Ordinal	PORT	PIN	176-pin STM32F765IIK Signal	176-pin STM32F765IIK FMU USAGE	Functional Description	
0	PA	0	ADC1_IN0	BAT1_V	Analog INPUT: Battery (aka Brick) voltage sense, typically resistive divider on Power Brick module with low source impedance	
1	PA	1	ADC1_IN1	BAT1_I	Analog INPUT: Battery (aka Brick) current sense, typically low side sense scaled by gain factor on Power Brick module	
2	PA	2	ADC1_IN2	BAT2_V	Analog INPUT: Battery (aka Brick) voltage sense, typically resistive divider on Power Brick module with low source impedance	
3	PA	3	ADC1_IN3	BAT2_I	Analog INPUT: Battery (aka Brick) current sense, typically low side sense scaled by gain factor on Power Brick module	
4	PA	4	ADC1_IN4	ADC1_SPARE_2	Analog INPUT: Can be used to sense any additonal analog voltage or current - but will be board dependent. Leave NC if not used	
5	PA	5	TIM2_CH1_IN	FMU_CAP1	Digital INPUT: Typicaly used for PWM input or edge capture, route to SERVO Header - See protection note	
6	PA	6	SPI1_MISO	SPI1_MISO_SENSOR1	Digital INPUT: SPI Bus 1 Master In Slave Out for Sensor bus 1 - Internal Sensors	
7	PA	7	TIM14_CH1	HEATER	Digital OUTPUT: Active High, Open Circuit state should be OFF, PWM or GPIO, connected to N-Channel FET to switch on and off resistor as heater, can be duty cycle modulated to set average power	See Layout Recomendation
8	PA	8	CAN3_RX	CAN3_RX	Digital INPUT: Connected to CAN Transceiver RXD signal - dronecode recommended TJA1051TK3/118 with Silent control (A HIGH level on pin S selects Silent mode TX is disabled, RX is active)	
9	PA	9	USB_OTG_FS_VBUS	VBUS	Digital INPUT: Provides the VBUS sensing feature for the Flight Managment Unit (FMU), voltage presence used to enter bootloader when FMU is connected to USB, recommend NUF2042XV6 or equivalent terminator w/ ESD protection	
10	PA	10	TIM1_CH3	FMU_CH2	Digital I/O: Output: PWM, GPIO, Input: PWM Input or capture route to SERVO Header - See protection note	
11	PA	11	USB_OTG_FS_DM	USB_DM	Digital I/O: USB D Minus, recommend NUF2042XV6 or equivalent terminator w/ ESD protection	
12	PA	12	USB_OTG_FS_DP	USB_DP	Digital I/O: USB D Plus, recommend NUF2042XV6 or equivalent terminator w/ ESD protection	
13	PA	13	SWDIO	JTAG-SWDIO	Digital I/O: Connected to Pin 4 of the Dronecode Debug connector (JST SM06B) for FMU. See https://wiki.dronecode.org/workgroup/connectors/start?s[]=connector	
14	PA	14	SWCLK	JTAG-SWCLK	Digital INPUT: Connected to Pin 5 of the Dronecode Debug connector (JST SM06B) for FMU. See https://wiki.dronecode.org/workgroup/connectors/start?s[]=connector	
15	PA	15	CAN3_TX	CAN3_TX	Digital OUTPUT: Connected to CAN Transceiver TXD signal - dronecode recommended TJA1051TK3/118 with Silent control (A HIGH level on pin S selects Silent mode TX is disabled, RX is active)	
16	PB	0	ADC1_IN8	RSSI_IN	Analog INPUT: RSSI connected through 10K series resistor with TVS protection at connector after series 220R to connector pin (May Also be used as TBD TIM3_CH3 Capture Digital INPUT)	See circuit Recomendation PX4IO conditional
17	PB	1	TIM3_CH4	nLED_RED	Used for status, may be a discrete LED. Does not require super a bright LED (Driven with OPEN DRAIN ANODE can be V5 or V3.3) Digital OUTPUT: Active Low, PWM capable pin to drive onboard Red LED (Single Red LED or R of RGB LED)	
18	PB	2			available Digital GPIO	
19	PB	3	TIM2_CH2_IN	FMU_CAP2	Digital INPUT: Typicaly used for PWM input or edge capture, route to SERVO Header - See protection note	
20	PB	4	PB4	SPI1_DRDY1_ICM20689	Digital INPUT: Ready Interrupt from ICM20689 if sensor present, NC if sensor not present	
21	PB	5	SPI6_MOSI	SPI6_MOSI_EXTERNAL2	Digital OUTPUT: SPI Bus 6 Master Out Slave In for External bus 2 - External	
22	PB	6	USART1_TX	USART1_TX_GPS1	Digital OUTPUT: USART1 TX is used for GPS1	
23	PB	7	USART1_RX	USART1_RX_GPS1	Digital INPUT: USART1 RX is used for GPS1	

Ordinal	PORT	PIN	176-pin STM32F765IIK Signal	176-pin STM32F765IIK FMU USAGE	Functional Description
24	PB	8	I2C1_SCL	I2C1_SCL_GPS1	Digital OUTPUT: I2C Bus 1's Clock paired with GPS1
25	PB	9	I2C1_SDA	I2C1_SDA_GPS1	Digital I/O: I2C Bus 1's Data paired with GPS1
26	PB	10	PB10	nSPI5_RESET_EXTERNAL1	Digital OUPUT: Reserved for SPI 5 reset or power control of external sensor
27	PB	11	TIM2_CH4_IN	FMU_CAP3	Digital INPUT: Typicaly used for PWM input or edge capture, route to SERVO Header - See protection note
28	PB	12	CAN2_RX	CAN2_RX/UART5_RX_ESC	Digital INPUT: Connected to CAN Transceiver RXD signal - dronecode recommended TJA1051TK3/118 with Silent control (A HIGH level on pin S selects Silent mode TX is disabled, RX is active) May be used as UART5 RX for Serial ESC
29	PB	13	CAN2_TX	CAN2_TX/UART5_TX_ESC	Digital OUTPUT: Connected to CAN Transceiver TXD signal - dronecode recommended TJA1051TK3/118 with Silent control (A HIGH level on pin S selects Silent mode TX is disabled, RX is active) May be used as UART5 TX for Serial ESC
30	PB	14	PB14	SPI1_DRDY2_BMI055_GYRO	Digital INPUT: Ready Interrupt from BMI055 Gyroscope INT3 if sensor present, NC if sensor not present
31	PB	15	PB15	SPI1_DRDY3_BMI055_ACC	Digital INPUT: Ready Interrupt from BMI055 Accelerometer INT1 if sensor present, NC if sensor not present
32	PC	0	ADC1_IN10	SCALED_V5	Analog INPUT: V5 Input voltage sense, resistive divide by 2 using 10K 1% resistors
33	PC	1	ADC1_IN11	SCALED_VDD_3V3_SENSORS	Analog INPUT: Sensor 3.3 V voltage sense, resistive divide by 2 using 10K 1% resistors
34	PC	2	ADC1_IN12	HW_VER_SENSE	Analog INPUT: Used to determine Board Version by sensing the R1-o-R2 node of the Resistive divider, see HW REV and VER ID tab
35	PC	3	ADC1_IN13	HW_REV_SENSE	Analog INPUT: Used to determine Board Revision by sensing the R1-o-R2 node of the Resistive divider, see HW REV and VER ID tab
36	PC	4	ADC1_IN14	ADC1_SPARE_1	Analog INPUT: Can be used to sense any additonal analog voltage or current - but will be board dependent. Leave NC if not used
37	PC	5	PC5	SPI1_DRDY4_ICM20602	Digital INPUT: Ready Interrupt from ICM20602 Gyroscope if sensor present, NC if sensor not present
38	PC	6	TIM3_CH1	nLED_GREEN	Used for status, may be a discrete LED. Does not require super a bright LED (Driven with OPEN DRAIN ANODE can be V5 or V3.3) Digital OUTPUT: Active Low, PWM capable pin to drive onboard Green LED (Single Green LED or G of RGB LED)
39	PC	7	TIM3_CH2	nLED_BLUE	Used for status, may be a discrete LED. Does not require super a bright LED (Driven with OPEN DRAIN ANODE can be V5 or V3.3) Digital OUTPUT: Active Low, PWM capable pin to drive onboard Blue LED (Single blue LED or B of RGB LED)
40	PC	8	SDMMC1_D0	SDMMC1_D0	Digital I/O: SDCARD D0 interface signal (requires 100K pull up to VDD_3V3_SDCARD)
41	PC	9	SDMMC1_D1	SDMMC1_D1	Digital I/O: SDCARD D1 interface signal (requires 100K pull up to VDD_3V3_SDCARD)
42	PC	10	SDMMC1_D2	SDMMC1_D2	Digital I/O: SDCARD D2 interface signal (requires 100K pull up to VDD_3V3_SDCARD)
43	PC	11	SDMMC1_D3	SDMMC1_D3	Digital I/O: SDCARD D3 interface signal (requires 100K pull up to VDD_3V3_SDCARD)
44	PC	12	SDMMC1_CLK	SDMMC1_CLK	Digital OUTPUT: SDCARD CLK interface signal, NO PULL UP
45	PC	13	PC13	SPI1_DRDY5_BMI055_GYRO	Digital INPUT: Ready Interrupt from BMI055 Gyroscope INT4 if sensor present, NC if sensor not present
46	PC	14	OSC32_IN	32KHZ_IN	Digital INPUT: 32.768 KHz crystal. Do not populate but route per data sheet
47	PC	15	OSC32_OUT	32KHZ_OUT	Digital OUTPUT: 32.768 KHz crystal. Do not populate but route per data sheet
48	PD	0	UART4_RX	UART4_RX_I2C2	Digital INPUT: UART4 RX may be paried with I2C2 - /dev/ttyS3 may be used for Non flow controlled telem port or optical sensor

Ordinal	PORT	PIN	176-pin STM32F765IIK Signal	176-pin STM32F765IIK FMU USAGE	Functional Description	
49	PD	1	UART4_TX	UART4_TX_I2C2	Digital OUTPUT: UART4 TX may be paried with I2C2 - /dev/ttyS3 may be used for flow controlled telem port or optical sensor	
50	PD	2	SDMMC1_CMD	SDMMC1_CMD	Digital I/O: SDCARD CMD interface signal (requires 100K pull up to VDD_3V3_SDCARD)	
51	PD	3	USART2_CTS	USART2_CTS_TELEM1	Digital INPUT: USART2 CTS TELEM1 (with full flow control) /dev/ttyS1	
52	PD	4	USART2_RTS	USART2_RTS_TELEM1	Digital OUTPUT: USART2 RTS TELEM1 (with full flow control) /dev/ttyS1	
53	PD	5	USART2_TX	USART2_TX_TELEM1	Digital OUTPUT: USART2 TX TELEM1 (with full flow control) /dev/ttyS1	
54	PD	6	USART2_RX	USART2_RX_TELEM1	Digital INPUT: USART2 RX TELEM1 (with full flow control) /dev/ttyS1	
55	PD	7	SPI1_MOSI	SPI1_MOSI_SENSOR1	Digital OUTPUT: SPI Bus 1 Master Out Slave In for Sensor bus 1 - Internal Sensors	
56	PD	8	USART3_TX	USART3_TX_TELEM2	Digital OUTPUT: USART3 TX TELEM2 (with full flow control) /dev/ttyS2	
57	PD	9	USART3_RX	USART3_RX_TELEM2	Digital INPUT: USART3 RX TELEM2 (with full flow control) /dev/ttyS2	
58	PD	10	PD10	SPI1_DRDY6_BMI055_ACC	Digital INPUT: Ready Interrupt from BMI055 Accelerometer INT2 if sensor present, NC if sensor not present	
59	PD	11	USART3_CTS	USART3_CTS_TELEM2	Digital INPUT: USART3 CTS TELEM2 (with full flow control) /dev/ttyS2	
60	PD	12	USART3_RTS	USART3_RTS_TELEM2	Digital OUTPUT: USART3 RTS TELEM2 (with full flow control) /dev/ttyS2	
61	PD	13	TIM4_CH2	FMU_CH5	Digital I/O: Output: PWM, GPIO, Input: PWM Input or capture route to SERVO Header - See protection note	
62	PD	14	TIM4_CH3	FMU_CH6	Digital I/O: Output: PWM, GPIO, Input: PWM Input or capture route to SERVO Header - See protection note	
63	PD	15	PD15	SPI5_DRDY7_EXTERNAL1	Digital INPUT: Ready Interrupt from TBD on SPI 5 if sensor present, NC if sensor not present	
64	PE	0	UART8_RX	UART8_RX	Digital INPUT: UART8 RX /dev/ttyS6 Reserved for connection to PX4IO	
65	PE	1	UART8_TX	UART8_TX	Digital OUTPUT: UART8 TX /dev/ttyS6 Reserved for connection to PX4IO	
66	PE	2	SPI4_SCK	SPI4_SCK_SENSOR2	Digital OUTPUT: SPI Bus 4 Clock for Sensor bus 2 - Internal Sensors (When present, the MS56xx device shall be the only device on this bus since SPI bus activity during ADC conversion degrades sensor performance)	
67	PE	3	PE3	VDD_3V3_SENSORS_EN	Digital OUPUT: Active High enable to V3.3 regulator for Sensors (Prefered LP5907-Q1 with internal enable Pull down and internal output shunt)	Regulator choice TBD
68	PE	4	PE4	VDD_3V3_SPEKTRUM_POWER_EN	Digital OUPUT: Active High enable to V3.3 regulator for Spektrum Satellite Receiver (AP7365-33WG-7 With External enable Pull down and External Voltage output shunt)	Regulator choice TBD PX4IO conditional
69	PE	5	TIM9_CH1	BUZZER_1	Digital OUPUT:Used to driver a piezo (never use magnetic transduces unless fixed on PCB not adjacent to Magnetometer)	
70	PE	6	SPI4_MOSI	SPI4_MOSI_SENSOR2	Digital OUTPUT: SPI Bus 4 Master Out Slave In for Sensor bus 2 - Internal Sensors (When present, the MS56xx device shall be the only device on this bus since SPI bus activity during ADC conversion degrades sensor performance)	
71	PE	7	PE7	DRDY8	Digital INPUT: Ready Interrupt from TBD if sensor present, NC if sensor not present	
72	PE	8	UART7_TX	UART7_TX_DEBUG	Digital OUTPUT: UART7 TX /dev/ttyS5 Connected to Pin 2 of the Dronecode Debug connector (JST SM06B) for FMU. See https://wiki.dronecode.org/workgroup/connectors/start?s[]=connector	PX4IO conditional
73	PE	9	TIM1_CH1	FMU_CH4	Digital I/O: Output: PWM, GPIO, Input: PWM Input or capture route to SERVO Header - See protection note	
74	PE	10	PE10	SAFETY_SWITCH_IN	Digital INPUT: Connected to Active High Safety switch, must have 1.5K pull down at connector. FMU samples this signal when PX4IO not populated but should be wired in parallel	PX4IO conditional
75	PE	11	TIM1_CH2	FMU_CH3	Digital I/O: Output: PWM, GPIO, Input: PWM Input or capture route to SERVO Header - See protection note	

Ordinal	PORT	PIN	176-pin STM32F765IIK Signal	176-pin STM32F765IIK FMU USAGE	Functional Description	
76	PE	12	PE12	nSAFETY_SWITCH_LED_OUT	Digital OUTPUT: Connected to Safety switch LED's cathode via 68R. Driven by FMU when PX4IO not populated but should be wired in parallel	PX4IO conditional
77	PE	13	SPI4_MISO	SPI4_MISO_SENSOR2	Digital INPUT: SPI Bus 4 Master In Slave Out for Sensor bus 2 - Internal Sensors (When present, the MS56xx device shall be the only device on this bus since SPI bus activity during ADC conversion degrades sensor performance)	
78	PE	14	TIM1_CH4	FMU_CH1	Digital I/O: Output: PWM, GPIO, Input: PWM Input or capture route to SERVO Header - See protection note	
79	PE	15	PE15	nVDD_5V_PERIPH_OC	Digital INPUT: Active low input from BQ24315 to indicate the 5V PERIPHERAL supply is in Over-Current condition. 47K pullup to VDD_3V3_FMU at BQ24315 /FAULT output with series 47K resistor to FMU for protection	
80	PF	0	I2C2_SDA	I2C2_SDA_UART4	Digital I/O: I2C Bus 2's Data, may be paired with UART4 but is used as External EXPANSION1	
81	PF	1	I2C2_SCL	I2C2_SCL_UART4	Digital OUTPUT: I2C Bus 2's Clock, may be paired with UART4 but is used as External EXPANSION1	
82	PF	2	PF2	SPI1_CS1_ICM20689	Digital OUPUT: Active Low SPI Chip Select for ICM20689 if present (May be reassigned to other IC if WHO AM I is unique)	
83	PF	3	PF3	SPI1_CS2_ICM20602	Digital OUPUT: Active Low SPI Chip Select for ICM20602 if present (May be reassigned to other IC if WHO AM I is unique)	
84	PF	4	PF4	SPI1_CS3_BMI055_GYRO	Digital OUPUT: Active Low SPI Chip Select for BMI055's GYRO if present (May be reassigned to other IC if WHO AM I is unique)	
85	PF	5	PF5	SPI2_CS_FRAM	Digital OUPUT: Active Low SPI Chip Select for FRAM	
86	PF	6	UART7_RX	UART7_RX_DEBUG	Digital INPUT: UART7 RX /dev/ttyS5 Connected to Pin 3 of the Dronecode Debug connector (JST SM06B) for FMU. See https://wiki.dronecode.org/workgroup/connectors/start?s[]=connector	
87	PF	7	SPI5_SCK	SPI5_SCK_EXTERNAL1	Digital OUTPUT: SPI Bus 5 Clock for External bus 1 - External Sensors	
88	PF	8	SPI5_MISO	SPI5_MISO_EXTERNAL1	Digital INPUT: SPI Bus 5 Master In Slave Out for External bus 1 - External Sensors	
89	PF	9	SPI5_MOSI	SPI5_MOSI_EXTERNAL1	Digital OUTPUT: SPI Bus 5 Master Out Slave In for External bus 1 - External Sensors	
90	PF	10	PF10	SPI4_CS1_MS5611	Digital OUPUT: Active Low SPI Chip Select for MS56xx (When present, the MS56xx device shall be the only device on this bus since SPI bus activity during ADC conversion degrades sensor performance)	
91	PF	11	PF11	SPI4_CS2	Digital OUPUT: Active Low SPI Chip Select Not used if MS56xx is used on SPI Bus 4	
92	PF	12	PF12	nVDD_5V_HIPOWER_EN	Digital OUTPUT: Active Low to BQ24315 Enable with internal pull down, Enables the 5V HIPOWER supply, series 47K resistor for FMU protection	
93	PF	13	PF13	nVDD_5V_HIPOWER_OC	Digital INPUT: Active low input from BQ24315 to indicate the 5V HIPOWER supply is in Over-Current condition. 47K pullup to VDD_3V3_FMU at BQ24315 /FAULT output with series 47K resistor to FMU for protection	
94	PF	14	I2C4_SCL	I2C4_SCL_EXTERNAL2	Digital OUTPUT: I2C Bus 4's Clock used as External EXPANSION2	
95	PF	15	I2C4_SDA	I2C4_SDA_EXTERNAL2	Digital I/O: I2C Bus 4's Data used as External EXPANSION2	
96	PG	0	PG0	HW_VER_DRIVE [1]	Digital OUTPUT: Used to drive R2 end of the R1-o-R2 Resistive divider, R1 end tied to VDD, see HW REV and VER ID tab	
97	PG	1	PG1	nPOWER_IN_A [2]	Digital INPUT: Active Low, comes from LTC4417, Low indicates POWER_IN_A valid, typically connected to BRICK 1 Valid Output of LTC4417	
98	PG	2	PG2	nPOWER_IN_B	Digital INPUT: Active Low, comes from LTC4417, Low indicates POWER_IN_B valid, typically connected to BRICK 2 Valid Output of LTC4417	
99	PG	3	PG3	nPOWER_IN_C	Digital INPUT: Active Low, comes from LTC4417, Low indicates POWER_IN_C valid, typically connected to VBUS Valid Output of LTC4417	

Ordinal	PORT	PIN	176-pin STM32F765IIK Signal	176-pin STM32F765IIK FMU USAGE	Functional Description	
100	PG	4	PG4	nVDD_5V_PERIPH_EN	Digital OUTPUT: Active Low to BQ24315 Enable with internal pull down, Enables the 5V PERIPHERAL supply, series 47K resistor for FMU protection	
101	PG	5	PG5	VDD_5V_RC_EN	Digital OUTPUT: Active High, used to enable a 5V (or 3.3V) regulator for RC radios, must have internal or external pulldown to ensure regulator off while powering up, powers RC receiver	
102	PG	6	PG6	VDD_5V_WIFI_EN	Digital OUTPUT: Active High, used to enable a 5V regulator for WIFI, must have internal or external pulldown to ensure regulator off while powering up	
103	PG	7	PG7	VDD_3V3_SD_CARD_EN	Digital OUPUT: Active High enable to V3.3 regulator for Sensors (Prefered LP5907-Q1 with internal enable Pull down and internal output shunt)	Regulator choice TBD
104	PG	8	USART6_RTS	USART6_RTS_TELEM3	Digital OUTPUT: USART6 RTS TELEM3 (with full flow control) OR Not USED with RC_INPUT /dev/ttyS4	
105	PG	9	USART6_RX	USART6_RX_TELEM3	Digital INPUT: USART6 RX TELEM3 (with full flow control) OR Not USED when RC_INPUT is used (May be connected to a long range radio)	PX4IO conditional
106	PG	10	PG10	SPI1_CS4_BMI055_ACC	Digital OUPUT: Active Low, SPI Chip Select for BMI055's ACC if present (May be reassigned to other IC if WHO AM I is unique)	
107	PG	11	SPI1_SCK	SPI1_SCK_SENSOR1	Digital OUTPUT: SPI Bus 1's Clock for Sensor bus 1 - Internal Sensors	
108	PG	12	SPI6_MISO	SPI6_MISO_EXTERNAL2	Digital INPUT: SPI Bus 6 Master In Slave Out for External bus 2 - External Sensors	
109	PG	13	SPI6_SCK	SPI6_SCK_EXTERNAL2	Digital OUTPUT: SPI Bus 6's Clock for External bus 2 - External Sensors	
110	PG	14	USART6_TX	USART6_TX_TELEM3/(RC_INPUT)	Digital OUTPUT: USART6 TX TELEM3 (with full flow control) /dev/ttyS4 OR used as RC_INPUT for SBUS 1 or 2/DSM. Inversion is in USART IP Block /dev/ttyS4 (May be connected to a long range radio)	
111	PG	15	USART6_CTS	USART6_CTS_TELEM3	Digital INPUT: USART6 CTS TELEM3 (with full flow control) OR Not USED when RC_INPUT is used /dev/ttyS4	
112	PH	0	OSC_IN	16_MHZ_IN	Digital INPUT: Connect to 16 MHz Crystal, use load capacitors and routing guidelines from data sheet, recommend 15 ppm or better for both tolerance and stability	
113	PH	1	OSC_OUT	16_MHZ_OUT	Digital OUTPUT: Connect to 16 MHz Crystal, use load capacitors and routing guidelines from data sheet, recommend 15 ppm or better for both tolerance and stability	
115	PH	2	PH2 [3]	CAN1_SILENT_S0	Digital OUTPUT: Connected to CAN Transceiver S signal - dronecode recommended TJA1051TK3/118 with Silent control (A HIGH level on pin S selects Silent mode TX is disabled, RX is active) May also be used for mux S0 when Serial ESC are used	
116	PH	3	PH3	CAN2_SILENT_S1	Digital OUTPUT: Connected to CAN Transceiver S signal - dronecode recommended TJA1051TK3/118 with Silent control (A HIGH level on pin S selects Silent mode TX is disabled, RX is active) May also be used for mux S1 when Serial ESC are used	
117	PH	4	PH4	CAN3_SILENT_S2	Digital OUTPUT: Connected to CAN Transceiver S signal - dronecode recommended TJA1051TK3/118 with Silent control (A HIGH level on pin S selects Silent mode TX is disabled, RX is active) May also be used for mux S2 when Serial ESC are used	
118	PH	5	PH5 [4]	SPI1_CS5_AUX_MEM	Digital OUPUT: Active Low SPI Chip Select for an EEPROM collocated on Sensor board, used for factory set temperature calibration data	
119	PH	6	TIM12_CH1	FMU_CH7	Digital I/O: Output: PWM, GPIO, Input: PWM Input or capture route to SERVO Header - See protection note	
120	PH	7	I2C3_SCL	I2C3_SCL_EXTERNAL3	Digital OUTPUT: I2C Bus 3's Clock used as External EXPANSION3. *as built this port is used onboard	
121	PH	8	I2C3_SDA	I2C3_SDA_EXTERNAL3	Digital I/O: I2C Bus 3's Data used as External EXPANSION3,*as built this port is used onboard	
122	PH	9	TIM12_CH2	FMU_CH8	Digital I/O: Output: PWM, GPIO, Input: PWM Input or capture route to SERVO Header - See protection note	

Ordinal	PORT	PIN	176-pin STM32F765IIK Signal	176-pin STM32F765IIK FMU USAGE	Functional Description	
123	PH	10	TIM5_CH1	[n]UI_LED_RED[_EXTERNAL]	Optional can be connected to a super bright (R) LED used to provide the User Interface LED as an alternative or in addition to the I2C/LED combo used on FMUv2, it may be located on the FMU's PCB or an external PCB Either Digital OUTPUT: Active Low PWM capable pin to drive R of Common Anode RGB LED like (LRTB GFTG-T7AW-1+V7A7-29+R5T9-49-L) directly **use nLED_RED_EXTERNAL as net name** **OR** Digital OUTPUT: Active High, PWM capable pin to drive an open collector transistor for the R of Common Anode RGB LED that requires higher current **use LED_RED_EXTERNAL as net name**	
124	PH	11	TIM5_CH2	[n]UI_LED_GREEN[_EXTERNAL]	Optional can be connected to a super bright (G) LED used to provide the User Interface LED as an alternative or in addition to the I2C/LED combo used on FMUv2, it may be located on the FMU's PCB or an external PCB Either Digital OUTPUT: Active Low PWM capable pin to drive G of Common Anode RGB LED like (LRTB GFTG-T7AW-1+V7A7-29+R5T9-49-L) directly **use nLED_GREEN_EXTERNAL as net name** **OR** Digital OUTPUT: Active High, PWM capable pin to drive an open collector transistor for the G of Common Anode RGB LED that requires higher current use **LED_GREEN_EXTERNAL as net name**	
125	PH	12	TIM5_CH3	[n]UI_LED_BLUE[_EXTERNAL]	Optional can be connected to a super bright (B) LED used to provide the User Interface LED as an alternative or in addition to the I2C/LED combo used on FMUv2, it may be located on the FMU's PCB or an external PCB Either Digital OUTPUT: Active Low PWM capable pin to drive B of Common Anode RGB LED like (LRTB GFTG-T7AW-1+V7A7-29+R5T9-49-L) directly **use nLED_BLUE_EXTERNAL as net name** **OR** Digital OUTPUT: Active High, PWM capable pin to drive an open collector transistor for the B of Common Anode RGB LED that requires higher current **use LED_BLUE_EXTERNAL as net name**	
126	PH	13	CAN1_TX	CAN1_TX	Digital OUTPUT: Connected to CAN Transceiver TXD signal - dronecode recommended TJA1051TK3/118 with Silent control (A HIGH level on pin S selects Silent mode TX is disabled, RX is active)	
127	PH	14	PH14	HW_REV_DRIVE [5]	Digital OUTPUT: Used to drive R2 end of the R1-o-R2 Resistive divider, R1 end tied to VDD, see HW REV and VER ID tab	
128	PH	15	PH15	SPI5_SYNC_EXTERNAL1	Digital OUTPUT: Optionally used a sync pulse for off board sensor on SPI 5	
129	PI	0	PI0	nARMED	Digital OUTPUT:GPIO will be set as input while not armed HW will have Pull UP. While armed it will be configured as a GPIO OUT set LOW.	
130	PI	1	SPI2_SCK	SPI2_SCK_FRAM	Digital OUTPUT: SPI Bus 2's Clock for FRAM SPI BUS	
131	PI	2	SPI2_MISO	SPI2_MISO_FRAM	Digital INPUT: SPI Bus 2 Master In Slave Out for FRAM bus	
132	PI	3	SPI2_MOSI	SPI2_MOSI_FRAM	Digital OUTPUT: SPI Bus 2 Master Out Slave In for FRAM bus	
133	PI	4	PI4	SPI5_CS1_EXTERNAL1	Digital OUPUT: Active Low SPI Chip Select for External 1 SPI Bus 5	
134	PI	5	TIM8_CH1_IN	RC_INPUT (aka PPM_IN)	Digital INPUT: Edge capture for RC_INPUT aka PPM_IN	PX4IO conditional
135	PI	6	PI6	SPI6_CS1_EXTERNAL2	Digital OUPUT: Active Low SPI Chip Select for External 2 SPI Bus 6	
136	PI	7	PI7	SPI6_CS2_EXTERNAL2	Digital OUPUT: Active Low SPI Chip Select for External 2 SPI Bus 6	
137	PI	8	PI8	SPI6_CS3_EXTERNAL2	Digital OUPUT: Active Low SPI Chip Select for External 2 SPI Bus 6	
138	PI	9	CAN1_RX	CAN1_RX	Digital INPUT: Connected to CAN Transceiver RXD signal - dronecode recommended TJA1051TK3/118 with Silent control (A HIGH level on pin S selects Silent mode TX is disabled, RX is active)	
139	PI	10	PI10	SPI5_CS2_EXTERNAL1	Digital OUPUT: Active Low SPI Chip Select for External 1 SPI Bus 5	
140	PI	11	PI11	SPI5_CS3_EXTERNAL1	Digital OUPUT: Active Low SPI Chip Select for External 1 SPI Bus 5	

[1] Bottom of HW revision detection

[2] These are Supply valid signals and should be driven by LTC4417 or LTC4415 if populated and pulled to the Invalid state if not populated - Validation is confirmed by HW Revision and Config see spec.

[3] Used to Set MUX for Serial ESC or CAN Silent

[4] Added 11/22 - to support EEPROM

[5] WAS - SERIAL_INVERT
NOW: Bottom of HW version detection because on F7 this can be done with {R|T}XINV -