User Manual User Level

ALL BRANDS
Controller
APM403S

Abbreviations and symbols used

GS = Generating Set
ATS = Automatic Transfer Switch (KOHLER/SDMO Verso type)
CB = Generating set circuit breaker

⚠ Warning

⚡ Electrical danger, risk of electrocution

📖 Read the manuals supplied with the GS

ⓘ Advice, information

1 - Safety instructions

⚠ ⚡ 📖   • Read the safety instructions relating to starting up a GS.
(see General and Safety Manual)
• When the GS is off, the control unit is powered by a dangerous voltage (preheating, battery charger).
• During operation, the APM403 is supplied by one or two dangerous voltages (GS and grid).
• The APM403 has been configured in the factory; modifying its parameters may result in unstable generating set operation.
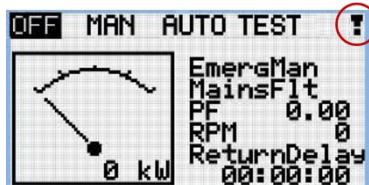
2 - Checks before starting

• Battery voltage
• Engine oil level
• Coolant level
• CB open (for manually controlled CB)

3 - Powering on

1. Connect the battery cables (if the battery is disconnected).
2. Close the battery isolator (if fitted to the GS).
**3.** Turn the key to the **ON** position.

• Initialization (2 messages displayed) and LEDs test opposite:

• Display of main screen opposite:

```
OFF  MAN  AUTO TEST      (!)

         EmergMan
         MainsFlt
         PF      0.00
         RPM        0
         ReturnDelay
   0 kW  00:00:00
```

ⓘ If the symbol is displayed, there is a fault. See section 11 to delete the fault.

ⓘ If Ⓖ flashes red (presence of an active fault which has not been reset), see section 11 to delete and reset the fault.

ⓘ If Ⓖ lights up red (presence of an active fault which has been reset), see section 11 to delete the fault.

4 - Presentation
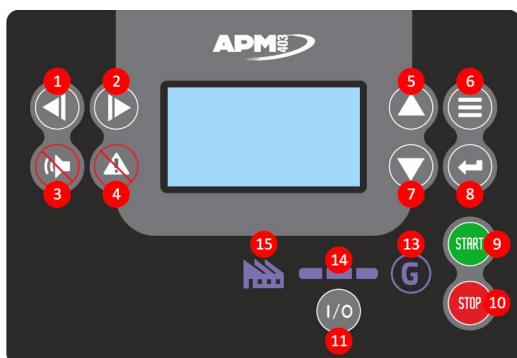
4 - Presentation (continued)

1-2 Select the operation mode, select a parameter
3 Stop the horn
4 Reset a fault
5-7 Change the visualization screen, select a setting screen, select a parameter
6 Access the main menu, return to the previous screen
8 Access the selected setting screen, confirm a setting
9 Start the GS (**MAN** mode)
10 Stop the GS (**MAN** mode)
11 Close/open the motorized CB (**MAN** mode)
13 GS status LED (Ⓖ)
14 CB physical status LED (▬)
15 Charge status LED (🏭)
(LED=light emitting diode)

5 - Operation modes

On the main screen, select the operation mode by pressing ◁ or ▷.

OFF - When powered on, the APM403 adopts this mode. Starting is not possible and the 🟢, 🔴 and ⚪ buttons are inoperative.

MAN - GS manual operation using the 🟢 and 🔴 buttons, as well as the ⚪ button. In this mode, activation of an external starting order is not acknowledged.

AUTO - GS automatic operation following an external starting order or grid outage. In this mode, the 🟢 and ⚪ buttons are inoperative.

TEST - GS test mode operation, with or without load depending on the configuration.

⚠ Switching from **AUTO** to **TEST** mode causes the GS to start without warning.

6 - Operation in manual mode: GS on

1. On the main screen, view the current operation mode.
2. Press ▷ or ◁ to select **MAN** mode.
3. Press 🟢, the GS starts.
• Starting sequence indicated on the main screen.
4. Monitor the acceleration of the GS.
• The GS voltage and frequency stabilize.
• When Ⓖ lights up green, the GS is ready to deliver power.

5. Depending on the CB type:

⇨ manual	⇨ motorized
- Close the CB manually	- Press ⚪, the CB closes automatically • ▬ lights up green

• 🏭 lights up green, the GS can deliver power.

6. Check the electrical and mechanical values by pressing the ▽ and △ keys (see section 15).
7. Monitor the power delivered by the GS (main screen).

7 - Operation in manual mode: GS off

1. Shed the generating set load.
2. Depending on the CB type:

⇨ manual	⇨ motorized
- Open the CB manually	- Press 🔘, the CB opens automatically • ▬▬ goes out

• The load is shed, Ⓖ remains lit.
3. Allow the engine to cool down for 3 minutes.
4. Press 🔴, Ⓖ goes out, the GS shuts down.
• The APM403 remains in **MAN** mode.

5. Select **AUTO** mode if the GS is operating on grid backup, otherwise select **OFF** mode.

8 - Automatic operation

1. Depending on the CB type:

⇨ manual	⇨ motorized
- Make sure it is in the closed position	- No check required

2. On the main screen, view the current operation mode and press ▶ (once or twice) to select **AUTO** mode.
• Starting is possible if Ⓖ is off. The GS is on standby.
• There are two possible scenarios for **AUTO** operation:
  ⇨ Activation of the **KO Remote Start/Stop** input (see section 8.1).
  ⇨ No grid voltage (see section 8.2).

8.1 - AUTO mode - *KO Remote Start/Stop*

• The GS starts when the **KO Remote Start/Stop** input is permanently activated (✱) independently of the grid voltage status.
(✱) potential-free contact (no alternating or direct voltage on the input).

1. Activate the **KO Remote Start/Stop** input. The GS starts.
⇨ Starting sequence indicated on the main screen.
• When the voltage and frequency are stabilized, Ⓖ lights up green.
• If the CB is motorized, it closes, ▬▬ lights up green.
• The GS adopts the load, 🏭 lights up green.
2. Check the electrical and mechanical values by pressing ▽ and △ (see section 15).
3. Monitor the output delivered by the GS (main screen).

When production is complete:
4. Deactivate the **KO Remote Start/Stop** input.
• If the CB is motorized, it opens, ▬▬ goes out, Ⓖ remains lit.
• After a cooling period of 3 minutes, the GS shuts down.
• The APM403 remains in **AUTO** mode.

8.2 - AUTO mode - No grid voltage

• The GS starts when the grid voltage is no longer within the programmed limits, and once the loss of mains delay has elapsed.
⇨ Starting sequence indicated on the main screen.
• When the voltage and frequency are stabilized, Ⓖ lights up green.
• If the CB is motorized, it closes, ▬▬ lights up green.

8.2 - AUTO mode - No grid voltage (continued)

• The GS adopts the load, 🏭 lights up green.
1. Check the electrical and mechanical values by pressing ▽ and △ (see section 15).
2. Monitor the output delivered by the GS (main screen).

• The GS starts the shutdown phase when the mains voltage has been restored within the programmed limits and once the mains return delay has elapsed.
• If the CB is motorized, it opens, ▬▬ goes out, Ⓖ remains lit.
• After a cooling period of 3 minutes, Ⓖ goes out and the GS shuts down.
• The APM403 remains in **AUTO** mode.

9 - Operation in TEST mode

• **TEST** mode is used to start the GS automatically. Once operational, the GS operates off load.

1. Depending on the CB type:

| ⇨ manual	⇨ motorized
- Open the CB manually	- No action

2. On the main screen, view the current operation mode.
3. Press ▶ as many times as necessary to select **TEST** mode.
• The GS starts without warning.
⇨ Starting sequence indicated on the main screen.
4. Monitor the acceleration of the GS.
• The GS voltage and frequency stabilize.
• Ⓖ lights up green, the CB remains open (if motorized).
• The ATS remains in its original position, if fitted to the installation.
• Once the *Test Without Load Duration* delay has elapsed, the GS shuts down automatically without cooling. The APM403 adopts **AUTO** mode.

10 - Appearance of a fault

• When the ▌ symbol appears on the main screen, a fault (alarm or fault) is present.
• If the fault is a defect, Ⓖ flashes red.
• The screen immediately switches to "List of faults".
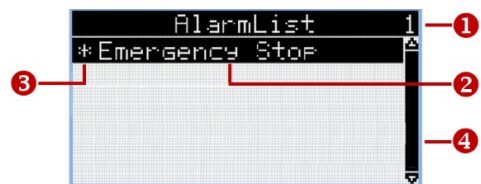
❶ number of faults on the screen
❷ fault title on a black background
❸ fault not reset (✱ symbol)
❹ scroll bar displayed if number of faults >6

ⓘ If the fault occurs when the main screen is not visible, the screen does not switch to "List of faults".
ⓘ When the GS is on stand-by and whatever the operation mode, display the main screen with ▽ and △. This will make it possible to view the appearance of a fault not resulting in Ⓖ being lit.

11 - Fault management

• The term "fault" also covers alarms.

. alarm =	- no GS shutdown - no effect on operation
. fault =	- immediate or gradual GS shutdown (depending on the type of fault) - Ⓖ flashes red

1. Press 🕭 to stop the horn (if the horn is present on the electrical equipment).
2. Eliminate the origin of the fault (possibly by contacting our Technical Service).
3. Insert a USB key at the rear of the APM403, wait for the USB key connected screen to appear and press ↩. Once the archive has been saved, press ↩ again. Remove the USB key (the backup made will help our Technical Service with troubleshooting).
• On the "List of faults" screen, the fault title appears as below:
   ✳ **Fault title**
   (⇨ fault inactive and not reset)
4. Press ⚠ to reset the fault. The message disappears from the screen.
• The GS can be restarted.

ⓘ If the fault is a defect, resetting (eliminating ✳) is obligatory in order to restart the GS.
ⓘ If the fault is reset before being eliminated, Ⓖ is fixed red.

12 - Fault display

• On the "List of faults" screen, a fault may appear in one of three ways:

⇨ Fault active and not reset:
   ✳ **Battery Voltage Warning**
⇨ Fault inactive and not reset:
   ✳ **Battery Voltage Warning**
⇨ Fault active and reset:
   Battery Voltage Warning

• If the fault is inactive and reset, nothing is displayed on the screen, even indirectly.

• If the text on the screen is too long, it moves from right to left, one letter at a time:

1) ✳ **DéfautCapteur Niv Ca**rburant ⇨ letters invisible

2) ✳ **apteur Niv Carburant** ⇨ moving right to left, one letter at a time

3) Back to 1, etc.

• If there are more than 6 faults on the screen, press ↩ to view the next faults.

• If the fault concerns the engine equipped with an ECU, the display will be as follows:
   ✳ **BOC KO ECU Coolant Temperature HT**
   ✳ **ECU FC: 000110 (0006Eh) FMI:0; OC:1; ADR:0**
ⓘ Display rules: active, inactive, reset, non-reset anomaly are the same as for a standard message.
ⓘ Message content with ECU in section 21.

13 - Event history

• Any change in the APM403 status constitutes an event (operation modes, powering up, GS on standby, fault occurrence, etc.).

example: an emergency stop fault (consequence of pressing the emergency stop button) and emergency stop reset are considered to be two distinct events.

• The "History" screen (in 2 parts), is used to consult all the events.
• The events are saved (300 max.). When the memory is full, the oldest event is deleted.

1. From any viewing screen, press ▤ twice to bring up the "History 1" screen.

History 1

```
No. Reason
000 Fault reset
-001 E-STOP
-002 Fault reset
-003 Wrn Battery Vol..
-004 Not Ready
10:33:44    20/03/2017
```
event selected
date & time of appearance

- *column 1*: events sequence number
- *column 2*: events titles
- *last line*: time and date of selected event
- ▲ and ▼: selection of an event

2. Press ↩, the "History 2" screen is displayed.

History 2

```
Time      Date
10:33:44 20/03/2017
10:33:32 2P/03/2017
10:33:17 20/03/2017
10:32:45 20/03/2017
10:32:40 20/03/2017
000 Fault reset
```
time and date of appearance
event no. & title

- *column 1*: time of appearance of events
- *column 2*: date of appearance of events
- *last line*: number and title of event selected by the date and time
- ▲ and ▼: date and time selection

3. Press ▤ to return to the main screen.

14 - Event history/Additional information

• From the "History 2" screen
(see previous section)
1. Press ↩, the "History 3" screen is displayed.

History 3

```
RPM    Pwr    Q
  0      0     0
  0      0     0
  0      0     0
  0      0     0
  0      0     0
000 Fault reset
```
values of; RPM, Pwr & Q
event no. & title

- *column 1*: speed at the time of the event
- *column 2*: active power at the time of the event
- column 3: reactive power at the time of the event
- *last line*: number and title of selected event
- ▲ and ▼: select the next or previous event

14 - Event history/Additional information

(continued)

2. Press ⬅ to bring up the "History 4" screen: power factor, load type, frequency
3. With each additional press on ⬅, it displays additional information:
"History 5", 3 composite voltages
"History 6", 3 line-to-neutral voltages
"History 7", 3 phase currents
"History 8", battery voltage, analog inputs 1 & 2
"History 9", analog inputs 3 and 4
"History 10", logic inputs & emergency stop
"History 11", logic outputs
4. Press ☰ to return to the main screen.

15 - Measurement screens

On powering up, the main screen appears.
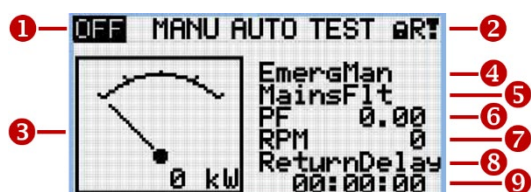
❶ operation modes
❷ access locked, USB connection, fault present
❸ GS active power indication
❹ GS status
❺ CB status
❻ power factor
❼ GS speed
❽ action in progress
❾ timer for action in progress

• Press ▽ and △ repeatedly to scroll through the screens. The number of screens available depends on the application and the APM403's hardware configuration:
Alternator Voltage
. composite and line-to-neutral voltages (depending on configuration)
. frequency
Alternator current
. 1, 2 or 3 phase currents (depending on configuration)
Alternator power
. active power, reactive power, power factor on each phase
. total active and reactive power, power factor
Analog inputs (2 screens)
. oil pressure, coolant temperature, fuel level, other measurement (depending on configuration), battery voltage
Logic inputs (2 screens)
. status of the eight logic inputs and the emergency stop
Logic outputs (2 screens)
. status of the eight logic outputs
Statistics - Energy and metering (2 screens)
. GS active and reactive energy
. no. of operating hours
. no. of starts
. no. of emergency stops
. no. of immediate shutdowns
. maintenance program
Hardware configuration
. slot activation
. auxiliary module type
List of faults

16 - Changing the language

From any visualization screen:
1. Press ☰ and ⬅ simultaneously.
2. Press ☰ three times.
3. Select the desired language from the proposed list, with △ or ▽.
4. Confirm with ⬅.
5. If there is no confirmation, but ☰ is pressed again, "Configuration Level" appears on the screen. Do not change anything; press ☰ again.
After eight seconds, the main screen appears.

17 - LEDs test

To check the operation of the LEDs:
1. Press ☰ and ⬅ simultaneously.
All the LEDs 🔋- - -Ⓖ flash green. After 8 seconds, the APM403 adopts the mode that was active before the keys were pressed simultaneously.

18 - Adjusting the screen contrast

From the visualization screen:
1. Press and hold ⬅.
2. To increase the contrast, press △ repeatedly.
3. To decrease the contrast, press ▽ repeatedly.
4. Release ⬅.
ⓘ Screen switches off after a few minutes.

19 - Changing a parameter

From the visualization screen:
1. Press ☰ to bring up the "main menu" screen.
• "Password" is selected.
2. Press ⬅, "Enter Password" is selected.
3. Press ⬅ and enter **1966** as follows:
   - Select each digit with ▷ and ◁.
   - Select the digit (1, 9 or 6) with ▽ or △.
   - Confirm with ⬅.
4. Press ☰ and select the menu in which you wish to change a parameter, using ▽ and △ (see list of parameters, section 20).
5. Confirm the menu choice with ⬅.
6. Select the parameter to be modified with ▷ and ◁.
• A cursor moves in smaller or larger increments depending on the number of parameters the menu contains.
7. Enter the parameter to be modified with ⬅.
• For certain parameters, the text "Current value" becomes "New value" and the parameter value appears on a blue background in white characters.
8. Modify the parameter value with ▽ and △.
ⓘ Additional information may appear: adjustment range or unit.
ⓘ Holding ▽ or △ down speeds up the modification process.
9. Confirm the new value with ⬅.
10. Press ☰ to go back to the main menu.
11. Press ☰ twice to go back to the main screen.

20 - List of parameters

• "Engine Settings" menu

parameter	description	range/values	setting
Maintenance Timer 1	GS operating time after which an alarm is triggered	**Disabled**, from **0** to **9999h**	**Disabled**

• "Scheduler" menu

parameter	description
Time	format **HH:MM:SS** (where **H**=hours, **M**=minutes, **S**=seconds)
Date	format **DD:MM:YYYY** (where **D**=day, **M**=month, **Y**=year)

parameter	description	range/values	setting
Time Stamp Period	time interval for saving histories	from **0** to **240 min** (in increments of 1)	**60 min**
#Summer Time Mode	operation mode based on the season	**Disabled, Winter, Summer, Winter-S, Summer-S** (✳)	**Disabled**
Timer 1 Function (1)	select a function for the programmed start	**Mode OFF, Test OnLd, TEST, No Func, Disabled**	**Disabled**
Timer 1 Setup (2) **Repetition**	select operation repetition	**Off, Once, Repeated**	**Off**
Timer 1 Setup First Occur. Date	set starting date	format **DD/MM/YYYY** (where **D**=day, **M**=month, **Y**=year)	**00/00/0000**
Timer 1 Setup First Occur. Time	set starting time	format **HH:MM** (where **H**=hours, **M**=minutes)	**00:00**
Timer 1 Setup Duration	set operating period	format **HH:MM** (where **H**=hours, **M**=minutes)	**00:00**
Timer 1 Setup (3) **Repeated**	select repetition mode	**Daily, Weekly, Monthly, Short Period**	**Daily**
Timer 1 Setup (3) **Refresh Period**	setting the repetition increment (variable according to the **Repeated** value)	from **1** to **1000** if **Daily** from **1** to **60** if **Weekly** from **1** to **12** if **Monthly** (in increments of 1)	**-**
Timer 1 Setup (3) (3 b) **Weekends**	setting the operation for weekends (see paragraph **22.2**)	**Including, Skip, Postpone**	**Including**
Timer 1 Setup (4) **Day**	choice of the start-up day (or days) of the week (linked to **Weekly**)	**Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday**	**OFF**
Timer 1 Setup (5) **Repeat Day**	choice of the repetition mode for the start-up days	**Repeat Day, Repeat Day in Week**	**Repeat Day**
Timer 1 Setup (6) **Repeat Day In Month**	choice of the start-up day of the month	from **1** to **31** (max. 31 days in a month)	**-**
Timer 1 Setup (7) **Repeat Day In Week**	choice of the start-up day (or days) of the week (linked to **Monthly**)	**Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday**	**OFF**
Timer 1 Setup (7) **Repeat Week In Month**	choice of the start-up week in the month	from **1** to **5** (max. 5 weeks in a month)	**-**
Timer 2 Function (+ all parameters relating to **Timer 2**)	identical to **Timer 1 Function**	identical to **Timer 1 Function**	**Disabled**
Timer 3 Function (+ all parameters relating to **Timer 3**)	identical to **Timer 1 Function**	identical to **Timer 1 Function**	**Disabled**

(✳) for certain countries in the southern hemisphere, use **Winter-S** and **Summer-S**
(1) if **Timer 1 Function** is set to **Disabled**, not all of the following parameters will appear
(2) if **Timer 1 Setup Repetition** is set to **Off**, not all of the following parameters will appear
(3) only appears if **Timer 1 Setup Repetition** is set to **Repeated**
(3 b) only appears if **Timer 1 Setup Repeated** is set to **Daily**
(4) only appears if **Timer 1 Setup Repeated** is set to **Weekly**
(5) only appears if **Timer 1 Setup Repeated** is set to **Monthly**
(6) only appears if **Timer 1 Setup Repeat Day** is set to **Repeat Day**

21 - ECU message

- First line = anomaly displayed in full text; **KO ECU Coolant Temperature HT**
- Second line; **ECU FC: 000110 (0006Eh) FMI:0; OC:1; ADR:0**
    . **FC** = **F**ault **C**ode = number **SPN** (**S**uspect **P**arameter **N**umber) (standard SAE J1939)
    . in brackets = SPN in hexadecimal form (example **110** in **h**exadecimal = **6E**)
    . **FMI** = **F**ailure **M**ode **I**dentifier (standard SAE J1939)
    . **OC** = occurrence of the fault
    . **ADR** = origin of the fault (**0** = engine)

22 - Scheduler menu - Programming

All the examples are described with **Timer 1**.
Timer 1 takes priority over **Timer 2** which takes priority over **Timer 3**.

To start the GS with **Timer 1**, the APM403 must be in **AUTO** mode.
1 ⇨ Select the required function (**Function**).
2 ⇨ Select the repetition mode (**Repetition**). If **Off** is selected, then all of the parameters linked to **Timer 1** disappear from the screen.
3 ⇨ Program all three parameters; **First Occur. Date**, **First Occur. Time**, **Duration**.
4 ⇨ Program one of the four choices on offer (only if **Repeated** has been selected at **2**).
5 ⇨ Depending on the choice made at **4**, program the proposed parameters.

Summary table of actions to be completed

1	2	3	4	5	5	§
Function	**Repetition**	To be programmed	To be programmed	To be programmed	To be programmed	
OFF mode **Test OnLd** **TEST** **No Func** **Disabled** (see ✱)	**Off**	-	-	-	-	-
	Once	**First Occur. Date** **First Occur. Time** **Duration**	-	-	-	22.1
	Repeated	**First Occur. Date** **First Occur.Time** **Duration**	**Daily**	**Refresh Period** **Weekends**	-	22.2
			Weekly	**Day** **Refresh Period**	-	22.3
			Monthly	**Repeat Day = Repeat Day**	**Refresh Period** **Repeat Day In Month**	22.4
				Repeat Day = Repeat Day In Week	**Refresh Period** **Repeat Day In Week** **Repeat Week In Month**	22.5
			Short Period	**Refresh Period**	-	22.6

(✱)	Function	description
	OFF mode	switch from AUTO mode to OFF mode (no start-up)
	Test OnLd	operation with Test on load
	TEST	operation with Test off load
	No Func	no start-up, activation of the binary output "Timer exercise" for other use
	Disabled	**Timer 1** deactivated

Abbreviations: **Monday=Mon, Tuesday=Tue, Wednesday=Wed, Thursday=Thu, Friday=Fri, Saturday=Sat, Sunday=Sun**

22-1 - Scheduler menu - Example with "Once"

Settings

parameter	Function	Repetition	First Occur. Date	First Occur. Time	Duration
setting	TEST	Once	07 / 12 / 2018	12 : 15	00 : 45

Operation
• On **7/12/2018** at **12:15**, the APM403 switches to TEST mode, the GS starts and operates with "Test off load" for **45 minutes**. The GS switches off, and the APM403 switches back to AUTO mode.

22.2 - Scheduler menu - Example with "Repeated" and "Daily"

Settings

parameter	Function	Repetition	First Occur. Date	First Occur. Time	Duration	Repeated	Refresh Period	Weekends (✱✱)
setting	TEST	Repeated	07 / 12 / 2018	14 : 00	00 : 45	Daily	3 (✱)	Including

(✱) setting from **1** to **1000** days, as **Repeated** = **Daily**

Operation
• On **7/12/2018** at **14:00**, the APM403 switches to TEST mode, the GS starts and operates with "Test off load" for **45 minutes**. The GS switches off, and the APM403 switches back to AUTO mode.
• **3** days after (**Refresh Period**), on 10/12/2018 at **14:00**, the above sequence is repeated.
• This sequence is repeated every **3** days including weekends (**Including**) (✱✱).

(✱✱) The **Weekends** parameter takes the following values: **Including**, **Skip**, **Postpone**.
  . **Including**: start-up possible on Saturdays and Sundays,
  . **Skip**: start-up not possible on Saturdays and Sundays, but the **Refresh Period** remains active. If **First Occur. Date** is a Thursday and if the **Refresh Period** = **3**, then the GS will start up the following Wednesday, rather than on Sunday.
  . **Postpone**: start-up not possible on Saturdays and Sundays, but the **Refresh Period** is disabled. If **First Occur. Date** is a Monday and if the **Refresh Period** = **4**, then the GS will start up on Monday and Friday, but not the following Tuesday. It will only restart the following Thursday.

Skip

Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Refresh Period ➡ 1		2	3		1	2	3	1	2	3			

Postpone

Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Refresh Period ➡ 1	2	3	4	-	-	1	2	3	4				

22.3 - Scheduler menu - Example with "Repeated" and "Weekly"

Settings

parameter	Function	Repetition	First Occur. Date	First Occur. Time	Duration	Repeated	Day	Refresh Period
setting	TEST	Repeated	06 / 12 / 2018	14 : 00	01 : 00	Weekly	see (✱)	2 (✱✱)

(✱) **Day**: **Mon**, **Wed**, **Fri** = **ON**, **Tue**, **Thu**, **Sat**, **Sun** = **OFF**, (✱✱) setting from **1** to **60** weeks, as **Repeated** = **Weekly**

Operation
• On **6/12/2018** at **14:00**, nothing happens as **Thu** = **OFF**.
• On **7/12/2018** at **14:00**, the APM403 switches to TEST mode, the GS starts and operates with "Test off load" for **1 hour**. The GS switches off, and the APM403 switches back to AUTO mode.
• **Refresh Period** = **2**, therefore no start-up during the week from 10/12/2018 to 16/12/2018.
• On 17/12/2018 (**Mon**) at **14:00**, the APM403 switches to TEST mode, the GS starts and operates with "Test off load" for **1 hour**. The GS switches off, and the APM403 switches back to AUTO mode. Operation on 19/12/2018 (**Wed**) and 21/12/2018 (**Fri**) (**Day**), etc…
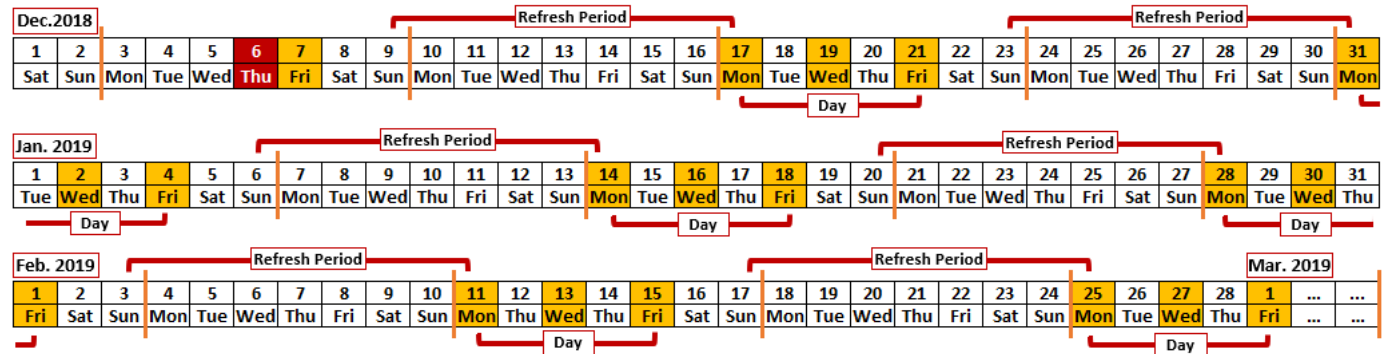
22.4 - Scheduler menu - Example with "Repeated" and "Monthly" and "Repeat Day = Repeat Day"

Settings

parameter	Function	Repetition	First Occur. Date	First Occur. Time	Duration	Repeated	Repeat Day	Refresh Period
setting	TEST	Repeated	06 / 12 / 2018	14 : 00	01 : 00	Monthly	Repeat Day	2 (✱)

parameter	Repeat Day In Month
setting	5 (✱✱)

(✱) setting from **1** to **12** months, as **Repeated** = **Monthly**, (✱✱) setting from **1** to **31** days, as **31** days max within a month

Operation
• On **6/12/2018**, the sixth day of December 2018, nothing happens as operation is scheduled for the **fifth** day of the month (**Repeat Day In Month**).
• **Refresh Period** = **2**, so there is no start-up in January 2019.
• On the **fifth** of February (**Repeat Day In Month**) at **14:00**, the APM403 switches to TEST mode, the GS starts and operates with "Test off load" for **1 hour**. The GS switches off, and the APM403 switches back to AUTO mode.
• There is no start-up in March 2019 (**Refresh Period**); in April 2019, the GS starts up on the **fifth** day (**Repeat Day In Month**); there is no start-up in May 2019, etc…
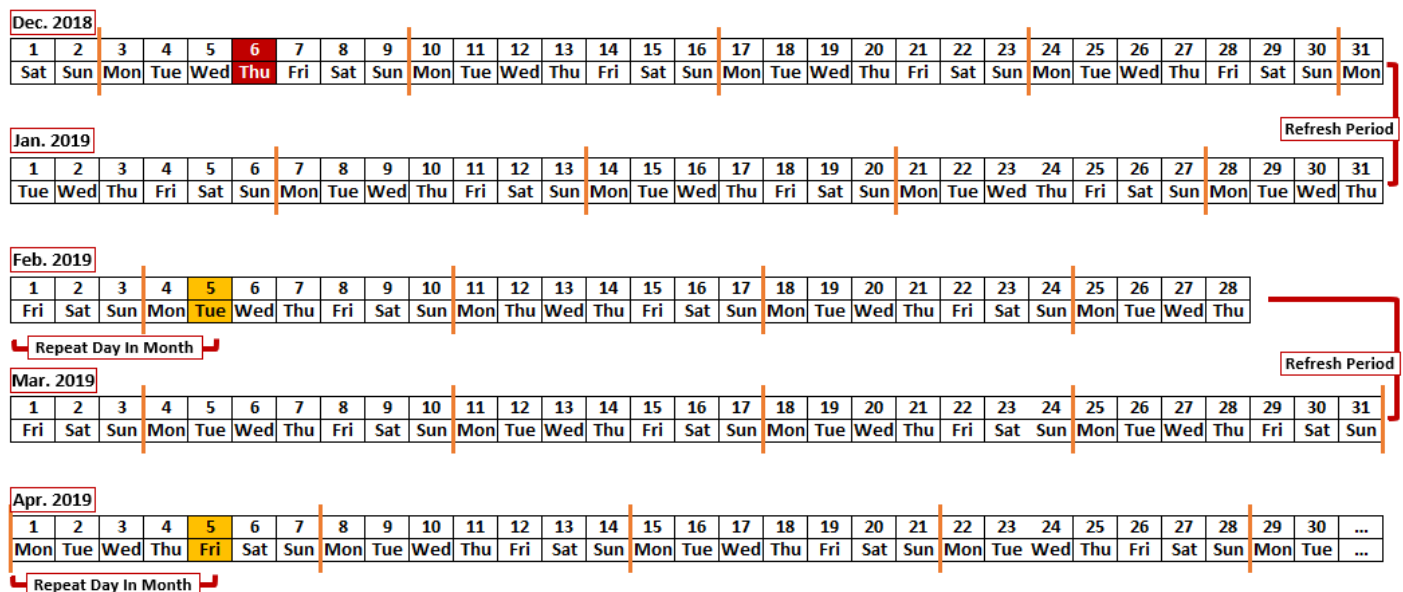
22.5 - Scheduler menu - Example with "Repeated" and "Monthly" and "Repeat Day = Repeat Day in Week"

Settings

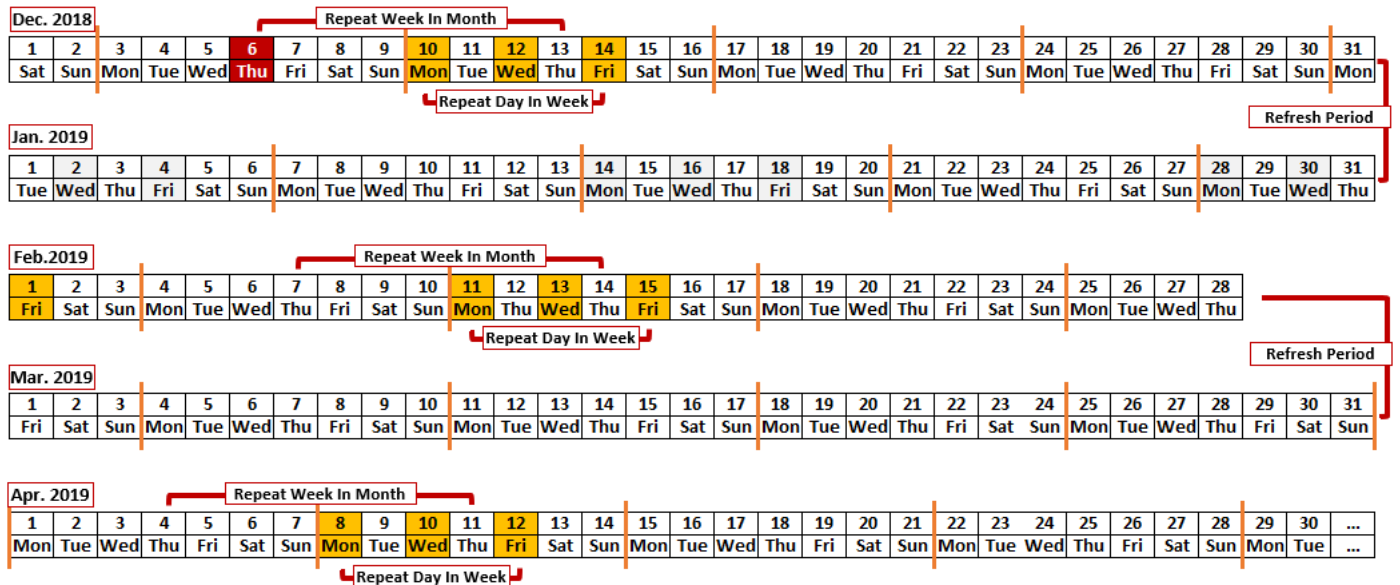| parameter	Function	Repetition	First Occur. Date	First Occur. Time	Duration	Repeated	Repeat Day	Refresh Period
setting	TEST	Repeated	06 / 12 / 2018	14 : 00	01 : 00	Monthly	Repeat Day In Week	2 (✱)

parameter	Repeat Day In Week	Repeat Week In Month
setting	see (✱✱)	2 (✱✱✱)

(✱) setting from **1** to **12** months as **Repeated** = **Monthly**
(✱✱) **Mon**, **Wed**, **Fri** = **ON**, **Thu**, **Thu**, **Sat**, **Sun** = **OFF**
(✱✱✱) setting possible from **1** to **5** weeks max (5 weeks in a month)

Operation

• On **6/12/2018** (**Thu**) at **14:00**, nothing happens as the start-ups are scheduled for the **second** week of each month (**Repeat Week In Month**), on **Mon**, **Wed** and **Fri** (**Repeat Day In Week**).
• On 10/12/2018 (**Mon**) at **14:00**, the APM403 switches to TEST mode, the GS starts and operates with "Test off load" **TEST**. After operating for **1 hour**, the GS stops, and the APM403 switches back to AUTO mode. Operation on 12/12/2018 (**Wed**) and 14/12/2018 (**Fri**) (**Repeat Day In Week**).
• **Refresh Period** = 2, nothing happens in January 2019.
• In February 2019, during the **second** week (**Repeat Week In Month**) and on 11/02/2019 (**Mon**), the APM403 switches to TEST mode, the GS starts and operates with "Test off load" (**TEST**). After operating for **1 hour**, the GS stops, and the APM403 switches back to AUTO mode. Operation on 13/02/2019 (**Wed**) and 15/02/2019 (**Fri**) (**Repeat Day In Week**).
• **Refresh Period** = 2, nothing happens in March 2019.
• In April 2019, during the second week (**Repeat Week In Month**) and on 8/04/2019 (**Mon**), the APM403 switches to TEST mode, the GS starts and operates with "Test off load" (**TEST**). After operating for **1 hour**, the GS stops, and the APM403 switches back to AUTO mode. Operation on 10/04/2019 (**Wed**) and 12/04/2019 (**Fri**) (**Repeat Day In Week**) etc…

22.6 - Scheduler menu - Example with "Repeated" and "Short Period"

Settings

parameter	Function	Repetition	First Occur. Date	First Occur. Time	Duration	Repeated	Refresh Period
setting	TEST	Repeated	09 / 12 / 2018	16 : 00	00 : 30	Short period	04 : 00 (✱)

(✱) setting from **0** to **23** for the hours, setting from **0** to **59** for the minutes
Note: if **Refresh Period** = **00 : 00** this corresponds to a setting with **ONCE**

Operation

• On **9/12/2018** at **16:00**, the APM403 switches to TEST mode, the GS starts and operates with "Test off load". After operating for **30 minutes**, the GS stops, and the APM403 switches back to AUTO mode.
• **3 hours, 30 minutes** later, still on **9/12/2018**, the APM403 switches to TEST mode, the GS starts and operates with "Test off load". After operating for **30 minutes**, the GS stops, and the APM403 switches back to AUTO mode.
• This sequence is repeated every **4 hours**.

Note: the period during which the GS is operating (**Duration**) is included in the parameter **Refresh Period**.