MAGNACOOL INSTALLATION & USER MANUAL

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USERSNAME: PASSWORD:

1. Purpose Of The Installation

2. Control Panel

2.1 Main Switch
This switch is used to provide the installation of tension. Switching the switch off will cut the power to the installation.

2.2 Touch Screen
Is used to change settings, change / select recipes, select auto / manual, start / stop installation, ...

2.3 Emergency Stop Button
In the event that something unexpected or something wrong happens, the operator can operate an emergency.

2.4 Blue Illuminated Pushbutton
When the emergency stop button has been activated or at the start-up of the installation, the light from this button will be "ON". Reactivate the emergency-stop button and press the blue button to reset the emergency relais in the cabinet.

2.5. Combi Start-Stop Pushbuttons
The green start button is used when during the operation the operator enters a new trolley. Pushing the start-button will start the preset time for that trolley.
The red stop button is used to stop the horn. The horn will sound when a preset time for a trolley has been reached.

3. Components On The Installation

3.1 Sensors

3.11 Pressure Switch
Sensor NC-contact, digital input.
Checks the pressure at the input side of the air-flow.

3.12 Hygro Sensor
Sensor 4-20mA, analog input.
Detects the Hygro value at the output side of the air-flow.

3.13 PT100, Inlet Fan
Temperature sensor, RTD input.
Detects the temperature value at the input side of the air-flow.

3.14 PT100, Outlet Fan
Temperature sensor, RTD input.
Detects the temperature value at the output side of the air-flow.

3.15 PT100, Mix
Temperature sensor, RTD input.
Detects the temperature value at the middle side of the air-flow.

3.2 Belimo Valves
There are 3 belimo valves on the installation.
- At the input side of the airflow (function "0"), 0V = closed and 10V = open
- At the output side of the airflow (function "0"), 0V = closed and 10V = open
- At the center of the airflow (function "1"), 0V = open and 10V = closed

These valves are operated with 1 analog output (0-10V). When the output signal rises, the first 2 controllers will open the in- and outlet and the third will close.

3.3 Motors
There are 2 motors on the installation

3.3.1 Motor4M3, Air Inlet Fan
The air inlet fan is controlled by a frequency drive (4G8). The speed is regulated by the PLC, by means off an analog output (0-10V). The same analog output is used also for the air outlet fan.

3.3.2 Motor4M11, Air Outlet Fan
The air outlet fan is controlled by a frequency drive (4G16). The speed is regulated by the PLC, by means off an analog output (0-10V). The same analog output is used also for the air inlet fan.

3.4 Towerlight
On top of the installation is an towerlight. There are 4 functions activated:
- Green light: Indicates that the installation is powered.
- Yellow light: Indicates that the installation has been started.
- Red light:
- Horn: Indicates that a trolley has finished it's preset time.

3.5 Touchscreen:
The touchscreen display is used to operate the installation, controls the settings, …
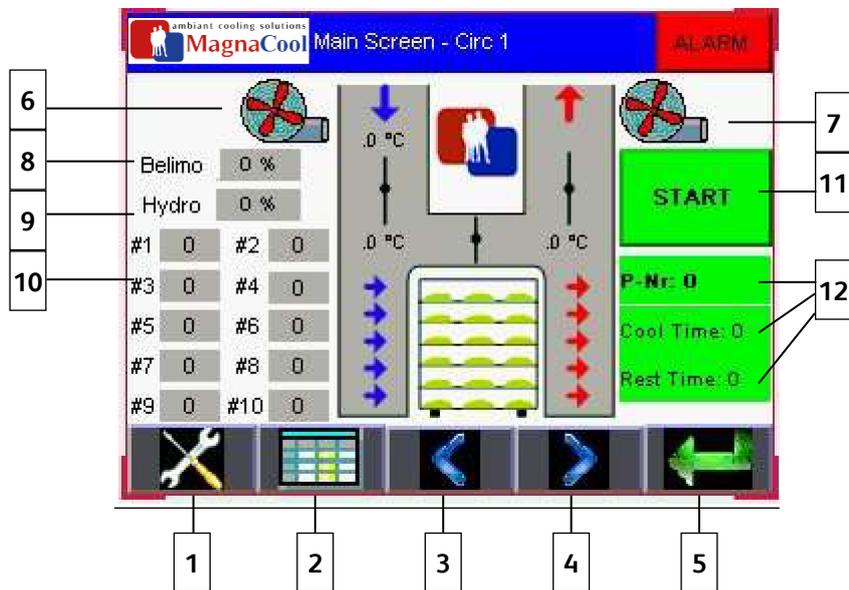
4 Touchscreen Displays.
Below is the description for each display that can be displayed on the screen. Some displays have password protection.

4.1 About

This screen is displayed after power-up or when the screen-saver is active and the operator touches the screen.
Pressing the arrow-key (1) will open the next screen: Main Screen – Circ 1

4.2. Main Screen – Circ 1

This screen is the main operator screen for the installation.

1 = Button "Goto Screen – Main Maintenance Screen"

2 = Button "Goto Screen – Program Selection"

3 = Button "Goto Screen – Trolley Timers"

4 = Button "Goto Screen – Main Screen – Circ 2" (only active when there's a second Unit)

5 = Button "Goto Previous Screen"

6 = Status display of Air Inlet Fan:

Red = Air inlet fan is not working/running Green = Air inlet fan is running

7 = Status display of Air Outlet Fan:

Red = Air outlet fan is not working/running Green = Air outlet fan is running

8 = Operating value of the Belimo Valves 9 = Hygro- value

10 = Displays the number of trolleys that are used. The value is pre programmed on the "Settings" screen

#1 = Trolley number

"0" = time that the trolley is in the tunnel.

Each time a trolley is manually inserted in the tunnel, the operator has to push the "START" pushbutton under the display to activate the time that trolley needs to be inside. Each time the button is pushed it will add a trolley (the time-value will change into yellow and will show the time that this trolley is inside). When the pre-programmed "Cool Time" has been reached, the horn will sound. Pressing the "STOP" pushbutton under the display will stop the horn sounding.

11 = Button "START" to start operating the installation

12 = Display of selected "Program"

P-Nr: … = Number of selected program

Cool Time: … = Pre programmed Cooling Time

Rest Time: … = Shows the remaining time the installation runs automatically

4.3 Main Maintenance Screen

This screen is the main maintenance screen for the installation.

        1 = Button "Goto Previous Screen"
        2 = Button "Goto Screen – Manueel Circuit 1" 3 = Button "Goto Screen – Settings"
        4 = Button "Goto Screen – Alarm List"
        5 = Button "Goto Screen – Date & Time" 6 = Button "LOGIN"
        7 = Button "LOGOUT"
        8 = Button "Goto Screen – Password Users" 9 = Button "Goto Screen – Settings Recipe"

The following "Goto Screen" buttons will ask for a username and password:
- SETTINGS   Not accessible to clients
- LOGIN   Accessible to all
- PASSWORD ADMIN   Accessible to all
- SETTINGS RECIPE   Accessible to all

When someone is logged in, the program will not ask for a username and password when a button (see above) is pressed. Do not forget to log back out after making changes. At power-up the user is automatically logged out.

4.4. Program Selection

Kolom 1: Program number: 1 – 5, 6 – 10, 11 – 15, … , 46 – 50

There are 5 different programs visible at any given time. To change the program number press button "4" or "5".

Kolom 2: Program name

Kolom 3: Time (min)

1 = Button "SELECT": After selecting the required program, press this button to validate the program.

2 = Numeric Entry Display:

By pressing on this square, the operator will open an numeric keypad to select a program.
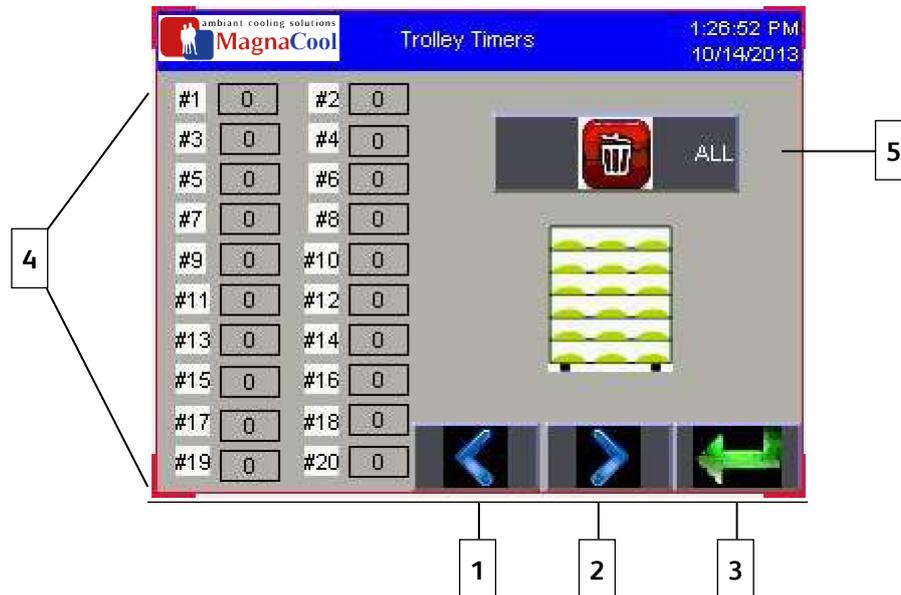
3 = Numeric Display: shows the selected program number.

4 = Previous programs (5 programs per shift)

5= Next programs (5 programs per shift)

6 = Button "Goto Previous Screen"

4.5. Trolley Timers

This screen is used to display the time of the individual trolleys. Also the option to reset the timers.

> 1 = Button "Goto Screen – Main Screen – Circ 1"
>
> 2 = Button "Goto Screen – Main Screen – Circ 2" (only active when there's a second Unit)
>
> 3 = Button "Goto Previous Screen"
>
> 4 = Displays the number of trolleys that are used. The value is pre programmed on the "Settings" screen
>
> > #1 = Trolley number
> >
> > "0" = time that the trolley is in the tunnel.
> >
> > > Each time a trolley is manually inserted in the tunnel, the operator has to push the "START" pushbutton under the display to activate the time that that trolley needs to be inside. Each time the button is pushed it will add a trolley (the time-value will change into yellow and will show the time that this trolley is inside). When the pre-programmed "Cool Time" has been reached, the horn will sound. Pressing the "STOP" pushbutton under the display will stop the horn sounding. The time display wil change to green.

There can be a max of 20 trolleys programmed to show onto the display.

4.6. Manual Circuit 1
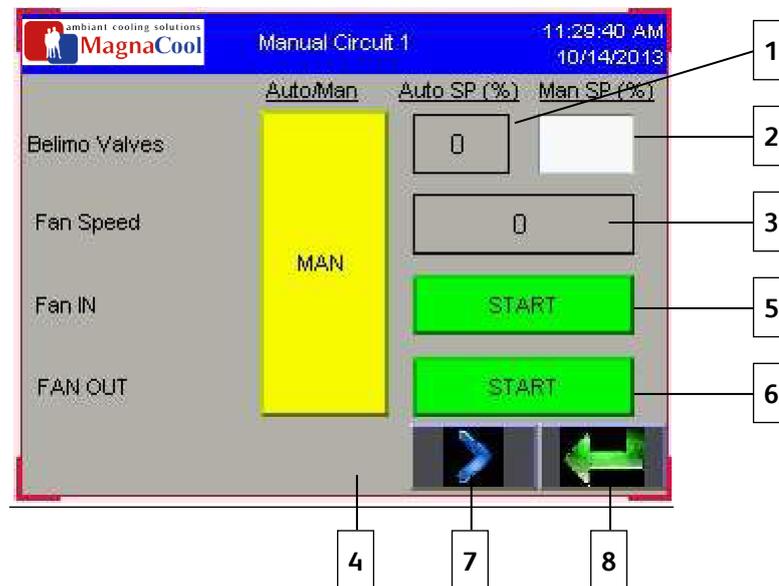
This screen is the main maintenance screen for the installation.

1 = Numeric display: Shows the "Auto setpoint %" for Belimo Valves

2 = Numeric entry: Pressing this area will open an numeric keypad. The operator can now set the desired setpoint for manual operation of the belimo valves

3 = Numeric display: Shows the current speed of the 2 fans

4 = Button "AUTO/MAN": Pressing this button will change the operation of the installation to "AUTO" or to "MAN" When in "MAN" (as seen above), the operator will be able to press the start buttons 5 and 6. The belimo valves will also open or close (as set in MAN SP)

5 = Button "START" Fan In: Only usable when "MANUAL MODE" is selected. Pressing this button will start the AIR INPUT FAN

6 = Button "START" Fan Out: Only usable when "MANUAL MODE" is selected. Pressing this button will start the AIR OUTPUT FAN

7 = Button "Goto Screen – Manual Circuit 2" (only active when there's a second Unit)

8 = Button "Goto Previous Screen"

4.7. User Passwords
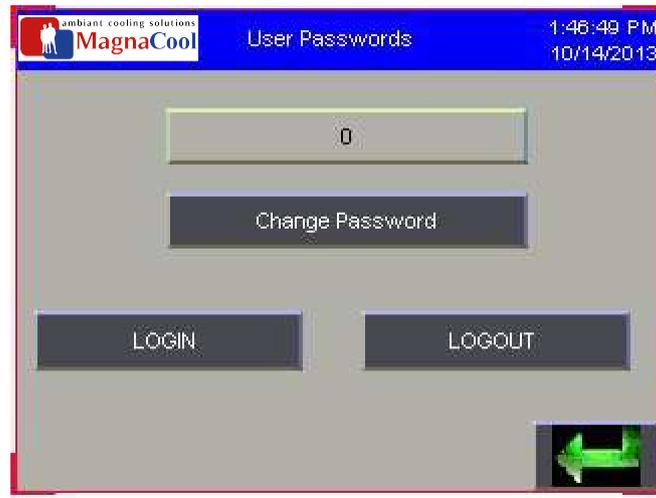
If user is already logged in, the name will be visible at the top. If not logged in press "LOGIN". To logout press the corresponding button.

To change the users password the user needs to be logged in. Pressing "Change Password" will open a pop-up screen. On this screen the user needs to enter 3 things:
- Old Password
- New Password
- Confirm Password

4.8. Settings (only accessible by constructor)

1 = Button: If there is a second unit on the installation, this button will activate it. 2 = Button: Press this button to activate the use of the Hydrometer

3 = Numeric Entry: opens a numeric keypad to enter the number of trolleys that will be used. Preset is "6" 4 = Numeric Entry: opens a numeric keypad to enter the temperature for minimum mix. Preset is "16"

5 = Numeric Entry: opens a numeric keypad to enter the speed that the fans for circuit 1 will run at. Preset is "90"

6 = Numeric Entry: opens a numeric keypad to enter the speed that the fans for circuit 2 will run at. Preset is "0". NOT USED

7 = Button "GOTO CONFIG": this is only used for configuration of the panelview. Do not access and change. Otherwise this could cause the installation to stop operating.

8 = Button "Goto Previous Screen"

4.9 Overview Programs
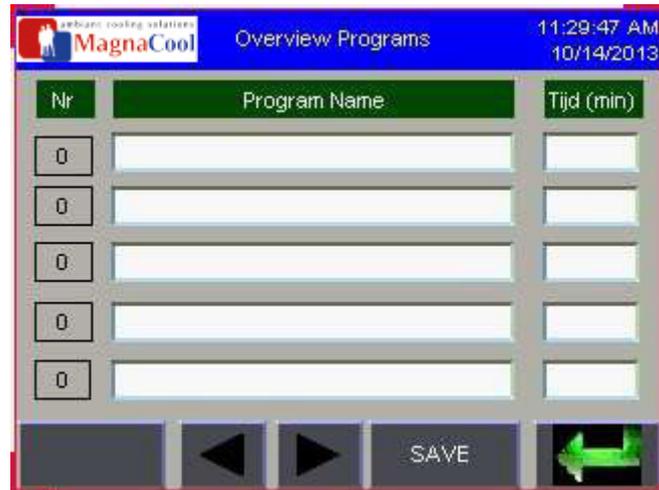
1 = Line 1:
- First kolom: The number of the program (1-50)
- Second kolom: The name of the program
  - By pressing the desired program name, the user can change the name
- Third kolom: The time that the trolley needs to be inside for this program
  - By pressing the desired time, the user can change the time

2 = Button"Goto Screen – Clear All Programs"
3 = Button: Pressing this button will show the previous 5 programs. Now the user can change them.
4 = Button: Pressing this button will show the next 5 programs. Now the user can change them.
5 = Button: SAVE: After the user has made changes to the program name or program time, pressing this button will save the changes.
6 = Button "Goto Previous Screen"

Default programs are:
- Nr 1   White Bread 500gr   30min
- Nr 2   Bread 700gr   60min
- Nr 3   Form White Bread 500gr   30min
- Nr 4   Form Bread 800gr   60min
- Nr 50   Continuous   999min

4.10 Alarm list

List of alarms that occurred since last "confirm". With time and date stamp.

5 Frequency Controllers.

5.1 Parameters Frequency Controller 4G8, Air Inlet Fan.

5.11 Basic Program Group

Nr.	Parameter	Min/Max	Display/Opties	Default	INSTELLING
P101	Motor NP Volts Set to the motor nameplate rated voltage	20/Drive Rated Voltage	1 Vac		**400V**
P102	Motor NP Hertz Set to the motor nameplate rated frequency	10/400 Hz	1 Hz	60 Hz	**50Hz**
P103	Motor OL Current Set to the maximum allowable motor current	0,0/ (Drive Rated Amps x 2)	0,1 A		**10.5A**
P104	Minimum Freq Sets the lowest frequency the drive will output continuously	0,0/400,0 Hz	0,1 Hz	0,0 Hz	**0Hz**
P105	Maximum Freq Sets the highest frequency the drive will output	0,0/400,0 Hz	1 Hz	60 Hz	**50Hz**
P106	Start Source Sets the control scheme used to start the drive	0/5	0="Keypad" 1="3-Wire" 2="2-Wire" 3="2-W Lvl Sens" 4="2-W Hi Speed" 5="Comm Port"	0	**2**
P107	Stop Mode Active stop mode for all stop sources	0/7	0="Ramp, CF" 1="Coast, CF" 2="DC Brake,CF" 3="DCBrkAuto, CF" 4="Ramp" 5="Coast" 6="DC Brake" 7=" DC BrakeAuto"	0	**0**
P108	Speed Reference Sets the source of the speed reference to the drive	0/5	0="Drive pot" 1="InternalFfreq" 2="0-10V Input" 3="4-20mA Input" 4="Preset Freq" 5="Comm Port"	0	**2**
P109	Accel Time 1 Sets the rate of acceleration for all speed increases	0,0/600,0 secs	0,1 secs	10,0 sec	**10.0sec**
P110	Decel Time 1 Sets the rate of deceleration for all speed decreases	0,1/600,0 secs	0,1 secs	10,0 sec	**10.0sec**
P111	Motor OL Ret Enables/disables the Motor Overload Retention function	0/1	0="Disabled" 1="Enabled"	0	**1**
P112	Reset To Defaults Resets all parameter values to factory default	0/1	0="Idle State" 1="Reset Defaults"	0	

5.1.2. Communications Group

Nr.	Parameter	Min/Max	Display/Opties	Default	
C301	Language	1 = "English" 2 = "Second Lang"	1/2	1	
C302	Comm Data Rate	0 = "1200" 1 = "2400" 2 = "4800" 3 = "9600" 4 = "19.2K" 5 = "38.4K"	0/5	3	
C303	Comm Node Addr	1/247	1	100	
C304	Comm Loss Action	0 = "Fault" (Default) 1 = "Coast to Stop" 2 = "Stop" 3 = "Continu Last"			
C305	Comm Loss Time	0.1/60.0 Secs	0.1 Secs	5.0 Secs	
C306	Comm Format	0 = "RTU 8-N-1" (Default) 1 = "RTU 8-E-1" 2 = "RTU 8-O-1" 3 = "RTU 8-N-2" 4 = "RTU 8-E-2" 5 = "RTU 8-O-2"			
C307	Comm Write Mode	0 = "Save" (Default) 1 = "RAM Only"			

5.1.3. Terminal Block Group

Nr.	Parameter	Min/Max	Display/Opties	Default	
t201 t202	Digital In1 Sel I/O terminal 5 Digital In2 Sel I/O terminal 6	0 = "Not Used" 1 = "Acc 2 & Dec 2" 2 = "Jog" 3 = "Aux Fault" 4 = "Preset Freq" 5 = "Local" 6 = "Comm Port" 7 = "Clear Fault" 8 = "RampStop,CF" 9 = "CoastStop,CF" 10 = "DCInjStop,CF" 11 = "Jog Forward" 12 = "Jog Reverse" 13 = "10V In Ctrl" 14 = "20mA In Ctrl" 15 = "Anlg Invert" 16-27 = Reserved	0/15		
t211	Anlg In 0-10V Lo	0.0/100.0%	0.1%	0.0%	
t212	Anlg In 0-10V Hi	0.0/100.0%	0.1%	0.0%	
t213	Anlg In 4-20mA Lo	0.0/100.0%	0.1%	0.0%	
t214	Anlg In 4-20mA Hi	0.0/100.0%	0.1%	0.0%	
t221	Relay Out Sel	0 = "Ready/Fault" 1 = "At Frequency" 2 = "MotorRunning" 3 = "Reverse" 4 = "Motor Overld" 5 = "Ramp Reg" 6 = "Above Freq" 7 = "Above Cur" 8 = "Above DCVolt" 9 = "Retries Exst" 10 = "Above Anlg V" 11 = "ParamControl" 12 = "NonRec Fault" 13 = "I/O Control" 14-22 = Reserved	0/22	0	
t222	Relay Out Level	t221 Setting t222 Min/Max 6 0/400Hz 7 0/180% 8 0/815 Volts 10 0/100% 11 0/1	0.1	0.0	

5.2. Parameters Frequency Controller 4G16, Air Outlet Fan

5.2.1. Basic Program Group

Nr.	Parameter	Min/Max	Display/Opties	Default	INSTELLING
P101	Motor NP Volts Set to the motor nameplate rated voltage	20/Drive Rated Voltage	1 Vac		**400V**
P102	Motor NP Hertz Set to the motor nameplate rated frequency	10/400 Hz	1 Hz	60 Hz	**50Hz**
P103	Motor OL Current Set to the maximum allowable motor current	0,0/ (Drive Rated Amps x 2)	0,1 A		**10.5A**
P104	Minimum Freq Sets the lowest frequency the drive will output continuously	0,0/400,0 Hz	0,1 Hz	0,0 Hz	**0Hz**
P105	Maximum Freq Sets the highest frequency the drive will output	0,0/400,0 Hz	1 Hz	60 Hz	**50Hz**
P106	Start Source Sets the control scheme used to start the drive	0/5	0="Keypad" 1="3-Wire" 2="2-Wire" 3="2-W Lvl Sens" 4="2-W Hi Speed" 5="Comm Port"	0	**2**
P107	Stop Mode Active stop mode for all stop sources	0/7	0="Ramp, CF" 1="Coast, CF" 2="DC Brake,CF" 3="DCBrkAuto, CF" 4="Ramp" 5="Coast" 6="DC Brake" 7=" DC BrakeAuto"	0	**0**
P108	Speed Reference Sets the source of the speed reference to the drive	0/5	0="Drive pot" 1="InternalFfreq" 2="0-10V Input" 3="4-20mA Input" 4="Preset Freq" 5="Comm Port"	0	**2**
P109	Accel Time 1 Sets the rate of acceleration for all speed increases	0,0/600,0 secs	0,1 secs	10,0 sec	**10.0sec**
P110	Decel Time 1 Sets the rate of deceleration for all speed decreases	0,1/600,0 secs	0,1 secs	10,0 sec	**10.0sec**
P111	Motor OL Ret Enables/disables the Motor Overload Retention function	0/1	0="Disabled" 1="Enabled"	0	**1**
P112	Reset To Defaults Resets all parameter values to factory default	0/1	0="Idle State" 1="Reset Defaults"	0	

5.2.2. Communications Group

Nr.	Parameter	Min/Max	Display/Opties	Default	
C301	Language	1 = "English" 2 = "Second Lang"	1/2	1	
C302	Comm Data Rate	0 = "1200" 1 = "2400" 2 = "4800" 3 = "9600" 4 = "19.2K" 5 = "38.4K"	0/5	3	
C303	Comm Node Addr	1/247	1	100	
C304	Comm Loss Action	0 = "Fault" (Default) 1 = "Coast to Stop" 2 = "Stop" 3 = "Continu Last"			
C305	Comm Loss Time	0.1/60.0 Secs	0.1 Secs	5.0 Secs	
C306	Comm Format	0 = "RTU 8-N-1" (Default) 1 = "RTU 8-E-1" 2 = "RTU 8-O-1" 3 = "RTU 8-N-2" 4 = "RTU 8-E-2" 5 = "RTU 8-O-2"			
C307	Comm Write Mode	0 = "Save" (Default) 1 = "RAM Only"			

5.2.3. Terminal Block Group

Nr.	Parameter	Min/Max	Display/Opties	Default	
t201	Digital In1 Sel I/O terminal 5 t202 Digital In2 Sel I/O terminal 6	0 = "Not Used" 1 = "Acc 2 & Dec 2" 2 = "Jog" 3 = "Aux Fault" 4 = "Preset Freq" 5 = "Local" 6 = "Comm Port" 7 = "Clear Fault" 8 = "RampStop,CF" 9 = "CoastStop,CF" 10 = "DCInjStop,CF" 11 = "Jog Forward" 12 = "Jog Reverse" 13 = "10V In Ctrl" 14 = "20mA In Ctrl" 15 = "Anlg Invert" 16-27 = Reserved	0/15		
t211	Anlg In 0-10V Lo	0.0/100.0%	0.1%	0.0%	
t212	Anlg In 0-10V Hi	0.0/100.0%	0.1%	0.0%	
t213	Anlg In 4-20mA Lo	0.0/100.0%	0.1%	0.0%	
t214	Anlg In 4-20mA Hi	0.0/100.0%	0.1%	0.0%	
t221	Relay Out Sel	0 = "Ready/Fault" 1 = "At Frequency" 2 = "MotorRunning" 3 = "Reverse" 4 = "Motor Overld" 5 = "Ramp Reg" 6 = "Above Freq" 7 = "Above Cur" 8 = "Above DCVolt" 9 = "Retries Exst" 10 = "Above Anlg V" 11 = "ParamControl" 12 = "NonRec Fault" 13 = "I/O Control" 14-22 = Reserved	0/22	0	
t222	Relay Out Level	t221 Setting t222 Min/Max 6 0/400Hz 7 0/180% 8 0/815 Volts 10 0/100% 11 0/1	0.1	0.0	

5.3. Basic Display Group

Nr.	Parameter	Min/Max	Display/Opties	Default
d001	Output Freq	0.0/P105	0.1 Hz	Read Only
d002	Commanded Freq	0.0/P105	0.1 Hz	Read Only
d003	Output Current	0/Drive Rated Amps x 2)	0,01 A	Read Only
d004	Output Voltage	0/Drive Rated Volts	0,1 VAC	Read Only
d005	DC Bus Voltage	Base don Drive Rating	1 VDC	Read Only
d006	Drive Status Bit 0 = Running Bit 1 = Forward Bit 2 = Accelerating Bit 3 = Decelerating	0/1	1	Read Only
d007	Fault 1 Code	F2/F122	F1	Read Only
d008	Fault 2 Code	F2/F122	F1	Read Only
d009	Fault 3 Code	F2/F122	F1	Read Only
d010	Process Display	0.00/9999	0.01 – 1	Read Only
d012	Control Source Digit 0 Start Command 0 = Keypad 1 = 3-Wire 2 = 2-Wire 3 = 2-Wire Level Sensitive 4 = 2-Wire High Speed 5 = RS485 (DSI) Port 9 = Jog Digit 1 Speed Command 0 = Drive Potentiometer 1 = Internal Freq 2 = 0-10V Input/Remote Pot 3 = 4-20mA Input 4 = Preset Freq 5 = RS485 (DSI) Port 9 = Jog Freq	0/9	1	Read Only
d013	Contrl In Status Bit 0 Start/Run FWD Input (Terminal 02) Bit 1 Direction/Run REV Input (Terminal 03) Bit 2 Stop Input (Terminal 01) Bit 3 Dynamic Brake Transistor ON/Reserved	0/1	1	Read Only
d014	Dig In Status Bit 0 Digital In1 Sel Bit 1 Digital In2 Sel Bit 2 Reserved Bit 3 Reserved	0/1	1	Read Only
d015	Comm Status Bit 0 Receiving Data Bit 1 Transmitting Data Bit 2 RS485 (DSI) Based Option Connected Bit 3 Communication Error Occurred	0/1	1	Read Only
d016	Control SW Ver	1.00/99.99	0.01	Read Only
d017	Drive Type	1001/9999	1	Read Only
d018	Elapsed Run Time	0/9999 Hrs	1 (= 10Hrs)	Read Only
d019	Testpoint Data	0/FFFF	1 Hex	Read Only
d020	Analog In 0-10V	0.0/100.0%	0.1%	Read Only
d021	Analog In 4-20mA	0.0/100.0%	0.1%	Read Only
d022	Drive Temp	0/120 degC	1 degC	Read Only

5.4. Drive Faults

Type1: Auto-Reset/Run.
Type 2: Non-Resetable.

No.	Fault	Type	Description	Action
F2	Auxiliary Input	1	Auxiliary input interlock is open	1. Check remote wiring 2. Verify communications programming for intentional fault
F3	Power Loss	2	Excessive DC Bus voltage ripple	1. Monitor the incoming line for phase loss or line imbalance 2. Check input line fuse
F4	UnderVoltage	1	DC bus voltage fell belowe the minimum value	Monitor the incoming AC line for low voltage or line power interruption
F5	OverVoltage	1	DC bus voltage exceed maximum value	Monitor the AC line for high line voltage or transient conditions. Nus overvoltage can also be caused by motor regeneration. Extend the decel time or install dynamic brake option
F6	Motor Stalled	1	Drive is unable to accelerate motor	Increase P109 and/or A402 or reduce load so drive output current does not exceed the current set by parameter A441
F7	Motor Overload	1	Internal electronic overload trip	1. An excessive motor load excists. Reduce load so drive output current does not exceed the current set by parameter P103 2. Verify A453 setting
F8	Heatsink OvrTmp	1	Heatsink temperature exceeds a predefined value	1. Check for blocked or dirty heat sink fins. Verify that ambient temperature has not exceeded 40°C for IP30/NEMA 1/UL Type 1 installations or 50°C for IP20/Open type installations 2. Check fan
F12	HW OverCurrent	2	The drive output current has exceeded the hardware current limit	Check programming. Check for excess load, improper A453 setting, DC brake volts set too high or other causes of excess current
F13	Ground Fault	2	A current path to earth ground has been detected at one or more of the drive output terminals	Check the motor and external wiring to the drive terminals for a grounded condition
F33	Auto Rstrt Tries	2	Drive unsuccessfully attempted to reset a fault and resume running for the programmed number of A451	Correct the cause of the fault and manually clear
F38	Phase U to Gnd	2	A phase to ground fault has been detected between the drive and motor in this phase	1. Check the wiring between the drive and motor 2. Check motor for grounded phase 3. Replace drive if fault cannot be cleared
F39	Phase V to Gnd			
F40	Phase W to Gnd			
F41	Phase UV Short	2	Excessive current has been detected between these two output terminals	1. Check the motor and drive output terminal wiring for a shorted condition 2. Replace drive if fault cannot be cleared
F42	Phase UW Short			
F43	Phase VW Short			
F48	Params Defaulted		The drive was commanded to write default values to EEPROM	1. Clear the fault or cycle power to the drive 2. Program the drive parameters as needed
F63	SW OverCurrent	1	Programmed A448 has been exceeded	Check load requirements and A448 setting
F64	Drive Overload	2	Drive rating of 150% for 1 minute or 200% for 3 seconds has been exceeded	Reduce load or extend Accel time
F70	Power Unit	2	Failure has been detected in the drive power section	1. Cycle power 2. Replace drive if fault cannot be cleared
F71	Net Loss		The communication network has faulted	1. Cycle power 2. Check communications cabling 3. Check network adapter setting 4. Check external network status
F81	Comm Loss	2	RS485 (DSI) port stopped communicating	1. If adapter was not intentionally disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required 2. Check connection 3. An adapter was intentionally disconnected 4. Turn off using C304
F100	Parameter Checksum	2	The checksum read from the board does not match the checksum calculated	Set P112 to option 1 "Reset Defaults"
F122	I/O Board Fail	2	Failure has been detected in the drive control and I/O section	1. Cycle power 2. Replace drive if fault cannot be cleared

5.5. Common Symptoms and Corrective Actions

Motor does not start

Cause(s)	Indication	Corrective action
No output voltage to the motor	None	Check the power circuit - Check the supply voltage - Check all fuses and disconnects Check the motor - Verify that the motor is connected properly Check the control input signals - Verify that a start signal is present. If 2-Wire control is used, verify that either the Run Forward or Run Reverse signal is active, but not both - Verify that I/O terminal 01 is active - Verify that P106 matches your configuration - Verify that A434 is not prohibiting movement
Improper boost setting at initial start-up	None	Set A453 to option 2 "35.0, VT"
Drive is faulted	Flashing red status light	Clear fault - Press Stop - Cycle power - Set A450 to option 1 "Clear Faults" - Cycle digital input if t201 – t202 is set to option 7 "Clear Fault"

Drive does not start from integral keypad

Cause(s)	Indication	Corrective action
Integral keypad is not enabled	Green LED above Start key is not illuminated	- Set parameter P106 to option 0 "Keypad" - Set parameter t201 – t202 to option 5 "Local" and activate the input
I/O terminal 01 "Stop" input is not present	None	Wire inputs correctly and/or install jumper

Drive does not start from start or run inputs wired to the terminal block

Cause(s)	Indication	Corrective action
Drive is faulted	Flashing red status light	Clear fault - Press stop - Cycle power - Set A450 to option 1 "Clear Faults" - Cycle digital input if t201 – t202 is set to option 7 "Clear Fault"
Incorrect programming - P106 is set to option 0 "Keypad" or option 5 "RS485 (DSI) Port" - t201 – t202 is set to option 5 "Local" and the input is active	None	Check parameter settings
Incorrect input wiring - 2 wire control requires Run Forward, Run Reverse or Jog input - 3 wire control requires Start and Stop inputs - Stop input is always required	None	Wire inputs correctly and/or install jumper
Incorrect Sink/Source DIP switch setting	None	Set switch to match wiring scheme

Drive does not respond to changes in speed command

Cause(s)	Indication	Corrective action
No value is coming from the source of the command	The drive "Run" indicator is lit and output is 0Hz	- Check d012 for correct source - If the source is an analog input, check wiring and use a meter to check for presence of signal - Check d002 to verify correct command
Incorrect reference source is being selected via remote devicxe or digital inputs	None	- Check d012 for correct source - Check d014 to see if inputs are selecting an alternative source. Verify settings for t201 – t202 - Check P108 for the source of the speed reference. Reprogram as necessary - Review the Speed Reference Control Chart

Motor and/or drive will not accelerate to commanded speed

Cause(s)	Indication	Corrective action
Acceleration time is exceeded	None	Reprogram P109 or A401
Excess load or short acceleration times force the drive into current limit, slowing or stopping acceleration	None	Compare d003 with A441 Remove excess load or reprogram P109 or A401 Check for improper A453 setting
Speed command source or value is not as expected	None	Verify d002 Check d012 for the proper Speed Command
Programming is preventing the drive output from exceeding limiting values	None	Check P105 to insure that speed is not limited by programming

Motor operation is unstable

Cause(s)	Indication	Corrective action
Motor data was incorrectly entered	None	1. Correctly enter motor nameplate data into P101, P102 and P103 2. Enable A436 3. Use A453 to reduce boost level

Drive will not reverse motor direction

Cause(s)	Indication	Corrective action
Digital input is not selected for reversing control	None	Check [Digital Inx Sel] Choose correct input and program for reversing mode
Digital input is incorrectly wired	None	Check input wiring
Motor wiring is improperly phased for reverse	None	Switch two motor loads
Reverse is disabled	None	Check A434

Drive will not reverse motor direction

Cause(s)	Indication	Corrective action
No input power to drive	None	Check the power circuit - Check the supply voltage - Check all fuses and disconnects
Jumper between I/O terminals P2 and P1 not installed and/or DC Bus Inductor not connected	None	Install jumper or connect DC Bus Inductor

AEROPLEAT METAL FILTER

MORE EFFECTIVE PRODUCTS BROUGHT TO YOU BY
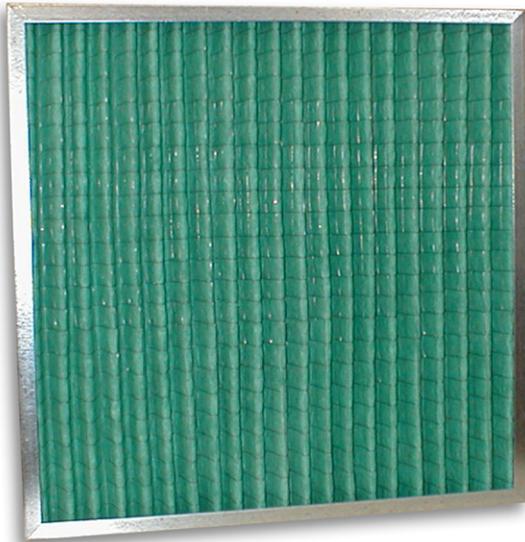
ADVANTAGES

- Low pressure drop media resulting in low energy costs
- Rigid frame for demanding applications. Fire classified M1
- Robust construction for reliable operation

Application: Pre filter for comfort air conditioning applications

Type: Pleated Panel

Frame: Metal

Media: Cotton/Synthetic

Dimensions: Filter front dimensions according EN 15805

Rec. final pressure drop acc. EN 13053: 150 Pa

Maximum airflow: 1,1 x nominal flow

Temperature max: 70°C

RH. max: 100 %

Mounting/Frames: Front and side access housings and frames are available

ISO16890 ACCORDING TO · EN 779:2012 ACCORDING TO

Type	EN779	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (mm)	Weight (kg)
Metal	G4	Coarse 65 %	592x592x50	3400/55	1,1	2,2
Metal	G4	Coarse 65 %	287x592x50	1650/55	0,5	1,7
Metal	G4	Coarse 65 %	610x610x50	3600/55	1,2	2,3
Metal	G4	Coarse 65 %	305x610x50	1800/55	0,6	1,7
Metal	G4	Coarse 65 %	500x500x50	2400/55	0,8	1,7
Metal	G4	Coarse 65 %	400x500x50	1900/55	0,6	1,5
Metal	G4	Coarse 65 %	500x625x50	3000/55	1,0	2,3

Other dimensions are available on request - All dimensions are nominal

HI-FLO M, P, TM BAG FILTER

MORE EFFECTIVE PRODUCTS BROUGHT TO YOU BY

ambiant cooling solutions
MagnaCool

ADVANTAGES

- Innovative pocket design for optimum air distribution
- Conical pockets
- Certified perfo
- Large surface area
- Save energy - optimised design (LCC)
- Comprehensive range of standard sizes

Application: Air conditioning applications

Type: Bag Filter

Frame: Galvanised steel

Media: Glass fiber

Dimensions: Filter front dimensions according EN 15805

Rec. final pressure drop acc. EN 13053: M6-F7: 200 Pa, F9: 300 Pa

Maximum airflow: 1,25 x nominal flow

Temperature max: 70°C

RH. max: 100 %

Mounting/Frames: Front and side access housings and frames are available

Type	EN779	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/h/Pa)	Bags	Media area (m²)	Weight (kg)	Energy consumption	Energy class	ePM1	ePM1min	ePM2,5	ePM2,5min	ePM10
ML6	M6	ePM2,5 50 %	592x892x640	5000/55	12	13,7	3,9		A					
M6	M6	ePM2,5 50 %	592x592x640	3400/55	12	9,1	3,3	748	A	40	40	54	54	80
M6-65	M6	ePM2,5 50 %	592x490x640	2800/55	12	7,6	3		A					
M6-63	M6	ePM2,5 50 %	592x287x640	1700/55	12	4,6	2		A					
NL6	M6	ePM2,5 50 %	490x892x640	4100/55	10	11,4	3,2		A					
N6	M6	ePM2,5 50 %	490x592x640	2800/55	10	7,6	3		A					
OL6	M6	ePM2,5 50 %	287x892x640	2500/55	6	6,8	2,2		A					
O6	M6	ePM2,5 50 %	287x592x640	1700/55	6	4,6	2		A					
O6-33	M6	ePM2,5 50 %	287x287x640	800/55	6	2,3	1,5		A					
PL6	M6	ePM2,5 50 %	592x892x520	5000/60	10	9,7	4,4		C					
P6	M6	ePM2,5 50 %	592x592x520	3400/60	10	6,2	2,9	986	C	40	40	54	54	80
P6-65	M6	ePM2,5 50 %	592x490x520	2800/60	10	5,1	2,4		C					
P6-63	M6	ePM2,5 50 %	592x287x520	1700/60	10	3,1	1,5		C					
QL6	M6	ePM2,5 50 %	490x892x520	4100/60	8	7,8	4,0		C					
Q6	M6	ePM2,5 50 %	490x592x520	2800/60	8	5,1	2,4		C					
RL6	M6	ePM2,5 50 %	287x892x520	2500/60	5	4,8	2,6		C					
R6	M6	ePM2,5 50 %	287x592x520	1700/60	5	3,1	1,5		C					
R6-33	M6	ePM2,5 50 %	287x287x520	800/60	5	1,6	1,1		C					
TML6	M6	ePM2,5 50 %	592x892x370	5000/70	12	8,1	2,9		C					
TM6	M6	ePM2,5 50 %	592x592x370	3400/70	12	5,5	2,55	1280	C	40	40	54	54	80
TM6-65	M6	ePM2,5 50 %	592x490x370	2800/70	12	4,5	2,15		C					

Type	EN779	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/h/Pa)	Bags	Media area (m²)	Weight (kg)	Energy consumption	Energy class	ePM1	ePM1min	ePM2,5	ePM2,5min	ePM10
TM6-63	M6	ePM2,5 50%	592x287x370	1700/70	12	2,7	1,4		C					
TNL6	M6	ePM2,5 50%	490x892x370	4100/70	10	6,8	2,6		C					
TN6	M6	ePM2,5 50%	490x592x370	2800/70	10	4,5	2,15		C					
TOL6	M6	ePM2,5 50%	287x892x370	2500/70	6	4	1,4		C					
TO6	M6	ePM2,5 50%	287x592x370	1700/70	6	2,7	1,4		C					
TO6-33	M6	ePM2,5 50%	287x287x370	800/70	6	1,3	0,8		C					
ML7	F7	ePM1 70%	592x892x640	5000/85	12	13,7	3		A					
ML7 ES	F7	ePM1 60%	592x892x640	5000/60	12	13,7	3		A+					
M7	F7	ePM1 70%	592x592x640	3400/85	12	9,1	3,3	1099	A	71	71	80	80	94
M7 ES	F7	ePM1 60%	592x592x640	3400/60	12	9,1	3,3	838	A+	62	62	71	71	90
M7-65	F7	ePM1 70%	592x490x640	2800/85	12	7,6	3		A					
M7-65	F7	ePM1 60%	592x490x640	2800/60	12	7,6	3		A+					
M7-63	F7	ePM1 70%	592x287x640	1700/85	12	4,6	2		A					
M7-63	F7	ePM1 60%	592x287x640	1700/60	12	4,6	2		A+					
NL7	F7	ePM1 70%	490x892x640	4100/85	10	11,4	2,7		A					
NL7 ES	F7	ePM1 60%	490x892x640	4100/60	10	11,4	2,7		A+					
N7	F7	ePM1 70%	490x592x640	2800/85	10	7,6	3		A					
N7 ES	F7	ePM1 60%	490x592x640	2800/60	10	7,6	3		A+					
OL7	F7	ePM1 70%	287x892x640	2500/85	6	6,8	1,8		A					
OL7 ES	F7	ePM1 60%	287x892x640	2500/60	6	6,8	1,8		A+					
O7	F7	ePM1 70%	287x592x640	1700/85	6	4,6	2		A					
O7 ES	F7	ePM1 60%	287x592x640	1700/60	6	4,6	2		A+					
O7-33	F7	ePM1 70%	287x287x640	800/85	6	2,3	1,5		A					
O7-33	F7	ePM1 60%	287x287x640	800/60	6	2,3	1,5		A+					
PL7	F7	ePM1 70%	592x892x520	5000/105	10	9,7	3,8		C					
PL7 ES	F7	ePM1 60%	592x892x520	5000/75	10	9,7	3,8		A					
P7	F7	ePM1 70%	592x592x520	3400/105	10	6,2	2,6	1348	C	71	71	80	80	94
P7 ES	F7	ePM1 60%	592x592x520	3400/75	10	6,2	2,6	895	A	62	62	71	71	90
P7-65	F7	ePM1 70%	592x490x520	2800/105	10	5,1	2,4		C					
P7-65	F7	ePM1 60%	592x490x520	2800/75	10	5,1	2,4		A					
P7-63	F7	ePM1 70%	592x287x520	1700/105	10	3,1	1,5		C					
P7-63	F7	ePM1 60%	592x287x520	1700/75	10	3,1	1,5		A					
QL7	F7	ePM1 70%	490x892x520	4100/105	8	7,8	3,6		C					
QL7 ES	F7	ePM1 60%	490x892x520	4100/75	8	7,8	3,6		A					
Q7	F7	ePM1 70%	490x592x520	2800/105	8	5,1	2,3		C					
Q7 ES	F7	ePM1 60%	490x592x520	2800/75	8	5,1	2,3		A					
RL7	F7	ePM1 70%	287x892x520	2500/105	5	4,8	2,2		C					
RL7 ES	F7	ePM1 60%	287x892x520	2500/75	5	4,8	2,2		A					
R7	F7	ePM1 70%	287x592x520	1700/105	5	3,1	1,6		C					
R7 ES	F7	ePM1 60%	287x592x520	1700/75	5	3,1	1,6		A					
R7-33	F7	ePM1 70%	287x287x520	800/105	5	1,6	1,1		C					
R7-33	F7	ePM1 60%	287x287x520	800/75	5	1,6	1,1		A					
TML7	F7	ePM1 70%	592x892x370	5000/130	12	8,1	2,5		D					
TML7	F7	ePM1 60%	592x892x370	5000/95	12	8,1	2,5		C					
TM7	F7	ePM1 70%	592x592x370	3400/130	12	5,2	2,3	1960	D	71	71	80	80	94
TM7 ES	F7	ePM1 60%	592x592x370	3400/95	12	5,2	2,3	1427	C	62	62	71	71	90
TM7-65	F7	ePM1 70%	592x490x370	2800/130	12	4,3	2,15		D					
TM7-65	F7	ePM1 60%	592x490x370	2800/95	12	4,3	2,15		C					
TM7-63	F7	ePM1 70%	592x287x370	1700/130	12	2,6	1,4		D					
TM7-63	F7	ePM1 60%	592x287x370	1700/95	12	2,6	1,4		C					
TNL7	F7	ePM1 70%	490x892x370	4100/130	10	6,8	2,2		D					
TNL7 ES	F7	ePM1 60%	490x892x370	4100/95	10	6,8	2,2		C					
TN7	F7	ePM1 70%	490x592x370	2800/130	10	4,3	2,05		D					
TN7 ES	F7	ePM1 60%	490x592x370	2800/95	10	4,3	2,05		C					
TOL7	F7	ePM1 70%	287x892x370	2500/130	6	4	1,5		D					
TOL7 ES	F7	ePM1 60%	287x892x370	2500/95	6	4	1,5		C					
TO7	F7	ePM1 70%	287x592x370	1700/130	6	2,6	1,35		D					
TO7 ES	F7	ePM1 60%	287x592x370	1700/95	6	2,6	1,35		C					
TO7-33	F7	ePM1 70%	287x287x370	800/130	6	1,3	0,8		D					

Type	EN779	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/h/Pa)	Bags	Media area (m²)	Weight (kg)	Energy consumption	Energy class	ePM1	ePM1min	ePM2,5	ePM2,5min	ePM10
TO7-33	F7	ePM1 60%	287x287x370	800/95	6	1,3	0,8		C					
ML9	F9	ePM1 85%	592x892x640	5000/130	12	13,7	3		C					
M9	F9	ePM1 85%	592x592x640	3400/130	12	9,1	3,3	1722	C	87	87	91	91	98
M9-65	F9	ePM1 85%	592x490x640	2800/130	12	7,6	3		C					
M9-63	F9	ePM1 85%	592x287x640	1700/130	12	4,6	2		C					
NL9	F9	ePM1 85%	490x892x640	4100/130	10	11,4	2,7		C					
N9	F9	ePM1 85%	490x592x640	2800/130	10	7,6	3		C					
OL9	F9	ePM1 85%	287x892x640	2500/130	6	6,8	1,8		C					
O9	F9	ePM1 85%	287x592x640	1700/130	6	4,6	2		C					
O9-33	F9	ePM1 85%	287x287x640	800/130	6	2,3	1,5		C					
PL9	F9	ePM1 85%	592x892x520	5000/160	10	9,7	4,1		D					
P9	F9	ePM1 85%	592x592x520	3400/160	10	6,2	2,5	2016	D	87	87	91	91	98
P9-65	F9	ePM1 85%	592x490x520	2800/160	10	5,1	2,4		D					
P9-63	F9	ePM1 85%	592x287x520	1700/160	10	3,1	1,5		D					
QL9	F9	ePM1 85%	490x892x520	4100/160	8	7,8	3,6		D					
Q9	F9	ePM1 85%	490x592x520	2800/160	8	5,1	2,4		D					
RL9	F9	ePM1 85%	287x892x520	2500/160	5	4,8	2,5		D					
R9	F9	ePM1 85%	287x592x520	1700/160	5	3,1	1,5		D					
R9-33	F9	ePM1 85%	287x287x520	800/160	5	1,6	1,1		D					
TML9	F9	ePM1 85%	592x892x370	5000/230	12	8,1	2,5		E					
TM9	F9	ePM1 85%	592x592x370	3400/230	12	5,5	2,25		E	87	87	91	91	98
TM9-65	F9	ePM1 85%	592x490x370	2800/230	12	4,5	2,15		E					
TM9-63	F9	ePM1 85%	592x287x370	1700/230	12	2,7	1,4		E					
TNL9	F9	ePM1 85%	490x892x370	4100/230	10	6,8	2,2		E					
TN9	F9	ePM1 85%	490x592x370	2800/230	10	4,5	2		E					
TOL9	F9	ePM1 85%	287x892x370	2500/230	6	4	1,5		E					
TO9	F9	ePM1 85%	287x592x370	1700/230	6	2,7	1,35		E					
TO9-33	F9	ePM1 85%	287x287x370	800/230	6	1,3	0,8		E					

PERSPEX CAST ACRYLIC SHEET FOOD CONTACT GRADES:
CLEAR & COLOURS

February 2015

COMPLIANCE WITH EUROPEAN FOOD CONTACT REGULATIONS

Declaration of Compliance for Perspex Cast Acrylic Sheet intended to be used in the manufacture of food contact materials and articles.

The information included in this document is valid from stated version date until this document is superseded.

Lucite International UK Ltd can confirm that the Perspex Cast Acrylic Sheet Food Contact Grades: Clears and Colours which are suitable to be used in the manufacture of materials and articles intended to come into contact with food comply with the relevant requirements as laid down in:

Framework Regulation (EC) 1935/2004 (dated 27-10-2004), articles 3 and 17.

EU Commission Regulation (EU) 10/2011 relating to plastic materials and subsequent amendments up to 1282/2011.

Fabricated test specimens have been tested according to EU Regulations.

Perspex Cast Acrylic Sheet has been manufactured in accordance with the relevant requirements of Commission Regulation (EC) No. 2023/2006 articles 4, 5, 6 and 7.

The polymers contain monomers and additives which are regulated with a specific migration limit (SML).

Table 1

Substance	Monomers	CAS	FCM/REF	LIMIT mg/kg
1	methacrylic acid, methyl ester	80-62-6	156	6 (T)
2	octadecyl 3-(3, 5-di-tert-butyl-4- hydroxyphenyl)proplonate	2082-79-3	433	6
3	2-(2'-hydroxy-5'-methylphenyl) benzotriazole	2440-22-4	444	30(T)
4	sulphosuccinic acid alkyl (C 4 -C 20) or cyclohexyl diesters, salts	Not applicable	813	5

The specific migration limit (SML) in the case of substances in the table above:

Substance 1: Total number of FCM substances: 156 must not exceed 6 mg/kg expressed as the sum of the substances.

Substance 3: Total number of FCM substances: 444 must not exceed 30mg/kg expressed as the sum of the substances.

Migration tests on a variety of Perspex Cast Acrylic Sheet samples have been performed according to Regulation 10/2011 as amended on specially fabricated test specimens by an independent laboratory and showed that under the following conditions the overall migration limits and specific migration limits were not exceeded.

Table 2

Simulant	Time(s)/ Temperature(s)
10% v/v aqueous ethanol	10 days 40°C
3% w/v aqueous acetic acid	10 days 40°C
Fat simulant	10 days 40°C

The colourants used in the manufacture of Perspex Cast Acrylic Sheet Food Contact grades are also compliant to (10) and Article 6, 2. in EU Commission Regulation (EU) 10/2011.

Compliance with the overall and specific migration limits as described must be measured from the final application intended to come into contact with food by using real food or appropriate food simulants at the intended and foreseeable conditions. It is the responsibility of the converter or food packer to verify that the final application complies with the requirements as set out by the applicable legislation.