Function code	Sienci Labs Spindle Kit Default Values Highlighted values are modified from factory values after reset using F013	This for the 110V 2.2KW Water Cooled Spindle w/ 400HZ+2.2KW VFD 110V Single to 3 Phase H100 VFD Factory value after reset using F013	Name of parameter	Setting range and data content
Red highlighted parameters should never be changed				
Basic				
These settings determine how the VFD is controlled, key specs which must match the spindle, and acceleration/deceleration for the spindle				
F000	**0**	0	Parameter locking	0: Disabled 1: Enabled
F001	2	0	Control mode	0: Keyboard 1: External input terminals 2: Communication interface
F002	2	3	Frequency setting selection	0: Set by F003 1: AI1 (signal type set by F070) 2: Communication interface (frequency set by 0201h register value) 3: Potentiometer on keyboard 4: AI2 (signal type set by F070) 5: PFI (frequency set by pulse frequency of the X5 terminal input pulse) 6: AI1+AI2 7: PID (frequency set by output of PID regulator)
F003	400	50	Main frequency	0.0 ~ 1000.0 Hz
F004	400	50	Reference frequency	0.1 ~ 1000.0 Hz
F005	400	50	Maximum operating frequency	10.0 ~ 1000.0 Hz
F006	**10**	10	Intermediate frequency	0.1 ~ 1000.0 Hz
F007	**0.5**	0.5	Starting frequency	0.1 ~ 20.0 Hz
F008	**380**	380	Maximum voltage	0.1V ~ *
F009	**14**	14	Intermediate voltage	F010 ~ 30.0% voltage corresponding to 10% fundamental frequency
F010	**5**	5	Low-frequency torque boost voltage	0.0 ~ 9.0% voltage corresponding to 1% fundamental frequency
F011	125	0	Lower frequency limit	0.0 ~ 1000.0 Hz
F012	**1**	1	Drive control mode	0: VF 1: Vector control 2: V2F 3: VF separation
F013	**0**	0	Parameter resetting	8: Restore ex-factory value
F014	10	5	Acceleration time I	0.1 ~ 650.00s
F015	10	5	Deceleration time I	0.1 ~ 650.00s
F016	**5**	5	Acceleration time II	0.1 ~ 650.00s
F017	**5**	5	Deceleration time II	0.1 ~ 650.00s
F018	**5**	5	Acceleration time III	0.1 ~ 650.00s
F019	**5**	5	Deceleration time III	0.1 ~ 650.00s
F020	**5**	5	Acceleration time IV (jogging acceleration time)	0.1 ~ 650.00s
F021	**5**	5	Deceleration time IV (jogging acceleration time)	0.1 ~ 650.00s
F022	**0**	0	Emergency stop (digital input terminal 13) deceleration time	0.1 ~ 650.00s 0: Emergency stop by coasting
Application				
These settings are largely unused, but determine some characteristics of spindle control				
F023	**1**	1	Reverse prohibit	0: Prohibited 1: Allowed
F024	**1**	1	Stop key enabled	0: Disabled 1: Enabled Parameter only works if F001 = 1 or 2
F025	**0**	0	Start mode	0: Start from starting frequency (when F029 is non-zero, DC brake first then start) 1: Frequency tracking start (used for high inertia loads, F033 generally set ~100)
F026	**0**	0	Stop mode	0: Ramp (if F030 = 0 then will still coast, otherwise after inverter decelerates to stop frequency then DC braking will take over which can cause motor heating) 1: Coast (no DC braking)
F027	**0**	0	Dead time of positive and negative rotation	0.0 ~ 50.0s
F028	**0**	0	Stop frequency	0.1 ~ 30.0 Hz
F029	**0**	0	DC braking time when starting	0.0 ~ 25.0s
F030	**0**	0	DC braking time when stopping	0.0 ~ 25.0s
F031	**30**	30	DC braking level	0.0 ~ 100.0%
F032	**5**	5	Frequency tracking time	0.1 ~ 20.0s
F033	**150**	150	Frequency tracking current level	0 ~ 200%

F034	**0**	0	Voltage rise time during frequency tracking	0.1 ~ 10.0s
F035	**0**	0	Percentage of start voltage during frequency tracking	1 ~ 20%
F036	**5**	5	Voltage increment during frequency tracking	1 ~ 20V
F037 - F038				Reserved
F039	**4**	4	Starting frequency of DC braking	0 ~ 15.0 Hz
F040	**0**	0	F/R key function selection	0: F/R 1: Control channel mandatory for keyboard 2: Count value clear 0 (see F065) When F040 is set to 1 and the F/R light is on, the control channel is forced to be the keyboard and the frequency is forced to be given by the keyboard potentiometer
F041	**5**	5	Carrier frequency	0 ~ 15
F042	**5**	5	Jog frequency	0.0 ~ 1000.0 Hz
F043	**0**	0	S curve time	0.0 ~ 6500.0s (valid when F014 is smaller than F043, provided that the actual acceleration is (F014+F043)/2) 0: Disabled
Input/output Terminals				
These settings determine functionality of the various control I/O on the VFD				
F044	**2**	2	FOR (X1) function	0: Disabled 1: Run 2: Forward rotate 3: Reverse rotate 4: Stop 5: Forward/reverse switching (can also be done with three-wire connection to terminals) 6: Jog 7: Jog forward (see F020, F021, F042) 8: Jog reverse (see F020, F021, F042) 9: External control timer I 10: External control timer II 11: Set frequency to F003 value 12: Radiator or motor overheating 13: Emergency stop 14: Reset (after fault elimination) 15: Set frequency to AI2 value 16: Touch run/stop control 17: Acceleration/deceleration time selection I 18: Acceleration/deceleration time selection II 19: Multi-segment speed I 20: Multi-segment speed II 21: Multi-segment speed III 22: High speed (set by frequency II) 23: Medium speed (set by frequency III) 24: Low speed (set by frequency IV) 25: PID allowed 26: Multi-segment speed IV 27: UP function (increase frequency) 28: DOWN function (decrease frequency) 29: Draft actuation allowed 30: PF I (pulse counter <250 Hz, only available for X5) 31: Reserved 32: Pulse counter reset 33: Stop the machine if the yarn is broken (only available for X4) The counter trigger pulse corresponding to F064 and F065 is only available for X5 input
F045	**3**	3	REV (X2) function	
F046	**14**	14	RST (X3) function	
F047	**22**	22	SPH (X4) function	
F048	**23**	23	SPM (X5) function	
F049	**24**	24	SPL (X6) function	
F050	**1**	1	Y1 output function	Outputs will contact to indicate 0: Disabled 1: Inverter running 2: Zero-speed (output frequency < start-up frequency) 3: Fault 4: DC braking 5: Set frequency arrival 6: Acceleration underway 7: Deceleration underway 8: Frequency consistency I (F060) arrival 9: Frequency consistency II (F061) arrival 10: Motor overload 11: Over-torque 12: Inverter overload 13: Pulse set counter (F065) arrival 14: Pulse middle counter (F066) arrival 15: External control timer I arrival 16: Reserved 17: Low-voltage 18: Internally controlled multi-segment speed stage completion 19: Internally controlled multi-segment speed process completion 20: 4 ~ 20mA offline (AI input if F070 > 2) 21: Ready for operation
F051	**5**	5	Y2 output function	

F052	**0**	0	Output function (KA & KC terminals)	21: Ready for operation 22: Reserved 23: Valid indication run command signal 24: ED0 25: Auxiliary pump 1 control 26: Auxiliary pump 2 control 27: Draft completed (resets when inverter stops) 28: PID lower limit alarm (see F162) 29: PID upper limit alarm (see F161) 30: Braking resistance underway 31: Relay control 32: Fan control (when temp is high or inverter is on)
F053	**3**	3	Output function (FA, FB & FC terminals)	
F054	**0**	0	AO terminal output monitoring function (0-10V analog map)	0: Output frequency, 0 - max operating frequency 1: Output current, 0 - x2 rated current of inverter 2: DC bus voltage , 0 - 1000V 3: Output voltage, 0 - 255/510V
F055	**100**	100	AO analog output gain	0 ~ 100%
F056	**0**	0	Swing frequency amplitude	5.10 ~ 60.0% of center frequency 0: Swing frequency function is disabled
F057	**10**	10	Jump amplitude	0.0 ~ 50% of swing amplitude
F058	**10**	10	Swing frequency cycle	0.0 ~ 100.0s
F059	**50**	50	Swing frequency rise time	0.1 ~ 99.9% of swing cycle
F060	**0**	0	Frequency consistency I (constant pressure water supply high speed frequency)	0.0 ~ 1000.0 Hz
F061	**0**	0	Frequency consistency II (constant pressure water supply low speed frequency)	0.0 ~ 1000.0 Hz
F062	**0.5**	0.5	Frequency Consistency range setting	0.1 ~ 10.0 Hz
F063	**1**	1	Timer I (continues even during fault)	0.1 ~ 999.9s
F064	**5**	5	Monostable pulse width setting	0.1 ~ 65.0s
F065	**0**	0	Counter reference value	0 ~ 65500 Pulse number unit: 1 Length unit: 0.01
F066	**0**	0	Counter mode setting	Units digit 0: Length 1: Count pulses Tens digit 0: Stop when the count reaches the set value 1: Keep running when the count reaches the set value Hundreds digit 0: Monostable pulse output is not started when the count reaches the set value 1: Monostable pulse output is started when the count reaches the set value Thousands digit 0: If the count reaches the set value, it will not be cleared automatically 1: If the count reaches the set value, it will be cleared automatically
F067	**0**	0	Digital input terminal logic (used together with jumper J2)	0: Positive logic, NPN wiring 1: Negative logic, PNP wiring
F068	**20**	20	Digital input terminal dithering elimination time	0 ~ 60000ms
F069	**10**	10	PFI/PFO maximum frequency	1.0 ~ 10.0 kHz
Analog Input/Output Parameters				
These settings configure the characteristics of the analog control I/O of the VFD (such as PWM control)				
F070	**0**	0	Input channel selection for analog quantity (can also be selected by channel 2 through jumper J3)	Units digit (AI1) 0: 0 ~ 10V 1: 0 ~ 5V Tens digit (AI2) 0: 0 ~ 20mA / 0 ~ 10V 1: 4 ~ 20mA / 2 ~ 10V (500Ω) 2: 4 ~ 20mA / 1 ~ 5V (250Ω)
F071	**20**	20	Filtering time of analog quantity	0 ~ 1000ms
F072	**100**	100	AI1 channel gain	0.0 ~ 500.0 %
F073	**100**	100	AI2 channel gain	0.0 ~ 500.0 %
F074	**0**	0	AI1 channel offset	-50.0 ~ 50.0 %
F075	**0**	0	AI2 channel offset	-50.0 ~ 50.0 %
F076	**0**	0	Negative bias reverse of analog quantity	0: Irreversible 1: Reversible
F077	**0**	0	UP/DOWN value memory after stop	0: Don't remember 1: Remember If F117 also on, will recall value after power off
F078	**1**	1	UP/DOWN increment selection	0: 0.1 Hz 1: 1.0 Hz
F079	**1**	1	UP/DOWN increment multiple	1 ~ 250
Multi-segment Speed				

These settings are not used				
F080	**2**	2	Selection of multi-segment speed mode	0: Normal operation 1: Internally controlled 16-segment speed 2: Externally controlled 4-segment speed 3: Externally controlled 16-segment speed 4: Externally controlled 4-segment speed (run command valid automatically) 5: Externally controlled 16-segment speed (run command valid automatically) See manual for deeper explanation
F081	**0**	0	Internally controlled multi-segment speed selection of operation mode	0: Stop after one cycle 1: Circulating 2: One cycle automatic running (stop interval) 3: Circulating automatic running (stop interval) Only works when F080 = 1
F082	**0**	0	Speed operation directions of first internally controlled 8 segments	0 ~ 255 0: Forward 1: Reverse Only works when F080 = 1
F083	**0**	0	Speed operation directions of last internally controlled 8 segments	0 ~ 255 0: Forward 1: Reverse Only works when F080 = 1
F084	**0**	0	Acceleration/deceleration time of the first internally controlled 8 segments	0 ~ 65535 Only works when F080 = 1
F085	**0**	0	Acceleration/deceleration time of the last internally controlled 8 segments	0 ~ 65535 Only works when F080 = 1
F086	**15**	15	Frequency II setting	0.0 ~ 1000.0 Hz
F087	**20**	20	Frequency III setting	
F088	**25**	25	Frequency IV setting	
F089	**30**	30	Frequency V setting	
F090	**35**	35	Frequency VI setting	
F091	**40**	40	Frequency VII setting	
F092	**0.5**	0.5	Frequency VIII setting	
F093	**10**	10	Frequency IX setting	
F094	**15**	15	Frequency X setting	
F095	**20**	20	Frequency XI setting	
F096	**25**	25	Frequency XII setting	
F097	**30**	30	Frequency XIII setting	
F098	**35**	35	Frequency XIV setting	
F099	**40**	40	Frequency XV setting	
F100	**45**	45	Frequency XVI setting	
F101	**10**	10	Internally controlled multi-segment speed timer I	0.0 ~ 6500.0s
F102	**10**	10	Internally controlled multi-segment speed timer II	
F103	**0**	0	Internally controlled multi-segment speed timer III	
F104	**0**	0	Internally controlled multi-segment speed timer IV	
F105	**0**	0	Internally controlled multi-segment speed timer V	
F106	**0**	0	Internally controlled multi-segment speed timer VI	
F107	**0**	0	Internally controlled multi-segment speed timer VII	
F108	**0**	0	Internally controlled multi-segment speed timer VIII	
F109	**0**	0	Internally controlled multi-segment speed timer IX	
F110	**0**	0	Internally controlled multi-segment speed timer X	
F111	**0**	0	Internally controlled multi-segment speed timer XI	
F112	**0**	0	Internally controlled multi-segment speed timer XII	
F113	**0**	0	Internally controlled multi-segment speed timer XIII	
F114	**0**	0	Internally controlled multi-segment speed timer XIV	
F115	**0**	0	Internally controlled multi-segment speed timer XV	
F116	**0**	0	Internally controlled multi-segment speed timer XVI	
F117	**0**	0	Internally controlled multi-segment speed memory function (UP/DOWN power fault reserve)	0: Don't remember 1: Remember If F077 also on, will recall value after power off

Protection				
These settings control electrical protection of the VFD and spindle in case of an issue or overloading of the spindle				
F118	**1**	1	Over-voltage stall prevention	0: Disabled 1: Enabled
F119	**155**	155	Stall level during acceleration	0 ~ 200% 0: Disabled
F120	**150**	150	Stall level during constant speed	0 ~ 200%
F121	**5**	5	Deceleration time for stall prevention during constant speed	0.1 ~ 25.5s
F122	**370**	720	Prevent of over-voltage stalling level	200 ~ 800V
F123	**1**	1	Over-torque detection mode	0: At speed, start detecting over torque but continue after detecting 1: At speed, start detecting over torque and stop after detecting 2: While running, detect over torque but continue after detecting 3: While running, detect over torque and stop after detecting
F124	**0**	0	Over-torque detection level	0 ~ 200% 0: Disabled
F125	**1**	1	Over-torque detection time	0.1 ~ 20.0s At half the set time, the multi-function output terminal will actuate with an over-torque alarm
F126	**0**	0	Counter memory after power failure	0: Not memorized 1: Memorized
F127			Pulse counter memory	0 ~ 65000
F128	**1**	1	Cooling fan control	0: Always running 1: Controlled by running command, delayed 30s after turning off
F129	**360**	360	Dynamic braking voltage	0 ~ 800V
Constant-pressure water supply				
These settings are not used				
F130	**0**	0	Number of auxiliary pumps	0 ~ 2
F131	**60**	60	Continuous time of auxiliary pump	1 ~ 9000min Time before alternate to other pump if there are 2
F132	**5**	5	Interlocking time of auxiliary pump	1 ~ 250s Time delay while switching pumps
F133	**60**	60	High-speed operating time	1 ~ 250s Alongside F060
F134	**60**	60	Low-speed operating time	1 ~ 250s Alongside F061
F135	**98**	98	Sleep pressure threshold	1 ~ 120% This value is a percent of the given pressure Sleep needs the hundreds digit of F160 to be on
F136	**30**	30	Sleep delay	1 ~ 250s
F137	**85**	85	Wake-up threshold	1 ~ 150% This value is a percent of the given pressure
F138	**10**	10	Sleep frequency	0.0 ~ 1000.0 Hz
F139	**2**	2	Wake-up delay	1 ~ 250s
Motor				
These settings are used to match the VFD with the specifications of the spindle motor				
F140	2.2	1.5	Rated power of motor	kW set as per motor nameplate
F141	**110**	220	Rated voltage of motor	V set as per motor nameplate
F142	12.5	7	Rated current of motor	A set as per motor nameplate
F143	**2**	4	Number of motor poles	2 ~ 22
F144	**2400**	1450	Rated rotating speed of motor	0 ~ 60000 r/min Set according to the rotating speed at 50Hz
F145	**2**	2	Automatic torque compensation	0.0 ~ 10.0%
F146	**40**	40	Motor no-load current	0 ~ 100%
F147	**0**	0	Motor slip compensation	0 ~ 1.0
F148	**4**	4	Motor slip compensation maximum frequency	0.0 ~ 20.0 Hz
F149	**100**	100	Motor slip compensation filtering time	0 ~ 200ms
F150	**2**	2	AVR function (automatic voltage regulation)	0: Disabled 1: Enabled
F151	**0**	0	Automatic energy-saving function	0.0 ~ 20.0% 0: Disabled
F152	**1**	1	Fault restart time	0.2 ~ 25.0s
F153	**0**	0	Power failure restart	0: Disabled (won't restart after momentary outage) 1: Frequency tracking startup (see F025)
F154	**0.5**	0.5	Allowable outage duration	0.1 ~ 5.0s
F155	**0**	0	Times of fault restart	0 ~ 99 0: Disabled 99: Infinite restart
PID				
These settings are not used				
F156	**10**	10	Proportional constant (P, error value gain)	0.0 ~ 1000.0%
F157	**2**	2	Integration time (I, inverse response speed)	0.1 ~ 3600.0s 0: Disabled

F158	**0**	0	Derivation time (D, attenuation)	0.01 ~ 10.00s 0: Disabled
F159	**50**	50	Target value	0.0 ~ 100.0% See manual for deeper explanation
F160	**10**	10	PID channel setting	Units digit (PID set by) 0: Value of F159 1: AI1 (analog 0-10V) 2: AI2 (analog 0-10V) Tens digit (PID feedback channel) 0: AI1 (analog 0-10V) 1: AI2 (analog 0-10V) 2: PFI Hundreds digit (PID sleep function) 0: Sleep function is prohibited 1: Enable sleep mode 1 (frequency mode) 2: Enable sleep mode 2 (pressure mode) Thousands digit (PID action direction) 0: Positive 1: Negative
F161	**100**	100	PID feedback upper limit (actuate multi-function output)	0 ~ 100%
F162	**0**	0	PID feedback lower limit (actuate multi-function output)	0 ~ 100%
RS485 Communication Parameters				
These settings control the setup of RS485 communication to the VFD				
F163	2	1	Communication address	0 ~ 250 0: Disabled
F164	**2**	2	Communication transmission speed	0: 4800 bit/s 1: 9600 bit/s 2: 19200 bit/s 3: 38400 bit/s
F165	**3**	3	Communication data mode	0: 8N1 for ASCII 1: 8E1 for ACSII 2: 8O1 for ACSII 3: 8N1 for RTU 4: 8E1 for RTU 5: 8O1 for RTU
F166				Reserved
F167	**0**			Reserved
F168	**0**			Reserved
F169	**0**	0	Given decimal point of communication frequency	0: Communication 0201H register adopts 1 bit decimal 1: Communication 0201H register adopts 2 bit decimal See manual for much deeper explanation
Monitoring				
These settings control the display functionality on the VFD of various statuses				
F170	**4**	4	Selection of extension display 1	0: Disabled 1: PID feedback value 2: Running speed 3: PID target value 4: DC bus voltage 5: Heat sink temperature 6: Counter value 7: Output torque 8: Input terminal status 9: AI1 10: AI2 11: PFI
F171	**5**	5	Selection of extension display 2	
F172	**0**	-	Fault clearing	00-10 01: Clear fault (all others reserved for factory use)
F173	**220**	220	Rated voltage of inverter	Set in factory according to inverter model
F174	**7**	7	Rated current of inverter	Set in factory according to inverter model
F175	**0**	0	Inverter type	0: Constant torque 1: Fan model
F176	**0**	0	Inverter frequency standard	0: 50 Hz 1: 60 Hz
F177	-	-	Unexpected error 1	Check fault display, "-" means no fault record
F178	-	-	Unexpected error 2	
F179	-	-	Unexpected error 3	
F180	-	-	Unexpected error 4	
F181	**1.77**	-	Software version number	0 ~ 2.55
F182	**0**	-	Running time	0 ~ 3600s
F183	**10**	-	Cumulative running time	0 ~ 65535h
F184	**1**	1	RPM display factor	0.000 ~ 9.999 Set F170 or F171 = 2 to display running speed

F185	**0**	0	Start up preset display selection	0: Output frequency 1: Setting frequency 2: Output current 3: Output voltage 4: Set by F170 5: Set by F171
F186	**1**	1	PID automatic display enable	0: Display output frequency and set frequency 1: Display PID feedback value and PID set value 2: Display output frequency and PID set value
F187	**1**	1	PID display selection	0: Original percentage 1-bit decimal 1: Display 1 bits after decimal point according to F188 2: Display 2 bits after decimal point according to F188
F188	**100**	100	Display number corresponding to PID value	1 ~ 1000
F189	**1.01**	-	Motor CPU software version number	
Advanced Extended				
Advanced settings pertaining to motor control				
F190	**0**	0	Magnetic flux braking enable	0: Disabled 1: Enabled Can shorten deceleration time with a large inertia
F191	**115**	115	Magnetic flux braking strength	100 ~ 200%
F192	**30**	30	Motor oscillation compensation factor	0 ~ 500
F193	**0**	0	Output open-phase protection	0: Inverter output allowed when the load is out of phase (required for single-phase motors) 1: Inverter output prohibited when the load is out of phase
F194	**0**	0	0 Hz inverter output	0: Inverter output allowed at 0 Hz 1: Inverter output prohibited at 0 Hz
F195	**1**	1	VF separation voltage control	0: Reserved 1: AI1 2: Reserved 3: Potentiometer on keyboard 4: AI2 5-7: Reserved
F196	**300**	300	Acceleration and deceleration time of VF separation voltage	1 ~ 100.00s
F197	**0**	0	Motor reverse operation enable when PID output negative value	0: Disabled 1: Enabled
F198	**0**	0	LSD compensation enable	0: Disabled 1: Enabled
F199	**0**	0	Keyboard UP.DOWN memory function selection	0: Not memorized 1: Memorized
F200	**0**			Reserved