

[] Queen's Univeristy Q20 Tune 01.02.0004, Feb. 28

## **Wiring Summary**

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<u>PIN</u>	Abbreviation	Name	Usage
D_3	AT1	Analogue Temperature Input 1	Analogue Input Inlet Air Temperature Sensor Voltage
D_4	AT2	Analogue Temperature Input 2	
D_5	AT3	Analogue Temperature Input 3	
D_6	AT4	Analogue Temperature Input 4	
	AT5	Analogue Temperature Input 5	Analogue Input Coolant Temperature Sensor Voltage
A_2	AT6	Analogue Temperature Input 6	
C_14	AV1	Analogue Voltage Input 1	Analogue Input Gear Shift Actuator Pressure Sensor Voltage
C_15	AV2	Analogue Voltage Input 2	Analogue Input Throttle Pedal Sensor Main Voltage
C_16	AV3	Analogue Voltage Input 3	Analogue Input Throttle Servo Bank 1 Position Sensor Main Voltage
C_17	AV4	Analogue Voltage Input 4	Analogue Input Throttle Servo Bank 1 Position Sensor Tracking Voltage
C_25	AV5	Analogue Voltage Input 5	
D_20	AV6	Analogue Voltage Input 6	Analogue Input Fuel Composition Sensor Voltage
D_21	AV7	Analogue Voltage Input 7	
D_22	AV8	Analogue Voltage Input 8	Analogue Input   Inlet Manifold Pressure Sensor Voltage
B_10	AV9	Analogue Voltage Input 9	
B_11	AV10	Analogue Voltage Input 10	
B_12	AV11	Analogue Voltage Input 11	
B_16	AV12	Analogue Voltage Input 12	Analogue Input Fuel Pressure Sensor Voltage
B_17	AV13	Analogue Voltage Input 13	
B_18	AV14	Analogue Voltage Input 14	
A_3	AV15	Analogue Voltage Input 15	
A_4	AV16	Analogue Voltage Input 16	
A_5	AV17	Analogue Voltage Input 17	
D_12	BAT_BAK	Battery Backup	
A_25	BAT_NEG	Battery Negative	
	BAT_NEG	Battery Negative	
C_11	BAT_NEG	Battery Negative	
C_10	BAT_NEG	Battery Negative	
A_32	BAT_NEG	Battery Negative	
C_26	BAT_POS	Battery Positive	Analogue Input ECU Battery Voltage
B_13	BAT_POS	Battery Positive	Analogue Input ECU Battery Voltage
B_19	BAT_POS	Battery Positive	Analogue Input ECU Battery Voltage
D_17	CAN1_HI	CAN Bus 1 High	
D_18	CAN1_LO	CAN Bus 1 Low	

A 30	CAN2_HI	CAN Bus 2 High	
	CAN2 LO	CAN Bus 2 Low	
	CAN3_HI	CAN Bus 3 High	
	CAN3_LO	CAN Bus 3 Low	
A 23		Digital Input 1	
	DIG2	Digital Input 2	
	DIG3	Digital Input 3	
	DIG4		
		Digital Input 4 Ethernet Receive-	
	ETH_RX-		
	ETH_RX+	Ethernet Receive+	
	ETH_TX-	Ethernet Transmit-	
	ETH_TX+	Ethernet Transmit+	
C_3	IGN_LS1	Low Side Ignition 1	
C_4	IGN_LS2	Low Side Ignition 2	Digital Output Ignition Cylinder 1 Output  Analogue Input Ignition Cylinder 1 Voltage
C_5	IGN_LS3	Low Side Ignition 3	
C_6	IGN_LS4	Low Side Ignition 4	
C_7	IGN_LS5	Low Side Ignition 5	
C_8	IGN_LS6	Low Side Ignition 6	
C 12	IGN LS7	Low Side Ignition 7	
C 13	IGN_LS8	Low Side Ignition 8	
	IGN_LS9	Low Side Ignition 9	
	IGN LS10	Low Side Ignition 10	
	IGN_LS11	Low Side Ignition 11	
	IGN_LS12	Low Side Ignition 12	
		Low Glad Ighladh 12	
	INJ_LS1	Low Side Injector 1	Digital Output Fuel Cylinder 1 Primary Output  Configuration Fuel Cylinder 1 Primary Pin  Analogue Input Fuel Cylinder 1 Primary Voltage
C_23	INJ_LS1	Low Side Injector 1	Configuration Fuel Cylinder 1 Primary Pin
C_23	INJ_LS1	Low Side Injector 1  Low Side Injector 2	Configuration Fuel Cylinder 1 Primary Pin
C_23 C_24 B_9	INJ_LS1 INJ_LS2 INJ_LS3	Low Side Injector 1  Low Side Injector 2  Low Side Injector 3	Configuration Fuel Cylinder 1 Primary Pin
C_23 C_24 B_9 B_15	INJ_LS1 INJ_LS2 INJ_LS3 INJ_LS4	Low Side Injector 1  Low Side Injector 2  Low Side Injector 3  Low Side Injector 4	Configuration Fuel Cylinder 1 Primary Pin
C_23 C_24 B_9 B_15 B_8	INJ_LS1 INJ_LS2 INJ_LS3 INJ_LS4 INJ_LS5	Low Side Injector 1  Low Side Injector 2  Low Side Injector 3  Low Side Injector 4  Low Side Injector 5	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14	INJ_LS1 INJ_LS2 INJ_LS3 INJ_LS4 INJ_LS5 INJ_LS6	Low Side Injector 1  Low Side Injector 2  Low Side Injector 3  Low Side Injector 4  Low Side Injector 5  Low Side Injector 6	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14  C_19	INJ_LS1 INJ_LS2 INJ_LS3 INJ_LS4 INJ_LS5 INJ_LS6 INJ_PH1	Low Side Injector 1  Low Side Injector 2  Low Side Injector 3  Low Side Injector 4  Low Side Injector 5  Low Side Injector 6  Peak Hold Injector 1	Configuration Fuel Cylinder 1 Primary Pin
C_24 B_9 B_15 B_8 B_14 C_19 C_20	INJ_LS1 INJ_LS2 INJ_LS3 INJ_LS4 INJ_LS5 INJ_LS6 INJ_PH1 INJ_PH2	Low Side Injector 1  Low Side Injector 2  Low Side Injector 3  Low Side Injector 4  Low Side Injector 5  Low Side Injector 6  Peak Hold Injector 1  Peak Hold Injector 2	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14  C_19  C_20  C_21	INJ_LS1 INJ_LS2 INJ_LS3 INJ_LS4 INJ_LS5 INJ_LS6 INJ_PH1 INJ_PH2 INJ_PH3	Low Side Injector 1  Low Side Injector 2  Low Side Injector 3  Low Side Injector 4  Low Side Injector 5  Low Side Injector 6  Peak Hold Injector 1  Peak Hold Injector 2  Peak Hold Injector 3	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14  C_19  C_20  C_21  C_22	INJ_LS1 INJ_LS2 INJ_LS3 INJ_LS4 INJ_LS5 INJ_LS6 INJ_PH1 INJ_PH2 INJ_PH3 INJ_PH4	Low Side Injector 1  Low Side Injector 2  Low Side Injector 3  Low Side Injector 4  Low Side Injector 5  Low Side Injector 6  Peak Hold Injector 1  Peak Hold Injector 2  Peak Hold Injector 3  Peak Hold Injector 4	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14  C_19  C_20  C_21  C_22  C_27	INJ_LS1 INJ_LS2 INJ_LS3 INJ_LS4 INJ_LS5 INJ_LS6 INJ_PH1 INJ_PH2 INJ_PH3 INJ_PH4 INJ_PH5	Low Side Injector 1  Low Side Injector 2  Low Side Injector 3  Low Side Injector 4  Low Side Injector 5  Low Side Injector 6  Peak Hold Injector 1  Peak Hold Injector 2  Peak Hold Injector 3  Peak Hold Injector 4  Peak Hold Injector 5	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14  C_19  C_20  C_21  C_22  C_27  C_28	INJ_LS1 INJ_LS2 INJ_LS3 INJ_LS4 INJ_LS5 INJ_LS6 INJ_PH1 INJ_PH2 INJ_PH3 INJ_PH4 INJ_PH5 INJ_PH6	Low Side Injector 1  Low Side Injector 2  Low Side Injector 3  Low Side Injector 4  Low Side Injector 5  Low Side Injector 6  Peak Hold Injector 1  Peak Hold Injector 2  Peak Hold Injector 3  Peak Hold Injector 4  Peak Hold Injector 5  Peak Hold Injector 5  Peak Hold Injector 6	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14  C_19  C_20  C_21  C_22  C_27  C_28  C_29	INJ_LS1 INJ_LS2 INJ_LS3 INJ_LS4 INJ_LS5 INJ_LS6 INJ_PH1 INJ_PH2 INJ_PH3 INJ_PH4 INJ_PH5 INJ_PH6 INJ_PH7	Low Side Injector 2 Low Side Injector 2 Low Side Injector 3 Low Side Injector 4 Low Side Injector 5 Low Side Injector 6 Peak Hold Injector 1 Peak Hold Injector 2 Peak Hold Injector 3 Peak Hold Injector 4 Peak Hold Injector 5 Peak Hold Injector 5 Peak Hold Injector 6 Peak Hold Injector 7	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14  C_19  C_20  C_21  C_22  C_27  C_28  C_29  C_30	INJ_LS1  INJ_LS2  INJ_LS3  INJ_LS4  INJ_LS5  INJ_LS6  INJ_PH1  INJ_PH2  INJ_PH3  INJ_PH4  INJ_PH5  INJ_PH6  INJ_PH7  INJ_PH8	Low Side Injector 2 Low Side Injector 2 Low Side Injector 3 Low Side Injector 4 Low Side Injector 5 Low Side Injector 6 Peak Hold Injector 1 Peak Hold Injector 2 Peak Hold Injector 3 Peak Hold Injector 4 Peak Hold Injector 5 Peak Hold Injector 5 Peak Hold Injector 6 Peak Hold Injector 6 Peak Hold Injector 7 Peak Hold Injector 8	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14  C_19  C_20  C_21  C_22  C_27  C_28  C_29  C_30  B_22	INJ_LS1  INJ_LS2  INJ_LS3  INJ_LS4  INJ_LS5  INJ_LS6  INJ_PH1  INJ_PH2  INJ_PH3  INJ_PH4  INJ_PH5  INJ_PH6  INJ_PH7  INJ_PH8  INJ_PH9	Low Side Injector 2 Low Side Injector 2 Low Side Injector 3 Low Side Injector 4 Low Side Injector 5 Low Side Injector 6 Peak Hold Injector 1 Peak Hold Injector 2 Peak Hold Injector 3 Peak Hold Injector 4 Peak Hold Injector 5 Peak Hold Injector 5 Peak Hold Injector 6 Peak Hold Injector 7 Peak Hold Injector 8 Peak Hold Injector 9	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14  C_19  C_20  C_21  C_22  C_27  C_28  C_29  C_30  B_22  B_23	INJ_LS1  INJ_LS2  INJ_LS3  INJ_LS4  INJ_LS5  INJ_LS6  INJ_PH1  INJ_PH2  INJ_PH3  INJ_PH5  INJ_PH6  INJ_PH7  INJ_PH8  INJ_PH9  INJ_PH10	Low Side Injector 2 Low Side Injector 2 Low Side Injector 3 Low Side Injector 4 Low Side Injector 5 Low Side Injector 6 Peak Hold Injector 1 Peak Hold Injector 2 Peak Hold Injector 3 Peak Hold Injector 4 Peak Hold Injector 5 Peak Hold Injector 5 Peak Hold Injector 6 Peak Hold Injector 7 Peak Hold Injector 7 Peak Hold Injector 8 Peak Hold Injector 9 Peak Hold Injector 10	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14  C_19  C_20  C_21  C_22  C_27  C_28  C_29  C_30  B_22  B_23  B_24	INJ_LS1  INJ_LS2  INJ_LS3  INJ_LS4  INJ_LS5  INJ_LS6  INJ_PH1  INJ_PH2  INJ_PH3  INJ_PH5  INJ_PH6  INJ_PH7  INJ_PH8  INJ_PH9  INJ_PH10  INJ_PH11	Low Side Injector 2 Low Side Injector 2 Low Side Injector 3 Low Side Injector 4 Low Side Injector 5 Low Side Injector 6 Peak Hold Injector 1 Peak Hold Injector 2 Peak Hold Injector 3 Peak Hold Injector 4 Peak Hold Injector 5 Peak Hold Injector 5 Peak Hold Injector 6 Peak Hold Injector 6 Peak Hold Injector 7 Peak Hold Injector 8 Peak Hold Injector 9 Peak Hold Injector 10 Peak Hold Injector 11	Configuration Fuel Cylinder 1 Primary Pin
C_23  C_24  B_9  B_15  B_8  B_14  C_19  C_20  C_21  C_22  C_27  C_28  C_29  C_30  B_22  B_23  B_24  B_25	INJ_LS1  INJ_LS2  INJ_LS3  INJ_LS4  INJ_LS5  INJ_LS6  INJ_PH1  INJ_PH2  INJ_PH3  INJ_PH5  INJ_PH6  INJ_PH7  INJ_PH8  INJ_PH9  INJ_PH10  INJ_PH11  INJ_PH12	Low Side Injector 2 Low Side Injector 2 Low Side Injector 3 Low Side Injector 4 Low Side Injector 5 Low Side Injector 6 Peak Hold Injector 1 Peak Hold Injector 2 Peak Hold Injector 3 Peak Hold Injector 4 Peak Hold Injector 5 Peak Hold Injector 5 Peak Hold Injector 6 Peak Hold Injector 7 Peak Hold Injector 7 Peak Hold Injector 8 Peak Hold Injector 9 Peak Hold Injector 10 Peak Hold Injector 11 Peak Hold Injector 12	Configuration Fuel Cylinder 1 Primary Pin  Analogue Input Fuel Cylinder 1 Primary Voltage
C_23  C_24  B_9  B_15  B_8  B_14  C_19  C_20  C_27  C_28  C_29  C_30  B_22  B_23  B_24  B_25  D_7	INJ_LS1  INJ_LS2  INJ_LS3  INJ_LS4  INJ_LS5  INJ_LS6  INJ_PH1  INJ_PH2  INJ_PH3  INJ_PH5  INJ_PH6  INJ_PH7  INJ_PH8  INJ_PH9  INJ_PH10  INJ_PH11	Low Side Injector 2 Low Side Injector 2 Low Side Injector 3 Low Side Injector 4 Low Side Injector 5 Low Side Injector 6 Peak Hold Injector 1 Peak Hold Injector 2 Peak Hold Injector 3 Peak Hold Injector 4 Peak Hold Injector 5 Peak Hold Injector 5 Peak Hold Injector 6 Peak Hold Injector 6 Peak Hold Injector 7 Peak Hold Injector 8 Peak Hold Injector 9 Peak Hold Injector 10 Peak Hold Injector 11	Configuration Fuel Cylinder 1 Primary Pin

		Differential Knock Input 1.Positive	
D_13	KNOCK2	Differential Knock Input  1.Negative	
D_13	KNOCK2	Knock Input 2	
A_13	KNOCK3	Differential Knock Input 2.Positive	
A_13	KNOCK3	Knock Input 3	
A_14	KNOCK4	Differential Knock Input 2.Negative	
A_14	KNOCK4	Knock Input 4	
A_11	LA_NB1	Lambda Narrow Input 1	
A_12	LA_NB2	Lambda Narrow Input 2	
A_20	LIN	LIN Bus	
C_18	OUT_HB1	Half Bridge Output 1	
C_18	OUT_HB1	Bridge Output 1.Negative	Digital Output Throttle Servo Bank 1 Motor Output
	OUT_HB2	Bridge Output 1.Positive	Digital Output Throttle Servo Bank 1 Motor Output
	OUT_HB2	Half Bridge Output 2	
	OUT_HB3	Bridge Output 2.Negative	
C_31	OUT_HB3	Half Bridge Output 3	
			Analogue Input Gear Shift Actuator Up Voltage
C_32	OUT_HB4	Half Bridge Output 4	Digital Output Gear Shift Actuator Up Output
			Configuration Gear Shift Actuator Up Pin
C_32	OUT_HB4	Bridge Output 2.Positive	
C_33	OUT_HB5	Bridge Output 3.Negative	
			Digital Output Gear Shift Actuator Down Output
C_33	OUT_HB5	Half Bridge Output 5	Configuration Gear Shift Actuator Down Pin
			Analogue Input Gear Shift Actuator Down Voltage
			Analogue Input Turbocharger Bypass Actuator Voltage
C_34	OUT_HB6	Half Bridge Output 6	Configuration Turbocharger Bypass Actuator Pin
			Digital Output Turbocharger Bypass Actuator Output
C 34	OUT HB6	Bridge Output 3.Positive	<u>'</u>
	OUT HB7	Half Bridge Output 7	
B 20	OUT_HB7	Bridge Output 4.Negative	
	OUT_HB8	Half Bridge Output 8	Analogue Input Boost Actuator Normal Voltage  Digital Output Boost Actuator Normal Output
			Doost Actuator Normal Output
	OUT_HB8	Bridge Output 4.Positive	
	OUT_HB9	Half Bridge Output 9	
	OUT_HB9	Bridge Output 5.Negative	
	OUT_HB10	Half Bridge Output 10	
	OUT_HB10	Bridge Output 5.Positive	
	RS232_RX	RS232.Receive	
	RS232_RX	RS232 Receive	
A_22	RS232_TX	RS232.Transmit	

A 22	RS232 TX	RS232 Transmit	
	SEN OV A	Sensor 0V A	
D_15	SEN_0V_A	Sensor 0V A	
A_33	SEN_0V_B	Sensor 0V B	
	SEN_0V_B	Sensor 0V B	
	SEN_0V_C	Sensor 0V C	
	SEN_0V_C	Sensor 0V C	
B_26	SEN_5V0_A	Sensor 5.0V A	Analogue Input ECU Sensor 5V0 A Voltage
C_2	SEN_5V0_A	Sensor 5.0V A	Analogue Input ECU Sensor 5V0 A Voltage
A_19	SEN_5V0_B	Sensor 5.0V B	Analogue Input ECU Sensor 5V0 B Voltage
C_9	SEN_5V0_B	Sensor 5.0V B	Analogue Input ECU Sensor 5V0 B Voltage
A_10	SEN_5V0_C	Sensor 5.0V C	Analogue Input ECU Sensor 5V0 C Voltage
A_18	SEN_5V0_C	Sensor 5.0V C	Analogue Input ECU Sensor 5V0 C Voltage
D_19	SEN_6V3	Sensor 6.3V	Analogue Input ECU Sensor 6V3 Voltage
			Configuration Engine Speed Pin
D_1	UDIG1	Universal Digital Input 1	Digital Input Engine Speed Reference
			Analogue Input Engine Speed Voltage
D_1	UDIG1	Universal Digital Input Pair 1.Phase A	
D_2	UDIG2	Universal Digital Input 2	Analogue Input Driver Switch 1
D_2	UDIG2	Universal Digital Input Pair 1.Phase B	
D_8	UDIG3	Universal Digital Input 3	Analogue Input
D_8	UDIG3	Universal Digital Input Pair 2.Phase A	
D_9	UDIG4	Universal Digital Input 4	Analogue Input Driver Switch 3
D_9	UDIG4	Universal Digital Input Pair 2.Phase B	
D_10	UDIG5	Universal Digital Input 5	Analogue Input Driver Switch 4
D_10	UDIG5	Universal Digital Input Pair 3.Phase A	
D_11	UDIG6	Universal Digital Input 6	
D_11	UDIG6	Universal Digital Input Pair 3.Phase B	
			Configuration Engine Synchronisation Pin
D 14	UDIG7	Universal Digital Input 7	Digital Input Engine Synchronisation Position
_			Analogue Input Engine Synchronisation Voltage
D_14	UDIG7	Universal Digital Input Pair 4.Phase A	
B_3	UDIG8	Universal Digital Input 8	Analogue Input Wheel Speed Front Left Sensor Voltage Wheel Speed Front Left Sensor
			Digital Input Input Input

			Configuration	Wheel Speed Front Left Sensor Pin
B_3	UDIG8	Universal Digital Input Pair 4.Phase B		
B_4	UDIG9	Universal Digital Input 9		
B_4	UDIG9	Universal Digital Input Pair 5.Phase A		
B_5	UDIG10	Universal Digital Input 10		
B_5	UDIG10	Universal Digital Input Pair 5.Phase B		
B_6	UDIG11	Universal Digital Input 11		
B_6	UDIG11	Universal Digital Input Pair 6.Phase A		
B_7	UDIG12	Universal Digital Input 12		
B_7	UDIG12	Universal Digital Input Pair 6.Phase B		