Codes Overview

Expand All

The following sections provide information about the various codes used in the EEPROM of the USB device.

ADC Configuration Codes

ADCConfiguration is an 8-bit number. The bits are stored in the following format: **PPPPSSSS**

PPPP = Programmable Gain Amplifier (PGA) Setting
SSSS = Sampling Rate Setting

Programmable Gain Amplifier Codes

Sampling Rate Codes

Adjustment Codes

Adjustment is an 8-bit number. The bits are stored in the following format: **RRRRMDSS**

RRRR = Reserved
M = Calibration Mode
D = Adjustment Direction
SS = Adjustment Size

This table provides a comprehensive list of adjustment codes.

Adjustment						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Reserved**
0	0	00	0000	RRRR	0000XXXX	Reserved
...	...	...	...	...	...	...
F	15	17	1111	RRRR	1111XXXX	Reserved
Adjustment						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Calibration Mode**
0	0	0	0	M	XXXX0XXX	Manual Calibration
1	1	1	1	M	XXXX1XXX	Automatic Calibration
Adjustment						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Adjustment Direction**
0	0	0	0	D	XXXXX0XX	Increase Voltage Output
1	1	1	1	D	XXXXX1XX	Decrease Voltage Output
Adjustment						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Adjustment Size**
0	0	0	00	SS	XXXXXX00	Small
1	1	1	01	SS	XXXXXX01	Medium
2	2	2	10	SS	XXXXXX10	Large

3	3	3	11	SS	XXXXXX11	Huge

This table provides a comprehensive list of adjustment codes.

Adjustment						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Mode**	**Direction**	**Step Size**
00	0	0000	00000000	Manual	Increase	Small
01	1	0001	00000001	Manual	Increase	Medium
02	2	0002	00000010	Manual	Increase	Large
03	3	0003	00000011	Manual	Increase	Huge
04	4	0004	00000100	Manual	Decrease	Small
05	5	0005	00000101	Manual	Decrease	Medium
06	6	0006	00000110	Manual	Decrease	Large
07	7	0007	00000111	Manual	Decrease	Huge
08	8	0010	00001000	Auto	Increase	Small
09	9	0011	00001001	Auto	Increase	Medium
0A	10	0012	00001010	Auto	Increase	Large
0B	11	0013	00001011	Auto	Increase	Huge
0C	12	0014	00001100	Auto	Decrease	Small
0D	13	0015	00001101	Auto	Decrease	Medium
0E	14	0016	00001110	Auto	Decrease	Large
0F	15	0017	00001111	Auto	Decrease	Huge
10	16	0020	00010000	Undefined	Undefined	Undefined
...	...	...	...	...	...	...
FF	255	0377	11111111	Undefined	Undefined	Undefined

Average Codes

This following sections provides a comprehensive list of average codes.

FUTEK Model Number(s): ETH100, IDA100, IHH500, IPM650, USB120, USB215, USB220, USB230, USB240, USB320, USB520 and USB530

AverageSetting						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Reserved**
0	0	0	00	RR	00XXXXXX	Reserved
1	1	1	01	RR	01XXXXXX	Reserved
2	2	2	10	RR	10XXXXXX	Reserved
3	3	3	11	RR	11XXXXXX	Reserved
AverageSetting						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Average Mode**
0	0	0	00	AA	XX00XXXX	Disable Average
1	1	1	01	AA	XX01XXXX	Moving Average

2	2	2	10	AA	XX10XXXX	Reserved
3	3	3	11	AA	XX11XXXX	Reserved
AverageSetting						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Reserved**
0	0	0	0	R	XXXX0XXX	Reserved
1	1	1	1	R	XXXX1XXX	Reserved
AverageSetting						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Number of Samples**
0	0	0	000	SSS	XXXXX000	2 Samples
1	1	1	001	SSS	XXXXX001	4 Samples
2	2	2	010	SSS	XXXXX010	8 Samples
3	3	3	011	SSS	XXXXX011	16 Samples
4	4	4	100	SSS	XXXXX100	32 Samples
5	5	5	101	SSS	XXXXX101	64 Samples
6	6	6	110	SSS	XXXXX110	128 Samples
7	7	7	111	SSS	XXXXX111	256 Samples

FUTEK Model Number(s): USB100 and USB200
FUTEK Model Number(s): USB110, USB210 and USB410

Calibration Register Codes

This table provides a comprehensive list of calibration register codes.

Register				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Calibration Register**
00	0	0000	00000000	Initialize Resistance Calibration
01	1	0001	00000001	Resistance (0 Ω)
02	2	0002	00000010	Resistance (10 kΩ)
03	3	0003	00000011	Finalize Resistance Calibration
04	4	0004	00000100	Initialize Analog Outputs (Voltage & Current)
05	5	0005	00000101	10% Load (Voltage)
06	6	0006	00000110	90% Load (Voltage)
07	7	0007	00000111	50% Load + Multimeter Reading (Voltage in Volts)
08	8	0010	00001000	0% Load (Current)
09	9	0011	00001001	100% Load (Current)
0A	10	0012	00001010	50% load + Multimeter Reading (Current in mA)
0B	11	0013	00001011	Apply Analog Outputs Calibration Values
0C	12	0014	00001100	Temperatures + 00.00 (˚C)
0D	13	0015	00001101	Reset Calibration
0E	14	0016	00001110	Bridge Input (2.00 mV/V)

0F	15	0017	00001111	Initialize Sensor and System Profile
10	16	0020	00010000	Initialize Analog Input (Voltage)
11	17	0021	00010001	Voltage Input (0.00VDC)
12	18	0022	00010010	Voltage Input (2.00VDC)
13	19	0023	00010011	Finalize Analog Input (Voltage) Calibration
14	20	0024	00010100	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

Decimal Point Codes

This table provides a comprehensive list of decimal point codes.

DecimalPoint				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Decimal Point Format**
00	0	0000	00000000	0.
01	1	0001	00000001	0.0
02	2	0002	00000010	0.00
03	3	0003	00000011	0.000
04	4	0004	00000100	0.0000
05	5	0005	00000101	0.00000
06	6	0006	00000110	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

Delimited Style Codes

This table provides a comprehensive list of delimited style codes.

DelimitedStyle					
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Delimiter**	**Terminator**
00	0	0000	00000000	Comma	Comma
01	1	0001	00000001	Tab	Tab
02	2	0002	00000010	Undefined	Undefined
...	...	...	...	...	...
FF	255	0377	11111111	Undefined	Undefined

Device Status Codes

This table provides a comprehensive list of device status codes.

DeviceStatus				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Status**
00	0	0000	00000000	OK

01	1	0001	00000001	Invalid Handle
02	2	0002	00000010	Device Not Found
03	3	0003	00000011	Device Not Opened
04	4	0004	00000100	IO Error
05	5	0005	00000101	Insufficient Resources
06	6	0006	00000110	Invalid Parameter
07	7	0007	00000111	Invalid Baud Rate
08	8	0010	00001000	Device Not Opened For Erase
09	9	0011	00001001	Device Not Opened For Write
0A	10	0012	00001010	Failed to Write Device
0B	11	0013	00001011	EEPROM Read Failed
0C	12	0014	00001100	EEPROM Write Failed
0D	13	0015	00001101	EEPROM Erased Failed
0E	14	0016	00001110	EEPROM Not Present
0F	15	0017	00001111	EEPROM Not Programmed
10	16	0020	00010000	Invalid Arguments
11	17	0021	00010001	Not Supported
12	18	0022	00010010	Other Error
13	19	0023	00010011	Device List Not Ready
14	20	0024	00010100	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

Digital Component Codes

The following sections provide a comprehensive list of digital component codes.

Offset Potentiometer Codes

This table provides a comprehensive list of offset potentiometer codes.

HighByte + LowByte				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Offset Potentiometer**
0000	0	00000000	0000000000000000	Digital Value
...	...	...	...	...
03FF	1023	00001777	0000001111111111	Digital Value
0400	1024	00002000	0000010000000000	Undefined
...	...	...	...	...
FFFF	65535	00177777	1111111111111111	Undefined

Span 1 Potentiometer Codes

This table provides a comprehensive list of span 1 potentiometer codes.

HighByte + LowByte				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Span 1 Potentiometer**
0000	0	00000000	0000000000000000	Digital Value
...	...	...	...	...
03FF	1023	00001777	0000001111111111	Digital Value
0400	1024	00002000	0000010000000000	Undefined
...	...	...	...	...
FFFF	65535	00177777	1111111111111111	Undefined

Span 2 Potentiometer Codes

This table provides a comprehensive list of span 2 potentiometer codes.

HighByte + LowByte				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Span 2 Potentiometer**
0000	0	00000000	0000000000000000	Digital Value
...	...	...	...	...
03FF	1023	00001777	0000001111111111	Digital Value
0400	1024	00002000	0000010000000000	Undefined
...	...	...	...	...
FFFF	65535	00177777	1111111111111111	Undefined

Excitation Codes

This table provides a comprehensive list of excitation codes.

HighByte + LowByte				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Excitation**
0000	0	00000000	0000000000000000	5 VDC
0001	1	00000001	0000000000000001	10 VDC
0002	2	00000002	0000000000000010	Undefined
...	...	...	...	...
FFFF	65535	00177777	1111111111111111	Undefined

Gain Codes

This table provides a comprehensive list of gain codes.

HighByte + LowByte				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Gain**
0000	0	00000000	0000000000000000	Gain Resistors
...	...	...	...	...
00FF	255	00000377	0000000011111111	Gain Resistors
0100	256	00000400	0000000100000000	Undefined

...	...	...	...	...
FFFF	65535	00177777	1111111111111111	Undefined

Output Codes

Output Configuration is an 8-bit number. The bits are stored in the following format: **STSSDOOO**

S = Symmetry
T = Output Type
SS = Span Voltage
D = Output Direction
OOO = Offset Voltage

This table provides a comprehensive list of output configuration codes.

Output Configuration						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Symmetry**
0	0	0	0	S	0XXXXXXX	Disabled
1	1	1	1	S	1XXXXXXX	Enabled
Output Configuration						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Output Type**
0	0	0	0	T	X0XXXXXX	Voltage Output (0-5, 0-10, ±5 or ±10 VDC depending on the span voltage and offset voltage)
1	1	1	1	T	X1XXXXXX	Current Output (4-20 or 4-12-20 mA depending on the span voltage and offset voltage)
Output Configuration						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Span Voltage**
0	0	0	00	SS	XX00XXXX	Undefined
1	1	1	01	SS	XX01XXXX	5 VDC
2	2	2	10	SS	XX10XXXX	10 VDC (always use this option with current output)
3	3	3	11	SS	XX11XXXX	Undefined
Output Configuration						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Output Direction**
0	0	0	0	D	XXXX0XXX	Positive
1	1	1	1	D	XXXX1XXX	Negative
Output Configuration						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Offset Voltage**
0	0	0	000	OOO	XXXXX000	Undefined
1	1	1	001	OOO	XXXXX001	0.0 VDC
2	2	2	010	OOO	XXXXX010	2.5 VDC
3	3	3	011	OOO	XXXXX011	Undefined
4	4	4	100	OOO	XXXXX100	5.0 VDC
5	5	5	101	OOO	XXXXX101	Undefined
6	6	6	110	OOO	XXXXX110	Undefined
7	7	7	111	OOO	XXXXX111	Undefined

This table provides a comprehensive list of output codes.

HighByte + LowByte								
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Symmetry**	**Output Type**	**Span**	**Output Direction**	**Offset**
0011	17	00000021	0000000000010001	Disabled	Voltage (±5 VDC)	5 VDC	Positive	0.0 VDC
0012	18	00000022	0000000000010010	Disabled	Voltage (0-5 VDC)	5 VDC	Positive	2.5 VDC
0019	25	00000031	0000000000011001	Disabled	Voltage (±5 VDC)	5 VDC	Negative	0.0 VDC
001A	26	00000032	0000000000011010	Disabled	Voltage (0-5 VDC)	5 VDC	Negative	2.5 VDC
0021	33	00000041	0000000000100001	Disabled	Voltage (±10 VDC)	10 VDC	Positive	0.0 VDC
0024	36	00000044	0000000000100100	Disabled	Voltage (0-10 VDC)	10 VDC	Positive	5.0 VDC
0029	41	00000051	0000000000101001	Disabled	Voltage (±10 VDC)	10 VDC	Negative	0.0 VDC
002C	44	00000054	0000000000101100	Disabled	Voltage (0-10 VDC)	10 VDC	Negative	5.0 VDC
0061	97	00000141	0000000001100001	Disabled	Current (4-20 mA)	10 VDC	Positive	0.0 VDC
0064	100	00000144	0000000001100100	Disabled	Current (4-12-20 mA)	10 VDC	Positive	5.0 VDC
0069	105	00000151	0000000001101001	Disabled	Current (4-20 mA)	10 VDC	Negative	0.0 VDC
006C	108	00000154	0000000001101100	Disabled	Current (4-12-20 mA)	10 VDC	Negative	5.0 VDC
0091	145	00000221	0000000010010001	Enabled	Voltage (±5 VDC)	5 VDC	Positive	0.0 VDC
0092	146	00000222	0000000010010010	Enabled	Voltage (0-5 VDC)	5 VDC	Positive	2.5 VDC
0099	153	00000231	0000000010011001	Enabled	Voltage (±5 VDC)	5 VDC	Negative	0.0 VDC
009A	154	00000232	0000000010011010	Enabled	Voltage (0-5 VDC)	5 VDC	Negative	2.5 VDC
00A1	161	00000241	0000000010100001	Enabled	Voltage (±10 VDC)	10 VDC	Positive	0.0 VDC
00A4	164	00000244	0000000010100100	Enabled	Voltage (0-10 VDC)	10 VDC	Positive	5.0 VDC
00A9	169	00000251	0000000010101001	Enabled	Voltage (±10 VDC)	10 VDC	Negative	0.0 VDC
00AC	172	00000254	0000000010101100	Enabled	Voltage (0-10 VDC)	10 VDC	Negative	5.0 VDC
00E1	225	00000341	0000000011100001	Enabled	Current (4-20 mA)	10 VDC	Positive	0.0 VDC
00E4	228	00000344	0000000011100100	Enabled	Current (4-12-20 mA)	10 VDC	Positive	5.0 VDC
00E9	233	00000351	0000000011101001	Enabled	Current (4-20 mA)	10 VDC	Negative	0.0 VDC
00EC	236	00000354	0000000011101100	Enabled	Current (4-12-20 mA)	10 VDC	Negative	5.0 VDC

Polarity Codes

This table provides a comprehensive list of polarity codes.

HighByte + LowByte				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Polarity**
0000	0	00000000	0000000000000000	Straight
0001	1	00000001	0000000000000001	Reverse
0002	2	00000002	0000000000000010	0 mV Input
0003	3	00000003	0000000000000011	20 mV Input
0004	4	00000004	0000000000000100	Undefined
...	...	...	...	...

FFFF	65535	00177777	1111111111111111	Undefined

Shunt Codes

This table provides a comprehensive list of shunt codes.

HighByte + LowByte				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Shunt**
0000	0	00000000	0000000000000000	30.0 kΩ
0001	1	00000001	0000000000000001	43.5 kΩ
0002	2	00000002	0000000000000010	60.4 kΩ
0003	3	00000003	0000000000000011	87.5 kΩ
0004	4	00000004	0000000000000100	100 kΩ
0005	5	00000005	0000000000000101	150 kΩ
0006	6	00000006	0000000000000110	300 kΩ
0007	7	00000007	0000000000000111	432 kΩ
0008	8	00000010	0000000000001000	Undefined
...	...	...	...	...
FFFF	65535	00177777	1111111111111111	Undefined

Sensitivity Codes

This table provides a comprehensive list of sensitivity codes.

HighByte + LowByte				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Sensitivity**
0000	0	00000000	0000000000000000	0.0000 mV/V
0001	1	00000001	0000000000000001	0.0001 mV/V
...	...	...	...	...
4E1F	19999	00047037	0100111000011111	1.9999 mV/V
4E20	20000	00047040	0100111000100000	2.0000 mV/V
4E21	20001	00047041	0100111000100001	2.0001 mV/V
...	...	...	...	...
FFFE	65534	00177776	1111111111111110	6.5534 mV/V
FFFF	65535	00177777	1111111111111111	6.5535 mV/V

Direction Codes

This table provides a comprehensive list of direction codes for calibrations performed in a single direction.

Direction					
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Direction 1**	**Direction 2**
00	0	0000	00000000	Compression	Undefined
01	1	0001	00000001	Tension	Undefined

02	2	0002	00000010	Clockwise (CW)	Undefined
03	3	0003	00000011	Counterclockwise (CCW)	Undefined
04	4	0004	00000100	Pressure	Undefined
05	5	0005	00000101	Vacuum	Undefined
06	6	0006	00000110	Undefined	Undefined
...	...	...	...	...	...
0F	15	0017	00001111	Undefined	Undefined

This table provides a comprehensive list of direction codes for calibrations performed in two directions.

Direction					
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Direction 1**	**Direction 2**
10	16	0020	00010000	Compression	Tension
11	17	0021	00010001	Tension	Compression
12	18	0022	00010010	Clockwise (CW)	Counterclockwise (CCW)
13	19	0023	00010011	Counterclockwise (CCW)	Clockwise (CW)
14	20	0024	00010100	Pressure	Vacuum
15	21	0025	00010101	Vacuum	Pressure
16	22	0026	00010110	Undefined	Undefined
...	...	...	...	...	...
FF	255	0377	11111111	Undefined	Undefined

Loading Point Codes

This following sections provides a comprehensive list of loading point codes.

FUTEK Model Number(s): USB100 and USB200

LoadingPoint				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Loading Point**
00	0	0000	00000000	Loading Point 0
01	1	0001	00000001	Loading Point 1
02	2	0002	00000010	Loading Point 2
03	3	0003	00000011	Loading Point 3
04	4	0004	00000100	Loading Point 4
05	5	0005	00000101	Loading Point 5
06	6	0006	00000110	Loading Point 6
07	7	0007	00000111	Loading Point 7
08	8	0010	00001000	Loading Point 8
09	9	0011	00001001	Loading Point 9
0A	10	0012	00001010	Loading Point 10
0B	11	0013	00001011	Loading Point 11

0C	12	0014	00001100	Loading Point 12
0D	13	0015	00001101	Loading Point 13
0E	14	0016	00001110	Loading Point 14
0F	15	0017	00001111	Loading Point 15
10	16	0020	00010000	Loading Point 16
11	17	0021	00010001	Loading Point 17
12	18	0022	00010010	Loading Point 18
13	19	0023	00010011	Loading Point 19
14	20	0024	00010100	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

FUTEK Model Number(s): ETH100, IDA100, USB110, USB120, USB210, USB215, USB220, USB230, USB240, USB320, USB410, USB520 and USB530

LoadingPoint				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Loading Point**
00	0	0000	00000000	Loading Point 0
01	1	0001	00000001	Loading Point 1
02	2	0002	00000010	Loading Point 2
03	3	0003	00000011	Loading Point 3
04	4	0004	00000100	Loading Point 4
05	5	0005	00000101	Loading Point 5
06	6	0006	00000110	Loading Point 6
07	7	0007	00000111	Loading Point 7
08	8	0010	00001000	Loading Point 8
09	9	0011	00001001	Loading Point 9
0A	10	0012	00001010	Loading Point 10
0B	11	0013	00001011	Loading Point 11
0C	12	0014	00001100	Loading Point 12
0D	13	0015	00001101	Loading Point 13
0E	14	0016	00001110	Loading Point 14
0F	15	0017	00001111	Loading Point 15
10	16	0020	00010000	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

FUTEK Model Number(s): IHH500 and IPM650

LoadingPoint				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Loading Point**

00	0	0000	00000000	Loading Point 0
01	1	0001	00000001	Loading Point 1
02	2	0002	00000010	Loading Point 2
03	3	0003	00000011	Loading Point 3
04	4	0004	00000100	Loading Point 4
05	5	0005	00000101	Loading Point 5
06	6	0006	00000110	Loading Point 6
07	7	0007	00000111	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

Nominal Bridge Resistance Codes

This table provides a comprehensive list of nominal bridge resistance codes.

Bridge Resistance				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Nominal Bridge Resistance**
00	0	0000	00000000	120 kΩ
01	1	0001	00000001	350 kΩ
02	2	0002	00000010	700 kΩ
03	3	0003	00000011	1000 kΩ
04	4	0004	00000100	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

Nominal Sensitivity Codes

This table provides a comprehensive list of nominal sensitivity codes.

Sensitivity				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Nominal Sensitivity**
00	0	0000	00000000	0.5 mV/V
01	1	0001	00000001	1.0 mV/V
02	2	0002	00000010	2.0 mV/V
03	3	0003	00000011	4.0 mV/V
04	4	0004	00000100	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

Potentiometer Number Codes

This table provides a comprehensive list of potentiometer number codes.

PotentiometerNumber

Hexadecimal	Decimal	Octal	Binary	Digital Component
00	0	0000	00000000	Offset Potentiometer
01	1	0001	00000001	Span 1 Potentiometer
02	2	0002	00000010	Span 2 Potentiometer
03	3	0003	00000011	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

Programmable Gain Amplifier Codes

This following sections provides a comprehensive list of programmable gain amplifier (PGA) codes.

FUTEK Model Number(s): ETH100, IDA100, IHH500, IPM650, USB110, USB120, USB210, USB215, USB220, USB240, USB320, USB410 and USB520

PGA Setting				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Gain**
0	0	00	0000	Gain = 1
1	1	01	0001	Gain = 2
2	2	02	0010	Gain = 4
3	3	03	0011	Gain = 8
4	4	04	0100	Gain = 16
5	5	05	0101	Gain = 32
6	6	06	0110	Gain = 64
7	7	07	0111	Gain = 128
8	8	10	1000	Reserved, Do Not Use
9	9	11	1001	Reserved, Do Not Use
A	10	12	1010	Reserved, Do Not Use
B	11	13	1011	Reserved, Do Not Use
C	12	14	1100	Reserved, Do Not Use
D	13	15	1101	Reserved, Do Not Use
E	14	16	1110	Reserved, Do Not Use
F	15	17	1111	Reserved, Do Not Use

FUTEK Model Number(s): USB100 and USB200

PGA Setting				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Gain**
0	0	00	0000	Gain = 1
1	1	01	0001	Reserved, Do Not Use
2	2	02	0010	Reserved, Do Not Use
3	3	03	0011	Reserved, Do Not Use

4	4	04	0100	Reserved, Do Not Use
5	5	05	0101	Reserved, Do Not Use
6	6	06	0110	Reserved, Do Not Use
7	7	07	0111	Reserved, Do Not Use
8	8	10	1000	Reserved, Do Not Use
9	9	11	1001	Reserved, Do Not Use
A	10	12	1010	Reserved, Do Not Use
B	11	13	1011	Reserved, Do Not Use
C	12	14	1100	Reserved, Do Not Use
D	13	15	1101	Reserved, Do Not Use
E	14	16	1110	Reserved, Do Not Use
F	15	17	1111	Reserved, Do Not Use

FUTEK Model Number(s): USB230 and USB530

PGA Setting				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Gain**
0	0	00	0000	Gain = 1
1	1	01	0001	Gain = 2
2	2	02	0010	Gain = 4
3	3	03	0011	Gain = 8
4	4	04	0100	Gain = 16
5	5	05	0101	Gain = 32
6	6	06	0110	Gain = 64
7	7	07	0111	Gain = 64
8	8	10	1000	Reserved, Do Not Use
9	9	11	1001	Reserved, Do Not Use
A	10	12	1010	Reserved, Do Not Use
B	11	13	1011	Reserved, Do Not Use
C	12	14	1100	Reserved, Do Not Use
D	13	15	1101	Reserved, Do Not Use
E	14	16	1110	Reserved, Do Not Use
F	15	17	1111	Reserved, Do Not Use

Sampling Rate Codes

This following sections provides a comprehensive list of sampling rate codes.

FUTEK Model Number(s): ETH100, IDA100, IHH500, IPM650, USB120, USB220, USB320 and USB520

SamplingRate				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Sampling Rate**

0	0	00	0000	5 Samples Per Second
1	1	01	0001	10 Samples Per Second
2	2	02	0010	15 Samples Per Second
3	3	03	0011	20 Samples Per Second
4	4	04	0100	25 Samples Per Second
5	5	05	0101	30 Samples Per Second
6	6	06	0110	50 Samples Per Second
7	7	07	0111	60 Samples Per Second
8	8	10	1000	100 Samples Per Second
9	9	11	1001	300 Samples Per Second
A	10	12	1010	600 Samples Per Second
B	11	13	1011	960 Samples Per Second
C	12	14	1100	1200 Samples Per Second
D	13	15	1101	1600 Samples Per Second
E	14	16	1110	2400 Samples Per Second
F	15	17	1111	4800 Samples Per Second

FUTEK Model Number(s): USB100 and USB200

SamplingRate				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Sampling Rate**
0	0	00	0000	External Input, 50/60 Hz Rejection, 5 Samples Per Second
1	1	01	0001	External Input, 50/60 Hz Rejection, 10 Samples Per Second
2	2	02	0010	External Input, 50 Hz Rejection, 5 Samples Per Second
3	3	03	0011	External Input, 50 Hz Rejection, 10 Samples Per Second
4	4	04	0100	External Input, 60 Hz Rejection, 5 Samples Per Second
5	5	05	0101	External Input, 60 Hz Rejection, 10 Samples Per Second
6	6	06	0110	Reserved, Do Not Use
7	7	07	0111	Reserved, Do Not Use
8	8	10	1000	Temperature Input, 50/60 Hz Rejection, 5 Samples Per Second
9	9	11	1001	Reserved, Do Not Use
A	10	12	1010	Temperature Input, 50 Hz Rejection, 5 Samples Per Second
B	11	13	1011	Reserved, Do Not Use
C	12	14	1100	Temperature Input, 60 Hz Rejection, 5 Samples Per Second
D	13	15	1101	Reserved, Do Not Use
E	14	16	1110	Reserved, Do Not Use
F	15	17	1111	Reserved, Do Not Use

FUTEK Model Number(s): USB110 and USB210

SamplingRate				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Sampling Rate**
0	0	00	0000	2.5 Samples Per Second
1	1	01	0001	10 Samples Per Second
2	2	02	0010	20 Samples Per Second
3	3	03	0011	25 Samples Per Second
4	4	04	0100	30 Samples Per Second
5	5	05	0101	50 Samples Per Second
6	6	06	0110	60 Samples Per Second
7	7	07	0111	80 Samples Per Second
8	8	10	1000	100 Samples Per Second
9	9	11	1001	150 Samples Per Second
A	10	12	1010	200 Samples Per Second
B	11	13	1011	250 Samples Per Second
C	12	14	1100	300 Samples Per Second
D	13	15	1101	500 Samples Per Second
E	14	16	1110	750 Samples Per Second
F	15	17	1111	1000 Samples Per Second

FUTEK Model Number(s): USB215

SamplingRate				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Sampling Rate**
0	0	00	0000	5 Samples Per Second
1	1	01	0001	10 Samples Per Second
2	2	02	0010	15 Samples Per Second
3	3	03	0011	20 Samples Per Second
4	4	04	0100	25 Samples Per Second
5	5	05	0101	30 Samples Per Second
6	6	06	0110	50 Samples Per Second
7	7	07	0111	60 Samples Per Second
8	8	10	1000	100 Samples Per Second
9	9	11	1001	150 Samples Per Second
A	10	12	1010	200 Samples Per Second
B	11	13	1011	300 Samples Per Second
C	12	14	1100	Undefined
...	...	...	...	...
F	15	17	1111	Undefined

FUTEK Model Number(s): USB230 and USB530

SamplingRate				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Sampling Rate**
0	0	00	0000	2.5 Samples Per Second
1	1	01	0001	5 Samples Per Second
2	2	02	0010	10 Samples Per Second
3	3	03	0011	15 Samples Per Second
4	4	04	0100	25 Samples Per Second
5	5	05	0101	30 Samples Per Second
6	6	06	0110	50 Samples Per Second
7	7	07	0111	60 Samples Per Second
8	8	10	1000	100 Samples Per Second
9	9	11	1001	500 Samples Per Second
A	10	12	1010	1000 Samples Per Second
B	11	13	1011	2000 Samples Per Second
C	12	14	1100	3750 Samples Per Second
D	13	15	1101	7500 Samples Per Second
E	14	16	1110	15000 Samples Per Second
F	15	17	1111	15000 Samples Per Second

FUTEK Model Number(s): USB240

SamplingRate				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Sampling Rate**
0	0	00	0000	1.5 Samples Per Second
1	1	01	0001	3 Samples Per Second
2	2	02	0010	6 Samples Per Second
3	3	03	0011	12 Samples Per Second
4	4	04	0100	24 Samples Per Second
5	5	05	0101	30 Samples Per Second
6	6	06	0110	48 Samples Per Second
7	7	07	0111	60 Samples Per Second
8	8	10	1000	75 Samples Per Second
9	9	11	1001	120 Samples Per Second
A	10	12	1010	150 Samples Per Second
B	11	13	1011	240 Samples Per Second
C	12	14	1100	300 Samples Per Second
D	13	15	1101	400 Samples Per Second
E	14	16	1110	600 Samples Per Second

F	15	17	1111	1200 Samples Per Second

FUTEK Model Number(s): USB410

SamplingRate				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Sampling Rate**
0	0	00	0000	2.5 Samples Per Second
1	1	01	0001	10 Samples Per Second
2	2	02	0010	20 Samples Per Second
3	3	03	0011	25 Samples Per Second
4	4	04	0100	30 Samples Per Second
5	5	05	0101	50 Samples Per Second
6	6	06	0110	60 Samples Per Second
7	7	07	0111	80 Samples Per Second
8	8	10	1000	100 Samples Per Second
9	9	11	1001	150 Samples Per Second
A	10	12	1010	200 Samples Per Second
B	11	13	1011	Undefined
...	...	...	...	...
F	15	17	1111	Undefined

Sensor Configuration Codes

SensorConfiguration is an 8-bit number. The bits are stored in the following format: **RTTTSSBB**

R = Reserved
TTT = Input / Output Type
SS = Nominal Sensitivity
BB = Nominal Bridge Resistance

This table provides a comprehensive list of sensor configuration codes.

SensorConfiguration						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Reserved**
0	0	0	0	R	0XXXXXXX	Reserved
1	1	1	1	R	1XXXXXXX	Reserved
SensorConfiguration						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Input / Output Type**
0	0	0	000	TTT	X000XXXX	Bridge
1	1	1	001	TTT	X001XXXX	Bridge and Pulse
2	2	2	010	TTT	X010XXXX	Voltage Output
3	3	3	011	TTT	X011XXXX	Voltage Output and Pulse
4	4	4	100	TTT	X100XXXX	Current Output
5	5	5	101	TTT	X101XXXX	Current Output and Pulse

6	6	6	110	TTT	X110XXXX	Undefined
7	7	7	111	TTT	X111XXXX	Undefined
SensorConfiguration						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Nominal Sensitivity**
0	0	0	00	SS	XXXX00XX	0.5 mV/V
1	1	1	01	SS	XXXX01XX	1.0 mV/V
2	2	2	10	SS	XXXX10XX	2.0 mV/V
3	3	3	11	SS	XXXX11XX	4.0 mV/V
SensorConfiguration						
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Bit**	**Bit Format**	**Nominal Bridge Resistance**
0	0	0	00	BB	XXXXXX00	120 ohms
1	1	1	01	BB	XXXXXX01	350 ohms
2	2	2	10	BB	XXXXXX10	700 ohms
3	3	3	11	BB	XXXXXX11	1000 ohms

Simulated Load Codes

This table provides a comprehensive list of simulated load codes.

SimulatedLoad				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Simulated Load**
00	0	0000	00000000	Disable
01	1	0001	00000001	Enable
02	2	0002	00000010	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

Switch Number Codes

This table provides a comprehensive list of switch number codes.

SwitchNumber				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Digital Component**
00	0	0000	00000000	Offset Potentiometer
01	1	0001	00000001	Span 1 Potentiometer
02	2	0002	00000010	Span 2 Potentiometer
03	3	0003	00000011	Excitation
04	4	0004	00000100	Gain
05	5	0005	00000101	Output
06	6	0006	00000110	Polarity
07	7	0007	00000111	Shunt
08	8	0010	00001000	Sensitivity

09	9	0011	00001001	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

Type of Board Codes

This table provides a comprehensive list of type of board codes.

Type of Board				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Model Number**
00	0	0000	00000000	USB100/USB200
01	1	0001	00000001	USB110
02	2	0002	00000010	USB210
03	3	0003	00000011	USB220
04	4	0004	00000100	USB230
05	5	0005	00000101	IHH500
06	6	0006	00000110	USB120
07	7	0007	00000111	USB320
08	8	0010	00001000	USB410
09	9	0011	00001001	USB240
0A	10	0012	00001010	IPM650
0B	11	0013	00001011	USB520
0C	12	0014	00001100	USB215
0D	13	0015	00001101	ETH100
0E	14	0016	00001110	USB530
0F	15	0017	00001111	ITB100
10	16	0020	00010000	IDA100
11	17	0021	00010001	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

Type of Calibration Codes

This table provides a comprehensive list of type of calibration codes.

TypeOfCalibration				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Type of Calibration**
00	0	0000	00000000	Type.....
01	1	0001	00000001	Type.....
02	2	0002	00000010	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined

Unit Codes

This table provides a comprehensive list of unit codes.

UnitCode					
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Abbreviation**	**Engineering Units**
00	0	0000	00000000	atm	atmosphere
01	1	0001	00000001	bar	bar
02	2	0002	00000010	dyn	dyne
03	3	0003	00000011	ft-H_2O	foot of water (H_2O)
04	4	0004	00000100	ft-lb	foot pound
05	5	0005	00000101	g	gram
06	6	0006	00000110	g-cm	gram centimeter
07	7	0007	00000111	g-mm	gram millimeter
08	8	0010	00001000	in-H_2O	inches of water (H_2O)
09	9	0011	00001001	in-lb	inch pound
0A	10	0012	00001010	in-oz	inch ounce
0B	11	0013	00001011	kdyn	kilodyne
0C	12	0014	00001100	kg	kilogram
0D	13	0015	00001101	kg-cm	kilogram centimeter
0E	14	0016	00001110	kg/cm^2	kilogram per centimeter squared
0F	15	0017	00001111	kg-m	kilogram meter
10	16	0020	00010000	klb	kilopound
11	17	0021	00010001	kN	kiloNewton
12	18	0022	00010010	kPa	kiloPascal
13	19	0023	00010011	kpsi	thousand pounds per square inch
14	20	0024	00010100	lb	pound
15	21	0025	00010101	Mdyn	megadyne
16	22	0026	00010110	mmHG	millimeter of mercury (torr)
17	23	0027	00010111	mN-m	milliNewton meter

18	24	0030	00011000	MPa	megaPascal
19	25	0031	00011001	MT	metric ton
1A	26	0032	00011010	N	Newton
1B	27	0033	00011011	N-cm	Newton centimeter
1C	28	0034	00011100	N-m	Newton meter
1D	29	0035	00011101	N-mm	Newton millimeter
1E	30	0036	00011110	oz	ounces
1F	31	0037	00011111	psi	pound per square inch
20	32	0040	00100000	Pa	Pascal
21	33	0041	00100001	ST	short ton (US)
22	34	0042	00100010	mV/V	millivolts per volt
23	35	0043	00100011	µA	microampere
24	36	0044	00100100	mA	milliampere
25	37	0045	00100101	A	ampere
26	38	0046	00100110	mm	millimeter
27	39	0047	00100111	cm	centimeter
28	40	0050	00101000	dm	decimeter
29	41	0051	00101001	m	meter
2A	42	0052	00101010	km	kilometer
2B	43	0053	00101011	in	inch
2C	44	0054	00101100	ft	foot
2D	45	0055	00101101	yd	yard
2E	46	0056	00101110	mi	mile
2F	47	0057	00101111	µg	microgram
30	48	0060	00110000	mg	milligram
31	49	0061	00110001	LT	long ton (UK)
32	50	0062	00110010	mbar	millibar
33	51	0063	00110011	˚C	degree Celsius
34	52	0064	00110100	˚F	degree Fahrenheit
35	53	0065	00110101	˚K	Kelvin
36	54	0066	00110110	˚Ra	degree Rankine
37	55	0067	00110111	kN-m	kiloNewton meter
38	56	0070	00111000	g-m	gram meter
39	57	0071	00111001	nV	nanovolt
3A	58	0072	00111010	µV	microvolt
3B	59	0073	00111011	mV	millivolt
3C	60	0074	00111100	V	volt
3D	61	0075	00111101	kV	kilovolt

3E	62	0076	00111110	NONE	NONE
3F	63	0077	00111111	Undefined	Undefined
...	...	...	...	...	...
FF	255	0377	11111111	Undefined	Undefined

Voltage Output Codes

This table provides a comprehensive list of voltage output codes.

VoltageOutput				
Hexadecimal	**Decimal**	**Octal**	**Binary**	**Supply Voltage**
00	0	0000	00000000	24 VDC
01	1	0001	00000001	20 VDC
02	2	0002	00000010	18 VDC
03	3	0003	00000011	15 VDC
04	4	0004	00000100	12 VDC
05	5	0005	00000101	10 VDC
06	6	0006	00000110	9 VDC
07	7	0007	00000111	5 VDC
08	8	0008	00001000	Undefined
...	...	...	...	...
FF	255	0377	11111111	Undefined