

# user's instructions

MICS  
PROGRESS  
A400-A500

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GROUPES ÉLECTROGÈNES - GENERATING SETS  
GRUPOS ELECTROGENOS - GERADORES ELÉCTRICOS  
STROMERZEUGER - GRUPPI ELETTRICI - GENERATORANLÆG  
DIESELGENERATORAGGREGAT - AGGREGATER - AGGREGATEN  
DIESELAGGREGAATIT - RAFSTÖÐVAR - ΑΑΪ ΑΒΑΟΪ ΔΪ ΥΑ ΟΝΟΑΙ Ι ΑΕΕ

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# SAFETY SYMBOLS



Caution : danger



Publications supplied with the generating set must be consulted.



Caution : risk of electric shock



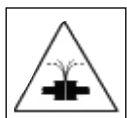
Protective clothing must be worn



Caution : toxic materials



Eyes and ears must be protected



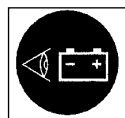
Caution : under pressure fluids



Periodic maintenance required



Caution : high temperature  
(risk of burns)



Battery charge check required



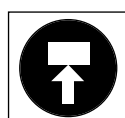
Caution : rotating or moving parts  
(risk of entanglement)



Compulsory lifting point



Caution : risk of corrosion



Compulsory stacking point



Caution : risk of explosion



Naked flame and unprotected lighting forbidden.  
No smoking



Authorised staff only



Water based fire extinguishers forbidden

## APPLICATION OF MACHINERY DIRECTIVE 89/392/EEC TO GENERATING SETS

- Access strictly reserved to staff authorised under the legislation in force.
- Live installation, automatic start-up possible.



This equipment has been configured for a specific application. It is forbidden to modify the system configuration without written consent from a person authorised by our company.  
In the event of not respecting this procedure, our company disclaims all responsibility on the consequences that could result from such action..

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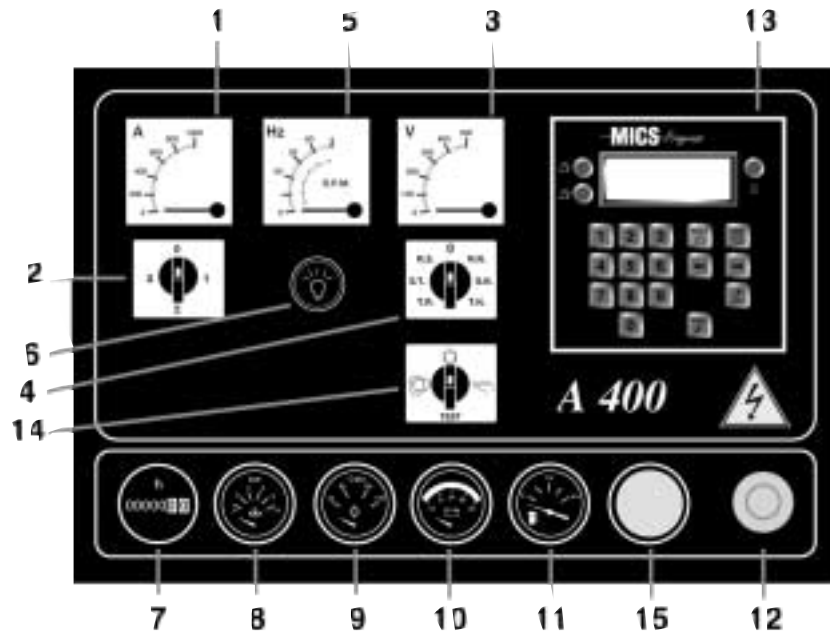
Design and production : Publication Department

from the following documents :

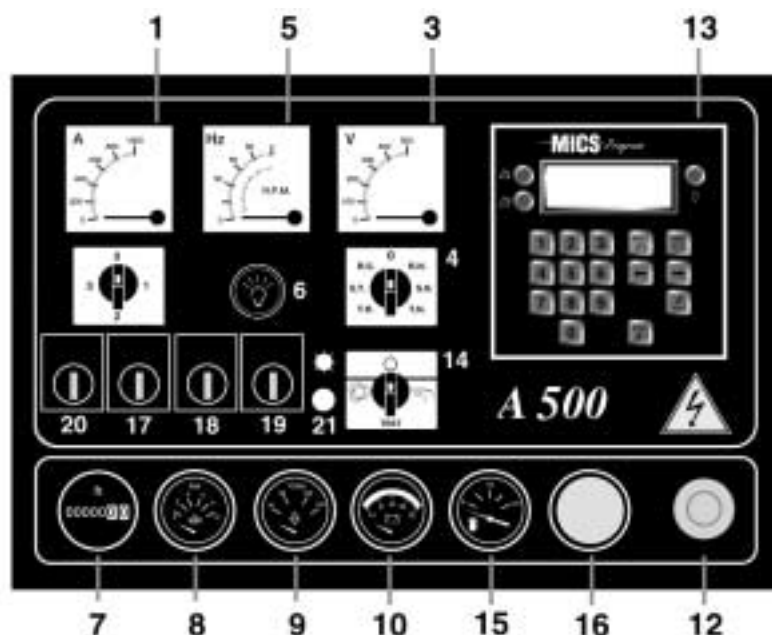
Generating sets manufacturer's source documents + Electrical Design Office documentation

Progress can be factory configured in several ways.  
Any further changes will have to be submitted to our company prior consent.

## CONTROL EQUIPMENT



- |                              |  |
|------------------------------|--|
| 1. Ammeter                   | 12. Emergency stop button (remote in Version IV & V) |
| 2. Ammeter switch            | 13. MICS Progress                                    |
| 3. Voltmeter                 | 14. 4-position function switch                       |
| 4. Voltmeter switch          | 15. Oil temperature gauge                            |
| 5. Frequency/RPM meter       | 16. Battery ammeter gauge                            |
| 6. Front lighting            | 17. Shutdown extractor light                         |
| 7. Hours counter             | 18. MDEC synthesis alarm light                       |
| 8. Oil pressure gauge        | 19. Lack of water preheating light                   |
| 9. Coolant temperature gauge | 20. Retention tank warning light                     |
| 10. Battery voltage gauge    | 21. Test lamps push button                           |
| 11. Fuel level gauge         |  |



# A - DESCRIPTION

The control racks are fitted with various standard or optional instruments and gauges. Depending on the options selected, the positioning of these instruments on the front may vary. The figures below define their functions



- **AMMETER :**

Shows the current, in Amps, on one phase.



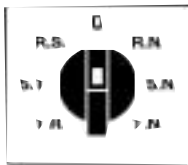
- **FREQUENCY/RPM METER :**

Shows the frequency, in Hz, delivered by the genset as well as the engine speed, in RPM.



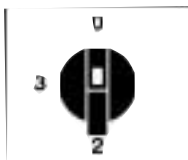
- **VOLTMETER :**

Shows the voltage, in Volts, supplied by the generating set.



- **VOLTMETER SWITCH :**

Various positions giving, on the voltmeter, phase/phase or phase/neutral voltage readings.




- **CAMMETER SWITCH :**


Various positions giving, on the ammeter, readings of current supplied by each phase.




- **FUNCTION SELECTOR SWITCH :**



This switch has 4 positions :

 : In this position, the genset does not start in the event of mains failure.

 : This operating mode is used to check the proper off load operation of the genset

**“TEST ”** : For test purposes, this operating mode enables you to check the automatic start-up facility as it simulates a mains failure. The genset starts automatically and delivers power to the installation.

 : In this mode, the genset is ready to start on a mains failure or external command. The start-up is interlocked with a time delay that avoids any start-up should the mains failure last for less than a few seconds.

NOTE : On positions  (during mains failures),  and “TEST”, the gauges and battery voltmeter are powered up and indicate the state of the various components under control. Also, the power supply indicator lamp is lit during start-up.



- OIL PRESSURE GAUGE :

Indicates the amount of oil pressure in the engine lubricating system.



- ENGINE TEMPERATURE GAUGE :

Indicates the coolant temperature in the engine.



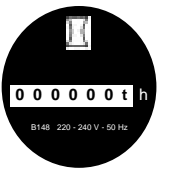
- BATTERY VOLTMETER :

Indicates the voltage, in Volts, of the starting battery(ies).



- FUEL LEVEL GAUGE :

Indicates the amount of fuel in the tank.



- HOURS COUNTER :

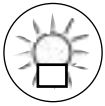
This totals the genset running hours as soon as it starts.



- EMERGENCY STOP BUTTON :

To be pushed in the event of an accident or problem, it will immediately stop the generating set from functioning. It must be reset when the genset is returned to service.

 : Push/pull or push/twist release type.



### - RACK LIGHTING

It will light the front of the rack as soon as the genset starts.

### - MICS PROGRESS

This is the A 400 main component. It ensures the following :

- Automatic start-up and shutdown of the genset,
- Control of the engine main safety devices.

It also ensures :

- Automatic synchronisation function : genset/genset or genset/mains,
- Paralleling function : genset/genset or genset/mains,
- Load distribution function between gensets.



### - SCREEN

The screen allows you to view :

- all alarms and faults,
- the genset operating states,
- various parameters which can be modified (with access code).



### - KEYPAD

The keypad ensures modification of the following :

- delays,
- set-up thresholds,
- genset general parameters (basics)
- access to the various configuration screens (checks, control, set-up).



- RESET :

Pressing this key will erase the message indicating a fault.



- STOP :

Pressing this key will immediately shut down the generating set and will light the fault lamp. Restarting the genset will not be possible until the fault has been RESET.



- ARROWS :

In a window, the Left and Right arrows enable access to the various options offered (see next page for list of screens).



- ESCAPE :

Pressing this key enables access to the higher level screen (see next page for list of screens).



- ENTER :

Pressing this key enables :  
1 - Access to the value of a parameter,  
2 - Validation of a command or the value of a modified parameter.



- GREEN LED :

Signals that the Progress is powered up (green flashing).



- ORANGE LED :

Signals an alarm (orange blinking).



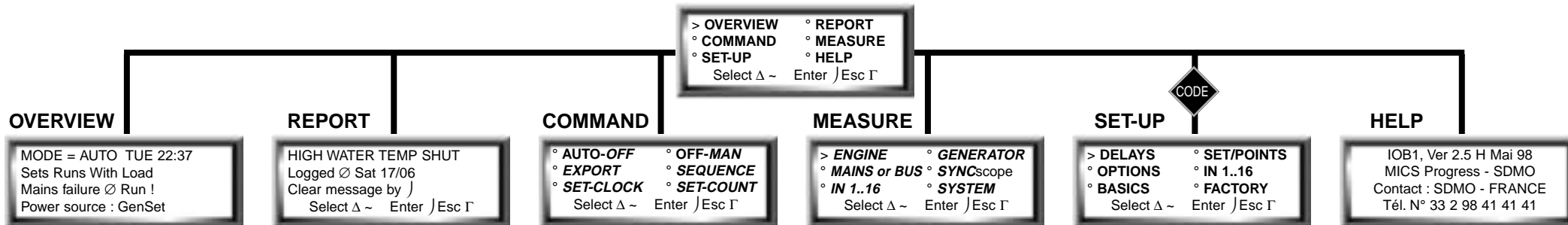
- RED LED :

Signals a fault (red blinking).



**Perform the initial commissioning of the battery(ies) 20 minutes before any start-up attempts (see Maintenance Manual).**

**Minimum voltage : 8 V for a 12 V battery  
18 V for a 24 V battery**



**Mode AUTO**

> AUTO ~ OFF ◦ EXPORT  
 ◦ SEQUENCE ◦ SET-CLOCK  
 ◦ SET-COUNT  
 Select Δ ~ Enter )Esc Γ

**Mode MAN**

> MAN ~ OFF ◦ LOAD-GEN  
 ◦ EXPORT ◦ SEQUENCE  
 ◦ SET-CLOCK ◦ SET-COUNT  
 Select Δ ~ Enter )Esc Γ

**EXPORT**

Export Power Quotas  
 kW : 1200 kVar : 1200  
 Enter new value by )  
 Leave unchanged by Γ

**SEQUENCE**

IDS ∅ 2 ∅ 1 ∅ 3  
 This Gen-Set ID No = 1  
 Exchange Command 2,3  
 Initial sequence 0,0

**SET-CLOCK**

Clock : 3 - 17.57  
 Note, Mon = 1... Sun = 7  
 Enter new value by )  
 Leave unchanged by Γ

**SET-COUNT** Mot de passe 1234

kW Hours : 00, 000,000  
 Hours Run : 000,000 : 80  
 Enter new value by )  
 Leave unchanged by Γ

**OVERVIEW**

Gen	Volts	Amps	Hz
Φ A	221	115	50.07
Φ B	222	117	>kW
Φ C	220	125	69.9

**POWER + PF**

Total-	COS Φ (PF)
>kVA : 78.9	Φ A 0.91
>kW : 69.9	Φ B 0.88
>kWAr : 36.4	Φ C 0.87

**GEN Φ A ou Φ B ou Φ C**

Gen Φ A	Hz : 50.07
Volts : 221	% THD : 0.1
Amps : 115	kVAr : 10.5
kVA : 25.4	kW : 23.1

**GEN ΦΦ**

Gen	Volts	Hz :	50.07
Φ A	221	Φ AB :	384
Φ B	222	Φ BC :	383
Φ C	220	Φ CA :	382

**ENGINE**

Battery Volts : 23.8  
 MPU : 1513 rpm 50.36 Hz  
 kW Hours : 00,001,234  
 HoursRun : 000,150 : 10

**MAINS or BUS**

Mains Φ A  
 Frequency Hz : 50.14  
 Voltage Vrms : 223  
 Distorsion % THD : 0.1

**GENERATOR**

> OVERVIEW ◦ POWER+PF  
 ◦ GEN Φ A ◦ GEN Φ B  
 ◦ GEN Φ C ◦ GEN ΦΦ  
 Select Δ ~ Enter ) Esc↔

**SYNCscope**

Gen Φ A v Mains (\*) or BUS Φ A  
 Freq Slip Hz : -0.07  
 Phase Shift ° : 11  
 Voltage Match : -2

**IN 1..16**

In# : 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6  
 On :  
 Off : \*\*\*\*\*  
 RUN WITH LOAD : OFF

**SYSTEM**

Function : Master  
 Network Ids : |-----  
 ANALOG OUT (V) : 1.58  
 PWM OUT (%) : 50.0

**DELAYS**

> Set Overspeed = 3 " 0  
 ◦ Gen OverVolts = 1 " 0  
 ◦ Gen UnderVolts = 1 " 0  
 ◦ Gen OverFreq = 1 " 0

**SET/POINTS**

> User Password = 1234  
 ◦ Crancking attempts = 3  
 ◦ Overspeed RPM = 1800  
 ◦ Crankstop RPM = 400

**OPTIONS**

ABBREVIATIONS SUMMARY  
 question ? 0-NO, 1-YES  
 Select AIB : 0-A, 1-B  
 S I W = shutdown I Warning

**IN 1..16**

In# : 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6  
 N/O :  
 N/C : \*\*\*\*\*  
 Select Δ ~ Enter )Esc Γ

**BASICS**

> Controller ID N° = 1  
 ◦ Number of Poles = 4  
 ◦ Pick-up Teeth = 126  
 ◦ CT Ratio = 100.0

**FACTORY** Mot de passe :

Vx Volt Max = 260.4  
 ◦ Ix Amps Max = 5.900  
 ◦ B + Volt Max = 40.00  
 ◦ D/A Volt Max = 7.432

Led blink indicates :  
 Green ~ Activity  
 Yellow ~ Warning  
 Red ~ Shutdorm

Press "enter" to have the list of the options.

(\*) Suivant la sélection utilisée dans SET-UP / OPTIONS  
 -> ATS = 0 ou ATS = 1



# B – DESCRIPTION OF DISPLAY PANELS

## I – GENERAL PANEL :

```
> OVERVIEW      ° REPORT
° COMMAND      ° MEASURE
° SET/UP       ° HELP
Select Δ ~ Enter J Esc Γ
```

### OVERVIEW

```
MODE = AUTO TUE 22:37
Sets Runs With Load
Mains failure ∅ Run !
Power source : GenSet
```

Press "Esc" to return to the higher level menu

### REPORT

```
HIGH WATER TEMP SHUT
Logged ∅ Sat 17/06
Clear message by J
Select Δ ~ Enter J Esc Γ
```

Press "Esc" to return to the higher level menu

### COMMANDES

```
> AUTO-OFF      ° OFF-MAN
° EXPORT        ° SEQUENCE
° SET-CLOCK     ° SET-COUNT
Select Δ ~ Enter J Esc Γ
```

Press "Esc" to return to the higher level menu

### Mode MANuel

```
CODE > MAN ~ OFF ° LOAD-GEN
° EXPORT        ° SEQUENCE
° SET-CLOCK     ° SET-COUNT
Select Δ ~ Enter J Esc Γ
```

Press "Esc" to return to the higher level menu



- The option selected is indicated by the cursor >
- Use the arrows ← → to select the option required
- Press Enter ↵ to call the selected option
- Press Esc ⏪ to return to the higher level menu. (main menu?)

### OVERVIEW

This panel indicates the Progress operating mode and also enables you to know which state the genset is in.

**Example :** mains failure, genset start-up – speed stabilisation – voltage – synchronisation – load transfer – Shut down, cooling, ...

### REPORT

This panel displays the various messages (alarms and faults) recorded with their associated time. A maximum of 8 messages can be recorded and viewed.

### COMMAND

When the letters "OFF" are placed in front of "AUTO" and "MAN", the Progress is stopped.

In the example, the Progress is in "AUTO" mode.

### - MANual mode

Selecting "OFF - MAN" (see previous screen) enables you to go to "MAN - OFF" mode. The genset starts immediately regardless of the position of the 4-position function switch.

Pressing "Enter" enables you to go from **MAN** → **OFF** to "OFF ~ MAN" and shuts down the genset after a cooling period..

### Load-GEN

This function enables the genset to take the load. The user password is required. It leads to the automatic closure of the contactor. The message "OFF-LOAD" then appears.

### OFF-LOAD

This function has the effect of opening the contactor.



### AUTOMATIC Mode

CODE

```

> AUTO ~ OFF ° EXPORT
° SEQUENCE ° SET-CLOCK
° SET-COUNT
Select Δ ~ Enter ) Esc Γ

```

Press "Esc" to return to the higher level menu

### - AUTOMATIC MODE

When the password has been entered, the generating set :

- Starts immediately if the 4-position function switch is placed in position 1 and if the mains is not available (information V4) (after lack of mains has been confirmed).

- Starts immediately if the 4-position function switch is placed in position 2 and if an external command activates input In#1.

- Starts immediately if the 4-position function switch is placed in position 3 "TEST".

Validating the command "AUTO – OFF", after the password has been entered, shuts down the genset after a cooling down period and makes the message go from AUTO ~ OFF to OFF ~ AUTO (shut down).

The 4-position switch is operative only if the Progress is in AUTO mode.

### EXPORT

CODE

```

Export Power Quotas
kW : 1200 kVar : 1200
Enter new value by )
Leave unchanged by Γ

```

Press "Esc" to return to the higher level menu

### - EXPORT

This screen can only be accessed in configurations #4, #5 and #6 (connection to mains network). If the genset has not been configured for these applications, the following message appears: "NOT APPLICABLE".

(The entry of the 2 values, in kW and kVA, must be compatible with the values of the genset power, in kW and kVA).

See REGLAGES BASE.

These 2 values define the power quotas exported by the genset to the mains or installation (configuration function).

### SEQUENCE

```

IDS 0 2 0 1 0 3
This Gen-Set ID No = 1
Exchange Command 2,3
Initial sequence 0,0

```

Press "Esc" to return to the higher level menu

### - SEQUENCE

This function applies to the MICS Progress in configuration #3 (production station, no mains) and when option "Parall auto start" is selected.

It enables the order in which the gensets must start to be displayed and modified.

The first line indicates the starting sequence.

example : Genset No 2, then Genset No 1, then Genset No 3.

The second line indicates the MICS Progress No on which the display is made.

The third line is used for any possible change of sequence.

example : 2,3 enables to get sequence 3'1'2 from sequence 2'1'3.

The fourth line provides aid during sequence changes.

### SET-HEURE

```

Clock : 3 - 17.57
Note, Mon = 1... Sun = 7
Enter new value by )
Leave unchanged by Γ

```

Press "Esc" to return to the higher level menu

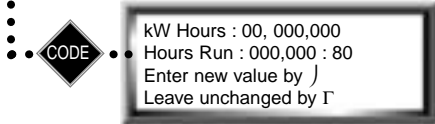
### - SET-HEURE

Time is not stored. It is therefore necessary to set the clock (hour and day) when the MICS Progress is powered up in order to get the messages time stamped.





### SET-COMPTE

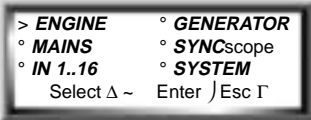


Press "Esc" to return to the higher level menu

The first digit indicates the day (from 1 to 7). The next four digits indicate the time (**Caution** : AM and PM are never displayed).  
**- SET-COMPTE**

This function is used to change the kW Hours and Hours Run counters. The password must be entered to modify the values displayed.

### MEASURE

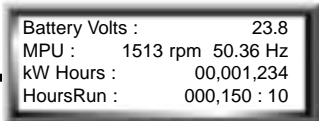


Press "Esc" to return to the higher level menu

### MEASURE

Main panel enabling viewing of the various possible readings on the engine, alternator, mains or bus, synchronisation, logic status of the various I/O, signal level on speed and voltage regulation outputs.

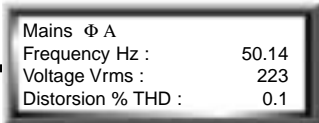
### ENGINE



Press "Esc" to return to the higher level menu

- **ENGINE**- This screen indicates :
  - Battery voltage, 40V maximum,
  - Engine speed in RPM and frequency in Hz,
  - Energy supplied in kWh (stored),
  - Genset Hours Run (stored)

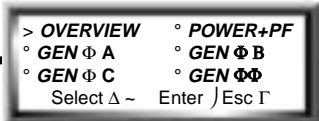
### MAINS or BUS



Press "Esc" to return to the higher level menu

- **MAINS or BUS** – This screen indicates:
  - Frequency in Hz (\*),
  - Phase/neutral voltage in Volts (\*),
  - Total harmonic distortion % (\*).
 (\*) depending on the value of {mains control INS = 0 or 1}, the values measured come from the mains or bus.

### GENERATOR



Press "Esc" to return to the higher level menu

- **GENERATOR**  
Main panel to view the electric variables relating to the alternator.

### OVERVIEW

Gen	Volts	Amps	Hz
Φ A	221	115	50.07
Φ B	222	117	>kW
Φ C	220	125	69.9

Press "Esc" to return to the higher level menu

### OVERVIEW

- This screen indicates :
- Phase/neutral effective voltage and current for Phase A,
  - Phase/neutral effective voltage and current for Phase B,
  - Phase/neutral effective voltage and current for Phase C,
  - Frequency in Hz, total active power.

### POWER + PF

Total	COS Φ (PF)
>kVA : 78.9	Φ A 0.91
>kW : 69.9	Φ B 0.88
>kVAr : 36.4	Φ C 0.87

### POWER + PF

- This screen indicates :
- Total apparent power in kVA,
  - Total active power in kW,
  - Total reactive power in kVAr,
  - Power factor on each phase (A, B and C).

### GEN $\phi$ A ou $\phi$ B ou $\phi$ C

Gen $\phi$ A	Hz : 50.07
Volts : 221	% THD :0.1
Amps : 115	kVAr :10.5
kVA : 25.4	kW :23.1

Press "Esc" to return to the higher level menu

### GEN $\phi$ A ou $\phi$ B ou $\phi$ C

This screen indicates for Phase A :

- Frequency in Hz,
- Effective voltage in Volts,
- Total harmonic distortion in %,
- Total active power in kW,
- Reactive power in kVAr,
- Apparent power in kVA.

Note: it is possible to view the screens for phases B and C (from screen GENERATOR)

### GEN $\phi\phi$

Gen	Volts	Hz :	50.07
$\phi$ A	221	$\phi$ AB :	384
$\phi$ B	222	$\phi$ BC :	383
$\phi$ C	220	$\phi$ CA :	382

Press "Esc" to return to the higher level menu

### GEN $\phi\phi$

This screen indicates for the three phases :

- Phase A/neutral effective voltage in Volts,
- Phase B/neutral effective voltage in Volts,
- Phase C/neutral effective voltage in Volts,
- Phases A/ B, B/C and C/A effective voltages in Volts.

### SYNCSCOPE

Gen $\phi$ A	v	Mains $\phi$ A
Freq Slip Hz :		-0.07
Phase Shift ° :		11
Voltage Match :		-2

Press "Esc" to return to the higher level menu

### SYNCSCOPE

This screen gives information on the synchronisation status between the genset between the genset and the bus or the genset and the mains.

- Voltage match : V1 – V4 (Volts) (line 4),
- Phase shift between these 2 voltages, in degrees (line 3),
- Frequency slip: frequency V1 – frequency V4 (line 2).

### IN 1..16

In# :	1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
On :	
Off :	* * * * * * * * * * * * * *
RUN WITH LOAD :	OFF

Press "Esc" to return to the higher level menu

### IN 1..16

This screen enables the status of each Progress logic input to be viewed.

The cursor on the first line indicates the input title.

### BASICS

Function :	Master
Network Ids :	-----
ANALOG OUT (V) :	1.58
PWM OUT (%) :	50.0

Press "Esc" to return to the higher level menu

### BASICS

This screen indicates whether the Progress concerned is "master" or "slave". It also indicates the controller No (when there are several networked Progresses) and the values for the speed and voltage regulation outputs.



CODE

## SET UP

```

> DELAYS      ° SET/POINTS
° OPTIONS     ° IN 1..16
° BASICS      ° FACTORY
Select Δ ~   Enter ) Esc Γ

```

Press "Esc" to return to the higher level menu

### DELAIS

```

> Set Overspeed = 3 " 0
° Gen OverVolts = 1 " 0
° Gen OverVolts = 1 " 0
° Gen OverVolts = 1 " 0

```

Press "Esc" to return to the higher level menu

### SETPOINTS

```

> User Password = 1
° Cranking attempts = 3
° Overspeed RPM = 1650
° Crankstop RPM = 600

```

Press "Esc" to return to the higher level menu

### OPTIONS

```

ABBREVIATIONS SUMMARY
question ? 0~NO, 1~YES
Select AIB : 0~A, 1~B
S I W = shutdown I Warning

```

Press "Esc" to return to the higher level menu

### IN 1..16

```

In# : 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
N/O :
N/C : * * * * *
Select Δ ~ Toggle ) Esc Γ

```

Press "Esc" to return to the higher level menu

### BASICS

```

> Controller ID N° = 1
° Number of Poles = 4
° Pick-up Teeth = 126
° CT Ratio = 100.0

```

Press "Esc" to return to the higher level menu

### FACTORY

```

Vx Volt Max = 260.4
° Ix Amps Max = 5.900
° B + Volt Max = 40.00
° D/A Volt Max = 7.432

```

Press "Esc" to return to the higher level menu

## SET/UP

This screen shows all adjustable parameters, enabling Progress to operate properly.

### - DELAIS

This screen enables you to view and possibly modify the various delays taken into account by Progress.

To scroll through, use the arrows and . To modify, use and the keypad.

### - SETPOINTS

This screen enables you to view and possibly modify the various set-points taken into account by Progress.

To scroll through, use the arrows and . To modify, use and the keypad.

### - OPTIONS

This screen enables you to view and possibly modify the various options offered by Progress.

An intermediate screen explains the various possible choices and their abbreviations.

To scroll through the various options, press and use the arrows and .

### - IN 1..16

This screen enables you to change the logic status of the 16 inputs :

- normally open N/O
- normally closed N/C

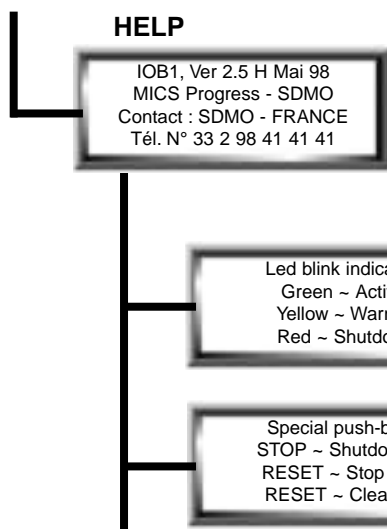
### - BASICS

This screen enables you to view and possibly modify the gen-set general parameters.

To scroll through, use the arrows and . To modify, use and the keypad.


### - FACTORY



This screen is available only after entry of the factory code. It defines the factory-set parameters.



## HELP

This screen indicates the type of I/O interface that is connected to Progress, the software version used and a telephone number in the event of an operating problem.

Press  to bring up the meaning of the LEDs on the front panel.

Press this key again and you will get to this screen which gives the function of buttons  and .

## II - SHORTCUTS :

To quickly access some menus, the 10 keys on the keypad, from version 2.5f, can be used if the system is not being used for set-ups.

KEY	DESCRIPTION
0	General panel for generator (voltage, current, frequency for the 3 phases)
1	Direct access to screen "REPORT" to view faults and alarms.
2	Direct access to screen "OVERVIEW" giving single voltage and current for each phase as well as frequency and total active power.
3	Direct access to screen "GEN ΦΦ" giving the 3 single voltages, the 3 phase-to-phase voltages and frequency.
4	Direct access to screen "POWER + PF" giving total active, reactive, apparent powers and power factor on each phase.
5	Direct access to screen "MAINS or BUS" giving the bus or mains main parameters (depending on configuration chosen).
6	Direct access to screen "SYNCscope" giving information on the synchronisation status of the genset onto another genset or the mains.
7	Direct access to screen "SYSTEM" giving indications on Progress: master, slave, number as well as values of the speed and voltage analogue outputs.
8	Direct access to screen "ENGINE" giving the engine general parameters.
9	Direct access to screen "HELP" giving indications on the software version used and the type of I/O interface.

### III - LIST OF PARAMÈTERS



The equipment has been configured for a specific application. It is forbidden to modify the system configuration without written consent of a person authorised by our company.  
In the event of not respecting this procedure, our company disclaims all responsibility on the consequences that could result from such action.

#### A - DELAYS

**Set Overspeed :**

Overspeed delay.

**GEN OverVolts :**

Alternator overvoltage delay

**GEN UnderVolts :**

Alternator undervoltage delay

**GEN OverFreq :**

Alternator over frequency delay

**GEN UnderFreq :**

Alternator under frequency delay

**G 2x OvCurr :**

Delay assigned to the genset before overload triggering

**G Revrse kW :**

Delay assigned to the genset before triggering on an active reverse power

**G Rvrs kVAr :**

Delay assigned to the genset before triggering orse power

**G Over % THD :**

Delay assigned to the genset before triggering caused by a harmonic distortion rate higher than the set point.

**SyncTimeout :**

Delay assigned to the genset to synchronise on the mains or bus.

**Sync Dwell Time :**

Delay assigned to the parallel device to observe synchronisation, voltage equality, frequency equality and phase shift.

**kw Surge Enable :**

Not used.

**Test Delay :**

Time the genset runs in test mode.

**V4 Volts Status :**

Delay to observe bus or voltage stability depending on the voltage configuration on V4.

**Standby On :**

Delay after mains failure before the genset starts in automatic mode with (control INS = 1).

**Stanby Off :**

Delay after mains return before load is removed from genset, in automatic mode with (control INS = 1).

**Eng Preglow :**

Delay for preheating of air intake glow plug(s) before start-up.

**Engine crank :**

Time for starter to trigger (period of one attempt).

**CrankFail Rest :**

Time between two start-up attempts.

**Set Stabil Max :**

Maximum delay assigned to the genset from starter throw-out to complete stabilisation in speed and voltage.

**GE stabil min :**

Minimum delay assigned to the genset from starter throw-out to closing of genset power delivery.

**Coolin Down :**

Engine cooling delay after genset is delivering power.

**Stoppin Max :**

Time limit for closure of fuel solenoid to reach genset shut down conditions.

**Alarm On Max :**

Delay of R#3 relay activation (external audible alarm).

**LubPump On :**

Operating time of pre-lubricating pump.

**LubPump Off :**

Delay between 2 operations of the pre-lubricating pump..

**LoadBreak >> Make :**

ATS delay.

**Contactors Delay :**

Delay assigned to contactor between time of closure and return of information on Progress.

**K # 7 On >> K # 8 On :**

Use in configuration #3. Delay of closure which exists between commands K#7 and K#8 (outputs IOB1).

**kW Quota ++ :**

When Progress is in configuration #4 (mains paralleling) and In#16 not activated; time before the export quota in kW increases.

**kW Quota -- :**

When Progress is in configuration #4 (mains paralleling) and In#16 not activated; time before the export quota in kW decreases.

**kVAr Quota ++ :**

When Progress is in configuration #4 (mains paralleling) and In#16 not activated; time before the export quota in kVAr increases.

**kVAr Quota -- :**

When Progress is in configuration #4 (mains paralleling) and In#16 not activated; time before the export quota in kVAr decreases.

**R # 1 Off >> On :**

When option R#1 : Trip\kW Load is at 1, it is the time before relay #1 is excited.

**R # 1 On >> Off :**

When option R#1 : Trip\kW Load is at 1, it is the time before relay #1 is de-excited.

**ParII Start :**

When option Parall Auto Start is at 1, it is the delay assigned to the genset before its start-up on a load increase.

**ParII Stop :**

When option Parall Auto Start is at 1, it is the delay assigned to the genset before its shutdown on a load decrease.

**LS Settling :**

When option Parall Auto Start is at 1, it is the delay for 2 gensets to shut down after a significant decrease of load.

## B - SET POINTS

**User Password :**

The user must enter a 4-digit password to change the operating mode or to change parameters.

**Cranking Attempts :**

Number of start-up attempts.

**Overspeed RPM :**

Overspeed threshold depending on the engine rating.

**CrankStop RPM :**

Threshold of starter throw out depending on the type of starter used.

**Bat OvVoltage :**

Threshold of battery overvoltage authorised.

**Bat UnVoltage :**

Threshold of battery undervoltage authorised.

**GEN OvVoltage :**

Threshold of overvoltage applied to phase/neutral voltage.



**GEN UnVoltage :**

Threshold of undervoltage applied to phase/neutral voltage.

**GEN OvFrequen :**

Threshold of alternator over-frequency authorised above the rated value.

**GEN UnFrequency :**

Threshold of alternator under-frequency authorised below the rated value.

**GEN OvCurrent :**

Threshold of alternator overload authorised above the rated value.

**GEN Revrse kW :**

Threshold of active reverse power authorised (1 phase value).

**GEN Rvrs kVAr :**

Threshold of reactive reverse power authorised (1 phase value).

**GEN over % THD :**

Authorised threshold of total harmonic distortion.

**V4 Ov Voltage :**

Threshold of overvoltage on mains or bus side, applied to the phase/neutral voltage.

**V4 Un Voltage :**

Threshold of undervoltage on mains or bus side, applied to the phase/neutral voltage.

**V4 Ov Frequen :**

Threshold of over-frequency on mains or bus side which is authorised above the rated value.

**V4 Un Frequen :**

Threshold of under-frequency on mains or bus side which is authorised below the rated value.

**Mains kW Surge :**

Not used (to be set to a value higher than the genset power).

**Bus kW Surge :**

Reference analogue voltage for the rated speed.

**Gov Volt Bias :**

Phase shift authorised for the paralleling of V1 and V4 (V1 = genset phase 1 voltage – V4 = mains or bus phase 1 voltage).

**SYNC Window V :**

Voltage difference authorised for the paralleling of V1 and V4 (V1 = genset phase 1 voltage – V4 = mains or bus phase 1 voltage).

**SYgain V/180° :**

Value of off load synchronisation gain.

**>> SYg V/180° :**

Value of on load synchronisation gain.

**SYstbl V/Hz :**

Value of stability in off load synchronisation.

**>> SYs V/Hz :**

Value of stability in on load synchronisation.

**SYgain %P/V :**

Value of synchronisation gain in off load voltage.

**>> SYg %P/V :**

Value of synchronisation gain in on load voltage.

**LSgain V/Xre :**

Value of gain in distribution of active load.

**LSstbl V/Xre :**

Value of stability in distribution of active load.

**LSgain % P/Xap :**

Value of gain in distribution of reactive load.

**LSstbl % P/Xap :**

Value of stability in distribution of reactive load.

**Ramp +kW/Sec :**

Value in kW/sec which is imposed on the generator during load transfer phases from the mains to the genset or between gensets. Adjustment kW by kW is possible.

**Ramp -kW/Sec :**

Value in kW/sec which is imposed on the generator during load transfer phases from the genset to the mains or between gensets. Adjustment kW by kW is possible.

**Ramp +kVAr/Sec :**

Value in kVAr which is imposed on the generator during load transfer phases from the mains to the genset or between gensets. Adjustment kVAr by kVAr is possible.

**Ramp -kVAr/Sec :**

Value in kVAr which is imposed on the generator during load transfer phases from the genset to the mains or between gensets. Adjustment kVAr by kVAr is possible.

**kW Quota ++ :**

Value, on external request, of power in kW/sec which is imposed on the generator.

**kW Quota -- :**

Value, on external request, of power in kW/sec which is imposed on the generator.

**In # 00 >> kW Quota ++ :**

By replacing In#00 by 06, 08, 09 or 12, and if it has not been already allocated, the chosen input enables to make a dynamic check of the power (kW).

**In # 00 >> kW Quota -- :**

By replacing In#00 by 06, 08, 09 or 12, and if it has not been already allocated, the chosen input enables to make a dynamic check of the power (kW).

**kVAr Quota ++ :**

Value, on an external request, of power in kVAr/sec which is imposed on the generator.

**kVAr Quota -- :**

Value, on an external request, of power in kVAr/sec which is imposed on the generator.

**In # 00 >> kVAr Quota ++ :**

By replacing In#00 by 06, 08, 09 or 12, and if it has not already been allocated, the chosen input enables to make a dynamic check of the power (kVAr).

**In # 00 >> kVAr Quota -- :**

By replacing In#00 by 06, 08, 09 or 12, and if it has not already been allocated, the chosen input enables to make a dynamic check of the power (kVAr).

**% kW / Xre >> R # 1 On :**

Not used.

**% kW / Xre >> R # 1 Off :**

Not used.

**+ % kW / Xre >> Start :**

Value expressed as a percentage of the genset power that allows the next genset to start-up in a sequence (only used in configuration #3 with automatic program "Parall Auto Start"). See "Standard applications".

**+ % kW / Xre >> Stop :**

Value expressed as a percentage of the genset power that allows the next genset to shut down in a sequence (only used in configuration #3 with automatic program "Parall Auto Start"). See "Standard applications".

**Exclude Net IDs :**

Allows the exclusion from the network of a certain number of gensets according to the ID Nos (number of gensets).

**In # 06 Excludes :**

Option at (1) enables to isolate a genset from the RS 485 network by activating input In#6.

Option at (0) enables to use input In#6 in a standard way.

**In # 08 Excludes :**

Option at (1) enables to isolate a genset from the RS 485 network by activating input In#8.

Option at (0) enables to use input In#8 in a standard way.

**In # 09 Excludes :**

Option at (1) enables to isolate a genset from the RS 485 network by activating input In#9.

Option at (0) enables to use input In#9 in a standard way.

**In # 12 Excludes :**

Option at (1) enables to isolate a genset from the RS 485 network by activating input In#12.

Option at (0) enables to use input In#12 in a standard way.

**C - OPTIONS - IDENTIFYING BY {.....}****Write Protect...!?:**

Selection (0) : all parameters defined in SET-UP are accessible to read and to modify.

Selection (1) : all parameters defined in SET-UP are only accessible to read.

**RMS use Harmonics ? :**

Selection (0) : calculation of root mean square values (current and voltage) is made by only taking into account the fundamental frequency.

Selection (1) : the calculations use the whole harmonic content.

**Not in auto warn ? :**

**Energize Run/Stop :** Corresponds to the control mode of the fuel solenoid.

(0) : for a de-energised solenoid.

(1) : for an energised solenoid.

**Cool after NoLoad ? :**

(0) : puts the engine into forced cooling.

(1) : puts the engine into forced cooling if, and only if, the genset contactor is closed, when the opening command is requested.

**Bat OverVolts S/W :**

(0) : The battery overvoltage is configured as a fault (engine shut down).

(1) : The battery overvoltage is configured as an alarm (no engine shut down).

**GEN UnderVolt S/W :**

(0) : The alternator undervoltage is configured as a fault (engine shut down).

(1) : The alternator undervoltage is configured as an alarm (no engine shut down).

**GEN UnderFreq S/W :**

(0) : The alternator under frequency is configured as a fault (engine shut down).

(1) : The alternator under frequency is configured as an alarm (no engine shut down).

**LowWaterLevel S/W :** On activation of input In#10, LOW WATER LEVEL, the option at :

(0) : leads to engine shut down (fault).

(1) : does not lead to engine shut down (alarm).

**Ext. Overload S/W :** On activation of input IN#14, "External overload", the option at :

(0) : leads to engine shut down (fault).

(1) : does not lead to engine shut down (alarm).

**GENCON low DC S/W :** On sensing a low level of supply voltage :

(0) : leads to engine shut down (fault).

(1) : does not lead to engine shut down (alarm).

**Generic configure ? :** Choosing this option allows to make specific applications which are not defined in the document "Standard Applications", No 33502002401.

**Parallelin System ? :** The option configured at (1) enables the use of all synchronisation functions for paralleling and distribution.

**Mains Standby ATS ? :** The option configured at (1) enables the use of applications requiring a MAINS/STANDBY changeover.

**Cogeneration Mode ? :**

The option configured at (1) enables the operation in "resell" mode.

**Parall auto Start ? :**

The option configured at (1) is used in configuration #3 for the start-up of the gensets depending on the level of power on the installation.

**Engine Diesel/Gaz :**

(0) : use for diesel engines.

(1) : use for gas engines.

**Generator Syn /Asy :**

(0) : use for synchronous generators (self excited).

(1) : use for asynchronous generators.

**In # 3 Sleep / Bypass :**

(0) : activating input In#3 in automatic mode stops the genset.

(1) : activating input In#3 inhibits the safety devices which stop the genset (except for overspeed) (use for safety gensets).

**Sleep clears faults ? :** The option at :

(1) : When going from AUTO mode to SLEEP mode, activating input In#3 has the effect to cancel the faults.

**Check contactors ? :**

(0) : controlling the closure of mains and genset contactors in relation to the command is not made.

(1) : controlling the closure of mains and genset contactors in relation to the command is made.

**Motor contactors ?** : The option at :

(0) : indicates that the power component(s) are controlled in a classic way (e.g. contactor).

(1) : indicates that the power component(s) are controlled by an electric motor with shut-off solenoid and open solenoid (motorized switch or motorized open-type breaker).

**R # 1 Shunt/kw load :**

(0) : relay R#1 is used to signal a fault.

(1) : relay R#1 is used for load control applications.

**R # 2 Alarm/ Useable :**

(0) : luminous alarm.

(1) : optional use.

**K # 6 Engine/GEN on :**

Output K#6 is supplied in the two following cases :

(0) : when the engine is running : speed 60 rpm or frequency 15 Hz.

(1) : when the generator voltage is high, i.e. V1, V2 and V3 Gen Unvoltage.

**K # 8 Delay/neutral :** This option is only used in configuration #3 :

(0) : relay K#8 (IOB1 interface) is activated after relay K#7 (IOB1 interface) depending on the preset delay. Relay K#8 is deactivated at the same time as K#7.

(1) : Not used.

**kW Drop=LoadSurge :**

Not used.

**Smooth Mains>>GEN ? :**

Not used.

**In # 06 Aux Shutdn ? :**

Enables the use of alarm inputs for unused optional faults.

**In # 08 Aux Shutdn ? :**

Enables the use of alarm inputs for unused optional faults.

**In # 09 Aux Shutdn ? :**

Enables the use of alarm inputs for unused optional faults.

**In # 12 Aux Shutdn ? :**

Enables the use of alarm inputs for unused optional faults.

## D - BASICS - GENERAL PARAMETERS

**Controller ID No :**

Progress ID, between 1 and 8. A unique value must be allocated to each Progress that is connected to the RS 485 communication bus (use in configuration #3 only).

**Number of poles :**

Number of pairs of rotor poles (always an even number).

**PickUP Teeth :**

Number of teeth on the flywheel. This value is used to calculate the engine rotation speed (for display).

**CT Ratio :**

Transformation ratio of the current transformers. For example, a 160 ratio corresponds to a 800A/5A current transformer.

**Pt Ratio :**

Transformation ratio of the potential transformers for use with average voltage. The minimum value to enter is 16.

**Xap : Rated kVA :**

The genset power expressed in kVA.

**Xre : Rated kW :**

The genset power expressed in kW.

**Adj Sec/Week :**

Real time clock adjustment specified in seconds per week.

## E – FACTORY PARAMETERS

These various parameters are not accessible to the user. They are factory set. An access code is required to read and modify them.

## IV – ALARM AND FAULT MESSAGES

This chapter lists all the alarm and fault messages by alphabetic order. To access the alarms and faults, whether or not they led to the genset shut down, use the menu "REPORT".

### **AIR DAMPER CLOSED**

This message signals that the air damper is closed. Input In#13 is then activated. A manual action is therefore required to reopen it.

### **AUX I/OBoard ERROR-check**

This message indicates :

- a connection error between Progress and the IOB1 interface board, or
- a DC voltage not available on the IOB1 interface board.

### **BATTERY CHARGER FAULT**

This message indicates that the battery charger is faulty. Input In#12 is activated.

### **CONTACTOR(s) FAILURE**

This message indicates that a conflict is detected between the state of auxiliary contacts on the mains and genset contactors (inputs In#15 and In#16) and the state of the outputs on relays K#7 & K#8 (control of coils).

### **EMI (noise) DETECTED**

This message indicates that Progress has detected an electromagnetic interference that can alter its operation.

### **ENGINE OVERCRANK**

This message indicates that all start-up attempts have failed.

### **ENGINE SHUT DOWN FAIL**

This message indicates that the fuel solenoid is not being supplied.

### **ENGINE SLOWCRANK**

This message indicates that the genset speed is below 60 rpm, 2 seconds after the starter has been activated.

### **EXTERNAL OVERLOAD**

When input In#14 is activated, this indicates an overload or a short-circuit leading to the opening of the circuit breaker.

### **FREQUENCY NOT BUILT**

This message indicates that the genset frequency has not reached the nominal threshold of use.

### **GEN EXCITATION LOSS**

A negative reactive power is detected.

### **GEN HIGH HARMONICS**

This message indicates :

- a non linear load too high
- a size of alternator not suitable for the application
- a short-circuited stator.

### **GEN OVER FREQUENCY**

The alternator frequency is above the preset threshold, and this during a preset period.

### **GEN OVERCURRENT**

This message indicates that Progress has detected an overload exceeding the setting made. Depending on how the input was programmed, this is an alarm or a fault.

### **GEN OVERVOLTAGE**

This message indicates that the alternator voltage has exceeded the preset threshold, and this during a preset period.

### **GEN REVERSE POWER**

This message indicates that the reverse power on the alternator has exceeded the preset threshold, and this during a preset period.

### **GEN UNDER FREQUENCY**

This message indicates that the alternator frequency has exceeded the preset threshold, and this during a preset period.

**GEN UNDERVOLTAGE**

This message indicates that the alternator voltage is lower than the preset threshold, and this during a preset period.

**GENCON LOW DC DANGER**

This message indicates that Progress is supplied by too low a voltage. Depending on how the input was preset, the message is an alarm or a fault.

**GENCON MEMORY ERROR**

This message indicates that a software problem occurred while loading the parameters into the EEPROM memory.

**GENCON PROGRAM ERROR**

This message indicates that a software problem occurred while loading the program into the Flash memory.

**GENCON UP : SET CLOCK**

This message indicates that the user has not set the clock after powering up Progress.

**GENERIC CONFIG ERROR**

Message specific to the generic configuration #0 (outside standard applications).

**HIGH BATTERY VOLTAGE**

This message indicates that the battery voltage is higher than the preset threshold, for at least one second.

**HIGH WATER TEMP SHUT**

This message indicates that the engine coolant temperature is too high. The engine will immediately shut down (fault), when input In#7 (IOB1) is activated.

**HIGH WATER TEMP WARN**

This message indicates that the engine coolant temperature is too high. The engine will not shut down (alarm), when input In#8 is activated.

**ILL GEN PHASE ORDER**

This message indicates that the phase order between the generator and the bus or mains is incorrect. This is an alarm.

**LOW BATTERY VOLTAGE**

This message indicates that the battery voltage is lower than the preset threshold, for at least one second (start-up not included).

**LOW FUEL LEVEL WARN (IOB1)**

When input In#11 is activated, this indicates a low fuel level which does not lead to engine shut down (alarm).

**LOW OIL PRESS SHUTDN (OB1)**

When input In#5 is activated, this indicates a low oil pressure which leads to immediate engine shut down (fault).

**LOW OIL PRESS WARNIN (OB1)**

When input In#6 is activated, this indicates a low oil pressure which does not lead to engine shut down (alarm).

**LOW WATER LEVEL**

When input In#10 is activated, this indicates a low water level in the radiator, which may lead or not to engine shut down, depending on how the input was programmed (alarm or fault).

**LOW WATER TEMP WARN**

When input In#9 is activated, this indicates too low a coolant temperature which does not lead to engine shut down (alarm).

**NETWORK RS-485 ERROR**

This message indicates a data transmission or reception error on the RS 485 serial link.

Several causes are possible :

- short-circuit in the network cable or polarity reversal (connections).
- electromagnetic interference
- cut cable
- cable length too long (max 1200 meters).

**NETWORK SET-UP ERROR**

This message indicates that 2 Progresses have the same ID No.

**NOT IN AUTO MODE**

The controller is not in AUTO mode.

**OIL PRESS NOT BUILT**

This message indicates that the oil pressure has not reached its nominal threshold.

**PARALLEL LOAD SURGE**

This message indicates that the mains voltage has disappeared while operating in permanent paralleling.

**PARALLEL MAINS FAIL**

When the genset is paralleled with the mains, this message indicates that the voltage measured by V4 (mains) is 50% lower than the genset rated voltage. Progress isolates the genset from the mains.

**REMOTE EMERGENCY STOP**

When input In#4 is activated, this message appears. The engine will stop immediately.

**REVISE SETPOINTS**

Depending on parameters changes in SET-UP/BASICS, the user must consult all the parameters defined in SET-UP/SET-POINTS.

**RPM OVERSPEED SHUTDN**

The engine speed is above the preset threshold. The engine will shut down immediately.

**RPM v FREQUENCY ERRO**

This message indicates that there is a conflict between the engine speed and the alternator speed. This means that the number of teeth (parameter in BASICS) is incorrect.

**SHUTDOWNS BYPASS ON !**

This message indicates that most of the safety devices have been configured as alarms.

**STOP BUTTON PRESSED**

This message indicates that the red button STOP on Progress has been activated, leading to immediate engine shut-down.

**SYNCHRONIZER TIME OUT**

This message indicates that the synchronisation delay assigned to the genset has been exceeded.

**UNEXPECTED BUS VOLTS**

This message indicates that voltage is available on the bus while logically it should not be.

**VOLTAGE NOT BUILT**

This message indicates that the alternator voltage has not been stabilised, even after a preset period.

## V – STARTING AND STOPPING THE GENSET(S) DEPENDING ON THE CONFIGURATION

To identify your equipment configuration, consult the table below :

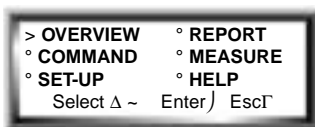
SET-UP/OPTION PARAMETERS	Generic Configuration	Paralleling System	Mains Stand-By ATS	Cogeneration Mode (resell)	Paralleling Start
Configuration # 1	0	0	0	0	0
Configuration # 2	0	0	1	0	0
Configuration # 3	0	1	0	0	0 or 1
Configuration # 4	0	1	0	1	0
Configuration # 5	0	1	1	0	0
Configuration # 6	0	1	1	1	0

# 1 - Starting Procedure

## • Powering up :

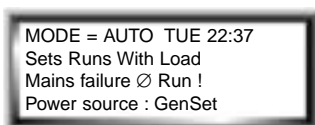
When powering up, screen "HELP" appears (see page 6). If there is a fault or an alarm (e.g. emergency shut down triggered), screen "REPORT" will appear and depending on the type of problem, the red and orange LEDs will flash.

- If there is no fault, press "ESC" and enter the day and time.
- Press "ENTER" to validate, menu "COMMAND" will appear (see page 6).
- Press "ESC" to get the main menu :



Move the cursor using keys  and  to get screen "OVERVIEW".

- As Progress is usually factory set in automatic mode, the following screen will appear (in the case of a genset with a mains network): :



Note: the messages may differ according to the configuration and the status of the genset.

Note : the 4-position function switch is still in position "STOP".

## • Manual operation :

Move the 4-position function switch to "MANU". The genset starts instantly. 2 cases can then arise :

- 1 – Configurations #1, #2, #3 (modes 1, 2 and 3), #4, #5 and #6.
- 2 – Configurations #3 (mode 4).

In case (1), the genset contactor or motorised circuit-breaker does not close. The genset runs off load.

In case (2), the genset contactor or motorised circuit-breaker closes and the genset takes the load.

Pressing "STOP" (Progress button) shuts the genset down instantly. Using the 4-position function switch to go from "MANU" to "STOP" will shut the genset down after a cooling period. An adjustable delay in menu "SET-UP/DELAYS" sets the time during which the genset will run manually.

## • Automatic operation :

To start in automatic mode, the 4-position function switch must be moved to "AUTO". The genset is on stand-by and Progress awaits a command to start. This command comes from :

- information V4 (mains or bus) (mains failure or bus available), or
- external information.

In both cases, the genset starts and takes the load.

Pressing "STOP" (Progress button) will stop the genset instantly. Using the 4-position function switch to go from "AUTO" to "STOP" will shut the genset down after a cooling period. An adjustable delay in menu "SET-UP/DELAYS" sets the time during which the genset will run in manual mode.

## • Test operation :

To start in "TEST" mode, the 4-position function switch must be moved to "TEST". The genset starts immediately and takes the load. Pressing "STOP" (Progress button) will stop the genset instantly. Using the 4-position function switch to go from "AUTO" to "STOP" will shut the genset down after a cooling period. An adjustable delay in menu "SET-UP/DELAYS" sets the time during which the genset will run in test mode.



- **Automatic operation (according to the selected configuration):**

To find out the operating mode of the selected configuration, consult the document no. 335 02 002 401.

This document shows in detail the operation of the various standard configurations applicable to the MICS Progress.