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Client: Alarm.com
Model/HVIN: ADC-620T
Standards: FCC 15.247/IC RSS-247
ID's: YL6-143620T/9111A-143620T
Report #: 2016169DTS

Appendix L: Manual

Please refer to the following pages.

ADC-620T Module

INSTALLATION GUIDE

Introduction

The ADC-620T Module for Neo enables wireless reporting of all alarms and other system events from the DSC Neo control panel using an all-digital, cellular network (if available) or broadband connection (if available). The module can be used as the primary communication path for all alarm signaling, or as a backup to a telephone connection to the central monitoring station. The wireless alarm signaling and routing service is operated by Alarm.com. The ADC-620T Module also features integrated support for Alarm.com's emPower™ solution with built-in Z-Wave capabilities.

Contact Information

For additional information and support on Alarm.com products and services, please visit www.alarm.com/dealer or contact Alarm.com technical support at 1-866-834-0470.

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Compatibility

The ADC-620T Module is compatible with DSC Neo panels with software versions 1.3 and later.

Account Creation

Before installing an Alarm.com ADC-620T Module in a Neo system, a new customer account needs to be created with Alarm.com. We recommend creating the account at least 24 hours in advance of installation to ensure that the radio is activated prior to installation.

To activate an account go to www.alarm.com/dealer and login. Under the "Customers" heading at the top left of the page click on "Create New Customer". You will need the following customer information to create the account:

- Customer Address
- Customer Phone Number
- Customer E-mail
- Preferred login name for the customer
- Alarm.com Radio Serial Number

At the end of the account creation process you will be able to print a Welcome Letter for the customer that has their login information and temporary password for the Alarm.com website.

Installation

Follow these guidelines during installation:

- Before affixing the panel to a wall, verify the cellular signal level at the installation location. On the Neo panel, press and hold the 5 key for 10 seconds to view the cellular signal level. An installation location with a sustained signal level of two or more bars is recommended.
- Do not exceed the panel total output power when using panel power for the ADC-620T Module, hardwired sensors, and /or sirens. Refer to the specific panel installation instructions for details. Only one Alarm.com Module can be used per Neo panel.
- The ADC-620T Module draws on average 100mA during normal operation. In PowerSave Mode, during or immediately following an AC power failure, the module will draw only 5mA on average.
- Avoid mounting the panel in areas with excessive metal or electrical wiring, such as furnace or utility rooms.
- Do not install the control panel and module in a basement or other below-ground location. Doing so will negatively impact signal strength.

Power Up

Connect AC power. It may take a few moments after power up for the panel to become active. If the panel does not turn on, ensure that the module has been fully connected to the panel via the ribbon cable then perform a full power cycle by following these steps:

1. Disconnect the battery leads and unplug the panel power transformer from AC power.
2. Verify that the module is inserted securely and that the antenna is snapped-in completely.
3. Connect battery leads to the battery.
4. Plug the panel power transformer into the AC outlet.

It is important to plug the battery in before plugging in the transformer, otherwise the panel will issue a "System Low Battery" message regardless of the battery voltage level.

Note that power cycling will clear existing banners.

Communications Test (Module Registration)

To initiate module communication with Alarm.com and/or the cellular network the first time, perform a "communications test". A communications test can also be used at any time to force communication with Alarm.com

To perform the communications test on Neo, press and hold [3] for two seconds. The communications test can also be generated by pressing [*][6] followed by the master code and [4], or via the Interactive Services menu. See the Interactive Menus section for information on how to perform the communications test through these menus.

The Neo panel will let you know when the communications test has completed by activating the siren output on medium volume for 2 seconds followed by full volume alarm for 2 seconds. If the communications test was initiated via the [3] key or the Interactive Services menu then the siren will not sound. All display lights and LCD pixels turn on. This indicates that Alarm.com has received and acknowledged the signal. This does not guarantee that the signal went through to a central station; it confirms that the Alarm.com Operations Center received the signal. The central station should be contacted directly to verify that the signal was received on the correct account and that the Central Station routing settings have been set up correctly.

The signal may not go through to the central station if (a) the Central Station Account settings were entered incorrectly on the Alarm.com Dealer Site or (b) if Alarm.com was unable to send the signal successfully to the Central Station receivers. In these cases the panel will show a "Failure to Communicate" message.

Panel Settings

Night Arming

The Neo panel has the ability to night arm, which arms the perimeter and restricts movement to designated interior areas. Night arming via the panel should be restricted to one of the five function keys. For more information on Night Arming and how to program the function keys see the installation guide provided with the panel.

Central Station and Telephone Line Settings

Central Station and telephone line settings will be automatically configured through the CS Forwarding Settings page of the Dealer Site. Note that the system cannot be programmed if it is armed, in alarm, or in installer programming. Before changing any panel settings through AirfX or the Dealer Site, ensure the panel is not in any of these states. following are the panel settings that will be configured via the Dealer Site page and should not be configured in the panel:

Section(s)	Subsection(s)	Option(s)	Description
------------	---------------	-----------	-------------

015	--	7	Telephone Line Monitoring
300	001 - 002	--	Panel/Receiver Communication Paths
301	001 - 004	--	Phone Number Programming
309	001	1 - 2	Maintenance Events/Restores Call Directions
309	002	1 - 2	Test Transmissions Call Directions
310	000	--	System Account Code
310	001 - 008	--	Partition Account Codes
311 - 318	001	1 - 2	Alarm/Restore Partition Call Directions
311 - 318	002	1 - 2	Tampers/Restore Partition Call Directions
311 - 318	003	1 - 2	Openings/Closing Partition Call Directions
350	001	--	Communicator Formats
384	--	2	Communicator Backup Options

Zone Attributes

Subsections [001] through [128] of section [002] control the attributes for each zone. Option [5] enables or disables Force Arming. If this option is set to OFF, the system cannot be armed if the zone is opened.

Notifications

The following panel settings may alter the behavior of customer notifications:

Section	Option	Description
015	4	If this option is ON, keyfob arming notifications will not be associated with a specific user.
016	8	If this option is OFF, notifications will not be available for keypad tampers. Set to ON to enable tamper notifications.

Not Supported

The following panel settings are either handled automatically or not supported and thus any changes to them will be ignored:

Section(s)	Subsection(s)	Option(s)	Description
324-348		All	Custom Reporting Codes
377	001	Tampers/Restores	Max number of transmissions
609-611		All	Reporting Codes

Panel Settings Automatically Change

Some panel settings are changed automatically when the ADC-620T Module is connected to the control panel. These settings should not be altered. They are:

Section	Subsection	Option	Value	Description
015	--	6	OFF	Master Code Not Changeable must be OFF to ensure module communicates the correct master code.
017	--	6	OFF	Daylights Saving Time must be disabled to ensure panel time is accurate.

024	--	5	OFF	Realtime Clock must be disabled to ensure panel time is accurate.
041	--	--	00	User Access Codes must be 4-digits.
377	001	Maintenance Troubles/Restores	014	Max number of transmissions should be 14.
377	002	AC Failure Communication Delay	Random value between 001 and 030	AC Failure Communication Delay should be set between 001 and 030 to ensure notifications for power failures are received.
377	002	Wireless Zone Low Battery Transmission Delay	001	Wireless Device Low Battery Transmission Delay should be set to 001 to ensure notifications for low batteries are received.
380	--	1	ON	Communications must be enabled so the Module can communicate with the panel.
380	--	2	OFF	System should transmit alarm restores immediately when the zone is restored.
380	--	5	OFF	System should not attempt to communicate through all available receivers at the same time.
382	--	5	ON	Communications must be enabled so the Module can communicate with the panel.
382	--	6	OFF	AC Failure Transmission Delay should be in minutes.

Clock: The ADC-620T Module sets the panel clock when it connects to Alarm.com and then updates it every 18 hours. It is important to select the correct panel time zone on the Alarm.com website, or the panel time will not be accurate. If a system is powered up before the customer account has been created, the time zone will default to Eastern Time.

Troubleshooting: Module Status Information

Module status information for verifying and troubleshooting module connection status or errors can be found through the Interactive Services menus on Neo. Go to the 'Interactive Services' → 'Module Status' menu.

See Table 1 below for potential module states.

Table 1: ADC-620T Module States

Idle	Most common state
Roaming	Roaming on partner network
SIM Missing	The SIM card is missing
PowerSave Mode	AC Power is Down
Registering...	The module is trying to register on the cellular network

Connection Error	The module is registered on the cellular network but cannot connect with Alarm.com
Radio Error	Radio is not operating correctly
Server Error	If it persists, the account may have been set up incorrectly
Connected	Currently talking to Alarm.com Servers
Connecting...	In the process of connecting to Alarm.com
Updating...	Updating Signal Level

In addition, some of the information can be retrieved via long key presses from the keypad. Press and hold the following panel keys for 2 seconds to display the given information on the panel display. Most messages are displayed for less than 30 seconds but can be cut short by pressing the 0 Key for 2 seconds.

Table 2: ADC-620T Module Statuses

1 Key	10-digit module serial number. This number is needed to create the Alarm.com customer account.
2 Key	Module firmware version. (e.g. 187a)
3 Key	Initiate communication test.
5 Key	Wireless signal strength level and module status or error, if any. The panel will display bars for the signal level (0 to 5) and a number (2 to 31) followed by the Mode it is in. (See "ADC-620T Module Statuses" on Table 1)
6 Key	Battery voltage as read by the module, to two decimal places, and the AC power status. (e.g. Battery: 6.79v, AC Power OK)
8 Key	Cellular frequency used by the module. The panel may also specify the type of network available.

Various Module States (modes)

There are four module states, or modes, as described below:

Idle Mode. AC power is OK and the module is not currently talking to Alarm.com.

PowerSave Mode. The module just powered up, AC power is down, or AC power was recently restored and the battery is recharging. The module is fully functional and will go into Connected Mode as soon as a signal needs to be sent. Press and hold the 5 Key for 2 seconds to switch the module into Idle Mode and update the signal level reading. The system will go into Idle Mode every 2 hours to check for any incoming messages.

Connected Mode. The module is currently talking to Alarm.com. The module stays in Connected Mode for at least four minutes after reporting an event to Alarm.com, unless the 5 Key is pressed and held for 10 seconds, which will cause the module to go back to Idle Mode.

Sleep Mode. The panel is not connected to AC power, or there is an AC power failure, and the battery level is low. The module will connect to Alarm.com to send a signal, but will otherwise draw almost no power. Note: If the ADC-620T Module is powered down for a short period of time, buffered messages from Alarm.com may be received when module power is restored.

Note: If the ADC-620T Module is powered down for a short period of time, buffered messages from Alarm.com may be received when module power is restored.

Improving Wireless Signal Strength

Guidelines for optimal wireless signal strength:

- *Install the module above ground level, as high up as possible within the structure.*

- *Install the module near or adjacent to an outside-facing wall of the structure.*
- *Do not install the module inside a metal structure or close to large metal objects or ducts.*
- *Upgrade the antenna. Contact Alarm.com technical support for antenna options.*

As you make changes to the module location to improve signal strength, request updated signal readings to verify changes. To request an updated reading, press and hold the "5" key for 2 seconds.

Walking the Customer through New User Setup on the Web

This section describes how to help your customer set up their website account, and only applies to customers on an interactive service plan with an online account. (Skip this step for customers using the module for wireless signaling only).

Before the customer can configure their website account, the Alarm.com account for that customer must be created on the Dealer Site, and the cellular module associated with the account must be installed successfully.

To log in and access their account, the customer can go to www.alarm.com (or custom dealer website address) to complete the new subscriber setup procedure.

The customer will need the following:

- The website login and temporary password included on the Alarm.com Welcome Letter generated when the account was created by the Dealer
- A list of their system sensors with corresponding zone IDs
- At least one phone number and e-mail address where notifications can be sent

Note: At least one sensor must be learned into the panel to complete the new subscriber setup. If not all sensors and touch screens were learned in before powering up the module, an updated sensor list must be requested by performing a cellular communications test or requesting an updated equipment list from the Dealer Site.

Interactive Menus

The "Interactive Services" menu can be used to access information about the ADC-620T Module, install or remove Z-Wave devices and configure or troubleshoot other interactive features. To enter the menu press [*] [8] [Installer Code] [851]. Ensure the panel has already displayed "Alarm.com Module OK" before attempting to enter Interactive Services.

The menu will time out after 20 minutes. Refer to Table 6 below for the menu options.

Table 6: Neo Interactive Services Menu

Menu	Description
Installer Programming	Press [*][8] [Installer Code] [851] to enter Interactive Services menu
-- Module Status	Scroll down through the various ADC-620T Module information screens
--- Radio	Signal level, connection status, roaming status, and errors (if any)
--- Cellular Freq.	Cellular frequency used by the module.
--- Battery	Current battery voltage and AC power status.

--- SN	Module serial number. Needed to create or troubleshoot an Alarm.com account.
--- SIM card	SIM card number. Sometimes needed to troubleshoot an account.
--- Version	ADC-620T Module firmware version and sub-version. Example: 181a, 181 = module firmware version, a = subversion.
--- Advanced - Network	For Alarm.com use only.
-- Z-Wave Setup ²	This menu is used to add, remove, and troubleshoot Z-Wave devices and networks. To control Z-Wave devices via the Alarm.com website and smart phone apps, you will also need to enable Z-Wave services on the account.
--- Number of Z-Wave Devices ²	The total number of Z-Wave devices currently known to the ADC-620T Module.
--- Add Z-Wave Device ²	Press [*] to enter Z-Wave Add Mode. Make sure the device you are trying to add is powered up and within 3 to 6 feet of the Neo panel. Refer to the manufacturer's instructions for button presses required to enroll device.
--- Remove Z-Wave Device ²	Press [*] to remove an existing Z-Wave device, or to "reset" a Z-Wave device that was previously learned into a different Z-Wave network. Previously enrolled devices must be reset before they can be enrolled into the module.
--- Z-Wave Home ID ²	Press [*] to query the Z-Wave network Home ID. If the ID is 0, verify that the module has communicated with Alarm.com and that the Alarm.com account is set up for Z-Wave.
-- Image Sensor Setup ¹	An Image Sensor daughterboard is required to enable Image Sensor capabilities on the module. This menu is only active if an Image Sensor daughterboard is connected.
--- Learn Image Sensor ¹	Press [*] to enter Add Mode. Enroll the Image Sensor by inserting batteries or resetting.
--- Delete Image Sensor ¹	Press [*] and scroll to the Image Sensor to delete. Press [*] to delete.
--- Image Sensor Settings ¹	Press [*] and scroll to the Image Sensor of interest. Press [*].
---- Image Sensor #[x] ¹	[x] is the sensor ID. Press [*] to view information on this Image Sensor.
---- [Power Information] ¹	Gives information on the Image Sensor's battery level and power status.
---- Signal ¹	The signal strength of the communication between the Image Sensor and the Image Sensor daughterboard.
---- Test PIR ¹	Press [*] to put the Image Sensor in PIR Test Mode.
---- PIR Sensitivity ¹	Press [*] to view current selection. Scroll down to view available sensitivity levels. Press [*] to select.
---- Rules ¹	Displays whether rules are confirmed.
---- MAC ¹	MAC address of Image Sensor.

---- Version ¹	Image Sensor daughterboard version.
---- Last Talk ¹	Last Image Sensor talk time.
--- Extended Range Option	Press [*] to enable/disable extended range.
-- Communications Test	Press [*] to perform ADC communication test.
User Functions	Press [*] [6] [Master Access Code] to enter User Functions menu. Then scroll right to "Interactive Serv" and press [*] to enter Interactive Services menu.
-- Module Status	See Installer Programming section above.
--- Radio	See Installer Programming section above.
--- Cellular Freq.	See Installer Programming section above.
--- SN	See Installer Programming section above.
--- SIM card	See Installer Programming section above.
--- Version	See Installer Programming section above.
--- Advanced - Network	See Installer Programming section above.
-- Z-Wave Setup ²	See Installer Programming section above.
--- Number of Z-Wave Devices ²	See Installer Programming section above.
--- Add Z-Wave Device ²	See Installer Programming section above.
--- Remove Z-Wave Device ²	See Installer Programming section above.
--- Z-Wave Home ID ²	See Installer Programming section above.
-- Image Sensor Setup ¹	See Installer Programming section above.
--- Image Sensor #[x] ¹	See Installer Programming section above.
---- [Power Information] ¹	See Installer Programming section above.
---- Signal ¹	See Installer Programming section above.
---- Test PIR ¹	See Installer Programming section above.
-- Communication Test	See Installer Programming section above.
-- Request Weather Update	See Installer Programming section above.

¹ All Image Sensor menus are only available when an Image Sensor daughterboard has been connected to the module. An Image Sensor daughterboard is required to enable Image Sensor functionality. An interactive Alarm.com account with an Image Sensor service plan is required for image capabilities and features.

² Refer to the emPower™ installation instructions and guides on the Alarm.com Dealer Site for more information on Z-Wave enrollment and troubleshooting.

Specifications

Compatibility	Neo panels with software versions 1.3 and later
Power requirements	3.9V
Standby current	50mA
Peak current	1A
Operating temperature	14 to 131°F (-10 to 55°C)
Storage temperature	-30 to 140°F (-34 to 60°C)
Max. relative humidity	90% non-condensing
Cellular network	Varies
Dimensions	(H x W) 3.25 x 4.25 in. (8.23 x 10.80 cm.)

Regulatory Information

Changes or modifications not expressly approved by Alarm.com can void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment in to an outlet on a circuit different from that which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC/IC

This modular transmitter is labeled with its own FCC ID and IC number. When the module is installed inside the host device and the FCC ID/IC of the module is not visible the host device shall display the provided label referring to the FCC ID and IC of the enclosed module. This label is shipped together with the module and it is the responsibility of the integrator to apply it to the exterior of the enclosure as indicated below.

