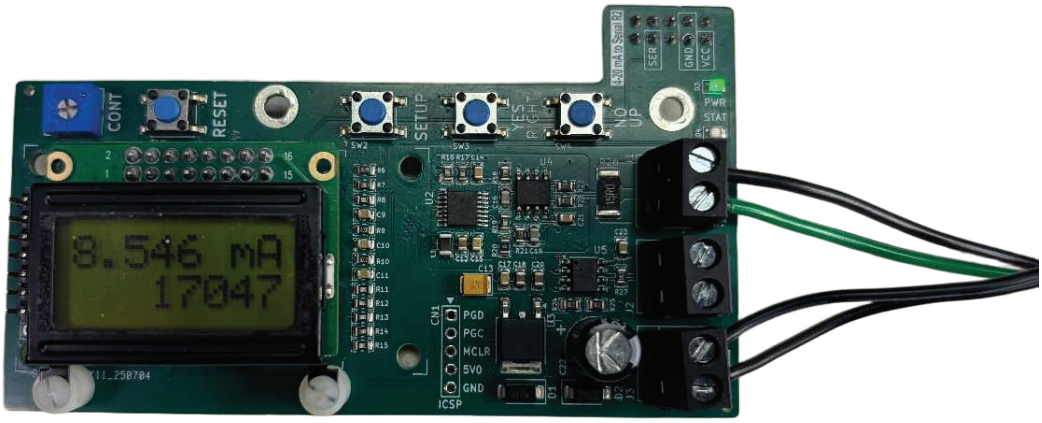
matko
ELECTRONIC DISPLAYS

Matko 4-20 mA to Serial Converter



Scan for Current
Matko Manuals

M420 & M420C

Manual

Rev 1.0

Description

The M420 is designed to take a 4-20 mA signal input and convert it to a RS422/RS485 serial output.

The M420C is a card designed to be built into the Matko SSD line of remote displays. It will plug into connector J1 in the bottom left of the SSD display. Power and data are all handled through the connector. The only external connection is the 4-20 mA signal input.

Setup is the same for both models

All settings are configured using 3 buttons

"**SETUP**"
"**YES/RIGHT**"
"**NO/UP**"

During normal operation the M420 will display the current mA input on line 1 and the current scaled value on line 2 of the LCD

Pressing "**SETUP**" will enter the Configuration/setup mode. "**SETUP**" will also advance to the next option There are 11 steps in setup mode before returning to normal operation

1. Set Address
2. Set Baud Rate
3. Set Decimal Point Location
4. Add Custom Character 1
5. Add Custom Character 2
6. Set Low Scaled Value
7. Set High Scaled Value
8. Set Current Low Reading
9. Set Current High Reading
10. Set LCD Backlight
11. Factory Default

Configuration

Setup Step 1: Setup Address

By Default the unit will send a Start of Text 0x02 as the first character in the data stream. Any character may be chosen.
Line 1 of the LCD will Display "ADDRESS"
Line 2 will display the 3 digit decimal value IE. "DEC 002"
The blinking digit is the value being adjusted. "**YES/RIGHT**" will cycle which digit is selected. "**NO/UP**" will adjust that digit. Only values between 0 and 255 are accepted, if any larger value is input the value will be saved as 0 and nothing will be transmitted for the address.
Pressing "**SETUP**" will advance to Step 2

Setup Step 2: Setup Baud Rate

By Default the unit will transmit the data stream at 9600 baud.
Line 1 of the LCD will Display "BAUDRATE"
Line 2 will display the current baud rate IE. "9600"
"**YES/RIGHT**" will cycle through the available baud rates 1200 -> 2400 -> 4800 -> 9600 -> 19200.
Pressing "**SETUP**" will save the selection and advance to Step 3

Setup Step 3: Set Decimal Point Location

By Default the unit will not have a decimal point, but a decimal point may be added at any location
Line 1 of the LCD will Display "DEC PNT"
Line 2 will display twill show the current decimal point location in relation to the 6 weight characters IE. "000000."
"**YES/RIGHT**" will cycle through the option for decimal location. 0.00000 -> 00.0000 -> 000.000 -> 0000.00 -> 00000.0 -> 000000.
Pressing "**SETUP**" will advance to Step 4

Configuration Continued

Setup Step 4: Custom Character 1

By Default no custom character will be added to the data stream. Any character may be added such as "g" for gross or "k" for kilograms...
Line 1 of the LCD will Display "CUSTOM 1"
Line 2 will display the 3 digit decimal value IE. "DEC 000"
The blinking digit is the value being adjusted. "**YES/RIGHT**" will cycle which digit is selected. "**NO/UP**" will adjust that digit. Only values between 0 and 255 are accepted, if any larger value is input the value will be saved as 0 and nothing will be transmitted for the address.
Pressing "**SETUP**" will advance to Step 5

Setup Step 5: Custom Character 2

By Default no custom character will be added to the data stream. Any character may be added such as "g" for gross or "k" for kilograms...
Line 1 of the LCD will Display "CUSTOM 2"
Line 2 will display the 3 digit decimal value IE. "DEC 000"
The blinking digit is the value being adjusted. "**YES/RIGHT**" will cycle which digit is selected. "**NO/UP**" will adjust that digit. Only values between 0 and 255 are accepted, if any larger value is input the value will be saved as 0 and nothing will be transmitted for the address.
Pressing "**SETUP**" will advance to Step 6

Setup Step 6: Set Low Scaled Value

By Default the low scaled value is 0
Line 1 of the LCD will Display "Low VAL"
Line 2 will display the low value IE. "000000"
The blinking digit is the value being adjusted. "**YES/RIGHT**" will cycle which digit is selected. "**NO/UP**" will adjust that digit. Only values between 0 and 255 are accepted, if any larger value is input the value will be saved as 0 and nothing will be transmitted for the address.
Pressing "**SETUP**" will advance to Step 7

Configuration Continued

Setup Step 7: Set High Scaled Value

By Default the high scaled value is 60000
Line 1 of the LCD will Display "HIGH VAL"
Line 2 will display the low value IE. "060000"
The blinking digit is the value being adjusted. "**YES/RIGHT**" will cycle which digit is selected. "**NO/UP**" will adjust that digit. Only values between 0 and 255 are accepted, if any larger value is input the value will be saved as 0 and nothing will be transmitted for the address.
Pressing "**SETUP**" will advance to Step 8

Setup Step 8 : Set Current Low Reading

By Default the low reading is set to 4.00 mA
Line 1 of the LCD will Display "LOW READ"
Line 2 will display the current reading IE. "4.05"
You may choose to override the typical low reading with the current actual reading if you need to fine tune the reading. "**SETUP**" will skip this step. "**YES/RIGHT**" will prompt for a verification to change the settings.
Line 1 will display "REPLACE"
Line 2 will display "LOW Y/N". "**YES/RIGHT**" a second time will replace the existing low settings. "**NO/UP**" will go back to the start of step 8.
Pressing "**SETUP**" will advance to Step 9

Setup Step 9 : Set Current High Reading

By Default the high reading is set to 20.00 mA
Line 1 of the LCD will Display "HI READ"
Line 2 will display the current reading IE. "19.95"
You may choose to override the typical high reading with the current actual reading if you need to fine tune the reading. "**SETUP**" will skip this step. "**YES/RIGHT**" will prompt for a verification to change the settings.
Line 1 will display "REPLACE"
Line 2 will display "HIGH Y/N". "**YES/RIGHT**" a second time will replace the existing low settings. "**NO/UP**" will go back to the start of step 9.
Pressing "**SETUP**" will advance to Step 10

Configuration Continued

Setup Step 10 : LCD Backlight

By default the LCD Backlight is off. This option allows for backlight to be turned on in 10% increments.

Setup Step 11 : Factory Default

This option will restore all settings to factory default
Line 1 of the LCD will Display "FACTORY"
Line 2 of the LCD will Display "DEFAULT"
"**YES/RIGHT**" will prompt for a verification to change the settings.
Line 1 will display "REPLACE"
Line 2 will display "Settings. "**YES/RIGHT**" a second time will replace the existing then display
Line 1 of the LCD will Display "DEFAULT"
Line 2 of the LCD will Display "COMPLETE"
Pressing "**SETUP**" will exit setup and return to normal operation

Default Settings are:
Address = 2 (Start of Text)
Baud = 9600
Decimal point = 000000.
Custom Character 1 = 0 (none)
Custom Character 2 = 0 (none)
Low Scaled value = 0
High Scaled Value = 60000
Low Reading = 4.00
High Reading = 20.00
LCD Backlight = Off

During Normal Operation the unit will transmit about twice a second with the following stream format:
<Address><Weight><Custom Character 1><Custom Character 2><Carriage Return><Line Feed>

<Address> is set with Setup Step 1, by default it is a start of text 0x02. When set to 0 nothing is transmitted.
<Weight> is 8 characters right justified. It includes negative sign or space as appropriate. 6 Numeric characters and a decimal point if used.
<Custom Character 1> is set with Setup Step 4, By default it is set to 0 and will not transmit.
<Custom Character 2> is set with Setup Step 5, By default it is set to 0 and will not transmit.
<Carriage Return> Decimal 13, Hexadecimal 0x0D.
<Line Feed> Decimal 10, Hexadecimal 0x0A.

ASCII Table

Dec	Char		Dec	Char	Dec	Char	Dec	Char
0	NUL	null	32	Space	64	@	96	`
1	SOH	start of heading - 0x01	33	!	65	A	97	a
2	STX	start of text - 0x02	34	"	66	B	98	b
3	ETX	end of text - 0x03	35	#	67	C	99	c
4	EOT	end of transmission	36	$	68	D	100	d
5	ENQ	enquiry	37	%	69	E	101	e
6	ACK	acknowledge	38	&	70	F	102	f
7	BEL	bell	39	'	71	G	103	g
8	BS	backspace	40	(	72	H	104	h
9	TAB	horizontal tab	41	)	73	I	105	i
10	LF	line feed - 0x0A	42	*	74	J	106	j
11	VT	vertical tab	43	+	75	K	107	k
12	FF	form feed, new page	44	,	76	L	108	l
13	CR	carriage return - 0x0D	45	-	77	M	109	m
14	SO	shift out	46	.	78	N	110	n
15	SI	shift in	47	/	79	O	111	o
16	DLE	data link escape	48	0	80	P	112	p
17	DC1	device control 1	49	1	81	Q	113	q
18	DC2	device control 2	50	2	82	R	114	r
19	DC3	device control 3	51	3	83	S	115	s
20	DC4	device control 4	52	4	84	T	116	t
21	NAK	negative acknowledge	53	5	85	U	117	u
22	SYN	synchronous idle	54	6	86	V	118	v
23	ETB	end of trans. block	55	7	87	W	119	w
24	CAN	cancel	56	8	88	X	120	x
25	EM	end of medium	57	9	89	Y	121	y
26	SUB	substitute	58	:	90	Z	122	z
27	ESC	escape	59	;	91	[	123	{
28	FS	file separator	60	<	92	\	124	|
29	GS	group separator	61	=	93	]	125	}
30	RS	record separator	62	>	94	^	126	~
31	US	unit separator	63	?	95	_	127	DEL