings:

| EAN Symbologies | Exclusive | Enable | Disable |
|---------------------------------------|---|--|----------------|
| EAN-13 no supplement (default enable) |  |  | N/A |
| EAN-13 with 2-digit supplement |  |  | N/A |
| EAN-13 with 5-digit supplement |  |  | N/A |

note: setting any symbology to exclusive will disable all other symbologies

EAN-8 Supplement Settings:

| EAN Symbologies | Exclusive | Enable | Disable |
|--------------------------------------|---|--|----------------|
| EAN-8 no supplement (default enable) |  |  | N/A |
| EAN-8 with 2-digit supplement |  |  | N/A |
| EAN-8 with 5-digit supplement |  |  | N/A |

note: setting any symbology to exclusive will disable all other symbologies

Code 39

Start Setup



End Setup



Code 39 Settings:

| Code 39 | Exclusive | Enable | Disable |
|---|-----------|--------|---------|
| Code 39 Enable/Disable (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|-----------------------|--------------------------------|---------|--|
| Full ASCII Conversion | normal code 39 | default | |
| | full ASCII code 39 | | |
| | full ASCII code 39 if possible | | |

| | | | |
|--|-----------------|---------|--|
| Code 39 and It Pharmaceutical Check Digit (CD) | not check CD | default | |
| | check CD | | |
| | not transmit CD | | |
| | transmit CD | default | |

| | | | |
|---|---------------------------------|---------|--|
| Code 39 and It Pharmaceutical Misc Settings | not transmit start/stop | default | |
| | transmit start/stop | | |
| | minimum data = three characters | | |
| | minimum data = one character | default | |
| | disable concatenation | default | |
| | enable concatenation | | |

| Italian Pharmaceutical Options | Enable | Disable |
|--|--------|---------|
| Italian Pharmaceutical Only (default disable) | | |
| Italian Pharmaceutical if Possible (default disable) | | |
| Leading A Transmission (default disable) | | |

Codabar

Start Setup



End Setup



Codabar Settings:

| Codabar | Exclusive | Enable | Disable |
|---|-----------|--------|---------|
| Codabar Enable/Disable (default enable) | | | |








note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|-------------------------------|---------------------------------|---------|--|
| Codabar ABC, CX Conversion | enable only Codabar normal mode | default | |
| | enable only ABC code | | |
| | enable only CX code | | |
| | enable Codabar / ABC and CX | | |

| | | | |
|-----------------------------|-----------------|---------|--|
| Codabar Check Digit (CD) | not check CD | default | |
| | check CD | | |
| | not transmit CD | | |
| | transmit CD | default | |

| | | | |
|-------------------------|---|---------|--|
| Codabar Start / Stop | not transmit start / stop | default | |
| | start / stop = ABCD / ABCD | | |
| | start / stop = abcd / abcd | | |
| | start / stop = ABCD / TN*E | | |
| | start / stop = abcd / tn*e | | |
| | start = <DC1><DC2><DC3><DC4> stop = <DC1><DC2><DC3><DC4> | | |

Codabar Settings Continued:

| | | | |
|---|-----------------------------------|---------|---|
| Codabar Minimum Digit | minimum data = one character | |  |
| | minimum data = three characters | |  |
| | minimum data = five characters | default |  |
| Codabar Space Insertion | disable space insertion | default |  |
| | enable space insertion | |  |
| Codabar Inter-Character Gap Check | disable inter-character gap check | |  |
| | enable inter-character gap check | default |  |

Code 128

Start Setup



End Setup



Code 128 Settings:

| Codabar | Exclusive | Enable | Disable |
|--|-----------|--------|---------|
| Code 128 Enable/Disable (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|---|----------------------------|---------|--|
| Code 128 and GS1-128 (EAN-128) EAN-128 Conversion | disable GS1-128 | default | |
| | enable GS1-128 only | | |
| | enable EAN-128 if possible | | |

| | | | |
|--|---|---------|--|
| Code 128 and GS1-128 (EAN-128) Concatenation | disable concatenation (FNC2 message append) | default | |
| | enable concatenation (FNC2 message append) | | |

Code 93

Start Setup



End Setup



Code 93 Settings:

| Symbology | Exclusive | Enable | Disable |
|--------------------------|-----------|--------|---------|
| Code 93 (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|-----------------------------|-----------------|---------|--|
| Code 93 Check Digit (CD) | not transmit CD | default | |
| | transmit CD | | |

Code 11

Start Setup



End Setup



Code 11 Settings:

| Symbology | Exclusive | Enable | Disable |
|---------------------------|-----------|--------|---------|
| Code 11 (default disable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|-----------------------------|----------------------|---------|--|
| Code 11 Check Digit (CD) | not check CD | | |
| | check 1 CD | | |
| | check 2 CD | | |
| | check auto 1 or 2 CD | default | |
| | not transmit CD | default | |
| | transmit CD | | |

2 of 5 and S-Code

Start Setup



End Setup



2 of 5 and S-Code Settings:

| Symbology | Exclusive | Enable | Disable |
|--|-----------|--------|---------|
| Industrial 2 of 5 (default enable) | | | |
| Interleaved 2 of 5 (default enable) | | | |
| S-Code (default enable) | | | N/A |
| Matrix 2 of 5 (default disable) | | | N/A |
| Chinese Post Matrix 2 of 5 (default disable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|---------------------------------------|-----------------|---------|--|
| 2 of 5 and S-Code Check Digit (CD) | not check CD | default | |
| | check CD | | |
| | not transmit CD | | |
| | transmit CD | default | |

| | | | |
|----------------------------------|---|---------|--|
| 2 of 5 and S-Code Space Check | disable space check for Industrial 2 of 5 | | |
| | enable space check for Industrial 2 of 5 | default | |

| | | | |
|-------------------|---|---------|--|
| S-Code Conversion | not transmit S-Code as Interleaved 2 of 5 | default | |
| | transmit S-Code as Interleaved 2 of 5 | | |

| | | | |
|------------------------------------|---------------------------------|---------|--|
| 2 of 5 and S-Code Minimum Digit | minimum data = one character | | |
| | minimum data = three characters | | |
| | minimum data = five characters | default | |

MSI / Plessey

Start Setup



End Setup



MSI / Plessey Settings:

| Symbology | Exclusive | Enable | Disable |
|--------------------------------|-----------|--------|---------|
| MSI / Plessey (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|-----------------------------------|----------------------------|---------|--|
| MSI / Plessey Check Digit (CD) | not check CD | | |
| | check 1 CD = mod 10 | default | |
| | check 2 CD = mod 10/mod 10 | | |
| | check 2 CD = mod 10/mod 11 | | |
| | check 2 CD = mod 11/mod 10 | | |
| | check 2 CD = mod 11/mod 11 | | |

| | | | |
|---|------------------------|---------|--|
| MSI / Plessey Check Digit (CD) Transmission | not transmit CD | | |
| | transmit CD 1 | default | |
| | transmit CD 1 and CD 2 | | |

UK / Plessey

Start Setup



End Setup



UK / Plessey Settings:

| Symbology | Exclusive | Enable | Disable |
|-------------------------------|-----------|--------|---------|
| UK / Plessey (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|----------------------------------|-----------------|---------|--|
| UK / Plessey Check Digit (CD) | not transmit CD | | |
| | transmit CD | default | |

| | | | |
|---------------------------------|-------------------------|---------|--|
| UK / Plessey Space Insertion | disable space insertion | default | |
| | enable space insertion | | |

| | | | |
|------------------------------|---------------------------|---------|--|
| UK / Plessey X Conversion | disable A -> X conversion | default | |
| | enable A -> X conversion | | |

POSTNET




Start Setup



End Setup



POSTNET Settings:

| Symbology | Exclusive | Enable | Disable |
|---------------------------|---|--|---|
| POSTNET (default disable) |  |  |  |

note: setting any symbology to exclusive will disable all other symbologies

Intelligent Mail Bar Code

Start Setup



End Setup



Intelligent Mail Bar Code Settings:

| Symbology | Exclusive | Enable | Disable |
|------------------------|-----------|--------|---------|
| IMBC (default disable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

GS1 DataBar

Start Setup



End Setup



GS1 DataBar Settings:

| Symbology | Exclusive | Enable | Disable |
|---|-----------|--------|---------|
| GS1 DataBar Omnidirectional Truncated Stacked Stacked Omnidirectional (default enable) | | | |
| GS1 DataBar Limited (default enable) | | | |
| GS1 DataBar Expanded Expanded Stacked (default enable) | | | |
| GS1 DataBar All Above Types (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|---------------------------------|-----------------|---------|--|
| GS1 DataBar Check Digit (CD) | not transmit CD | | |
| | transmit CD | default | |

| | | | |
|--------------------------------|-------------------------------------|---------|--|
| GS1 DataBar AI Transmission | not transmit application identifier | | |
| | transmit application identifier | default | |

Korean Postal Authority

Start Setup



End Setup



Korean Postal Authority Code Settings:

| Symbology | Exclusive | Enable | Disable |
|--|-----------|--------|---------|
| Korean Postal Authority (default disable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|---|-----------------|---------|--|
| Korean Postal Authority Check Digit (CD) | not transmit CD | default | |
| | transmit CD | | |

| | | | |
|---------------------------------|-------------------|---------|--|
| Korean Postal Authority Dash | not transmit dash | | |
| | transmit dash | default | |

| | | | |
|--|------------------------------|---------|--|
| Korean Postal Authority Upside Down Reading | upside down reading enabled | | |
| | upside down reading disabled | default | |

IATA

Start Setup







End Setup



IATA Settings:

| Symbology | Exclusive | Enable | Disable |
|-----------------------|---|--|---|
| IATA (default enable) |  |  |  |

note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|--------------------------|--------------------------|---------|---|
| IATA Check Digit (CD) | not check CD | default |  |
| | check FC / SN only | |  |
| | check FC / CPN / SN | |  |
| | check FC / CPN / AC / SN | |  |

| | | | |
|--|-----------------|---------|---|
| IATA Check Digit (CD) Transmission | not transmit CD | |  |
| | transmit CD | default |  |

Tri-Optic

Start Setup



End Setup



Tri-Optic Settings:

| Symbology | Exclusive | Enable | Disable |
|----------------------------|-----------|--------|---------|
| Tri-Optic (default enable) | | | N/A |

note: setting any symbology to exclusive will disable all other symbologies

Telepen

Start Setup



End Setup



Telepen Settings:

| Symbology | Exclusive | Enable | Disable |
|--------------------------|-----------|--------|---------|
| Telepen (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

| | | | |
|-----------------------------------|--------------|---------|--|
| Telepen Conversion Output Mode | numeric mode | default | |
| | ASCII mode | | |

JPN (Customer Bar Code)

Start Setup



End Setup



JPN Settings:

| Symbology | Exclusive | Enable | Disable |
|-----------------------|-----------|--------|---------|
| JPN (default disable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

PDF417

Start Setup



End Setup



PDF417 Settings:

| Symbology | Exclusive | Enable | Disable |
|-------------------------|-----------|--------|---------|
| PDF417 (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

Micro PDF417

Start Setup



End Setup



Micro PDF417 Settings:

| Symbology | Exclusive | Enable | Disable |
|-------------------------------|-----------|--------|---------|
| Micro PDF417 (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

Maxi Code

Start Setup



End Setup



Maxi Code Settings:

| Symbology | Exclusive | Enable | Disable |
|----------------------------|-----------|--------|---------|
| Maxi Code (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

QR Code

Start Setup



End Setup



QR Code Settings:

| Symbology | Exclusive | Enable | Disable |
|--------------------------|-----------|--------|---------|
| QR Code (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

Micro QR

Start Setup



End Setup



Micro QR Settings:

| Symbology | Exclusive | Enable | Disable |
|---------------------------|-----------|--------|---------|
| Micro QR (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

Aztec Code

Start Setup



End Setup



Aztec Code Settings:

| Symbology | Exclusive | Enable | Disable |
|-----------------------------|-----------|--------|---------|
| Aztec Code (default enable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

Aztec Runes

Start Setup



End Setup



Aztec Runes Settings:

| Symbology | Exclusive | Enable | Disable |
|-------------------------------|-----------|--------|---------|
| Aztec Runes (default disable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

Data Matrix

Start Setup



End Setup



Data Matrix Settings:

| Symbology | Exclusive | Enable | Disable |
|--|-----------|--------|---------|
| Data Matrix (ECC 200) (default enable) | | | |
| Data Matrix (ECC 000-140) (default disable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

Codablock F

Start Setup



End Setup



Codablock F Settings:

| Symbology | Exclusive | Enable | Disable |
|-------------------------------|-----------|--------|---------|
| Codablock F (default disable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

Chinese Sensible Code

Start Setup



End Setup



Chinese Sensible Code Settings:

| Symbology | Exclusive | Enable | Disable |
|--|-----------|--------|---------|
| Chinese Sensible Code (default disable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

All Codes

Start Setup



End Setup



All Codes Settings:

| Symbology | Exclusive | Enable | Disable |
|---------------------------------------|-----------|--------|---------|
| All 1D Codes (default disable) | | | |
| All 2D Codes (default disable) | | | |
| All 1D and 2D Codes (default disable) | | | |

note: setting any symbology to exclusive will disable all other symbologies

Use this setting if you're having trouble reading a bar code with the default settings and you don't know what type of code you are trying to read. It's also a quick way to turn On or Off all 1D or 2D code symbologies.

Number of Characters

Start Setup



End Setup



Number of Characters Settings:

If you are going to read bar codes of a known length, it is recommended to set the scanner for a fixed number of characters. The scanner uses this to verify that labels read are of the correct length and reject labels that do not have the specified length. The advantage of setting a fixed length is that it provides protection against short scans of labels, such as Interleaved 2of 5, which do not provide sufficient security against partial scans. The length check is done on the label data and is not affected by options such as (not) transmit start/stop character or check digit. Setting the number or characters does not affect fixed length codes, such as EAN-13. It is also possible to set the minimum and maximum number of characters allowed. The character length settings can be global (applying to all enabled codes) or individual (applying only to selected code types).

Character Length Settings:

| | | | |
|------------------------------------|---|---------|--|
| Global Setting for Fixed Length | fixed length OFF for all variable length codes | default | |
| | fixed length ON for all enabled variable length codes | | |
| Individual Setting for Length | fixed length ON for selected variable length code(s) | | |
| | set minimum length for selected variable length code(s) | | |
| | set maximum length for selected variable length codes | | |

Fixed Length Example Programming Sequence:

- 1) Scan "Start Setup"
- 2) Scan "Fixed Length ON" (global or individual)
- 3) Scan a bar code of the desired length
- 4) Scan another bar code of a second desired length (optional)
- 5) Scan "End Setup"

If you scan "global" fixed length then all enabled codes will be affected. If you scan "individual" fixed length then only the symbology scanned in step 3 and/or 4 is affected.

Note: The maximum number of characters that can be set is 8000.

Composite Codes

Start Setup



End Setup



Composite Codes Settings:

| | | | |
|-------------------------|--|---------|--|
| Link Flag | not ignore link flag for RSS/EAN-128 and EAN/UPC | default | |
| | ignore link flag for RSS/EAN-128 and EAN/UPC | | |
| RSS / EAN-128 Composite | disable RSS/EAN-128 composite | default | |
| | enable RSS/EAN-128 composite | | |
| EAN / UPC Composite | disable EAN/UPC composite | default | |
| | enable EAN/UPC composite | | |
| Composite Component | enable 1D composite only | | |
| | enable 2D composite only | | |
| | enable 1D and 2D composites | default | |

Outputs for Composite Code Setting:

| Composite Setting | | | Output | | |
|-------------------|------------|---------------------|--------|----|----|
| Enable/Disable | Link Flag | Composite Component | 1D+2D | 1D | 2D |
| Enable | not ignore | N/A | o | x | x |
| | ignore | 1D composite only | o | # | x |
| | | 2D composite only | o | x | # |
| | | 1D and 2D composite | o | # | # |
| Disable | N/A | 1D composite only | x | o | x |
| | | 2D composite only | x | x | o |
| | | 1D and 2D composite | x | o | o |

o : Priority output

: Output when data cannot be output with o

x : Not output

String Options

Start Setup



End Setup



Case Conversion Settings:

| | | | |
|-----------------|--------------------------------------|---------|--|
| Case Conversion | no case conversion (AbCd -> AbCd) | default | |
| | convert to upper case (AbCd -> ABCD) | | |
| | convert to lower case (AbCd -> abcd) | | |
| | exchange case (AbCd -> aBcD) | | |

Output Format Settings:

The following additional characters can be included in each code that is scanned:

1) Preamble / Postamble (up to 8 digits)

Specified strings can be added in front and at the end of the data for all codes.

2) Prefix / Suffix (up to 4 digits)

Specified strings can be added in front and at the end of the data for a specific symbology. By default, the prefix is empty and the suffix is a CR character.

3) Code Identification / Code Length

Code Identification and Code Length can be included in a prefix and/or a suffix.

Output Format:





















| Preamble (max 8 digits) | Prefix for each code (max 4 digits) | Data | Suffix for each code (max 4 digits) | Postamble (max 8 digits) |
|----------------------------|--|------|--|-----------------------------|
|----------------------------|--|------|--|-----------------------------|

| | | |
|------------------------|-------------------|--|
| Preamble and Postamble | preamble command | |
| | postamble command | |

























Preamble / Postamble Example Programming Sequence:

- 1) Scan "Start Setup"
- 2) Scan "Preamble Command" or "Postamble Command"
- 3) Scan up to 8 ASCII values from the ASCII Value Table
- 4) Scan "End Setup"

Prefix / Suffix Commands:

| Symbology | Prefix Command | Suffix Command |
|---------------------------|--|---|
| All Codes |  |  |
| UPC-A |  |  |
| UPC-A add-on |  |  |
| UPC-E |  |  |
| UPC-E add-on |  |  |
| EAN-13 |  |  |
| EAN-13 add-on |  |  |
| EAN-8 |  |  |
| EAN-8 add-on |  |  |
| Code 39 |  |  |
| Tri-optic |  |  |
| Codabar |  |  |
| Industrial 2 of 5 |  |  |
| Interleaved 2 of 5 |  |  |
| S-code |  |  |
| Matrix 2 of 5 |  |  |
| IATA |  |  |
| MSI/Plessey |  |  |
| Telepen |  |  |
| UK/Plessey |  |  |
| Code 128 |  |  |
| GS1-128 |  |  |
| Code 11 |  |  |
| Intelligent Mail Bar Code |  |  |









































































































Prefix / Suffix Commands Continued:

| Symbology | Prefix Command | Suffix Command |
|-----------------------|---|--|
| POSTNET |  |  |
| GSI DataBar |  |  |
| Composite code |  |  |
| Codablock-F |  |  |
| Data Matrix |  |  |
| Aztec |  |  |
| Chinese Sensible Code |  |  |
| QR Code |  |  |
| Maxicode |  |  |
| PDF417 |  |  |
| MicroPDF417 |  |  |
| Clear Prefix / Suffix |  |  |

Prefix / Suffix Example Programming Sequence:

- 1) Scan “Start Setup”
- 2) Scan “Prefix Command” or “Suffix Command” for the desired symbology
- 3) Scan up to 4 ASCII values from the Prefix / Suffix ASCII Value Table
- 4) Scan “End Setup”

Prefix / Suffix ASCII Value Table:

| ASCII | Command | ASCII | Command | ASCII | Command | ASCII | Command |
|-------|---|-------|---|-------|--|--------|---|
| <SP> |  | A |  | a |  | (NULL) |  |
| ! |  | B |  | b |  | (SOH) |  |
| “ |  | C |  | c |  | (STX) |  |
| # |  | D |  | d |  | (ETX) |  |
| \$ |  | E |  | e |  | (EOT) |  |
| % |  | F |  | f |  | (ENQ) |  |
| & |  | G |  | g |  | (ACK) |  |
| ' |  | H |  | h |  | (BEL) |  |
| (|  | I |  | i |  | (BS) |  |
|) |  | J |  | j |  | (HT) |  |
| * |  | K |  | k |  | (LF) |  |
| + |  | L |  | l |  | (VT) |  |
| , |  | M |  | m |  | (FF) |  |
| - |  | N |  | n |  | (CR) |  |
| . |  | O |  | o |  | (SO) |  |
| / |  | P |  | p |  | (SI) |  |
| : |  | Q |  | q |  | (DLE) |  |
| ; |  | R |  | r |  | (DC1) |  |
| < |  | S |  | s |  | (DC2) |  |
| = |  | T |  | t |  | (DC3) |  |
| > |  | U |  | u |  | (DC4) |  |
| ? |  | V |  | v |  | (NAK) |  |
| @ |  | W |  | w |  | (SYN) |  |
| [|  | X |  | x |  | (ETB) |  |
| \ |  | Y |  | y |  | (CAN) |  |
|] |  | Z |  | z |  | (EM) |  |

Prefix / Suffix ASCII Value Table Continued:

| ASCII | Command | ASCII | Command | ASCII | Command | ASCII | Command |
|-------|---------|-------|---------|-------|---------|-------|---------|
| ^ | | 0 | | | | (SUB) | |
| _ | | 1 | | | | (ESC) | |
| ` | | 2 | | | | (FS) | |
| { | | 3 | | | | (GS) | |
| | | 4 | | | | (RS) | |
| } | | 5 | | | | (US) | |
| ~ | | 6 | | | | DEL | |
| | | 7 | | | | | |
| | | 8 | | | | | |
| | | 9 | | | | | |

Code Identification / Length Settings:

| | | |
|---------------------|--|--|
| Code Identification | code identification using Worth Data Code ID | |
| | code identification using AIM/ISO/IEC 15424 ID | |
| Code Length | code length (1D/2D : 2/6 digit) | |
| | code length (1D/2D : 6/6 digit) | |

Code Identification and Code Length can be included in a prefix and/or suffix. The code length will be the number of characters that is configured above. The code identification and code length can be put at any position in the prefix/suffix string. These direct input characters count as 1 entry of the 4 permissible entries for a prefix and suffix.

The code length is transmitted as 2 digits, excluding prefix and suffix characters. For 2D codes the code length is transmitted as 6 digits. It is also possible to send the length as 6 digits for both 1D and 2D codes.

Worth Data Code ID Prefix / Suffix Values:

| Code | Code ID | Code | Code ID |
|------------------------|---------|---------------------------|---------|
| UPC-A | C | MSI/Plessey | Z |
| UPC-A +2 | F | Telepen | d |
| UPC-A +5 | G | UK/Plessey | a |
| UPC-E | D | Code 128 | T |
| UPC-E +2 | H | GS1-128 | T |
| UPC-E +5 | I | Code 93 | U |
| EAN-13 | B | Code 11 | b |
| EAN-13 +2 | L | Korean Postal Authority | c |
| EAN-13 +5 | M | Intelligent Mail Bar Code | 0 |
| EAN-8 | A | POSTNET | 3 |
| EAN-8 +2 | J | GS1 DataBar | y |
| EAN-8 +5 | K | Composite Code-A | m |
| Code 39 | V | Composite Code-B | n |
| Code 39 Full ASCII | W | Composite Code-C | l |
| Italian Pharmaceutical | Y | Codablock-F | E |
| Codabar | R | DataMatrix | t |
| Codabar ABC | S | Aztec | o |
| Codabar CX | f | Aztec Runes | o |
| Industrial 2 of 5 | O | Chinese Sensible Code | e |
| Interleaved 2 of 5 | N | QR Code | u |
| S-Code | g | Micro QR Code | j |
| Matrix 2 of 5 | Q | Maxi Code | v |
| Chinese Post | w | PDF417 | r |
| IATA | P | Micro PDF417 | s |

Collective Reading

Start Setup



End Setup



Collective Reading Settings:

It is possible to not output data unless the specified number of codes is read. That means that the scanner does not read codes other than the specified number. Use this setting to read a group of labels all at once.








| | | | |
|---------------------|---------------------|---------|--|
| Multiple Label Read | multiple label = 1 | default | |
| | multiple label = 2 | | |
| | multiple label = 3 | | |
| | multiple label = 4 | | |
| | multiple label = 5 | | |
| | multiple label = 6 | | |
| | multiple label = 7 | | |
| | multiple label = 8 | | |
| | multiple label = 9 | | |
| | multiple label = 10 | | |

| | | | |
|---|---------------|---------|--|
| Multiple Label Read (right and left) | left to right | default | |
| | right to left | | |

| | | | |
|---|---------------|---------|--|
| Multiple Label Read (top and bottom) | top to bottom | default | |
| | bottom to top | | |

| | | | |
|--|----------------------------|---------|--|
| Multiple Label Read (output priority) | output priority vertical | default | |
| | output priority horizontal | | |

Collective Reading Settings Continued:

| | | | |
|-----------------|--|---------|---|
| Same Label Read | disable same label read during multiple read | default |  |
| | enable same label read during multiple read | |  |
| Sorting Labels | enable sorting decoded labels | default |  |
| | disable sorting decoded labels | |  |
| Buffered Mode | buffered mode (one image) | default |  |
| | buffered mode (multiple images) | |  |
| | non-buffered mode | |  |

Read Mode

Start Setup



End Setup



Read Mode Settings:



| | | | |
|-----------|---|---------|--|
| Read Mode | single read | default | |
| | multiple read (see below) | | |
| | continuous read (used mainly for demonstration) | | |



In multiple read mode, when a bar code has been decoded, the decoded data will be output and the scan engine will keep on reading. When the bar code that has just been output is read again, it will not be output. However, when the scanner cannot decode any labels for some configurable time, it will forget the previous scan and then the same label can be read again.

| | | | |
|--------------------------|---|---------|--|
| Multiple Read Reset Time | multiple read reset time = 1 frame | | |
| | multiple read reset time = 2 frames | | |
| | multiple read reset time = 3 frames | | |
| | multiple read reset time = 4 frames | | |
| | multiple read reset time = 5 frames | | |
| | multiple read reset time = 6 frames | default | |
| | multiple read reset time = 7 frames | | |
| | multiple read reset time = indefinitely | | |












| | | | |
|------------------------|-----------------------------------|---------|--|
| Enable/Disable Trigger | enable trigger | default | |
| | disable trigger (continuous read) | | |

Read Mode Settings Continued:

| | | | |
|------------------------------|----------------------|---------|---|
| Auto Trigger (Stand Mode) | enable auto trigger | |  |
| | disable auto trigger | default |  |













| | | | |
|---------------------------------|--------------------------------------|---------|---|
| Auto Trigger Synchronization | disable auto trigger synchronization | |  |
| | enable auto trigger synchronization | default |  |










note: when the auto trigger is synchronized with the trigger switch, the read time configured for normal reading will be used for auto trigger read time.

| | | | |
|---------------------------|------------------------|---------|---|
| Auto Trigger Read Time | read time 1 second | default |  |
| | read time 2 seconds | |  |
| | read time 3 seconds | |  |
| | read time 4 seconds | |  |
| | read time 5 seconds | |  |
| | read time 6 seconds | |  |
| | read time 7 seconds | |  |
| | read time 8 seconds | |  |
| | read time 9 seconds | |  |
| | read time * 10 | |  |
| | read time indefinitely | |  |




| | | | |
|----------------------------|----------------------------|---------|---|
| Auto Trigger Conditions | auto trigger = sensitive | default |  |
| | auto trigger = normal | |  |
| | auto trigger = insensitive | |  |

Read Mode Settings Continued:





| | | | |
|---------------------|------------------------|---------|---|
| Normal Read Time | read time 0 second | |  |
| | read time 1 second | |  |
| | read time 2 seconds | default |  |
| | read time 3 seconds | |  |
| | read time 4 seconds | |  |
| | read time 5 seconds | |  |
| | read time 6 seconds | |  |
| | read time 7 seconds | |  |
| | read time 8 seconds | |  |
| | read time 9 seconds | |  |
| | read time * 10 | |  |
| | read time indefinitely | |  |

| | | | |
|------------|-----------------------------|---------|---|
| Redundancy | read 1 time, redundancy = 0 | |  |
| | read 2 time, redundancy = 1 | default |  |
| | read 3 time, redundancy = 2 | |  |
| | read 4 time, redundancy = 3 | |  |
| | read 5 time, redundancy = 4 | |  |
| | read 6 time, redundancy = 5 | |  |
| | read 7 time, redundancy = 6 | |  |
| | read 8 time, redundancy = 7 | |  |
| | read 9 time, redundancy = 8 | |  |









Redundancy is the number of times that the label has to be scanned in addition to the first scan.











| | | | |
|--------------------------------|-------------------------------------|---------|---|
| Positive and Negative Codes | positive bar codes (black on white) | default |  |
| | negative bar codes (white on black) | |  |
| | positive and negative bar codes | |  |

Read Mode Settings Continued:




| | | | |
|--------------------|---------------------------------|---------|---|
| Add-on Delay Timer | disable add-on wait more | default |  |
| | add-on wait mode = 0.25 seconds | |  |
| | add-on wait mode = 0.50 seconds | |  |
| | add-on wait mode = 0.75 seconds | |  |




Since WPC-type codes (UPC, EAN) with add-on (supplements) have a high probability of unsuccessful decoding, the scanner repeats decoding the add-on code during the specified period of time. It is effective to read the add-on parts, but it will also cause a reduced response when a code without an add-on is read.



| | | | |
|---------------------------|-------------------------|---------|---|
| Margin Check (Quiet Zone) | no margin check | |  |
| | margin check 1/7 normal | |  |
| | margin check 2/7 normal | |  |
| | margin check 3/7 normal | |  |
| | margin check 4/7 normal | |  |
| | margin check 5/7 normal | |  |
| | margin check 6/7 normal | |  |
| | margin check normal | default |  |





| | | | |
|--------------|---|---------|---|
| Power Saving | disable power saving (USB I/F default) | default |  |
| | power saving after 0 seconds (RS-232 I/F default) | default |  |
| | power saving after 1 second | |  |
| | power saving after 2 seconds | |  |
| | power saving after 5 seconds | |  |
| | power saving after 10 seconds | |  |
| | power saving after 30 seconds | |  |
| | power saving after 10 minutes | |  |
| | power saving after 30 minutes | |  |
| | power saving after 60 minutes | |  |



Imager Settings:




| | | | |
|-------------------|------------------------------|---------|---|
| Illumination Mode | disable LED illumination | |  |
| | enable LED illumination | default |  |
| | LED illumination alternating | |  |

| | | | |
|---------------|---|---------|---|
| Aiming On/Off | disable laser aiming and LED illumination | |  |
| | enable laser aiming | default |  |
| | disable laser aiming | |  |

| | | | |
|-----------------|---|---------|---|
| Central Reading | enable central reading (read only a code that the laser aims at) | |  |
| | disable central reading (read the entire image) | default |  |

| | | | |
|---------------------|--|---------|---|
| 1D Code Decode Mode | careful mode (good for hard to read codes) | |  |
| | standard mode | default |  |
| | semi-quick mode | |  |
| | quick mode (good for easy to read codes) | |  |

| | | | |
|----------------------|-----------------------------------|---------|---|
| LCD Display Scanning | disable scanning from LCD display | default |  |
| | enable scanning from LCD display | |  |

| | | | |
|-----------------|--------------------------------|---------|---|
| Auto Focus Mode | AF system = laser and contrast | default |  |
| | AF system = contrast only | |  |
| | AF system = laser only | |  |

Note: Normally laser ranging is used for reading labels. In case it cannot be used in a brightly-lit environment, the contrast method is used. When “contrast only” is configured, the reading speed will be slower.

| | | | |
|------------------|----------------------|--|---|
| Fixed Focus Mode | short range = 90mm | |  |
| | medium range = 163mm | |  |
| | long range = 880mm | |  |

Indicator Settings

Start Setup



End Setup



| | | | |
|---------------------|----------------------------|---------|--|
| Buzzer | enable good read buzzer | default | |
| | disable good read buzzer | | |
| Buzzer Tone | single tone buzzer | default | |
| | high-low buzzer | | |
| | low-high buzzer | | |
| Buzzer Duration | buzzer duration = 50ms | default | |
| | buzzer duration = 100ms | | |
| | buzzer duration = 200ms | | |
| | buzzer duration = 400ms | | |
| Buzzer Loudness | buzzer loudness = maximum | default | |
| | buzzer loudness = high | | |
| | buzzer loudness = medium | | |
| | buzzer loudness = low | | |
| Buzzer Transmission | buzzer before transmission | default | |
| | buzzer after transmission | | |
| Startup Buzzer | enable startup buzzer | default | |
| | disable startup buzzer | | |
| Good Read LED | disable LED | | |
| | LED duration = 0.2 seconds | default | |
| | LED duration = 0.4 seconds | | |
| | LED duration = 0.8 seconds | | |

Diagnostics

Start Setup



End Setup



Diagnostic Codes:

| | | |
|-------------|------------------------------------|--|
| Diagnostics | Transmit software version | |
| | Transmit settings | |
| | Transmit only changes from default | |
| | Transmit ASCII printable string | |
| | Transmit ASCII control string | |
| | Reset to default (RS-232) | |
| | Reset to default (USB-HID) | |

Appendix B

Resolving USB Installation Issues

The USB HID (Human Interface Device) keyboard driver is standard with Windows®. Most recent versions of Windows include necessary files in the installed Windows system folders so driver installation is easy if not automatic. It is possible for the user to cancel the HID driver installation before it is completed and this results in a problem. Restarting Windows does NOT initiate a re-installation; the user must go into the device management utility in Windows. Location and operation of the device management utility is different depending on the version of Windows:

Windows® XP:

1. Go to the **Start menu**.
2. Select **Control Panel**.
3. Switch to **Classic View** if you are in **Category View**
4. Select **System**.
5. Select **Hardware** tab.
6. Select **Device Manager**
7. Double Click on **Human Interface Devices**
8. Locate the USB Human Interface Device with a ! in the icon.
9. Click on **Update Driver**
10. Follow instructions.

If XP fails to find the driver on the computer's hard disk, you may have to insert and point to the original Windows XP CD-ROM to complete the installation. Also make sure you have rights to add new hardware to your computer - some

XP installations problems can be solved by logging in as the **Administrator** of the computer.

11. Click **Finish**

Windows® 98SE & ME:

1. Go to the **Start** menu.
2. Go to **Settings**.
3. Select **Control Panel**.
4. Go to **System**.
5. Click on the **Device Manager** tab.
6. Double Click on the **USB Human Interface Devices**
7. Click on the **Reinstall Driver** button.
8. Follow directions.

If the installer cannot find the right driver file on your hard disk, you may have to insert the original Windows® 98SE or ME CDROM and point to it to complete the installation.

9. Click **Finish**.

Windows® 2000:

1. Log on as **Administrator** and open the **Administrative Tools** folder in your **Control Panel**.
2. Run the **Computer Management** utility.
3. Select the **Tree** tab on the left panel
4. Find the **Device Manager** entry under **System Tools** and click on it. The right panel will display current devices.
5. Problem devices will be identified with an ! icon. Find either the **HID Keyboard Device** under **Keyboards** or the **USB Human Interface Device** under **Human Interface Devices** and double-click on one of those entries.
6. Select the **Driver** tab at the top of the window and click on the **Update Driver** button. Follow the prompts to re-install the HID driver.

Windows 7 & Vista:

1. Go to the **Start menu**.
2. Select **Control Panel**.
3. Switch to **Classic View** if you are in **Category View**
4. Select **System**.
5. Select **Hardware** tab.
6. Select **Device Manager**
7. Double Click on **Human Interface Devices**
8. Locate the USB Human Interface Device with a ! in the icon.
9. Click on **Update Driver**
10. Follow instructions.

If Windows 7 or Vista fails to find the driver on the computer's hard disk, you may have to insert and point to the original Windows 7 or Vista CD-ROM to complete the installation. Also make sure you have rights to add new hardware to your computer - many Windows 7 or Vista installations problems can be solved by logging in as the **Administrator** of the computer. In order to install new hardware in Windows 7 or Vista you may need to turn off the **UAC** (UserAccount Control). **UAC** is turned off using the **User Account** icon. **UAC** is turned on using the **Security Center** icon.

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<http://myh66.com>

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