

DirectDial

DirectDial is an auto dialer programmed to work directly with AutomationDirect PLC platforms.

DirectDial uses DirectNet protocol to communicate with any port capable of using DirectNet. (Limited only to slave address 1 to 9).

Rev C Updates:

Speaks Signed or Unsigned Decimal values with decimal point.

Hardware lock-out for V-memory writes.

Getting Started:

The Baud rate fixed to 9600,0,8,1.

This is the default parity and data bit length for the DL family of plc. DL 250 port 2 will have to be configured for DirectNet communication. See plc instructions for details.

Connect the + power lead to any dc supply voltage between 8V and 12Vdc. The current consumption is 85ma max. Connect the - power lead to ground.

Connect the D2-DSCBL to the male Db9 connector on the DirectDial and to a DirectNet port on the plc. For DL 250 port 2, use cable D2-DSCBL-1

Next, connect a standard RJ11C phone connector to the RJ11 socket on the DirectDial board. This is the same plug that is used to connect home telephones to the wall. Check with your local phone company if you are unsure the phone system you use has standard Tip and Ring voltage and signal levels. Typically most residential homes have the standard line levels. Some large companies with their own PBX system may use equipment incompatible with the tip and ring voltage levels.

On first power up, DirectDial defaults to PLC slave address 1 and reads the V memory base of V2000.

When DirectDial has been powered, the POWER LED will turn on. The communication to the plc will begin after a few seconds. The DNET LED will flash if successful data is being read. DirectDial is reading only at this point.

PLC Setup:

DirectDial is now reading data from plc base address M (default V2000). This V-memory location can be changed over-the-phone (See Star * Commands). Plc base address M is where the alarm call out information is stored in the plc. If the value 9A9Ah is written (by plc ladder logic) to M (ex. V2000), a call out will occur. The phone number to call must be in M+1 (ex. V2001) to M+7 (ex. V2007). This allows a total of 7 words X 4 nibbles or 28 digits to be dialed.

Example PLC address data:

```
V2000..... 9A9A <---- Signals call out
V2001..... 1402 <---- Begin phone number
V2002..... 5551
V2003..... 212F <---- End phone number
V2004..... 0000
V2005..... 0000
V2006..... 0000
V2007..... 0000
```

Notice an F was placed after the last digit. This indicates that 2 was the last digit to dial. All numbers after F are ignored.

Some phone system require a 9 then a pause to dial out successfully. To delay the dial sequence, insert a D into the phone number. This will delay the dialing 4 seconds. Multiple D's can be inserted to make longer delays.

```
V2000..... 9A9A
V2001..... 9D14
V2002..... 0255
V2003..... 5121
V2004..... 0000
V2005..... 0000
V2006..... 0000
V2007..... 0000
```

If all 32 digits are used, an F is not required as the last digit. A (zero) 0 as the first digit will cause a failure in the alarm call out. An F as the first digit will also cause a failure. This means the call out will not take place. Hex values A, B, C, and E in the phone number will be ignored and skipped but may not cause a call out failure.

Custom Voice Message:

There are 40 words pre-recorded to the DirectDial auto dialer. These words along with the recorded numbers can be concatenated to create sentences to indicate the alarm condition. To create a sentence, look at the list of words included with these instructions. Find the number of the word you want to say. Then enter those numbers into M+8 (ex. V2010) to M+15 (ex.V2017). You may enter 2 words per V-memory location. This allows for 8 x 2 words or 16 words. Use FF to end the message.

To Say: “Pump 12 shut down at 11:30”, you would enter the following numbers into V-memory:

```
V2010.... 7813
V2011.... 8052
V2012.... 1222
V2013.... FF00
V2014.... 0000
V2015.... 0000
V2016.... 0000
V2017.... 0000
```

This speaks message 78 (Pump) 13 (twelve) 80 (shut down) 52 (at) 12 (eleven) 22 (thirty).

If any value is 0 or > 90 then the unit will ignore these word values.

There is also a default message that is played on each call: “This is plc slave address 2” The slave address number programmed by the star command is the number the auto dialer will say on call out.

The message is repeated 10 times or until someone answers and acknowledges the alarm by pressing any key on the phone. If this happens, the value 0A0Ah is written back to address M (ex. V2000). If no acknowledge is received, then address M (ex. V2000) is written with 1A1Ah.

Status Update Voice Message:

By pressing 3 anytime during the Main Menu message, the operator can listen to a status update created by the plc. To create a sentence, look at the list of words included with these instructions. Find the number of the word you want to say. Then enter those numbers into M+16 (ex. V2020) to M+23 (ex.V2027). You may enter 2 words per V-memory location. This allows for 8 x 2 words or 16 words. Use FF to end the message.

To Say: "Counter 7 value is 1000", you would enter the following numbers into V-memory:

V2020.....	5408
V2021.....	8965
V2022.....	0230
V2023.....	FF00
V2024.....	0000
V2025.....	0000
V2026.....	0000
V2027.....	0000

This speaks message 54 (Counter) 08 (seven) 89 (value) 65 (is) 02 (one) 30 (thousand).

After the status update is read, the value 3A3Ah is written to the base address. The plc could use this value to create a new status update message giving multiple messages to the caller.

Calling DirectDial:

When DirectDial receives a call, the following will occur:

1. Greeting message: "Welcome...."
2. Menu message: "Please choose...."
3. Silence. Awaiting input.

The menu has the following options:

1. Read from V-memory.
2. Write to V-memory.
3. Get status update.
4. Hangup. (Unit will hang up after 60s of inactivity on the line.)

Choose 1...

The unit will ask, "Please enter the V-memory location, use 4 digits."

Enter the V-memory area you want to read. Use 4 digits so if you want to read V100, enter 0 1 0 0.

You have access to read any V-memory register between V0 and V7777.

The unit responds: "V-memory 2,021 contains the value 1,234." (One thousand two hundred thirty four.)

Or, the dialer may respond "V-memory 2,021 contains the hexadecimal value one four A F." Meaning the register contains the value (14AFh).

Choose 2...

The unit responds: "Please enter the V-memory location, use 4 digits."

Since this is a write command, you may only enter the V-memory value between V2000 and V4777. Using the telephone keypad, enter the four digits.

Next the unit asks: "Please enter the BCD value. Use 4 digits."

Now enter the 4 digit BCD value that will be saved to the V-memory area.

DirectDial does not read the value back and verify that it was saved. If the communication went with no error, you will hear: "That was successful." If communication failed, you will hear "That failed."

Choose 3...

The unit responds by reading values from the V memory and speaking those words. See the "Status Update Voice Message" section for details on setting up the memory area.

Choose 4...

The unit responds with: "Thank you and goodbye." Then the unit hangs up.

Choose 5, 6, 7, 8, 9, 0, #

These are hot keys and they will write an immediate value to the plc base address. See Base Address Value Definitions for more details.

Star * Commands:

Choose *...

The * commands are used to set some operating parameters. Any time you call DirectDial, let the greeting messages play and wait for the silence. Then you may enter the following commands:

*4:

Selects BCD or HEX readout for V-memory reads. (0000 to 9999) (0000 to FFFF)

*5:

Selects Unsigned Decimal readout for V-memory reads. (0 to 65,535) see also *7N

*6:

Selects Signed Decimal readout for V-memory reads. (-32,768 to 32,768) see also *7N

*7N: Where N is a number between 0 and 5.

If *5 or *6 is selected to readout Decimal values, then a decimal point can be placed in the speech. If N = 0, then the readout is 65535. If N = 1, the readout is 6553.5. If N = 2, the readout is 655.35. Up to N = 5 to readout 0.65535. If Signed decimal is used and a negative number exists in the V-memory, then the speech may announce for N = 3, "NEGATIVE 32.768".

*8<message> NNNN:

Here a message is played: "Please enter the V-memory location that contains the call out information." And NNNN is the V-memory address. Enter any address between 2000 and 4750.

*8 <message> 2 0 1 0 will change the call out information area to the range of (V2010 to V2037). Now the plc program must write 9A9Ah to V2010 in order to call out and the phone numbers must be located beginning at V2011, call out message must be at V2020 and the status update message must start at V2030.

*9N: Where N is the plc address. N can equal 1 to 9.

* 9 2 will change the plc address to 2. You must also change the PLC Station Number to 2. See the DirectSoft manual for instructions on how to do this.

PLC Base Address Value Definitions:

The following is a list of values that can be written by the dialer to M (ex. V2000), the call out base address.

M = 0A0Ah

This is written by the auto dialer to plc address M to indicate the call was made and acknowledged by the called party.

M = 1A1Ah

This is written by the auto dialer to plc address M to indicate the caller pressed 1 to read v memory. This is sent after the value is read.

M = 2A2Ah

This is written by the auto dialer to plc address M to indicate the caller pressed 2 to write to v memory. This is sent after the value is written.

M = 3A3Ah

This is written by the auto dialer to plc address M to indicate the caller pressed 3 for a status update. This is sent after the status update is said.

M = 4A4Ah

This is written by the auto dialer to plc address M to indicate the caller pressed 4 to exit the dialer and hangup.

M = 5A5Ah

This is written by the auto dialer to plc address M to indicate an incoming call is being answered.

M = 6A6Ah

This is written by the auto dialer to plc address M to indicate the call was made and NO acknowledge was received from the called party.

M = 7A7Ah

This indicates the phone number was invalid and the phone call was not placed. A (zero) 0 as the first digit will cause a failure in the alarm call out. An F as the first digit will also cause a failure. Hex values A, B, C, and E in the phone number will be ignored.

M = 8A8Ah

This indicates the dialer timed out and hung up because of no activity from the caller.

M = 9A9Ah

This value indicates to the auto dialer to call out on alarm.

The following are hot keys. The value shown is written to the plc base address M anytime a key 5, 6, 7, 8, 9, 0, or # is pressed during or after the main menu message. These hot keys can allow immediate action in the plc. There are 7 hot keys shown below:

M = 5555 Key 5 was pressed.
M = 6666 Key 6 was pressed.
M = 7777 Key 7 was pressed.
M = 8888 Key 8 was pressed.
M = 9999 Key 9 was pressed.
M = AAAAh Key 0 was pressed.
M = BBBBh Key # was pressed.

If the first digit of the phone number is 0 at M+1 (ex. V2001 = 0000) then the unit will not dial and the value 7A7Ah is written to M (ex. V2000).

The indicator LED are labeled as follows:

POWER—On any time the unit has power.
RING—On when an incoming call is ringing.
HOOK—On then the unit is answering or placing a call.
DTMF – On when a valid DTMF tone is received or sent.
DNET –On when communicating with the PLC. If this lamp is on solid, a communication problem exists. If it flashes around once a second, then valid communication is happening.

V-memory Write Lock-Out

The jumper located between the phone line connector and the DSCBL connector must be removed to lock-out V-memory writes. If the jumper is placed across the pins, the call will be able to write to V-memory areas between V2000 and V4777.

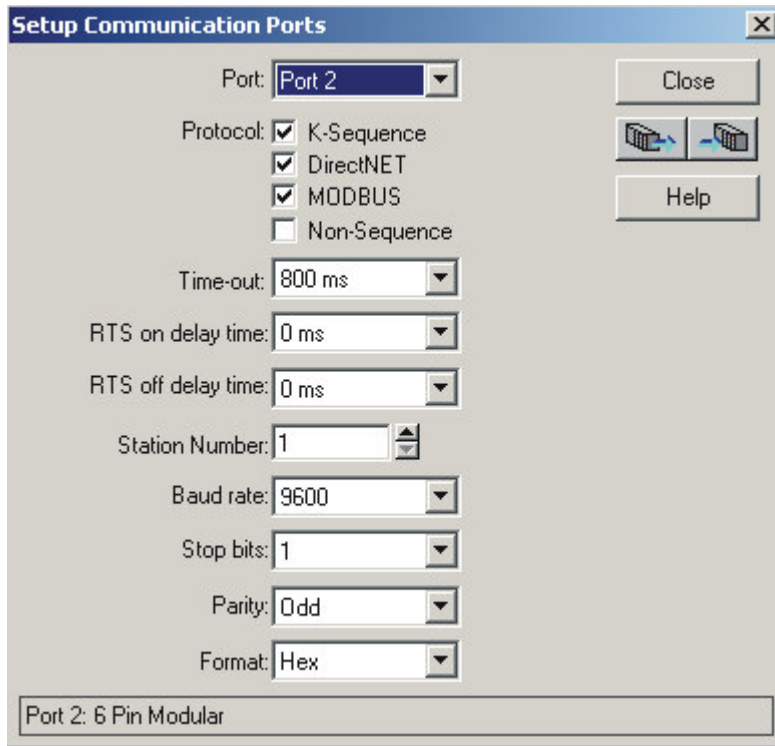
Custom Words

The following is a list of available words and the values that must be entered into V-memory.

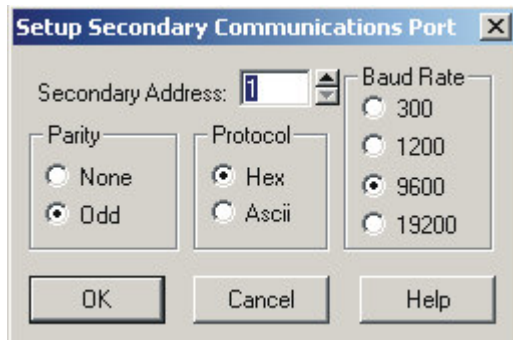
Zero.....01	Alarm.....51
One.....02	At.....52
Two.....03	Closed.....53
Three.....04	Counter.....54
Four.....05	Degrees.....55
Five.....06	Failed.....56
Six.....07	Feet.....57
Seven.....08	Field.....58
Eight.....09	Help.....59
Nine.....10	High.....60
Ten.....11	Hours.....61
Eleven.....12	ID number....62
Twelve.....13	Inches.....63
Thirteen....14	Input.....64
Fourteen....15	is.....65
Fifteen....16	Level.....66
Sixteen....17	Low.....67
Seventeen...18	Machine.....68
Eighteen...19	Miles.....69
Nineteen...20	Minutes.....70
Twenty.....21	Motor.....71
Thirty.....22	Open.....72
Forty.....23	Output.....73
Fifty.....24	Negative.....74
Sixty.....25	Per.....75
Seventy.....26	Percent.....76
Eighty.....27	Pressure.....77
Ninety.....28	Pump.....78
Hundred.....29	Running.....79
Thousand....30	Shut down....80
Million.....31	Speed.....81
	Stopped.....82
	Switch.....83
	System.....84
	Tank.....85
	Temperature..86
	Thee.....87
	Timer.....88
	Value.....89
	Volts.....90

Port Settings

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The DI05 will use the D2-DSCBL for communication. Inside DirectSoft Software, pull down the PLC menu and choose Setup then Setup Sec. Comm Port. The menu above will be displayed. Make sure the settings are exactly like the screen above.



The DL240 will use the D2-DSCBL for communication. Inside DirectSoft Software, pull down the PLC menu and choose Setup then Setup Sec. Comm Port. The menu above will be displayed. Make sure the settings are exactly like the screen above.