

## QUICK START GUIDE

# DC and DCC Operation of Atlas Gold Series Diesel Locomotives

Equipped with QSI Sound-Decoders  
(Quantum™, Quantum Titan™, or  
Quantum Titan™ with ET)



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# **Quick Start Guide: DC and DCC Operation Of Atlas Gold Series Diesel Locomotives Equipped with QSI Sound-Decoders (Quantum, Quantum Titan, or Quantum Titan with ET)**

Congratulations on purchasing an Atlas HO-scale or 2-rail O-scale Gold Series sound-equipped locomotive that has a QSI sound decoder (Quantum, Quantum Titan, or Quantum Titan with ET). The information in this section is designed to help you get your new Atlas HO or 2-rail O-scale Gold Series locomotive with QSI sound running on your layout as quickly as possible. Atlas recommends that you get used to operating your new Atlas sound-equipped diesel locomotive before exploring its more advanced features and programming options.

The documentation for Atlas Gold Series HO-scale and 2-rail O-scale diesel locomotives that are equipped with QSI sound decoders (Quantum, Quantum Titan, or Quantum Titan with ET) is divided into three parts, with an increasing level of detail included in each successive layer of the documentation:

- **Basic-Level Information:** This document, the *Quick Start Guide*, explains how to run a Gold Series locomotive on your layout and operate a few basic functions such as
  - Blowing the *Horn*
  - Ringing the *Bell*
  - Turning on and off the headlights: DCC (or DC with a Quantum Engineer)
  - Turning on and off the sound: DCC (or DC with a Quantum Engineer)

Since it is essential that each DCC-equipped locomotive have a unique address, information on programming a new DCC address is included in the DCC section of this *Quick Start Guide*.

- **Intermediate Level Information:** The document:

*User Manual: DC and DCC Operation of Atlas Gold Series Diesel Locomotives Equipped with QSI Sound-Decoders (Quantum™, Quantum Titan™, or Quantum Titan™ with ET)* <sup>[1]</sup>

may be downloaded from the Atlas website: <http://www.atlasrr.com/> by clicking first on the *Support* button and then on the *DCC Support* button on the Atlas homepage. The *User Manual* explains, in considerably more than the material in this document, how to:

- Operate and program your Atlas Gold Series diesel locomotive on a DC-powered layout,

- Use the (non-programming-related) functionality available in your Atlas Gold Series diesel locomotive on a DCC-powered layout,
- Program a number of commonly-used DCC Configuration Variables (CVs).

Since the *User Manual* is written at a somewhat higher level than this *Quick Start Guide*, Atlas recommends that you practice doing the operations described in this *Quick Start Guide* before reading the *User Manual*. Although the *User Manual* contains all the information that many people will ever need to operate their locomotive, QSI sound decoders (Quantum, Quantum Titan, or Quantum Titan with ET) have many more capabilities than can be described in a moderate-length document, such as the *User Manual*. If you wish to take advantage of any of these advanced capabilities, please download from the QSI Solutions website one of the two documents (analog or DCC, as appropriate) listed in the next bullet item.

- **Advanced-Level Information:** Advanced level information explains in detail how to use all the operational and programming functionality built into your Gold Series locomotive. Advanced-level information is contained in two separate on-line documents, one for DC operation and the other for DCC operation::
  - DC: *Quantum Analog Reference Manual Ver 4.0* (or later)<sup>[2]</sup>,
  - DCC: *NMRA DCC Reference Manual for QSI Quantum 3, 2, and 1 Equipped Locomotives*, Version 5.1.0, February 4, 2013 (or later)<sup>[3]</sup>.

Although intended primarily for advanced users, some of the information in the above two documents will also be useful for beginners or intermediate users who want to modify the behavior of their locomotive in ways beyond the scope of the *User Manual*.

This document contains two Quick Start Guides: one for DC operation (starting on page 4) and the other for DCC operation (starting on page 8). Read the Quick Start Guide for the type of track power (DC or DCC) used on your layout.

In addition, at the end of this document, there are procedures for:

- Resetting the QSI sound-decoder using the magnetic wand,
- Adjusting the overall sound system volume using the magnetic wand.

The two magnetic wand procedures listed above may be used in either DC or DCC operation.

# Quick Start Guide for DC Operation

If you have a DC-powered layout, read through this section and be up and running with your new Gold Series locomotive in fewer than five minutes.

## Controlling Speed and Direction of Gold Series Locomotives on DC

Sound-equipped locomotives, such as Atlas Gold Series locos, behave differently on a DC-powered layout from the way non-sound-equipped locomotives operate. If you haven't run sound-equipped locomotives on DC before, the following two sections explain what to expect.

- **Running the Locomotive on a DC Layout**

- Use a variable voltage DC power pack with a standard direction switch.
- Set the direction switch to run your locomotive forward
- Turn the throttle up slowly until you hear the Quantum System™ begin to generate locomotive sounds. You will have to move the throttle to a higher setting (about 4.5 volts) than you would need to start a non-sound locomotive moving just to get any sound from the Quantum System. Furthermore, the sound-equipped locomotive will not start to move until the track voltage exceeds 8.5 volts. At DC track voltages between 4.5 and 8.5 volts, you will hear *Start Up* sounds, and the *Front and Rear Headlights* will turn *On* in their *Dim* states. (The *Rear Headlight* will be *Off* instead of *Dim* if your loco has Version 7 firmware and Q1a hardware.) Continue to turn up the throttle voltage (to about 9 volts) until the locomotive begins to move forward. The directional *Front Headlight* will turn from *Dim* to *Bright*, and locomotive sounds will continue.
- The locomotive will start moving slowly due to special Quantum inertia effects that resist rapid increases or decreases in speed<sup>1</sup>.
- As you slow the locomotive down by gradually reducing the throttle, squealing brake sounds will occur before the locomotive comes to a stop

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<sup>1</sup> See *Locomotive Inertia Effects* in Section 3.1 of Reference [1] for a more complete description of this feature. The inertial effects that occur with Regulated Throttle Control (RTC) can be eliminated by programming your locomotive to use Standard Throttle Control (STC).

- **Reversing the Locomotive on a DC Layout**

This simple operation is done in exactly the same manner as it is with standard DC locos.

- Bring the locomotive to a stop, and turn the power all the way off.
- Flip the direction switch, and reapply power to go in the opposite direction.
- As you increase the track voltage, the Rear Headlight will switch from *Dim* to *Bright* (*Off* to *Bright* if your loco has Version 7 firmware and Q1a hardware), and the *Front Headlight* will become *Dim* (assuming that the locomotive was originally going forward).

## **Controlling Sound, Lighting, and Other Features of Gold Series Locomotives on DC**

Atlas Gold Series locos have many sound, lighting, and other features that the user can control. Some of these features (*Horn*, *Bell*, and various maintenance scenarios) can be triggered by moving the direction switch of a variable-voltage DC power pack from one position to the other at a specified rate. In order to trigger certain other features, you will need an add-on analog control box called the *Quantum Engineer*. (The Quantum Engineer is suitable ONLY for use with HO-scale locomotives.) The Quantum Engineer is connected between the variable-voltage DC output of your power pack and your layout.

## **Functions that Can be Triggered Using the DC Power Pack Direction Switch**

- **Blowing the Horn on DC**

Blow the authentic diesel locomotive *Horn* for short or long blasts – you control the duration

- To turn on the *Horn*, while the locomotive is moving, flip the direction switch quickly to its opposite position (e.g., if the switch is set for the locomotive to move Forward, move it to the Reverse position). If you flip the direction switch too slowly from one position to the other, you can momentarily lose power while the switch moves through its center position.
- The locomotive will NOT change direction when you blow the *Horn*
- Leave the direction switch in the opposite position until the horn has sounded for as long as you want it to sound. Then to shut off the *Horn*, flip the direction switch back quickly to its original position.
- If your locomotive has *Ditch Lights*, these lights will flash alternately for as long as the Horn is blowing and will continue this alternate flashing for a short time afterwards.

- **Ringling the Bell on DC**

You can turn the Bell on and leave it on while you operate other functions on the locomotive.

- Turn the *Bell On* with a *Quick flip-and-back operation of the direction switch*. The *Bell* will stay on until you do another Quick flip-and-back operation of the direction switch to turn it off, or if you interrupt the track power.
- Turn the *Bell off* with a second *Quick flip-and-back operation of the direction switch*.

Note: Depending on the particular bell that you select<sup>2</sup>, it can have a slow start up effect where the pneumatic clapper gradually gains power until it starts to strike the bell,

Note: When you turn the Bell off, it will continue ringing briefly with less and less volume as the pneumatic clapper slows down, just like the prototype.

*If you do a **Slow** flip-and-back operation, you will get a short Horn hoot instead of the Bell. If you try to do a very short Horn blast using a **Quick** operation, you will activate the Bell instead. If you have trouble doing the **Quick** flip-and-back operation, try holding the power pack in place with your other hand to keep the pack from slipping.*

- **Additional Features that can be Triggered from the Direction Switch of a Variable-Voltage DC Power Pack (firmware versions 8 and 9 only)**

Four other features available in your HO scale or 2-rail O scale Atlas Gold Series locomotive can be triggered by combinations of short and long horn blasts. These features are:

- Doppler Effect (also available in version 7)
- Fuel Loading Scenario
- Maintenance Scenario
- Water Loading Scenario

See Section 3.2 of the *User Manual*<sup>[1]</sup> for information on triggering the Doppler Effect feature using the Direction Switch of your DC Power Pack. Similarly, Section 3.11 of the *User Manual*<sup>[1]</sup> explains how to trigger each of the three Scenarios using the Direction Switch of your DC Power Pack.

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<sup>2</sup> The option of selecting among several different bells is available only in QSI firmware Versions 8 and 9.

## **Triggering Additional Features from a Quantum Engineer (HO only)**

Your Atlas Gold Series diesel locomotive is equipped with QSI's QARC™ (Quantum Analog Remote Control) Technology. QARC Technology uses special remote control signals to operate different Quantum features on a conventional HO-scale DC-powered layout. With QARC Technology, you can operate features that are otherwise available only with Digital Command Control (DCC). In particular, QARC will allow you to:

- Turn on or off lights
- Shut down and start up locomotives,
- Make up Consists easily,
- Simplify Analog programming,
- Set System Volume or Mute while train is operating,
- Trigger Coupler Crash sounds,
- Operate prototype-like Air Brakes,
- Turn Dynamic Brakes on and off,
- Activate verbal speedometer readout,

and operate many other features.

QSI's QARC controller, called the Quantum Engineer, can be added to your existing Analog power pack. Wiring is simple; two wires go to the variable DC output from the power pack, and two wires go to the track on an HO layout. All features on the power pack remain the same including throttle and reverse switch control. For further information on the Quantum Engineer Controller, see the *Quantum Engineer Operating Instructions*<sup>[4]</sup>.

## **Programming Parameters of Gold Series Locomotives on DC**

The values of many parameters in an Atlas Gold Series locomotive can be changed to the user's preferred values. Examples of such programmable parameters are:

- Volumes of particular sounds [e.g., horn volume and/or prime mover (diesel engine)],
- Overall sound volume,
- Track voltage at which the locomotive first starts to move.

A number of these parameters may be programmed on either a DC or a DCC layout. Once programmed, the changed value applies to both DC and DCC operation. For example, if you lower the overall sound volume, the reduced volume will be heard on both DC and DCC layouts.

Table 1 in the *User Manual*<sup>[1]</sup> lists all the parameters of an Atlas Gold Series locomotive (*equipped with a QSI sound-decoder (Quantum™, Quantum Titan™,*

or *Quantum Titan™ with ET*) that can be changed with analog programming. Sections 3.13.1 to 3.13.4 in the *User Manual*<sup>[1]</sup> explain how to do analog programming by manipulating the direction switch on a variable-voltage DC power pack. Alternatively, you can use the Quantum Engineer<sup>[4]</sup> to program these parameters (HO only).

## Quick Start Guide for DCC Operation

If you have a layout powered by any DCC system that is compatible with the NMRA DCC specifications, read through this section and be up and running with your new Gold Series locomotive in fewer than five minutes.

**RECOMMENDATION:** Before delving further into this DCC Quick Start Guide, if you are new to DCC, Atlas strongly recommends that you read the (DCC manufacturer's) instruction manual that came with your DCC system, especially the sections that deal with:

- Running a (decoder-equipped) locomotive using that DCC system,
- Sending DCC function commands to the locomotive to operate the horn, bell, headlights, and other functions,
- Programming the CVs in your decoder *on the main line* (usually referred to as *Ops Mode* or *Operations Mode* programming).

### Controlling Speed and Direction of Gold Series Locomotives on DCC

- **Running the Locomotive on DCC – Basic Operation**

Consult your DCC system manual if you have questions about how to do any of the following operations.

- Select locomotive address number 3 on your DCC system (if your locomotive has been programmed to a different address, use that address instead),
- Set your DCC system to use either 128 (preferable) or 28 (acceptable) speed steps.
- Make sure that all DCC track power is turned off. Then put your locomotive on the track and turn the DCC power back on. Once you advance the throttle to the first DCC speed step, you will hear the *Prime Mover* sounds.

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<sup>3</sup> To avoid confusion between these two entirely different meanings of *Diesel Engine*, the device that powers the generator (or alternator) is called the *Diesel Motor* in the Quantum Programmer software. The terminology *Diesel Motor* is not used in this document.

- As you continue to turn up the DCC speed control, the locomotive will start to move forward or backward, depending on which direction (Forward or Reverse) was selected on the DCC controller. The locomotive sounds will continue.
- When *Regulated Throttle Control (RTC)* is turned *On* (which is the default setting), there will be noticeable momentum in both acceleration and deceleration.
- As you slow the locomotive down by gradually reducing the throttle, *Squealing Brake*
- *sounds* will occur shortly before the locomotive comes to a halt.

#### **The Prime Mover of a Diesel Locomotive**

Two major parts of the operating mechanism of a prototype diesel-electric locomotive are (1) the *diesel engine* and (2) the *DC generator* (or the *AC alternator* in some modern locomotives). The generator (or alternator) is powered (mechanically) by the diesel engine and supplies (electric) power to the truck-mounted *traction motors* that drive the locomotive. The diesel engine and generator (or alternator) are mounted inside the locomotive's body, which is often called the *carbody*. Although the terminology *Diesel Engine* is perfectly correct technically for the (major) component of a diesel-electric locomotive that drives the generator (or alternator), some people are in the habit of calling a diesel locomotive a diesel engine<sup>3</sup>. The term *Prime Mover* in this document refers to the entire Power Unit consisting of the *Diesel Engine*, the *Generator* or *Alternator*, and the *Turbo* (if present). Prime Mover sounds include *Exhaust*, *Labored Exhaust*, and *Rod Knock*.

- **Reversing the Locomotive on DCC**

This simple operation is done in exactly the same manner as it is with standard locomotives:

- The direction of motion of your locomotive will change each you press the direction button on your DCC throttle.
- In order to avoid damage to the mechanism in your locomotive, do not press the direction button when the locomotive is moving.

- **Behavior of Locomotive in the Neutral State of DCC**

When you reduce the setting of the speed control on the DCC controller to zero, the locomotive will automatically enter the *Neutral state* right after the locomotive stops moving. You will hear a *Short Air Release* when the locomotive stops moving and a *Long Air Release* about one second later, followed by *Air Pumps* and other background sounds. Neutral sounds also include *Cooling Fans* with *Vents* opening and closing that turn on and off randomly, *Air Pumps* that come on randomly in response to air consumed, random *Spitter* and *Air Dryer* sounds (firmware versions 8 and 9 only), plus timed-out *Low Idle* sound.

## **Controlling Sound, Lighting, and Other Features of Gold Series Locomotives on DCC Layouts**

Atlas Gold Series locos have many sound, lighting, and other features that the user can control. These features can be triggered by pushing one (or sometimes several) of the function keys on your DCC controller.

### **Controlling the Basic Functions**

This section explains how to control four commonly-used functions on Atlas Gold Series locomotives (*Headlights*, *Bell*, *Horn*, and *Mute*)

- **Operation of Locomotive Headlights on DCC (F0 Key)**

- When the locomotive is first powered up, the directional *Front Headlight* and *Rear Headlight* may not be turned on. If this is the case, press the *F0* (or *Headlight*) key on your DCC controller one or two times to turn on the directional lighting.
- Once turned on, the directional *Headlights* behave as follows:
  - When the locomotive is moving forward, the *Front Headlight* will be *Bright*; when the locomotive is stopped or moving backwards the *Front headlight* will be *Dim*. Hence, if the locomotive was moving forward and then stops, the *Front Headlight* will switch from *Bright* to *Dim* after the locomotive stops.
  - When the locomotive is moving backwards, the *Rear Headlight* will be *Bright*. When the locomotive is stopped or moving forward, the behavior of the *Rear Headlight* depends on the version of Quantum or Quantum Titan hardware installed in your locomotive:
    - If your locomotive has Q1a hardware, the *Rear Headlight* will be *Off* when the locomotive is stopped or moving forward.
    - In all other cases (Quantum Q2 hardware or Quantum Titan hardware with Version 8 or 9 firmware), the *Rear Headlight* will switch from *Bright* to *Dim* when the locomotive is stopped or moving forward.

- **Operation of Auxiliary Lighting on DCC**

Although not all Atlas Gold Series locomotives have *Ditch Lights* or *Mars Lights*, if your locomotive does, this additional lighting behaves as follows.

- If your Atlas sound-equipped locomotive has *Ditch Lights*, these lights will behave as follows

- *Turn On* in the steady (non-flashing) state when the locomotive starts to move *Forward*,
- *Flash Alternately* when you blow the *Horn* **and** the locomotive is moving *Forward*,
- *Turn Off* in the *Neutral* state.
- Alternatively, if your Atlas sound-equipped locomotive has a *Mars Light* this light will
  - *Start Pulsing* when the locomotive begins to move *Forward*.
  - *Stop Pulsing* and go *Dim* when the locomotive stops
- **Ringing the Bell on DCC (F1 or Bell Key)**
  - You can turn the Bell *On* and leave it *On* while you operate other functions on the locomotive.
  - Turn the Bell *On* by pressing the Bell or F1 key on your DCC throttle.
  - The Bell will stay *On* until you do another press of the Bell or F1 key on your DCC throttle (or if you interrupt the track power).
  - Turn the Bell *Off* with a second press of the Bell or F1 key on your DCC throttle

Note: When you turn the Bell *Off*, it will continue ringing briefly with less and less volume as the pneumatic clapper slows down, just like the prototype.

- **Blowing the Horn on DCC (F2 or Horn Key)**

Blow the diesel locomotive Horn for short or long blasts – you control the duration. The operation of the Horn depends on how your DCC system was designed and configured.

  - If your DCC system has separate *Horn* and *F2* keys,
    - Pressing the *Horn* key will blow the Horn only for as long as you are holding the button down. This behavior is called *momentary* operation.
    - Pressing the *F2* key and releasing it will cause the Horn to come on and stay on until you press *F2* again. This behavior is called *latching* operation.
  - If your DCC system has only an *F2* key, this key may be set at the factory for either *latching* or *momentary* operation, depending on the DCC system. Some DCC systems allow the user to configure a function key (such as *F2*) for either *latching* or *momentary* operation.
  - If the Ditch Lights are *On*, the locomotive is moving forward, and the *Horn* is blowing (*Horn* or *F2* key pressed), the *Ditch Lights* will flash alternately for as long as *F2* is pressed and will continue this alternate flashing for a short time after you release the *F2* or *Horn* key.

- **Muting all Sounds on DCC (F8 Key)**

The Quantum System allows you to reduce the System Volume to a lower programmable *Mute Volume* level or increase it back to its original setting using the *F8* function key. To gradually decrease or increase the locomotive's sound volume, press the *F8* key in *Forward*, *Reverse*, or *Neutral*. The default *Mute Volume* is 0 (no sound during Mute).

This capability is useful when you need to reduce the sound to engage in a conversation or to answer the phone. In addition, if you have many trains operating at once, you can reduce the volume on all those that are running in the background of the layout and increase the volume of the closest locomotive. The Mute feature changes the sound gradually over a second or two, which allows the sound to increase or decrease realistically as the locomotive approaches or recedes from the observer. Note: The Mute state is not maintained if power is turned off and back on; instead, the locomotive will return to its full-volume setting.

## **Controlling Other DCC Functions Available in Atlas Gold Series Locos**

In addition to the four DCC functions just discussed (F0, F1, F2, and F8), there are twenty five other DCC functions currently defined by the NMRA. Depending on which QSI firmware version is installed in your Gold Series locomotive, there are additional DCC functions that can be triggered by pressing the appropriate key (e.g., press the "5" key to trigger DCC Function #5) on your DCC controller. The following table lists the DCC functions available in various QSI firmware releases. The entries in this table are subject to the following constraints:

- Depending on the DCC system, the *FL* Key may be labeled in various ways such as "*F0*", "*Headlights*," "*Lights*," or "*Directional Lighting*."
- FL(f) and FL(r) activate/deactivate the automatic behavior of the Headlight, Reverse Light, and Hazard Directional Lighting regardless of which direction the train is moving.
- Dynamic brakes cannot be turned on in Forward or Reverse unless the locomotive is moving over 9 smph.
- The F6 key may sometimes require a triple press to initiate Start Up.
- The F9 key may sometimes require a triple press to initiate Shut Down.
- Automatic cab lights are not used in any Atlas Gold Series locomotives equipped with QSI *sound-decoders* (*Quantum™*, *Quantum Titan™*, or *Quantum Titan™ with ET*).

## DCC Function Key Operation for Atlas Gold Series Locomotives Equipped with QSI Sound-Decoders

Function Key	QSI Version Number			Locomotive Behavior in Forward or Reverse (FWD or REV)	Locomotive Behavior in Neutral (either NFF or NFR)
	7	8	9		
FL(f)	X	X	X	Headlight, Rear Headlight, and Hazard Light (directional lighting On or Off)	Headlight, Rear Headlight, and Hazard Light (directional lighting On or Off)
FL(r)	X	X	X	Headlight, Rear Headlight, and Hazard Light (directional lighting On or Off)	Headlight, Rear Headlight, and Hazard Light (directional lighting On or Off)
F1	X	X	X	Bell on/off	Bell on/off
F2	X	X	X	Horn or Horn with Doppler Effect	Horn
F3	X	X	X	Coupler Crash/Coupler Fire	Coupler Arm (Enable) or Coupler Fire
F4	X	X	X	Diesel Fans and Louvers On/Off	Diesel Fans and Louvers On/Off
F5	X	X	X	Dynamic Brake function On/Off	Dynamic Brake function On/Off (in Disconnect only)
F6	X	X	X	Doppler Shift (single-press F6)	Locomotive Start Up (double-press F6)
F7	X	X	X	Squealing Brakes/Flanges and Air Brakes	Diesel: Long Air Let-off
F8	X	X	X	Audio Mute On/Off	Audio Mute On/Off
F9	X	X	X	Heavy Load On/Off (single-press F9)	Advance Shut Down State: (Disconnect, Standby, Total Shut Down) (double-press F9)
F10	X	X	X	Status Report (speed in SMPH)	Status Report (Loco DCC address, etc.)
F11	X			Number Board or Marker Lights On/Off	Number Board or Marker Lights On/Off
		X	X	Alternate Horn Selection	Alternate Horn Selection
F12 <sup>1</sup>				Automatic Cab Lights On/Off	Automatic Cab Lights On/Off
F13		X	X	System Volume Decrease (Titan only)	System Volume Decrease (Titan only)
F14		X	X	System Volume Increase (Titan only)	System Volume Increase (Titan only)
F15		X	X	Grade Crossing (Titan only, works only in FWD or REV)	
F16-F25		X	X	Short Air Let-off	Short Air Let-off
F26		X	X		Fuel Loading Scenario (Titan only, works only in Neutral)
F27		X	X		Maintenance Scenario (Titan only, works only in Neutral)
F28		X	X		Water Loading Scenario (Titan only, works only in Neutral)

For detailed explanations of the DCC functions listed in the above table, see Section 4.1 in the *User Manual*<sup>[1]</sup>

## **Programming a New DCC Address for Your Locomotive**

The decoder in an Atlas Gold Series locomotive comes from the factory set to use the short address "3." However, in order to control (independently) several locomotives on the same track at the same time, it is necessary that each locomotive have a unique DCC address. A convenient choice for the DCC address is the road number printed on the side of the locomotive's cab. Frequently, the number on the side of the cab is a 3- or 4-digit number, which is treated in DCC as a **Long (or 4-digit) Address**.

Most DCC systems allow you to change the DCC address of a locomotive in either of two ways:

- On a special section of track not connected in any way to your layout and called the *Program Track*. (In DCC terminology, programming locomotives on the program track is called *Service Mode Programming*.)
- Anywhere on the Main Line (regular track) of your layout. [In DCC terminology, programming a locomotive on the main line of your layout is called either *Programming on the Main (POM)* or *Operations Mode (Ops Mode) Programming*.]

If your DCC system allows you to program 4-digit addresses on the main line (many DCC systems do), Atlas recommends that you take advantage of this capability by programming the address of your Gold Series locomotive on the main line using Operations Mode (Ops Mode) programming.

Although DCC systems differ in how (or if) they support programming of 4-digit addresses on the main line, the following technique **must** be used with a number of DCC systems commonly sold in North America:

- NCE: all NCE DCC systems
- Digitrax: all Digitrax DCC systems **except for Zephyr and Zephyr xtra**,
- MRC: Prodigy series [Advance, Advance<sup>2</sup> (i.e., Advance Squared), Wireless, or Express].

### **Follow These Steps to Program a New 4-digit Address on the Main Line:**

1. Operate the locomotive on the main line using its current DCC address.
2. If you cannot determine the current DCC address of the locomotive, transfer the locomotive to a DC or DCC powered track, and reset the Quantum System decoder by following either the DC or the DCC magnetic wand reset procedures given at the end of this *Quick Start*

*Guide.* After completing the reset, make sure that you can operate the locomotive using the default DCC address “3.”

3. **Disable verbal announcements by using Operations Mode programming to set CV62 = 0.** Consult your DCC system manual for an explanation of how to program CVs. Since you have just disabled verbal announcements, you **will not hear** any verbal confirmation of the value of 0 that you just wrote into CV62.
4. Follow the procedure in your DCC system manual for programming a new Long Address using Operations Mode programming on the main line. After you have completed setting the Long Address, make sure that your DCC system has activated this Long Address, i.e., it has set CV29 to a value that supports 4-digit addresses (e.g., 34 or 38). In particular, if you have a Digitrax DCC system that has a DT402 or DT400 walk-around throttle, be certain to press the “Y+” key IMMEDIATELY after you see “Ad4on?=y” displayed on the throttle screen.
5. Change your DCC system from its configuration for Operations Mode programming to its configuration for running a locomotive on the main line (if the DCC system doesn’t perform this reconfiguration automatically).
6. Verify that the locomotive can operate on the main line using its new 4-digit address. If the locomotive doesn’t operate on the address that you just programmed, it may be worthwhile to verify that CV29 was programmed correctly. To verify the value of CV29, do these checks:
  - a. Set your DCC system to run a loco with address “3” (or whatever 2-digit address you last used)
  - b. If your locomotive runs on address 3, program CV29 = 38 (use CV29 = 34 instead, if you don’t want the locomotive to run on DC) and see if the loco now runs on the 4-digit address that you have just programmed.
7. If the locomotive responds properly to the new address, re-enable verbal announcements by using Operations Mode programming again to set CV62 = 1. In this case, you **will** hear verbal confirmation of the CV62 value of “1” that you just entered since you have just re-enabled verbal announcements.

If your DCC system is NOT one of the DCC systems listed above, refer to Table 7 in the *User Manual*<sup>[1]</sup> for the proper 4-digit address programming procedure to use (instead of the procedure described above). Detailed information on each of the alternate address programming procedures given in Table 7 are included in the *User Manual*.

## **Resetting your Locomotive to Factory Default Values Using the Magnetic Wand (resets all Analog and DCC parameters)**

Resetting the firmware in the Quantum or Quantum Titan sound-decoder to its factory-built configuration can resolve many problems that sometimes occur with firmware-controlled electronics. In fact, we have found at Atlas that at least 20 to 25 percent of the problems with the Gold Series locomotives that we receive for repair can be resolved simply by resetting the sound-decoder. Hence, the very first step you take to resolve a problem should be to reset the Quantum or Quantum Titan sound-decoder in your locomotive.

There are two ways to reset the parameters of a Quantum, Quantum Titan or sound-decoder (1) the DCC-only reset described in Section 4.2.6 of the Atlas Gold Series Diesel Locomotive User Manual which resets *only* the DCC CVs and (2) the magnetic wand reset described here that resets both DCC CVs and analog parameters. Since a number of parameters (e.g., sound volumes) are shared between DC and DCC operation, the magnetic wand reset does a better job of resetting the decoder to its original factory configuration than does the DCC-only reset. Hence, Atlas recommends resetting using the magnetic wand whether your locomotive is normally operated on DC or on DCC.

Every Atlas locomotive equipped with a QSI sound-decoder has a magnetic reed switch located directly under the top of the plastic shell. This switch can be activated by the Magnetic Wand (the T-shaped object packed with your locomotive) without having to disassemble the locomotive. . Resetting with the magnetic wand can be done on either a DC-powered track or a DCC-powered track. However, the procedure differs, depending on whether the track has DC or DCC power.

The following items are needed in order to do a magnetic wand reset.

#### **ITEMS REQUIRED FOR MAGNETIC WAND RESET**

- 1. The Gold Series locomotive that you wish to reset**
- 2. The magnetic wand (packed with your locomotive)**
- 3. The three photographs on the last page of the 4-page magnetic wand resetting booklet** (packed with your locomotive and titled *Using the Magnetic Wand to Reset an Atlas Gold Series (Your) Scale (Your Model) Locomotive Equipped with a QSI Quantum System Sound-Decoder*) **that show where to place the magnetic wand on the top of your locomotive**
- 4. A DC- or DCC-powered track**
- 5. Either a power pack with a *variable-voltage DC* output or a DCC system**

The magnetic wand reset procedures given below apply to all Atlas Gold Series locomotives that have a QSI sound decoder (Quantum, Quantum Titan, or Quantum Titan with ET), both HO-scale and Two-Rail O-scale. Please note that, whether you are doing the reset on a DC-powered track or on a DCC-powered track, you will be resetting ALL parameters, both DC and DCC, to their default values. The details of the DC and DCC reset procedures are given below.

### **Magnetic Wand Reset Procedure for DC-Powered Track**

1. Turn off all track power to your DC-powered layout.
2. Place your Atlas Gold Series sound-equipped locomotive on a section of track that is powered by conventional DC.
3. Examine the three photographs on the last page of the 4-page magnetic wand resetting booklet (packed with your locomotive and titled *Using the Magnetic Wand to Reset Atlas Gold Series (Your) Scale (Your Model) Locomotives Equipped with a QSI Sound-Decoder (Quantum Titan with ET)* to determine where to place the magnetic wand on the top of your locomotive.
4. Place the Magnetic Wand over the reed switch area on the top of the locomotive at the location determined in Step 3 and ***with the metal (shiny silver) part of the wand parallel to the ties of the track and on or just above the top of the locomotive. The magnet (the shiny silver cylinder) should be horizontal with one circular end pointing towards one side (side NOT end) of the locomotive and the other end pointing towards the other side.*** Keeping the wand in the small

plastic bag in which it was shipped prevents possible marring or scratching of the locomotive.

5. ***Slowly and gradually apply conventional DC power to your track until the track voltage increases from 0 to approximately 8 to 10 volts.*** If the magnetic wand is in the correct location (along the length of the locomotive) and with the silver part parallel to the ties, the locomotive will not move, and there will be no sound until you hear “reset” spoken in Step 6 (below).
6. While continuing to hold the magnetic wand on or just above the top of the locomotive, keep increasing the track voltage slowly until you hear the word “reset” spoken from the locomotive.
7. Caution: if you don't hear the word “reset” spoken, your locomotive has ***NOT*** been reset.
8. Pull the Magnetic Wand straight up (away from the locomotive) immediately after you hear “reset” so that the manual volume adjustment procedure (described in Section 6.2.2 of the *User Manual*) is not activated.

## **Magnetic Wand Reset Procedure for DCC-Powered Track**

1. Turn off all track power to your DCC-powered layout.
2. Set up the DCC system to run locomotive #3. (If you have to turn your DCC system *On* to select locomotive #3, turn it *Off* after completing this step.)
3. Place your Atlas Gold Series sound-equipped locomotive on a section of track on the layout.
4. Examine the three photographs on the last page of the 4-page magnetic wand resetting booklet (packed with your locomotive and titled *Using the Magnetic Wand to Reset Atlas Gold Series (Your Scale (Your Model) Locomotives Equipped with a QSI Sound-Decoder (Quantum Titan with ET)* to determine where to place the magnetic wand on the top of your locomotive.
5. Place the Magnetic Wand over the reed switch area on the top of the locomotive at the location determined in Step 3 and ***with the metal (shiny silver) part of the wand parallel to the ties of the track and on or just above the top of the locomotive. The magnet (the shiny silver cylinder) should be horizontal with one circular end pointing towards one side (side NOT end) of the locomotive and the other end pointing towards the other side.*** Keeping the wand in the small plastic bag in which it was shipped prevents possible marring or scratching of the locomotive.

6. While you are holding the magnetic wand on the top of the locomotive in the position described in Step 5, turn DCC power *On* for the track on which the locomotive is resting.
7. You should hear the word “reset” spoken, either immediately after you turn DCC track power on or right after you start to advance the DCC throttle. Caution: if you don’t hear the word “reset” spoken, your locomotive has NOT been reset.
8. Pull the Magnetic Wand straight up (away from the locomotive) immediately after you hear “reset” so that the manual volume adjustment procedure (Section 6.2.2 of the *User Manual*) is not activated.

After you have successfully completed either of these reset procedures (DC track power or DCC track power), the locomotive will operate on DCC as loco #3.

## **Manual Volume Adjustment Using Reed Switch (Analog and DCC)**

1. Study the three photographs on the last page of the 4-page magnetic wand resetting booklet (packed with your locomotive and titled *Using the Magnetic Wand to Reset Atlas Gold Series (Your Scale (Your Model) Locomotives Equipped with a QSI Sound-Decoder (Quantum Titan with ET)* to determine where to place the magnetic wand on the top of your locomotive
2. Power up the locomotive and leave it in Neutral
  - a. For a DC-powered layout, “leave it in Neutral” means turn up track voltage to somewhere in the range of 7 to 8 volts so that the decoder is producing sounds, but the locomotive is not yet moving.
  - b. For a DCC-powered layout, “leave it in Neutral” means turn on DCC track power, select the locomotive on your DCC system, but do not turn up the DCC throttle (so that the locomotive is not moving).
3. Place the silver part of the enclosed magnetic wand over the reed switch area on the top of the locomotive<sup>4</sup> (parallel to the ties and perpendicular to the rails) and wait as you hear the volume increase or decrease in incremental amounts as the Horn hoots about once every second. Move the wand away and again place it over the reed switch area to change the direction (louder or softer) of the volume change. Remove the wand by pulling it straight up when you reach the desired volume level.

Note: Volume can also be adjusted digitally using the programming methods described in the DC and DCC programming sections of the *User Manual*<sup>[1]</sup>

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<sup>4</sup> The wand does not need to touch the body. It can be held a reasonable distance from the top of the locomotive to prevent possible marring of the painted surface.

## REFERENCES

- [1]. *User Manual: DC and DCC Operation of Atlas Gold Series Diesel Locomotives Equipped with QSI Sound-Decoders (Quantum™, Quantum Titan™, or Quantum Titan™ with ET)* Version 6.7, 01 June, 2013 (or later), Available for download from the Atlas website:  
<http://www.atlasrr.com/>
- [2]. *Quantum Analog Reference Manual Ver 4.0* (or later). Available for download from the QSI Solutions website:  
<http://www.qsisolutions.com/>  
From the QSI Solutions Home Page, single-click on *DOWNLOADS & MANUALS*; scroll down almost to the bottom (under the heading *General*): double-click on *Quantum DC Analog Reference Manual, Ver. 4.0 (or later)*
- [3]. *NMRA DCC Reference Manual for QSI Quantum 3, 2, and 1 Equipped Locomotives*, Version 5.1.0, February 4, 2013 (or later). Available for download from the QSI Solutions website:  
<http://www.qsisolutions.com/>  
From the QSI Solutions Home Page, single-click on *DOWNLOADS & MANUALS*; scroll down almost to the bottom (under the heading *General*): Just below the heading *General*, double-click on *Full DCC Reference Manual for All QSI Decoders*.
- [4]. *Quantum Engineer Operating Instructions*, August 2, 2005. Available for download from the QSI Solutions website:  
<http://www.qsisolutions.com/>  
From the QSI Solutions Home Page, single-click on *DOWNLOADS & MANUALS*; scroll down close to the bottom until you see the heading *Quantum Engineer*; double click on *Quantum Engineer User Manual*.

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