



# Molad

A Hebrew calendar application for a Java™ mobile device

Version .2.0  
December 2006  
Kislev 5767

# Introduction

## Molad and 'Molad'

**Molad** (*birth*) is a Hebrew word for *new moon*. While new moon causes superstitions and horror in the Christian world, for the Jewish culture Molad means a new month, a new year, and a new life. Despite scientific declarations of the Universal mortality, for me Molad symbolises the eternity of the Universe, life ... and the calendar!

This application is designed to suit any Java™ 2 Micro-Edition compatible mobile device, like the majority of recent mobile phone models. Colour support and screen size 176x208 (“classic” Series 60 devices) or more will be an advantage (but not necessary).

The following features are supported:

- Calendar page for a specified day
- List of coming and past events
- Halachic times (zmanim) customized to specific location, daylight saving and user preferences
- Omer days
- Sedrot (Torah readings)
- Custom events

Most of other Hebrew calendar programs don't accept a secular date before year 1752 Common Era (C.E.) - the day when Gregorian calendar was introduced in England (?). It might look naive, but I can't understand why a Hebrew calendar application should depend on such a minor event. This application supports Hebrew years in the range from 1 to 5000000 - hopefully enough for now :). Given that different countries adopted Gregorian calendar at a different time, you can specify the changeover date, so that the appropriate secular calendar will be chosen automatically.

The application is designed to be intuitive and user friendly. During the first run it will try to accommodate to your location, but the adjustment is strongly recommended. The application can be customised to different zmanim calculation schemes, different time zones and daylight saving schemes. ***All sunrise/sunset and zmanim calculations are to be used only as a guide line. Please. contact your local authorities for the actual times.***

Here are the features that I would like to support in the future:

- Monthly calendar pages - this would look terribly bad on a small screen.
- Introduction date for each holiday. As far as I know, holidays like Chanukah or Purim are not as old as Pesach, therefore it doesn't look logical to show Chanukah say for year 1000 A.M. Unfortunately, I don't know exact introduction dates even for new holidays like Yom Zikaron, or Yom Atzmaut.

The very first version of Molad released two years ago and happened to be a Chanukah present to for the Jewish community all over the world. Today is 18 of Kislev 5767 (10 December 2006) and there are just few days till Chanukah in my possession. Let it become another great Chanuka present ... and another occasion to remind you that some popular intelligent devices are still free of Microsoft® intrusion.

## Current Releases

**Standard Molad2 release** is designed for MIDP 2.0 and CLDC 1.1 compatible releases. If you own a 2005 or a later model, it most probably is be MIDP 2.0 compatible. Unfortunately some MIDP 2.0 compatible devices do not provide CLDC 1.1-compatibility (e.g. no floating point support) in which case you have to use legacy release.

**Legacy Molad2 release** for older models (including N-Gage, Siemens SX1, Sony Ericsson P800) and the ones without native floating point support. This release includes majority of the features provided by the standard release, however time calculations are slower because of emulated floating point and some user interfaces are less attractive and convenient because of MIDP 1.0 limitations.

As the result of the recent modifications the application size has more than doubled and is now about 125KB. This shouldn't create a problem for modern devices. If the application size is a concern for you, use **Molad 1.2**, which easily fits into 64K and has a Hebrew version which an exclusive support of Hebrew native years.

Unfortunately *Molad2 releases are now available only in English*, simply because the new features enormously extended the application vocabulary; so that I need time and probably someone's help to translate the new text into Hebrew. If you are willing to do this, please contact me. Hopefully, the Hebrew release of Molad2 is going to appear in a reasonably short time. In the anticipation of this (and also because of nostalgic feelings) this manual still has a description of Hebrew native numerals.

Because of changed name, you can install Molad2 without removing the original Molad installation. Therefore you can keep both versions for a while in order to decide which one suits you better.

## Credits and Links

**Daniel Sebbagh** <[sebbagh@hotmail.com](mailto:sebbagh@hotmail.com)> for his great Hebrew translation. He also suggested having native format of Hebrew dates.

**NOAA Improved Sunrise/Sunset Calculation** available from National Oceanic and Atmospheric administration site:

<http://www.srrb.noaa.gov/highlights/sunrise/sunrise.html>

The code has been slightly time optimised and modified to suit the application structure.

**HebCal** by **Danny Sadinoff** a UNIX (Linux and Solaris) product ported to Windows.

<http://www.sadinoff.com/hebcad>

Congratulations Danny, well done. The code has been thoroughly studied and used as an excellent source of information.

**Chelm.org's explanation of the Jewish Calendar**

<http://www.chelm.org/jewish/calendar/explain.html>

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A clear and comprehensive explanation, even a code provided. Unfortunately the code doesn't work before year 1760 C.E., and apart from that, the logic for Rosh HaShanah calculation doesn't look 100% accurate to me.

**Judaism 101. Jewish Calendar**

<http://www.jewfaq.org/calendar.htm>

Copyright 1995-2001 Tracey R Rich

A very simple explanation of the calendar which doesn't pretend to be exhaustive, but might be sufficient for non-developers.

### ***Orthodox Union***

<http://www.ou.org>

A good source of information about Jewish history, culture, holidays. Contains Zmanim tables, publications, and more.

### ***MyZmanim***

<http://www.myzmanim.com>

Calculale Halachic Times (zmanim) for any date and any place in the word, find about zmanim schemes.

### ***Countries Calendar Reform***

<http://webexhibits.org/calendars/year-countries.html>

You might wish to visit the page to find out the date when Gregorian calendar was adopted in your area.

## **Previous Releases**

### **Version 1.2 (14 Kislev 5767 / 5 December 2006)**

This version can be very well named 1.1.1, but a long number has troubles fitting About screen :) It is a farewell to Molad 1, since after the release of Molad2 the original thread will be no longer supported, unless the is has some really crucial bugs. Version 1.2 includes minor interface improvement and bug fixes.

### **Version 1.1 (14 Iyar 5765 / 23 May 2005)**

We've got a number of comments regarding Molad, but practically no bug reports, apart from "can't install", which is something we can hardly help with, for (as it was mentioned) it's impossible to test the application everywhere. Some of tiny bugs I identified and fixed, but they are so insignificant, that there is no need to upgrade, unless you are interested in the following new features:

- Support for touch screens (such as stylus devices like Sony-Ericsson P800, Nokia Series 90, Motorola 388, etc). Refer to [Using a pointer device \(stylus\)](#) .
- Hebrew release (translation by [Daniel Sebbagh](#) ), and native format for Hebrew dates, partially supported by the English release - see [Representing Hebrew numerals in native format](#)

### **Version 1.0 (10 Kislev 5764 / 5 Dec 2004)**

The original release.

## **Support**

Molad has been developed and is maintained by *Michael Glickman* (Australia) and is distributed free of charge.

The application web site is <http://molad.palmcrust.com>.

For our other (commercial and free products) for Palm and mobile devices see <http://www.palmcrust.com>

Being interested in Jewish culture, I am not a religious person, have no religious friends, and don't visit a synagogue. This is why your comments are so important to me. Please, send me your suggestions, bug reports, etc to [palmcrust@yahoo.com](mailto:palmcrust@yahoo.com). *You are strongly advised not to use this address for advertising, or anything*

*not related to our software.* The mail box quite often runs out of quota, in which case we are unable to attend a really valuable message.

The Molad1 code has been developed using j2mewtk v 1.4 for Linux with Nokia Series 30 and 60 MIDP Concept SDKs. The Molad2 code was developed using Java2 ME WTK 2.2 and 2.5 in Windows and tested with real Nokia and Motorola devices, as well as various Nokia, Siemens and Motorola emulators.

## For Developers

I've build *moladlib* - a library, containing all the calculations used in the application (practically everything apart from GUI). The library is distributed under GNU Public License (GPL). The library is available from the application site.

Another package contains the text classes used by the application. If you want to translate Molad to another language, just replace the text in the classes and send the updated files to me. Please, try to avoid the translation being longer than the original text.

# How the Calendars Operate

This is a very brief explanation. Follow the links from [Credits and Links](#) section for better instructions.

## Hebrew Calendar

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Have you noticed how the moon changes its shape throughout the month? At times, it shines brightly like a cream-colored ball. Other times, we can compare it to a slice of honeydew. On some nights, it looks like a split banana! Sometimes, you can't see it at all! While in bed watching the moon, take a peek through your window, shut your eyes for a moment and imagine a scene taking place many years ago in Eretz Yisrael

In the Great Beit-Din, the chief Rabbi sits in his honored place, greeting the Jew who just arrived in the court. "I saw the moon last night, Rabbi, and I believe it is the beginning of a new month," reports the Jew. The Rabbi motions to a chart with many different moon shapes hanging on the wall. "Is this the shape you saw?" asks the Rabbi, pointing to a particular shape. The man who witnessed the moon would be questioned until the judges were satisfied. When the judges heard proper testimony from at least two witnesses, they would declare that a new month had arrived

Rambam - Sefer HaMitzvot

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That's how the calendar worked in good old days, until Hilel II established a fixed calendar in the year 359 C.E.

Current Hebrew Calendar is a synthesis of astronomy, mathematics, religion ... and creativity.

It is a lunisolar (moon + sun) calendar based on the following facts:

1. The lunar month (time between two consecutive new moons) is 29 days 12 hrs and 793 parts (chelekim), each part being a 1/1080 of an hour.
2. 235 lunar months are equal in duration to 19 solar years.

If we temporary disregard 793 parts in the lunar month we get 29.5 days in month, or 59 days in two months. For that reason Hebrew months alternate in duration between 30 and 29:

No	Month	Days	No	Month	Days
1	Nissan	30	7	Tishri	30
2	Iyar	29	8	Cheshvan	29 or 30 (*)
3	Sivan	30	9	Kislev	30 or 29 (*)
4	Tammuz	29	10	Tevet	29
5	Av	30	11	Shevat	30
6	Elul	29	12	Adar / Adar Alef (**)	29 / 30
			13	Adar Bet (**)	29

(\*) Normally Cheshvan has 29 days, Kislev has 30 days. A day can be added to Cheshvan, or taken away from Kislev in order to get a year a day longer, or shorter. See comments below.

(\*\*) Adar Alef and Adar Bet replace Adar in a leap year - see comments below

A year cannot be purely lunar, otherwise holiday seasons would drift. Relation 2 yields the average number of lunar months in a year as  $235/19$  or  $12 \frac{7}{19}$ . In the Hebrew calendar a "regular" year has 12 months, but whenever the accumulated fraction jumps over a whole number (i.e.  $f*(y-1) < N \leq f*y$ , where  $f=7/19$ ,  $y$ -year number,  $N$ -a whole number (\*\*\*)), an additional month is added to a year. A year with an additional

month is a *leap year* . In a leap year the last month Adar (29 days) is replaced by two months: Adar Alef (Adar 1) of 30 days, and Adar Bet (Adar 2) of 29 days. Simple mathematics show that leap years are 3rd, 6th, 8th, 11th, 14th, 17th and 19th in a 19-year cycle, so that each cycle has 12 non-leap and 7 leap years. (Indeed, 7 and 12 are special for any occasion !)

(\*\*\*) In fact we don't need to keep the old fraction! Since 19 is a prime number, a fraction like  $(7*y)/19$  jumps over a whole number if and only if the remainder  $(7*y) \% 19$  gets less than 7.

Please note that the last month in the calendar is not the last month of a year: a new year (Rosh HaShanah) starts at 1 Tishri, just in the middle of a calendar year - after all, a tricky nation can afford a tricky calendar :). The years are counted from the creation of the world, so that there are no negative years in the calendar. This year counting is often referred as Anno Mundi ("the year of the world" in Latin) or A.M. for short

Remember extra 793 parts in the lunar month ? Something has to be done about that. The solution provided by the calendar is pretty straightforward: calculate the exact time of a new moon (molad) for Tishri (the new year month), if it is noon or afternoon, the new year (Rosh HaShanah) is postponed one day. Well, it looks really simple ... and too simple to be the case. There is also a requirement that some holidays should not fall on a particular day of a week, like Yom Kippur must not be adjacent to Shabbat (i.e. cannot be Yom 6, or Yom 1), and Hoshanah Rabah should not fall on Shabbat. These *dehiot adjustments* might also result in Rosh HaShanah being postponed. See the source code for the details.

In order to postpone Rosh HaShanah, a day is added to Cheshvan, extending it to 30 days. Since year extension is not always astronomically justified, the following year might need to be reduced by one day to keep in path with the solar year. To do that a month is taken from Kislev leaving it with 29 days. Note that only one of the two months can be altered.

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Few more remarks not related to the calendar algorithm, but still might interest someone.

1. Relation  $2 (19 \text{ solar yrs} = 235 \text{ lunar mnth})$  is named *Metonic cycle* after Greek (Athenian) astronomer Meton (4th century C.E.), but there is a strong evidence that this relation was known to Babylonian and Chinese astronomers before Meton.
2. Combining facts 1 and 2 we can evaluate solar year as 365 days and 5 1847/4107 hrs, or 365days 5 hrs 26 min 58.92 sec, where according to the current astonomic data this is 365.242199 or 365 days 5 hours 48 min and 46 sec, which is even less accurate than Julian calendar. I haven't heard about forthcoming reform of Hebrew calendar though :)
3. The Bible refers to months by numbers, not by names, and (as far as I know) there is no evidence to find out how the calendar was organised at that time. But there is a certain evidence that Babylonian calendar used 19 year cycles with 12 years of 12 months and 7 years of 13 months, and the Babylonian names of months (Nisanu, Ayaru, Simann, Du'uru, Abu, Ululu, Tashritu, Avakhsamna, Kislimu, Tebetu, Shabatu, Adaru) sound very similar to Hebrew months, BTW can you guess what was the name of 13th month ? Adaru-2 ! Actually there is a strong belief that current Hebrew calendar is actually derived from the Babylonian and adopted probably during Exile in 6th century B.C.E..

## Julian and Gregorian Calendars

The calendar used world wide is derived from Julian calendar attributed to Roman emperor Julius Caesar. The calendar assumes a solar year to be 365 days and 6 hours. This produces one extra day added to February once in every 4 years. The year with 366 instead of 365 days is a *leap year*. In *Julian calendar* every multiple of 4 corresponds to a leap year.

By 7th century C.E. the Christian world started counting years from the birth of Christ (year 3761 A.M.), what is referred as Common or Christian Era (C.E.) in Jewish terminology, while dates 'Before Christ' are referred as Before Common Era (B.C.E). Please note that there is no year 0, so that year 1 B.C.E. is followed by year 1 C.E.

The actual solar year is "only" about 365 days 5 hrs and 48 min and 46 sec. This gives extra 11 min 14 sec per a year, or extra 3 days in 4 centuries. This suggests that number of leap years in 4 centuries should be reduced by 3. In the 16th century C.E. the vernal (Spring) equinox fell on 11th of March, i.e, 10 days before the calendar equinox day, which could no longer be tolerated. The new calendar, developed under the leadership of Jesuit mathematician and astronomer Christoph Clavius only slightly differs from Julian calendar. Any multiple of 100 would correspond to a leap year in Julian calendar, whereas in the new calendar for a leap year it must also be a multiple of 400. Thus years 1600 and 2000 are leap years, whereas years 1700, 1800 and 1900 aren't.

The new *Gregorian calendar* was introduced in 1582 by Pope Gregory XIII who ordered that 4th of October was to be followed by 15th of October. That dropped 10 days from October and re-established the consistency of solar and calendar years. The reform took place in Italy, Poland, Portugal and Spain, other catholic countries soon followed. In England and colonies (including Ireland, and Eastern part of USA) Gregorian calendar was introduced in 1752 (2 Sept. followed by 14 Sept.), while Christian orthodox countries adopted Gregorian calendar not until 20th century (Russia: 31Jan1918- 14Feb1918, Greece: 9Mar1924-23Mar1924).

For the complete list of calendar reform dates see <http://webexhibits.org/calendars/year-countries.html>

## Representing Hebrew Numerals in Native Format.

This manual is meant to be readable in a non-Hebrew environment, therefore Hebrew letters and numerals are also spelled in English and left-to- right. What a shame ...

Hebrew traditional numeral system uses Hebrew letters to represent numbers. In particular, day of month and year in a Hebrew date are normally expressed in Hebrew notation. Unfortunately, some users might find Hebrew numerals almost completely unreadable, while for others those would be *merely* unreadable, because not all phones support Hebrew characters.

For that reason the application allows to select in which format, native (Hebrew) or numeric (common), day of month and year are represented in Hebrew dates. This is accomplished by `Hebrew Days` and `Hebrew Years` parameters in [Settings screen](#) .

The application was built in an assumption that a non-Hebrew release works in a "Hebrew-intolerant" environment, therefore any use of Hebrew characters should be avoided there. For that reason, ***native format for years is supported only in the Hebrew release.*** As for days of month, a non-Hebrew release uses transliteration given by the following table:

Aleph - A	Bet - B	Gimmel - G	Daled - D	Hey - H	Vav - V
Zayin - Z	Chet - X	Tet - T	Yod - I	Caf - C	Lamed - L

(Looks bizzare, doesn't it? I simply can't think of anything better.)

The following brief explanations might help you to understand Hebrew numerals... Actually it is me who really needs help, given that there is still something I am not quite sure about... In essence, this is the way how it is implemented, and if you feel its wrong, please don't hesitate to contact me.

Hebrew numeral system is decimal, though not quite positional, for separate character sets are used for units, tens and hundreds, as given by the table below.

To avoid confusion between numbers and text, a *gershayim* ["] mark is inserted in a number before the last letter. In case only one letter is used, a *geresh* ['] is appended to this letter.

Units		Tens		Hundreds	
Hebrew	Common	Hebrew	Common	Hebrew	Common
Aleph א	1	Yod י	10	Kuf ק	100
Bet ב	2	Caf כ	20	Resh ר	200
Gimmel ג	3	Lamed ל	30	Shin ש	300
Daled ד	4	Mem מ	40	Tav ת	400
Hey ה	5	Nun נ	50	TavKuf תק	500
Vav ו	6	Samech ס	60	TavResh תר	600
Zayin ז	7	Ayin ע	70	TavShin תש	700
Chet ח	8	Pei פ	80	TavTav תת	800
Tet ט	9	Tsadi צ	90	TavTavKuf תתק	900

The number 15 and 16 are represented on the base of Tet(9), rather than on the base of Yod(10) in order to avoid inappropriate use of sacred letter combinations. Thus 15 is Tet"Vav ט"ו (9 and 6), and 16 is Tet"Zayin ט"ז (9 and 7). This also applies in case of added hundreds, e.g. 215 is ReshTet"Vav רט"ה.

I find it logical (and this is how the application works) that the last (non-single) letter is replaced with its "sofit" if applicable, e.g. 750 is TavShin"Nunsofit תש"ן, rather than TavShin"Nun תש"נ .

What to do with numbers over 999 ? The thousands are simply counted separately, in which case we end up with two separate numbers: one for thousands and the following one for low-order part. For example, number 5766 (current year) is Hey' TavShinSamech"Vav ה'תשס"ו

Number 1000000 or over ? It seems logical to have three separate numbers for that case. However it isn't as simple as appears to be, therefore the current Molad implementation always uses a numeric format for a year over 999999.

More questions... What happens if there are only thousands (e.g. 6000)? Hebrew numeral system doesn't appear to have a sign for zero, while we obviously need a placeholder to fill the gap. The application simply adds a geresh['] mark for the missing triad(3-digit part), so that year 6000 is represented as Vav" ' ' (with two geresh marks), while year 6 has a single geresh: Vav' ' .

As you might have noticed, Hebrew representation for a year (*full Hebrew year format*) might be too long to fit in the [Date View screen](#) . For that reason DateView screen uses *short Hebrew year format* where thousands are simply omitted unless the low order part is below 100. For example, for years 6000 to 6099 always appear in long format, while year 5766 is displayed in the short format is just TavShinSamech"Vav תשס"ו (without Hey' 'ה' for 5 thousand). This is quite common and reasonable: since we've lived in the 6th millenium for over 7.5 centuries there is no need to specify thousands all the time. On the contrary, [Date Set screen](#) uses full format for Hebrew years along with numeric representation.

# Using the Application

## Terms Explained

### Phone Keys

This refers to keys [1] -[9], [\*], [0], [#].

T9 layout

```
[1] [2] [3]
[4] [5] [6]
[7] [8] [9]
[*] [0] [#]
```

would be the best fit, however a non-T9 keypad (e.g. Nokia 3650 or Siemens SX1) will also do.

Some expensive models (Sony Ericsson P800, Nokia Series 90, Motorola 388) a designed to be used with a stylus, something the application currently does not support. However in some cases there is a way around. For example P800 has buttons labeled [A] [B] [C] [D] translated to corresponding game keys

### Other Keys

Screen Buttons	Key located below the screen. All devices have at least two screen buttons: Left and Right, some models also have a middle screen button. Screen buttons are used for entering <a href="#">Commands</a>
LEFT RIGHT UP DOWN	Press corresponding arrow key, or move joystick in appropriate direction
SEL	SELECT (FIRE) key is quite often located in the middle of arrow pad. For some devices it is SEND (green) key
[A] [B] [C] [D]	Additional keys referred as "Game Keys". This is optional

### Commands

To enter a command, press Left or Right screen button (depending on the model). This often brings you a list of available commands. Highlight a command using UP and DOWN keys, then enter SEL to execute it. For your convenience some models assign a commands like Quit, Close, Accept to a separate screen button - just press the button to select a command.

## Date View ("Calendar") Screen

The application starts with a Date View screen for today. You can change date using navigation keys, discussed in [Controlling Date View Screen](#).

### Date View Data

Date View screen consists of several parts.

#### Scroller

Scroller or ticker is a moving window used for messages, such as an important information (e.g. location need to be customised), or reminder. If the scroller annoys you, set the reminder as FLAT to place it at the bottom of the screen (see [Settings](#)).

#### Title bar

Title contains can be customised to contain application/location name, current date and time, etc. See [Settings](#) for details.

#### The Main Panel (Dates)

Hebrew date (right) and corresponding Common (Gregorian or Julian) date (left) year, day of week, day and month. A Secular (common) year Before Common Era (B.C.E) is shown with suffix B (e.g. 300B stands for year 300 B.C.E.)

The arrow in the middle of Date panel shows current navigation calendar:

- > Hebrew calendar is current
- <- Common calendar is current

Navigation calendar is explained in [Controlling Date View Screen](#) section.

#### Information Bar

The information bar below the main panel consists of the flowing line

The *first line* shows indicators, moon phase, day count.

*Indicator* is one of the following letters:

- J - Julian calendar (if omitted, then Gregorian calendar is used)
- L - Leap year. Left L refers to a Common leap year, while right L denotes Hebrew leap year
- S - Summer time (daylight saving) applies.

Day count is either an Omer day (Sefirat HaOmer starts after Passover/Pesach and ends before Shavuot), or a day in 3-week period between two fasts (17 Tammuz and 9 Av). Omer and 3W days are shown if 'show Omer/3W' is enabled in Settings, in which case a special colour is used for Omer/3W pages. If neither Omer nor 3W apply, the field shows day order numbers in common and Hebrew years separated with a slash (/).

*Moon phase* is shown as a shape and percentage of the lunar month elapsed:

Percentage	Phase	Percentage	Phase
0 - 11	New moon	50 - 61	Full moon
12 - 24	Waxing crescent	62 - 74	Waning gibbous
25 - 37	First quarter	75 - 87	Third quarter
38 - 49	Waxing gibbous	88 - 99	Waning crescent

The second line contains times: sunrise (left), special time as candle-lighting or havdalah (centre) and sunset (right). The times are adjusted to daylight saving. If summer time applies (one hour shift forward), the times are shown in yellow colour and letter S appears in the bar. The times are shown with or without seconds according to Calendar settings. If special time needs to be displayed while the screen is too narrow to show three times, only sunrise and special time appears.

Icons:



The time line can be customised in Settings/Appearance. In particular it can be turned off.

The information bar for a Shabbat day might be extended with Shabbat names (like *Shabbat HaGadol* being the last Shabbat before Pesach), or weekly Torah readings (sedrot). For that you need to enable respectively 'show Shabbat' and/or 'show Sedrot' in Settings.

## Events

The list of events (holidays and custom events) corresponding to current day. The events shown here are specified with DISPLAYED event option.

## Controlling Date View Screen

The following keys are used to control Date View screen

Key (-s)	Action
LEFT or [4]	<u>Previous day</u>
RIGHT or [6]	<u>Next day</u>
UP or [2]	<u>Previous month</u> Goes one Hebrew or Secular month back depending on navigation calendar

DOWN or [8]	<u>Next month</u> Goes one Hebrew or Secular month forward depending on navigation calendar
[*] or [A]	<u>Previous Year</u> Goes one Hebrew or Secular year back depending on navigation calendar.
[#] or [B]	<u>Next Year</u> Goes one Hebrew or Secular year forward depending on navigation calendar.
[3] or [D]	<u>Navigate By</u> Change navigation calendar. Current navigation calendar is indicated by an arrow in the middle of date pane (see <a href="#">Date View Data</a> ).
SEL	Enter Year Show <a href="#">Year Set</a> screen
[1]	<u>Settings</u> Show <a href="#">Settings</a> screen
[5]	<u>Today</u> Go to current date
[7]	<u>Coming events</u> Same as Coming Events command (see <a href="#">Date View Commands</a> )
[9]	<u>Past events</u> Same as Past Events command (see <a href="#">Date View Commands</a> )
[0] or [C]	<u>Turn Page</u> If the information requires several pages, pressing a key will select next display page. See <a href="#">Multiple Pages and Auto-Turn Page</a> .

## Date View Commands

The following commands are available from Date View screen.

Command Name	Description
Coming Events	Show list of events preceding the viewed date. The events are shown in ascending date order. Each line contains event name and either event date, or number of days left, depending on the List item is <a href="#">Settings</a> . The events shown in the list are specified with LISTED event option.
Past Events	Show list of events following the viewed date. The events are shown in descending date order. Each line contains event name and either event date, or number of days past, depending on the List item is <a href="#">Settings</a> . The events shown in the list are specified with LISTED event option
Zmanim	Show Zmanim Report screen with Halachic Times for selected date
Settings	Show <a href="#">Settings</a> screen
Set Date	Show <a href="#">Date Set</a> screen
Set Year	Show <a href="#">Year Set</a> screen
Today	Go to current date
Help	Show Help for Date View page

About Molad	Show release information, application details and credits
Quit	Quit application

## Multiple Pages and Auto-Turn Page

In some cases (especially with a small size screen) screen size might be insufficient to fit all data. In this case the information is shown in several pages. Use [0] or [C] to turn page. While turning pages you get back to starting page after all pages are displayed.

You can specify Auto-Turn Page option, in which case page will be turned automatically every 4 seconds.

## Date Set Screen

Date set screen provides another way for to specify a date for Date View. It might be more efficient than using a navigation keys, especially with a slow device, or the target date is far away from the viewed date. In particular you can jump directly to a specified date.

You can call Date Set to select either Hebrew or Common date. If this panel is called from the Date View screen, the calendar is set according to NavigateBy mode, later you can switch from common to Hebrew calendar and vice versa. Date Set screen is also used to specify the last Julian date for [Settings](#) in which case changing navigation calendar is disabled..

## Controlling Date Set Screen

The following keys are used:

Key (-s)	Action
LEFT or [4]	<u>Previous day</u>
RIGHT or [6]	<u>Next day</u>
UP or [2]	<u>Previous month</u>
DOWN or [8]	<u>Next month</u>
[7]	<u>Previous week</u>
[9]	<u>Next week</u>
[*] or [A]	<u>Previous year</u>
[#] or [B]	<u>Next year</u>
[1] or [C]	<u>Enter Year</u> Show <a href="#">Year Set</a> screen
[3] or [D]	<u>Change Calendar</u> Toggle Calendar where applicable
[5]	<u>Today</u> Go to current date
[0]	<u>Previous Date</u> Go to a date effective before calling this page
SEL	<u>Accept</u>

---

Accept specified date and exit this page
--

## Date Set Commands

The following commands can be activated from Date Set screen

Command	Description
Set Year	Show <a href="#">Year Set</a> screen
Change Calendar	Change (where applicable) calendar from common to Hebrew and vice versa.
Previous Date	Go to a date effective before calling this page
Today	Go to current date
Help	Show help for Date View page
Accept	Accept specified date and exit this page

The application accepts dates in a range from 1 Tishri 1 to 29 Elul 5000000, which corresponds to 7 October 3761 B.C.E. Julian to 1 November 4996299 C.E. Gregorian. Please note that year 0 is never accepted since (as mentioned before) year 1 B.C.E. is followed by year 1 C.E.

## Year Set Screen

This page is used for entering year. Depending on the context, you can switch from common (secular) to Hebrew year and vice versa. For common calendar, where applicable, you can also select era: C.E. (common era), or B.C.E. (before common era).

The year is entered as a numeric value (only digits are allowed). Choice of calendar and era depends on the release.

Standard Release: Select item using up / down keys and press SEL key to change value.

Legacy Release. Use up/down keys to select corresponding calendar/era and press SEL key to accept.

Enter Accept command to accept specified year.

## Using a Pointing Device (Stylus)

Touch screen devices usually come with a pointer device (stylus) and often don't have a T9 style keypad, which might complicate the control [Date View](#) , [Date Set](#) and [Event Date Setup](#) and DST start/end Date screens. In fact, you can control these screens through menu, but it is not as convenient as with keypad.

Starting with v 1.1 the application allows controlling the above mentioned screen also with a stylus, however this does not exclude the use of keypad. For example, some stylus devices have Game Keys that can be used along with a stylus. The application automatically recognises a touch screen device and shows Pointer Navigation help before common help information, if relevant.

The use of stylus to be rather intuitive. In order to advance to *next* day/month/year, you just tap the *right* side of day/month/year respectively on the screen. Similarly, in order to get to *previous* day/month/year you tap the *left* side of day/month/year resp. In [Date View](#) screen you can navigate by Hebrew or secular date, depending on which day, month, or year is tapped.

Tapping *day of week* (DOW) or other "hot spots" is processed specifically to the screen displayed, as the following:

Screen-specific pointer commands		
Screen	Tapped field	Command
Date View (calendar)	DOW common, left	Past holidays/events
	DOW common, right	Set common (secular) date
	DOW Hebrew, left	Set Hebrew date
	DOW Hebrew, right	Coming holidays/events
	DOW, centre of screen	Today
	DAY, centre of screen	Change navigation calendar
	MONTH, centre of screen	About Molad
	YEAR, centre of screen	Set Year
	INFO BAR, left	Settings
	INFO BAR, right	Zmanim Report
Date Set	DOW, left	Change calendar (where applicable)
	DOW, right	Set year
	DOW, centre of screen	Today
	MONTH, centre of screen	Previous Date
	YEAR, centre of screen	Set year
Event Setup	EVENT NAME, left	Previous Date
	EVENT NAME, right	Today
	NUMBER OF DAYS, left	Increment number of days
	NUMBER OF DAYS, right	Decrement number of days
All forms	All other spots	Help

Taping other spots shows Help screen.

## Settings Screen

Settings Screen is a actually front end to various other panels, that provide custom features. Top bring up Settings screen press [1] or select Settings command from [Date View](#) screen.

The following options are provided:

Name	Description
<a href="#">Location</a>	Set up location specific information
<a href="#">Appearance</a>	Specify the way in which the data are shown
<a href="#">Calendar</a>	Customize calendar settings
<a href="#">Holidays</a>	Assign display options for holidays (hagim)
<a href="#">Custom Events</a>	Specify custom events
<a href="#">Zmanim Visibily</a>	Specify which of the Halachic Times are listed in Zmanim Report page
<a href="#">Zmanim Setup</a>	Customise zmanim calculation
<a href="#">Defragment Data</a>	Remove gaps in Location and Zmanim data bases

The following paragraphs discuss each of the options is details.

## Location Settings

This page allows to set up location specific data. After the installation, the application attempts to guess location details from system settings on your device, however you have to enter Location page to ensure that the information is correct.

Use up and down key to select an item, then press SEL key. This will either modify the item "on fly" or bring up an additional page related to selected item. When the value is modified on fly" and more than two choices are available, you can specify the direction of change by choosing "Next Value" or "Previous Value" command. The specified direction is applied until a new direction is entered.

The following location details are specified:

Item Name	Item Description
Name:	Location Name: usually the name of the city or village. Location names are used to store and retrieve custom locations.
Holidays	Holiday style: Israel or Diaspora. This affects duration of holidays and sedra scheme: in Israel some holidays are shorter than in Diaspora, which makes sense: major holidays are official non-working days in Israel, but not in Diaspora :)
Time Scale	24 hours (e.g. 19:25), or 12 hours (e.g. 7.25P)
Latitude	Angular distance from equator along the corresponding meridian. The location coordinates (latitude and longitude) are shown in degrees, minutes and seconds as DD°MM'SS", where a minute is 1/60 of a degree, and a second is 1/60 of a minute or 1/3600 of a degree. Actually, seconds aren't really important, therefore DD°MM' provide a sufficient accuracy in calculations. The latitude is prefixed by letter N for northern hemisphere, and S for southern hemisphere. Example: latitude of Jerusalem is N31°47', that is 31 degrees 47 minutes to the north from equator.

Longitude	<p>Angular distance from Greenwich (zero) meridian along the corresponding parallel. The longitude is prefixed by letter E for eastern hemisphere, and W for western hemisphere. Example: longitude of Jerusalem is E35°13', that is 35 degrees 13 minutes eastern the Greenwich meridian.</p>
Time Difference.	<p>Time difference from Coordinated Universal Time (UTC), which is effectively the same as Greenwich Mean Time. The time is shown in hours and minutes as HH:MM prefixed by letter E if the time is ahead of UTC (to the east of Greenwich), or W if the time is behind UTC (to the west of Greenwich). Normally the time difference can be evaluated from the longitude, but countries like Russia and Iceland keep the time one hour ahead, while some other places use fractional time difference (like E09:30 for Darwin and Adelaide in Australia), therefore the application allows up to 2 hours tolerance ahead and 1 hour tolerance behind the implicit time difference. If the time zone is outside tolerance, you will see a warning in Date View screen. If this scroller irritates you, select "Today", or pick up another date to get rid of it.</p>
Summer Time (DST)	<p>Many countries practice Daylight Saving, also known as Summer Time, where time is shifted 1 hour ahead during summer months. You can select one of the following DST options: You can select one of the following DST modes:  Off - no DST  On - use On and Off to manually turn DST on and off  System - take DST mode from device (not recommended)  Custom - enter DST rule manually</p> <p>In case of custom DST mode the screen contains additional fields the specify the rules which trigger start and end of DST, as the following:</p> <p>Style:  Specified Date, DST starts/ends at specified date  Month 1st - DST starts/ends at 1st specified day of week in specified month  Month 2nd - DST starts/ends at 2nd specified day of week in specified month  Month 3rd and Month 4th - similar  Month 2nd last - DST starts/ends at 2nd last specified DOW in specified month  Month last - DST starts/ends at last specified DOW in specified month</p> <p>Calendar:  Common or Hebrew - Hebrew calendar is used in Israel only</p> <p>Date - date (day and month) where applicable  DayOfWeek - day of week (DOW) where applicable  Month - month where applicable</p> <p>Note, that when the starting date is after the ending date, the summer time rolls over a calendar year, which is the case in the southern hemisphere.</p> <p>Example 1 (Israel):  Start DST: Specified date  Calendar: Common  Date: 1 April</p>

	<p>End DST: Month 1st  Calendar: Hebrew  DayOfWeek: Yom 1  Month: Tishri</p> <p>In this case DST starts at 1st of April, and ends at first Sunday (Yom 1) of month Tishri (which in fact is the first Sunday in Hebrew new year).</p> <p>Example 2 (Brazil):  Start DST: Month 1st  Calendar: Common  DayOfWeek: Sunday  Month: November  End DST: Month 3rd  Calendar: Common  DayOfWeek: Sunday  Month: February  DST starts at 1st Sunday of November and ends next year at 3rd Sunday of February</p>
--	---

The following *commands* are available from Location screen:

Command Name:	Command Description
Save	Save a custom location in location data base. Later this location can be retrieved with Load Custom command, which is also used to delete a custom location.. To create a new custom location you need to specify a unique location name, otherwise location with the same name will be overwritten.
Load Preset	Load one of over 125 built-in locations. This will enormously save your time, even if you location is not found there. Just load a similar location, change name and coordinates and save as a custom location. In the list of preset locations you can select Enter Name option to type few starting letters of the name. This will bring you straight to the desired location.
Load Custom	Load a previously saved custom location. This brings you the list of custom locations where you can either pick up the location to load, or delete a location with Delete command.
Acquire	Get location coordinates over the air - a luxury that not every provider currently supports. The application shows this option only if your device supports Location API (JSR 179). <i>In order to be able to acquire the location coordinates, you have to grant permission (once only) for using location services to the application.</i>
Change	Same as pressing SEL key.
Help	Show help page for Location screen
Close	Close Location screen. In case modification are made, you will have to confirm the new values by answering Yes to "Apply Changes?" question.

## Appearance Settings

Specifies the way data appear on the screen. The page is controlled in the same way as [Location](#) page

The following Appearance settings are available:

Item Name	Item Description
Options	<p>General options:</p> <p>O Show Omer/3X Highlight Omer or 3week days in <a href="#">Date View screen</a> , show Omer and 3W day numbers in Date View <a href="#">information bar</a></p> <p>S Show Sedrot Show Torah readings for each Shabbat</p> <p>H Show Shabbat show special Shabbat names</p> <p>M Month Numbers show month numbers (e.g. Kislev [9]) in <a href="#">Date Set</a> screen</p> <p>S TimeBar Seconds Show time as hours minutes in seconds in the second line of information bar in <a href="#">Date View</a> screen. If disabled, only hours and minutes are shown.</p> <p>Z Zmanim Seconds Show seconds in Zmanim Report. If disabled, only hours and minutes are shown.</p> <p>A Auto-Page turn page automatically in Date View screen, as explained in <a href="#">Multiple pages and Auto-Turn Page</a></p> <p>Pressing SEL for Options brings a list of options where you need to tick options you wish to enable. Enter Close command for getting back to Settings</p>
List	<p>Specifies which information is shown in the list of Coming or Past events:</p> <p>Date - event common date.</p> <p>Interval - number of days between the event date and view date separated with &gt; for coming events. or &lt; for past events</p>
TimeBar Content	<p>Information displayed in the second line of information bar in <a href="#">Date View</a> screen:</p> <p>Off - time bar is disabled</p> <p>Sun Rise/Set - sunrise and sunset times only</p> <p>Sun&amp;Candles - sunrise, sunset, candle light / havdalah times</p>
Title Style	<p>Appearance of title bar in <a href="#">Date View</a> Screen:</p> <p>None - title is disabled. Ideally this should save screen space, but unfortunately not all devices agree to hide title ...</p> <p>Application Name - application name and version</p> <p>Location - name of selected location <a href="#">location</a></p> <p>Your Time - time from the current device</p> <p>Your Date and Time - date and time from the current device</p> <p>Location Time - time at specified <a href="#">location</a> (which might be different from your time)</p> <p>Location Date and Time</p> <p>Please not that Location Date and Time work properly only if your device is properly set up for your time zone and DST mode. Date and time options are resource consuming, therefore if your battery soon gets flat, you need to select a more economic option.</p>
Hebrew Days	<p>Specifies the way Hebrew days of month are displayed:</p> <p>Numeric - use common ("Arabic") numerals: 1, 2 ... 30.</p> <p>Native - use Hebrew traditional numerals where letters are used to represent numbers. <i>A non-Hebrew release uses transliteration</i> , for the details refer to <a href="#">Representing Hebrew numerals in native format</a>.</p> <p>By default, Native is accepted by the Hebrew release, the others will take Numeric.</p>
Hebrew Years	<p>Specifies the way Hebrew years are displayed</p>

(Hebrew release only)	Numeric - use common numeric representation (like 5765) Native - use Hebrew numerals for years (like ט"ז) Hebrew release users might refer to <a href="#">Representing Hebrew numerals in native format</a> for more information.
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Commands available from Appearance page:

Command Name	Command Description
Default Values	Set all values to default.
Change	Same as pressing SEL key
Next Value	Where applicable, select next value and change direction of change to forward
Previous Value	Where applicable, select previous value and change direction of change to backward
Help	Show Help page for Appearance screen
Close	Close Appearance screen. In case modification are made, you will have to confirm the new values by answering Yes to "Apply Changes?" question.

## Calendar Settings

Specifies setting related to calendar calculations. The page is controlled in the same way as previously discussed setting pages.

The following Calendar settings are available:

Item Name	Item Description
Navigate by	Hebrew or Common. Specifies default calendar used for <a href="#">Date View</a> navigation
Time Calculation	A compromise between fast and accurate time calculation. Available choices: Fast - reasonably fast, but might be not quite accurate; a good choice for Legacy release or a slow device Normal - iterate twice, to ensure accuracy of data, this is the default value for the Standard release Accurate - increase accuracy by calculating Solar Noon; recommended if times are shown with seconds
Julian up to	The last day of Julian Calendar. By default it is 4Oct 1582 - the last day of Julian Calendar in the first countries adopted Gregorian calendar. For an English-speaking country you might prefer 2 Sept 1752. Pressing SEL for this line brings up <a href="#">Set Date screen</a> same as used with Date View.
Remind (nights)	Number of nights before the event, when the reminder starts. Default value is 14, so that the reminder starts when there are 2 weeks (more precisely 14 nights) before the event. Selecting this item shows an additional screen where you can also disable reminder by leaving the number of nights blank, in which case Off is shown as the reminder period. If the reminder is enabled, it will appear only for the events selected for the Reminder. See <a href="#">Event Display Options</a> for the details
Reminder Style:	If reminder is enabled, you can select reminder style:

	Scroller - the reminder appears as a scroller (ticker) Plain - the reminder appears as a line at the bottom of the page.
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Commands available from Calendar page are very similar to the [Appearance](#) page.

## Holidays and Custom Events

In this manual term *events* is used as a common name for *holidays* and *custom events*.

### Event Display Options

Event display options control the presence and appearance of an event. The following options are supported

Acronym	Name	If enabled...
L	List	... the event appears in a list of coming and past event
D	Display	... the event is show at Date View page for appropriate date
H	Highlight	... the date view page for the event is show in a different colour
E	Erev (Eve)	... the event is appears for the preceding date as Erev (e.g. 'Erev Rosh HaShanah' at 29 of Adar/AdarB page)
R	Reminder	... the reminder is shown for this event
K	Katan	.. the event is celebrated twice in a leap year, as Katan (Small) in AdarA and "Full-Size" in AdarB (appears only for AdarB events). See <a href="#">Adar Bet Events</a> for explanations.
C	Candle Light	... candle light time and havdalah time are shown for this event, for an event which lasts more that a day (like Passover) this check box is replaced by Candlelight mode choices as discussed below.

Comments:

1. Highlight and Erev imply Display
2. An event never appears as 'Erev' in a list of Coming/Past events.
3. An event listed as Erev does not cause page highlighting, but its name is typed highlighted, if Highlight is enabled.
4. A Katan Event is not highlighted, but other settings apply. In particular List enables listing Katan Event in Coming/Past, while enabling Erev will produce a line like 'Erev MyEvent Katan' for the date preceding Katan event.

Candlelight modes are shown for an event which lasts more then one day:

Acronym	Name	Description
not used	None	No candle lighting
N	Normal	Candles are lit at start of the event and extinguish at the end of the event
C	Continuous	Candles are lit every day (e.g. Chanukah)
F	Cndlight	When candle light period is less than half of the event duration, this option specifies

	Frame	that candles are lit at start and end of the event. Consider, for example, the way Passover (Pesach) is celebrated in Diaspora. Total duration is 8 days, candle light period is two days. If "frame" is specified, then candles are lit at two starting nights of Pesach and two last nights of Pesach.
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## Customising Holidays

Display options is the only customised feature for holidays. You can select holidays to be listed for Coming/Past events, holidays to appear on Date View screens, Date View highlighting and other. See [Event Display Options](#) for the details.

To specify display options for a holiday:

1. From Date View screen enter *Settings* command (or press [1] key)
2. In the list of settings select *Holidays* and press SEL key. This brings up the list of holidays, where each holiday is shown with initial letters of enabled display options
3. Select a holiday you wish to set up and press SEL key get the list of options.
4. Press SEL key to enable/disable highlighted option in the list, enter *Close* when done - the new options are now effective. *Please note, that Display will be actually disabled only in case both Highlight and Erev are also disabled.*

Options for holiday name **Rosh Chod.** (short for Rosh Chodesh - start of month) apply to start of each month. If enabled, you get events like 'Rosh Chodesh <month name>' listed / displayed for 1st of each Hebrew month.

You can reset all display options to default, by selecting Default Values command. Be aware that once the command is confirmed, you lose all your custom display options.

## Custom Events

For a custom event you need to specify:

- Event Name (up to 20 chars) used for Date View page
- Event Short Name - used for event lists and compound names (i.e with *Erev* and/or *Katan*)
- Event Date: Hebrew day and month, number of days (1 by default)
- Cndlight days: number of days to light candles, by default equal to event duration
- Display options, see [Event Display Options](#)

To maintain custom events:

1. From Date View screen enter *Settings* command (or press [1] key)
2. In the list of settings select *Custom events* and press SEL key. This brings up the list of custom events

The list of custom events contains custom event short names with initial letters of enabled display options. The last (or the only) line named **New Event ...** You can have up to 128 custom events.

To add or edit an event, select an event (*New Event ...* for adding) and press SEL to get Event Setup screen. You can go straight to event options by entering *Set Options* command. To delete an event enter *Delete* command.

Event Setup screen shows event names, event date and options. Use UP and DOWN key to navigate between event names and options (some devices might have it in a different way).

Default display options of a custom event are `Listed`, `Displayed`. To edit display options enter *Set Options* command. This brings up *Display Options setup* screen similar to the one used for [customising holidays](#) .

Event date is initially set to the day and month of the *active (last viewed) date* - the date shown on Date View Screen before `Settings` command was entered. To change the event date enter *Set Date* command - this brings up **Event Date Setup** screen.

The following keys are used with Event Date Setup screen:

Key (-s)	Action
LEFT or [4]	Previous day of month
RIGHT or [6]	Next day of month
UP or [2]	Previous month
DOWN or [8]	Next month
[*] or [A]	Reduce number of days
[#] or [B]	Increase number of days
[1] or [C]	Get day and month from the active (last viewed) date
[3] or [D]	Get day and month from today
[7]	Go 7 days back
[9]	Go 7 days forward

Finally, you can specify the candle light period. Default means that the candle light period is same as event duration. Be aware that candle light mode is off by default, therefore you have to enable it, if you want this field to make sense.

Comments:

1. Adar events are celebrated in AdarA during leap years. For AdarB events see [Adar Bet Events](#)
2. It is assumed that Cheshvan, Kislev and Adar have 30 days. In years where a month has 29 days, the event assigned to 30th of the month takes place at 29th of the month
3. Number of days is normally shown only of more that one. However, with a touchscreen device number of days always appears, so that you can set it with a stylus, see [Using a pointer device \(stylus\)](#) .

## Adar Bet Events

Everybody knows that Purim is a lucky holiday. But someone might not realise that it also has a lucky date: 14 of Adar Bet. Since non-leap years don't have AdarB, the holiday is celebrated at 14 of Adar. But in a leap year Purim is celebrated twice: as Purim Katan ("Small Purim") at 14 of AdarA, and "main" Purim at 14 of AdarB !

If you are lucky enough to be born or married in AdarB, you can follow Purim tradition and celebrate your remarkable date twice in a leap year. To do that you set up a custom event for AdarB, and enable Katan as display option (see [Event Display Options](#) )

## Zmanim Settings

### Zmanim Visibility

Use this screen to specify which of the Halachic Times appear in Zmanim Report. Just select a name and press SEL key to change visibility from On to Off and vice versa. Select Default Values to revert to default settings, and Back to leave the screen

### Zmanim Setup

This is a bit trickier :)

You might be surprised to learn that there is no unanimous decision on how Halachic Times are computed. Consult MyZmanim at <http://www.myzmanim.com/messagebox.aspx?messageid=degreexplained>

If unsure, load one of the preset schemes and see if it suits you, where you might wish to customise candle light and/or havdalah offset. If you really want to know what it is all about, you are welcome to follow.

The following settings are available:

**Name** - scheme name used to store and retrieve custom zmanim schemes

### **Convert Time to Elevation**

When conversion is disabled, then all time offsets are taken as is: if I say that dawn takes place 72 minutes before sunrise, I really mean 72 minutes before sunrise...

However there is a different approach which claims, that the time offsets apply "as is" only to Jerusalem during equinox days (e.g. days when day and night are equally long), while for other days and other locations the offsets should be computed according to sun elevation angle.

It can be found that 72 minutes before the sunset in Jerusalem during equinox days the sun elevation angle is  $16^{\circ}.6'$  (the angle is negative because the sun is below the horizon). Now we can apply sun elevation angle of negative  $16^{\circ}.6'$  to a different location and/or different day to find the time offset applicable for the new environment, which might be quite different from 72 minutes. The Dawn (Alot HaShachar) offset also affects the times of Magen Avraham tfilim that have to be recalculated

Although this angular or *adaptive scheme* to zmanim calculations makes sense from scientific point of view, many people find it rather controversial, and prefer a traditional *fixed scheme*, therefore Molad tries to satisfy both parties.

Convert time to Elevation Parameter accepts the following options:

Never	offsets are always taken as is (fixed scheme)
Dawn and Dusk	sun elevation applies only to dawn (Alot HaShachar) and dusk ( <i>Tzet HaKochvim</i> ), while Magen Avraham tfilim are scheduled according to fixed offset (a compromise between two schemes)
Dawn, Dusk, Morning MA	sun elevation applies to dawn, dusk and Magen Avraham tfilim before the midday (myzmanim approach)
Dawn, Dusk, All MA	sun elevation applies to dawn, dusk and all Magen Avraham tfilim

## Havdalah Mode

The following options can be specified for Havdala:

At Dusk Gaonim	Havdalah time is always taken equal to Dusk Gaonim, in which case havdalah offset is not specified
Convert to Elevation	Havdalah offset is converted to elevation
Fixed Time Offset	Havdalah offset is taken "as is", no matter which method applies to other

## Offsets

Offsets are specified for Alot (Dawn), Early Talit, Dusk Gro, Dusk Gaonim, Candle Light and Havdalah (where applicable) Other times are calculated automatically. *Please note that Candle Light is never converted to elevation.*

To change value, select an item and press SEL key. This will bring up a new form where you can enter the offset. In case the offset is adaptive (i.e. converted to elevation), you can choose to enter it either as minutes and seconds (which will be converted to elevation), or directly as elevation in degrees, minutes and seconds. The sign is not specified, because it is taken according to the context.

## **Commands:**

<b>Command Name</b>	<b>Command Description</b>
Default Values	Set values to default (which is same as 72min adaptive)
Help	Show help page for Zmanim Setup
Save	Save a custom Zmanim scheme
Load Preset	Load one of the following preset schemes: <i>72min adaptive</i> 72 min offset for Dawn, Dusk, dawn and morning Magen Avraham offsets are converted to elevations <i>72min fixed</i> 72 min offset for Dawn, all offsets fixed 90min fixed 90 min offset for Dawn, all offsets are fixed
Load Custom	Load or delete a previously saved custom Zmanim scheme. This brings you a list of saved Zmanim schemes. You can select a scheme and enter Delete command in order to delete it, or press SEL key in order to load the scheme.
Close	Close Location screen. In case modification are made, you will have to confirm the new values by answering Yes to "Apply Changes?" question.

## **Defragment Data**

Whenever you delete or modify Locations or Zmanim schemes, you might create gaps. The consequences of that depend on your implementation, but in some cases the size of your data base might go over tolerance. The Defragment Data option allows you to remove the gaps which might result in substantial decrease data base size.

The application keeps modification counts for Locations and Zmanims. When you chooser Defragment Data in Settings list, you get the page which lists modified data bases along with their counts. Tick the data bases you with to defragment and select Accept to start defragmenting.

During defragmentation a data base is copied to a new location. If this operation succedes, the old data base is deleted and the copy is used instead.