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RUM **Prospect tehnic**

ENG *Technical leaflet*

CAREL

Technology & Evolution

Contents

(RUM) **Eliminarea produsului**
Aparatul (sau produsul) trebuie sa fie eliminat separate, in conformitate cu legile in vigoare ce se refera la eliminarea deseurilor

(ENG) *Disposal of the product*
The appliance (or the product) must be disposed of separately in accordance with the local waste disposal legislation in force

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Produsele CAREL sunt un dispozitive unice, a caror funcionaliate este specificata in documentatiile tehnice furnizate odata cu produsul sau care pot fi descarcate, chiar inainte de cumparare, de pe site-ul www.carel.com. Clientul (producatorul, dezvoltatorul sau instalatorul echipamentelor finale) accepta toate raspunderile si riscurile, ce au legatura cu configuratia produsului, pentru a ajunge la rezultatele astepate in instalatie si/sau echipament. Lipsa acestei faze a studiului, care este ceruta/indicate in manualul de utilizare, poate cauza produsului final nefunctionalitati de care CAREL nu poate fi responsabil. Clientul final trebuie sa utilizeze produsul doar in conditiile descrise in documentatia atasata produsului in sine. Raspunderea CAREL in relatia cu produsele proprii este specificata in conditiile din contractul general CAREL editat pe site-ul www.carel.com si/sau in intelegerile specifice cu fiecare client.

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ROMANA

1. INTRODUCERE

Mastercella este un nou controller electronic folosit in instalatiile de refrigerare statice sau ventilate, capabil sa controleze toate functiile si echipamentele, cum sunt: compresoare, ventilatoare, degivrare, alarme si iluminat. Cutia MasterCella are un grad de protectie IP65 si legaturile cu cablurile sunt foarte simple si datorita faptului ca partea frontala poate fi indepartata. Cutia MasterCella da posibilitatea instalarii atat pe perete, cat si in tablou.

2. CODURI OPTIONALE

COD.	DESCRIERE
IRTRRES000	telecomanda inflarosu de dimensiuni reduse
IROPZSEM10	placa seriala RS485 cu recunoastere automata a polaritatii +/-
IROPZSEM30	placa seriala RS485 cu recunoastere automata a polaritatii +/- si conexiune la un display repeater
PST00VR100	display repeater detasabil
IR00RG0000	afisor suplimentar din gama ir33 afisaj verde
IR00RR0000	afisor suplimentar din gama ir33 afisaj rosu
PSTCON0300	cablu de alimentare/conexiune seriala 3m pentru display repeater
PSTCON1000	cablu de alimentare/conexiune seriala 10m pentru display repeater, lung de 10m
PSOPZKEY00	cheie de programare parametri cu baterie incorporate la 12V
PSOPZKEYA0	cheie de programare parametri cu alimentare la 230V
IROPZKEY00	cheie de programare parametri cu memorie baterie incorporate la 12V
IROPZKEYA0	cheie de programare parametri cu memorie si alimentare la 230V
VPMSTDKY*0(1,2)	kit de chei programare
MDOPZCA000	placa suplimentara cu 3 relee
MDOPZCB000	placa suplimentara cu 5 relee
0402512CEL	separator sarcina 32A
0402515CEL	ax H= 85 mm
0402517CEL	galben/rosu separator

Tab. 2.a

3. DISPLAY

Mastercella este prevazut cu display cu LED, 3 digiti, pentru afisarea temperaturii si cu iconite pentru afisarea functionarii instalatiei. Poate fi conectat, folosind o interfata speciala, la un display suplimentar, folosit, de exemplu, pentru vizualizarea temperaturii din sonda 3.

3.1 Semnale pe display

Iconita	Functionalitate	Functionare normala			Pornire
		ON	OFF	clipocire	
⊖	COMPRESOR	Comp. ON	Comp. OFF	Initializare comp.	
✿	VENTILATOARE	Vent. ON	Vent. OFF	Initializare vent.	
❄	DEGIVRARE	Functionare degivrare	Nu functioneaza deg.	Initializare deg.	
aux	AUX	Iesire auxiliara activata	Iesire auxiliara neactivata	Rezistenta incalzire activa	
⚠	ALARMA	Intarziere alarma externa (dupa expirarea timpului "A7")	Nici o alarma	Alarme in functionare normala(ex. Inalta/ joasa temp.) sau alarma de la intrarea digitala externa, imediata sau intarziata.	
🕐	CEAS	Daca cel putin a fost setat un timp de degivrare	Nu a fost setat nici un timp de degivrare	Alarma de ceas	ON daca RTC este instalat
💡	ILUMINAT	Iesirea auxiliara de iluminat activa	Iesirea auxiliara de iluminat neactivata	Rezistenta incalzire activa	
🔧	SERVICE		Nici o neregula	Neregula (ex. EEPROM eroare sau sensor defect)	
HACCP	HACCP	Activata functia HACCP	Dezactivata functia HACCP	Alarma salvata HACCP (HA si/sau HF)	
❄	CICLU	Activata functia ciclu continuu	Dezactivata functia ciclu continuu	Initializare functia ciclu continuu	

Tab. 3.a

Clipocitul indica faptul ca functia a fost initializata dar nu porneste pana nu se termina timpul de intarziere.

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3.2 Butoanele de pe tastatura

Iconita	Buton	Functionare normala		Pornire	Adresa automata alocata cererii
		Apasand butonul singur	Apasand impreuna cu alte butoane		
HACCP	HACCP	Intrati in meniu si afisati sau stergeti alarmele HACCP			
(power)	ON/OFF	Daca este apasat mai mult de 5s, schimba starea on/off a instalatiei			
prg	PRG/MUTE	Daca este apasat mai mult de 5s, acceseaza paratemtri de tip "F" din lista de param. In cazul unei alarme anuleaza semnalul sonor si dezactiveaza releul de larma	• daca este apasat mai mult de 5s impreuna cu butonul SET, acceseaza parametric de tip "C" dau descarca parametri • daca este apasat mai mult de 5s impreuna cu butonul UP/CC,anuleaza manual orice fel de alarma	Daca este apasat mai mult de 5s la pornire, activeaza procedura de revenire la paramtri din fabrica	Daca este apasat mai mult de 1s, porneste procedura de cerere a adresei seriale
▲	UP/CC	Daca este apasat mai mult de 5s, activeaza/ dezactiveaza ciclul continuu	• daca este apasat mai mult de 5s impreuna cu butonul "SET", porneste procedura de printare raport (functia este valabila dar trebuie implementata) • daca este apasat mai mult de 5s impreuna cu butonul PRG/MUTE, reseteaza fiecare alarma manual		
💡	ILUMINAT	Daca este apasat mai mult de 1s, activeaza/ dezactiveaza iesirea aux 2			
aux	AUX	Daca este apasat mai mult de 1s, activeaza/ dezactiveaza iesirea aux 1			
▼	JOS/DEG	Daca este apasat mai mult de 5s, activeaza/ dezactiveaza degivrarea manuala			
🌡	SET	Daca este apasat mai mult de 1s, afiseaza si/sau seteaza valoarea setpointu-lui	• daca este apasat mai mult de 5s impreuna cu butonul PRG/MUTE, acceseaaza parametrii "C" din meniu sau descarca lista de parametri • daca este apasat mai mult de 5s impreuna cu butonul UP/CC, porneste procedura de imprimare a rapoartelor (functie valabila dar cu implementare)		

Tab. 3.b

Setarea valorii setpoint-lui (valoare temperaturii dorite)

Pentru afisarea sau setarea valorii, se procedeaza astfel:
1) apasati butonul **set** pentru mai mult de 1 secunda pentru afisarea valorii setpoint-lui;
2) credteti sau descresteti valoarea folosind butoanele ▲ si ▼ , pana ajungeti la valoarea dorita;
3) apasati din nou butonul **set** pentru a confirma noua valoare.

Anularea alarmelor manual

Toate alarmele cu resetare manuala pot anulate apasand impreuna tasta **prg** si ▲ pentru minim 5s.

Degivrare manuala

Ca si degivrarea automata, degivrarea manuala poate fi pornite daca se indeplinesc conditiile de temperatura, apasad butonul ▼ 5s

Butonul ON/OFF

Apasand butonul (power) pentru 5s, schimba starea instalatiei on/off. Cand controlerul este off este in modul standby, de aceea inainte de a incepe mentenanta instalatiei, trebuie deconaectat de la tensiune.

Functia HACCP

MasterCella are implementata aceasta functie in standard, pentru a monitoriza temperatura din depozitul de alimente. Alarma "HA"=depasirea pragului maxim: in plus, pana la trei tipuri de alarme HA sunt salvate (HA, HA1, HA2), respective de la cea mai recenta (HA) pana la cea mai veche (HA2), cu un semnal Han care afiseaza numarul de alarme HA. Alarma "HF"=lipsa tensiune pentru mai mult de 1 minut si depasirea valorii maxime a AH: pana la trei alarme de tip HF sunt salvate (HF,HF1,HF2), respective de la cea mai noua (HF) pana la cea mai veche (HF2), cu un semnal HFn care afiseaza numarul de evenimente HF ocupate. Setarea alarmei HA/HF: parametric AH (prag de temp. inalta); AD si Htd (Ad+Htd=intarziere alarmei HACCP).

Afisarea intarzierilor

1. cand apasam butonul HACCP mai mult de o secunda, se vizualizeaza numele primullui parametru care are legatura cu alarmele HA si HF;
2. folositi butoanele ▲ si ▼ pentru a derula lista de parametric care au legatura cu alarmele HA si HF;
3. odata ce s-a ajuns la parametrul dorit, apasati tasta set pentru vizualizarea valorii;
4. daca parametrul selectat este HA sau HF, apasati butoanele ▲ si ▼ pentru afisarea anului, lunii, zilei, orei, minutului si duratei ultimei alarme aciva HA sau HF. Exemplu: y03 ▼ M07 ▼ d22 ▼ h23 ▼ m57 ▼ t99 ▼ start again.
   Secventa indica faptul ca ultima alarma HA sau HF a fost active pe 22 iulie 2003 la ora 23:57 si a durat 99 ore;
5. apasand tasta **set** din nou, reveniti la lista de parametric care au legatura cu alarmele HA si HF; urmatoarele functii sunt valabile doar din meniu:
   – stergerea alarmelor HACCP, apasand tasta **HACCP** mai mult de 5s (mesajul 'rES' indica faptul ca alarmele au fost sterse, si LED-ul HACCP se opreste din clipocit., semnalul HA si/sau HF este resetat si monitorizarea HA reincepe);
   – stergerea alarmei HACCP si alarmelor salvate (Han, HA,HA1, HA2, HFn, HF, HF1, HF2), apasand tasta **HACCP** si ▲ mai mult de 5s (mesajul 'rES' indica faptul ca alarmele au fost sterse, si LED-ul HACCP se opreste din clipocit., semnalul HA si/sau HF este resetat, alarmele HAn, HA, HA1,HA2, HFn, HF, HF1, HF2 sunt anulate si monitorizare HA reincepe);
6. pentru a reveni la functionarea normala in orice timp, apasati tasta **prg** pentru 3 s, sau asteptati pentru a expira timpul (60s) fara a atinge alte taste.

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Ciclu continuu

Pentru a active functia ciclului continuu, apasati tasta ❄ mai mult de 5s. In timpul functionarii ciclului continuu, compresorul continua sa functioneze pe toata perioada, si se va opri pe perioada de oprire a ciclului sau cand se ajunge la temperatura minima prestabilita (Al= pragul minim de alarma temperatura). Setand ciclul continuu: paramtrul "cc" (perioada ciclului continuu): "cc"=0 niciodata active; parametrul "c6" (intarzierea alarmei dupa terminarea ciclului): anuleaza sau intarzie alarma de temperatura scazuta la sfarsitul ciclului continuu.

Procedura de setare a parametrilor impliciti

Pentru setarea parametrilor se procedeaza astfel:
- daca "Hdn"=0 : 1) deconectati alimentarea aparatului; 2) reconectati aparatul tinand apasata tasta **prg** pana apare mesajul "Std" pe display. <u>Nota:</u> valoarea implicita este setata doar pentru parametric vizibili (C si F). Pentru mai lulte detalii vezi tabelul General cu parametri.
- daca "Hdn"<>0 : 1) deconectati alimentarea aparatului; 2) reconectati aparatul tinand apasata tasta **prg** pana apare valoarea parametrului 0 pe display;
  3) selectati valoarea parametrilor impliciti, intre 0 si "Hdn", folosind butoanele ❄ si ❄ ; 4) apasati tasta **prg** pana apare mesajul "Std" pe display.

Atribuirea automata a adresei seriale

Aceasta ete o procedura speciala care foloseste o aplicatie instalata pe PC pentru setarea simpla si controlul adreselor seriale a tuturor echipamentelor (caracteristica a acestei functii) conectate la o retea CAREL. Procedura este extreme de simpla:
1. Folosind softul de la distanta, porniti procedura "Network definition"; procedura porneste trimitand un mesaj special ('<ADR>') la reteaua CAREL, care contine adrese in retea;
2. apasand butonul **prg** de pe aparat activati recunoasterea mesajului, care automat seteaza adresa cu valoarea dorita si trimite un mesaj de confirmare aplicatiei, care contine codul echipamentului si vesiunea de serie a aparatului (mesajul'V'). Dupa recunoasterea mesajului trimis de aplicatia de la distanta, echipamentul afiseaza mesajul 'Add' pentru 5 secunde, urmat de valoarea adresei seriale inregistrate;
3. aplicatia, odata ce mesajul de confirmare a fost receptionat de aparat, salveaza informatia receptionata in propria baza de date, crescand cu 1 adresa seriala si trimitand din nou mesajul '<ADR>';
4. in acest punct, repetati procedura de la punctul 2 si la alt aparat, pana cand definiti adresele seriale la toata reteaua.
<u>Nota:</u> odata ce adresa a afost alocata in aparat, operatia este dezactivata pentru el timp de 1 minut, pentru conditii de securitate, timp in care o alata adresa nu poate si alocata aparatului.

Acesare parametrilor (tip C)

1. apasati impreuna butoanele **prg** si **set** pentru mai mult de 5 secunde, pe display se visualizeaza "0" (introduceti parola)
2. folosind butoanele ❄ si ❄ pentru a afisa numarul"22" (parola pentru accesare parametric)
3. confirmati apasand butonul **set**
4. pe display se afiseaza primul parametru de tip "C"

Acesare parametrilor (tip F)

1. apasati butonul **prg** mai mult de 5 secunde (in cazul unei alarme, mai intai anulati soneria), pe display se afiseaza primul parametru de tip "F".

Modificarea parametrilor

Dupa ce se afiseaza parametrul, chiar daca este de tip "C" sau "F", procedura este urmatoarea:
1. utilizati butoanele ❄ sau ❄ pentru a derula lista de parametric pana ajungeti la cel pe care il vreti modificati; cand derulati, o iconita apare pe display pentru afisarea categoriei din care face parte parametrul;
2. alternativ, apasati butonul **prg** pentru afisarea unui meniu pentru acces rapid la familia de parametric ce se vrea modificata;
3. deruland meniul cu butoanele ❄ si ❄ , se visualaizeaza codurile categoriilor de parametric (vezi tabelul General de parametri), insotite de iconita corespunzatoare pe display (daca este present);
4. odata ce ati ajuns la categoria dorita, apasati **set** pentru acces direct la primul parametru din categoria aleasa (daca nici un parametru nu este vizibil, apasand **set** va avea effect);
5. in acest punct, continuati sa derulati lista de parametric sau reveniti la meniul "Categories" apasand tasta **prg**;
6. apasati **set** pentru visualizarea valorii associate cu parametrul;
7. crescreti sau descresteti valoarea folosind butoanele ❄ sau ❄ ;
8. apasati **set** pentru salvarea temporara a noii valori si revenirea la visualizarea parametrilor;
9. repetai operatia de la punctul 1 sau punctul 2;
10. daca paramatru are sub-parametri, apasati set pentru afisarea primului sub-parametru;
11. apasati butoanele ❄ sau ❄ pentru visualizarea tuturor subparametrilor;
12. apasati **set** pentru afisarea valorilor;
13. crescreti sau descresteti valoarea folosind butoanele ❄ sau ❄ ;
14. apasati **set** pentru salvarea temporara a noii valori si revenirea la visualizarea codului sub-parametrilor;
15. apasati **prg** pentru a reveni la visualizarea parametrului.

Salvarea valorilor noi associate parametrilor

Pentru salvarea definitive a noii valori a parametrului modificat, apasati butonul **prg** mai mult de 5 secunde, astfel iesind din procedura de programare a parametrului. Toate modificarile facute parametrilor, si salvate temporar pe RAM pot fi sterse, revenind la" functionarea normala", nu atingeti nici un buton timp de 60 secunde, si lasati sa expire serinuea dupa timpul alocat. Daca aparatul este deconectat de la tensiune inainte de a apasa tasta **prg**, toate modificarile facute parametrilor si salvate temporar vor fi pierdute.

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Acces direct la parametri prin selectarea categoriei

Configurarea parametrilor poate fi accesata, asa cum a fost descrisa mai sus, deasemenea si dupa categorie (vezi iconitele si abrevierile in tabelul ce urmeaza), in functie cu lista de pe display echivalent cu nume si cu iconita corespunzatoare. Pentru a avea acces direct la selectia grupei de parametric dupa categorie, apasati **prg**, UP/DOWN si pentru a modifica parametric apasati **set**, UP/DOWN.

Categorie	Parametri	Text	Iconita
Parametri senzori	/	'Pro'	✎
Parametri control	r	'Ctl'	❄
Parametri compresor	c	'CMP'	⊖
Parametri degivrare	d	'dEF'	❅
Parametri aparme	A	'ALM'	▲
Parametri ventilator	F	'FAn'	❀
Configurare parametrilor	H configuration	'CnF'	aux
Parametri HACCP	H HACCP	'HcP'	⌂HACCP
Parametri RTC	rtc	'rtc'	◷

Tab. 3.c

Configurare sensor (/A2 la /A4)

La seria MasterCella, acesti parametric sunt folositi pentru configurarea modului senzorului: 0 = fara senzor; 1 = sensor produs (doar vizualizare); 2= sensor degivrare; 3 = sensor condensare; 4 = sensor anti-inghet.

Configurarea intrarii digitale (A4,A5)

La MasterCella, acest parametru si modelul de controller folosit definesc functionalitatea intrarii digitale:
0 = intrare neactivata;
1 = alarma externa imediata, normal inchis: deschis=alarma;
2 = intarziere alarma externa, normal inchis;
3 = activare degivrare de la un contact extern (un contact extern poate fi conectat la intrarile multifunctionale pentru a active sau dezactiva degivrarea);
4 = porneste deg. Cand se inchide contactul extern;
5 = contact usa care opreste compresorul si decivrarea: deschis = usa deschisa;
6 = ON/OFF la distanta: inchis = ON;
7 = contact cortina: inchis =perdea coborata;
8 = intrare presostat joasa pentru pump-down: deschis = joasa presiune;
9 = contact usa care opreste doar ventilatoarele: deschis = usa deschisa;
10 = functionare directa/inversa: deschis = direct;
11 = sensor lumina;
12 = activare iesire AUX (configurare cu parametric H1 dau H5): deschis = dezactivat;
13 = contact usa care opreste comp si vent si nu controleaza lumina;
14 = contact usa care opreste vent si nu controleaza lumina.

Configurarea iesirii pe releu auxiliar AUX1 si AUX2 (H1 si H5)

Acestia astabilesc cand al patrulea si al cincilea releu (daca este present) sunt folositi ca iesiri auxiliare (ex. Vent. evacuare sau alt aparat ON/OFF), ca o iesire de alarma, ca iesire pentru iluminat, ca si degivrare pentru un o suflanta auxiliara, ca si control valva Pump-Down sau ca o iesire pentru ventilatoarele condensatorului.
0 = iesire alarma: normal energizat; releul nu este energizat cand alarma apare;
1 = iesire alarma: normal neenergizat; releul este energizat cand alarma apare;
2 = iesire auxiliara;
3 = iesire iluminat;
4 = iesire degivrarepentru vaporizator auxiliar;
5 = iesire Pump-Down;
6 = iesire condensator;
7 = intarzierea iesirii pentru compresor;
8 = iesirea auxiliara cu oprire;
9 = iesire iluminat cu oprire;
10 = dezactivare iesire;
11 =inverseaza iesirea cu controlul in banda moarta;
12 = iesire treapta al doilea compresor;
13 = iesire treapta al doilea compresor cu rotatie.
Atentie: modul H1/H5 = 0 este util pentru semnalizarea alarmelor chiar cand tensiunea este oprita.

Nota: la modelele cu un singur releu auxiliar, pentru asocierea butonului ☀ cu iesirea, setati H1 = 10 si H5 = 3. Este necesar sa asociati releul asociat cu aux 1 la iesirea aux 2. Operatia poate fi efectuata folosind kit-ul de programare PSOPZPRG00 si cheia de programare PSOPZKEY00/A0.

Data si ziua producerii degivrarii (parametri td1 la td8)

0 = nici un eveniment; 1 la 7 = Luni pana Duminica; 8 = de Luni pana Vineri; 9 = de Luni pana Sambata; 10 = Sambata si Duminica; 11 = in fiecare zi.

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4. CUPRINSUL PARAMETRILOR FUNCTIONALI

UOM = unitate de masura; Def. = val. implicita

Simbol	Cod.	Parametru	AD	U.M.	Tip	Min	Max	Deg.
	Pw	Parola	AD	-	C	0	200	22
	/2	stabilitatea masuratorii	AD	-	C	1	15	4
	/3	rata afisarii senzorului	AD	-	C	0	15	0
	/4	senzor virtual	AD	-	C	0	100	0
	/5	selectati °C sau °F	AD	flag	C	0	1	0
		0: °C						
		1: °F						
	/6	Punct zecimal	AD	flag	C	0	1	0
		Cu zecimi de un grad						
		Fara zecimi de un grad						
	/tI	vizualizare pe terminal intern	AD	-	C	1	7	1
		1: sensor virtual						
		2: senzorilor 1						
		3: senzorilor 2						
		4: senzorilor 3						
		5: senzorilor 4						
		6: senzorilor 5						
		7: set point						
	/tE	vizualizare pe terminal extern	AD	-	C	0	6	0
		fara conexiune de la distanta						
		1: sensor virtual						
		2: senzorilor 1						
		3: senzorilor 2						
		4: senzorilor 3						
		5: senzorilor 4						
		6: senzorilor 5						
	/P	selectare tip senzor	AD	-	C	0	2	0
		NTC standard cu marja de la -50la90 °C						
		NTC dedicate cu marja de la -40la150 °C						
		PTC standard cu marja de la -50la150 °C						
	/A2	configurare sensor 2	D	-	C	0	4	2
			A	-	C	0	4	0
		0: Lipsa senzor						
		1: Senzor produs (doar vizualizare)						
		2: Senzor degivrare						
		3: Senzor condensare						
		4: Senzor anti-inghet						
	/A3	configurarea senzorilor 3 (S3/DI1)	AD	-	C	0	4	0
		Idem / A2						
	/A4	configurarea senzorilor 4 (S4/DI2)	AD	-	C	0	4	0
		Idem / A2						
	/A5	configurarea senzorilor 5 (S5/DI3)	AcD	-	C	0	4	0
		Idem / A2						
	/c1	calibrarea senzorilor 1	AD	°C/°F	C	-20	20	0.0
	/c2	calibrarea senzorilor 2	AD	°C/°F	C	-20	20	0.0
	/c3	calibrarea senzorilor 3	AD	°C/°F	C	-20	20	0.0
	/c4	calibrarea senzorilor 4	AD	°C/°F	C	-20	20	0.0
	/c5	calibrarea senzorilor 5	AD	°C/°F	C	-20	20	0.0

Simbol	Cod.	Parametru	AD	U.M.	Tip	Min	Max	Deg.
	St	Set point temperatura	AD	°C/°F	F	r1	r2	0.0
	rd	controlul delta	AD	°C/°F	F	0.1	20	2.0
	rn	zona moarta	AD	°C/°F	C	0.0	60	4.0
	rr	inversati control delta cu zona moarta	AD	°C/°F	C	0.1	20	2.0
	r1	minim setpoint permis	AD	°C/°F	C	-50	r2	-50
	r2	maxim setpoint permis	AD	°C/°F	C	r1	200	60
	r3	mod de operare	AD	flag	C	0	2	0
		0: Direct (frig) avand controlul degivrarii						
		1: Direct (frig)						
		2: Ciclu invers (incalzire)						
	r4	variatia automata a setpoint zi/noapte	AD	°C/°F	C	-20	20	3.0
	r5	activare monitorizare temperatura	AD	flag	C	0	1	0
		0: Dezactivat						
		1: Activat						
	rt	intervalul de monitorizare al temperaturii	AD	ore	F	0	999	-
	rH	temperatura maxima citita	AD	°C/°F	F	-	-	-
	rL	temperatura minima citita	AD	°C/°F	F	-	-	-

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Simbol	Cod.	Parametru	AD	U.M.	Tip	Min	Max	Deg.
	c0	intarzierea releului compresor, vent, si AUX la pornire, la control cu banda moarta	AD	min	C	0	15	0
	c1	timpul minim intre doua porniri succesive	AD	min	C	0	15	0
	c2	timp minim repaus compresor	AD	min	C	0	15	0
	c3	timp minim functionare compresor	AD	min	C	0	15	0
	c4	setarea functonarii	AD	min	C	0	100	0
	cc	perioada ciclului continuu	AD	ore	C	0	15	0
	c6	intarzierea alarmei dupa ciclu continuu	AD	ore	C	0	250	2
	c7	timpul maxim de Pump-Down	AD	s	C	0	900	0
	c8	intarzierea pornirii compresorului dupa functionarea valvei PD	AD	s	C	0	60	5
	c9	activarea functiei autostart cu functionare PD	AD	flag	C	0	1	0
	c10	selectare Pump-Down dupa timp si presiune	AD	flag	C	0	1	0
		0: Pump-down dupa presiune						
		1: Pump-down dupa timp						
	c11	intarzierea intarzierii compresorului	AD	s	C	0	250	4

Simbol	Cod.	Parametru	AD	U.M.	Tip	Min	Max	Deg.
	d0	tipul degivrarii	AD	flag	C	0	4	0
		0: Degivrare electrica dupa timp						
		1: Degivrare cu gaze calde dupa temperatura						
		2: Degivrare electrica dupa timp						
		3: Degivrare cu gaze calde dupa timp						
		4: Degivrare electrica termostatata dupa timp						
	dl	intervalul intre doua degivrari	AD	ore	F	0	250	8
	dt1	temperatura sf. degivrare, vaporizator	AD	°C/°F	F	-50	200	4.0
	dt2	temperatura sf. degivrare, vaporizator aux.	AD	°C/°F	F	-50	200	4.0
	dP1	perioada maxima de degivrare, vaporizator	AD	min	F	1	250	30
	dP2	perioada maxima de deg., vaporizator aux	AD	min	F	1	250	30
	d3	pornirea intarziata a degivrarii	AD	min	C	0	250	0
	d4	activarea degivrarii la pornire	AD	flag	C	0	1	0
		0: Fara degivrare la pornirea echipamentului						
		1: Degivrare la pornirea echipamentului						
	d5	intarzierea deg.la pornire	AD	min	C	0	250	0
	d6	vizualizarea in timpul degivrarii	AD	-	C	0	2	1
		0: Afisarea alternata dEF si valoarea senzorului						
		1: Afisare ultimei vavori a temperaturii						
		2: Afisare doar dEF						
	dd	perioada scurgere dupa degivrare	AD	min	F	0	15	2
	d8	intarzierea alarmei dupa degivrare	AD	ore	F	0	250	1
	d8d	intarzierea alarmei dupa deschiderea usii	AD	min	C	0	250	0
	d9	prioritatea degivrarii peste protectia compres.	AD	flag	C	0	1	0
		0: Se tine cont de timpul de protectie c1, c2 si c3						
		1: Nu se tine cont de timpul de protectie c1, c2 si c3						
	d/1	afisarea senzorului de degivrare	AD	°C/°F	F	-	-	-
	d/2	afisarea senzorului de degivrare 2	AD	°C/°F	F	-	-	-
	dC	timp alocat pentru degivrare	AD	flag	C	0	1	0
		0: dl in ore, dP1 si dP2 in minute						
		1: dl in minute, dP1 si dP2 in secunde						
	d10	timp de functionare compresor	AD	ore	C	0	250	0
	d11	pragul de temp. al timpului de functionare	AD	°C/°F	C	-20	20	1.0
	d12	degivrarea avansata	AD	-	C	0	3	0
	dn	perioada normala a degivrarii	AD	-	C	1	100	65
	dH	factorul proportional ptentru var. dupa 'dl"	AD	-	C	0	100	50

Simbol	Cod.	Parametru	AD	U.M.	Tip	Min	Max	Deg.
	A0	alarma si diferential ventilatie	AD	°C/°F	C	0.1	20	2.0
	A1	tipul pragului 'AL' si 'AH'	AD	flag	C	0	1	0
		0: AL si AH sunt praguri relative						
		1: AL si AH sunt praguri absolute						
	AL	pragul de temperatura joasa	AD	°C/°F	F	-50	200	0.0
	AH	pragul de temperatura inalta	AD	°C/°F	F	-50	200	0.0
	Ad	intarzierea alarmei temp. joase si inalte	AD	min	F	0	250	120
	A4	configurarea ID 1	A	-	C	0	14	0
			D	-	C	0	14	3
		0: Intrare inactiva						
		1: Alarma externa imediata						
		2: Alarma externa intarziata						
		3: Daca este model M, selectia senzorului						
		3: Alte modele, activarea degivrarii						
		4: Porneste degivrarea						
		5: : Oprirea compresorului si ventilatoarelor la deschiderea usii						
		6: on/off de la distanta						
		7: Activarea perdelei						

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Simbol	Cod.	Parametru	AD	U.M.	Tip	Min	Max	Deg.
		8: Presostat de joasa presiune						
		9: Oprirea doar a ventilatoarelor la deschiderea usii						
		10: Functionare directa/inversa						
		11: Senzor lumina						
		12: Activarea iesirii auxiliare AUX						
		13: Oprirea compresorului si ventilatoarelor la deschiderea usii si controlul luminii						
		14: Oprirea doar a ventilatoarelor la deschiderea usii fara controlul luminii						
⚠	A5	configurarea ID 2	AD	-	C	0	14	0
		Idem A4						
	A6	oprire compressor sau alarma externa	AD	min	C	0	100	0
	A7	intarzierea alarmei externe	AD	min	C	0	250	0
	A8	activarea alarma 'Ed1' si 'Ed2'	AD	flag	C	0	1	0
		0: Activarea semnalelor Ed1 si Ed2						
		1: Dezactivarea semnalelor Ed1 si Ed2						
	A9	configurarea ID 3	AD	-	C	0	14	0
		Idem A4						
	Ado	Controlul luminii la deschiderea usii	AD	flag	C	0	1	0
	Ac	alarma temperatura inalta condensator	AD	°C/°F	C	0.0	200	70.0
	AE	diferential temperatura inalta condesator	AD	°C/°F	C	0.1	20	10
	Acd	Intarzierea alarmei temp. inalta cond.	AD	min	C	0	250	0
	AF	timpul oprire sensor iluminat	AD	s	C	0	250	0
	ALF	prag de alarma anti inghet	AD	°C/°F	C	-50	200	-5.0
	AdF	intarziere alarma anti inghet	AD	min	C	0	15	1

Simbol	Cod.	Parametru	AD	U.M.	Tip	Min	Max	Deg.
❁	F0	controlul ventilatiei	D	flag	C	0	2	0
		0: Ventilatoarele pornite mereu						
		1: Controlul ventilatoarelor in functie de diferenta de temperatura intre senzorul virtual si temperatura din vaporizator						
		2: Controlul ventilatoarelor in functie de temperatura din vaporizator						
	F1	temperatura de pornire a ventilatiei	D	°C/°F	F	-50	200	5.0
	F2	oprire vent. cu compressor oprit	D	flag	C	0	1	1
		0: Ventilatoarele tot timpul pornite						
		1: Ventilatoarele oprite cand compresorul este oprit						
	F3	ventilatie in degivrare	D	flag	C	0	1	1
		0: Functionare ventilatoare pe timpul degivrarii						
		1: Nefunctionare ventilatoare pe timpul degivrarii						
	Fd	oprire ventilatie dupa drenare	D	min	F	0	15	1
	F4	temperatura de oprire vent. condensator	AD	°C/°F	C	-50	200	40
	F5	diferential de pornire vent. condensator	AD	°C/°F	C	0.1	20	5.0

Simbol	Cod.	Parametru	AD	U.M.	Tip	Min	Max	Deg.
	H0	adresa seriala	AD	-	C	0	207	1
	H1	functia releu 4	AD	flag	C	0	13	1
		0: Iesirea de alarma in tensiune						
		1: Iesire de alarma fara tensiune						
		2. Iesire auxiliara						
		3: Iesirea de iluminat						
		4: Iesirea auxiliara de degivrare						
		5: Iesirea valvei Pump down						
		6: Iesire ventilatorului de condensator						
		7: Intarzierea Iesirii compresorului						
		8: Dezactivarea iesirii auxiliare cand este OPRIT						
aux		9: Dezactivarea iesirii iluminatului cand este OPRIT						
		10: Nici o functie asociata cu iesirea						
		11: Functionare inverse in controlul cu banda moarta						
		12: Iesirea treptei celui de-al doilea compresor						
		13: Iesirea treptei celui de-al doilea compresor cu rotatie						
	H2	dezactivare tastatura / inflarosu	AD	flag	C	0	6	1

Parametru "H2"	ILUMINAT	ON/OFF	AUX	HACCP	PRG/FARA SUNET (fara sunet)	SUS/CC	JOS/DEG	SET	Parametru F modifica	Set point modifica	Telecomanda modifica
0								▪		▪	
1											
2						▪			▪		▪
3											▪
4		▪				▪	▪		▪		
5		▪				▪	▪		▪	▪	
6						▪	▪		▪	▪	

Functionarea tastaturii
"▪" = Dezactivat

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aux

	Cod.	Parametru	AD	U.M.	Tip	Min	Max	Deg.
	H3	activare cod pentru telecomanda	AD	-	C	0	255	0
	H4	dezactivarea buzzer	AD	flag	C	0	1	0
		0: Sonerie activata						
		1: Sonerie dezactivata						
	H5	functia releu 5	AD	flag	C	0	13	1
		Idem H1						
	H6	blocare tastatura	AD	-	C	0	255	0
	H8	selectare activare iesire cu banda moarta	AD	flag	C	0	1	0
		0: Cu legatura la iesirea configurata la iluminat						
		1: Cu legatura la iesirea configurata la auxiliar						
	H9	activare variatia setpoint cu banda moarta	AD	flag	C	0	1	0
		0: Variatia setointului cand este Dezactivata						
		1: Variatia setointului cand este Activata						
	Hdh	set oprire rezistente anticondens	AD	°C/°F	C	-50	200	0.0

Simbol	Cod.	Parametru	AD	U.M.	Tip	Min	Max	Deg.
	HAn	numar de evenimente HA ocupate	AD	-	C	0	15	0
	HA	Data.timp al ultimului eveniment HA	AD	-	C	-	-	-
	y__	An		Ani		0	99	0
	M__	Luna		Luni		1	12	0
	d__	Zi		Zile		1	7	0
	h__	Ora		ore		0	23	0
	n__	Minut		Minute		0	59	0
	t__	Perioada		ore		0	99	0
HACCP	HA1	Data.timp al 2-lea eveniment HA	AD	-	C	-	-	-
	HA2	Data.timp al 3-lea eveniment HA	AD	-	C	-	-	-
	HFn	numar de evenimente HF ocupate	AD	-	C	0	15	0
	HF	Data.timp al ultimului eveniment HF	AD	-	C	-	-	-
	y__	An		Ani		0	99	0
	M__	Luna		Luni		1	12	0
	d__	Zi		Zili		1	7	0
	h__	Ora		ore		0	23	0
	n__	Minut		Minute		0	59	0
	t__	Perioada		ore		0	99	0
	HF1	Data.timp al 2-lea eveniment HF	AD	-	C	-	-	-
	HF2	Data.timp al 3-lea eveniment HF	AD	-	C	0	-	-
	Htd	Intarzierea alarmei HACCP	AD	min	C	0	250	0

Simbol	Cod.	Parametru	AD	U.M.	Tip	Min	Max	Deg.
	td1	timp degivrare 1	AD	-	C	-	-	-
	d__	Zi		Zile		0	11	0
	h__	Ora		ore		0	23	0
	n__	Minut		Minute		0	59	0
	td2	timp degivrare 2	AD	-	C	-	-	-
	td3	timp degivrare 3	AD	-	C	-	-	-
	td4	timp degivrare 4	AD	-	C	-	-	-
	td5	timp degivrare 5	AD	-	C	-	-	-
	td6	timp degivrare 6	AD	-	C	-	-	-
	td7	timp degivrare 7	AD	-	C	-	-	-
	td8	timp degivrare 8	AD	-	C	-	-	-
	ton	Iluminat/aux On/Off periada	AD	-	C	-	-	-
	d__	Zi		Zile		0	11	0
	h__	Ora		ore		0	23	0
	n__	Minut		Minute		0	59	0
	toF	Iluminat/aux On/Off periada	AD	-	C	-	-	-
	d__	Zi		Zile		0	11	0
	h__	Ora		ore		0	23	0
	n__	Minut		Minute		0	59	0
	tc	setare data/timp RTC	AD	-	C	-	-	-
	y__	An		Ani		0	99	0
	M__	Luna		Luni		1	12	1
	d__	Zi din luna		Zile		1	31	1
	u__	Zi din saptamana		Zile		1	7	6
	h__	Ora		ore		0	23	0
	n__	Minuto		minute		0	59	0

Tab. 4

Avertizare importanta: pentru ca setarea timpului sa devina imediat operationala, opriti si porniti aparatul. Daca aparatul nu este oprit, timpul va fi operational urmatoarea data cand va fi folosit, cand timpul iar va fi setat.

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5. TABELUL CU ALARME SI SEMNALE: vizualizare, buzzer si relee

Urmatorul table descrie alarmele si semanlele de pe controller, cu descrierea corespunzatoare, starea buzzerului, releul de alarma si modul de resetare.

Cod	Iconita de pe display	Releu de alarma	Buzeer	Reset	Descriere
'rE'	Clipocire	Active	Active	Automat	defect sensor virtual
'E0'	Clipocire	off	off	Automat	defect sensor camera S1
'E1'	Clipocire	off	off	Automat	defect sensor degivrare S2
'E2'-3-4	Clipocire	off	off	Automat	defect sensor S3-4-5
'___'	Nu	off	off	Automat	sensor neactivat
'LO'	Clipocire	Active	Active	Automat	alarma temperatura joasa
'HI'	Clipocire	Active	Active	Automat	alarma temperatura inalta
'AFr'	Clipocire	Active	Active	manuale	alarma anti -inghet
'IA'	Clipocire	Active	Active	Automat	alarma instantanee pentru contact extern
'dA'	Clipocire	Active	Active	Automat	intarzierea alarma pentru contact extern
'dEF'	active	off	off	Automat	functionare degivrare
'Ed1'-2	Nu	off	off	autom./manual	sfarsit deg. dupa timp la vaporizator 1-2
'Pd'	Clipocire	Active	Active	autom./manual	alarma timp maxim pump-down
'LP'	Clipocire	Active	Active	autom./manual	alarma temperatura joasa
'AtS'	Clipocire	Active	Active	autom./manual	autopornire in pump-down
'cht'	Nu	off	off	autom./manual	prealarmare temp. inalta condensator
'CHT'	Clipocire	Active	Active	manuale	temp. inalta condensator
'dor'	Clipocire	Active	Active	Automat	alarma usa deschisa de prea mult timp
'Etc'	Clipocire	off	off	autom./manual	alarma RTC
'EE'	Clipocire	off	off	Automat	eroare parametru instalatie EEPROM
'EF'	Clipocire	off	off	Automat	eroare parametru functionare EEPROM
'HA'	Clipocire	off	off	manuale	HACCP alarma de tip 'HA'
'HF'	Clipocire	off	off	manuale	HACCP alarma de tip 'HF'
'rCt'	Semnal				activarea aparatului pentru programare de la telecomanda
'Add'	Semnal				procedura in lucru pentru alocare adresa seriala in mod automat
'Prt'	Semnal				raportul a fost printat
'LrH'	Semnal				activarea procedurii de umiditate relative scazuta
'HrH'	Semnal				activarea procedurii de umiditate relative crescuta
'ccb'	Semnal				cerere pornire ciclu continuu
'ccE'	Semnal				cerere oprire ciclu continuu
'dFb'	Semnal				cerere pornire degivrare
'dFE'	Semnal				cerere oprire degivrare
'On'	Semnal				Switch ON
'OFF'	Semnal				Switch OFF
'rES'	Semnal				Anulare alarma prin comada manuala Anulare alarme HACCP Anulare minitorizare temperatura
'n1'...'n6'	Clipocire	Active	Active	Automat	indica alarma active la instalatia 1 la 6 in retea
'dnL'	Semnal				Download in lucru
'd1'...'d6'	Clipocire	off	off		d6'Download cu erori la aparatele 1 la 6

Tab. 5.a

Nota: Buzzerul este activat daca este activ parametrul 'H4'.
Releul de alarma este activat daca unal din iesirile auxiliare, 1 sau 2 ('H1' si 'H5') a fost alocata la functia de releu alarma (normal inchis sau normal deschis).

1. INTRODUCTION

MasterCella is the new electronic controller for static or ventilated refrigerating units, able to manage all the actuators normally featured, such as: compressors, fans, defrost, alarms and lights. The MasterCella case is IP65 and the electrical wiring is especially simple, due to the fact that the front panel can be removed. The MasterCella case allows installation either on the panel or on the wall.

2. OPTION CODES

CODE	DESCRIPTION
IRTRRES000	small infrared remote control
IROPZSEM10	RS485 serial board with automatic recognition of the polarity +/-
IROPZSEM30	RS485 serial board with automatic recognition of the polarity +/- and connection of repeater display
PST00VR100	remote repeater display
IR00RG0000	remote repeater display ir33 range green display
IR00RR0000	remote repeater display ir33 range red display
PSTCON0300	connection cables to the repeater display, one end with screw, 3 metres long
PSTCON1000	connection cables to the repeater display, one end with screw, 10 metres long
PSOPZKEY00	parameter programming key with 12V batteries included
PSOPZKEYA0	parameter programming key with external 230 Vac power supply
IROPZKEY00	parameter programming key with extended memory and 12V batteries included
IROPZKEYA0	parameter programming key with extended memory and external 230 Vac power supply
VPMSTDKY*0(1,2)	programming key kit
MDOPZCA000	optional board with 3 repeat connectors
MDOPZCB000	optional board with 5 repeat connectors
0402512CEL	Disconnecting switch 32 A
0402515CEL	Shaft H= 85 mm
0402517CEL	Yellow/red disconnecting switch

Tab.2.a

3. DISPLAY

MasterCella is fitted with a three digit LED display for the temperature, and icons for displaying the operating status. It can also be connected, using a special interface, to a further display, used, for example, to show the reading of the third probe.

3.1 Signals on the display

Icon	Function	Normal Operation			Startup
		ON	OFF	flashing	
⊖	COMPRESS.	compressor on	compressor off	compressor call	
❀	FAN	fan on	fan off	fan call	
❄	DEFROST	defrost in progress	no defrost call	defrost call	
aux	AUX	AUX auxiliary output active	AUX auxiliary output not active	anti-sweat heater function active	
⚠	ALARM	delayed external alarm (before the time A7' has elapsed)	no alarm present	alarms in norm. operation (e.g. high/low temperature) or alarm from external digital input, immediate or delayed	
🕐	CLOCK	if at least one timed defrost has been set	no timed defrost set	clock alarm	ON if Real-Time Clock present
💡	LIGHT	LIGHT auxiliary output active	LIGHT auxiliary output not active	anti-sweat heater function active	
⚒	SERVICE		no malfunction	malfunction (e.g. EEPROM error or probes faulty)	
HACCP	HACCP	HACCP function enabled	HACCP function not enabled	HACCP alarm saved (HA and/or HF)	
❄	CYCLE	CONTINUOUS CYCLE function activated	CONTINUOUS CYCLE function not activated	CONTINUOUS CYCLE function call	

Tab. 3.a

The flashing status indicates that the function has been called but cannot be run until the delay timers expire.

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3.2 Buttons on the keypad

Icon	Button	Normal operation		Start-up	Automatic address assignment request
		Pressing the button alone	Pressing together with other buttons		
HACCP	HACCP	enters the menu to display and delete of the HACCP alarms			
(power symbol)	ON/OFF	if pressed for more than 5 s, switches the unit on/off			
prg	PRG/MUTE	if pressed for more than 5 s, accesses the menu for setting the type "F" parameters (Frequent). In the event of alarms: mutes the audible alarm (buzzer) and deactivates the alarm relay	• if pressed for more than 5s together with the SET button, accesses the menu for setting the type "C" parameters (Confi guration) or downloading the parameters. • if pressed for more than 5s together with the UP/CC button, resets any alarms with manual reset	if pressed for more than 5 s at start-up, activates the procedure for restoring the default parameters	if pressed for more than 1 s, starts the automatic serial address assignment procedure
▲	UP/CC	if pressed for more than 5 s, activates/ deactivates the continuous cycle	• if pressed for more than 5s together with the SET button, starts the report printing procedure (function available but management to be implemented) • if pressed for more than 5s together with the PRG/MUTE button, resets any alarms with manual reset		
(light symbol)	LUCE	if pressed for more than 1 s, activates/ deactivates auxiliary output 2			
aux	AUX	if pressed for more than 1 s, activates deactivates auxiliary output 1			
▼	DOWN/DEF	if pressed for more than 5 s, activates/ deactivates a manual defrost			
(thermometer)	SET	if pressed for more than 1 s, displays and/or sets the set point	• if pressed for more than 5s together with the PRG/MUTE button, accesses the menu for setting type "C" parameters (Configuration) or downloading the parameters • if pressed for more than 5s together with the UP/CC button, starts the report printing procedure (function available but management to be implemented)		

Tab. 3.b

Setting the set point (desired temperature value)
To display or set the set point, proceed as follows:
1) press the **set** button for more than 1 second to display the set point;
2) increase or decrease the value of the set point with the ▲ and ▼ buttons respectively, until reaching the desired value;
3) press the set button again to confi rm the new value.

Resetting alarms with manual reset
All the alarms with manual reset can be reset by pressing the **prg** and ▲ buttons together for more than 5 s.

Manual defrost
As well as the automatic defrost, a manual defrost can be started if the temperature conditions are right, by pressing the button ▼ for 5 seconds.

ON/OFF button
Pressing the button (power symbol) for 5 seconds switches the unit on/off. When the controller is off it is in standby mode, therefore before performing maintenance on the unit, power must be disconnected.

HACCP function
MasterCella is compliant with the HACCP standards, as it monitors the temperature of the food stored. Alarm "HA"= maximum threshold exceeded: in addition, up to three HA events are saved (HA, HA1, HA2), respectively from the most recent (HA) to the oldest (HA2), with a signal HAn that displays the number of HA events that have occurred. Alarm "HF"= power failure for more than 1 minute and maximum threshold AH exceeded: up to three HF events are saved (HF, HF1, HF2), respectively from the most recent (HF) to the oldest (HF2), with a signal HFn that displays the number of HF events that have occurred. Setting the HA/HF alarm: parameter AH (high temp. threshold); Ad and Htd (Ad + Htd = HACCP alarm delay).

Displaying the details
1) When pressing the **HACCP** button for more than one second, the display shows the name of the fi rst parameter relating to the HA and HF alarms;
2) Use the ▲ and ▼ buttons to scroll the parameters relating to the HA and HF alarms;
3) Once having reached the desired parameter, press set to display the value;
4) If the selected parameter is HA or HF, press the ▲ and ▼ buttons to display the year, month, day, hour, minute and duration of the last alarm HA or HF activated.
Example: y03 ▼ M07 ▼ d22 ▼ h23 ▼ m57 ▼ t99 ▼ start again...
The sequence indicates that the last HA or HF alarm was activated on 22 July 2003 at 23:57 and lasted 99 hours;
5) Pressing **set** again returns to the list of param. relating to the HA and HF alarms; the following functions are available from inside the menu:
   - delete the HACCP alarm, by pressing the **HACCP** button for more than 5 seconds (the message 'rES' indicates the alarm has been deleted, the HACCP LED stops fl ashing, the HA and/or HF signal is reset and the monitoring of HA resumes);
   - delete the HACCP alarm and the alarms saved (HAn, HA, HA1, HA2, HFn, HF, HF1, HF2), by pressing the **HACCP** and ▲ buttons for more than 5

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seconds (the message 'rES' indicates the alarms have been deleted, the HACCP LED stops fl ashing, the HA and/or HF signal is reset, the HAn, HA, HA1, HA2, HFn, HF, HF1, HF2 alarms saved are cancelled and the monitoring of HA resumes);

6) To return to normal operation at any time, press the **prg** button for 3 s, or wait for the session to expire by timeout (60 s) without pressing any button.

Continuous cycle

To activate the continuous cycle function, press the ▲ ⊛ button for more than 5 s. During operation in continuous cycle, the compressor continues to operate for the entire duration, and will stop for cycle timeout or when reaching the minimum temperature established (AL = minimum temperature alarm threshold). Setting the continuous cycle: parameter "cc" (continuous cycle duration): "cc"= 0 never active; parameter "c6" (alarm bypass after continuous cycle): excludes or delays the low temperature alarm at the end of the continuous cycle.

Procedure for setting the default parameters

To set the default parameters on the controller, proceed as follows:
• If "Hdn" = 0: 1) disconnect power from the instrument; 2) reconnect power to the instrument holding the **prg** button until the message "Std" appears on the display. **Note:** <u>the default values are only set for the visible parameters (C and F). For further details see the Summary table of operating parameters.</u>
• If "Hdn" < > 0: 1) disconnect power from the instrument; 2) reconnect power to the instrument holding the **prg** button until the value 0 appears;
3) select the set of default parameters, between 0 and "Hdn", using the ▲ ⊛ and ▼ ⁂ buttons; 4) press the **prg** button until the message "Std" appears on the display.

Automatic serial address assignment

This is a special procedure that uses an application installed on a PC to simply set and manage the addresses of all the instruments (that feature this function) connected to the CAREL network. The procedure is very simple:
1) Using the remote software, start the "Network defi nition" procedure; the application starts sending a special message ('<!ADR>') to the CAREL network, containing the network address;
2) Pressing the **prg** button on an instrument activates the recognition of this message, which automatically sets the address to the desired value and sends a confirmation message to the application, containing the unit code and the fi rmware revision (message 'V'). Upon recognition of the message sent by the remote application, the instrument displays the message 'Add' for 5 seconds, followed by the value of the serial address assigned;
3) The application, once the confi rmation message has been received from one of the units, saves the information received to its database, increments the serial address and starts sending the '<!ADR>' message again;
4) At this point, repeat the procedure from point 2 on another unit, until defi ning the addresses of the entire network.
Note: <u>once the address has been assigned on an instrument, operation is disabled on the unit for 1 minute, for safety reasons, during which time a different address cannot be assigned to the instrument.</u>

Accessing the confi guration parameters (type C)

1) Press the **prg** and **set** buttons together for more than 5 seconds, the display will show "0" (the password prompt);
2) Use the ▲ ⊛ or ▼ ⁂ button to display the number "22" (password to access the parameters);
3) Confi rm with the **set** button;
4) The display shows the first modifiable "C" parameter.

Accessing the configuration parameters (type F)

1) Press the **prg** button for more than 5 sec. (in the event of alarms, fi rst mute the buzzer), the display shows the first modifiable "F" param.

Modifying the parameters

After having displayed the parameter, either type "C" or type "F", proceed as follows:
1) Use the ▲ ⊛ or ▼ ⁂ button to scroll the parameters until reaching the one to be modifi ed; when scrolling, an icon on the display comes on to show the category the parameter belongs to;
2) Alternatively, press **prg** to display the "categories" menu and quickly access the family of parameters to be modified;
3) Scroll the menu with the ▲ ⊛ and ▼ ⁂ buttons, the display shows the codes of the various categories of parameters (see the Summary table of operating parameters), accompanied by the corresponding icon on the display (if present);
4) Once having reached the desired category, press **set** to directly access the first parameter in the chosen category (if none of these parameters are visible, pressing **set** will have no effect);
5) At this point, continue to scroll the parameters or return to the "Categories" menu with the **prg** button;
6) Press **set** to display the value associated with the parameter;
7) Increase or decrease the value with the ▲ ⊛ or ▼ ⁂ button respectively;
8) Press set to temporarily save the new value and return to the display of the parameter;
9) Repeat the operations from point 1 or from point 2;
10) If the parameter has sub-parameters, press **set** to display the fi rst sub-parameter;
11) Press the ▲ ⊛ or ▼ ⁂ button to display all the sub-parameters;
12) Press set to display the associated value;
13) Increase ⊛ or ⁂ decrease the value with the or button respectively;
14) Press **set** to temporarily save the new value and return to the display of the sub-parameter code;
15) Press **prg** to return to the display of the parent parameter.

Saving the new values assigned to the parameters

To defi nitively save the new values of the modified parameters, press the **prg** button for more than 5 seconds, thus exiting the parameter programming procedure. All the modifi cations made to the parameters, and temporarily saved to the RAM can be cancelled, returning to "normal operation", by not pressing any button for 60 seconds, and allowing the session to expire by timeout. If power is disconnected from the instrument before pressing the **prg** button, all the changes made to the parameters and temporarily saved will be lost.

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Direct access to the parameters by selecting the category

The configuration parameters can also be accessed via the category, as listed in the table below. The summary of operating parameters also shows the corresponding category for each parameter. To access the categories menu, press **prg** when the parameter symbol is displayed. Then use UP and DOWN to scroll the categories. Press **set** to display the first parameter in the selected category.

Category	Parameters	Text	Icon
Probe parameters	/	'Pro'	🔧
Control parameters	r	'Ctl'	❄
Compressor parameters	c	'CMP'	⊖
Defrost parameters	d	'dEF'	❄
Alarm parameters	A	'ALM'	⚠
Fan parameters	F	'FAn'	�
Confi guration parameters	H configuration	'CnF'	aux
HACCP parameters	H HACCP	'HcP'	⌂ HACCP
RTC parameters	rtc	'rtc'	🕐

Tab. 3.c

Probe confi guration (/A2 to /A4)

In the MasterCella series, these parameters are used to confi gure the operating mode of the probes: 0 = probe absent; 1 = product probe (display only); 2 = defrost probe; 3 = condenser probe; 4 = antifreeze probe.

Digital input confi guration (A4, A5, A9)

In the MasterCella, this parameter and the model of controller used defi ne the meaning of the digital input:
0 =   input not active;
1 =   immediate external alarm, normally closed: open = alarm;
2 =   delayed external alarm, normally closed;
3 =   enable defrost from external contact: open = disabled (an external contact can be connected to the multifunction input to enable or disable the defrost).
4 =   start defrost when closing the external contact;
5 =   door switch with compressor and fans off: open = door open;
6 =   remote ON/OFF: closed = ON;
7 =   curtain switch: closed = curtain lowered;
8 =   low pressure switch input for pump-down: open = low pressure;
9 =   door switch with fans only off: open = door open;
10 =   direct/reverse operation: open = direct;
11 =   light sensor;
12 =   activation of AUX output (if configured with the parameters H1 or H5): opening = deactivation;
13 =   door switch with compressor and fans OFF and light not managed;
14 =   door switch with fans OFF and light not managed.

Confi guration of AUX1 and AUX2 relay outputs (H1 and H5)

This establishes whether the fourth and the fi fth relay (present only if featured on the model) are used as auxiliary outputs (e.g. demister fan or other ON/OFF actuator), as an alarm output, as a light output, as a defrost actuator for the auxiliary evaporator, as a control for the Pump-Down valve or as an output for the condenser fan.
0 =   alarm output: normally energised; the relay is de-energised when an alarm occurs;
1 =   alarm output: normally de-energised; the relay is energised when an alarm occurs;
2 =   auxiliary output;
3 =   light output;
4 =   auxiliary evaporator defrost output;
5 =   Pump-Down valve output;
6 =   condenser fan output;
7 =   delayed compressor output;
8 =   auxiliary output with switch off;
9 =   light output with switch off;
10 =   output disabled;
11 =   reverse output in control with dead band;
12 = second compressor step output;
13 = second compressor step output with rotation.
Warning: mode H1/H5=0 is useful for signalling the alarm status even when power is cut off.

Note: in the models fi tted with only one auxiliary output, to associate the button ☀ to this output, set H1 = 10 and H5 = 3. In addition, the available relay needs to be assigned for the auxiliary functions to AUX2 rather than AUX1. The operation can be performed using the programming kit PSOPZ-PRG00 and the programming key PSOPZKEY00/A0.

Date and day of defrost event (parameters td1 to td8)

0= no event; 1 to 7= Monday to Sunday; 8= from Monday to Friday; 9= from Monday to Saturday; 10= Saturday and Sunday; 11= every day.

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ENGLISH

4. SUMMARY OF OPERATING PARAMETERS

UOM = Unit of measure; Def. = Default value

Simbol	Code	Parameter	AD	U.O.M.	Type	Min	Max	Def.
	Pw	Password	AD	-	C	0	200	22
	/2	Measurement stability	AD	-	C	1	15	4
	/3	Probe display response	AD	-	C	0	15	0
	/4	Virtual probe	AD	-	C	0	100	0
	/5	Select °C or °F	AD	flag	C	0	1	0
		0: °C						
		1: °F						
	/6	Decimal point	AD	flag	C	0	1	0
		with tenths of a degree						0
		without tenths of a degree						1
	/tI	Display on internal terminal	AD	-	C	1	7	1
		1: virtual probe						
		2: probe 1						
		3: probe 2						
		4: probe 3						
		5: probe 4						
		6: probe 5						
		7: set point						
	/tE	Display on external terminal	AD	-	C	0	6	0
		remote terminal not present						0
		1: virtual probe						1
		2: probe 1						2
		3: probe 2						3
		4: probe 3						4
		5: probe 4						5
		6: probe 5						6
	/P	Select type of probe	AD	-	C	0	2	0
		NTC standard with range -50T90 °C						0
		NTC enhanced with range -40T150 °C						1
		PTC standard with range -50T150 °C						2
	/A2	Configuration of probe 2 (S2)	D	-	C	0	4	2
			A	-	C	0	4	0
		0: Probe absent						
		1: Product probe (display only)						
		2: Defrost probe						
		3: Condenser probe						
		4: Antifreeze probe						
	/A3	Configuration of probe 3 (S3/DI1)	AD	-	C	0	4	0
		As for /A2						
	/A4	Configuration of probe 4 (S4/DI2)	AD	-	C	0	4	0
		As for /A2						
	/A5	Configuration of probe 5 (S5/DI3)	AD	-	C	0	4	0
		As for /A2						
	/c1	Calibration of probe 1	AD	°C/°F	C	-20	20	0.0
	/c2	Calibration of probe 2	AD	°C/°F	C	-20	20	0.0
	/c3	Calibration of probe 3	AD	°C/°F	C	-20	20	0.0
	/c4	Calibration of probe 4	AD	°C/°F	C	-20	20	0.0
	/c5	Calibration of probe 5	AD	°C/°F	C	-20	20	0.0

Simbol	Code	Parameter	AD	U.O.M.	Type	Min	Max	Def.
	St	Temperature Set point	AD	°C/°F	F	r1	r2	0.0
	rd	Control delta	AD	°C/°F	F	0.1	20	2.0
	rn	Dead band	AD	°C/°F	C	0	60	4.0
	rr	Reverse differential for control with dead band	AD	°C/°F	C	0.1	20	2.0
	r1	Minimum set point allowed	AD	°C/°F	C	-50	r2	-50
	r2	Maximum set point allowed	AD	°C/°F	C	r1	200	60
	r3	Operating mode	AD	flag	C	0	2	0
		0: Direct (cooling) with defrost control						
		1: Direct (cooling)						
		2: Reverse-cycle (heating)						
	r4	Automatic night-time set point variation	AD	°C/°F	C	-20	20	3.0
	r5	Enable temperature monitoring	AD	flag	C	0	1	0
		0: Disabled						
		1: Enabled						
	rt	Temperature monitoring interval	AD	ore	F	0	999	-
	rH	Maximum temperature read	AD	°C/°F	F	-	-	-
	rL	Minimum temperature read	AD	°C/°F	F	-	-	-

Simbol	Code	Parameter	AD	U.O.M.	Type	Min	Max	Def.
	c0	Comp., fan and AUX delay on start-up in dead band	AD	min	C	0	15	0
	c1	Minimum time between successive starts	AD	min	C	0	15	0
	c2	Minimum compressor OFF time	AD	min	C	0	15	0
	c3	Minimum compressor ON time	AD	min	C	0	15	0
	c4	Duty setting	AD	min	C	0	100	0
	cc	Continuous cycle duration	AD	ore	C	0	15	0
	c6	Alarm bypass after continuous cycle	AD	ore	C	0	250	2
	c7	Maximum pump down time	AD	s	C	0	900	0
	c8	Comp. start delay after open PD valve (factory set to 0 and not visible)	AD	s	C	0	60	5
	c9	Enable autostart function in PD	AD	flag	C	0	1	0
	c10	Select Pump down by time or pressure	AD	flag	C	0	1	0
		0: Pump down by pressure						
		1: Pump down by time						
	c11	Second compressor delay	AD	s	C	0	250	4

Simbol	Code	Parameter	AD	U.O.M.	Type	Min	Max	Def.
	d0	Type of defrost	AD	flag	C	0	4	0
		0: Electric heater defrost by temperature						
		1: Hot gas defrost by temperature						
		2: Electric heater defrost by time						
		3: Hot gas defrost by time						
		4: Electric heater defrost thermostat by time						
	dI	Interval between defrosts	AD	ore	F	0	250	8
	dt1	End defrost temperature, evaporator	AD	°C/°F	F	-50	200	4.0
	dt2	End defrost temperature, aux evap.	AD	°C/°F	F	-50	200	4.0
	dP1	Maximum defrost duration, evaporator	AD	min	F	1	250	30
	dP2	Maximum defrost duration, aux evap.	AD	min	F	1	250	30
	d3	Defrost start delay	AD	Min	C	0	250	0
	d4	Enable defrost on start-up	AD	flag	C	0	1	0
		0: No defrost is performed when the instrument is switched on						
		1: A defrost is performed when the instrument is switched on						
	d5	Defrost delay on start-up	AD	min	C	0	250	0
	d6	Display on hold during defrost	AD	-	C	0	2	1
		0: Alternating display of dEF and probe value						
		1: Display of the last temp. shown						
		2: Display of dEF steady						
	dd	Dripping time after defrost	AD	min	F	0	15	2
	d8	Alarm bypass after defrost	AD	ore	F	0	15	1
	d8d	Alarm bypass after door open	AD	ore/min	F	0	250	0
	d9	Defrost priority over compressor protectors	AD	flag	C	0	1	0
		0: The protection times c1, c2 and c3 are observed						
		1: The protection times c1, c2 and c3 are not observed						
	d/1	Display of defrost probe 1	AD	°C/°F	F	-	-	-
	d/2	Display of defrost probe 2	AD	°C/°F	F	-	-	-
	dC	Time base for defrost	AD	flag	C	0	1	0
		0: dI in hours, dP1 and dP2 in minutes						
		1: dI in minutes, dP1 and dP2 in seconds						
	d10	Compressor running time	AD	ore	C	0	250	0
	d11	Running time temperature threshold	AD	°C/°F	C	-20	20	1.0
	d12	Advanced defrost	AD	-	C	0	3	0
	dn	Nominal defrost duration	AD	-	C	1	100	65
	dH	Proportional factor, variation in dI	AD	-	C	0	100	50

Simbol	Code	Parameter	AD	U.O.M.	Type	Min	Max	Def.
	A0	Alarm and fan differential	AD	°C/°F	C	0.1	20	2.0
	A1	Type of threshold 'AL' and 'AH'	AD	flag	C	0	1	0
		0: AL and AH are relative thresholds						
		1: AL and AH are absolute thresholds						
	AL	Low temperature alarm threshold	AD	°C/°F	F	-50	200	0.0
	AH	High temperature alarm threshold	AD	°C/°F	F	-50	200	0.0
	Ad	Low and high temperature signal delay	AD	min	F	0	250	120
	A4	Digital input 1 configuration	A	-	C	0	14	0
			D	-	C	0	14	3
		0: Input not active						
		1: Immediate external alarm						
		2: Delayed external alarm						
		3: If model M, probe selection						
		3: Other models enable defrost						
		4: Start defrost						
		5: Door switch with compressor and fan stop						
		6: Remote on/off						
		7: Curtain switch						

Simbol	Code	Parameter	AD	U.O.M.	Type	Min	Max	Def.
		8: Low pressure switch						
		9: Door switch with fan stop only						
		10: Direct/reverse						
		11: Light sensor						
		12: Activation of the AUX output						
		13: Door switch with compressor and fans off and light not managed						
		14: Door switch with fans only off and light not managed						
	A5	Digital input 2 configuration	AD	-	C	0	14	0
		As for A4						
	A6	Stop compressor from external alarm	AD	min	C	0	100	0
	A7	External alarm detection delay	AD	min	C	0	250	0
	A8	Enable alarms 'Ed1' and 'Ed2'	AD	flag	C	0	1	0
		0: Alarm signals Ed1 and Ed2 enabled						
		1: Alarm signals Ed1 and Ed2 disabled						
	A9	Digital input 3 configuration	AD	-	C	0	14	0
		As for A4						
	Ado	Light management mode with door switch	AD	flag	C	0	1	0
		0: With normal algorithm						
		1: With extended algorithm						
	Ac	High condenser temperature alarm	AD	°C/°F	C	0.0	200	70.0
	AE	High condenser temperature alarm differential	AD	°C/°F	C	0.1	20	10
	Acd	High condenser temperature alarm delay	AD	min	C	0	250	0
	AF	Light sensor OFF time	AD	s	C	0	250	0
	ALF	Antifreeze alarm threshold	AD	°C/°F	C	-50	200	-5.0
	AdF	Antifreeze alarm delay	AD	min	C	0	15	1

Simbol	Code	Parameter	AD	U.O.M.	Type	Min	Max	Def.
	F0	Fan management	D	flag	C	0	2	0
		0: Fans always on						
		1: Fans controlled according to the temperature difference between the virtual control probe and the evaporator temperature						
		2: Fans controlled according to the evaporator temperature						
	F1	Fan start temperature	D	°C/°F	F	-50	200	5.0
	F2	Fan OFF with compressor OFF	D	flag	C	0	1	1
		0: Fans always on						
		1: Fans off with compressor off						
	F3	Fans in defrost	D	flag	C	0	1	1
		0: Fans operate during defrosts						
		1: Fans do not operate during defrosts						
	Fd	Fan OFF after dripping	D	min	F	0	15	1
	F4	Condenser fan stop temperature	AD	°C/°F	C	-50	200	40
	F5	Condenser fan start differential	AD	°C/°F	C	0.1	20	5.0

Simbol	Code	Parameter	AD	U.O.M.	Type	Min	Max	Def.
aux	H0	Serial address	AD	-	C	0	207	1
	H1	Function of relay 4	AD	flag	C	0	13	1
		0: Alarm output usually energised						
		1: Alarm output usually de-energised						
		2. Auxiliary output						
		3: Light output						
		4: Auxiliary evaporator defrost output						
		5: Pump down valve output						
		6: Condenser fan output						
		7: Delayed compressor output						
		8: Auxiliary output with deactivation when OFF						
		9: Light output with deactivation when OFF						
		10: No function associated with the output						
		11: Reverse output in control with dead band						
		12: Second compressor step output						
		13: Second compressor step output with rotation						
	H2	Disable keypad/IR	AD	flag	C	1	6	1

Parameter "H2"	LIGHT	ON/OFF	AUX	HACCP	PRG/MUTE	UP/CC	DOWN/DEF	SET	Parameter F modification	Set point modification	Remote control modification
0									•		•
1											
2									•	•	•
3											•
4			•			•	•	•			
5			•			•	•	•	•		
6						•	•	•	•		

Keypad function
"•" = Disabled

	Code	Parameter	AD	U.O.M.	Type	Min	Max	Def.
	H3	Remote control enabling code	AD	-	C	0	255	0
	H4	Disable buzzer	AD	flag	C	0	1	0
		0: Buzzer enabled						
		1: Buzzer disabled						
	H5	Function of relay 5	AD	flag	C	0	13	1
		As for H1						
	H6	Lock keypad	AD	-	C	0	255	0
	H8	Select activation of output with time band	AD	flag	C	0	1	0
		0: Time band linked to output configured for light						
aux		1: Time band linked to output configured for aux						
	H9	Enable set point variation with time band	AD	flag	C	0	1	0
		0: Set point variation with time band disabled						
		1: Set point variation with time band enabled						
	Hdh	Anti-sweat heater offset	AD	°C/°F	C	-50	200	0.0

Simbol	Code	Parameter	AD	U.O.M.	Type	Min	Max	Def.
	HAn	Number of HA events recorded	AD	-	C	0	15	0
	HA	Date/time of last HA event	AD	-	C	-	-	-
	y__	Year		years		0	99	0
	M__	Month		months		0	12	1
	d__	Day		days		0	7	1
	h__	Hour		hours		0	23	0
	n__	Minute		minutes		0	59	0
	t__	Duration		hours		0	99	0
	HA1	Date/time of penultimate HA event	AD	-	C	-	-	-
	HA2	Date/time of third-to-last HA event	AD	-	C	-	-	-
	HFn	Number of HF events recorded	AD	-	C	0	15	0
	HF	Date/time of last HF event	AD	-	C	-	-	-
	y__	Year		years		0	99	0
	M__	Month		months		0	12	1
	d__	Day		days		0	7	1
	h__	Hour		hours		0	23	0
	n__	Minute		minutes		0	59	0
	t__	Duration		hours		0	99	0
	HF1	Date/time of penultimate HF event	AD	-	C	-	-	-
	HF2	Date/time of third-to-last HF event	AD	-	C	0	-	-
	Htd	HACCP alarm delay	AD	minutes	C	0	250	0

Simbol	Code	Parameter	AD	U.O.M.	Type	Min	Max	Def.
	td1	Defrost time band 1	AD	-	C	-	-	-
	d__	Day		days		0	11	0
	h__	Hour		hours		0	23	0
	n__	Minute		minutes		0	59	0
	td2	Defrost time band 2	AD	-	C	-	-	-
	td3	Defrost time band 3	AD	-	C	-	-	-
	td4	Defrost time band 4	AD	-	C	-	-	-
	td5	Defrost time band 5	AD	-	C	-	-	-
	td6	Defrost time band	AD	-	C	-	-	-
	td7	Defrost time band 7	AD	-	C	-	-	-
	td8	Defrost time band 8	AD	-	C	-	-	-
	ton	Light/aux on time band, variation set point	AD	-	C	-	-	-
	d__	Day		days		0	11	0
	h__	Hour		hours		0	23	0
	n__	Minute		minutes		0	59	0
	toF	Light/aux off time band, variation set point	AD	-	C	-	-	-
	d__	Day		days		0	11	0
	h__	Hour		hours		0	23	0
	n__	Minute		minutes		0	59	0
	tc	RTC date/time setting	AD	-	C	-	-	-
	y__	Year		years	0	0	99	0
	M__	Month		months	1	1	12	1
	d__	Day of the month		days	1	1	31	1
	u__	Day of the week		hours	6	6	7	1
	h__	Hour		minutes	0	0	23	0
	n__	Minute		hours	0	0	59	0

Tab. 4.a

Important warning: for the set times to become immediately operational, turn the instrument on and off again. If the instrument is not switched off, the times will only become operational when next used, when the internal timers are set.

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5. TABLE OF ALARMS AND SIGNALS: display, buzzer and relay

The following table describes the alarms and the signals on the controller, with the corresponding description, status of the buzzer, the alarm relay and the reset mode.

Code	Icon on the display	Alarm relay	Buzzer	Reset	Description
'rE'	🔧 flashing	active	active	automatic	virtual control probe fault
'E0'	🔧 flashing	off	off	automatic	room probe S1 fault
'E1'	🔧 flashing	off	off	automatic	defrost probe S2 fault
'E2'-3-4	🔧 flashing	off	off	automatic	probe S3-4-5 fault
' — '	no	off	off	automatic	probe not enabled
'LO'	⚠ flashing	active	active	automatic	low temperature alarm
'HI'	⚠ flashing	active	active	automatic	high temperature alarm
'AFr'	⚠ flashing	active	active	manual	antifreeze alarm
'IA'	⚠ flashing	active	active	automatic	immediate alarm from external contact
'dA'	❄ flashing	active	active	automatic	delayed alarm from external contact
'dEF'	on	off	off	automatic	defrost running
'Ed1'-2	no	off	off	autom./manual	defrost on evaporator 1-2 ended by timeout
'Pd'	🔧 flashing	active	active	autom./manual	maximum pump-down time alarm
'LP'	🔧 flashing	active	active	autom./manual	low pressure alarm
'AtS'	🔧 flashing	active	active	autom./manual	autostart in pump-down
'cht'	no	off	off	autom/manual	high condenser temperature pre-alarm
'CHT'	🔧 flashing	active	active	manual	high condenser temp.
'dor'	⚠ flashing	active	active	automatic	door open for too long alarm
'Etc'	🕐 flashing	off	off	autom./manual	real time clock fault
'EE'	🔧 flashing	off	off	automatic	unit parameter EEPROM error
'EF'	🔧 flashing	off	off	automatic	operating parameter EEPROM error
'HA'	HACCP flashing	off	off	manual	HACCP alarm type 'HA'
'HF'	HACCP flashing	off	off	manual	HACCP alarm type 'HF'
'rCt'	Signal				Instrument enabled for programming from remote control
'Add'	Signal				Automatic address assignment procedure in progress
'Prt'	Signal				Report being printed
'LrH'	Signal				Activation of the low relative humidity procedure
'HrH'	Signal				Activation of the high rH procedure
'ccb'	Signal				Request start continuous cycle
'ccE'	Signal				Request end continuous cycle
'dFb'	Signal				Request start defrost
'dFE'	Signal				Request end defrost
'On'	Signal				Switch ON
'OFF'	Signal				Switch OFF
'rES'	Signal				Reset alarms with man. reset; Reset HACCP alarms; Reset temp. monitoring
'n1' to 'n6'	⚠ flashing	active	active	automatic	Indicates alarm on unit 1 to 6 present in the network
'dnL'	Signal				Download in progress
'd1' to 'd6'	⚠ flashing	off	off		Download with errors on unit 1 to 6

Tab. 5.a

Notes: The buzzer is activated if enabled by parameter 'H4'.
The alarm relay is activated if one of the auxiliary outputs, AUX ('H1') or AUX2 ('H5'), has been assigned the alarm relay function (normally energised or de-energised).

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6. ELETTRICAL SPECIFICATIONS

Power supply	Model	Voltage		Power
	E	230 V~, 50-60Hz		11,3VA, 50mA~ max
	A	115 V~, 50-60Hz		11,3VA, 100mA~ max
	H not avalaible	115-230 V~, 50-60Hz		12VA, 110mA~ max

Insulation guaranted by the power supply		insulation in reference to very low voltage parts	reinforced
			6mm clearance, 8 creepage
			3750V insulation
	E, A, (H not avalaible)	insulation from relay outputs	basic
			3mm clearance, 4 creepage
			1250V insulation

Inputs	S1	NTC or PTC (depending on the model)
	S2	NTC or PTC (depending on the model)
	DI1	free contact, contact resistance < 10ohm, closing current 6mA
	S3	NTC or PTC (depending on the model)
	DI2	free contact, contact resistance < 10ohm, closing current 6mA
	S4	NTC or PTC (depending on the model)
	DI3	free contact, contact resistance < 10ohm, closing current 6mA
	S5	NTC or PTC (depending on the model)
	Maximum ditance of probes and digital inputs less than 10 m.	
	Note: during installation keep the power and loads connection separate from probe cables, digital inputs, repeater display and supervisory system.	

Probe type		$10k\Omega$ a 25°C, range from −50°C to +90°C	
	NTC std. CAREL		1°C in the range from −50° C to +50°C
		measurement error:	3°C in the range from +50° C to +90°C
	NTC high tempe-rature	$50k\Omega$ a 25°C, range from −40°C a +150°C	
			1,5°C in the range from −20° C to +115°C
		measurement error:	4°C in the range from -20° C to +115°C
	PTC std. Carel (specific model)	985Ω a 25°C, range da -50°C a 150°C	
			2°C in the range from −50° C to +50°C
		measurement error:	4°C in the range from +50° C to +150°C

Relè outputs	depending on the model				
		EN60730-1		UL 873	
		250V~	operating cycle	250V~	operating cycle
	8 A (**)	8 (4) A su N.O. 6 (4) A su N.C. 2 (2) A su N.O. e N.C.	100000	8A res 2FLA 12LRA C300	30000
	16 A (**)	10 (4) A fino a 60°C su N.O. 12 (2) A su N.O. e N.C.	100000	12A res 5FLA 30LRA C300	30000
	2HP	10 (10) A	100000	12A res 12FLA 72LRA	30000
	30 A (**)	12 (10) A	100000	12A res 2HP 12FLA	30000
	(**) Relay not suitable for fluorescent loads (neon lights, ...) that use starters (ballasts) with phase-shift capacitors. Fluorescent lamps with electronic control devices or without phase-shift capacitors can be used, within the operating limits specified for each type of relay.				
	insulation from very low voltage parts	rinforced			
		6mm clearance, 8 creepage			
		3750V insulation			
	insulation between relay outputs indipendent	principale			
		3mm clearance, 4 creepage			
		1250V insulation			

Connection	Type of connection	Sections		Cross sections max current
	screw			
	removible for screw blocks			
	faston	for cable from 0,5 to 2,5 mm^2		12A
	Section conduttors for probes and digital inputs		from 0,5 to 2,5 mm^2 (da 20 a 13 AWG)	
	Section conduttors for power supply and loads		from 1,5 to 2,5 mm^2 (da 15 a 13 AWG)	
	the installer has to provide the correct dimensioning of the power supply and cable connection between the instruments and the loads. Depending on the model, the maximum current in the common terminals 1, 3 and 5 is 12 A. When using the controller at maximum operating temperature and full load, use cables featuring a maximum operating temperature of 105 °C at least.			

Case	plastic	dimensions	200x240x93 mm
		board dimensions	178x86x40 mm
	board and frontal	frontal dimensions	100x90x12 mm

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Mounting	wall (with plastic case)	with screw	interasse 162,5x218,5 mm
	panel (with frontal case)	with screw	interasse 159,5x197,5 mm
	board	with screw	
		with screw	
Display	digits	3 digit LED	
	display range	from −99 to 999	
	operating status	indicated by graphic icon on the display	
Tastiera	8 mechanics buttons, polycarbonate keyboard on the plastic case		
Ricevitore infrarossi	depending on the model		
Orologio con batteria tampone	depending on the model		
Buzzer	avaible in all the models		
Clock	error at 25°C	± 10ppm (±5,3min/year)	
	range temperature error −10/60 °C	- 50ppm (-27min/year)	
	ageing	< ±5ppm (±2,7min/year)	
	discharge time	typical 6 months (max 8 months)	
	recharge time	typical 5 hours (< max 8 hours)	
Operating temperature	board		-10T65 °C
	plastic case with the following elettrical configurations: Relay 1 12A, Relay 2 0A, Relay 3 4A, Relay 4 4A, Relay 5 4A Relay 1 0A, Relay 2 12A, Relay 3 4A, Relay 4 4A, Relay 5 4A depending on the relay used these elettrical configuration will be reduced.		-10T50 °C
Operating humidity	board		
	with plastic case		<90% r.H. non-condensing
Storage temperature	-20T70 °C		
Storage humidity	<90% r.H. non-condensing		
Front panel degree of protection	with plastic case		IP65 without power switch IP54 with power switch
	panel mounting with plastic frontal		
Control pollution status	2 (normal situation)		
PTI of the insulating material	printed circuit board 250, insulation 175		
Period of electric stress across insulating parts	long		
Heat and fire resistance category	category D and category B (UL 94-V0)		
Class of protection against voltage surges	category II		
Type of disconnection or interruption	1.B relay contacts (micro-disconnection)		
Construction of control	incorporated control, electronically		
Classification according to protection against electric shock	Class II, by appropriate incorporation		
The control is either to be hand-held or is intented for a hand-held equipment	no		
Software class and structure	Class A		
Front panel cleaning	use only neutral detergents and water		
Serial interface for CAREL network	external, available on all models		
Interface for repeater display	external, available on IRxxxx(0,L,H)xxxx		
Maximum distance betwe-en interface and display	10m		
Power supply switch	available on the domand in all models with plastic case		
Programming key	available on all models		

7. RECOMMENDED CURRENT ACCORDING TO THE CROSS-SECTION OF THE WIRES

AWG	Cross-section (mm²)	Current
24	0.21	0.8
23	0.26	1
22	0.33	1.3
21	0.41	1.6
	0.5	2
20	0.52	2.1
19	0.65	2.6
18	0.82	3.3
17	1	4
16	1.31	5.3
	1.5	6
15	1.65	6.8
14	2.1	9
	2.5	12
13	2.63	12.8
12	3.31	16.1

Tab. 6.a

8. CONFIGURATIA ELECTRICA/*ELECTRICAL CONFIGURATIONS*/BRANCHEMENTS ÉLECTRIQUES/*ELEKTRISCHE ANSCHLÜSSE*/CONEXIONES ELÉCTRICAS/*LIGAÇÕES ELECTRICAS*

MD33(A,D) (0,1,2,3,4,5) (A,B,E,F) (N,R,C,B) (0,1,2,3,4,5,6,7) 0
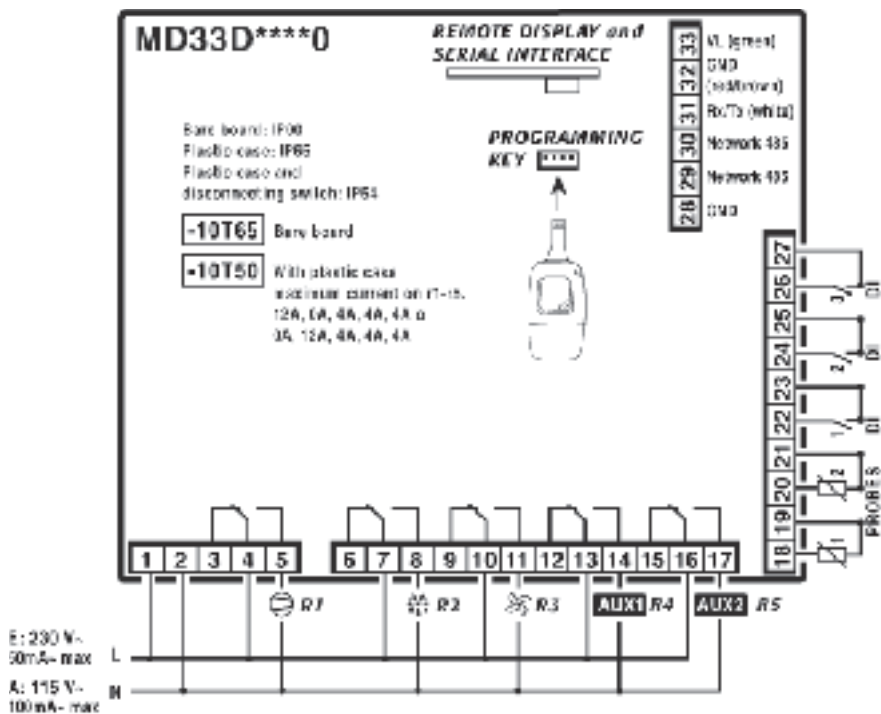

Fig. 7.a

Fig. 7.b

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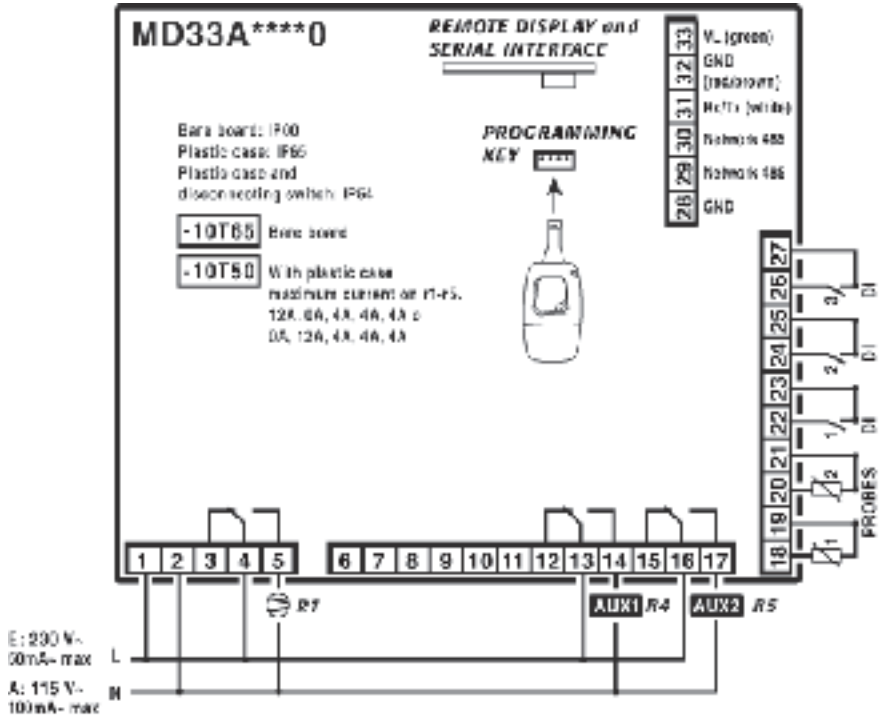
9. EXEMPLU DE CONEXIUNI TERMINALE/*EXAMPLES OF TERMINAL BOARDS CONNECTION*/EXEMPLE DE CÂBLAGE DE LA CARTE DE CONNE-XION/*ANSCHLUSSBEISPIEL FUER DIE STECKVERBINDUNGEN*/EJEMPLOS DE CONEXIÓN TARJETAS BORNES/*EXEMPLO DI LIGAÇÃO DA PLACA DE CONECTORES*
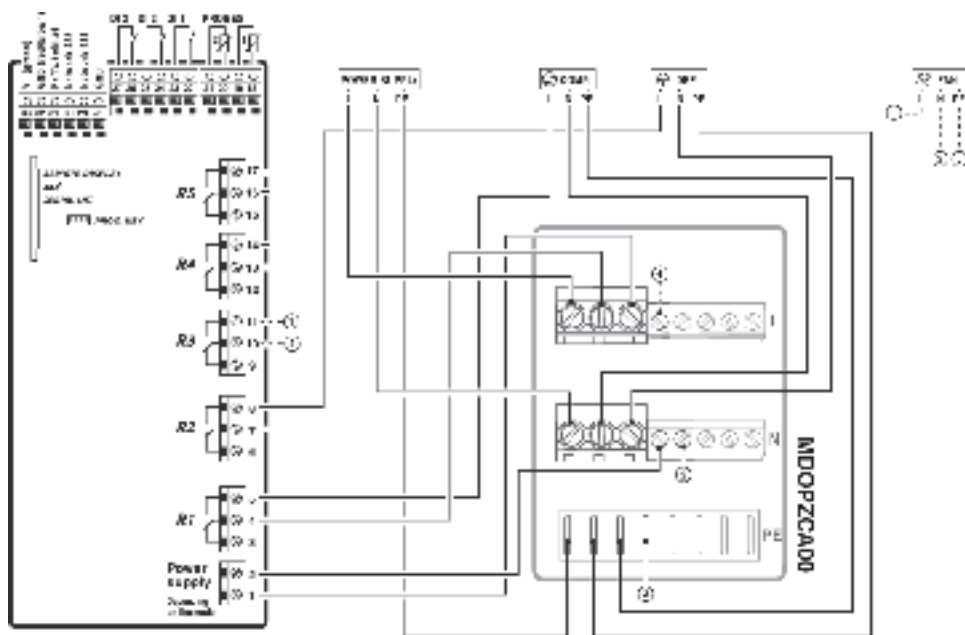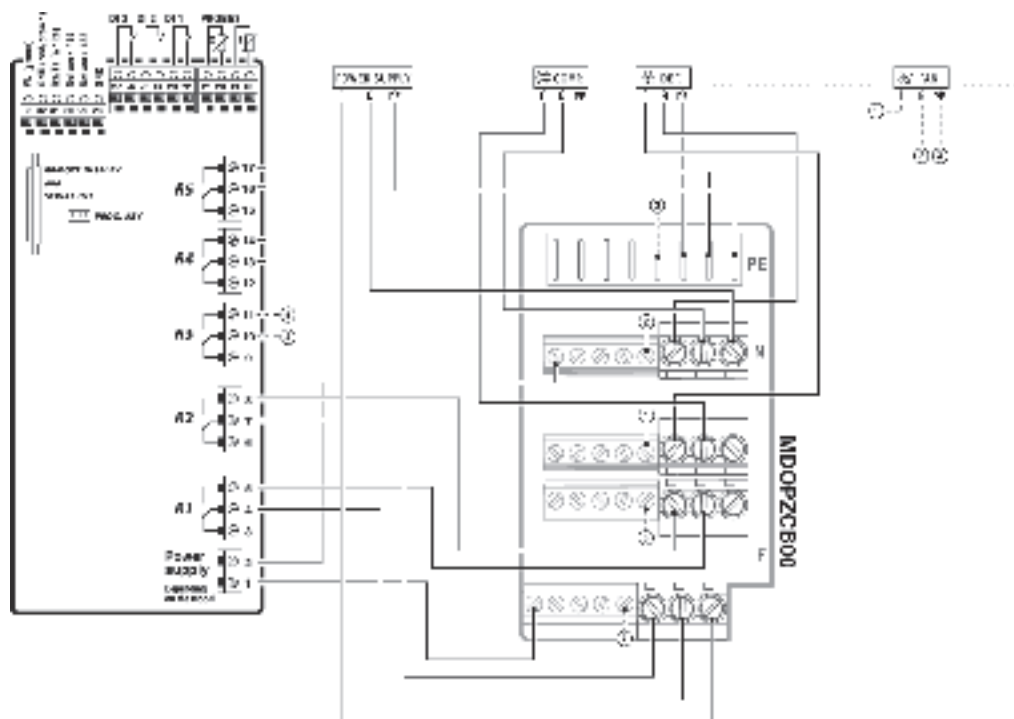

Fig. 8.a

Fig. 8.b

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10. DIMENSIUNI/DIMENSIONS/DIMENSIONS/ABMESSUNGEN/ DIMENSIONES/DIMENSÕES
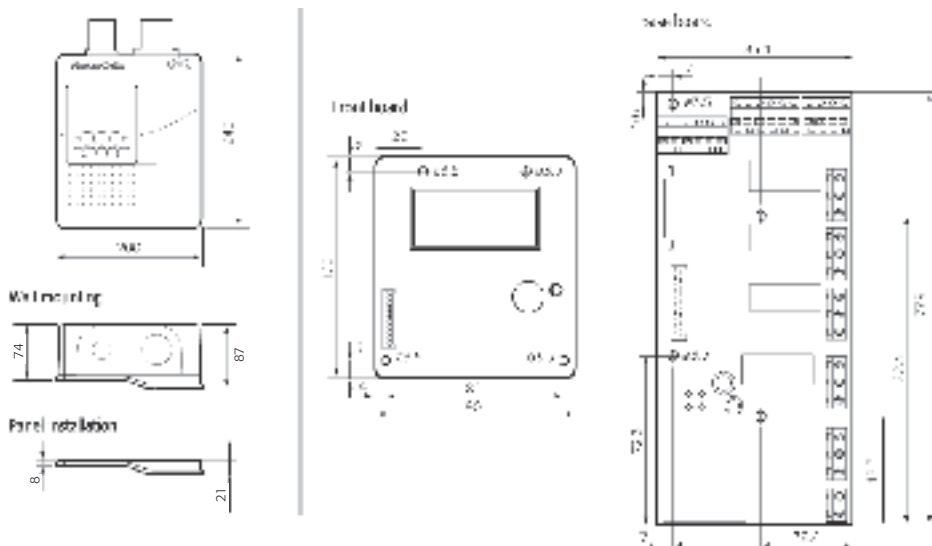

Fig. 9.a

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