Notice descriptive et de fonctionnement
Operating instruction manual
Manual descriptivo y de funcionamiento

SDMO

Inverseur de sources automatique
Automatic transfer switch
Inversor de fuentes automático

VERSO200

02/08/2013 33514066401_0_1

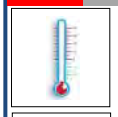
Automatic Transfer Switch - VERSO 200 - Quick Commissioning Guide

1 Safety Instructions

- This equipment must only be installed by qualified electrical personnel.
- Maintenance operations and configuration of this equipment must be carried out by authorised and trained personnel.
- Once installed and switched on this equipment may be powered by two different voltage sources. These two voltage sources are dangerous and are capable of causing harm to the human body.
- For more information consult the user manual.

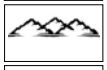
(*) Warning, risk of electric shock

2 Environmental conditions



Temperature: **-10°C** to **+40°C** (without derating)
Temperature: **-20°C** to **+70°C** (with derating)

Storage: **-20°C** to **+70°C**
(Maximum duration one year)



Altitude: **2000m max.** without derating

Humidity: **80%** without condensation, up to **55°C**
95% with condensation, up to **40°C**

Level of protection: **IP2x** from 200A to 630A
IP55 from 800A to 3200A

Weight: sizes 200A - 630A, from **35kg** to **40kg**
sizes 800A - 1600A, from **200kg** to **250kg**
sizes 1600A - 3200A, from **415kg** to **450kg**

3 Preliminary checks

- Check the data plate to ensure that the size of the switch and the range of voltage are suitable for the required application (e.g. 200A, 380VAC to 440VAC).
- Ensure that suitable electrical protection (circuit breaker or fuse) is connected upstream of the switch (This applies to **both** the mains side and the generating set side).
- Read carefully the information provided on the electrical drawing.

4 Mounting and Installation

- The electrical box has four 7mm diameter holes for wall mounting or affixing to a suitable metallic bracket. Only use suitable professional materials for the mounting bracket.
  The template for mounting the box is shown on the packaging.
- The box must be positioned vertically, as shown in the picture opposite. Power connections are provided through the bottom of the box, regardless of size.

5 Power Connections

- Use cables of appropriate length and gauge for the size of the switch taking into account the distance between the switch **D** and:
  . Mains circuit breaker **S**,
  . Genset circuit breaker **M**,
  . Users load **O**.

size	200A	250A	400A
gauge	**95mm²**	**150mm²**	**240mm²**
size	630A	800A	1000A
gauge	**2x300mm²**	**2x300mm²**	**2x300mm²**
size	1250A	1600A	2000A
gauge	**4x185mm²**	**4x300mm²**	**4x400mm²**
size	2500A	3200A	
gauge	**4X630mm²**	**4X630mm²**	

gauge max. indicated per phase conductor

- The table opposite shows typical cable gauges used:
  Important: The table does not take into account voltage drops in the cables (caused by distance and methods of installation).
- The non-magnetic cable gland plate at the bottom of the transfer switch is designed to accommodate cable glands with mechanical latching.
- After preparing the cable ends using suitable lugs, connect them to the connection points on the switch or to the copper busbars while respecting the tightening torque.
  Each cable link must have a protective conductor connected to the enclosure using the available welded studs.

used screw	M6	M8	M10	M12
recommended (N.m)	**4.5**	**8.3**	**20**	**40**
max (N.m)	**5.4**	**13**	**26**	**45**

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6 Connection of auxiliary equipment and control panel

- Connect any auxiliary generating set equipment; coolant heater, battery charger etc. directly to fuse **4F17**, using a cable of suitable length and gauge.
- Connect remote start wires to terminals **1** & **2** on terminal box **X1**, using a cable of suitable length and gauge.


= remote start

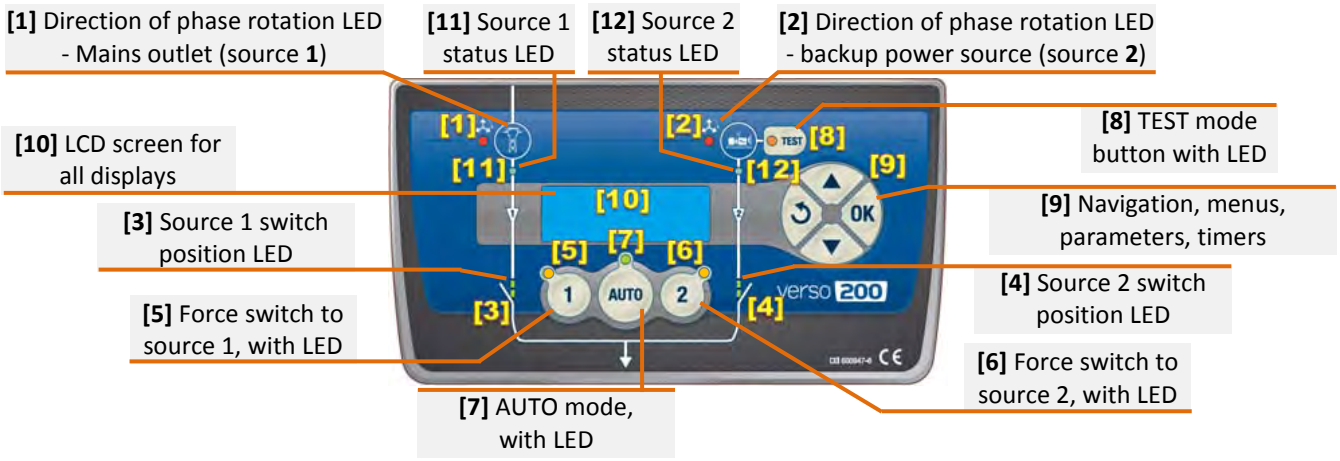

= single phase auxiliaries


= three phase auxiliaries

. flexible= H07RNF
. rigid = U1000R2V

. remote start = 2,5mm²
. auxiliaries = 1,5mm² minimum

7 Getting started with control/command automation



8 Diagnostics/LED functions

n° LED	No light	Steady green light	Flashing green light	Steady orange light	Steady red light
[1]	Phase rotation source 1 OK				Phase rotation fault source 1
[2]	Phase rotation source 2 OK				Phase rotation fault source 2
[11]	No source 1	source 1 OK		U/F alarm source 1	U/F fault source 1
[12]	No source 2	source 2 OK		U/F alarm source 2	U/F fault source 2
[3]	Source 1 switch open	Source 1 switch closed	Position monitoring fault source 1		
[4]	Source 2 switch open	Source 2 switch closed	Position monitoring fault source 2		
[5]	No force switch to source 1			Force switch to source 1 selected	
[6]	No force switch to source 2			Force switch to source 2 selected	
[7]	AUTO mode not selected	AUTO mode selected			
[8]	TEST mode not selected			TEST mode selected	

9 4 key navigation keypad

. Access to previous menu or data selection (*)
. Increase by a value of **1** or other option

. Exit navigation
. Exit a menu

. Access to following menu or data selection(*)
. Decrease by a value of **1** or other option

. Access to a menu list
. Access to data (*)
. Reset displayed screen « **RESET=OK** »

(*) data = parameter, value, timer, adjustment

10 Commissioning

1- Check that no tools have been left in the electrical enclosure.

2- Set the generating set to the stop position (handling of the generating set reserved for experienced personnel).

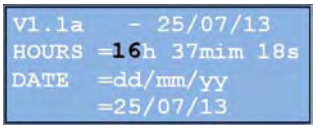
3- Make sure that the switch is in position " **0** " (front window).
If not, move the yellow lever to and turn the handle of the switch to position "**0".** Return the yellow lever to the **AUTO** position.

4- Close the mains circuit breaker, voltage will now be present on the source side, auto-configuration will be initiated and, if the phase rotation is correct (LED [1] off), the switch will automatically switch to position **1** (source 1) and LED **[11]** will turn green.

The **AUTOCONF** screen will appear for several seconds, followed by a screen showing the main parameters associated with the automatic system (flashing of the first parameter). These three parameters must be controlled (**Type**, **Unom**, **Fnom**).

5- Press **OK** to validate each parameter, or modify them if necessary using ▼ or ▲.

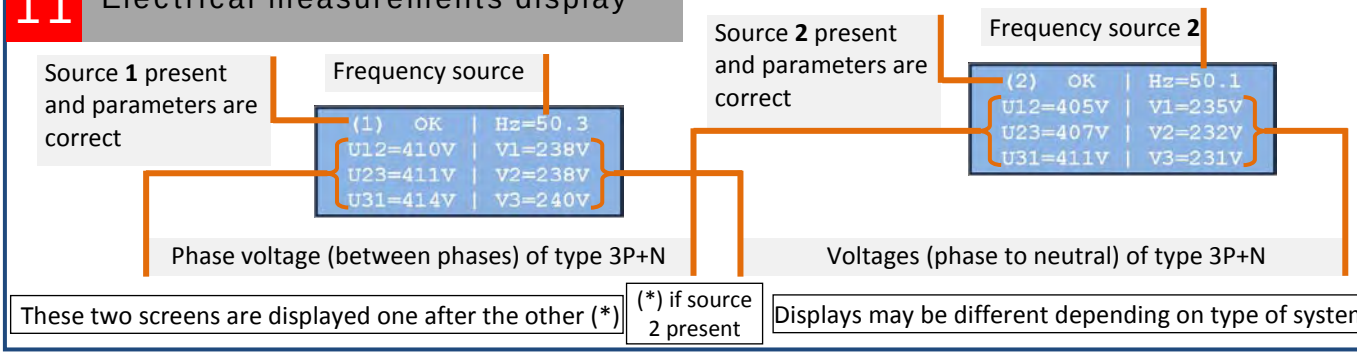
6- If necessary adjust the time and date by pressing ▼ or ▲. Press **OK** to move on to the next value or to validate each entry.



The default screen showing electrical measurements (see paragraph 11) will now appear.
If the phase rotation is not correct (LED **[11]** turns red), open the mains breaker and restore the phase sequence. Go back to the previous operation.

7- Start up the genset in MANUAL mode and close the genset circuit breaker, check voltage and phase sequence. If phase rotation is not correct (LED **[12]** turns red) open the genset breaker and restore phase sequence.

11 Electrical measurements display



12 Available menus

- **LAMP TEST** = Functional test of all LED's and the screen,
- **STATS** = Record of the number of operating hours of each source (**(1)=xxxH**, **(2)=xxxH**), and the number of transfers from one source to another (**(1)->(2)=xx**, **(2)->(1)=xx**),
- **EVENTS** = Record of all the events that have occurred regarding the operation of the transfer switch (alarms, faults, test mode etc…),
- **MAINT** = Access to two telephone numbers in case of operating problem,
- **PARAM** = Access to switch parameters (see Attachment **1**, § **A11**, list of parameters),
- **TIMER** = Access to switch timer (See Attachment **1**, § **A12** list of timers),
- **PROGRAMS** = Access to programmed functions (See Attachment **2**, § **A23**),
- **I/O** = Access to programming of inputs and outputs of the electronic card (See Attachment **2**, §**A22**),
- **AUTOSET** = Access to automatic configuration of the transfer switch,
- **RS485** = Access to serial link parameters
- **INIT** = Restore factory settings + AUTOSET
- **FACTORY** = Access to traceability information (serial number, software version), access to time and date settings, access to USB drive

13 Displays: Information, alarms, faults and statuses

Information, reports, alarms and faults are displayed as coded messages.

- On the first line only the following messages may be displayed:

(1) OK	source **1** operational	**(2) OK**	source **2** operational
(1) ???	source **1** detected but configuration incompatible	**(2) ???**	source **1** detected but configuration incompatible
(1) U<%	Under-voltage alarm or fault at source **1**	**(2) U<%**	Under-voltage alarm or fault at source **2**
(1) U>%	Over-voltage alarm or fault at source **1**	**(2) U>%**	Over-voltage alarm or fault at source 2
(1) F<%	Under-frequency alarm or fault at source **1**	**(2) F<%**	Under-frequency alarm or fault at source **2**
(1) F>%	Over-frequency alarm or fault at source **1**	**(2) F>%**	Over-frequency alarm or fault at source **2**
(1) ACB	Phase rotation fault at source **1**	**(2) ACB**	Phase rotation fault at source **2**

- On the third line only the following messages may be displayed:

(0) -> (1) =SOS	Failure to close at source **1**	**(0) -> (2) =SOS**	Failure to close at source **2**
(1) -> (0) =SOS	Failure to open at source **1**	**(2) -> (0) =SOS**	Failure to open at source **2**
(1) =SOS ACB	Phase sequence fault at source **1**	**(2) =SOS ACB**	Phase sequence fault at source **2**
		(2) =SOS GEN START	Genset fail to start

note: With regards to the messages mentioned in this table, the fourth line will display the message **RESET = OK** meaning « Press **OK** » to reset the fault

- On the third line only the following action messages may be displayed:

ATS = 0	Opening function at source **1** & **2**	**AUTOSET =OK**	auto-configuration initialising
MODE EJP	EJP (STOR*) mode engaged (France only)	**|--AUTOSET--|**	auto-configuration in progress (flashing)
PROGRAM	Program in progress (+ DEL "test" switched on)		

- On the third and fourth lines the following action messages may be displayed:

T00=003s **(1) -> (0)**	Transfer Timer	**(1) =OK CONFIRM ?** **CONFIRM=OK**	Manual confirmation of return to mains
T01=005s **(2) -> (1)**	Return to mains timer	**T19=600s** **MODE TEST**	Test mode ongoing
T17=060s **(1) <°C**	Genset cooling timer (source 1) ***(not implemented)***	**T18=060s** **(2) <°C**	Genset cooling timer (source 2)
T20=020min **Préavis EJP**	Advance notice of EJP (STOR*) timer * Short Term Operating Reserve	**T21=600min** **Perte EJP**	loss of EJP (STOR*) timer *Short Term Operating Reserve

14 TEST mode

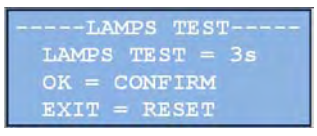
Pressing **TEST** will light up LED **[8]**, start up the generating set and make the screen displayed below appear.
Two possible modes:

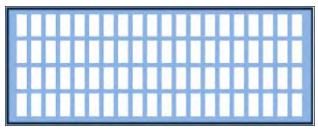
- test with load (**TEST>0KW=OK)**, press **OK** to select this mode,
- test without load (**TEST 0KW=EXIT)**, press ↺ to select this mode.

The user will have a period of 30 seconds to make a selection.
If no action is taken by the user, 'TEST without load' mode is selected automatically.

15 Lamps test

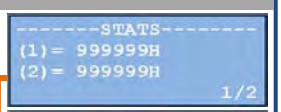
1- Press **OK** for access to various menus,
2- Press **OK** to access LAMPS TEST menu,
3- Press **OK**. All LED's and entire screen will light up.

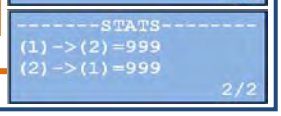




16 STATS menu

1- Press **OK**,
2- Press ▼ until you reach STATS,
3- Press **OK** to access
4- Press ▼, to access





17 EVENTS menu

1- Press **OK**,
2- Press ▼ until you reach EVENTS,
3- Press **OK**,
4- Press ▼ or ▲, to access the time-stamped list

Automatic Transfer Switch - VERSO 200 - Attachment 1

A11 List of parameters

designation	function	Possible values	Std settings
Type	Mains	**3P+N**, **3P**, **2P+N**, **1P+N**	**AUTOCONF**
Unom	Voltage in Volts	**440**, **415**, **400**, **380**, **240**, **230**, **220**, **208**	**AUTOCONF**
Fnom	Frequency in Hz	**50Hz**, **60Hz**	**AUTOCONF**
(1) U<%	Default min mains U threshold	Range of adjustment dependant on apparatus	**15**
(2) U<%	Default min genset U threshold	Range of adjustment dependant on apparatus	**15**
(1) U>%	Default max mains U threshold	Range of adjustment dependant on apparatus	**10**
(2) U>%	Default max genset U threshold	Range of adjustment dependant on apparatus	**10**
(1) Hz<%	Default min mains F threshold	Range of adjustment dependant on apparatus	**5**
(2) Hz<%	Default min genset F threshold	Range of adjustment dependant on apparatus	**5**
(1) Hz>%	Default max mains F threshold	Range of adjustment dependant on apparatus	**5**
(2) Hz>%	Default max genset F threshold	Range of adjustment dependant on apparatus	**5**
ABC	Direction of phase rotation	**ABC**, **ACB**, **OFF** (no management)	**ABC**
(1) V/V	Adjustment of mains voltage measuring	Voltage gain adjustment (**1**=0,1V) (e.g.:)	**1000**
(2) V/V	Adjustment of genset voltage measuring	Voltage gain adjustment (**1**=0,1V) (e.g.:)	**1000**
Position	Management of returns positions	**YES**=management, **NO**=no management	**YES**
Bklight	LCD screen backlight		**99**
Contrast	LCD screen contrast		**50**
Modbus	Modbus card	**YES**=with Modbus, **NO**=without Modbus	**NO**
Prio EJP	Default priority to EJP (*STOR) (France only)	**YES**=application, **NO**=no application	**NO**
(1) OK?	Manual confirmation of return to mains	**YES**=confirmation required, **NO**=confirmation not required	**NO**
NO %	No management of U and F limits	**OFF**=operation with limits, **ON**=operation without limits	**OFF**
Hyst/U%	Hysteresis U value	between **0**% and **3**% (of voltage limit)	**2**
Hyst/F%	Hysteresis F value	between **0**% and **2**% (of frequency limit)	**0**
(1) +/-	Measuring card adjustment	Adjustment of offset voltage of measuring card 5A07	**100**

A12 List of timers

N°	function	Range of adjustment	Standard range	N°	function	Range of adjustment	Std settings
T00	Loss of source 1	**0**s to **180**s	**3**	**T26**	Screen scrolling time	**1**s to **10**s	**5**
T01	Return source 2	**0**s to **999**s	**5**	**T27**	Automatic configuration	**0**s to **999**s	**3**
T02	min U source 1	**0**s to **999**s	**5**	**T28**	Min critical U source 1	**0**s to **999**s	**1**
T03	max U source 1	**0**s to **999**s	**5**	**T29**	Max critical U source 1	**0**s to **999**s	**1**
T04	min U source 2	**0**s to **999**s	**5**	**T30**	min critical U source 2	**0**s to **999**s	**5**
T05	max U source 2	**0**s to **999**s	**5**	**T31**	max critical U source 2	**0**s to **999**s	**5**
T06	min F source 1	**0**s to **999**s	**5**	**T32**	min critical F source 1	**0**s to **999**s	**1**
T07	max F source 1	**0**s to **999**s	**5**	**T33**	max critical F source 1	**0**s to **999**s	**1**
T08	min F source 2	**0**s to **999**s	**5**	**T34**	min critical F source 2	**0**s to **999**s	**5**
T09	max F source 2	**0**s to **999**s	**5**	**T35**	max critical F source 2	**0**s to **999**s	**5**
T10	default command source 1	**2**s to **999**s	**5**	**T36**	last fault source 1	**0**s/**10** to **999**s/**10**	**5**
T11	default command source 2	**2**s to **999**s	**5**	**T37**	reserve	**0**s to **999**s	**1**
T12	Source change over	**0**s/**10** to **999**s/**10**	**10**	**T38**	last fault source 2	**0**s/**10** to **999**s/**10**	**5**
T13	U stabilisation source 1	**0**s/**10** to **999**s/**10**	**10**	**T39**	reserve	**0**s to **999**s	**1**
T14	U stabilisation source 2	**0**s/**10** to **999**s/**10**	**30**	**T40**	production demand	**0**s to **999**s	**10**
T15	U setting source 1	**0**s/**10** to **999**s/**10**	**5**	**T41**	switch power supply	**0**s to **999**s	**3**
T16	U setting source 2	**0**s/**10** to **999**s/**10**	**5**	**T42**	activate back-light	**0**s to **999**s	**15**
T17	Genset cooling source 1	**0**s to **999**s	**60**	**T43**	Default opening at source 1	**0**s to **999**s	**5**
T18	Genset cooling source 2	**0**s to **999**s	**60**	**T44**	Default opening at source 2	**0**s to **999**s	**5**
T19	test	**0**s to **999**s	**600**	**T45**	reserve	**0**s to **999**s	**3**
T20	advance warning EJP (*STOR)	**0**min to **999**min	**20**	**T46**	reserve	**0**s to **999**s	**3**
T21	loss EJP (*STOR)	**0**s to **999**s	**600**	**T47**	reserve	**0**s to **999**s	**3**
T22	load shedding	**0**s to **999**s	**10**	**T48**	reserve	**0**s to **999**s	**3**
T23	non-start	**0**s to **999**s	**30**	**T49**	reserve	**0**s to **999**s	**3**
T24	return to home screen	**0**s to **999**s	**120**				
T25	Standby	**0**s to **999**s	**120**				

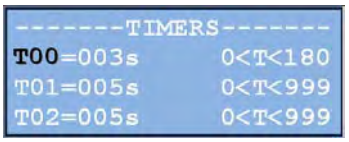
s=second **min**=minute **s/10**= tenth of a second **U**=voltage **F**=frequency *STOR= Short Term Operating Reserve

Automatic Transfer Switch - VERSO 200 - Attachment 2

A21 Modification of parameters/timers

See list of timers and parameters overleaf

1- Press **OK**,
2- Press ▼ Until you reach menu:
   - PARAM (to modify a parameter), and press **OK**,
   - TIMER (to modify a timer), and press **OK**,
3- Press **OK**,
4- Press ▼ or ▲ until you reach the desired parameter or timer,
5- Press **OK** to access the parameter or timer,
6- Press ▼ or ▲ to modify the parameter or timer,
7- Press **OK** to accept the modification,
8- Press ↺ twice to exit the menu.



A22 Programming inputs and outputs

● Three inputs **IN1** (terminals **1** & **2**, connection **J6**), **IN2** (terminals **3** & **4**), **IN3** (terminals **5** & **6**, connection **J6**)
Table of programmable functions (**F01** to **F08**, **F00** = no function)

F01	**PreavisEJP**	Notice of EJP (*STOR)	**F04**	**(2) >0KW**	Request production	**F07**	**1->(0)<-2**	Set to position 0
F02	**Top EJP**	TOP EJP (*STOR)	**F05**	**(2) >0KW+T**	Request timed production	**F08**	**Lamp test**	LED and screen test
F03	**Prior EJP**	EJP priority	**F06**	**(1) =OK ?**	Confirmation of sector return	**F09**	**SOS 4F01**	Trip lightning conductor reporting

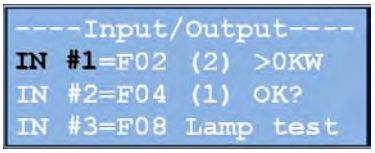
● Two outputs **OUT1** (terminals **2** & **3**, connection **J13**), **OUT2** (terminals **2** & **3**, connection **J14**)
Table of programmable functions (**F01** to **F12**, **F00** = no function)

F01	**-> (1)**	Opening of source 1	**F05**	**(1) OK**	source 1 OK	**F09**	**EJP**	EJP mode (French market only)
F02	**-> (2)**	Opening of source 2	**F06**	**(2) OK**	source 2 OK	**F10**	**=IN#1**	Input 1 reporting
F03	**(1) ->**	Closure of source 1	**F07**	**(AUTO NOK**	mode AUTO not OK	**F11**	**=IN#2**	Input 2 reporting
F04	**(2) ->**	Closure of source 2	**F08**	**(2) + T22**	Request load shedding	**F12**	**=IN#3**	Input 3 reporting

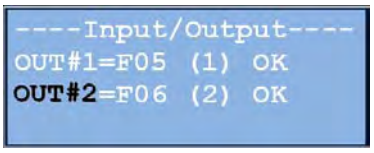
*STOR= Short Term Operating Reserve

● Programming inputs and outputs
1- Press **OK**,
2- Press ▼ until you reach menu I/O,
3- Press **OK**,
4- In the Input/Output menu, press ▼ or ▲ until you reach;
   - the desired input (**IN#1**, **IN#2** or **IN#3**),
   - the desired output (**OUT1#1** or **OUT#2**),
5- Press **OK** to access the programming:
   - of the input selected (**IN#1**, **IN#2** or **IN#3**),
   - of the output selected (**OUT#1** or **OUT#2**),
6- Select the desired function by pressing ▼ or ▲,
7- Press **OK** to validate the function,
8- Press ↺ twice to exit the menu.

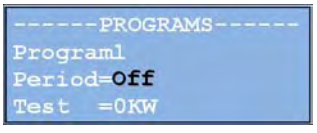
Example of programming of three inputs



Example of programming of two outputs



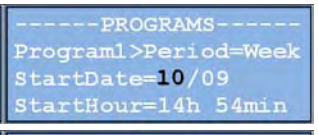
A23 Setting the clock

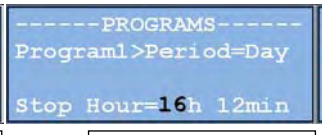


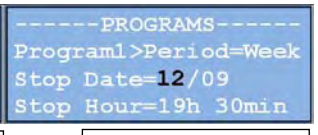
1- Press **OK**,
2- Press ▼ until you reach the PROGRAMS menu,
3- Press **OK**,
4- In the PROGRAMS menu, select **Program1**, **Program2** or **Program3** by pressing ▼ or ▲,
5- Press **OK** to access the chosen program selection, the message **Off** will be flashing (see above),
6- Each program has two criteria: **Period = Off**, **1Day**, **Days** or **Week** (see table) and **Test** = **0KW** or **>0KW**,

option	inactive	date 🗓	start 🕒	stop 🕒	365	52
Off	x					
1Day		x	x	x		
Days			x	x	x	
Week		x	x	x		x

Test = **0KW** = test without load
Test = **>0KW** = test with load
365 = everyday, **52** = every week







1Day program | **Days** program | **Week** program

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