EWCM 900/S rel. 5/2000 ing

compressors and fans manager

WHAT IT IS

The EWCM 900(/S) is a series of controllers designed specifically for the control of a machine room in a refrigeration system.
The EWCM 900(/S) provides control management of the compressors (single units, multi-stage systems or compressors of different capacity), and of the condenser fans.

HOW IT IS MADE

- **Housing:** black ABS plastic, 72x144 mm, depth 120 mm
- **Mounting:** flush panel mount (67x136 mm) with brackets
- **Connections:** quick-disconnect screw terminal block
- **Refrigerants:** 22, R 134 A, 502, 404 A, 407, 507
- **Suction sensor input:** NTC or 4…20 mA pressure transducer (scaleable)
- **Head pressure sensor input:** NTC or 4…20 mA pressure transducer (scaleable)
- **Two pressurestat alarm inputs**
- **Global alarm output:** relay 6(3)A 250V AC
- **Controller breakdown output:** relay 6(3)A 250V AC
- **Configurable outputs:** 11 relays 6(3)A 250V AC
- **Alarm inputs:** 11 optoisolated inputs (the same voltage of the supply)
- **Serial connection:** RS-485 port for connection to the Televis system
- **Consumption:** 6 VA
- **Power supply:** Depending on the model. See label on the instrument.

AVAILABLE VERSIONS

EWCM 900/S with 11 relay outputs with pressure or temperature input (NTC probe), it depends on the model.
EWCM 900/S with serial connection for connection to the TELEVIS system.

GENERAL FEATURES

The new EWCM 900/S is a series of controllers designed specifically for the control of a machine room in a refrigeration system.
The suction and the condensing inputs come from two 4…20 mA pressure transducers for freon gas or from two NTC temperature probes, while up to 11 relay outputs with their digital alarm inputs are provided for the management of the single units, multistep compressors, compressors having different power and condenser fans.
The EWCM is also provided with the management of the high and low pressure alarms and the management of the high and low pressurestat alarms for both compressor and fan section.
The two setpoints "normal" and "economy", can be displayed in three different programmable units of measurement: Bar/PSI, °C or °F. This feature which is available at any time, and not only during the configuration, makes the controller easy to use and adaptable to the preference of the user, the Installer or the maintenance personnel.
A protection system executes a continuous diagnosis of the controller; in the event of a malfunction, a dedicated output is used to transfer the control of the main refrigeration plant to an emergency system which will take over until service personnel corrects the situation.

FRONT KEYPAD (COMPRESSORS SECTION)

"PRG" button: to have access the programming.
"HRS" button: to display/reset the running hours of each compressor.
"MAINT" button: to display/modify the "available" or "in service" status of each compressor.
"SET" button: to display/modify the "normal" or the"economy" setpoints.
"UP" button: to increase the figures.
"DOWN" button: to decrease the figures.
"MUTE" button: to silence/reset an alarm.
"LOCK led": to dispaly the keyboard lock function.
"ALARM" led: to display an alarm condition.
"COMPRESSOR & STAGES" leds: red and green leds to display the output compressor status.
4 DIGIT DISPLAY: it shows the input probe value, the default unit of measurement can be programmed with "dEU" parameter.
As soon as an alarm occurs the display will switch back and forth between the probe read-out and the alarm code label.

FRONT KEYPAD (FANS SECTION)

"PRG" button: to have access the programming.
"SET" button: to display/modify the "normal" or the "economy" setpoints.
"UP" button: to increase the figures.
"DOWN" button: to decrease the figures.
"ALARM" led: to display an alarm condition.
"FAN" leds: yellow leds to display the output fan status.
3 DIGIT DISPLAY: it shows the condensing probe value, the default unit of mea-

PLUS PRODUCT

- **Alarm circuit combined with each compressor**
- **High pressure control by means of fan management on the capacitor**
- **Clock to set the various operation setpoints in various time periods**
- **Conversion chart for the various freon types commonly used**

surement can be programmed with "dEU" parameter.

As soon as an alarm occurs the display will switch back and forth between the probe read-out and the alarm code message.

INPUT AND OUTPUT TERMINALS

Alarm relay output: remote alarm, the terminals 1 and 2 are closed when there is an active alarm.

Safety relay output: the terminals 3 and 4 are open when an EWCM failure appears.

Pressurestat compressor alarm: high and low pressurestat alarm input (terminals 5 and 6, "SEP" parameter).

Pressurestat condenser alarm: high and low pressurestat alarm input (terminals 7 and 8, "SEP" parameter).

Power supply: input terminals 9 and 10.

Economy set switch: to activate the economy setpoint (terminals 13 and 14 have free voltage contacts, "rSIP" parameter).

Suction probe: input terminals 15 and 16.

Condensing probe: input terminals 17 and 18.

Televis System: RS-485, input terminals 19, 20 and 21.

Alarm inputs linked to outputs: when active, the corresponding output is swiched off (terminals from 22 to 43, "ALIP" parameter).

Relay outputs: to supply the contactors of the compressors or the fans (terminals from 44 to 65).

PARAMETER PROGRAMMING ENTERING THE PROGRAMMING MODE

The EWCM is provided with two levels of parameters programming: operating "oPr" and Configuration "CnF".

To have access the "oPr" menu, push and release the PRG button and then the UP arrow.

To have access the "CnF" menu, push the PRG button twice and then the UP arrow.

If a password has been activated, the "PAS" label will be showed before entering the programming.

To exit the programming mode, push the PRG button another time, all the changes will be automatically memorized.

HOW TO DISPLAY AND MODIFY THE PARAMETERS

After entering programming, to display a parameter label push the "UP" or "DOWN" arrows:

- to show a parameter value push the "SET" button;
- to modify the parameter value push the "UP" or "DOWN" arrows;
- to exit the parameter value push the "SET" button.

PASSWORDS

The passwords "Psc" and "Pso" are provided to enter the Configuration and

DEFAULT SETTINGS - COMPRESSORS SECTION

Parameter	Description	Range	Default	Unit
CONFIGURATION PARAMETERS				
CPnU	ComPressor nUmber	1…11	7	number
Ctyp	Compressor tyPe	0 / 1	1	number
CPSt	ComPressor Step	1…6	1	number
PC1…PC11	Power Compressor 1…11	1…255	1	number
rot	Compressors rotation	0 / 1	0	number
Sat	Compressors saturation	0 / 1	0	number
nCPC	Number of Master Compressor	0…Cpnu	0	number
FtyP	Freon tyPe	0 / 1 / 2 / 3 / 4 / 5	1	number
PSi	Pressure Selection Unit	0 / 1	0	number
PA04*	Pressure At 0…4 mA	0…8	0,5	Bar
PA20*	Pressure At 0…20 mA	0…31	8	Bar
CAL**	CALibration	–0.5…0.5	0	Bar
CAL***	CALibration	–5…5	0	°C
SEP	SEt (alarm) Polarity	0 / 1	1	number
rSIP	reduced Set Input Polarity	0 / 1	1	number
ALIP	ALarm Input Polarity	0 / 1	1	number
StPP	Step outPuts Polarity	0 / 1	1	number
Psc	Password configuration	0…255	0	number
tAb	tAble of parameters	/	/	/
OPERATING PARAMETERS				
Pri	Primes	0…59	0	minutes
HoUr	HoUrs	0…23	0	hours
daY	dAY	1…7	0	number
dEU	dEfault Unit	0 / 1 / 2	0	number
Pbd	Proportional band	0.1…5	0,4	Bar / °C / °F
onon	on/on (compressor)	0…255	5	minutes
oFon	oFF/on (compressor)	0…255	5	minutes
don	delay on	0…5000	15	seconds
doF	delay oFF	0…255	5	seconds
donF	delay on/oFF	0…255	15	seconds
FdLy	First deLay on	0 / 1	1	number
FdLF	First deLay oFF	0 / 1	1	number
odo	output delay at on	0…255	0	seconds
LSE	Lower SEt	0.1 / HSE	0.2	Bar / °C / °F
HSE	Higher SEt	LSE / 25	5	Bar / °C / °F
StrS	Start time reduced Set	0…24	0	hours
SPrS	Stop (time) reduced Set	0…24	0	hours
rSd1…rSd7	reduced Set day 1…7	0 / 1	0	number
UAro	Unit Alarm override	0 / 1	1	number
Aro	Alarm override	0…255	15	minutes
PAO	Power Alarm Override	0…255	30	minutes
LAL	Lower ALarm	0.01…25	5	Bar
HAL	Higher ALarm	0.01…25	5	Bar
tAo	time Alarm override	0	255	minutes
SEr	SErvice	1…9999	3000	hours
PEn	Pressurestat Errors number	0…15	5	number
PEI	Pressurestat Errors Interval (time)	0…15	15	minutes
CPP	Compressor Probe Protection	0 / 1	0	number
SPr	Step Probe protection	0 / CPnU	1	number
PoPr	Power (with faulty) probe	0 / n	0	number
rELP	rELative Pressure	0 / 1	1	number
Loc	keyboard Lock function	0 / 1	1	number

Parameter	Description	Range	Default	Unit
Pso	Password operating	0…255	0	number
FAA	FAmily Address	13…14	13	number
dEA	dEvice Address	0…14	0	number
tAb	tAble of parameters	/	/	/
EL 1	ELIWELL 1	/	/	/
EL 2	ELIWELL 2	/	/	/

* Not available for NTC models.
** For programmable input 4…20 mA.
*** For input probe NTC.

Operating parameters programming.
To activate the password enter the programming mode, select the password label and set the password number.

CONFIGURATION PARAMETERS (COMPRESSORS SECTION)
System capacity
CPnU: ComPressor nUmber.
Number of compressors installed.
CtyP: Compressor tyPe.
0 = compressors having different power (Neutral Zone Control);
1 = compressors having the same power (Proportional Control).
Note: compressors having the same power, but without partial reduction valves.
- Neutral Zone (dead band) is used with compressors having a big power.
- Proportional control is used with small power compressors.
CPSt: ComPressor Step.
Number of steps of each compressor (only for CtyP = 1).
If CtyP = 0, this parameter will default to 1.
PC1…PC11: Power Compressor 1…11.
These parameters set the power of each compressor from1 to 255 (only for CtyP = 0).
For instance: 3 compressors of 10, 20 and 40 Hp; PC1 = 10, PC2 = 20 and PC3 = 40, or PC1 = 1, PC2 = 2 and PC3 = 4.
rot: Compressors rotation.
Enables the fixed sequence or rotation of the compressors according to the hours worked.
0 = fixed sequence;
1 = compressor rotation.
Sat: Compressors saturation.
Enables the saturation algorithm for shutting down proportioned compressors (see section Saturation Algorithm);
0 = disabled;
1 = enabled.
nCPC: Number of Master Compressor.
Selects the Master compressor: this compressor will always be the first to start and the last to be shut down. The number identifies the compressor that will act as the Master. Range 0...Cpnu;
0 = function disabled.
FtyP: Freon tyPe.
Type of freon used in the plant.
0 = R 134 A;
1 = 22;
2 = 502;
3 = R 404 A;
4 = R 407 C;

FtyP: Freon tyPe.
Type of freon used in the system.
0 = R 134 A;
1 = 22;
2 = 502;
3 = R 404 A;
4 = R 407 C;
5 = R 507.
PSI: Enables the pressure values to be displayed in PSI.
0 = standard display;
1 = PSI display.
Suction line sensor configuration
(*not available for NTC models)
PA04*: Pressure At 0…4 mA.
Read-out corresponding to the low input signal of 4 mA.
PA20*: Pressure At 0…20 mA.
Read-out corresponding to the high input signal of 20 mA.
CAL: CALibration.
Read-out probe calibration.
Other inputs configuration
SEP: SEt (alarm) Polarity.
Pressurestat input polarity (terminals 5 and 6). It selects the active condition for a pressurestat alarm.
0 = active alarm without voltage;
1 = active alarm with voltage.
rSIP: reduced Set Input Polarity.
Economy set input polarity (terminals 13 and 14). It selects the active condition for an active economy set.
0 = active economy set with open contact;
1 = active economy set with closed contact.
ALIP: ALarm Input Polarity.
Alarm input polarity (terminals 22 to 39). It selects the active condition for an input compressor alarm.
0 = active alarm without voltage;
1 = active alarm with voltage.
StPP: Step outPuts Polarity.
It selects the active output of the partial reduction valves (only for compressor having the same power).
0 = it means active step without voltage;
1 = it means active step with voltage.
This parameter does not include the compressor output relay which is active with closed contact.
Password
Psc: Password configuration.
Password required to access the configuration parameters (operating parameters).
Range 0...255;
0 = password disabled;

1...254 = password enabled;
255 = software lock: the programming parameters cannot be accessed.
tAb: tAble of parameters.
It cannot be modified.

OPERATING PARAMETERS (COMPRESSORS SECTION)
Economy set clock setting
Pri: Primes.
Minute setting.
HoUr: HoUrs.
Hours setting.
dAY: dAY.
Day setting.
NOTE: 1 = Sunday; 7 = Saturday.
Control cycle setting
dEU: dEfault Unit.
Default unit of measurement.
0 = bar;
1 = °C;
2 = °F.
Pbd: Proportional band.
Proportional band width, the unit of measurement is expressed by "dEU" parameter. With compressors having the same power, the Proportional band width is divided by the number of the available resources to give the pressure step width for each resource. With compressors having different power, "Pbd" sets the dead band witdh: if the probe value is higher than the setpoint + Pb/2, the compressors will be swiched on by following the delay time parameters setting. If the probe value is lower than the setpoint – Pb/2, the compressors will be switched off by following the delay time parameters setting. If the probe value is within the proportional band no compressor will be swiched on or off.
onon: on/on (compressor).
Compressor on/on delay. Time delay in minutes, between two consecutive starts of the same compressor.
oFon: oFF/on (compressor).
Compressor off/on delay. Time delay between stop and start of the same compressor.
don: delay on.
Step delay on. Time delay in seconds, between starts of two steps.
doF: delay oFF.
Step delay off. Time delay in seconds, between stops of two steps.
donF: delay on/oFF.
Step delay on/off. Minimum resource activation time, in seconds.
The activated compressor will work minimum for the time set in this parameter.
FdLy: First deLay on.
The delay time "don" can be used also before the first request of power.
0 = no;
1 = yes.
FdLF: First deLay oFF.
The delay time "dof" can be used also before the first request of power.
0 = no;
1 = yes.
odo: output delay at on.

After swiching on the power supply the output will be off during the time set in this parameter.

Setpoint
LSE: Lower SEt.
Lower setpoint limit for both setpoints, the default unit of measurement is expressed by "dEU" parameter.
HSE: Higher SEt.
Higher setpoint limit for both setpoints,the default unit of measurement is expressed by "dEU" parameter.
StrS: Start time reduced Set.
Start time for economy set.
SPrS: StoP (time) reduced Set.
Stop time for economy set.
rSd1...rSd7: reduced Set day 1...7.
Days of the week on which to activate the "economy" Set.
0 = Normal Set, economy set active during period StrS...SPrS;
1 = Economy Set only.
NOTE: rSd1 = Sunday; rSd7 = Saturday.

Alarms
UAro: Unit Alarm override.
Unit of measurment for alarm silencing ("Aro").
0 = minutes;
1 = hours.
Aro: Alarm override.
Alarm silencing override time.
PAO: Power Alarm Override.
Power on pressure alarms override time, in minutes. After turning on the power supply, the pressure alarms are silenced during this time.
LAL: Lower ALarm.
Low pressure alarm limit. If the probe signal is lower than Set – LAL, the "Er03" low alarm label is displayed.
HAL: Higher ALarm.
High pressure alarm limit. If the probe signal is higher than Set + HAL, the "Er04" high alarm label is displayed.
tAo: time Alarm override.
Time delay before displaying the "Er03/Er04" alarm condition.
SEr: SErvice.
Number of compressor running hours. When a compressor running hours reach the number set in this parameter, the "Er14" maintenance warning message will be displayed.
PEn: Pressurestat Errors number.
Number of high and low pressurestat errors on terminals 5 and 6.
PEI: Pressurestat Errors Interval (time).
CPP: Compressor Probe Protection.
It selcts the system protection when the probe is faulty "Er01".
0 = the system operates with the same compressors which were working when the probe failed;
1 = the system operates with the number of stages set in "SPr" in case of compressors having the same power; or with the power level set in "PoPr" in case of compressor having different power.
SPr: Step Probe protection.
Number of stages to run the system if the

probe is faulty (CtyP = 1 and CPP = 1).
PoPr: Power (with faulty) probe.
Power level to run the system if the probe is faulty (CtyP = 0 and CPP = 1).

User interface
rELP: rELative Pressure.
Relative or absolute pressure read-out.
0 = absolute;
1 = relative.
Loc: keyboard Llock function.
It disables the following functions: setpoint adjustment, compressor running hours reset, avilable and in service compressor status control.
The "Loc" parameter can however be modified.
0 = keyboard unlocked;
1 = keyboard locked.
Pso: Password operating.
Password to access the programming Operating parameters.

Tele-assistance
FAA: FAmily Address.
It selects the family number when connected to a Televis network.
dEA: dEvice Address.
It selects the device number when connected to a Televis network.
tAb: table of parameters.
This parameter can not be modified.
EL1: ELIWELL 1.
This parameter can not be modified.
EL2: ELIWELL 2.
This parameter can not be modified.

CONFIGURATION PARAMETERS (FANS SECTION)
System capacity
nFn: number of Fans.
To set the total number of the available fan motors in the system.
Head pressure sensor configuration
(*not available for the NTC models)
PA04*: Pressure At 0...4 mA.
Read-out corresponding to the low input signal of 4 mA.
PA20*: Pressure At 0...20 mA.
Read-out corresponding to the high input signal of 20 mA.
CAL: CALibration.
Read-out probe calibration.
Configuration of the other inputs
SEP: SEt (alarm) Polarity.
Pressurestat input polarity (terminals 7 and 8). It selects the active condition for a pressurestat alarm.
0 = active alarm without voltage;
1 = active alarm with voltage.
Password
Psc: Password configuration.
Password required to access the configuration parameters (operating parameters). Range 0...255;
0 = password disabled;
1...254 = password enabled;
255 = software lock: the programming parameters cannot be accessed.
rot: rotation.
This enables the fan that has been operating less and disables the fan that has been

operating more. The alternative is the fixed sequence (enabling according to the sequence 1, 2, 3, 4 and disabling by following the reverse order).
0 = fixed sequence;
1 = rotation.
tAb: tAble of parameters.
It cannot be modified.

OPERATING PARAMETERS (FANS SECTION)
Fan control
dEU: dEfault Unit.
Default unit of measurement.
0 = bar;
1 = °C;
2 = °F.
Pbd: Proportional band.
This parameter sets the band width (on either side of the setpoint) in which the control is proportional. It is expressed in the default unit of measurement (see parameter "dEU").
don: delay on.
Time delay in seconds, between starts of two steps.
doF: delay oFF.
Time delay in seconds, between stops of two steps.
Setpoint
LSE: Lower SEt.
Lower setpoint limit for both the "normal" and the "economy" setpoint, the default unit of measurement is expressed by "dEU".
HSE: Higher SEt.
Higher setpoint limit for both the "normal" and the "economy" setpoint, the default unit of measurement is expressed by "dEU".
Alarms
LAL: Lower ALarm.
Low pressure alarm limit. If the probe signal is lower than Set - LAL, the "Er03" low alarm label is displayed.
HAL: Higher ALarm.
High pressure alarm limit. If the probe signal is higher than Set + HAL, the "Er04" high alarm label is displayed.
PEn: Pressostat Errors number.
Number of high and low pressurestat errors on terminals 7 and 8.
PEI: Pressurestat Errors Interval (time).
FPP: Fan Probe Protection.
It selcts the system protection when the probe is faulty "Er01".
0 = the system operates with the same fans which were working when the probe failed;
1 = the system operates with the number of stages set in "FPr".
FPr: Fan Probe number.
The number of fans on which the system should run (only if FPP = 1).
Password
Pso: Password operating.
Password to have access the programming Operating parameters). Range 0...255;
0 = password disabled;

DEFAULT SETTINGS - FANS SECTION

Parameter	Description	Range	Default	Unit
CONFIGURATION PARAMETERS				
nFn	number of Fans	0…10	4	number
PA04*	Pressure At 0…4 mA	0…8	1	Bar
PA20*	Pressure At 0…20 mA	0…31	31	Bar
CAL**	CALibration	–0.5…0.5	0	Bar
CAL***	CALibration	–5…5	0	°C
SEP	SEt (alarm) Polarity	0 / 1	1	number
Psc	Password configuration	0…255	0	number
rot	rotation	0 / 1	1	number
tAb	tAble of parameters	/	/	/
OPERATING PARAMETERS				
dEU	dEfault Unit	0 / 1 / 2	0	number
Pbd	Proportional band	0.1…25	3	Bar / °C / °F
don	delay on	0…999	30	seconds
doF	delay oFF	0…255	5	seconds
LSE	Lower SEt	0,1 / HSE	10	Bar / °C / °F
HSE	Higher SEt	LSE / 25	25	Bar / °C / °F
LAL	Lower ALarm	0…25	2	Bar
HAL	Higher ALarm	0…25	2	Bar
PEn	Pressurestat Errors number	0…15	5	number
PEI	Pressurestat Errors Interval (time)	0…15	15	minutes
FPP	Fan Probe Protection	0 / 1	0	number
FPr	Fan Probe number	0 / nFn	4	number
Pso	Password operating	0…255	0	number
tAb	tAble of parameters	/	/	/

* Not available for NTC models.
** For programmable input 4…20 mA.
*** For input probe NTC.

1...254 = password enabled;
255 = software lock: the programming parameters cannot be accessed.
tAb: tAble of parameters.
This parameter can not be modified.

USER INFORMATIONS
How to display/modify the setpoint
The EWCM is provided with two setpoints: normal and economy (used during the night time or holidays). Push and release the "SET" key to display the normal set, the other unit of measurement and the economy set can be displayed by pushing repeatedly the "SET" key whithin 5 seconds. The corresponding led status lights on the right side of the display shows the unit of measurement selected, the active setpoint displayed is identified by the "N" or "R" green led, the other setpoint by the "N" or "R" blinking light. By pushing "UP" or "DOWN" arrow keys the selected setpoint can be modified.
Compressors leds status
Before switching on an output the corresponding green led blinks, this blinking period depends on the delay parameters.
When the relay output has been swiched on the corresponding red led will light.
Note: after turning on the power supply the pressure may result out of range, therefore

to start up the system the EWCM controls the compressors simply as the probe value were higher than the alarm limits. After the time delay set to the parameter "PAO", if the probe value is still out of range, the EWCM will start working following the "CPP", "SPPr" and "PoPr" parameters setting.
How to display/reset the compressors and fans running hours
Push and release the "HRS" key to display the first compressor running hours, the "HRS" led will light; push the "UP" arrow within 5 seconds to display the successive compressors, the corresponding red led will blink; the compressor running hours can be reset by keeping pressed the "MUTE" key for 5 five seconds; to exit this procedure push and release the "HRS" key once again.
How to display/modify the "maintenance" and "in service" status
Push and release the "MAINT" key to display the first compressor status, the corresponding red led blinks and the "MAINT" green led is on.
The "onLn" (on line) message means that the output is "in service".
To modify it keep the "MUTE" key pressed for 5 seconds, the "oFLn" message means that the output is in "maintenance" and the

corresponding red led will blink.
During the working cycle the "maintence" status of a compressor is shown by the blinking of the corresponding red and green leds, in this case the output compressor is always swiched off.
Digital alarm inputs
High and low pressurestat alarm
Terminal 5 and 6, "SEP" parameter.
Until the condition alarm on these terminals is active, the EWCM keeps all the compressor outputs switched off. This kind of alarm does not need a manual reset. If during the "PEI" interval time the number of pressurestat errors reaches the "PEn" value, the "Er0L" or the "Er0H" warning message will be displayed. "Er0L" means low pressurestat alarm and "Er0H" means high pressurestat alarm. Press the "MUTE" button for 5 seconds to reset this alarm. This function can be excluded by setting PEn = 0.
High and low pressurestat alarm
Terminal 7 and 8, "SEP" parameter.
Until the condition alarm on these terminals is active, the EWCM keeps all the compressors outputs switched off and all the fans outputs switched on. This kind of alarm does not need a manual reset.
If during the "PEI" interval time the number of pressurestat errors reaches the "PEn" value, the "Er0L" or the "Er0H" warning message will be displayed. "Er0L" means low pressurestat alarm and "Er0H" means high pressurestat alarm.
Press the "MUTE" button for 5 seconds to reset this alarm.
This function can be excluded by setting PEn = 0.
Alarm inputs linked to outputs
Terminals from 22 to 43, "ALIP" parameter. Each compressor alarm protection must be connected to the corresponding alarm input (e.g. low compressor oil level, klixon etc.). If one of these alarms is active, the corresponding compressor output will be switched off, the corresponding red led will blink, the "ALARM" red led will light and the display will show the warning message.
This alarm does not need a manual reset.
Alarm silencing
When an alarm condition is active, the alarm relay will be energized and the terminal 1 and 2 are closed.
To silence an alarm push and release the "MUTE" key, the alarm relay will be de-energized and the "ALARM" led will blink if the alarm condition is still active. The silencing time depends on the "UAro" and "Aro" parameters setting. If during the silencing time another alarm becomes active, the silencing time will be reset, and the new alarm condition will be displayed. Alarms that need a manual reset: keep pressed the "MUTE" key, the display will show the "CAnC" message and then the "rES" message.
Saturation Algorithm
When inserting steps in a multi-step compressor system, the principle of fully satu-

rating one compressor before starting the next must be adopted. This logic changes when removing a step in plants of the same type, in that before shutting down the last step of a working compressor, a step of another compressor should be shut down first to prevent a restart request for same compressor shut down. This will happen if parameter "Sat = 0". If parameter "Sat = 1", when switching off it is also possible to shut down the last step of a compressor (shutting it down completely) before switching off the steps of another compressor.

ERROR MESSAGES
Er0L…Er0H (Compressors)
E0L...E0H (Fans)
Error Low…High.

Er0L...Er0H: Low and high pressure alarms detected at the digital input of the suction pressurestat.

E0L...E0H: Low and high pressure alarms detected at the digital input of the delivery pressurestat.

Er01...E01: Error 01.
Er01: Alarm signalling a fault in the suction sensor; this is managed by parameters "CPP", "SPr" and "PoPr";

E01: Alarm signalling a fault in the delivery sensor; this is managed by parameters "FPP" and "FPr"

Er02...E02: Error 02.
Er02: Alarm from a compressor protection digital input, signalled by a flashing led.

This alarm de-activates all the outputs from the compressor generating the alarm.

E02: Alarm from a fan protection digital input, signalled by a flashing led.

This alarm de-activates all the outputs from the fan generating the alarm.

Er03...E03: Error 03.
Er03: Low pressure alarm, for the compressor section, if the value measured by the sensor is lower that the Set value - LAL.

E03: Low pressure alarm, for the fan section, if the value measured by the sensor is lower that the Set value - LAL.

These alarms are reset automatically if the value returns to below half that of the LAL.

Er04...E04: Error 04.
Er04: High pressure alarm, for the compressor section, if the value measured by the sensor is higher that the Set value + HAL.

E04: High pressure alarm, for the fan section, if the value measured by the sensor is higher that the Set value + HAL.

These alarms are reset automatically if the value returns to below half that of the HAL.

Er11: Error 11.
Clock programming error alarm. (see parameters "Pri", "HoUr" and "dAY").

Er12: Error 12.
Parameter programming error alarm; more resources than those available have been used.

The alarm is reset manually.

Er13: Error 13.
Instrument self-diagnostics alarm. The alarm is reset manually (see button "mute").

Er14: Error 14.
Maintenance alarm. Indicates that at least one of the compressors has exceeded the number of operating hours beyond which the instrument automatically signals a maintenance alarm.

The compressor has reached the number of hours programmed in parameter "SEr". The alarm is signalled by the flashing of the relevant output led.

TECHNICAL DATA
Housing: black ABS plastic, 72x144 mm, depth 120 mm.

Mounting: flush panel mount (67x136 mm) with brackets.

Connections: quick-disconnect screw terminal block.

Data storage: non-volatile EEPROM memory.

Refrigerants: 22, R 134 A, 502, 404 A, 407 A, 507 A.

Suction sensor input: NTC or 4…20 mA (scaleable).

Head pressure sensor input: NTC or 4…20 mA (scaleable).

Pressure switch input: two (2).

Global alarm output: relay 6(3)A 250V AC.

Controller breakdown output: relay 6(3)A 250V AC.

Configurable outputs: 11 relays 6(3)A 250V AC.

Alarm inputs: 11 (250 Vac optoisolated; other voltages on request).

Serial connection: RS-485 port for connection to the TELEVIS system.

Consumption: 6 VA.

Power supply: Depending on the model. See label on the instrument.

EWCM 900 terminals 1 - 21

alarm relay   safety relay

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

+ − + − gnd + −

| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |

POWER SUPPLY

gnd

low pressure alarm input

high pressure alrm input

reduced set

EWPA 007 evap. probe

EWPA 030 cond. probe

TELEVIS system connection

EWCM 900 terminals 22 - 43

| 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 |

P

N

alarm inputs

C_1 t_2 t_3 C_2 t_2 t_3 V_1 V_2 V_3

K_1 K_2 K_3 K_4 K_5 K_6 K_7 K_8 K_9

K_1 K_2 K_3 K_4 K_5 K_6 K_7 K_8 K_9

| 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 |

out 1 out 2 out 3 out 4 out 5 out 6 out 7 out 8 out 9

relay outputs   **EWCM 900** terminals 44 - 65

EWCM 900 NTC terminals 1 - 21

alarm relay | safety relay

gnd + −

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |

gnd

POWER SUPPLY

low pressure alarm input

high pressure alarm input

reduced set

NTC evap. probe

NTC cond. probe

TELEVIS system connection

EWCM 900 NTC terminals 22 - 43

| 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 |

P

N

alarm inputs

C_1 t_2 t_3 C_2 t_2 t_3 V_1 V_2 V_3

K_1 K_2 K_3 K_4 K_5 K_6 K_7 K_8 K_9

K_1 K_2 K_3 K_4 K_5 K_6 K_7 K_8 K_9

| 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 |

out 1 out 2 out 3 out 4 out 5 out 6 out 7 out 8 out 9

relay outputs

EWCM 900 NTC terminals 44 - 65