

Instruction Manual



INSTALLATION INSTRUCTIONS FOR EMS P/N 30-6601

**1991-1993 Silvia S13 SR20DET
1991-1995 Nissan 180SX SR20DET**



STOP!

THIS PRODUCT HAS LEGAL RESTRICTIONS.
READ THIS BEFORE INSTALLING/USING!

WARNING! THIS IS A RACE ONLY PRODUCT MANUFACTURED AND SOLD FOR INSTALLATION ON VEHICLES DESIGNED TO BE USED SOLELY FOR COMPETITION PURPOSES. ONCE THIS PART IS INSTALLED, THE VEHICLE MAY NEVER BE USED, OR REGISTERED OR LICENSED FOR USE, ON A PUBLIC ROAD OR HIGHWAY. IF YOU INSTALL THIS PART ON YOUR VEHICLE AND USE THE VEHICLE ON A PUBLIC ROAD OR HIGHWAY, YOU WILL VIOLATE THE CLEAN AIR ACT AND MAY BE SUBJECT TO PERSONAL CIVIL OR CRIMINAL LIABILITY, INCLUDING FINES OF UP TO \$4,819 PER DAY.

IT IS THE RESPONSIBILITY OF THE INSTALLER AND/OR USER OF THIS PRODUCT TO ENSURE THAT IT IS USED IN COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. IF THIS PRODUCT WAS PURCHASED IN ERROR, DO NOT INSTALL AND/OR USE IT. THE PURCHASER MUST ARRANGE TO RETURN THE PRODUCT FOR A FULL REFUND.

THIS POLICY ONLY APPLIES TO INSTALLERS AND/OR USERS WHO ARE LOCATED IN THE UNITED STATES; HOWEVER CUSTOMERS WHO RESIDE IN OTHER COUNTRIES SHOULD ACT IN ACCORDANCE WITH THEIR LOCAL LAWS AND REGULATIONS.

WARNING!

Improper installation and/or adjustment of this product can result in major engine/vehicle damage. For technical assistance visit our dealer locator to find a professional installer/tuner near you.

Note: AEM holds no responsibility for any engine damage or personal injury that results from the misuse of this product, including but not limited to injury or death.

AEM Performance Electronics
2205 W. 126TH STREET UNIT A, HAWTHORNE, CA 90250
PHONE: (310) 484-2322 FAX: (310) 484-0152
<http://www.aempower.com>
Instruction Part Number: 10-6601

Thank you for purchasing an AEM Engine Management System.

The AEM Engine Management System (EMS) is the result of extensive development on a wide variety of cars. Each system is engineered for the particular application. The AEM EMS differs from all others in several ways. The EMS is a stand alone system, which completely replaces the factory ECU and features unique Plug and Play Technology, which means that each system is configured especially for your make and model of car without any jumper harnesses. There is no need to modify your factory wiring harness and in most cases your car may be returned to stock in a matter of minutes.

For stock and slightly modified vehicles, the supplied startup calibrations are configured to work with OEM sensors, providing a solid starting point for beginner tuning. For more heavily modified cars, the EMS can be reconfigured to utilize aftermarket sensors and has many spare inputs and outputs allowing the elimination of add-on rev-limiters, boost controllers, nitrous controllers, fuel computers, etc. It also includes a configurable onboard 1MB data logger that can record any 16 EMS parameters at up to 250 samples per second. Every EMS comes with all functions installed and activated; there is no need to purchase options or upgrades to unlock the full potential of your unit.

The installation of the AEM EMS on the supported vehicles uses the stock sensors and actuators. After installing the AEMTuner software, the startup calibration will be saved to the following folder on your PC:

C:\Program Files\AEM\AEMTuner\Calibrations\Nissan

Multiple calibrations may be supplied for each EMS; additional details of the test vehicle used to generate each calibration can be found in the Calibration Notes section for that file.

Please visit the AEM Performance Electronics Forum at <http://www.aempower.com> and register. We always post the most current strategy release, PC Software and startup calibrations online. On the forum, you can find and share many helpful hints/tips to make your EMS perform its best.

TUNING NOTES AND WARNING:

While the supplied startup calibration may be a good starting point and can save considerable time and money, it will not replace the need to tune the EMS for your specific application. AEM startup calibrations are not intended to be driven aggressively before tuning. We strongly recommend that every EMS be tuned by someone who is already familiar with the AEM software and has successfully tuned vehicles using an AEM EMS. Most people make mistakes as part of the learning process; be warned that using your vehicle as a learning platform can damage your engine, your vehicle, and your EMS.

Read and understand these instructions BEFORE attempting to install this product.

1) Install AEMTuner software onto your PC

The latest version of the AEMTuner software can be downloaded from the AEMTuner section of the AEM Performance Electronics forums. Series 2 units are not supported by the older AEMPro tuning software.

2) Change Cam/Crank Angle Sensor: AEM trigger disc MUST be used

On Nissans, discrepancies have been observed in the OEM cam/crank angle signals between model years and/or trim levels. To avoid confusion the Series 2 EMS does not support the OEM Nissan trigger pattern. A replacement trigger disc is now included with every Nissan EMS and must be installed before attempting to start the engine. An AEM trigger disc is supplied with each 30-6601 EMS which fits SR20DET cam angle sensors. Please consult the following instructions supplement, which will be installed to the C:\Program Files\AEM\AEMTuner\Instructions folder:

'10-6600-C for EMS - 30-66XX supplement- CAS trigger install KA, GA, and SR engines.PDF'

3) Remove the Stock Engine Control Unit

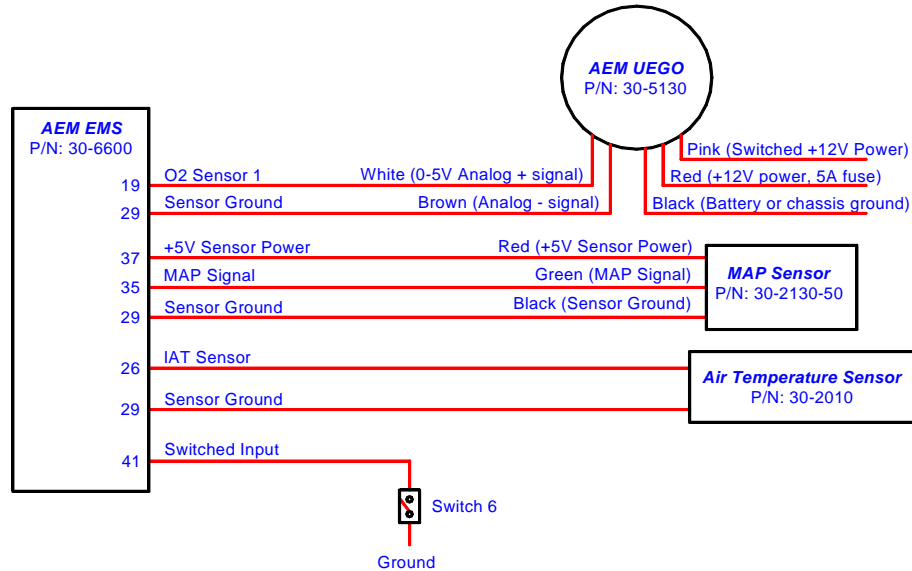
- a) Access the stock Engine Control Unit (ECU). The location of the ECU on the 180SX, Silvia, and 240SX vehicles is behind the kick-panel on the passenger side of the vehicle.
- b) Carefully disconnect the wiring harness from the ECU. Avoid excessive stress or pulling on the wires, as this may damage the wiring harness. Some factory ECUs use a bolt to retain the factory connectors, and it must be removed before the harness can be disconnected. There may be more than one connector, and they must all be removed without damage to work properly with the AEM ECU. Do not cut any of the wires in the factory wiring harness to remove them.
- c) Remove the fasteners securing the ECU to the car body, and set them aside. Do not destroy or discard the factory ECU, as it can be reinstalled easily for street use and troubleshooting.

4) Install the AEM Engine Management System

- a) Plug the factory wiring harness into the AEM EMS and position it so the wires are not pulled tight or stressed in any manner. Secure the EMS with the provided Velcro fasteners.
- b) Plug the comms cable into the EMS and into your PC.
- c) Turn the ignition on, but do not attempt to start the engine.
- d) At the time these instructions were written, new EMS units do not require USB drivers to be installed to the PC.
- e) With the AEMTuner software open, select **ECU>>Upload Calibration** to upload the startup calibration file (.cal) that most closely matches the vehicle's configuration to be tuned. Check the Notes section of the calibration for more info about the vehicle it was configured for. These files can be found in the following folder:
C:\Program Files\AEM\AEMTuner\Calibrations\Nissan
- f) Set the throttle range: Select Wizards>>Set Throttle Range and follow the on-screen instructions. When finished, check that the 'Throttle' channel never indicates less than 0.2% or greater than 99.0%, this is considered a sensor error and may cause some functions including idle feedback and acceleration fuel to operate incorrectly.

5) Wiring accessories to the EMS:

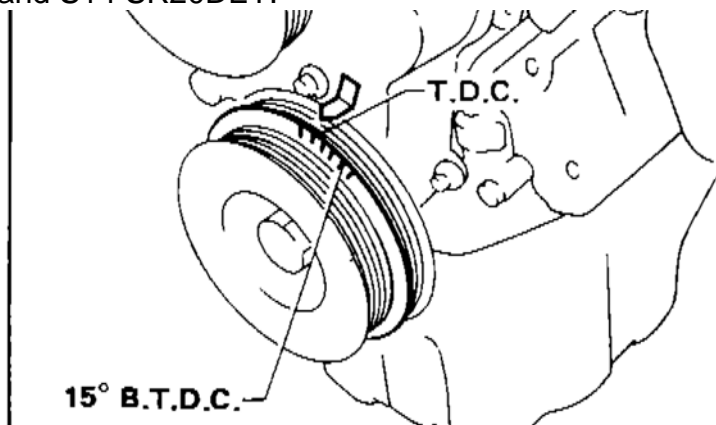
Please follow this suggested wiring diagram when adding accessories such as UEGO gauges, MAP sensors, IAT sensors, or switches for use with the EMS. Note that wire polarity is not important for the Air Temperature sensor.



6) Ready to begin tuning the vehicle.

- a) Before starting the engine, verify that the fuel pump runs for a couple of seconds when the key is turned on and there is sufficient pressure at the fuel rail. If a MAP sensor is installed, check that the Engine Load indicates something near atmospheric pressure (approximately 101kPa or 0 PSI at sea level) with the key on and engine off. Press the throttle and verify that the 'Throttle' channel responds but the Engine Load channel continues to measure atmospheric pressure correctly.
- b) Start the engine and make whatever adjustments may be needed to sustain a safe and reasonably smooth idle. Verify the ignition timing: Select **Wizards>>Ignition Timing Sync** from the pull-down menu. Click the 'Lock Ignition Timing' checkbox and set the timing to a safe and convenient value (for instance, 10 degrees BTDC). Use a timing light and compare the physical timing numbers to the timing value you selected. Use the *Sync Adjustment Increase/Decrease* buttons to make the physical reading match the timing number you selected.

Crankshaft timing marks are not labeled for some vehicles. Consult the factory service manual for more information. The diagram below shows labels for the S13 and S14 SR20DET:



- c) Note: This calibration needs to be properly tuned before driving the vehicle. It is intended for racing vehicles and may not operate smoothly at idle or part-throttle.
NEVER TUNE THE VEHICLE WHILE DRIVING

7) Troubleshooting an engine that will not start

- a) Double-check all the basics first... engines need air, fuel, compression, and a correctly-timed spark event. If any of these are lacking, we suggest checking simple things first. Depending on the symptoms, it may be best to inspect fuses, sufficient battery voltage, properly mated wiring connectors, spark using a timing light or by removing the spark plug, wiring continuity tests, measure ECU pinout voltages, replace recently-added or untested components with known-good spares. Check that all EMS sensor inputs measure realistic temperature and/or pressure values.
- b) If the EMS is not firing the coils or injectors at all, open the Start tab and look for the 'Stat Sync'd' channel to turn ON when cranking. This indicates that the EMS has detected the expected cam and crank signals; if Stat Sync'd does not turn on, monitor the Crank Tooth Period and T2PER channels which indicate the time between pulses on the Crank and T2 (Cam) signals. Both of these channels should respond when the engine is cranking, if either signal is not being detected or measuring an incorrect number of pulses per engine cycle the EMS will not fire the coils or injectors.
- c) If the Engine Load changes when the throttle is pressed this usually indicates that there is a problem with the MAP sensor wiring or software calibration (when the EMS detects that the MAP Volts are above or below the min/max limits it will run in a failsafe mode using the TPS-to-Load table to generate an artificial Engine Load signal using the Throttle input). This may allow the engine to sputter or start but not continue running properly.

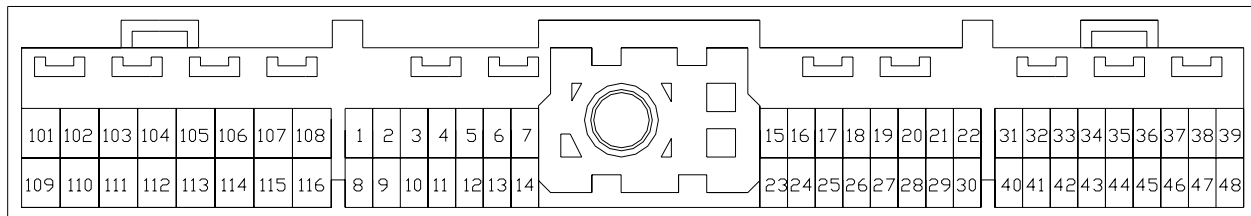
Application Notes for EMS P/N 30-6601

1991-1993 Silvia S13 SR20DET, 1991-1995 180SX SR20DET

| | |
|-----------------------------|-----------------------------|
| Make: | Nissan |
| Model: | Silvia and 180SX |
| Years Covered: | 1991-1995 |
| Engine Displacement: | 2.0L |
| Engine Configuration: | Inline 4 |
| Firing Order: | 1-3-4-2 |
| N/A, S/C or T/C: | Turbocharged |
| Load Sensor Type: | 0-5V MAF |
| # Coils: | 4 |
| Ignition driver type: | 0-5V Falling Edge trigger |
| Number of Injectors: | 4 (P&H drivers: Inj 1-4) |
| Factory Injectors: | 370cc Saturated |
| Factory Inj Resistors: | No |
| Injection Mode: | Sequential |
| Knock Sensors used: | 1 |
| Lambda Sensors used: | 1 |
| Idle Motor Type: | Duty-controlled solenoid |
| Main Relay Control: | Yes (not user programmable) |
| Crank Pickup Type: | Optical |
| **Crank Teeth/Cycle: | 24 (AEM trigger disc) |
| Cam Pickup Type: | Optical |
| **Cam Teeth/Cycle: | 1 (AEM trigger disc) |
| Transmissions Offered: | Manual/Automatic |
| Trans Supported: | Manual |
| Drive Options: | RWD |
| Supplied Connectors: | N/A |
| AEM extension/patch harness | 30-2995 |

| | |
|-------------------------|------------------|
| Spare Injector Drivers: | Inj 5, Pin 23 |
| Spare Injector Drivers: | Inj 6, Pin 105 |
| Spare Injector Drivers: | Inj 7, Pin 14 |
| Spare Injector Drivers: | Inj 8, Pin 114 |
| Boost Solenoid: | PW 2, Pin 111 |
| EGT 1 Location: | Pin 5 |
| EGT 2 Location: | Pin 15 |
| EGT 3 Location: | Pin 44 |
| EGT 4 Location: | Pin 115 |
| Spare 0-5V Channels: | MAP, Pin 35 |
| Spare 0-5V Channels: | ADCR11, Pin 33 |
| Spare Low Side Driver: | LS2, Pin 45 |
| Spare Low Side Driver: | LS4, Pin 102 |
| Spare Low Side Driver: | LS5, Pin 10 |
| Spare Low Side Driver: | LS6, Pin 11 |
| Check Engine Light: | LS10, Pin 24 |
| Spare High Side Driver: | HS1, Pin 28 |
| Spare Switch Input: | Switch 2, Pin 43 |
| A/C Switch Input: | Switch 6, Pin 41 |

Wire View of AEM EMS



WARNING:

*All switch input pins must connect to ground; the switch should not provide 12V power to the EMS because that will not be detected as on or off.

The function of several pins have been changed from the original 30-1601 EMS, please see the pinout chart for more info.

Engine Wiring Harnesses, 'swapped' engine installations

Many Nissan wiring harnesses have been found to contain significant differences between model years and/or trim levels. Likely differences include: Crank signal, Cam signal, Ignition switch wiring (the Ignition switch input controls the Main Relay output), injector and coil destinations. Official documentation for some vehicles was not offered in English, so it would be very wise to double-check the pinout destinations for these circuits. This is especially true if the vehicle contains a 'swapped' engine or if the wiring harness has been cut, spliced, soldered, tapped or modified in any manner. It is the user's responsibility to check that the wiring on the vehicle matches the pinout chart below. AEM will not be held responsible for loss or damage that can occur if the EMS is installed in a vehicle in which the wiring harness does not match the AEM-supplied pinout chart!

Primary Load Sensor, EMS Fuel Strategy

The factory MAF (mass air flow) sensor(s) can be removed to help decrease intake air restriction; the EMS can be configured to use a MAP sensor to determine engine load. It is recommended to use a 3.5 bar MAP sensor or higher (P/N 30-2130-50).

The factory Mass Air Flow sensor can be used as the primary load input for the AEM EMS if desired. Please check the Notes section of each calibration for more info about the vehicle setup and fuel strategy that calibration was configured to use.

EMS Fuel Map, Boost Fuel Trim Table

The 30-6601 maps provided utilize the "*Boost Fuel Trim Table*" to provide a 1:1 fuel compensation above and below atmospheric pressure. In the startup calibration, the "*Boost Fuel Trim Table*" is configured to provide twice as much fuel when the manifold pressure is twice as high and half the fuel when the manifold pressure is half as high; this should help simplify the tuning process for different vacuum and boost levels. Notice the values in the main "*Fuel Map*" do not change above 100 kPa (0 psi boost), the fuel correction is being made by the "*Boost Fuel Trim Table*."

Note: the "*Boost Fuel Trim Table*" must be adjusted if a different MAP sensor is installed or if the Load breakpoints are adjusted. The Boost Fuel Trim value should be set to -90 at 10kPa, 0 at 100 kPa, +100 at 200 kPa, +200 at 300 kPa, etc...

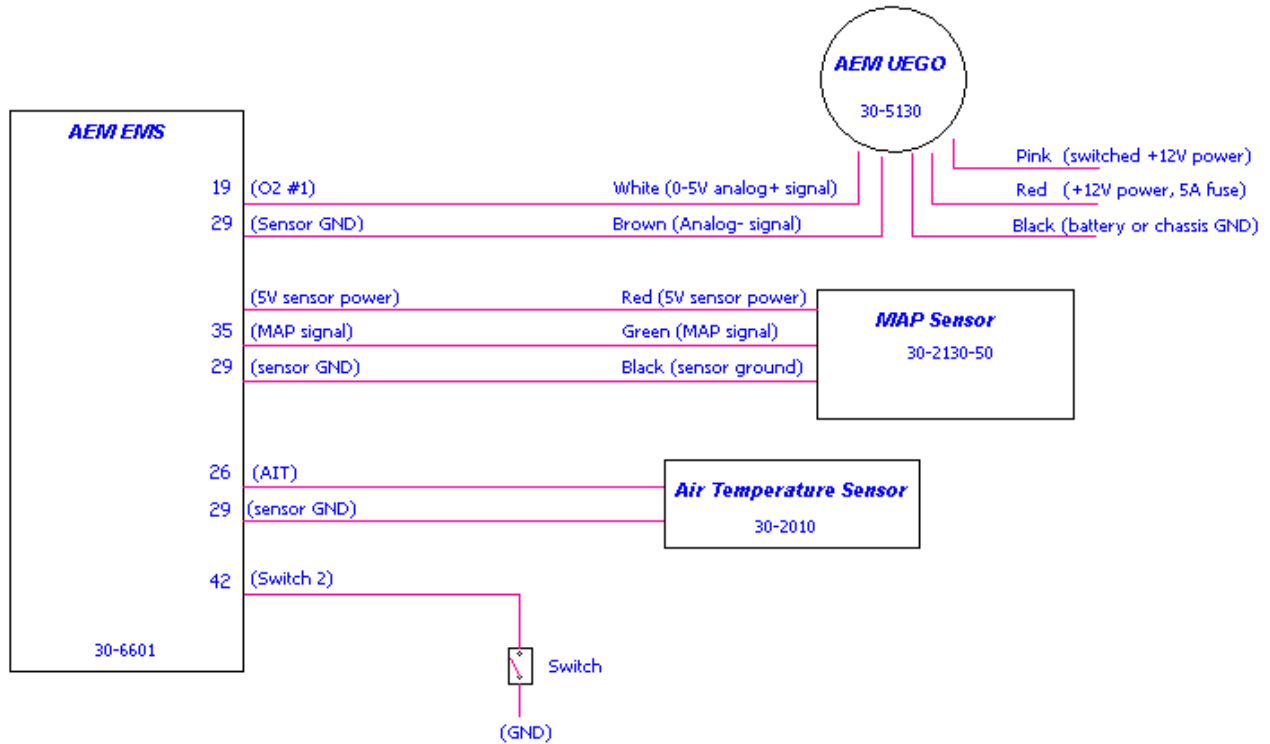
Peak and Hold Injector Drivers

Injectors 1-6 include Peak (4 amps) and Hold (1 amp) injector drivers. These drivers may be used with peak and hold or saturated type injectors. The factory Nissan wiring harness may contain a resistor pack to prevent excessive current when using low-impedance injectors with the stock ECU. With the 30-6601 installed, users can elect to remove and bypass the OEM resistor pack for more precise control of low-impedance injectors.

Please note that the injector response time will be different with and without the factory injector resistor pack. If the OEM resistor pack has been removed and bypassed, please use the correct battery offset wizard for your injectors. Most battery offset wizards will specify <P&H DRIVER> if they are intended for use without a resistor pack.

Wiring accessories to the EMS:

Please follow this suggested wiring diagram when adding accessories such as UEGO gauges, MAP sensors, IAT sensors, or switches for use with the EMS. Note that wire polarity is not important for the Air Temperature sensor.

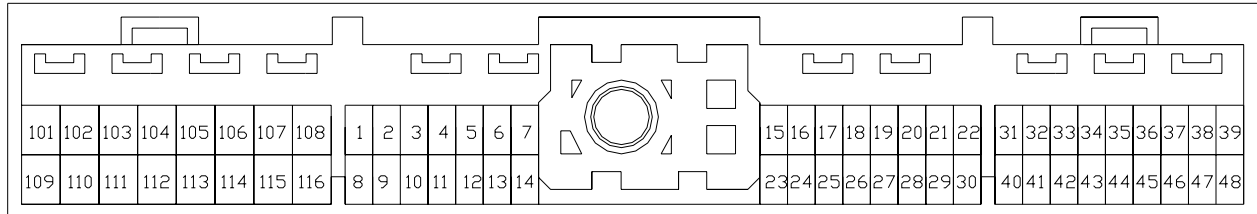


Connection Diagram for EMS P/N 30-6601

| | |
|-----------|--|
| PnP | These pins are used in the AEM-supplied startup calibration. They can be reconfigured by the end user. |
| Available | Not used by the startup calibration. Modifications to the OEM wiring may be required before use. |
| Dedicated | The function of these pins is fixed and must not be changed. |

| Pin | 1991-1995 Nissan 180SX SR20DET, 1991-1993 Nissan Silvia S13 SR20DET | AEM EMS 30-6601 | I/O | Notes |
|-----|--|----------------------|--------|--|
| 1 | Ignition 1 | Coil 1 | Output | PnP for Coil 1, 0-5V Falling Edge trigger |
| 2 | Ignition 2 | Coil 2 | Output | PnP for Coil 2, 0-5V Falling Edge trigger, connects to pin 7 |
| 3 | Tachometer Signal | Low Side 7 | Output | PnP for Tachometer |
| 4 | ECCS Self-Shutoff Relay | Main Relay (control) | Output | Dedicated, EMS activates relay with switched GND |
| 5 | Ignition pulse monitor | EGT 1 | Input | Available, jumper set for 0-5V Input |
| 6 | ECCS Ground | Power Ground | Input | Dedicated |
| 7 | Data Link Connector | Coil 2 | Output | PnP for Coil 2, 0-5V Falling Edge trigger, connects to pin 2 |
| 8 | Ignition 3 | Coil 3 | Output | PnP for Coil 3 |
| 9 | Ignition 4 | Coil 4 | Output | PnP for Coil 4 |
| 10 | --- | Low Side 5 | Output | Available, Switched Ground, 1.5A max |
| 11 | --- | Low Side 6 | Output | Available, Switched Ground, 1.5A max |
| 12 | A/T Signal No. 3 | CAN1H | Output | Dedicated, CAN high side |
| 13 | ECCS Ground | Power Ground | Input | Dedicated |
| 14 | Diagnostics Clock | Injector 7 | Output | Available, Switched Ground, 1.5A Max |

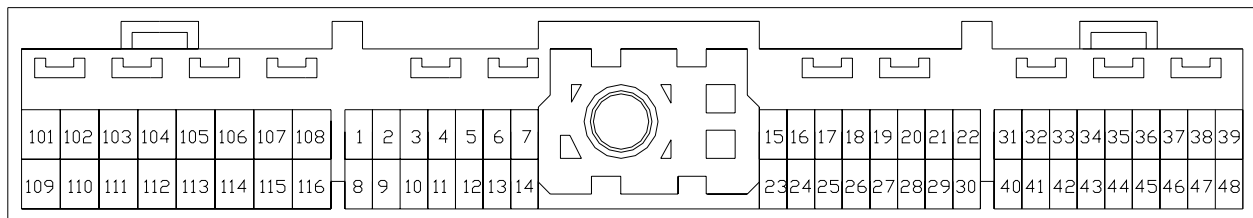
Wire View of AEM EMS



Connection Diagram for EMS P/N 30-6601

| Pin | 1991-1995 Nissan 180SX SR20DET, 1991-1993 Nissan Silvia S13 SR20DET | AEM EMS 30-6601 | I/O | Notes |
|-----|--|-----------------|--------|--|
| 15 | Data Link Connector | EGT 2 | Input | Available, jumper set for 0-5V Input |
| 16 | Mass Air Flow Sensor | MAF | Input | PnP for MAF Sensor |
| 17 | Mass Air Flow Ground | Power Ground | Input | Dedicated |
| 18 | ECT Sensor | Coolant | Input | PnP for Coolant Temp Sensor |
| 19 | Oxygen Sensor | O2 #1 | Input | Dedicated, 0-5V input signal |
| 20 | Throttle Position Sensor | TPS | Input | PnP for Throttle Position Sensor |
| 21 | Sensor Ground | Sensor Ground | Output | Dedicated, sensors only |
| 22 | Crankshaft Reference Signal | Cam (T2) | Input | Dedicated, must use AEM replacement trigger disc. |
| 23 | Data Link Connector | Injector 5 | Output | Available, Switched Ground, 1.5A Max |
| 24 | Malfunction Indicator Light | Low Side 10 | Output | Available, Switched Ground, 1.5A Max |
| 25 | Exhaust Over Temp Warning Lamp | Low Side 3 | Output | Available, Switched Ground, 1.5A Max |
| 26 | Exhaust Temperature sensor | AIT | Input | Available, Air Intake Temperature Sensor Input, (2.2k pull-up resistor to 5V) |
| 27 | Knock Sensor | Knock 1 | Input | PnP for Knock Sensor |
| 28 | A/T Signal No. 4 | High Side 1 | Output | Available, Switched +12V, 1.5A Max |
| 29 | Sensor Ground | Sensor Ground | Output | Dedicated, sensors only |
| 30 | Crankshaft Reference Signal | Cam (T2) | Input | Dedicated, must use AEM replacement trigger disc. |

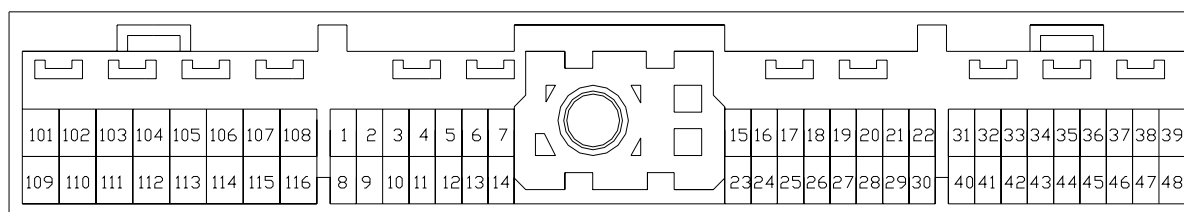
Wire View of AEM EMS



Connection Diagram for EMS P/N 30-6601

| Pin | 1991-1995 Nissan 180SX SR20DET, 1991-1993 Nissan Silvia S13 SR20DET | AEM EMS 30-6601 | I/O | Notes |
|-----|--|--------------------|--------|--|
| 31 | Crankshaft Position Sensor Signal | Crank Signal | Input | Dedicated, must use AEM replacement trigger disc Connects to pin 40 |
| 32 | Vehicle Speed | T3 | Input | PnP for Vehicle Speed Sensor |
| 33 | --- | ADCR11 | Input | Available, 0-5 Volt Input |
| 34 | Start Signal | +12V Switched | Input | Dedicated |
| 35 | Neutral Position Switch | MAP | Input | Available, Manifold Pressure sensor input |
| 36 | Ignition Switch | Main Relay (input) | Input | Dedicated, +12V activates Main Relay circuit |
| 37 | Throttle Position Sensor Power | +5V Sensor | Output | Dedicated |
| 38 | Power Supply for ECM | +12V Switched | Input | Dedicated, gets +12V power when ECCS Relay is on |
| 39 | ECCS Ground | Power Ground | Input | Dedicated |
| 40 | Crankshaft Position Signal | Crank Signal | Input | Dedicated, must use AEM replacement trigger disc Connects to pin 31 |
| 41 | Air Conditioner Switch | Switch 6 | Input | PnP for A/C Switch |
| 42 | A/T Signal No. 1 | CAN1L | Input | Dedicated, CAN low side |
| 43 | Power Steering Oil Pressure Switch | Switch 2 | Input | Available, Switched Input |
| 44 | A/T Signal No. 2 | EGT 3 | Input | Available, jumper set for 0-5V Input |
| 45 | A/C FICD | Low Side 2 | Output | Available, Switched Ground, 1.5A Max |
| 46 | Back-up Power Supply | Permanent +12V | Input | Dedicated, used to store internal log data |
| 47 | Power Supply for ECM | +12V Switched | Input | Dedicated, gets +12V power when ECCS Relay is on |
| 48 | ECCS Ground | Power Ground | Input | Dedicated |
| 101 | Injector 1 | Injector 1 | Output | PnP for Injector 1 (Peak & Hold 4A/1A driver) |
| 102 | Pulse Secondary Air Injection Solenoid Valve | Low Side 4 | Output | Available, Switched Ground, 1.5A max |
| 103 | Injector 3 | Injector 3 | Output | PnP for Injector 3 (Peak & Hold 4A/1A driver) |
| 104 | Fuel Pump Relay | Low Side 11 | Output | PnP for Fuel Pump relay control signal |
| 105 | Fuel Pressure Control Module | Injector 6 | Output | Available, Switched Ground, 1.5A max |
| 106 | Air Conditioner Relay | Low Side 9 | Output | PnP for A/C Compressor |
| 107 | ECCS Ground | Power Ground | Input | Dedicated |
| 108 | ECCS Ground | Power Ground | Input | Dedicated |
| 109 | Reverse Electrical Flow Return Circuit | Permanent +12V | Input | Dedicated |
| 110 | Injector 2 | Injector 2 | Output | PnP for Injector 2 (Peak & Hold 4A/1A driver) |
| 111 | Turbo Boost Pressure Control Solenoid | PW 2 | Output | Available, Pulse Width Out |
| 112 | Injector 4 | Injector 4 | Output | PnP for Injector 4 (Peak & Hold 4A/1A driver) |
| 113 | Idle Auxiliary Air Control Valve | PW 1 | Output | PnP for Idle Air Control |
| 114 | --- | Injector 8 | Output | Available, Switched Ground, 1.5A max |
| 115 | --- | EGT 4 | Input | Available, jumper set for 0-5V Input |
| 116 | ECCS Ground | Power Ground | Input | Dedicated |

Wire View of AEM EMS



30-1601 (Series 1) vs 30-6601 (Series 2) EMS differences:

The EMS functions assigned to certain pins have been changed and no longer match the 30-1601 EMS. Unless otherwise noted, the following pins and functions will need to be manually reconfigured after using AEMTuner to convert a V1.19 (30-1601, Series 1 EMS) calibration for use with the 30-6601 Series 2 hardware.

| Pin | Vehicle harness destination | 30-1601 function | 30-6601 function | Notes |
|-----|-----------------------------|------------------|------------------|---------------------------------|
| 12 | A/T Signal No. 3 | Low Side 5 | CAN1H | LS5 not available |
| 15 | Data Link Connector | Injector 8 | EGT 2 | Injector 8 available on pin 114 |
| 42 | A/T Signal No. 1 | Switch 1 | CAN1L | Switch 1 not available |
| 114 | --- | EGT 2 | Injector 8 | EGT 2 available on pin 15 |

AEM Electronics Warranty

Advanced Engine Management Inc. warrants to the consumer that all AEM Electronics products will be free from defects in material and workmanship for a period of twelve months from date of the original purchase. Products that fail within this 12-month warranty period will be repaired or replaced when determined by AEM that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of the AEM part. In no event shall this warranty exceed the original purchase price of the AEM part nor shall AEM be responsible for special, incidental or consequential damages or cost incurred due to the failure of this product. Warranty claims to AEM must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser of product and is non-transferable. All implied warranties shall be limited in duration to the said 12-month warranty period. Improper use or installation, accident, abuse, unauthorized repairs or alterations voids this warranty. AEM disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured by AEM. Warranty returns will only be accepted by AEM when accompanied by a valid Return Merchandise Authorization (RMA) number. Product must be received by AEM within 30 days of the date the RMA is issued.

Please note that before AEM can issue an RMA for any electronic product, it is first necessary for the installer or end user to contact the tech line at 1-800-423-0046 to discuss the problem. Most issues can be resolved over the phone. Under no circumstances should a system be returned or a RMA requested before the above process transpires.

AEM will not be responsible for electronic products that are installed incorrectly, installed in a non approved application, misused, or tampered with.

Any AEM electronics product can be returned for repair if it is out of the warranty period. There is a minimum charge of \$75.00 for inspection and diagnosis of AEM electronic parts. Parts used in the repair of AEM electronic components will be extra. AEM will provide an estimate of repairs and receive written or electronic authorization before repairs are made to the product.