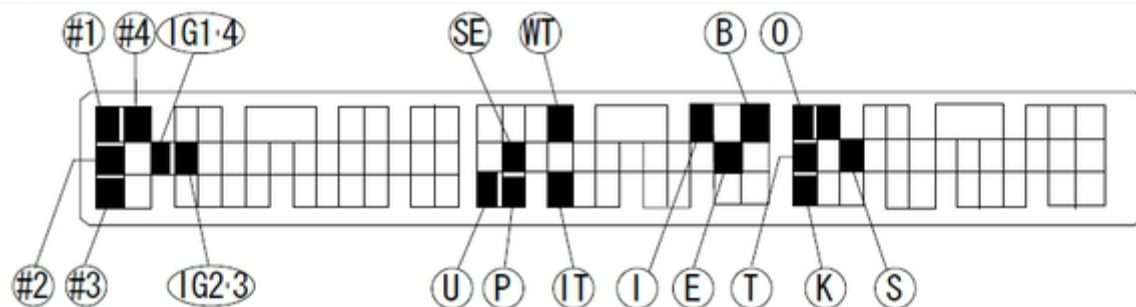


MITSUBISHI LANCER EVOLUTION 9 (CT9A·4G63)STARTDATA Instruction = MP5-5 Harness

MITSUBISHI LANEVO9 ECU Side Terminal [MP5-5 Base]

Refer the following for special setting when modifying the wiring, etc.



To prepare the vehicle data, write CT9A STARTDATA on HKS website to F-CONVPRO. Setting by using an actual vehicle according to each vehicle characteristics is required.
* CT9ASTARTDATA is data only to start the engine.

The data were prepared based on the vehicle using high-octane gasoline (the octane level is approximately 98-100), and the following parts were installed:

- EVC6 IR2.4
- Super Power Flow Kit
- Metal Catalyzer
- Super Turbo Muffler

Suppose the vehicle is a boost-up specs using a factory injector.
The max boost is set to $\approx 1.5\text{K}$ considering the performance of the factory injector and fuel pump.
Excessive boost-up may lead to the engine damage.

Explanatory Notes

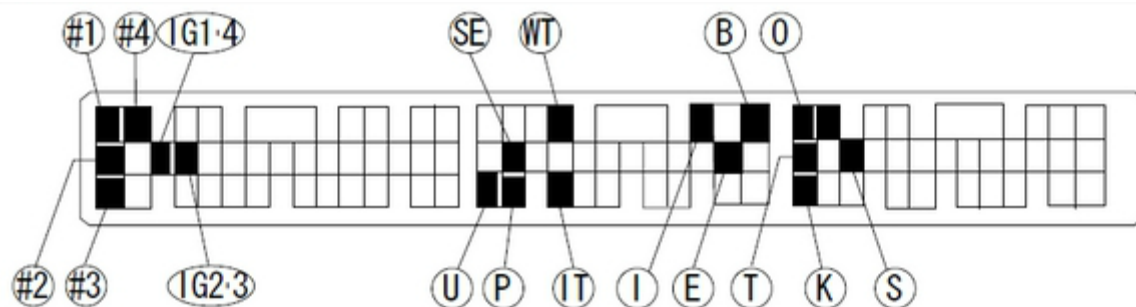
- ⓑ: Power Supply (12V)
 - Ⓤ: Backup Power Supply (12V)
 - ⓔ: Ground
 - Ⓢⓔ: Center Ground
 - Ⓟ: Pressure Sensor, Airflow Signal, etc.
 - ⓕⓐ: Press Sensor Signal for HKS FCD
 - ⓐⓇⓕ: Airflow Signal for HKS AFR
 - Ⓢ: Speed Signal
 - ⓈⓁⓓ: Speed Signal for HKS SLD
 - ⓇⓂ: RPM Signal
 - ⓇⓂⓁ: RPM Signal Level Converter Required.
 - Ⓢ: Injector Signal
 - ⓈⓅ: Primary Injector Signal
 - ⓈⓈ: Secondary Injector Signal
 - Ⓣ: Throttle Angle Signal
 - Ⓡⓖ: Ignition Signal
 - ⓇⓖⓁ: Leading Ignition Signal
 - ⓇⓖⓉ: Trailing Ignition Signal
 - ⓇⓖⓈⓁ: Rotor Detect Signal(Leading Side)
 - ⓇⓖⓈⓉ: Rotor Detect Signal(Trading Side)
 - ⓌⓉ: Water Temp Signal
 - ⓇⓉ: Intake Air Temp Signal
 - Ⓚ: Knocking Signal
 - ⓐ: O2 Sensor Signal
 - S/C·T/C: Supercharger·Turbocharger
 - A/T: Automatic Transmission
 - M/T: Manual Transmission
- ※ When there is more than one signal, a number comes after the mark.
The number comes with the injector and ignition signals mean a number of cylinder.

This explains the main points to prepare STARTDATA using the modified harness MP5-5 for Mitsubishi Lancer Evolution 9. For mapping, parameter settings, and data logging, refer to the operation manual of F-CON V Pro Ver.3.4.

MITSUBISHI LANCER EVOLUTION 8 (CT9A·4G63)STARTDATA Instruction = MP5-5 Harness

MITSUBISHI LANEVO8 ECU Side Terminal [MP5-5 Base]

Refer the following for special setting when modifying the wiring, etc.



To prepare the vehicle data, write CT9A STARTDATA on HKS website to F-CONVPRO. Setting by using an actual vehicle according to each vehicle characteristics is required.
* CT9A STARTDATA is data only to start the engine.

The data were prepared based on the vehicle using high octane gasoline, and the following parts were installed:

- EVC6 IR2.4
- Super Power Flow Kit
- Metal Catalyzer
- Super Turbo Muffler

Suppose the vehicle is a boost-up specs using a factory injector.
The max boost is set to $\approx 1.5K$ considering the performance of the factory injector and fuel pump.
Excessive boost-up may lead to the engine damage.

Explanatory Notes

- ⓑ: Power Supply (12V)
 - ⓓ: Backup Power Supply (12V)
 - ⓔ: Ground
 - ⓔⓔ: Center Ground
 - ⓔ: Pressure Sensor, Airflow Signal, etc.
 - ⓔⓔⓔ: Press Sensor Signal for HKS FCD
 - ⓔⓔⓔ: Airflow Signal for HKS AFR
 - ⓔ: Speed Signal
 - ⓔⓔⓔ: Speed Signal for HKS SLD
 - ⓔ: RPM Signal
 - ⓔⓔⓔ: RPM Signal Level Converter Required.
 - ⓔ: Injector Signal
 - ⓔⓔⓔ: Primary Injector Signal
 - ⓔⓔⓔ: Secondary Injector Signal
 - ⓔ: Throttle Angle Signal
 - ⓔⓔ: Ignition Signal
 - ⓔⓔⓔ: Leading Ignition Signal
 - ⓔⓔⓔ: Trailing Ignition Signal
 - ⓔⓔⓔ: Rotor Detect Signal(Leading Side)
 - ⓔⓔⓔ: Rotor Detect Signal(Trading Side)
 - ⓔⓔ: Water Temp Signal
 - ⓔⓔ: Intake Air Temp Signal
 - ⓔ: Knocking Signal
 - ⓔ: O2 Sensor Signal
 - S/C·T/C: Supercharger·Turbocharger
 - A/T: Automatic Transmission
 - M/T: Manual Transmission
- ※ When there is more than one signal, a number comes after the mark.
The number comes with the injector and ignition signals mean a number of cylinder.

This explains the main points to prepare STARTDATA using the modified harness MP5-5 for Mitsubishi Lancer Evolution 8. For mapping, parameter settings, and data logging, refer to the operation manual of F-CON V Pro Ver.3.4.

■ Before Using CT9ASTARTDATA

CT9ASTARTDATA explains how the set-up was performed for Mitsubishi Lancer Evolution 9 (CT9A) using the modified harness MP5-5. (MP5-5 was modified in order to install to CT9A.)

For Lance Evolution 8, refer to this information as well since the engine control logic is the same. Required modifications are shown in page 3-7.

※ Since the engine for EVO9 is equipped with MIVEC, it makes significant influence on the fuel and ignition program. Be careful to work on when performing the set-up using CT9ASTARTDATA for EVO8

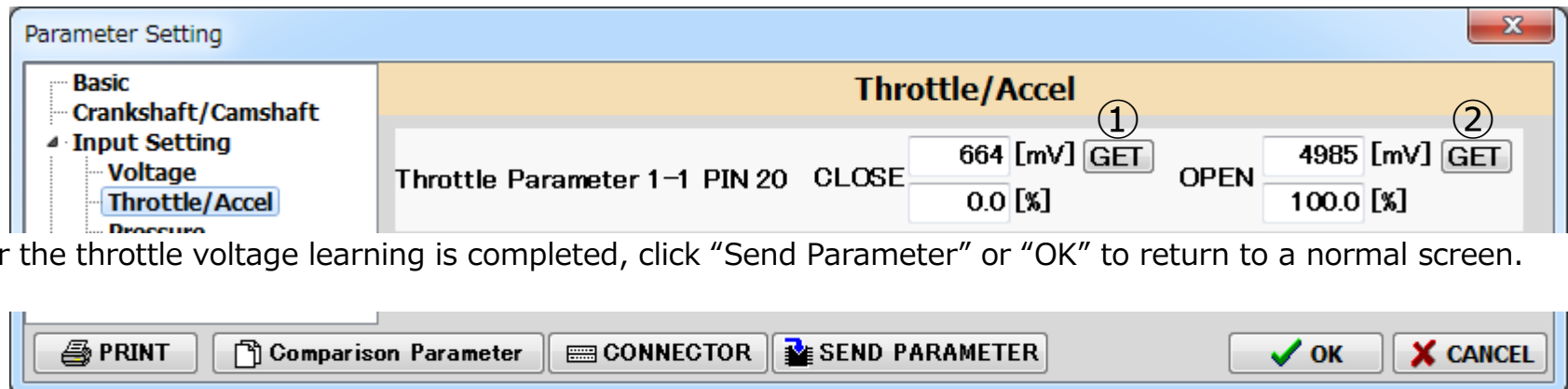
■ Before using CT9ASTARTDATA...

When preparing CT9ASTARTDATA, the following throttle sensor voltage input was performed.

Make sure to complete the throttle sensor learning before starting the vehicle set-up.

EVO9 & 8

- ① Turn on the ignition. Check if the power of F-Con unit is on.
- ② Select "Send All Data" from "Communication" menu.
- ③ Click "GET" of CLOSE side (①) in Throttle/Accel under Parameter Setting without acceleration.
- ④ Click "GET" of OPEN side (②) in Throttle/Accel under Parameter Setting while an accelerator is fully opened.



- ⑤ After the throttle voltage learning is completed, click "Send Parameter" or "OK" to return to a normal screen.

To remove the airflow meter, wiring for the intake air temperature sensor must be modified since the intake air temperature sensor is built in the factory airflow meter. Follow the procedures below for modification.

F-CON V Pro Ver3 Connector Figure

64	63	62	61	60	59	58	57	56	55	54	53	52	38	37	36	35	34	33	32	31	22	21	20	19	18	17	16	15	14	13	12
51	50	49	48	47	46	45	44	43	42	41	40	39	30	29	28	27	26	25	24	23	11	10	9	8	7	6	5	4	3	2	1

Disconnect the wire inserted in #39 terminal . Make sure to add resistance and ground properly.

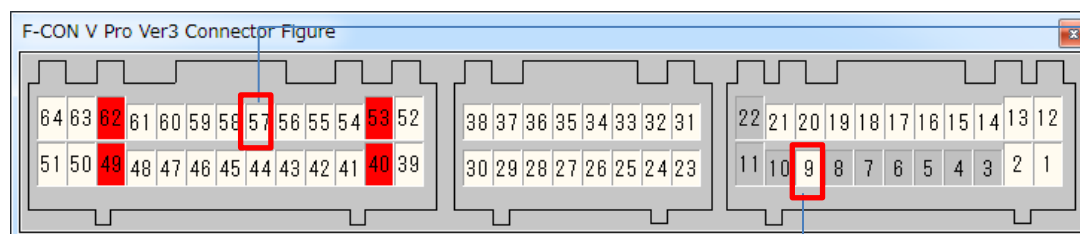
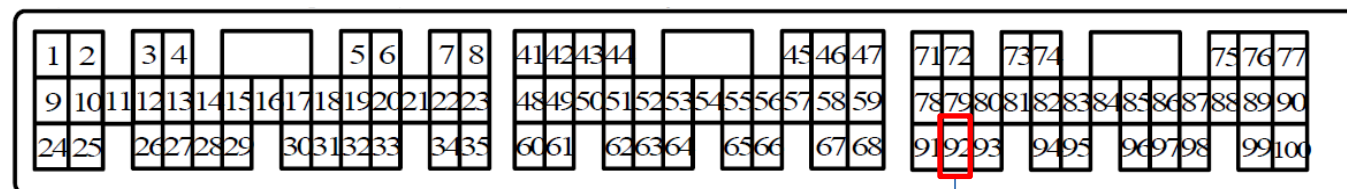
2 - 3 k Ω Resistance — Ground

THA Sensor (Engine Side)

Insert HKS Intake Air Temp Sensor Signal wire to #39.

EV09 is equipped with the factory pressure sensor besides Karman-Vortex airflow sensor. Wiring of these sensors must be modified using F-Con unit.

EV09



✕

Go to next page to see the software setting.

To Engine side's Factory Pressure Sensor

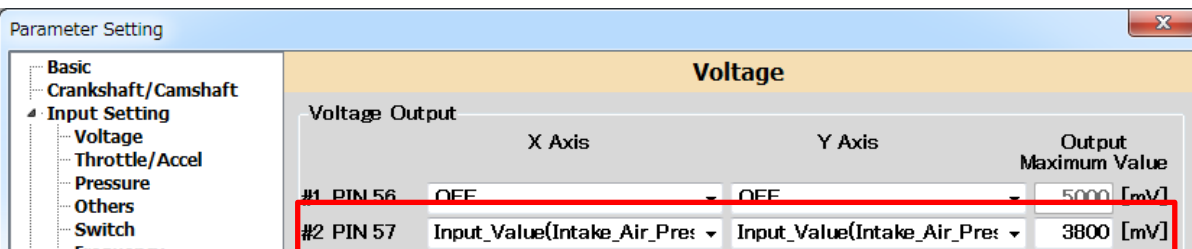
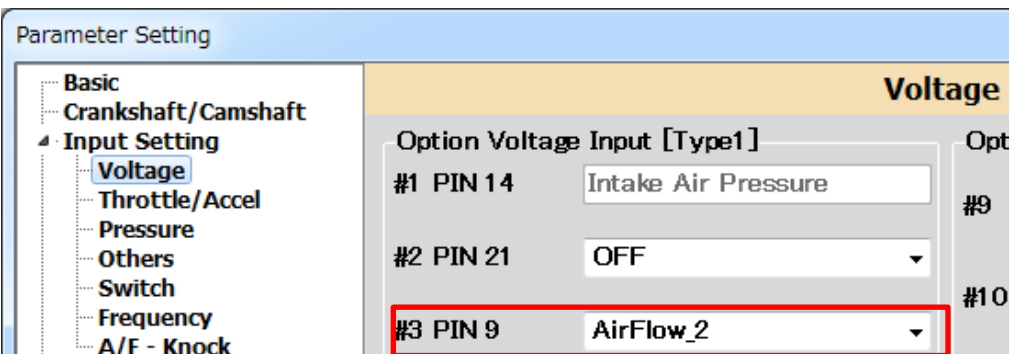


■ Software Setting for Factory Pressure Sensor

After the wiring modification explained in the previous page, the following parameter setting must be done.

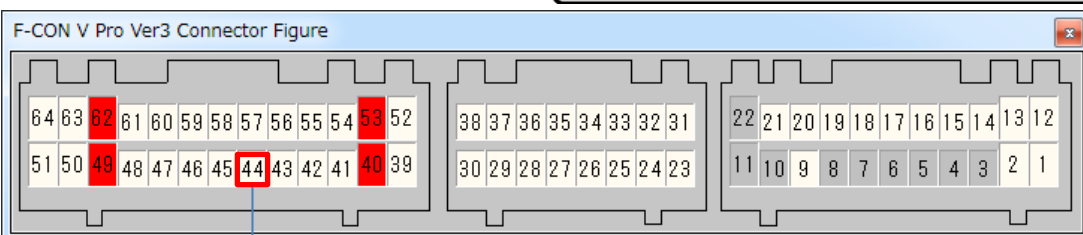
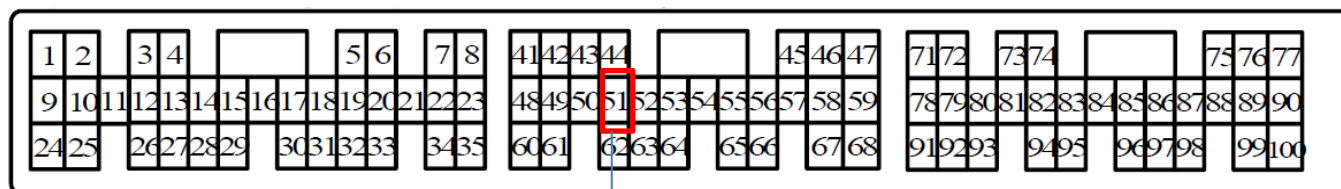
Go to Input Setting under Parameter Setting, and select Voltage. Set PIN 9 to "AirFlow_2".

Also, go to Output Setting, and select "Input_Value(Airflow2)" for PIN57. Set the output maximum value to approximately 3800MV. This setting can avoid the ECU's overload recognition when the boost pressure is increased.



■ Wiring Modification of Factory

After removal of the airflow meter, wiring of the atmospheric pressure sensor must be modified as shown below.



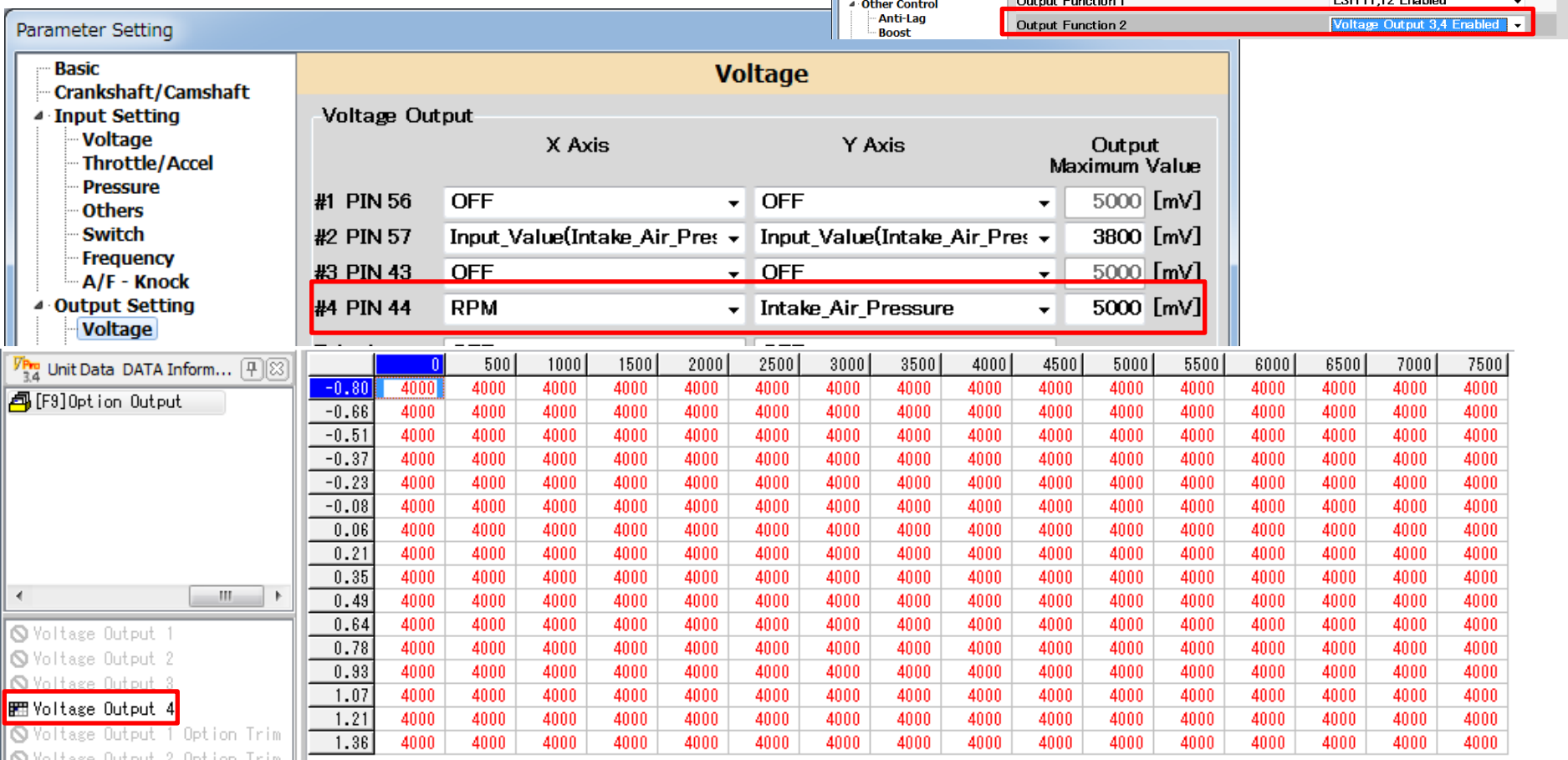
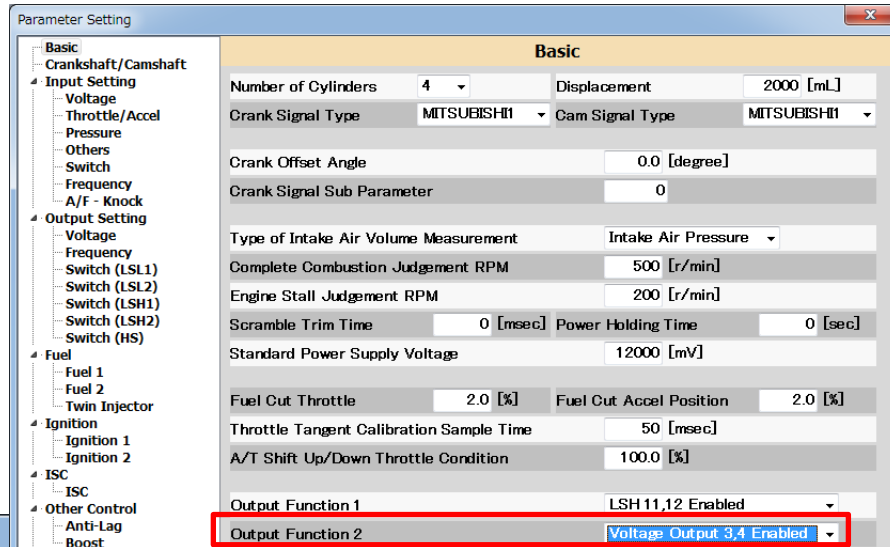
Go to next page to see the software setting.

✗ Cut off & Insulate



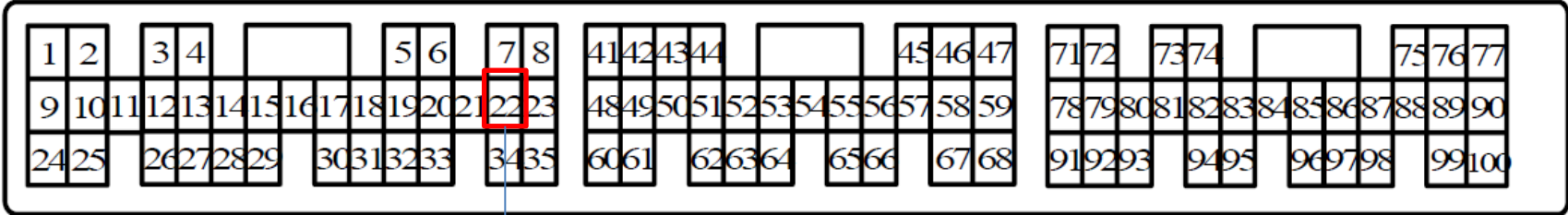
To Engine side's Factory Atmospheric Pressure Sensor

EVO9/8



■ To Avoid CEL

For EVO9, when the fuel and ignition are controlled by F-Con V Pro, the actual air-fuel ratio becomes different from the designated ratio so the factory ECU may detect it as abnormal air-fuel ratio, and the CEL may come on. To avoid this symptom, cut off #22 terminal on the ECU side. Make sure to insulate the terminal after cutting off. HKS OB-LINK or a similar device can check the engine error codes.



xCut off and Insulate

CEL on Engine Side

EVO9/8

Vehicle Setup Points (Setup on Chassis Dynamometer)

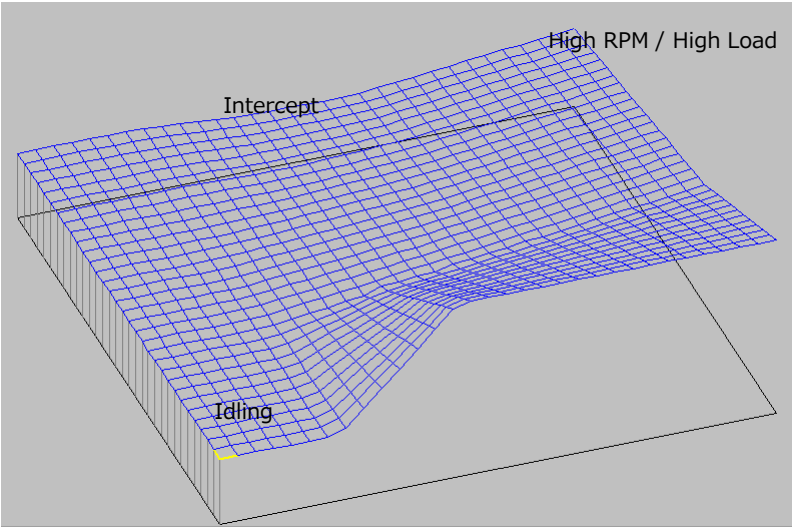
■ Standard Ignition Time Main Map

Based on information from F-CONIS-OB2 (CANH/L) , the ignition time map tracing the factory ECU ignition time was prepared to maintain the vehicle condition. (At intercept≠BTDC13, and under high speed & high load area ≠BTDC19)

To prepare STARTDATA, the knocking signal from the factory knocking sensor was confirmed using Oscilloscope, and the vehicle conditions were checked from its output waveform.

This map's values may vary depending on the vehicle's individual difference. Attention must be paid to the vehicle' knocking during setting up the vehicle.

Use the acceleration trim ignition time map and other items that may effect on the engine response as default data. The setup must be performed in accordance with each vehicle characteristics.



Unit Data DATA Inform...	2484	2710	2935	3161	3387	3613	3839	4065	4290	4516	4742	4968	5194	5419	5645	5871	6097	6323	6548	6774	7000
[F1]Axis Setting	-0.80	31.4	35.1	38.9	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
[F2]Conversion Table	-0.73	30.2	33.6	37.0	38.1	38.1	38.1	38.2	38.2	38.3	38.3	38.4	38.5	38.5	38.6	38.6	38.7	38.7	38.8	38.8	38.9
[F3]Fuel Control	-0.65	28.9	32.0	35.2	36.2	36.3	36.3	36.4	36.5	36.6	36.7	36.8	36.9	37.0	37.1	37.2	37.2	37.4	37.5	37.5	37.7
[F3]Fuel Map 1	-0.58	27.6	30.4	33.3	34.2	34.4	34.5	34.7	34.8	34.9	35.1	35.2	35.4	35.5	35.6	35.8	35.9	36.1	36.2	36.3	36.5
[F3]Fuel Map 2	-0.50	26.3	28.9	31.4	32.3	32.5	32.7	32.9	33.1	33.2	33.4	33.6	33.9	34.0	34.2	34.4	34.6	34.8	35.0	35.1	35.3
[F3]Fuel Map 3	-0.43	24.9	27.3	29.5	30.3	30.6	30.8	31.1	31.4	31.5	31.8	32.0	32.3	32.5	32.7	33.0	33.2	33.5	33.7	33.9	34.1
[F3]Fuel Cut	-0.36	23.8	25.7	27.7	28.5	28.8	29.0	29.3	29.6	29.8	30.1	30.5	30.8	31.0	31.3	31.6	31.8	32.2	32.5	32.7	33.0
[F4]A/F	-0.28	22.4	24.1	25.8	26.5	26.8	27.2	27.5	27.9	28.2	28.5	28.9	29.2	29.5	29.8	30.1	30.5	30.9	31.2	31.5	31.8
[F5]Ignition Control	-0.21	21.1	22.5	23.9	24.6	24.9	25.3	25.7	26.1	26.5	26.8	27.3	27.6	28.0	28.4	28.7	29.1	29.6	29.9	30.3	31.0
[F5]Ignition Map 1	-0.13	19.8	21.0	22.1	22.7	23.1	23.5	24.0	24.4	24.8	25.2	25.7	26.1	26.5	26.9	27.4	27.8	28.3	28.6	29.1	29.4
[F5]Ignition Map 2	-0.06	18.5	19.4	20.2	20.7	21.2	21.7	22.2	22.6	23.1	23.5	24.1	24.5	25.0	25.4	25.9	26.4	26.9	27.4	27.8	28.3
[F6]ISC	0.02	17.3	17.8	19.1	19.3	19.9	20.1	20.9	21.3	21.8	22.2	23.0	23.1	23.7	24.1	24.7	25.3	25.6	26.1	26.6	27.2
[F7]Boost	0.09	17.1	17.6	18.1	18.5	19.0	19.5	20.0	20.5	21.0	21.5	22.1	22.6	23.1	23.6	24.1	24.6	25.1	25.6	26.1	26.7
[F8]Valve Timing	0.17	16.9	17.3	17.8	18.2	18.7	19.2	19.6	20.1	20.6	21.1	21.6	22.1	22.6	23.1	23.6	24.2	24.7	25.2	25.7	26.2
[F9]Option Output	0.24	16.7	17.1	17.6	18.0	18.4	18.8	19.2	19.7	20.2	20.6	21.2	21.7	22.2	22.7	23.2	23.7	24.2	24.7	25.2	25.8
	0.31	16.6	16.9	17.3	17.7	18.1	18.5	18.9	19.3	19.7	20.2	20.8	21.3	21.8	22.2	22.7	23.3	23.8	24.2	24.7	25.3
	0.39	16.4	16.7	17.0	17.4	17.7	18.1	18.5	18.9	19.3	19.8	20.4	20.8	21.3	21.8	22.3	22.8	23.3	23.8	24.3	24.8
	0.46	16.2	16.5	16.7	17.1	17.4	17.8	18.1	18.5	18.9	19.4	19.9	20.4	20.9	21.3	21.8	22.4	22.9	23.3	23.8	24.3
	0.53	16.0	16.3	16.5	16.8	17.1	17.5	17.8	18.1	18.5	19.0	19.5	20.0	20.5	20.9	21.4	21.9	22.4	22.8	23.3	23.8
	0.61	15.8	16.1	16.2	16.5	16.8	17.1	17.4	17.7	18.1	18.5	19.1	19.5	20.0	20.4	20.9	21.5	22.0	22.4	22.9	23.4
	0.68	15.6	15.8	15.9	16.2	16.5	16.8	17.1	17.3	17.7	18.1	18.6	19.1	19.6	20.0	20.5	21.0	21.5	21.9	22.4	22.9
	0.76	15.5	15.6	15.7	15.9	16.2	16.4	16.7	17.0	17.3	17.7	18.2	18.7	19.2	19.6	20.0	20.6	21.1	21.4	21.9	22.4
	0.83	15.3	15.4	15.5	15.6	15.9	16.1	16.3	16.6	16.8	17.3	17.8	18.2	18.7	19.1	19.6	20.1	20.6	21.0	21.5	21.9
	0.91	15.1	15.1	15.2	15.3	15.5	15.7	16.0	16.2	16.4	16.9	17.3	17.8	18.3	18.7	19.2	19.6	20.1	20.5	21.0	21.5
	0.98	14.9	14.9	14.9	15.0	15.2	15.4	15.6	15.8	16.0	16.4	16.9	17.3	17.8	18.2	18.7	19.2	19.7	20.1	20.6	21.0
	1.06	14.7	14.7	14.6	14.7	14.9	15.1	15.2	15.4	15.6	16.0	16.5	16.9	17.4	17.8	18.3	18.7	19.2	19.6	20.1	20.5
	1.13	14.5	14.4	14.4	14.5	14.6	14.7	14.8	15.0	15.2	15.6	16.1	16.5	17.0	17.4	17.8	18.3	18.8	19.1	19.6	20.1
	1.20	14.3	14.2	14.1	14.2	14.3	14.3	14.4	14.6	14.8	15.2	15.6	16.0	16.5	16.9	17.4	17.8	18.3	18.7	19.2	19.6
	1.28	14.2	14.0	13.9	13.9	14.0	14.0	14.1	14.2	14.3	14.8	15.2	15.6	16.1	16.5	16.9	17.4	17.9	18.2	18.7	19.1
	1.35	14.0	13.8	13.6	13.6	13.7	13.7	13.7	13.8	13.9	14.3	14.8	15.2	15.7	16.1	16.5	16.9	17.4	17.7	18.2	18.6
	1.43	13.8	13.5	13.4	13.3	13.3	13.3	13.4	13.4	13.5	13.9	14.3	14.7	15.2	15.6	16.0	16.5	17.0	17.3	17.8	18.2
	1.50	13.6	13.3	13.1	13.0	13.0	13.0	13.0	13.0	13.1	13.5	13.9	14.3	14.8	15.2	15.6	16.0	16.5	16.8	17.3	17.7

Vehicle Setup Points (Setup on Chassis Dynamo Meter)

■ Standard Ignition Time Main Map

Based on information from F-CONIS “F Main Input·Output”, the ignition timing map tracing the factory ECU ignition time was prepared to maintain the vehicle condition. (At intercept≒18000μSEC, and under high area (nearly the rev limit) ≒16900μSEC afterward.)

Under the high RPM area, the boost pressure slightly dropped, but the injector opening rate became nearly equal to 95% or higher; therefore, the limit of the factory boost pressure increase should be about 1.5K.

Also, it was confirmed that the value of the AF was about 11.0 under the high RPM and high load area.

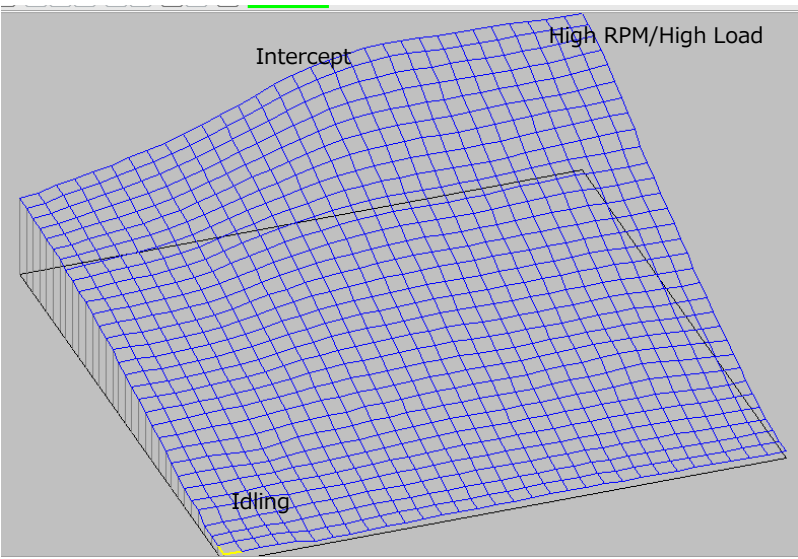
Unit Data DATA Inform...
[F3] Fuel Control
Standard Injection Time
Injection Time at Start
None Phase Injection Time
Independent Injection Time
Main Injector Dead Time

Voltage	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
Time	5000	4000	3000	2000	1625	1250	1100	950	825	700	650	600	550	500	450	400

Considering the injector dead time of the factory injectors, the injector dead time of the injector dead time map was set to be longer, and the total injection time was adjusted in the standard injection time main map.

Use the non-phase injection time map, acceleration trim map (fuel correction), and other items that may effect on the engine response as default data. The setup must be performed in accordance with each vehicle characteristics.

	2484	2710	2935	3161	3387	3613	3839	4065	4290	4516	4742	4968	5194	5419	5645	5871	6097	6323	6548	6774	7000
-0.80	746	771	779	722	723	754	837	876	876	867	844	820	799	785	772	770	767	765	758	754	752
-0.73	827	827	851	836	848	871	933	963	961	949	931	912	896	881	847	844	807	814	783	806	796
-0.65	1069	1070	1111	1125	1126	1121	1150	1152	1148	1147	1150	1141	1115	1099	1061	1067	1001	993	943	974	961
-0.58	1369	1385	1444	1484	1476	1470	1470	1453	1436	1438	1459	1465	1451	1437	1401	1396	1315	1285	1209	1224	1205
-0.50	1752	1765	1834	1877	1895	1890	1879	1839	1799	1800	1817	1843	1843	1856	1811	1799	1690	1628	1542	1548	1542
-0.43	2105	2113	2173	2244	2280	2281	2282	2263	2251	2246	2253	2283	2300	2305	2265	2234	2156	2072	1967	1922	1906
-0.36	2466	2506	2574	2645	2705	2699	2712	2678	2691	2691	2715	2744	2754	2772	2746	2722	2627	2515	2399	2338	2314
-0.28	2856	2951	3032	3062	3118	3103	3126	3084	3074	3093	3165	3234	3245	3292	3360	3367	3269	3116	2953	2833	2760
-0.21	3366	3410	3487	3519	3589	3629	3666	3593	3523	3549	3663	3775	3793	3881	3982	4023	3904	3740	3521	3367	3247
-0.13	3916	3933	4019	4057	4109	4134	4177	4121	4075	4093	4198	4319	4369	4479	4517	4537	4412	4302	4072	3897	3764
-0.06	4511	4488	4538	4588	4635	4683	4712	4641	4603	4607	4695	4770	4808	4875	4863	4872	4808	4743	4559	4397	4293
0.02	5036	5055	5108	5138	5181	5238	5246	5160	5113	5085	5150	5188	5217	5264	5229	5228	5177	5143	5022	4909	4851
0.09	5592	5601	5648	5654	5713	5814	5825	5711	5594	5554	5618	5651	5654	5677	5703	5732	5718	5609	5511	5426	5436
0.17	6076	6113	6189	6201	6254	6353	6396	6307	6202	6152	6209	6242	6250	6270	6294	6320	6307	6203	6112	6034	6047
0.24	6546	6615	6721	6731	6773	6850	6921	6870	6793	6750	6801	6833	6845	6864	6884	6908	6896	6796	6713	6641	6658
0.31	7019	7116	7236	7264	7314	7385	7465	7438	7384	7344	7389	7420	7437	7453	7472	7492	7482	7439	7363	7298	7266
0.39	7491	7623	7758	7807	7879	7956	8040	8025	7992	7943	7981	8011	8033	8047	8062	8080	8071	8033	7964	7906	7877
0.46	7955	8126	8281	8359	8458	8549	8631	8618	8587	8537	8569	8598	8625	8636	8649	8664	8657	8622	8561	8510	8484
0.53	8413	8627	8805	8913	9040	9145	9226	9215	9185	9135	9161	9189	9220	9230	9240	9252	9246	9215	9184	9168	9172
0.61	8876	9126	9327	9468	9623	9740	9820	9812	9750	9690	9710	9774	9840	9874	9906	9926	9912	9870	9850	9842	9865
0.68	9350	9624	9848	10022	10206	10336	10414	10409	10317	10250	10270	10373	10477	10531	10589	10611	10596	10539	10507	10479	10496
0.76	9835	10123	10370	10577	10788	10932	11009	10976	10945	10908	10905	10973	11093	11159	11199	11211	11231	11192	11150	11104	11159
0.83	10295	10598	10878	11127	11375	11544	11634	11645	11596	11543	11548	11608	11686	11713	11784	11865	11874	11905	11883	11941	11949
0.91	10707	11055	11379	11678	11975	12181	12297	12395	12384	12292	12274	12267	12269	12320	12423	12525	12595	12690	12809	12880	12857
0.98	11098	11492	11869	12229	12582	12838	12995	13072	13074	13091	13059	13041	13060	13093	13193	13294	13409	13449	13519	13604	13577
1.06	11488	11929	12359	12809	13220	13554	13753	13869	13915	13900	13895	13848	13883	13963	14047	14114	14158	14147	14151	14188	14228
1.13	11879	12366	12849	13359	13827	14211	14451	14600	14670	14672	14628	14612	14648	14721	14759	14757	14737	14795	14783	14922	15017
1.20	12267	12800	13336	13906	14492	14895	15145	15321	15416	15442	15422	15412	15414	15430	15388	15423	15452	15550	15666	15862	
1.28	12658	13237	13789	14456	15039	15533	15854	16050	16182	16240	16219	16211	16178	16155	16080	16049	16088	16186	16263	16419	16499
1.35	13046	13671	14313	15003	15643	16174	16525	16756	16907	17011	16985	16951	16945	16883	16781	16727	16748	16817	16849	16968	16998
1.43	13436	14108	14803	15553	16251	16881	17217	17493	17685	17788	17746	17713	17675	17503	17434	17435	17420	17491	17578	17691	17722
1.50	13631	14325	15047	15827	16553	17141	17538	17843	18044	18173	18124	18074	17970	17915	17856	17815	17758	17850	17962	17474	17455



Refer to the manual of F-CON V Pro Ver.3.4 for use of the fuel mapping, etc.

Vehicle Setup Points (Setting Items, etc.)

■ Other Items

■ Start Injection Time Map

To improve the startability, the value of the start injection time map was changed.
If the startability is a satisfied level, continue setting up with default data used when a new file was made.

	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120	130
1	57600	35800	16200	10950	7920	6960	6000	5040	5040	5040	5040	5040	5040	5040	5040	5040
2	57600	35800	16200	10950	7920	6960	6000	5040	5040	5040	5040	5040	5040	5040	5040	5040
3	57600	35800	16200	10950	7920	6960	6000	5040	5040	5040	5040	5040	5040	5040	5040	5040
4	57600	35800	16200	10950	7920	6960	6000	5040	5040	5040	5040	5040	5040	5040	5040	5040
5	57600	35800	16200	10950	7920	6960	6000	5040	5040	5040	5040	5040	5040	5040	5040	5040
6	57600	35800	16200	10950	7920	6960	6000	5040	5040	5040	5040	5040	5040	5040	5040	5040
7	57600	35800	16200	10950	7920	6960	6000	5040	5040	5040	5040	5040	5040	5040	5040	5040
8	57600	35800	16200	10950	7920	6960	6000	5040	5040	5040	5040	5040	5040	5040	5040	5040

■ For the parameter setting for the airflow meter process and wiring modification, refer to page 4. CT9ASTARTDATA was prepared based on a vehicle equipped with the factory airflow meter. For the vehicle without the airflow meter, edit the parameter as shown in the diagram on the right. Edit the output maximum value of #2 PIN under Frequency of Parameter Setting from 20 to 2000[Hz], which is equivalent to the output from the factory airflow meter.

	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
[F7]Boost	-0.80	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
[F8]Valve Timing	-0.68	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
[F8]Option Output	-0.51	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Voltage Output 1	-0.27	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Voltage Output 2	-0.23	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Voltage Output 3	-0.08	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Voltage Output 4	0.06	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Voltage Output 1 Option Time	0.21	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Voltage Output 2 Option Time	0.35	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Frequency Output 1	0.49	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Duty Pulse Output 1	0.64	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Duty Pulse Output 2	0.78	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	0.95	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	1.07	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	1.21	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
	1.36	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

Parameter Setting

Basic

Crankshaft/Camshaft

Input Setting

Voltage

Throttle/Accel

Pressure

Others

Switch

Frequency

STARTDATA

Frequency

Option Frequency Input

Frequency 1 PIN 58 JIS_Speed

Frequency 2 PIN 59 OFF

Car Speed Control Data

JIS_Speed

Parameter Setting

Basic

Crankshaft/Camshaft

Input Setting

Voltage

Throttle/Accel

Pressure

Others

Switch

Frequency

A/F - Knock

Output Setting

Voltage

Frequency

w/out Airflow Meter

Frequency Output

X Axis

Y Axis

Output Maximum Value

#1 PIN 45 Input_Value Input_Value 164.9 [km/h]

#2 PIN 46 RPM Intake_Air_Pressure 2000.0 [h-k]

Frequency Output Voltage

Unit Data DATA Inform...

[F3]Fuel Cut

[F4]A/F

[F5]

[F5]

Deceleration Fuel Cut

RPM Fuel Cut

Port	1	2	3	4	5	6	7	8
Cut	7000	6950	7000	6950	20000	20000	20000	20000
Return	6900	6900	6900	6900	20000	20000	20000	20000

■ RPM Fuel Cut Map

For those vehicles equipped with the factory CAT or Metal Catalyzer, the rev limiter is controlled by fuel cut.
For STARTDATA, the impact from the fuel cut is reduced by the setting shown above.

For those vehicles without CATs, the rev limiter can be controlled by editing Ignition Cut RPM of Parameter Setting as shown in the diagram on the right. Make sure not to perform this setting for the vehicle equipped with a CAT. If neglected, it may cause damage to a CAT by unburnt gas which results in damage to an engine.

Parameter Setting

Basic

Crankshaft/Camshaft

Input Setting

Output Setting

Fuel

Ignition

Ignition 1

Ignition 2

Ignition Cut RPM

Normal 7000 [rpm]

Start 20000 [rpm]

Ignition Cut (Start) Setting

■ Speed Limiter Cancel Function (Formula is shown on the right.)

The speed signal setting is done in #1 PIN 45 of Frequency Output Setting under Parameter Setting.

For CT9ASTARTDATA, the following setting was done to cancel the speed limiter. The speed limiter cancel function is set to activate at 116.7[Hz] by input 116.7 to the output maximum value.

For CT9ASTARTDATA, the output maximum value is set to the value shown above, and the ECU's speed recognition is clipped approximately at 165km.

In Frequency of Input Setting under Parameter Setting, "JIS_Speed" was selected for Option Frequency Input's Frequency 1 PIN 58, and "4" was input for Number of JIS Car Speed Signal Pulse.

■ Formula to Calculate Frequency Input Value

$$F=N\times SPD/5,6515$$

F=Frequency (HZ)

N=Speed Pulse

SPD=Car Speed (KM/H)

Parameter Setting

Basic

Crankshaft/Camshaft

Input Setting

Output Setting

Voltage

Frequency

Switch (LSL1)

Switch (LSL2)

Switch (LSH1)

Frequency

Frequency Output

	X Axis	Y Axis	Output Maximum Value
#1 PIN 45	Input_Value	Input_Value	116.7 [Hz]
#2 PIN 46	RPM	Intake_Air_Pressure	2000.0 [Hz]

Parameter Setting

Basic

Crankshaft/Camshaft

Input Setting

Voltage

Throttle/Accel

Pressure

Others

Switch

Frequency

A/F - Knock

Output Setting

Voltage

Frequency

Switch (LSL1)

Switch (LSL2)

Switch (LSH1)

Switch (LSH2)

Switch (HS)

Fuel

Fuel 1

Fuel 2

Twin Injector

Frequency

Option Frequency Input

Frequency 1 PIN 58 JIS_Speed

Frequency 2 PIN 59 OFF

Car Speed Control Data JIS_Speed

Wheel Speed 1 Tire Circumference 0 [mm]

Wheel Speed 1 Number of Pulse 0

Wheel Speed 1 Trim Coefficient 0.0 [%]

Wheel Speed 2 Tire Circumference 0 [mm]

Wheel Speed 2 Number of Pulse 0

Wheel Speed 2 Trim Coefficient 0.0 [%]

Number of JIS Car Speed Signal Pulse 4