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INITIAL INFORMATION

**The IIDHX4 ISOLATED INTELLIGENT DISTRIBUTION HUB
for IRS485/RS422 networks in industrial/robust applications.**

Built-in “master-port” Communications Module Interface

**Communications Modules are available for: RS232, RS485,
RS422, USB, 10/100 Base-T Ethernet, 900MHz Radio.
(Fiber Optics and other isolated modules available soon.)**

Extended distance up to 2 miles (3.2Km) @ 38,400bps

GENERAL and BACKGROUND INFORMATION:

R. E. SMITH has been designing and producing **RS485** repeaters, converters, and distribution hubs (repeater hubs) for over 15 years. Most unit feature isolated **RS485** (2-wire, half duplex) and operate at speeds up to 115.2Kbps (and higher). During this time period we have incorporated various levels of galvanic isolation and transient protection schemes to allow our units to operate

reliably in industrial and outdoor applications. Other feature of our product line include: Automatic data direction control with fast turn around time (27uS typical from the leading edge of the stop bit), wide operating input voltage range (9-35VDC), true pier-to-pier communications (on the fly repeater), built in bias and termination, removable terminal strips, Power/RXdata/TXdata LED indicators, independent TXdata and RXdata control jumpers, built-in auto-reset fuses on the communications lines, high voltage isolation (3.0KV, 1 sec.), built-in RS232↔RS485 converter, -40C to +85C operating temperature range, 10-90% relative humidity (non-condensing) and other features to allow our units to be easily installed and serviced in the field.

Over the years we have made various recommendations to enhance the reliable operation of our products. While some of the recommendations appear to be easy to implement in a typical installation, many times these enhancements are not incorporated into the final application. Our product line has had a long and reliable track record in many applications from the bottom of the sea to the top of the atmosphere. With the advent of our new **IIDHX4, IDHX4, IDHX6 and IDHX8**, 3.0KV isolated distribution hubs, many of the field recommendations that we have made over the years. have now been incorporated into these new designs. While a direct hit from lightening usually wins all battles, the new features of the **IDHX Series** of multi-port distribution hubs makes it much more difficult for induced lightening voltages/currents, or other extreme electrical conditions, to disrupt/damage these enhanced repeaters.

We have listened to suggestions from our customers and have endeavored to continually improve our product line over the years. We thank everyone who has participated in making our product line one of the, if not, the most robust line of RS485 products available. Any additional suggestions for improvement to our product line would be greatly appreciated. Custom and semi-custom solutions are also available.

Thank you,
Ronald Smith
513-874-4796

GENERAL DESCRIPTION of the IIDHX4 Unit:

(WORK IN PROGRESS)

COMMAND STRUCTURE:

COMMAND *CHX(1FH,ARG) FOR INDIVIDUAL CHANNEL CONTROL
* = ATTN CHAR (VARIABLE), X = CELL A-D

ARG	RX	RX	TX	NOTES
				ONLY RETX BUS

RXO	1	0	0	RECEIVE DATA ONLY FROM CELL-X
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RXT	0	1	0	RECEIVE DATA ONLY AND RETRANSMIT TO OTHER CELLS (IF ENABLED)
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RPP	0	1	1	RECEIVE AND RETRANSMIT (PIER-TO-PIER)
-----	---	---	---	---------------------------------------

TXO	0	0	1	TRANSMIT DATA ONLY TO CELL-X
RTF	1	0	1	RECEIVE DATA AND TRANSMIT DATA FOR CELL-X (MUX OR FUNNEL MODE)
OFF	0	0	0	CELL-X IS OFF

COMMAND *MDE(1FH,ARG) THIS COMMAND APPLIES TO ALL CHANNELS
 * = ATTN CHAR (VARIABLE)

ARG	RX	RX	TX	NOTES
	ONLY RETX BUS			
MPP	0	1	1	RECEIVE AND RETRANSMIT (PIER-TO-PIER)
MFM	1	0	1	SEND AND RECEIVE BUT NO RETRANSMIT (FUNNEL MODE)
OFF	0	0	0	ALL OFF
MCA	1	0	1	CELL-A IS ON, B,C,D ARE OFF (MODE CELL-A ON)
MCB	1	0	1	CELL-B IS ON, A,C,D ARE OFF (MODE CELL-B ON)
MCC	1	0	1	CELL-C IS ON, A,B,D ARE OFF (MODE CELL-C ON)
MCD	1	0	1	CELL-D IS ON, A,B,C ARE OFF (MODE CELL-D ON)

PROPOSED NEW ARGUMENTS:

RXA	1	0	0	ALL CELLS RECEIVE DATA ONLY
TXA	0	0	1	ALL CELLS TRANSMIT DATA ONLY

JUMPERS

J1 ADDRESS MSB (0-255)
 J2-7 ADDRESS MID
 J8 ADDRESS LSB
 J9 REMOVE = USE EXTERNAL ADDRESS
 INSTALL = USE EEPROM ADDRESS

J10-11 ENABLE COMMUNICATIONS TO PROCESSOR
 NOTE: REMOVE J10 TO DISABLE PROCESSOR RESPONSE

J12	J13	J14	J15	NOTES
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I	X	X	X	USE INTERNAL SETTINGS (EEPROM) AND RESERVED
R	I	I	I	FORCE MPP MODE (PIER-TO-PIER)
R	I	I	R	FORCE MFM MODE (FUNNEL MODE)
R	I	R	I	FORCE MOF MODE (ALL OFF)
R	I	R	R	RESERVED (FORCE MPP MODE (PIER-TO-PIER))
R	R	I	I	FORCE MCA MODE (MODE CELL-A ON)
R	R	I	R	FORCE MCB MODE (MODE CELL-B ON)
R	R	R	I	FORCE MCC MODE (MODE CELL-C ON)
R	R	R	R	FORCE MCD MODE (MODE CELL-D ON)

J16-17 ENABLE COMMUNICATIONS TO CELLS

J18 INSTALL = 9600 BPS
 REMOVE = 115.2K BPS

*OPT(1FH,SAVE) = SAVE CURRENT SETTINGS

*LOC(1FH)

*GET(1FH)

*VER(1FH)

*TYP(1FH)

*OPT(1FH,SAVE) SAVE CURRENT SETTINGS TO EEPROM

INVALID ATTENTION CHARACTERS: A-Z, 0-9, #, (,), SPACE, TAB, (OR)

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Terminal Emulator

Sequencer

Flash Updater

Configuration Menu

About R.E. Smith

Disconnect

Clear Buffer

Keyfile: ...Desktop\PRO-SOFT\PRO-QRG\AaKEYFILES\KEY-IIDHX4.txt

☐ Split View
☒ Send Uppercase Only
☐ RX HEX
☐ RX CR = CRLF

RX

TX

AA

```

*OPT (1FH, READ)
OPTIONS-1F0H
ATTN-ATTENTION CHAR(*)=2AH
ADIS-AUTO DISABLE=N
SAVE-(A,B,C,D)-101-101-101-101#
*LOC (1FH) LUNIT (1FH, J) -1F0F#
*GET (1FH) GUNIT (1F0H, A, B, C, D) -101-000-000-000#
*VER (1FH) VER-1.0A-20051029#
*TYP (1FH) TYPE-IIDHX4-REV-A#

```

A RXD(100)	B RXD(100)	C RXD(100)	D RXD(100)	MCA-MODE	K0000	*TEST	*OPT-READ
A RXT(010)	B RXT(010)	C RXT(010)	D RXT(010)	MCB-MODE	K5555	TEST	*OPT-SAVE
A RPP(011)	B RPP(011)	C RPP(011)	D RPP(011)	MCC-MODE	KAAAA		ATTN=\$
A TXD(001)	B TXD(001)	C TXD(001)	D TXD(001)	MCD-MODE	KFFFF		ATTN=*
A RTF(101)	B RTF(101)	C RTF(101)	D RTF(101)	*LOC(MUX)	*LOC(I/O)	*TST(I/O)	ATTN=@
A OFF(000)	B OFF(000)	C OFF(000)	D OFF(000)	*GET(MUX)	*GET(I/O)	*VER(I/O)	ADIS=Y
				*VER(MUX)	*AIN(I/O)	*READ(I/O)	ADIS=N
MPP-MODE	MFM-MODE	MFF-MODE		*TYP(MUX)	*IOR(I/O)		*OPT-RFDS

COM1

9600

N-8-1

Port Open - COM1,9600,N-8-1,NO FLOW

READY

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☐ RX HEX
☐ RX CR = CRLF
RX

TX

AA

```

*LOC(1FH)LUNIT(1FH,J)-1F0F#
*GET(1FH)GUNIT(1F0H,A,B,C,D)-101-101-101-101#
*VER(1FH)VER-1.0A-20051029#
*TYP(1FH)TYPE-IIDHX4-REV-A#
*OPT(1FH,READ)
OPTIONS-1F0H
ATTN-ATTENTION CHAR(*)=2AH
ADIS-AUTO DISABLE=N
SAVE-(A,B,C,D)-101-101-101-101#

```

A RXD(100)	B RXD(100)	C RXD(100)	D RXD(100)	MCA-MODE	K0000	*TEST	*OPT-READ
A RXT(010)	B RXT(010)	C RXT(010)	D RXT(010)	MCB-MODE	K5555	TEST	*OPT-SAVE
A RPP(011)	B RPP(011)	C RPP(011)	D RPP(011)	MCC-MODE	KAAAA		ATTN=\$
A TXD(001)	B TXD(001)	C TXD(001)	D TXD(001)	MCD-MODE	KFFFF		ATTN=*
A RTF(101)	B RTF(101)	C RTF(101)	D RTF(101)	*LOC(MUX)	*LOC(I/O)	*TST(I/O)	ATTN=@
A OFF(000)	B OFF(000)	C OFF(000)	D OFF(000)	*GET(MUX)	*GET(I/O)	*VER(I/O)	ADIS=Y
				*VER(MUX)	*AIN(I/O)	*READ(I/O)	ADIS=N
MPP-MODE	MFM-MODE	MFF-MODE		*TYP(MUX)	*IOR(I/O)		*OPT-RFDS

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Port Open - COM1,9600,N-8-1,NO FLOW

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```

*MDE (1FH,MCA) OK
*GET (1FH)GUNIT(1F0H,A,B,C,D)-101-000-000-000#
*MDE (1FH,MCB) OK
*GET (1FH)GUNIT(1F0H,A,B,C,D)-000-101-000-000#
*MDE (1FH,MCC) OK
*GET (1FH)GUNIT(1F0H,A,B,C,D)-000-000-101-000#
*MDE (1FH,MCD) OK
*GET (1FH)GUNIT(1F0H,A,B,C,D)-000-000-000-101#
*MDE (1FH,MFM) OK
*GET (1FH)GUNIT(1F0H,A,B,C,D)-101-101-101-101#

```

A RXD(100)	B RXD(100)	C RXD(100)	D RXD(100)	MCA-MODE	K0000	*TEST	*OPT-READ
A RXT(010)	B RXT(010)	C RXT(010)	D RXT(010)	MCB-MODE	K5555	TEST	*OPT-SAVE
A RPP(011)	B RPP(011)	C RPP(011)	D RPP(011)	MCC-MODE	KAAAA		ATTN=\$
A TXD(001)	B TXD(001)	C TXD(001)	D TXD(001)	MCD-MODE	KFFFF		ATTN=*
A RTF(101)	B RTF(101)	C RTF(101)	D RTF(101)	*LOC(MUX)	*LOC(I/O)	*TST(I/O)	ATTN=@
A OFF(000)	B OFF(000)	C OFF(000)	D OFF(000)	*GET(MUX)	*GET(I/O)	*VER(I/O)	ADIS=Y
				*VER(MUX)	*AIN(I/O)	*READ(I/O)	ADIS=N
MPP-MODE	MFM-MODE	MFF-MODE		*TYP(MUX)	*IOR(I/O)		*OPT-RFDS

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9600
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Port Open - COM1,9600,N-8-1,NO FLOW

READY