

TimeMaster

GMX Series Electronic Time Controls

APPLICATION

The GMX Series are universal electronic time switches within NEMA 1 indoor or NEMA 3 outdoor enclosures intended for the control of lighting, heating, air conditioning, pumps, motors, or general electrical circuits in residential, commercial, industrial and agricultural facilities. Basic models are:

GMX digi 12	1 channel SPDT 12 program electronic
GMX digi 20	1 channel SPDT 20 program electronic
GMX digi 42	1 channel SPDT 42 program electronic
GMX2 digi 42	2 channel 2 x SPDT 42 programs

SPECIFICATIONS

Switch Rating: SPDT Switch

16A Resistive @ 125/277VAC
1/2 HP @ 125VAC
1 HP @ 240VAC
1000W Tungsten @ 240VAC
500W Tungsten @ 120VAC

ENVIRONMENTAL RATINGS

Ambient Temperature: -20°F to 140°F
Humidity: 0-95% RH, Non-condensing

WIRING CONNECTIONS

Screw clamp terminals for up to AWG #10 wires

INSTALLATION

Note: For outdoor locations, **Raintight** or wet location conduit hubs that comply with requirements of UL 514B (standard for fittings for conduit and outlet boxes) are to be used.

1. Remove 2 screws retaining the interior cover panel and remove panel by prying out with a thin blade at the top.
2. Select knockouts to be used. Remove the inner (1/2") knockout by inserting a screwdriver in the slot and carefully punch knockout loose. Remove slug. If the 3/4" knockout is required, remove the outer ring with pliers after removing the 1/2" knockout. Smooth edges with knife if necessary.



GMX digi 20-I-120

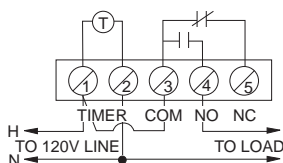
3. Place enclosure in desired mounting location and mark the three mounting holes.
4. Drill holes for #10 screws, start screws in holes.
5. Place enclosure over screws and tighten screws.
6. Connect conduit hubs to conduit before connecting the hubs to the enclosure. After inserting hubs into enclosure, carefully tighten hub lock nut. Do not over-torque.
7. Wire in accordance with National and Local Codes.
8. Replace interior cover panel and 2 screws.

GROUNDING: This enclosure is of plastic construction and does not require a ground connection and does not require bonding in pool applications.

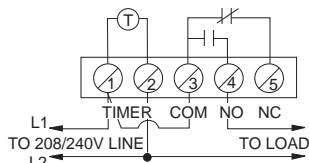
This enclosure does not provide grounding between conduits. When using non-metallic conduit or cable, connect the ground wires of all cables together with a wire nut. When metallic conduit is used, use grounding type bushings and a jumper wire between each conduit.

Typical Wiring Diagrams

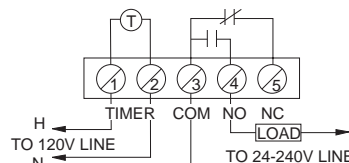
120V Timer, 120V Load



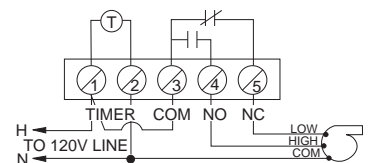
208/240V Timer, 208/240V Load



120V Timer, 24V, 120V, or 240V Load



120V Two Speed Fan





GMX digi 12

PROGRAMMING INSTRUCTIONS

The digi 12 incorporates a 24 hour and 7 day time base. Therefore each day of the week can be uniquely programmed. For convenience, Block Programming is also provided, whereby up to seven days can be grouped together if the "ON" and "OFF" times are the same. The digi 12 displays in AM/PM format: When setting the hours, be sure the "A" is displayed for AM time and the "P" is displayed for PM time.

SETTING TIME AND DAY OF CLOCK


1. Depress the **Reset** button.
2. Depress clock symbol key  during entire time setting procedure.
3. Press **Day** key to bring the actual day of the week into display.
4. Press **h+** and **m+** keys to set the actual time of day. If keys are depressed for more than a second, the digits will advance rapidly.
5. Release the  key when the correct time and day are shown in the display. The colon between the hours and minutes will be flashing indicating the timer has started.

PROGRAMMING

1. Press **Timer** once (do not keep depressed). The display will show "ON" and "--:--" for the time.
2. Press **h+** and **m+** keys to set ON time.
3. If the event is to occur every day, proceed to step 5.
4. If the event is to occur only on selected days of the week, press **Day** key to select the desired day of the week. Successive depressing of the **Day** key beyond Sunday will bring the following blocks of days into the display.

Monday through Friday
Saturday and Sunday
Monday through Saturday

All days shown in the respective blocks will be switched ON (or OFF) at the selected hour and minute.

5. Press **Timer** key to enter program. The display will show "OFF".
6. Program OFF command using steps 1-5 above.
7. Repeat for up to 12 programs (6 ON and 6 OFF).
6. Press  key to return to time of day display.


REVIEW AND CHANGE OF PROGRAMS

By operating the **Timer** key the individual commands as programmed can, at any time, be brought consecutively into the display for revision or checking. Revisions are carried out by writing over the existing programs using the steps outlined above.

CANCELLING PROGRAMS

Use procedure above to bring program to be canceled into display. Use **m+** key and then **h+** key to set minutes and then hours to null position, "--:--". This program has been made ineffective and will no longer be carried out. To cancel all programs, depress **Reset** key. This clears entire memory, including time of day and program.

MANUAL OVERRIDE

1. Press override key  to turn load ON or OFF without affecting the stored programs (temporary override).

BATTERY POWERED RESERVE

GM digi 12, 32, and 42 Models: In case of power failure, the built-in battery maintains the time of day, program storage and LCD display for a minimum of 7 days. During power outage relays are de-energized.



GM digi 20 Model: The GMX digi 20 has a capacitor powered reserve which will maintain program for up to 5 days.

GMX2 digi 32

PROGRAMMING INSTRUCTIONS

The digi 32 incorporates a 7 day time base. Therefore each day of the week can be uniquely programmed. For convenience, Block Programming is also provided, whereby up to seven days can be grouped together if the "ON" and "OFF" times are the same. The digi 32 displays in AM/PM format: When setting the hours, be sure the "AM" is displayed for AM time and the "PM" is displayed for PM time.

SETTING TIME AND DAY OF CLOCK


1. Depress the reset button.
2. Depress clock symbol key  during entire time setting procedure.
3. Press **Day** key to bring the actual day of the week into display.
4. Press **±1h** button once if installed during daylight savings period: do nothing if installed during standard time.
5. Press **h+** and **m+** keys to set the actual time of day. If keys are depressed for more than a second, the digits will advance rapidly.
6. Release the  key when the correct time and day are shown in the display. The colon between the hours and minutes will be flashing indicating the timer has started.

PROGRAMMING

1. Press **CH1** once (do not keep depressed). The display will show "CH1 (channel 1) ON" and "--:--" for the time.
2. Press **Day** key to select the desired day(s) of the week. Successive depressing of the **Day** key will bring the following blocks of days into the display:

Monday through Sunday
Monday through Friday
Saturday and Sunday
Each Day

All days shown in the respective blocks will be switched ON (or OFF) at the selected hour and minute.

3. Insert the hour and minutes at which time an "ON" command is to take place using the **h+** and **m+** keys.
4. Press key **CH1** to enter program. The display will show "CH1 OFF".
5. Program OFF command using steps outlined above.
6. Program channel 2 by following steps 1-5 using **CH2** key.
7. Press  key to return to time of day display.

Note: Once the time switch is programmed, it will automatically "look back" and assume the correct "ON" or "OFF" switch position.



REVIEW AND CHANGE OF PROGRAMS

By operating key **CH1** or **CH2** the individual commands as programmed can, at any time, be brought consecutively into the display for revision or checking. Revisions are carried out by writing over the existing programs using the steps outlined above.

CANCELLING PROGRAMS

Use procedure above to bring program to be canceled into display. Use **m+** key and then **h+** key to set minutes and then hours to null position, "--:--". This program has been made ineffective and will no longer be carried out. To cancel all programs, depress **Reset** key. This clears entire memory, including time of day and program.

MANUAL OVERRIDE


1. Press override key for channel 1 , or channel 2  once to turn load ON or OFF without affecting the stored programs (temporary override).
2. Press override key a second time and the channel is now on "permanent ON" (display shows "FIX ON").
3. Press override key a third time and the channel is now on "permanent OFF" (display shows "FIX OFF").
4. Press override key again to turn operation back to automatic.

DAYLIGHT SAVINGS/STANDARD TIME CHANGE

When a time change to Daylight Savings time is required, press **±1h** once. The time base in the unit will automatically advance by one hour and **+1h** will appear in the display.

To change to standard time, press **±1h** again; the time base is set back one hour and **+1h** will disappear.

GMX digi 20 PROGRAMMING INSTRUCTIONS

The circular keypads are positioned to provide a sequential path for programming. Starting with **Prog.** to select a program, clockwise to  to select ON or OFF, then **h** for hour, **m** for minute, and finally **Day** to select day or days of the week. If an input is missing or incomplete, the missing segments will flash when the ☉ or program key is depressed. (For example, if no ON or OFF is selected, the ON symbol will flash). The missing entry must be completed before programming can resume. While programming, pressing the **h**, **m**, or **Day** key longer than 2 seconds will cause a rapid roll of the parameter.

- A program consists of: 1. ON or OFF command, 2. Hour and minute, and 3. Day or multiple days on which it is to occur.
- **Res.** is the reset key which clears the time of day and deletes all program information.
- The **±1h** key sets clock time up or down 1 hour for daylight savings time adjustment in the spring and fall.
- Military (24:00 hr.) or AM/PM (12:00 hr.) time may be selected by pressing and holding the **h** key while depressing the **±1h** key.

Note: A flashing display indicates either incomplete data entry or the battery is low. Check to see if days and ON or OFF times are entered and check the power supply to the time control.

IMPORTANT: Depress reset key before beginning to set time and program



SETTING TIME AND DAY OF CLOCK



1. Select military (24:00 hr.) or AM/PM (12:00 hr.) time mode by depressing and holding **h** key while pressing **±1h** key to toggle between military and AM/PM. (AM appears in display when in AM/PM mode.)
2. Press and hold down ☉ key.
3. If setting the time when daylight savings time is in effect, press **±1h** key once (+1h will appear in display).
4. Set hour with **h** key. If AM or PM does not appear in display, the unit is in military time. See note above to change display.
5. Set minutes with **m** key.
6. Press **Day** key repeatedly to the day of the week. (1 is Monday, 7 is Sunday)
7. Release ☉ key, colon will begin flashing. If the days are flashing, the day of the week was not entered (see step 6).

PROGRAMMING

1. Press **Prog.** key

1	2	3	4	5	6	7
AM	-	-	-	-	-	-


 will appear in display. (Pressing **Prog.** key again, display will show the number of free programs; **Fr 20**). Press again to RETURN to 1st program.
2. Press  key, ON symbol will appear. Pressing the key again will toggle to OFF.
- 2a. Select ON or OFF for the program with the  key.
3. Press **h+** to select hour for switching time.
4. Press **m+** to select minute for switching time.
5. If the program is to occur every day of the week, (24 hour time control) ignore **Day** key and press **Prog.** key to advance to next program.
6. If 7 day time control is desired, press **Day** key. 1 2 3 4 5 6 (Mon thru Sat) block of days appears in display. Pressing **Day** key again, 1 2 3 4 5 (Mon thru Fri) appears in display. Pressing **Day** key again, 6 7 (Sat & Sun) appears in display. Pressing **Day** key again, 1 (Mon) appears in display. Repeated presses will cycle through all days of the week, and back to 1 thru 7 (Mon thru Sun).
- 6a. Select day or block of days desired with the **Day** key.
7. Press **Prog.** key and repeat steps 2 thru 6a to enter additional programs of ON and OFF times.
(Note that more than one OFF time program may be entered, enabling automatic control of manual overrides.)
8. Press ☉ key to enter run mode.



IMPORTANT: The output relays will switch ON (or OFF) only at the programmed times. After programming is completed, if a channel should be ON, it must be manually turned ON with the  key. For example, programming is completed at 2PM and CH1 was programmed to be ON at 8AM and OFF at 5PM. After pressing the ☉ key, CH1 will be OFF; press  to turn it ON. It will assume automatic operation at the 5PM OFF time.

REVIEW AND CHANGE OF PROGRAMS


1. To review a program at any time, press **Prog.** key. Programs will be displayed in the sequence they were entered with repeated presses of **Prog.** key.
2. To change a program, select the program to be changed with the **Prog.** key, and enter the new time of day, and/or days of week just as in the programming steps shown above. The old program is overwritten with the new selections. Press **Prog.** to store the new program.
3. To delete an individual program, select the program as in step 1 and press the **m** key and then the **h** key until “—:—” appears in display. Press either **Prog.** or ☉ key until “—:—” flashes. The program is deleted after a few seconds.

MANUAL OVERRIDE



While in the **Run** mode, (☉ symbol is display), pressing the  key will reverse the load status (switch load OFF if it is ON, or switch ON if it is OFF). A hand symbol appears in display to indicate the override is active. At the next scheduled switching time, automatic time control will resume, eliminating the override.

Pressing the  key a second time  appears in the display indicating the load is switched **permanently ON**.

Pressing the  key a third time,  appears in the display indicating the load is switched **permanently OFF**.

Pressing the  key a fourth time returns to automatic, ☉ appears in the display.

GMX digi 42, GMX2 digi 42 PROGRAMMING INSTRUCTIONS

The circular keypads are positioned to provide a sequential path for programming. Starting with **Prog.** to select a program, clockwise to  to select ON or OFF, then **h** for hour, **m** for minute, and finally **Day** to select day or days of the week. If an input is missing or incomplete, the missing segments will flash when the  or program key is depressed. (For example, if no ON or OFF is selected, the ON symbol will flash). The missing entry must be completed before programming can resume.

While programming, pressing the **h** or **m** key longer than 2 seconds will cause a rapid roll of the parameter. A program consists of: 1. ON or OFF command, 2. Hour and minute, and 3. Day or multiple days on which it is to occur.



Note: A flashing display indicates either incomplete data entry or the battery is low. Check to see if days and ON or OFF times are entered, and check the power supply to the time control.

IMPORTANT: Depress reset key (Res.) before beginning to set time and program

MANUAL OR AUTOMATIC DAYLIGHT TIME CHANGEOVER

For areas where Daylight Time is not observed, please ignore this section.



The Digi 42 offers the option of manual or completely automatic daylight time changeover in the spring and fall. For manual changeover, depressing the **±1h** key sets clock time up or down 1 hour to change the time twice a year. For automatic changeover, perform the following programming, which only needs to be done during initial installation, or if the reset key is depressed at any time. When programmed for auto changeover, the time switch will automatically change the time at 2AM on the first Sunday of April and last Sunday of October until the year 2079.

1. Select military (24:00 hr.) time or AM/PM time by simultaneously depressing the **±1h** key and **h** keys. (AM or PM appears in display when in AM/PM time).
2. Enter the Daylight Time Program by pressing the **±1h** and **Day** once simultaneously. A "1" will appear under "Mo" in display. Then set the current (today's) date with the **m** key and the month with the **h** key. (If military time, set date with **h** key and month with **m** key). For example: Feb 15 would appear as 02:15 if in AM/PM, or as 15:02 if in military time.
3. Press **±1h** key once. A "2" will appear under "Tu" in display. Then enter the current year with the **m** key. If you overshoot the current year, hold down the **m** key and the years will scroll to 2079 and back to 1995, 1996, 1997, etc.
4. Press **±1h** key once. A "3" will appear under "We" in display, and "AU" (for pre-set European dates). If European dates are desired, press  key to enter the data and exit Daylight Time programming mode.
5. Press **m** key once. "cHA" will appear in display (for entering North American dates). NOTE: If the **m** key is inadvertently pressed two times, and "HA" appears in display, press the **m** key two more times, or until the display shows "cHA". ("HA", for specific dates, is not used at present).
6. Press **±1h** key once. A "4" will appear under "Th" in display. Enter the date for changeover to Summer Daylight Time for the current year (see chart below for dates) by entering the date with the **m** key and the month with the **h** key. (If in military time, set date with **h** key and month with **m** key). For example, April 7 would appear as 04:07 if in AM/PM time, 07:04 if in military time.
7. Press **±1h** key once. A "5" will appear under "Fr" in display. Enter the date for changeover to Winter Time for the current year (see chart below for dates) by entering the date with the **m** key and the month with the **h** key. (If in military time, set date with **h** key and month with **m** key)
8. Press  key to enter the data and exit the Daylight Time programming mode.

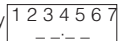




Daylight Time Changeover Dates

1996	April 7	October 27	1999	April 4	October 31
1997	April 6	October 26	2000	April 2	October 29
1998	April 5	October 25	2001	April 1	October 28

SETTING TIME AND DAY OF CLOCK




1. Select military (24:00 hr.) or AM/PM (12:00 hr.) time mode by depressing and holding **h** key while pressing **±1h** key to toggle between military and AM/PM. (AM appears in display when in AM/PM mode.)
2. Press and hold down  key.
3. If Automatic Daylight Time Changeover is not programmed, press **±1h** key once if setting the timer when daylight time is in effect (**+1h** appears in display).
4. Set hour with **h** key. If AM or PM does not appear in display, the unit is in military time. See note above to change display.
5. Set minutes with **m** key.
6. Press **Day** key repeatedly to the day of the week. (1 is Monday, 7 is Sunday)
7. Release  key, colon will begin flashing. If the days are flashing, the day of the week was not entered. (see step 6)




PROGRAMMING

1. Press **Prog.** key  will appear in display. (Pressing **Prog.** key again, display will show the number of free programs; **Fr 42**.) Press again to advance to 1st program.
2. Press  key, ON symbol  will appear below CH1. Pressing the key again will toggle to OFF . Pressing again returns to ON. Select ON or OFF.
3. Press **h** to select hour for switching time.
4. Press **m** to select minute for switching time.
5. If the program is to occur every day of the week, (24 hour time control) ignore **Day** key and press **Prog.** key to advance to next program.
6. If 7 day time control is desired, press **Day** key, a flashing underline appears below day 1. Pressing the **Day** key a second time advances the underline to day 2, etc. Use the **Day** key to advance to a day of the week to be omitted from the program and press the **Sel.** (select) key, the day will flash. Continue pressing **Day** and **Sel.** keys to omit days until only the desired days remain and are not flashing.
7. Press **Prog.** key and repeat steps 2 through 6 to enter additional programs of ON and OFF times. Note that more than one OFF time program may be entered, enabling automatic control of manual overrides.
8. Press  key to enter run mode.

8TH DAY (HOLIDAY OR VACATION) PROGRAM





Multiple programs (more than one ON and OFF time) may be entered to be implemented on holidays or vacation periods. (A typical program is: OFF, 12:01AM to have the load(s) OFF during the holiday.)


IMPORTANT: The output relays will switch ON (or OFF) only at the programmed times. After programming is completed, if the switch should be ON, it must be manually turned ON with the  key. For example, programming is completed at 2PM and CH1 was programmed to be ON at 8AM and OFF at 5PM. After pressing the  key, CH1 will be OFF; press  to turn it ON. It will assume automatic operation at the 5PM OFF time.

1. Press **Prog.** key, select ON or OFF, **h** and **m** as with normal programming, but do not select or omit any days.
2. Press  key,  will appear in the display, indicating 8th day holiday/vacation program.
3. Press  key to enter run mode. Time switch is now permanently preset for the ON/OFF schedule to be implemented on holidays or extended vacation periods in the future as described below.




HOLIDAY PROGRAM: Preselect Day or Series of Days for 8th Day Program to Occur

The holiday program may be implemented at any time up to 6 days in advance of the holiday(s) or vacation period. It may also be activated on the holiday or first day of the vacation period.



1. While in **Run** mode, press  key, --:Ho appears in display.
2. Press **Day** key to select the day of week Holiday program is to begin.
3. Press **Sel.** key to select the number of days Holiday program is to run. (Up to 99 days. If **Sel.** key is held down, numbers roll up rapidly to 99 and then 01).
4. Press  key to store, holiday symbol appears in display.
5. To review or change the Holiday Program, press  key. To cancel Holiday Program, press  key a second time.



On the day that the Holiday Program is selected to begin, the 8th day program will be implemented at 12:00AM Midnight and have priority over the regular daily programs. The display will show the holiday symbol and the number of days the program is to run, which will count down each day and revert to the normal display, when all days of the holiday/vacation period have expired. To cancel Holiday Program, press  key.

REVIEW AND CHANGE OF PROGRAMS



1. To review a program at any time, press **Prog.** key. Programs will be displayed in the sequence they were entered with repeated presses of **Prog.** key.
2. To change a program, select the program to be changed with **Prog.** key, and enter the new time of day, and/or days of week just as in the programming steps shown above. The old program is overwritten with the new selections. Press **Prog.** to store the new program.
3. To delete an individual program, select the program as in step 1 and press the **m** key and then the **h** key until  appears in display. Press either **Prog.** or  key until  flashes. The program is deleted after a few seconds.

MANUAL OVERRIDE

While in the **Run** mode, ( symbol is display), pressing the  key will reverse the load status (switch load OFF if it is ON, or switch ON if it is OFF). A hand symbol appears in display to indicate the override is active. At the next scheduled switching time, automatic time control will resume, eliminating the override.

Pressing the  key a second time  appears in the display indicating the load is switched **permanently ON**.

Pressing the  key a third time,  appears in the display indicating the load is switched **permanently OFF**.

Pressing the  key a fourth time returns to automatic,  appears in the display.

GRASSLIN CONTROLS CORPORATION
A GE Industrial Systems Company

31 Industrial Ave., Mahwah, New Jersey 07430 • Tel.: 201-825-9696 • Fax: 201-825-8694
www.grasslin.com