

MicroStrain LXRS Wireless Node				
EEPROM Address	Nomenclature	Valid Ranges	Factory Init Value	Remarks
0	Current Log Page	1-4095	1	Indicates the next flash memory page to be used for datalogging. Note that this EEPROM is firmware controlled, and usually not modified by the developer.
2	Current Page Offset	0-527	0	Indicates the byte offset location for the next datalogging session. When calculating the Atmel's exactly location in memory for downloading, if current page offset is greater than or equal to 264, the real location in memory is current log page = EEPROM 0 * 2 + 1 and Current Page Offset = EEPROM 2 - 264. Otherwise, current log page = EEPROM 0 * 2 and current page offset = EEPROM 2. Note that this EEPROM is firmware controlled, and usually not modified by the developer.
4	Data Sets Stored		0	The number of datalogging sessions (a.k.a. triggers) currently stored in flash memory. Note that this EEPROM is firmware controlled, and usually not modified by the developer.
6	Sensor Trigger Value	0-4096	43690	Used in Sensor Event Driven Trigger (SEDt). Indicates the threshold value for ceiling and floor trigger, or in the case of the slope detectors, this value is used as the "delta".
8	Sensor Trigger Channel	1-8	43690	Used in Sensor Event Driven Trigger (SEDt). Indicates the channel to monitor.

10	Sensor Trigger Type	0,1,2	43690	<p>Used in Sensor Event Driven Trigger (SEDT).</p> <p>. To enable one of the following trigger types, the user must write the appropriate value to this location, and then reset the Node. Once activated, the LED (in the case of a V-Link) will remain on. If this location contains any other value besides the trigger types listed below, then the sensor trigger will remain disarmed. If the sensor trigger is enabled with a valid type, it will remain so after each triggered session, unless the triggered session is set to continuous mode (value of '1' written to memory location 102). Under this circumstance, the sensor trigger is automatically disarmed when the memory is filled, and a value of '1000' is written to memory location 10.</p> <p>Trigger Type Values: 1 - CEILING_TRIGGER_ARMED 2 - FLOOR_TRIGGER_ARMED SENSOR_TRIGGER_DISARMED 0, (any != 1,2) MEM_FULL_DISARMED 1000</p>
12	Active Channel Mask	1-127	1	<p>Sets the channels that will be sampled during streaming, datalogging or LDC modes. The most significant bit controls channel eight, and the least significant bit controls channel 1. To activate a channel set the corresponding bit high (1), and to deactivate a channel, set the corresponding bit low (0). Example: Set channels 1,3 and 4 active by using a value of 13 decimal (b00001101)</p>

14	Datalogging Sample Rate	1-7	1	<p>Sets the sample rate for datalogging.</p> <p>Sample Rate - Corresponding EEPROM Value</p> <p>2048 Hz - 1</p> <p>1024 Hz - 2</p> <p>512 Hz - 3</p> <p>256 Hz - 4</p> <p>128 Hz - 5</p> <p>64 Hz - 6</p> <p>32 Hz - 7</p> <p>for EH-Link Pitchlink and sglink mil it sets the sample rate and values may range to 1Hz</p> <p>16 Hz - 8</p> <p>8 Hz - 9</p> <p>4 Hz - 10</p> <p>2 Hz - 11</p> <p>1 Hz - 12</p>
16	Samples Per Data Set (x100)	1-655	30	<p>Sets the sampling duration for streaming, datalogging and LDC acquisition modes. The entered value is multiplied by a factor of 100, so a value of 1 would result in 100 samples, and a value of 655 would result in 65500 samples. Higher values are not supported, but there are options for continuous data acquisition (see locations 100, 102). Note that all active channels are sampled during one 'node sample', or sweep.</p>
18	Optional Boot Mode	5-Jan	43690	<p>Enables one of five optional boot modes. If one of the values below are programmed to this register, the node will immediately enter that mode upon startup. Please note that this optional boot mode only works for hard resets (i.e. power off then on), it will not work after soft resets. Must have node FW version 4.91+, and base station FW version 1.99+ is recommended.</p> <p>Boot Mode - EEPROM Value</p> <p>LDC_ON_STARTUP - 1</p> <p>STREAM_ON_STARTUP - 2</p> <p>HIGH_SPEED_STREAM_ON_STARTUP - 3</p> <p>DATALOG_ON_STARTUP - 4</p> <p>SLEEP_ON_STARTUP - 5</p> <p>SYNC_SAMPLE_ON_STARTUP - 6</p>

20	Reserved	-	43690	-
22	Reserved	-	43690	-
24	Reserved	-	43690	-
26	PGA Offset 1	0-1023	512	10-bit value that sets the programmable offset of channel 1, allowing the user to balance sensor output and compensate for sensor offset. This value can be automatically tuned by using the auto-balance feature.
28	PGA Offset 2	0-1023	512	10-bit value that sets the programmable offset of channel 2, allowing the user to balance sensor output and compensate for sensor offset. This value can be automatically tuned by using the auto-balance feature.
32	PGA Offset 4	0-1023	512	10-bit value that sets the programmable offset of channel 4, allowing the user to balance sensor output and compensate for sensor offset. This value can be automatically tuned by using the auto-balance feature.
34	LDC Sampling Delay	0-50, 10000	5,5,10 (G,SG,V)	Programmable sampling delay for LDC sampling mode. Sets the duration (in milliseconds) of pulsed power sensor excitation i.e. the amount of time between sensor excitation power up and A/D sampling. Low-impedance sensors with slow rise times can exhibit longer settling time, and thus benefit from a larger delay before sampling. Smaller delay values reduce power consumption during LDC. Note that this value only applies to sample rates less than 32 Hz, since sensor excitation power is applied full time for sample rates of 32 Hz and above. A value of 10,000 may be entered into this location to provide full time excitation power for sample rates below 32 Hz.
36	TDMA Slot Address	-	43690	Network configuration value set by Node Commander before starting a synchronized sampling session (continuous or burst)
38	LDC Action	1-3	43690	Selects the sampling action for low duty cycle mode. Must have node FW version 4.97+, and base station FW version 2.00+ is recommended. Log and Transmit is not yet supported by Firmware 7.x nodes. Current options are: Action - Value Log only - 1 Transmit only - 2 Log and transmit - 3 If a value is entered outside the range (1-3), the node defaults to transmit only mode.

40	payload packet size	1-48	1	payload packet size (1-48 samples)
42	Reserved	-	43690	MN custom A1 Upper Gain Upper 16 bits
44	Reserved	-	43690	MN custom A1 Lower Gain Lower 16 bits
46	Reserved	-	43690	MN custom Upper Offset Upper 16 bits
48	Reserved	-	43690	MN custom A0 Lower Offset Lower 16 bits
50	Node Address	1-65534	-	Sets the node address. Note that the node needs to be reset (powered off and on) to activate the new address. The value 65535 should never be programmed into this EEPROM location. Address 65535 is a special broadcast address that can be used to send commands to all nodes. This is useful for group datalogging, streaming, LDC, sleep, etc..
52	Reserved	-	43690	-
54	Reserved	-	43690	-
56	Calibration	0,1-4,11-14	43690	Controls the onboard calibration feature for SG-Link and V-Link. Values of 1,2,3 and 4 will generate a calibration waveform on channels 1,2,3 and 4 respectively, during the next streaming session. This waveform automatically forces a 1000 sample duration stream, with the on-board resistor applied during the middle of the stream (off-on-off). After one waveform, this EEPROM location is automatically reset to zero. Note that continuous streaming is disabled when the is enabled. Values of 11,12, 13 and 14 allow the user to stream with the -resistor applied during the entire stream. 11, 12, 13 and 14 correspond to channels 1,2,3 and 4 respectively.
58	DAC1	-	43690	custom
60	DAC2	-	43690	custom
62	DAC3	-	43690	custom
64	DAC4	-	43690	custom

66	Sleep Interval	512-7680	1536	<p>Defines the listen-for-wakeup interval for the node. The following equation can be used to determine the specific value needed for a wake interval defined in seconds: Value = $(7680 / \text{Desired_Interval_in_seconds})$ For example, if the user wants the node to check for a wake command every 10 seconds, then this location would be programmed with a value of $(7680/10) = 768$. The minimum wake interval is internally limited to one second (a value of 7680), and the maximum wake interval is limited to approximately 15 seconds (a value of 512). Any values outside of this range will be automatically truncated. NOTE: After modifying this value, the node must be reset in order for the changes to take effect.</p>
68	TDMA Frame Repeat	-	43690	custom
70	User Inactivity Timeout	5-65535	7200	<p>Defines the approximate length of time necessary before a node can enter sleep mode, if there is no user activity. There is no conversion factor required for this value, the user simply needs to enter the desired timeout in seconds. The minimum value is internally limited to 5 seconds, and any value below this will be truncated. NOTE: After modifying this value, the node must be reset in order for the changes to take effect.</p>

72	LDC sample rate	102 - 123	1	<p>Sets the sample rate for synchronized sampling (continuous and burst) and Legacy LDC.</p> <p>Rate, EEPROM Value</p> <p>"2048 Hz", 102</p> <p>"1024 Hz", 103</p> <p>"512 Hz", 104</p> <p>"256 Hz", 105</p> <p>"128 Hz", 106</p> <p>"64 Hz", 107</p> <p>"32 Hz", 108</p> <p>"16 Hz", 109</p> <p>"8 Hz", 110</p> <p>"4 Hz", 111</p> <p>"2 Hz", 112</p> <p>"1 Hz", 113</p> <p>"1 sample per 2 sec", 114</p> <p>"1 sample per 5 sec", 115</p> <p>"1 sample per 10 sec", 116</p> <p>"1 sample per 30 sec", 117</p> <p>"1 sample per 60 sec", 118</p> <p>"1 sample per 2 min", 119</p> <p>"1 sample per 5 min", 120</p> <p>"1 sample per 10 min", 121</p> <p>"1 sample per 30 min", 122</p> <p>"1 sample per 60 min", 123</p>
30	PGA Offset 3	0-1023	512	<p>10-bit value that sets the programmable offset of channel 3, allowing the user to balance sensor output and compensate for sensor offset.</p> <p>This value can be automatically tuned by using the auto-balance feature.</p>
74	Auto Balance Interval	-	43690	custom
76	LDC packet format	1,2	1	<p>Selects the LDC packet protocol.</p> <p>EEPROM Value, Packet Format</p> <p>1, 2-byte bits mode (int16)</p> <p>2, 4-byte floating point mode (int32)</p> <p> *Note: Floating point mode relies on the channel actions conversion coefficients stored in EEPROM locations _ - _.</p>

78	Sniff Duration	1-50	43690	Allows the user to adjust the length of the sleep mode "sniff" window, or the amount of time that the node listens for a wake packet (ping) from the base station. Enter the desired value in milliseconds, valid range from 1-50. If a value higher than 50 is entered, the node will default to 10 ms. If 0 is entered, the node will default to 10 ms. Lower sniff durations help to reduce the average current consumption during sleep mode, but may be more difficult to wake. Values of 1 and 2 ms have been tested with the new "rapid wake" feature on the base station.
80	Manual Trigger Config	0,1,1000	43690	<p>This function allows the user to trigger a datalogging session by activating an external switch attached to the programming port of an Node Commander Node. This option requires a special header, call for pricing / availability.</p> <p>To enable one of the following trigger types, the user must write the appropriate value to this location, and then reset the Node. If this location contains any other value besides the valid trigger types listed below, then the manual trigger option will remain disabled. If the manual trigger is enabled with a valid type, it will remain so after each triggered session, unless the memory is full as result of datalogging, i.e. while using continuous mode (value of '1' written to memory location 102). Under this circumstance, the sensor trigger is automatically disarmed when the memory is filled, and a value of '1000' is written to memory location 80.</p> <p>Manual Trigger Type Values:</p> <p>NORMALLY_OPEN_SWITCH 0 NORMALLY_CLOSED_SWITCH 1 SENSOR_TRIGGER_DISARMED 43690, (any != 0,1) MEM_FULL_DISARM_FLAG 1000</p>
82	Clock Timer Control	0-15	43690	Internal Use only
84	Reserved	-	43690	-
86	Reserved	-	43690	-
90	RF Channel #	11-26	25	Sets the radio frequency channel. Note that the node must be reset for the change to take effect.
92	RF Channel B #	11-26	25	custom

94	Transmit Power Level	-	65535	<p>Sets the programmable transmit output power of the radio. By default, the radio is set to 0 dBm. If you want to reduce this level, write a value of 100 to the MSB of this register, and then write one of the following values in the LSB. (EEPROM Value, Output Power Level)</p> <p>31, 0 dBm 27, -1 dBm 23, -3 dBm 19, -5 dBm 15, -7 dBm 11, -10 dBm 7, -15 dBm 3, -25 dBm</p> <p>XRS nodes: 25619, 16 dBm Extended Range 25615, 10 dBm Standard Range 25607, 0 dBm Low Power</p>
96	Return Node Address	4660	4660	Important. Must be set to 4660.
98	Find Trigger Number	-	43690	legacy
100	Continuous Streaming/LDC	0,1	0	<p>Enables non-stop sampling for both streaming and LDC. Node will only stop sampling when turned off.</p> <p>1 - enabled, any other value disabled</p>
102	Continuous Datalogging Flag	0,1	0	<p>Enables non-stop sampling for datalogging. Node will stop sampling when memory is full.</p> <p>1 - enabled, any other value disabled</p>
88	Radio Broadcast Filter	-	43690	<p>Prevent node from hearing "broadcast" packets in certain modes.</p> <p>0 (default), Never filter broadcast packets 1, Filter broadcast packets during sleep</p>
104	Reserved	-	43690	-
106	Reserved	-	43690	-

108	FW Version	1-65535	xxx	Lists the current node firmware version. This location is automatically populated by the microcontroller on startup. The value can be read as MSB.LSB. For example, if the location reads 1028, the firmware version is 4.04.
110	Reserved	-	43690	-

112	Model Number	XXXX (See remarks)	XXXX	<p>Identifies the node type. Programmed at factory, do not change.</p> <p>2313 G-Link 2G 2314 G-Link 10G 2413 SG-Link 1CH 2416 SG-Link 2CH 2414 SG-Link OEM 2513 V-Link 2618 TC-Link 6CH 2620 TC-Link 1CH 2619 TC-Link OEM 2990 ENV-Link 2998 EH-Link 6101 LatchPin 2989 HS-Link 2813 DVRT-Link 2418 G-Link mXRS 2G 2419 G-Link mXRS 10G 2417 SG-Link mXRS 2420 SG-Link OEM-S 2421 DVRT-Link mXRS 2423 SG-Link OEM mXRS 2424 PROX-Link 2425 SG-Link MIL 2426 SG-Link MIL mXRS 2997 Pitch-Link 2427 TC-Link 6CH mXRS 2993 ENV-Link-Pro mXRS 2428 V-Link mXRS 2622 TC-Link 1CH mXRS 2623 TC-Link 3CH mXRS 2624 ENV-Link-Mini mXRS</p>
114	Serial ID	0-9999	xxx	<p>Lists the serial ID for a node. Combine with the model number to obtain the full serial number, i.e. A V-Link with id 735 would have a SN = 2513-0735</p>

116	Expanded Memory Flag	8191	xxx	Indicates the maximum number of pages on the flash memory. All currently produced nodes produced are 2 MB devices, with 8191 pages. This value is populated by the microcontroller on startup, based on the response from the flash chip. Values other than 8191 indicate an error with the flash memory.
118	Radio ID	31	31	Currently 31 for all 2.4 GHz nodes.
120	Microcontroller ID	4	4	PIC18F4620, 32 PIC18F46K20, 33 PIC18F47K90, 34
122	Reserved	-	43690	-
124	Reserved	-	43690	-
126	Reserved	-	43690	-
128	Ch 1 HW Gain	0-255	0	(V-Link, SG-Link only) Sets the gain for channel 1 using the following equations: V-Link Gain = $10.0 - (1020000.0 / (20.0 * \text{Bit Value} - 5151.0))$ SG-Link Gain = $7.262 * (\text{Bit Value} + 0.255)$ Valid Range for V-Link is 0-247, corresponding to HW gain of 208-4844 Valid Range for SG-Link is 14-248, corresponding to HW gain of 100-1831
128	TC-Link Gain	(TC-Link only)	5	
130	Ch 2 HW Gain	0-255	0	(V-Link only) Sets the gain for channel 2 using the following equation: Gain = $10.0 - (1020000.0 / (20.0 * \text{Bit Value} - 5151.0))$ Valid Range is 0-247, corresponding to HW gain of 208-4844
130	TC-Link Filter	0-12	4	(TC-Link Only)
132	Ch 3 HW Gain	0-255	0	(V-Link only) Sets the gain for channel 3 using the following equation: Gain = $10.0 - (1020000.0 / (20.0 * \text{Bit Value} - 5151.0))$ Valid Range is 0-247, corresponding to HW gain of 208-4844
134	CH 4 HW Gain	0-255	0	(V-Link only) Sets the gain for channel 4 using the following equation: Gain = $10.0 - (1020000.0 / (20.0 * \text{Bit Value} - 5151.0))$ Valid Range is 0-247, corresponding to HW gain of 208-4844
136	Reserved	-	43690	-
138	Reserved	-	43690	-
140	Reserved	-	43690	-
142	Reserved	-	43690	-

144	Reserved	-	43690	-
146	Reserved	-	43690	-
148	Reserved	-	43690	-
150	Ch 1 Action ID		43690	See Data Communications Protocol (DCP)
152	Ch 1 Action Gain		43690	See DCP
154	Ch 1 Action Gain		43690	See DCP
156	Ch 1 Action Offset		43690	See DCP
158	Ch 1 Action Offset		43690	See DCP
160	Ch 2 Action ID		43690	See DCP
162	Ch 2 Action Gain		43690	See DCP
164	Ch 2 Action Gain		43690	See DCP
166	Ch 2 Action Offset		43690	See DCP
168	Ch 2 Action Offset		43690	See DCP
170	Ch 3 Action ID		43690	See DCP
172	Ch 3 Action Gain		43690	See DCP
174	Ch 3 Action Gain		43690	See DCP
176	Ch 3 Action Offset		43690	See DCP
178	Ch 3 Action Offset		43690	See DCP
180	Ch 4 Action ID		43690	See DCP
182	Ch 4 Action Gain		43690	See DCP
184	Ch 4 Action Gain		43690	See DCP
186	Ch 4 Action Offset		43690	See DCP
188	Ch 4 Action Offset		43690	See DCP
190	Ch 5 Action ID		43690	See DCP
192	Ch 5 Action Gain		43690	See DCP
194	Ch 5 Action Gain		43690	See DCP
196	Ch 5 Action Offset		43690	See DCP
198	Ch 5 Action Offset		43690	See DCP
200	Ch 6 Action ID		43690	See DCP
202	Ch 6 Action Gain		43690	See DCP
204	Ch 6 Action Gain		43690	See DCP
206	Ch 6 Action Offset		43690	See DCP
208	Ch 6 Action Offset		43690	See DCP
210	Ch 7 Action ID		43690	See DCP
212	Ch 7 Action Gain		43690	See DCP
214	Ch 7 Action Gain		43690	See DCP

216	Ch 7 Action Offset		43690	See DCP
218	Ch 7 Action Offset		43690	See DCP
220	Ch 8 Action ID		43690	See DCP
222	Ch 8 Action Gain		43690	See DCP
224	Ch 8 Action Gain		43690	See DCP
226	Ch 8 Action Offset		43690	See DCP
228	Ch 8 Action Offset		43690	See DCP
230	Bootloader Page Address		43690	do not change
232	Bootloader Enable Flag		43690	do not change
234	Bootloader Checksum		43690	do not change
236	Bootloader Version		xxx	Bootloader version number. Read as MSB.LSB
238	Bootloader Options		43690	do not change
240	Bootloader Counter		43690	indicates the number of times that the bootloader has been used.
242	Reserved	-	43690	-
244	Reserved	-	43690	-
246	Reset Counter		43690	Value increments each time the node turns on (or resets).
248	Brown Out Reset Enable	0,1	1	Enables / disables the brown out reset function of the microcontroller during sleep. If a value of 0 is used, the brown out reset is disabled during sleep. This will result in the lowest sleep power consumption, but it may be difficult to turn off or reset a sleeping node. (The power switch may need to be placed in the off position for up to 30 seconds). If any non zero value is written, the brown out reset will be enabled during sleep. This will add approximately 40 uA to the overall sleep current, but the node will turn off immediately when the switch is powered off.
250	Cycle Power	0,1,2	43690	Allows for wireless reset of node and radio. Write a value of 1 to reset the node. Write a value of 2 to reset the radio. Resets take effect immediately.

252	Node Test	LSB=7-10, MSB=1-255	43690	<p>This memory location allows access to testing features for both the node and the base station.</p> <p>Radio Test: After writing one of the specific test values listed below, the hardware must be reset to enter radio test mode. The base or node will then activate test mode for a fixed period of time, after which the node or base will resume normal operations.</p> <p>LSB Value (decimal) Function</p> <p>07 Transmit non-modulated carrier for 500 seconds. 08 Transmit modulated carrier for 500 seconds. 09 Transmit non-modulated carrier for X seconds. 10 Transmit modulated carrier for X seconds.</p> <p>!= {7,8,9,10} No radio test.</p> <p>* If the LSB is set to {9,10} then the value of the MSB will be read to determine X, the programmable duration. X can range from 1-255 seconds. For example, if you want a non-modulated radio test that lasts for 150 seconds, you program the MSB=150, and the LSB=9. If you are using Node Commander to write this two byte value, you must first convert it to decimal: i.e. $150 * 256 + 9 = 38409$</p>
254	SUMO - Startup Mode Over	0,1,100	-	<p>Stores values used in the start up mode override routine (SUMO). SUMO provides the user with a manual method to exit special startup modes. Sumo can be triggered by first turning the node off, and then powering the node in an on-off-on sequence, similar to a double-click. This will place the node in a safe startup mode, and prevent automatic execution of the following:</p> <ul style="list-style-type: none"> - All optional boot modes enabled via EEPROM location 18 - Over-aggressive sensor event driven triggers. <p>Under normal operation, this register is used internally by the microcontroller to determine if the user has generated a SUMO double-click. The user can also disable SUMO by writing a value of 100 to this location. Firmware version 4.98+ is required for bypassing optional boot modes, 4.99+ is required for bypassing SEDT.</p>