

Dial 2 Start

Cellular Remote Switch

Installation and Operating Instructions

IMPORTANT! – This instruction manual should be read thoroughly and understood **BEFORE** installation and operation of this equipment. Failure to do so may result in serious bodily injury!

IMPORTANT! – The electronic components contained within the Dial 2 Start housing are sensitive to Electrostatic Discharge (ESD). It is important to make sure that you employ proper handling procedures that will minimize the possibility of ESD damaging the circuit board.

If you are unsure how to install your Dial 2 Start or insert your network SIM card please refer these tasks to a Qualified Person.

Description:

The Dial 2 Start is a wireless remote On/Off switch that can be controlled through a connection to the GSM cell phone network. The connection to the GSM cell network is accomplished by purchasing a SIM card and Pay-As-You-Go (PAYG) plan from your local wireless provider. Once the SIM card is installed in the holder on the back of the main circuit board your Dial 2 Start will have its own unique telephone number.

The unit is activated by an incoming call to its cell phone number. The unit cannot answer a voice call but in sensing the call its logic will activate one or both of the output relays in a pre-programmed sequence. Because the unit doesn't answer the call, the activation of the relays does not incur any call charges to the PAYG plan or to the caller.

Alternately, the individual relays can be activated by sending SMS text messages to the unit's phone number. Similarly, the unit is programmed by sending specific SMS text commands.

The Dial 2 Start unit controls 2 independent switches. You can therefore control 2 separate devices from one unit. An example would be in a aircraft hangar where the battery charger and engine pre-heater are turned on in sequence to prepare an aircraft for a flight.

Requirements:

The Dial 2 Start cellular switch requires the purchase of a mobile phone SIM card and a Pay-as-You-Go card with enough credit to cover the cost of the SMS messages required to program the unit.

We strongly recommend that if you are using a PAYG card that you choose to automatically "Top-Up" the card. Alternatively, there are cards with carriers such as AT&T in the U.S. and Rogers in Canada that are good for a year. Ensure that when you purchase the SIM and PAYG cards that there is no need for activation by phone, that voice mail is deactivated and that the PIN request is disabled from the SIM card before inserting it in the Dial 2 Start. You may have to check for these choices when you register on the company's web site.

If the PIN request mode is not disabled the Dial 2 Start will not work and after the unit is switched on more than three times you will have to contact the service provider to reset the PIN using PUK Code. To date, there have been no problems with SIM chips obtained through AT&T and Rogers. They have gone into the unit and worked right away.

The SIM card should now be ready to insert into the SIM Card Carrier located behind the Dial 2 Start circuit board.

Installation of the SIM Chip:

1. Remove your Dial 2 Start unit from the packaging and make sure that there has been no shipping damage.
2. Ensure that the unit is NOT plugged into any power source.
3. Remove the 4 screws from the cover and set them aside.
4. Read the safety warning stickers on the sides of the box before slitting them along the joint where the lid meets the body of the box. Remove the box lid and set aside.
5. Check that all of the components in the box are secure and have not loosened as a result of rough handling during shipping.
6. Before touching the circuit board it is best to place some sort of ground strap between yourself and the ground to dissipate any static electricity. Better yet, ground yourself to the board as well.
7. Look along the top left hand edge of the circuit board for a yellow button. This button will be under the green circuit board. Next to that button is the black SIM card carrier. Pushing the yellow button will release the SIM card carrier. Carefully remove the carrier from the channels mounted to the back of the board.
8. Remove the SIM chip from the plastic frame it comes in and fit it into the carrier with the gold contacts facing outwards.
9. Carefully slide the carrier back into the tracks mounted to the underside of the board. Make sure that it is pushed all of the way down. There is no "click" when it is fully seated but it should be flush with the edge of the circuit board. You have successfully installed the SIM card.
10. Put the lid back on the box and tighten it back down with the 4 screws.

Placement of the Unit:

1. Consideration must be given before mounting your Dial 2 Start as to where the best cellular signal strength is going to be. Metal buildings are very good at blocking cellular signals. The unit is supplied with 2 different antennae for this purpose. This may take some trial and error using the "CSQ" command. The optimum situation has the remote antenna located high on an outside wall where it has the best chance of receiving a good signal.
2. The Dial 2 Start housing has mounting flanges on the top and bottom so that it can be conveniently secured with 4 screws to a number of surfaces. The unit can be mounted in any orientation.
3. Install your chosen antenna to the gold colored coaxial input on the side of the box and orientate the antenna for best signal strength.

Default Settings:

Access Mode – Open (any call to the Dial 2 Start will activate it)

Relay 1 – On for 2 seconds (upon activation)

Wait Time – 2 seconds (after Relay 1 completion)

Relay 2 – On for 2 seconds (after Wait Time completion)

Password – 123456

Programming the Unit:

The Dial 2 Start unit is programmed by sending it SMS text commands from a mobile phone. These commands are sent to the telephone number of the SIM card installed in your Dial 2 Start Cellular Switch. The password command "PWD" must prefix all SMS text commands and it is recommended that the default password be changed.

All SMS text commands have to be sent in CAPITAL LETTERS with NO spaces or other characters added.

Programming Commands:

A quick reference of all the commands can be found on page 8.

#PWD

Password

This command must prefix all SMS text commands (except *REST) that are sent to the unit. The password is numerical 6 digits. The unit comes from the factory with the default password set as 123456 and the following command must prefix the initial commands to the unit: **#PWD123456**

#CAP

Changing the Password

To change the password of the unit you must use the #CAP command. To change the password to 121212 you would send the following SMS text message to the unit.

#PWD123456#CAP121212#CAP121212

If you perform this command at this time replace the default passwords in the following examples with your new password.

You will receive the following SMS text confirmation from the unit: **CAP:121212**

#WHL

White List

This command is used to add telephone numbers to a list that is authorized to access the Dial 2 Start.

Your Dial 2 Start is delivered to you in Open Access Mode. This allows any incoming telephone number access to the unit. Once the unit has been installed and the White List has been populated with approved telephone numbers you can restrict access to the numbers on the White List by using the **#ACM2** command.

To add a telephone number to the White List, you would send the following SMS text command to the unit. In this example the number being added to the list is 123-456-7890.

#PWD123456#WHL01=1234567890

You will receive the following SMS text confirmation from the unit: **WHL01:1234567890**

WHL01= is the first position on the White List. **WHL02=** would be the second position and so on up to a maximum of 99 numbers. **WHL99=** would be the 99th and final position on the White List.

Checking the Numbers on the White List

To check the number in a specific position on the White List, for example position 01 you would send the unit the following SMS text command: **#PWD123456#WHL01?**

You will receive the following SMS text confirmation from the unit: **WHL01=1234567890**

Erasing a Number on the White List

To erase a number in a specific position on the White List you would send the following SMS text command to the unit: **#PWD123456#WHL01D**

You will receive the following SMS text confirmation from the unit: **WHL01-OK**

Erasing ALL the Numbers on the White List

To erase all the numbers on the White List you would send the following SMS text command to the unit:

#PWD123456#WHL99D

You will receive the following SMS text confirmation from the unit: **DELALL-OK**

#ACM2

Security Access Mode

This command enables the Security Access Mode. This restricts access to the unit to ONLY the telephone numbers found on the White List. To enable the Security access Mode you would send the following SMS text command to the unit: **#PWD123456#ACM2**

You will receive the following SMS text confirmation from the unit: **ACM-ON**

To turn the Security Access Mode OFF you would send the following SMS text command to the unit:

#PWD123456#ACM0 **Note: the 0 is a Zero not the letter O**

You will receive the following SMS text confirmation from the unit: **ACM-OFF** This places the unit back into Open Access Mode where a call from any incoming phone number will activate the unit.

#TEL

Administrator List

The Administrator List is a list of up to 8 - 16 digit phone numbers that will receive SMS text alerts from the unit when the relays are activated via SMS text command messages. These SMS text messages from the unit ONLY apply to the following commands: **#RLY** and **#RLOP**

The **#TEL** command allows you to be able to add numbers to the Administrator List by sending the following SMS text command to the unit: **#PWD123456#TEL01=1234567890**

You will receive the following SMS text confirmation from the unit: **TEL01:1234567890**

It is wise when programming your unit to have phone numbers in the Administrator List correspond with the numbers in the White List where WHL01 and TEL01 are the same telephone number.

Deleting a number from the Administrator List can be accomplished by sending the following SMS text command:

#PWD123456#TEL01D

You will receive the following SMS text confirmation from the unit: **WHL01-OK** The number is also removed from the corresponding position on the White List.

Checking All the Administrator Numbers

To review all the number on the Administrator List you would send the following SMS text command to the unit:

#PWD123456#TEL?

You will receive the following SMS text confirmation from the unit:

TEL01:1234567890

TEL02:2345678901

TEL03:3456789012

#RERN

Enable, Disable and Check Status of Administrator List

This is the command that allows you to enable, disable, and check the status of the Administrator List.

You can switch ON or OFF the ability to receive SMS text alerts of relay activation for any individual administrator on the list by sending a variation of this SMS text command: **#PWD123456#RERN=11110000**

In this command the number 1 means ENABLED and the number 0 means DISABLED. In the example above the first 4 administrators on the Administrator List have been ENABLED (TEL01, TEL02, TEL03 and TEL04)

You will receive the following SMS text confirmation from the unit: **RERN=11110000**

To check the status of the **#RERN** list you would send the following SMS text command to the unit:

#PWD123456#RER?

You will receive the following SMS text confirmation from the unit: **RERN=11110000**

#CSQ

Check GSM Signal Strength

This command is useful to check what the GSM signal strength is at the unit's location.

To check the signal strength you would send the following SMS text command to the unit:

#PWD123456#CSQ?

The Dial 2 Start has a signal strength range of 1 to 31. Minimum signal strength of 5 is required. If you receive a value of 5 or less it is recommended that the unit be relocated or an external antenna be used.

You will receive the following SMS text confirmation from the unit: **CSQ<22>**

#GOT**Relay ON Time**

This command defines the amount of time that each of the relays stays ON when you call the unit. You have the ability through this command to latch each of the relays for a period of 1 to 65,535 seconds. (Approx. 18 hr 12min)

To set Relay 1 to switch ON for 15 minutes you would send the unit the following SMS text command:

#PWD123456#GOT1=00900 It is important that the command is sent in 5 digit format.

You will receive the following SMS text confirmation from the unit: **GOT1=00900**

To set Relay 2 to switch ON for 2 hours you would send the unit the following SMS text command:

#PWD123456#GOT2=07200 It is important that the command is sent in 5 digit format.

You will receive the following SMS text confirmation from the unit: **GOT1=07200**

#GOTS**Delay Time Between Relay Activation**

This command allows you to set the delay time between the deactivation of Relay 1 and the Activation of Relay 2. This feature is very useful when you have two devices attached to the unit that have high independent current draw. It allows the first load to be shut OFF before the second load is turned ON. It is **IMPORTANT** that you do not exceed 15 amps TOTAL load for the entire unit.

To set the Delay Time between the deactivation of Relay 1 and the activation of Relay 2 to 5 seconds, you would send the unit a SMS text command as follows: **#PWD123456#GOTS=00005** It is important that the command is sent in 5 digit format.

You will receive the following SMS text confirmation from the unit: **GOTS=00005**

#GOT?**Check the Relay ON and Delay Times**

To check the Relay ON and Delay times you would send the unit the following SMS text command:

#PWD123456#GOT?

You will receive the following SMS text confirmation from the unit:

GOT1=00900

GOT2=07200

GOTS=00005

#RLY**Temporary Latching of Output Relays**

This command allows you to temporarily switch ON either of the relays for up to 65,535 seconds. You will receive confirmation SMS text messages from the unit when the relays switch ON or OFF. This does not affect the GOT1 or GOT2 settings.

To activate Relay 1 for 60 seconds you would send the unit the following SMS text command:

#PWD123456#RLY1=00060 It is important that the command is sent in 5 digit format.

You will receive the following SMS text confirmation from the unit: **RLY1-ON:00060**

When the relay switches OFF you will receive another SMS text message from the unit: **RLY-OFF**

To activate Relay 2 for 6 minutes you would send the unit the following SMS text command:

#PWD123456#RLY2=00360 It is important that the command is sent in 5 digit format.

You will receive the following SMS text confirmation from the unit: **RLY2-ON:00360**

When the relay switches OFF you will receive another SMS text message from the unit: **RLY-OFF**

To check the status of the relays you would send the following SMS text command to the unit:

#PWD123456#RLY?

#RLOP

Permanent Latching of Output Relays

It is possible to permanently latch Relay 1 and Relay 2 ON or OFF through the use of the **#RLOP** command.

To switch Relay 1 ON permanently you would send the following SMS text command to the unit:

#PWD123456#RLOP1=1 (1=ON, 0=OFF)

You will receive the following SMS text confirmation from the unit: **RLOP1-ON** when the relay switches ON or **RLOP1-OFF** when the relay switches OFF.

NOTE: The confirmation messages are sent only to the numbers on the Administrators List who are activated using the #RERN command.

#RLY?

Checking the Status of the Output Relays

To check the status of the output relays you would send the following SMS text command to the unit:

#PWD123456#RLY?

You will receive the following or similar SMS text confirmation from the unit:

RLY1:00000

RLY2:00030

RLOP1:OFF

RLOP2:OFF

#SMW

Relay 24 Hour Timers

This command will allow you to program the relays to operate at certain times over a 24 hour period.

Note: The time must be entered in 24-Hour format. You can program up to 8 selections for each relay.

Text Command Definitions

#SMW=SS,MM,HH,TTTTT,F,R;

SS is a 2 digit value for seconds

MM is a 2 digit value for minutes

HH is a 2 digit value for hours

TTTTT is a 5 digit value for seconds – the amount of time in seconds the relay is to be switched ON for.

F is the time selection number: 1 to 8

R is the relay number: 1 or 2

To program Relay 1 to switch on for 30 minutes at 9:00 pm, you would send the following SMS text command to the unit: **#PWD123456#SMW=00,00,21,01800,1,1;**

You will receive the following SMS text confirmation from the unit: **SMW=00,00,21,01800,1,1;**

To program Relay 2 to switch on for 1 hour at 6:00 am, you would send the following SMS text command to the unit: **#PWD123456#SMW=00,00,06,03600,1,2;**

You will receive the following SMS text confirmation from the unit: **SMW=00,00,06,03600,1,2;**

NOTE: Once this function has been activated, the relays will operate automatically according to the programmed time selections. Activation of the relays via Caller ID and SMS text will be ignored.

#TSET

Setting the Time

Text command to be sent would be **#TSET=SS,MM,HH;**

SS is a 2 digit value for seconds

MM is a 2 digit value for minutes

HH is a 2 digit value for hours

To program the time 8:35 am, you would send the following SMS Text Command to the unit:
#PWD123456#TSET=00,35,08;

You will receive the following SMS text confirmation from the unit: **TSET=00,35,08;**

To Check the Time:

To check the time on the unit you would send the following SMS text command to the unit:
#PWD123456#TSET?

You will receive the following SMS text confirmation from the unit: **TSET=00,35,08;**

NOTE: The time has to be set to use the #SMW command.

#REST

Resetting the Unit

To reset the unit you would send the following SMS text command to the unit: ***REST#123456**

NOTE: You do NOT use the PWD prefix in front of the 6 digit password in this command.

You will receive the following SMS text confirmation from the unit: **REST-OK** The unit will revert to the factory default settings and the password will revert to the default 123456.

Specifications:

Model	D2S-120
Board Operating Voltage	12 or 24 volt D.C.
Board Operating Current	Maximum 500mA, 55mA typical
Relay Contacts	2x230V @ 30 Amp Normally Open and Normally Closed Contacts (Form C)
GSM Frequency MHz	GSM-850, GSM-900, GSM-1800, GSM-1900
Humidity	Less Than 80% RH
Operating Temperature	-20 to +55°C
Physical Size	180mm x 180mm x 100mm
Protection	IP56 Weather Resistant Box
Weight	2.0 kg
Testing Approvals	C.E, CSA, UL

Dial-2-Start Cellular Remote Switches

Manufactured by Effectus AeroProducts Inc.

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Dial-2-Start - Quick Reference Programming Guide

Password - #PWDXXXXXX (6 digits) This command must always prefix any SMS text commands (apart from the RESET command) sent to the unit. All examples use the default password 123456 except for the #CAP example which demonstrates changing the password. Use only 10 digit phone numbers in all commands.

Function	Command	Format	Note
Changing the Password	#CAP	#PWD123456#CAP121212#CAP121212 Current Password > New Password Twice	
White List	#WHL	#WHL01=1234567890 Position> Telephone Number (10 digits)	Up to 99 Numbers
Security Access Mode	#ACM	#ACM2 #ACM0 ON > OFF	
Administrator List	#TEL	#TEL1=1234567890 Position > Telephone Number (10 digits)	Up to 8 Numbers
Check Signal Strength	#CSQ	#CSQ? Current Signal Strength	0 – 31, Minimum of 5 Required
Relay ON Time	#GOT	#GOT1=00900 1=RLY1, 2=RLY2 > Time in Seconds (5 digits)	Maximum 65,535 Seconds
Delay Time Between Relay 1 Switching OFF and Relay 2 Switching ON	#GOTS	#GOTS=0005 Time in Seconds (5 digits)	
Temporary Latching of Output Relays	#RLY	#RLY1=00060 1=RLY1, 2=RLY2 > Time in Seconds (5 digits)	Maximum 65,000 Seconds
Switching Relay 1 and Relay 2 Permanently ON and OFF	#RLOP	#RLOP1=1 1=RLY1, 2=RLY2 > 1=ON, 2=OFF	
Setting the Time	#TSET	#TSET=SS,MM,HH; SS=Seconds, MM=Minutes, HH=Hours (All 2 digit Values)	24 – Hour Format
Relay 24 Hour Timers	#SMW	#SMW=SS,MM,HH,TTTTT,F,R; SS=Seconds, MM=Minutes, HH=Hours TTTTT=Relay ON time in Seconds (5 digits) F=Time Selection Number, R=Relay Number 1 or 2	
Resetting the Unit	*REST#123456	*REST#123456 Reset to factory default settings and password	DO NOT USE THE PASSWORD PREFIX