
Table of Contents

	Navigation / Document Conventions	v
1	Introduction	1
	Redundancy Board	1
	Triple Redundancy	1
	Software Requirements.....	2
	Features.....	2
	Package Contents.....	3
2	Installation	5
	Weights and Overall Dimensions.....	6
	Power.....	6
	Min/max input voltages	7
	Servo Power	8
	Connectors.....	8
	Terminating Leads Of J3/J4 Wiring Harnesses	9
	MP2128 ^{3X} StatusLights	9
	MP2128 ^{3X} Redundancy Feature.....	10
3	Loading Firmware	13
	Correct Firmware type for Autopilot.....	13
	Physical connections	13
	Firmware update procedure.....	13
4	Terminology.....	16
5	Failure Detection and Board Switching.....	19
	Connected Board	19
	Sensor Failure.....	19
6	Synchronisation	23
	Sensor Values	23
	Communication Link.....	23
	Fly Files.....	24
	Other Synchronisation Details	25
	VRS Files	25
7	Communication Ports	27
	Serial Com Ports.....	27
	Serial Protocols.....	28
	RADA	28
	RADB	28
	APCOM_1b/2b/3b	28
	COM1/2/3_RS	29
	MPCOM4_1b/2b/3b.....	29

Triple Redundant **Autopilot**
Installation & Operation

8	Servos	31
9	High Current Drivers (Relays)	33
	Controlling Relay Channels	33
	Relay Specifications	34
	Relay Status	35
10	ADC Inputs	37
11	CAN Bus	39
12	GPIO	41
	The MP2128 ^{3x} GPIO Channels	41
	TPU & GPIO Channels	42
13	VRS File Configuration	45
	MP3X- Specific Fields	45
	Mounting Orientation Configuration	45
	Differences Between VRS Files	46
14	Manual Flight (LRC-PIC)	49
	LRC-PIC	49
	PPM Encoder	49
	LRC Base Configuration	50
15	HORIZON^{mp} Setup	51
16	qHWIL	53
17	HORIZON^{mp} Instruments	55
	Status Lights	55
	HORIZON ^{MP} Instruments	57
18	How to Fail and disable sensor checks on boards	59
	Disabling/Enabling a Board	59
	Disable sensor checks on a board	59
19	VRS Editing/Transmission	61
	Upload VRS	61
	Downloading a VRS	63
	Editing a VRS	64
20	Plug-ins – Special Behaviour	65
	Sensor Monitor Plug-in	65
	Reading Fields	65
	Writing Fields	66
	Error Monitor Plug-in	66
21	Compass Calibration	69

Installation & Operation

22	Using Differential GPS with the NovAtel GPS Receiver	71
23	Troubleshooting	73
	Power up	73
	Power up	75
	(continued)	75
	Vibration	75
	Error on RC CH5 Input	76
	LRC-PIC mode	76
	GPS.....	76
	HyperTerminal	78
	HORIZON ^{mp}	78
	Loss of communication after transmitting VRS or flashing autopilot.....	79
24	Appendix.....	80
	MP3X-Specific Fields	80
	Status Field Bit Details	85
	Redundancy Status Bits	86
	MP3X Status [Left/Right]	86
	MP3X Comm Status [Left/Right]	86
	Communication statistics.....	88
	Connector Pins.....	89
	Wiring Harness Diagrams.....	94