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# Installation and set-up Guide

## The Eden Avanta Controller



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# 1. Introduction



The Eden Avanta series is a new range of next-generation refrigeration controllers designed to provide automatic temperature regulation and defrost scheduling for refrigerated display cabinets and cold room applications.

Each of the models in the range delivers a powerful combination of connectivity, flexibility and ease of use in a DIN Rail mounting form factor.

Significant energy savings are achieved across the range through the use of sophisticated algorithms, ensuring efficient and appropriate use of energy-intensive items of refrigeration plant.

The Eden Avanta series covers the full range of evaporator inlet valve type and connectivity options.

Each model is easy to install and configure, thanks to features such as the standard two-part connectors for all external wiring of Inputs/Outputs. All Eden Avanta controllers provide the option of up to seven temperature / analogue inputs for maximum flexibility, and multiple sensor types are also supported.

The range is tested and certified to BS EN 60730-1 and offers clear, intuitive and easy-to-use interfaces for simple, durable and reliable end-user operation.

This installation and set-up guide covers the complete Eden Avanta series: EA2111 (Eden Avanta with EEV, 485 Comms); EA2112 (Eden Avanta with LSV, 485 Comms); EA2121 (Eden Avanta with EEV, IP Comms); EA2122 (Eden Avanta with LSV, IP Comms).

## 1.1 The Eden Avanta Range

The Eden Avanta provides automatic temperature regulation and defrost scheduling for refrigerated display cabinets and cold room applications.

The controller has a maximum of 7 temperature inputs, the values of which control the evaporator inlet valve (EEV or LSV). Defined digital inputs are also standard, the function of which are selectable from within the **Setup** menu. The controller has outputs to control fans, suction valve, Lights, and defrost. The Avanta range all feature Energy saving algorithms.

The Eden Avanta supports multiple sensor types\* PT1000, NTC2K2, NTC5K, NTC10K

\* Note sensor types cannot be mixed on a single controller.

### 1.1.1 Variants:-

The Eden Avanta is supplied in a number of different hardware configurations which determines evaporator inlet valve type and comms type. The EEV variant has a solid state relay and the LSV variant has an electro-mechanical relay.

Eden Avanta with Integral Display, EEV, 485 Comms	(EA2111)
Eden Avanta with Integral Display, LSV, 485 Comms	(EA2112)
Eden Avanta with Integral Display, EEV, IP Comms	(EA2121)
Eden Avanta with Integral Display, LSV, IP Comms	(EA2122)
Eden Avanta with Integral Display, EEV, Wi-Fi Comms	(EA2131)
Eden Avanta with Integral Display, LSV, Wi-Fi Comms	(EA2132)
Eden Avanta with Remote Display, EEV, 485 Comms	(EA2211)
Eden Avanta with Remote Display, LSV, 485 Comms	(EA2212)
Eden Avanta with Remote Display, EEV, IP Comms	(EA2221)
Eden Avanta with Remote Display, LSV, IP Comms	(EA2222)
Eden Avanta with Remote Display, EEV, Wi-Fi Comms	(EA2231)
Eden Avanta with Remote Display, LSV, Wi-Fi Comms	(EA2232)

### 1.1.2 Configuration:-

The Eden Avanta controllers are delivered pre-configured as follows:-

EEV (All variants) as Remote Cabinet controller LT

LSV (All variants) as Remote Cabinet controller HT

The setUp menu allows six standard default configuration options as follows:-

Menu	Display	Value	EEV Type	LSV Type
Set	SU1	0	N/A	HT Integral
		1	N/A	LT I integral
		2	Remote Cabinet HT	Remote Cabinet HT
		3	Remote Cabinet LT	Remote Cabinet LT
		4	Coldroom HT	Coldroom HT
		5	Coldroom LT	Coldroom LT

**Network:-**

Network connectivity is determined at the order stage (see listed variants on page 33)

## 2. Setting up the controller

The Eden Avanta can be set up via a variety of different methods

- Through the front panel display and function keys
- Through the RCS system manager
- Directly via the controllers communication port using a PC
- Across an IP network

Subsequent pages will identify and explain each menu group and individual parameter in detail when utilising the function keys on the front of the Avanta controller for set up purposes. Information has been presented in exactly the same format as it will appear to the user on the display, and descriptions of each function are given along with the maximum, minimum and default values for HT and LT variants.

If the user wishes to confirm / modify parameters using the RCS system manager then the Avanta controllers will need to be logged onto the system to achieve this, please complete the Setup and Address sections as identified on pages 8-11 before proceeding to use the system manager.

Controllers can be pre-commissioned with identical non default parameter sets via the use of a PC connected directly into the Avanta controller's communication port. To achieve this a simple software application is available from RCS upon request.

### 2.1 Front Panel Display Keys & Icons:-

The Eden Avanta consists of a very attractive front panel display and a keypad. The display and keypad can be supplied as an integral part of the Avanta or as a remote unit. The display has 4 digits, decimal point and icons. It shows temperatures, all parameter values, and the main unit status.

The silicon keypad ensures ease of use and reliability.



The front panel incorporates a blue LED 4 character display for indicating temperatures and status / alarm messages. The four function keys are identified below:-



### Alarm

Critical alarm present, see **Alarms** Menu – Page 10



### Service

See Parameter **Ti9** – Page 18



### HACCP

See Parameter **Su9** – Page 9



### Valve

Illuminated when Relay 1 is on – Pages 28-29



### Fans

Illuminated when Relay 3 is on - Pages 28-29



### Lights

Illuminated when Relay 4 is on - Pages 28 - 29



### Defrost

Illuminated when Relay 5 is on – Pages 28-29

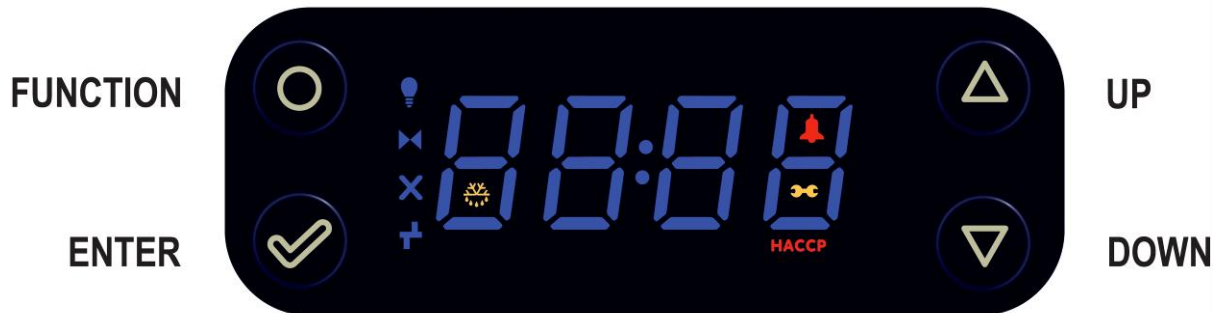


### Network

Off = No Network attached / network failure  
On = Network Established



## 2.2 Using the front panel display and function keys



To enter setup press the **FUNCTION** and **UP** buttons simultaneously for greater than 3 seconds until the message **SEt** appears. Pressing the **ENTER** key again at this point will allow access to the first item in the setup menu (**Su1**). Pressing the **FUNCTION** button at any point will return the user to the previous menu. The **UP** / **DOWN** buttons can be used to scroll through the available menu groups, as listed below. Once the required menu group is displayed pressing the enter key again will allow access to that group as described above.

Display Text	Menu Group	Information
Set	Initial controller setup	Setup
Addr	485 / IP comms configuration	Address
rEF	Refrigeration Mode Parameters	Refrigeration
dEF	Defrost Mode Parameters	Defrost
FAnS	Fans parameters	Fans
ti	Time related Parameters	Times
StA	Unit Status Information	Status
ALAr	Unit Alarm Information	Alarms
LtS	Lights related Parameters	Lights
SLP	Sleep Mode	Sleep
SELF	Self Test Mode	Self

The following pages provide details of each menu group in order. It is recommended that the user follows this sequence to ensure correct setup is achieved.

If no buttons are pressed for a period greater than 3 minutes the display will revert to indicating the actual cabinet temperature. This applies to all menus.

## 2.2.1 Set up menu



Accessed by pressing and holding the FUNCTION and UP keys simultaneously for greater than 3 seconds. The display will indicate **SEt**, at this point press the ENTER button again and the display will indicate **Su1**. This is the first item in the set up menu. The UP and DOWN keys can be used to scroll through the entire list of set up items – from **Su1** through to **Su12**. See table below:-

Pressing ENTER whilst displaying any Su number will allow the user to view and modify that particular value by using the UP / DOWN keys to either increment or decrement the default value. Once the desired value is displayed press ENTER again to save, or use the FUNCTION key to return to previous menu without saving.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
Su1	Unit Type	0 = HT Integral 1 = LT Integral 2 = HT Remote Case 3 = LT Remote Case 4 = HT Coldstore 5 = LT Coldstore		4	4	Options 1 and 2 not valid if EEV variant.
Su2	Control Probe Type	0 = Use Air On Probe 1 = Use Log Probe		Air On	Air On	Selects between using the air on, or the log probe as the control temperature. If Su3 is set to 0 (off) N/A will appear
Su3	Log Probe Type	0 = Off 1 = Logging 2 = Logging with Alarm		0 - Off	0- Off	Selects the function of the log probe. (if fitted)
Su4	Trim In Defrost	No Yes		No	No	Selects the state (on or off) of the trim heater output during defrost.
Su5	Trim Output %	0 – 100	%	100	100	Selects the percentage output level of the trim heater output on a 100 second time base. Example – if Su5 = 10% then trim on for 10 seconds and off for 90 seconds.
Su6	Relay 6 Function	0 = Suction <b>1 = Trim</b> 2 = Compressor 2		Suction	Suction	If unit type 1 or 2 is selected this parameter will default to 2 – compressor 2 – otherwise:- <b>ENSURE 1</b> – Trim is selected

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
Su7	Digital Input 1 Function	0 = Case Clean 1 = Door Open 2 = C1 Fault 3 = Man Trapped		Case - Clean	Case - - Clean	Default for cabinet type 3 and 4 is case clean. If unit type 1 or 2 selected (su1) then default value becomes 2 – C1 Fault. If unit type 5 or 6 selected (su1) then default becomes 1 – Door alarm. All digital inputs are contact sense N/O. N/C for alarm.
Su8	Digital Input 2 Function	0 = Case Clean 1 = Door Open 2 = C2 Fault 3 = Man Trapped		Case - - Clean	Case - - Clean	Default for cabinet type 3 and 4 is case clean. If unit type 1 or 2 selected (su1) then default value becomes 2 – C2 Fault. If unit type 5 or 6 selected (su1) then default becomes 1 – Man Trapped alarm. All digital inputs are contact sense N/O. - N/C for alarm.
Su9	HACCP Function	0 = Off 1 = On 2 = Flashing		0 - Off	0- Off	Selects the state of the front panel HACCP icon.
Su10	Sensor Type	0 = PT1000 1 = 5K NTC 2 = 10K NTC 3 = 2K2 NTC		PT1000	PT1000	Selects the temperature sensor type being used. Note – sensor types cannot be mixed on a single controller
Su11	Evaporator Probes Fitted	0 = Not Fitted 1 = Fitted		1 - Fitted	1 - Fitted	Allows the user to select if Evaporator In and Out sensors are fitted.
Su12	Number of Compressors	1 2		2	2	Selects the number of compressors in use when unit type 1 or 2 (integral) is configured

## 2.2.2 Controller address and communications menu.



Accessed by pressing and holding the FUNCTION and UP keys simultaneously for greater than 3 seconds. The display will indicate **SEt**, Press the DOWN key once - the display will indicate **Addr** at this point press the ENTER button and the display will indicate **485A**. This is the first item in the address menu. The UP and DOWN keys can be used to scroll through the entire list of set up items – from **485A** through to **DGT**. See table below:- Pressing ENTER whilst displaying any item will allow the user to view and modify that particular value by using the UP / DOWN keys to either increment or decrement the default value. Once the desired value is displayed press ENTER again to save, or use the FUNCTION key to return to previous menu without saving.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
485A	Controller RS485 communication address (unit number)	0.0 – 499.9		0.0	0.0	Allows the user to set the controllers network address for RS485 legacy systems
485C	Controller RS485 communication baud rate	0 = 9600 1 = 600		9600	9600	Allows the user to set the controllers network baud rate for RS485 legacy systems
IP-1	IP Address Byte 1	0 – 255		0	0	Allows the user to set the first byte of the controllers IP address. <b>Note-</b> If DHCP is set to yes this value is not editable.
IP-2	IP Address Byte 2	0 – 255		0	0	Allows the user to set the second byte of the controllers IP address. <b>Note-</b> If DHCP is set to yes this value is not editable.
IP-3	IP Address Byte 3	0 – 255		0	0	Allows the user to set the third byte of the controllers IP address. <b>Note-</b> If DHCP is set to yes this value is not editable.
IP-4	IP Address Byte 4	0 – 255		0	0	Allows the user to set the fourth byte of the controllers IP address. <b>Note-</b> If DHCP is set to yes this value is not editable.
Sn -1	Sub-Net Address Byte 1	0 – 255		0	0	Allows the user to set the First byte of the controllers sub net mask. <b>Note-</b> If DHCP is set to yes this value is not editable.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
Sn -2	Sub-Net Address Byte 2	0 – 255		0	0	Allows the user to set the second byte of the controllers sub net mask. <b>Note-</b> If DHCP is set to yes this value is not editable.
Sn -3	Sub-Net Address Byte 3	0 – 255		0	0	Allows the user to set the third byte of the controllers sub net mask. <b>Note-</b> If DHCP is set to yes this value is not editable.
Sn -4	Sub-Net Address Byte 4	0 – 255		0	0	Allows the user to set the fourth byte of the controllers sub net mask. <b>Note-</b> If DHCP is set to yes this value is not editable.
Gt1	Network Gateway Address Byte 1	0 – 255		0	0	Allows the user to set the first byte of the network gateway address.
Gt2	Network Gateway Address Byte 2	0 – 255		0	0	Allows the user to set the second byte of the network gateway address.
Gt3	Network Gateway Address Byte 2	0 – 255		0	0	Allows the user to set the third byte of the network gateway address.
Gt4	Network Gateway Address Byte 2	0 – 255		0	0	Allows the user to set the fourth byte of the network gateway address.
NtP1	NTP server Address Byte 1	0 – 255		0	0	Allows the user to set the first byte of the NTP server address
NtP2	NTP server Address Byte 2	0 – 255		0	0	Allows the user to set the second byte of the NTP server address
NtP3	NTP server Address Byte 3	0 – 255		0	0	Allows the user to set the third byte of the NTP server address
NtP4	NTP server Address Byte 4	0 – 255		0	0	Allows the user to set the fourth byte of the NTP server address
dHCP	DHCP Enabled	Yes No		Yes	Yes	Configures if DHCP is being used
dntP	NTP server address obtained via DHCP	Yes No		Yes	Yes	Configures if the NTP server address is automatically obtained via DHCP
dGt	Network gateway address obtained via DHCP	Yes No		Yes	Yes	Configures if the gateway address is automatically obtained via DHCP

If the user is unsure of any network related parameter please consult your network administrator

### 2.2.3 Controllers Refrigeration related parameter menu.



Accessed by pressing and holding the FUNCTION and UP keys simultaneously for greater than 3 seconds. The display will indicate **SEt**, Press the DOWN key 2 times - the display will indicate **rEF**, at this point press the ENTER button and the display will indicate **rF1**. This is the first item in the REFRIGERATION menu. The UP and DOWN keys can be used to scroll through the entire list of the **rEF** menu – from **rF1** through to **Rf16**. See table below:-

Pressing ENTER whilst displaying any item will allow the user to view and modify that particular value by using the UP / DOWN keys to either increment or decrement the default value. Once the desired value is displayed press ENTER again to save, or use the FUNTION key to return to the previous menu without saving.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
rF1	Force Refrigeration	No Yes		No	No	Allows the user to force the controller into a forced refrigeration state. During the force refrigeration state any scheduled defrosts will be ignored. The controller will remain in this state until either NO is selected or a period of 60 minutes has elapsed.
rF2	Temperature Setpoint	-40.0°C - +35.0°C	°C	1.0°C HT -20°C LT -1.0°C - HT C/S -20°C - LT C/S	1.0°C HT -20°C LT -1.0°C - HT C/S -20°C - LT C/S	Temperature at which inlet valve or compressor/s will switch on
rF3	Temperature Diff.	0.2 – 5.0°C	°C	1.0°C HT 2.0°C LT	1.0°C HT 2.0°C LT	Differential temperature below the temperature setpoint at which the inlet valve or compressor will switch off
rF4	Control Ratio	0 – 100%	%	66% Cabinet 100% Coldstore	66% Cabinet 100% Coldstore	Ratio of Air On temperature that is used to calculate the estimated cabinet temperature for control. The remaining percentage used is Air off temperature.
rF5	Display Ratio	0 – 100%	%	66	66	As above only applied to the front panel display temperature.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
rF6	Superheat Setpoint	0.0 - 9.0	°C	6.0°C	6.0°C	The controller will attempt to maintain this superheat setpoint N/A will be displayed if LSV version.
rF7	EEV Injection percentage	0 – 100%	%	45%	45%	Sets the value of the EEV when in a recovery state. N/A will be displayed if LSV version.
rF8	Air On Alarm Setpoint	-40.0°C - +35.0°C	°C	8.0 HT -10.0 LT	8.0 HT -10.0 LT	Sets the Air On alarm setpoint
rF9	Air Off Alarm Setpoint	-40.0°C - +35.0°C	°C	4.0 HT -20.0 LT 3.0 HT C/S -18.0 LT C/S	4.0 HT -20.0 LT 3.0 HT C/S -18.0 LT C/S	Sets the Air Off alarm setpoint
rF10	Logging Probe OT Alarm Setpoint	-40.0°C - +35.0°C	°C	10.0 HT -12.0 LT	10.0 HT -12.0 LT	Sets the log probe over temperature alarm setpoint. NOTE – N/A will be displayed if Su3 is not set to 2
rF11	Logging Probe UT Alarm Setpoint	-40.0°C - +35.0°C	°C	-5.0 HT -35.0 LT	-5.0 HT -35.0 LT	Sets the log probe under temperature alarm setpoint NOTE – N/A will be displayed if Su3 is not set to 2
rF12	EEV Minimum Opening	0 – 100%	%	15%	15%	Sets the minimum valve opening during normal operation. The controller will prevent the valve from closing below this value. N/A will be displayed if LSV version.
rF13	Manual EEV Control	0 = No 1 = Yes		0 - No	0 – No	Allows the user to manually control the EEV valve opening % if set to Yes. Used in conjunction with rF14 N/A will be displayed if LSV version.
rF14	Manual EEV Opening	0 – 100 %	%	0	0	If rF13 is set to yes, the manual % opening value. The EEV will remain at this percentage until manual control is exited_N/A will be displayed if LSV version.
rF15	Air On setpoint	-40.0°C - +20.0°C	°C	-3.0 HT -20.0 LT	-3.0 HT -20.0 LT	Temperature at which inlet valve or compressor/s will switch on. Note N/A will be displayed if not type 4 or 5 (coldstore)
rF16	Evaporator Offset to allow injection state	-10.0°C - +10.0°C	°C	0.0 HT 2.0 LT	0.0 HT 2.0 LT	Temperature offset from the ECT setpoint at which the injection (recovery) state can be entered Note N/A will be displayed if not type 4 or 5 (coldstore)

## 2.2.4 Controllers Defrost menu.



Accessed by pressing and holding the FUNCTION and UP keys simultaneously for greater than 3 seconds. The display will indicate **SEt**, Press the DOWN key 3 times - the display will indicate **dEF**, at this point press the ENTER button and the display will indicate **dF1**. This is the first item in the DEFROST menu. The UP and DOWN keys can be used to scroll through the entire list of the DEFROST menu – from **dF1** through to **dF13**. See table below:-

Pressing ENTER whilst displaying any item will allow the user to view and modify that particular value by using the UP / DOWN keys to either increment or decrement the default value. Once the desired value is displayed press ENTER again to save, or use the FUNCTION key to return to the previous menu without saving.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
dF1	First Defrost Time	00:01 – 23:59	hh:mm	01:00	01:00	Sets the first scheduled defrost time
dF2	Number of Defrosts per Day	0 – 8		6	6	Sets the number of defrost cycles per day. Automatically spaced equally from the first defrost time (dF1)
dF3	Maximum Defrost Duration	00:00 – 01:59	hh:mm	00:30	00:30	Maximum time that a scheduled defrost cycle can run. Note - Timed from the end of defrost Minimum (dF4)
dF4	Minimum Defrost Duration	00:00 – 01:59	hh:mm	00:05	00:05	Minimum time that a scheduled defrost cycle must run before terminating. If termination temperature is achieved during this period the controller will turn off the defrost output but not return to refrigeration mode until period has elapsed.
dF5	Pump Down Duration	0 – 60	mm	0	0	Pump down time prior to minimum defrost duration (dF4) commencing
dF6	Drain Down Duration	0 – 60	mm	02	02	Drain down time after defrost has terminated to allow water to be cleared.



I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
dF7	Defrost termination Temperature	-40.0°C - +35.0°C	°C	8.0°C	8.0°C	Scheduled defrost will terminate when the defrost termination sensor reaches this temperature. Note – If the defrost termination sensor is not fitted (or faulty) then defrost termination will occur when the Evap. In sensor reaches this temperature if fans off, or the Air Off sensor reaches this temperature if fans on.
dF8	Defrost termination sensor in Use	0 = Defrost 1 = Evap. In 2 Air Off		0 = Defrost	0 = Defrost	Allows the user to select the sensor used for defrost termination.
dF9	Defrost Type	0 = Electric 1 = Hot Gas		0 - Electric	0 – Electric	Allows the user to select if electric or hot gas defrost in being used.
dF10	Suction Valve after Hot Gas defrost	Open Closed		Closed	Closed	Allows the user to select if the suction valve is open or closed during the drain down period. Only applicable if Hot Gas defrost is selected at dF9
dF11	Force Defrost	Yes No		No	No	Sets the controller into defrost. The controller will remain in this mode until either No is selected or max defrost duration (Df3) time is exceeded.
dF12	Trigger Defrost	Yes No		No	No	Allows the user to trigger a defrost cycle additional to those scheduled. All normal termination criteria apply.
dF13	LSV during Hot Gas Defrost	0 = Closed 1 = Open		0 - Closed	0 – Closed	Allows the user to select if the evaporator inlet valve is open or closed during a hot gas defrost. Only applicable if Hot Gas defrost is selected at dF9

## 2.2.5 Controllers Fan related parameter menu.



Accessed by pressing and holding the FUNCTION and UP keys simultaneously for greater than 3 seconds. The display will indicate **SEt**, Press the DOWN key 4 times - the display will indicate **FAns**, at this point press the ENTER button and the display will indicate **Fn1**. This is the first item in the FANS menu. The UP and DOWN keys can be used to scroll through the entire list of the FANS menu – from **Fn1** through to **Fn9**. See table below:- Pressing ENTER whilst displaying any item will allow the user to view and modify that particular value by using the UP / DOWN keys to either increment or decrement the default value. Once the desired value is displayed press ENTER again to save, or use the FUNCTION key to return to the previous menu without saving.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
Fn1	Fans Only Mode	0 = No 1 = Yes 2 = Lights and Fans Only		0 – No	0 – No	Allows the user to set the controller into Fans Only Mode. The controller will remain in this mode until No is selected.
Fn2	Maximum Fans off Time	0 – 60	mm	0	0	Maximum time for which the fans are switched off following draindown.
Fn3	Fans Off Temperature During Defrost	-40.0°C - +35.0°C	°C	8.0°C (HT) -10.0°C (LT)	8.0°C (HT) -10.0°C (LT)	Allows the user to determine the temperature at which fans will turn off during defrost. Once turned off by this setting fans will remain off for the remaining defrost duration. <b>NOTE</b> If -40.0°C is selected fans will be always off during defrost
Fn4	Fans Off Delay Time	0 – 60	ss	0	0	The delay time before fans are switched off when a door open state is entered. Note N/A will be displayed if not type 4 or 5 (coldstore)
Fn5	Fans Holdoff End setpoint	-40.0°C - +35.0°C	°C	0.0°C (HT) -10.0°C (LT)	0.0°C (HT) -10.0°C (LT)	Defrost termination sensor temperature which when achieved will allow fans to be switched on.
Fn6	Fans Pulse In defrost	No Yes		0 = No	0 = No	Allows the user to select if evaporator fans pulse during defrost

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
Fn7	Fans On setpoint	-10.0°C - +30.0°C	°C	50.0°C (HT) -1.0°C (LT)	5.0°C (HT) -1.0°C (LT)	Cold store Only. Defrost termination sensor temperature or Air On temperature which when achieved will allow fans to be switched on. Note N/A will be displayed if not type 4 or 5 (coldstore)
Fn8	Fans Pulse Time	5 – 600	ss	60	60	Time in seconds for which the fans will alternate between on and off if Fn6 is set to yes
Fn9	Door Open State Closes Valve	0 = No 1 = Yes		0 – No	0 – No	Allows the user to select if a door open state closes the evaporator inlet valve. Note N/A will be displayed if not type 4 or 5 (coldstore)

## 2.2.6 Controllers Time related parameter menu.



Accessed by pressing and holding the FUNCTION and UP keys simultaneously for greater than 3 seconds. The display will indicate **SEt**, Press the DOWN key 5 times - the display will indicate **Ti**, at this point press the ENTER button and the display will indicate **Ti1**. This is the first item in the TIMES menu. The UP and DOWN keys can be used to scroll through the entire list of the TIME menu – from **Ti1** through to **Ti19**. See table below:-  
Pressing ENTER whilst displaying any item will allow the user to view and modify that particular value by using the UP / DOWN keys to either increment or decrement the default value. Once the desired value is displayed press ENTER again to save, or use the FUNCTION key to return to previous menu without saving.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
ti1	Time of Day	00:00 – 23:59	hh:mm	00:00	00:00	Allows the user to set the correct time of day into the controller. Note on networked systems the time of day will automatically be down loaded from the host system
ti2	Current Date	01:01 – 31:12	dd:mm	00:00	00:00	Sets the controllers current date
ti3	Current Year	2012 -2100		0000	0000	Sets the controllers current year
ti4	Time of Next Defrost		hh:mm			Allows the user to view the time of the next scheduled defrost cycle.
ti5	Time Since last defrost		hh:mm			Allows the user to view the time since the last scheduled defrost cycle occurred.
ti6	Duration of last defrost		hh:mm			Allows the user to view the duration time of the last scheduled defrost cycle.
ti7	Duration of current defrost		hh:mm			Allows the user to view the elapsed time of a current defrost cycle.
ti8	Door Alarm Delay	0 – 120	mm			Delay after the door open input is asserted before the alarm occurs. Note N/A will be displayed if not type 4 or 5 (coldstore)
ti9	Service Interval Time	0 – 130	khrs	60	60	Running time in KHrs (1000x) before the front panel service (spanner) icon is illuminated. Reset can be achieved by changing the value to 0 then back to the desired interval.
ti10	Air On Alarm Delay	0 – 120	mm	20	20	Delay for the Air On OT alarm

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
ti11	Air Off Alarm Delay	0 – 120	mm	20	20	Delay for the Air Off OT alarm
ti12	Log Probe Alarm Delay	00:00 – 02:00	hh:mm	00:20	00:20	Delay for the log probe alarm NOTE – N/A will be displayed if Su3 is not set to 2
ti13	Cycle Time	0 – 120	mm	60	60	Energy saving feature (LSV use) see appendix 1.
ti14	EEV Injection Time	0 – 30	mm	4	4	Maximum period the controller can be in an injection (stall prevention) state. N/A will be displayed if LSV version.
ti15	Pull Down Time	0 – 30	ss	8	8	Time after draindown, before an injection state (recovery) state can be entered
ti16	Door Open Time	0 – 60	mm			Displays the time a cold store door has been continuously open for. Note N/A will be displayed if not type 4 or 5 (coldstore)
ti17	Door Interlock Time	0 – 60	mm	0 (HT) 5 (LT)	0 (HT) 5 (LT)	Maximum time for which fans and /or inlet valve are off / closed when a cold store door is open. Note N/A will be displayed if not type 4 or 5 (coldstore)
ti18	Compressor/s start holdoff Time	0 – 15	mm	4	4	Time period following initial power up of the controller before compressors can be started – <b>Integral use only</b>
ti19	Compressor/s Restart Time	0 – 15	mm	4	4	Anti – short cycle time for compressor 1 and 2 – <b>Integral use only</b>
Ti20	Compressor/s stage Time	0 – 15	mm	4	4	Period which must elapse between compressor A changing state and subsequent change of state of compressor B – <b>Integral use only</b>
Ti21	Compressor/s Minimum On Time	0 – 15	mm	4	4	Minimum time compressor/s must run once started – <b>Integral use only</b>
Ti22	Compressor/s Minimum Off Time	0 – 15	mm	4	4	Minimum time compressor/s must be stopped once switched off – <b>Integral use only</b>

## 2.2.7 Controllers current Status menu.



Accessed by pressing and holding the FUNCTION and UP keys simultaneously for greater than 3 seconds. The display will indicate **SEt**, Press the UP key 6 times - the display will indicate **StA**, at this point press the ENTER button and the display will indicate **St1**. This is the first item in the STATUS menu. The UP and DOWN keys can be used to scroll through the entire list of the STATUS menu – from **St1** through to **St20**. See table below: - Pressing ENTER whilst displaying any item will allow the user to view that particular value. None of the items within this menu are user editable. Use the FUNCTION key to return to previous menu.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
St1	Air On Temperature		°C			Displays the current Air On sensor Temperature.
St2	Air Off Temperature		°C			Displays the current Air Off sensor Temperature
St3	Evaporator In Temperature		°C			Displays the current Evap. In sensor Temperature
St4	Evaporator Out Temperature		°C			Displays the current Evap. Out sensor Temperature
St5	Superheat		°C			Displays the current superheat Temperature
St6	Defrost sensor Temperature		°C			Displays the current Defrost termination sensor Temperature
St7	Estimated cabinet Temperature		°C			Displays the current estimated cabinet temperature. This is defined by the ratio of air on temperature set within the rEF menu at rF5 (Display Ratio)
St8	Log Probe Temperature		°C			Displays the current log sensor Temperature.
St9	Analogue channel 7					Displays the current value of analogue input channel 7. (Hardware configurable).
St10	Trim Output percentage		%			Displays the current percentage of the controllers trim output.
St11	Digital Input 1	Open Closed				Displays the current state of controllers digital input 1. Function dependant upon selection made in SETUP menu – Su7

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
St12	Digital Input 2	Open Closed				Displays the current state of controllers digital input 2. Function dependant upon selection made in SETUP menu – Su8
St13	Case Clean	On Off				Displays if the controller is currently in case clean mode. (all outputs off)
St14	EEV percentage open		%			Displays the current percentage opening of the EEV. .N/A will be displayed if LSV version.
St15	Compressor 1 Fault	Yes No				Displays the current fault status of C1 (Integral only)
St16	Compressor 2 Fault	Yes No				Displays the current fault status of C2 (Integral only)
St17	Compressor 1 Running	Yes No				Displays the current status of controllers C1 output. (Integral only)
St18	Compressor 2 Running	Yes No				Displays the current status of controllers C2 output. (Integral only)
St19	Software Version					Displays controllers software version
St20	Display software version					Displays controllers display version

## 2.2.8 Controllers current Alarms menu.



Accessed by pressing and holding the FUNCTION and UP keys simultaneously for greater than 3 seconds. The display will indicate **SEt**, Press the UP key 4 times - the display will indicate **ALAr**, at this point press the ENTER button and the display will indicate **AL1**. This is the first item in the ALARMS menu. The UP and DOWN keys can be used to scroll through the entire list of the ALARMS menu – from **AL1** through to **AL14**. See table below:- Pressing ENTER whilst displaying any item will allow the user to view that particular value. None of the items within this menu are user editable. Use the FUNCTION key to return to previous menu.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
<b>AL1</b>	Any Alarms	Yes No				Allows the user to quickly establish if any alarm conditions are currently Active.
<b>AL2</b>	Air On OT	Yes No				Indicates if the controller currently has an Air On over temperature alarm.
<b>AL3</b>	Air Off OT	Yes No				Indicates if the controller currently has an Air Off over temperature alarm.
<b>AL4</b>	Air On Sensor Failure	Yes No				Indicates if the controller currently has a faulty Air On temperature sensor.
<b>AL5</b>	Air Off Sensor Failure	Yes No				Indicates if the controller currently has a faulty Air Off temperature sensor.
<b>AL6</b>	Evaporator In Sensor Failure	Yes No				Indicates if the controller currently has a faulty Evap. In temperature sensor.
<b>AL7</b>	Evaporator Out Sensor Failure	Yes No				Indicates if the controller currently has a faulty Evap. Out temperature sensor.
<b>AL8</b>	Defrost Termination Sensor Failure	Yes No				Indicates if the controller currently has a faulty Defrost Termination temperature sensor.
<b>AL9</b>	Logging Sensor Failure	Yes No				Indicates if the controller currently has a faulty Log temperature sensor.
<b>AL10</b>	Door Open	Yes				Indicates if the controller



I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
	(Cold store Only)	No				currently has a Door Open alarm Note N/A will be displayed if not type 4 or 5 (coldstore)
<b>AL11</b>	Man Trapped (Cold store Only)	Yes No				Indicates if the controller currently has a Man Trapped alarm_Note N/A will be displayed if not type 4 or 5 (coldstore)
<b>AL12</b>	Insufficient Data	Yes No				Indicates if the controller currently has an Insufficient Data alarm. Note – Usually occurs when defrost time 1 has not been set.
<b>AL13</b>	Compressor 1 Alarm (Integral Only)	Yes No				Indicates if the controller currently has a Compressor 1 Fault.
<b>AL14</b>	Compressor 2 Alarm (Integral Only)	Yes No				Indicates if the controller currently has a Compressor 2 Fault.
<b>AL15</b>	Critical Probe Fault	Yes No				Set if the controller currently has more than one temperature sensor in a fault condition.

Note – All of the above alarms if present will cause the front panel Bell Icon to be illuminated.

## 2.2.9 Controllers Lights related parameter menu.



Accessed by pressing and holding the FUNCTION and UP keys simultaneously for greater than 3 seconds. The display will indicate **SEt**, Press the UP key 3 times - the display will indicate **LiS**, at this point press the ENTER button and the display will indicate **Li1**. This is the first item in the LIGHTS menu. The UP and DOWN keys can be used to scroll through the entire list of the LIGHTS menu – from **Li1** through to **Li15**. See table below:- Pressing ENTER whilst displaying any item will allow the user to view and modify that particular value by using the UP / DOWN keys to either increment or decrement the default value. Once the desired value is displayed press ENTER again to save, or use the FUNCTION key to return to previous menu without saving.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
Li1	Lights control Mode	0 – Remote 1 – Local 2 – Off 3 – On		2	2	Allows the user to set the control of case lights:- 0 = Case lights controlled via host System manager. 1 = Case lights controlled via controller schedule (see Li2 – Li15) 2 = Always Off 3 = Always On
Li2	Sunday Lights On Time	00:00 – 23:59	hh:mm	08:00	08:00	Available if Li1 set to 1 - Local
Li3	Sunday Lights Off Time	00:00 – 23:59	hh:mm	22:00	22:00	Available if Li1 set to 1 - Local
Li4	Monday Lights On Time	00:00 – 23:59	hh:mm	08:00	08:00	Available if Li1 set to 1 - Local
Li5	Monday Lights Off Time	00:00 – 23:59	hh:mm	22:00	22:00	Available if Li1 set to 1 - Local
Li6	Tuesday Lights On Time	00:00 – 23:59	hh:mm	08:00	08:00	Available if Li1 set to 1 - Local
Li7	Tuesday Lights Off Time	00:00 – 23:59	hh:mm	22:00	22:00	Available if Li1 set to 1 - Local
Li8	Wednesday Lights On Time	00:00 – 23:59	hh:mm	08:00	08:00	Available if Li1 set to 1 - Local
Li9	Wednesday Lights Off Time	00:00 – 23:59	hh:mm	22:00	22:00	Available if Li1 set to 1 - Local
Li10	Thursday Lights On Time	00:00 – 23:59	hh:mm	08:00	08:00	Available if Li1 set to 1 - Local
Li11	Thursday Lights Off Time	00:00 – 23:59	hh:mm	22:00	22:00	Available if Li1 set to 1 - Local
Li12	Friday Lights On Time	00:00 – 23:59	hh:mm	08:00	08:00	Available if Li1 set to 1 - Local
Li13	Friday Lights Off Time	00:00 – 23:59	hh:mm	22:00	22:00	Available if Li1 set to 1 - Local
Li14	Saturday Lights On Time	00:00 – 23:59	hh:mm	08:00	08:00	Available if Li1 set to 1 - Local
Li15	Saturday Lights Off Time	00:00 – 23:59	hh:mm	22:00	22:00	Available if Li1 set to 1 - Local

## 2.2.10 Controller Sleep mode menu.



Accessed by pressing and holding the FUNCTION and UP keys simultaneously for greater than 3 seconds. The display will indicate **SLP**, Press the UP key 2 times - the display will indicate **SLP**, at this point press the ENTER button and the display will indicate **SP1**. This is the only item in the SLEEP menu. See table below:-

Pressing ENTER whilst displaying **SP1** will allow the user to view and modify that particular value by using the UP / DOWN keys to either increment or decrement the default value. Once the desired value is displayed press ENTER again to save, or use the FUNCTION key to return to previous menu without saving.

**Note:** - Caution should be used when setting this value as the controller will remain in sleep mode indefinitely once selected.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
SP1	Sleep Mode	Yes No		No	No	Allows the user to set the controller into sleep mode (All outputs off). The controller will continue to report temperature values to the host Supervisory system during sleep mode periods. The controller will remain in sleep mode if selected until the user selects No.

## 2.2.11 Controller Self test menu.



Accessed by pressing and holding the FUNCTION and UP keys simultaneously for greater than 3 seconds. The display will indicate **SEt**, Press the UP key once - the display will indicate **SELF**, at this point press the ENTER button and the display will indicate **SF1**. This is the only item in the SELF TEST menu.

See table below:-

Pressing ENTER whilst displaying **SF1** will allow the user to view and modify the default value of NO to YES. If YES is selected the controller will remain in self test for a period of two minutes, or until NO is selected, if sooner. The FUNCTION key can be used to return to the previous menu.

I/D	Parameter	Range	Units	Deflt LSV	Deflt EEV	Information
SF1	Self Test	No Yes		No	No	<p>Allows the user to set the controller into self test mode.</p> <p>The controller will cycle all outputs consecutively for a period of 2 minutes.</p> <p>The order in which the outputs are switched are:-</p> <ul style="list-style-type: none"> <li>Liquid valve</li> <li>Fans</li> <li>Defrost</li> <li>Suction / Trim</li> <li>Lights</li> </ul>

### 3. Connections:-

The Eden Avanta input and output wiring is made via two part connectors on each side of the controller. The communications port (Ethernet or RS485) is located on the top of the unit. Please see Specification sheet for required clearances.

The following tables provide a list of all input and output assignments along with the designated function of each. The tables indicate if each of these functions has an associated alarm function.

Sensor wiring is made simple by the fact that there is a dedicated ground connection for each of the standard 6 sensor inputs, removing the need to double up on connections.

The high voltage relay connections are also made via two part connectors making the installation process a lot easier than wiring fixed type connectors. The only physical difference between the EEV and LSV variants applies to relay 1 only.

The following diagrams provide all Input/Output assignments and connection details.





**Unit Type 1 & 2, Integral Version = LSV Alarm Function**

Sensor / Input / Relay	Function	Alarm Function
Sensor 1	Air On Temperature	Yes
Sensor 2	Air Off Temperature	Yes
Sensor 3	Evaporator In Temperature	No
Sensor 4	Evaporator Out Temperature	No
Sensor 5	Defrost Termination	No
Sensor 6	Logging Probe	Yes (Selectable)
Analogue Input 1	0-10Vdc	Selectable
Digital Input 1	Case Clean	No
Digital Input 2	Remote Defrost	No
Relay 1	Compressor 1	N/A
Relay 2	Compressor 2	N/A
Relay 3	Fans	N/A
Relay 4	Lights / Alarm	N/A
Relay 5	Defrost	N/A
Relay 6	Trim	N/A

Unit Type 3 & 4	Version = EEV	Alarm Function
Sensor 1	Air On Temperature	Yes
Sensor 2	Air Off Temperature	Yes
Sensor 3	Evaporator In Temperature	No
Sensor 4	Evaporator Out Temperature	No
Sensor 5	Defrost Termination	No
Sensor 6	Logging Probe	Yes (Selectable)
Analogue Input 1	0-10Vdc	Selectable
Digital Input 1	Case Clean	No
Digital Input 2	Remote Defrost	No
Relay 1	EEV	N/A
Relay 2	Suction	N/A
Relay 3	Fans	N/A
Relay 4	Lights / Alarm	N/A
Relay 5	Defrost	N/A
Relay 6	Trim	N/A

Unit Type 3 & 4	Version = LSV	Alarm Function
Sensor 1	Air On Temperature	Yes
Sensor 2	Air Off Temperature	Yes
Sensor 3	Evaporator In Temperature	No
Sensor 4	Evaporator Out Temperature	No
Sensor 5	Defrost Termination	No
Sensor 6	Logging Probe	Yes (Selectable)
Analogue Input 1	0-10Vdc	Selectable
Digital Input 1	Case Clean	No
Digital Input 2	Remote Defrost	No
Relay 1	LSV	N/A
Relay 2	Suction	N/A
Relay 3	Fans	N/A
Relay 4	Lights / Alarm	N/A
Relay 5	Defrost	N/A
Relay 6	Trim	N/A

## 4. Installation:

### 4.1 Fixing details



The controller is secured via the retaining clips on each side onto standard DIN rail. These should be firmly pushed against the underside of the mounting DIN rail. The retaining clips can be simply disengaged by pulling out by the use of a screwdriver or similar.

### 4.2 Cleaning and External Protection

The Eden Avanta display bezel has the following dimensions: - 78mm x 36mm

Cleaning: - Only use a soft lint-free cloth. Abrasive cloths, towels, paper towels and similar items may damage the Eden controller. Keep any liquids away from the controller; don't use aerosol sprays, solvents or abrasives.

External Protection Device: - The Eden Avanta must be provided with an external over current protection device such as a 6A, Type C, MCB conforming to BS EN 60898.



### 4.3 Internal Clearances:

Allow 20mm on top of enclosure  
Allow 20mm on bottom of enclosure  
Allow 10mm above enclosure

## 5. Specification

### 5.1 Power requirements:

Supply Voltage Range:	100 – 240 Vac $\pm$ 10%
Supply Frequency:	50 – 60 Hz
Maximum supply current:	5.2 Amps (when relay 5 is fully loaded)
Typical supply current:	<1 Amp
Operating temperature range:	+5C to +50C
Operating Humidity:	95% maximum
Storage temperature range:	-20.0C to +65.0C
Environmental:	Indoor use at altitudes up to 2000m, Pollution Degree 1, Installation Category II. Voltage fluctuations not to exceed $\pm$ 10% of nominal voltage

### 5.2 Dimensions:

Size	180mm (W) x 62mm (H) x 98mm (D)
Approx Weight:	185 Grams (without free-end connectors)
Safety:	EN60730-1
EMC:	EN61326-1 2006
Ventilation:	There is no requirement for forced cooling ventilation
Class 2 Insulation:	<b>No</b> protective Earth is required and <b>none</b> should be fitted.

**The host equipment must provide a suitable external over-current protection device such as: -**

Fuse:	6.3A 240 Vac Antisurge (T) HRC conforming to IEC 60127
Or MCB:	6A, 240 VAC Type C conforming to BS EN 60898

The host equipment must provide adequate protection against contact to hazardous live parts.

### 5.3 Inputs:

Analogue:	(X7) Channels 1-6 = PT1000 or 5K or 10K or 2K2 (selectable) Channel 7 configurable for current, voltage, additional temperature sensor
Digital:	(X2) (selectable)

### 5.4 Communications:

On-board RS485 or Ethernet 10/100baseT or Wi-Fi  
(order option)

## 5.5 Relays:

Max current relay 1:	10A (non inductive)	<b>LSV Version</b>
Max Voltage relay 1:	COS =0.1 2A (inductive load) >200,000 operations	<b>LSV Version</b>
Exclusive common	250Vac, 30V dc	<b>LSV Version</b>
Max current relay 1:	1.5A (SSR Zero – Crossing)	<b>EEV Version</b>
Max Voltage relay 1:	280Vac	<b>EEV Version</b>
Exclusive common		
Max current relay 2:	10A (non inductive),	
Max Voltage relay 2:	COS =0.1 2A (inductive load) >200,000 operations	
Exclusive common	250Vac , 30V dc	
Max current relay 3:	10A (non inductive),	
Max Voltage relay 3:	COS =0.1 2A (inductive load) >200,000 operations	
Exclusive common	250Vac 30V dc	
Max current relay 4:	10A (non inductive),	
Max Voltage relay 4:	COS =0.1 2A (inductive load) >200,000 operations	
Exclusive common	250Vac 30V dc	
Max current relay 5	10A (non inductive),	
Max Voltage relay 5	COS =0.1 2A (inductive load) >200,000 operations	
Exclusive common	250Vac 30V dc	
Max current relay 6:	10A (non inductive),	
Max Voltage relay 6:	COS =0.4 2A (inductive load) >200,000 operations.	
Exclusive common	250Vac 30V dc	

## 5.6 Part Numbers for ordering:

(EA2111)	Eden Avanta with EEV, 485 Comms
(EA2112)	Eden Avanta with LSV, 485 Comms
(EA2121)	Eden Avanta with EEV, IP Comms
(EA2122)	Eden Avanta with LSV, IP Comms

## 6. Revision History

Revision	Date	Author	Amendments	Comments
1	20/03/2013	SL	First Draft	Issued for internal review
1.1	01/07/2013	DS	Images updated	Issued for customer distribution
2.0	14/03/2014	SL	Relay Designations Corrected	Issued for customer distribution
3.0	11/03/2015	DS	New Part No's Added	Issued for customer distribution

## 7. Disclaimer

To allow for design and specification improvements, the information contained within this document is subject to change at any time without prior notice. RCS Energy Management shall not be liable for any errors or omissions, for incidental or consequential damages either directly or indirectly resulting from the misuse of this product or associated document.

## 8. Contact Details

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# Appendices

## Appendix 1

### Cycle Time function (Times menu (Ti13))

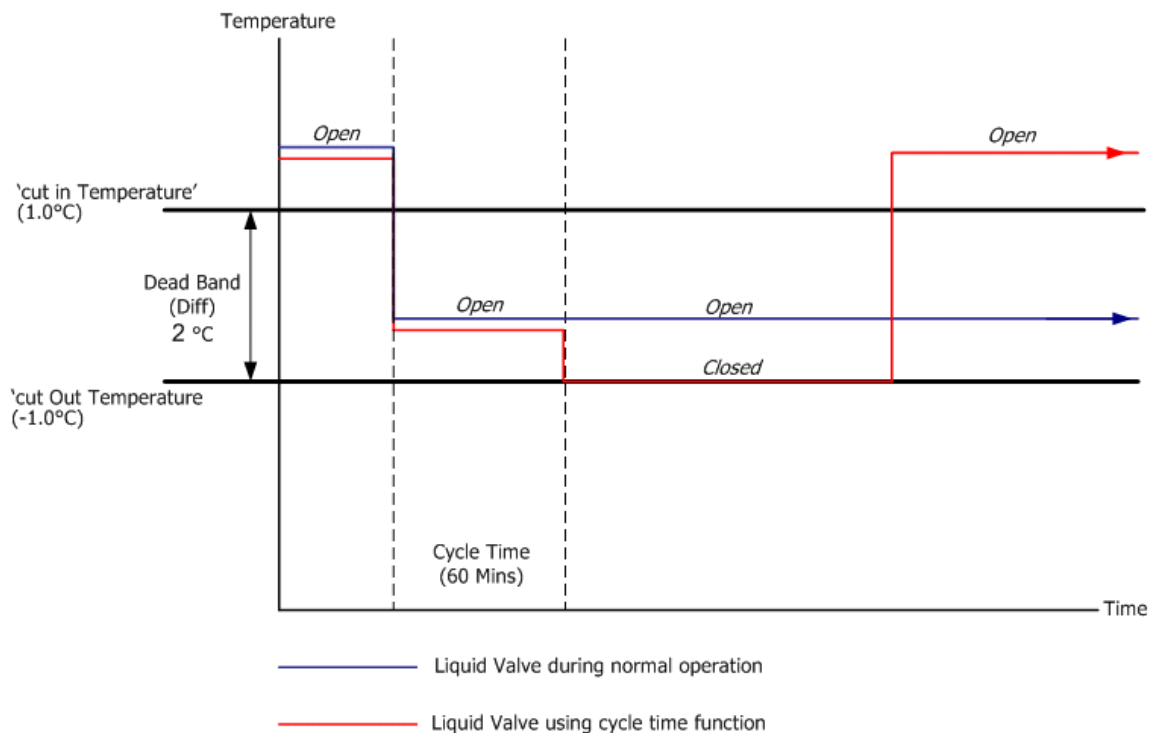
Minimum value = 0 Minutes  
**Default Value = 60 Minutes**  
 Maximum value = 120 Minutes

This energy saving feature applies to HT cases with liquid solenoid valve control only, and operates within the standard LSV control loop. The cycle time function will close the liquid solenoid valve if the valve has been open for greater than the cycle time parameter (Ti13) and has been constantly within the dead band for this period.

The diagram below (Fig 1) shows the cycle timer operation overlaid over the standard control loop.

The cycle time function can be disabled by setting Ti13 value to zero.

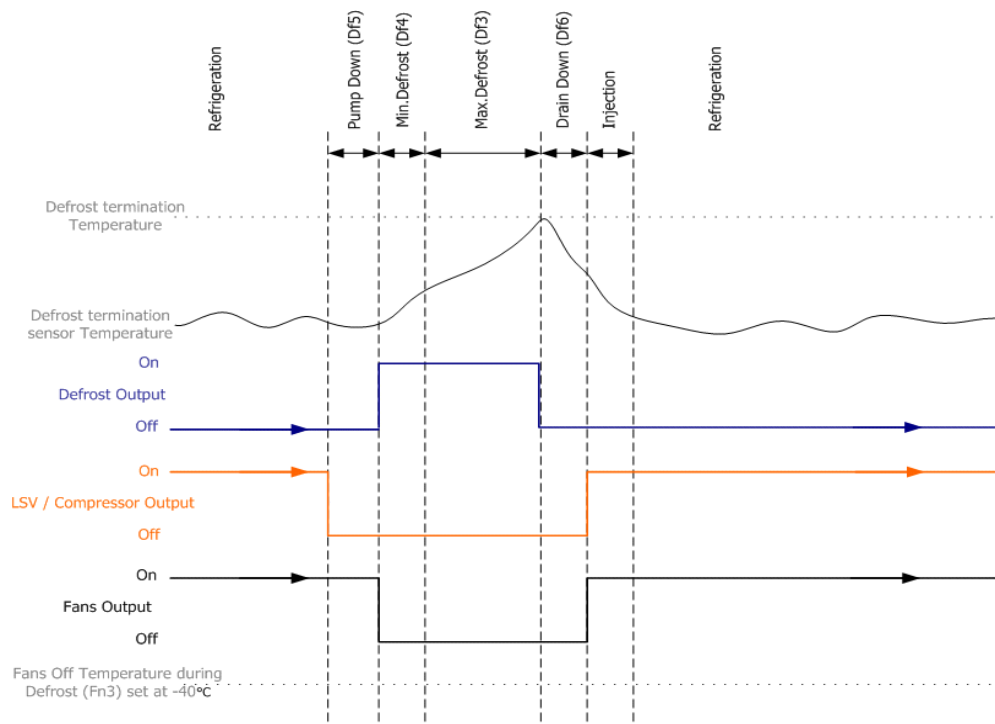
Fig 1



The benefits of using the cycle time function are realised by shorter defrost periods or less frequent defrost periods, resulting in very stable product temperatures as a result of an ice free evaporator.

## Appendix 2

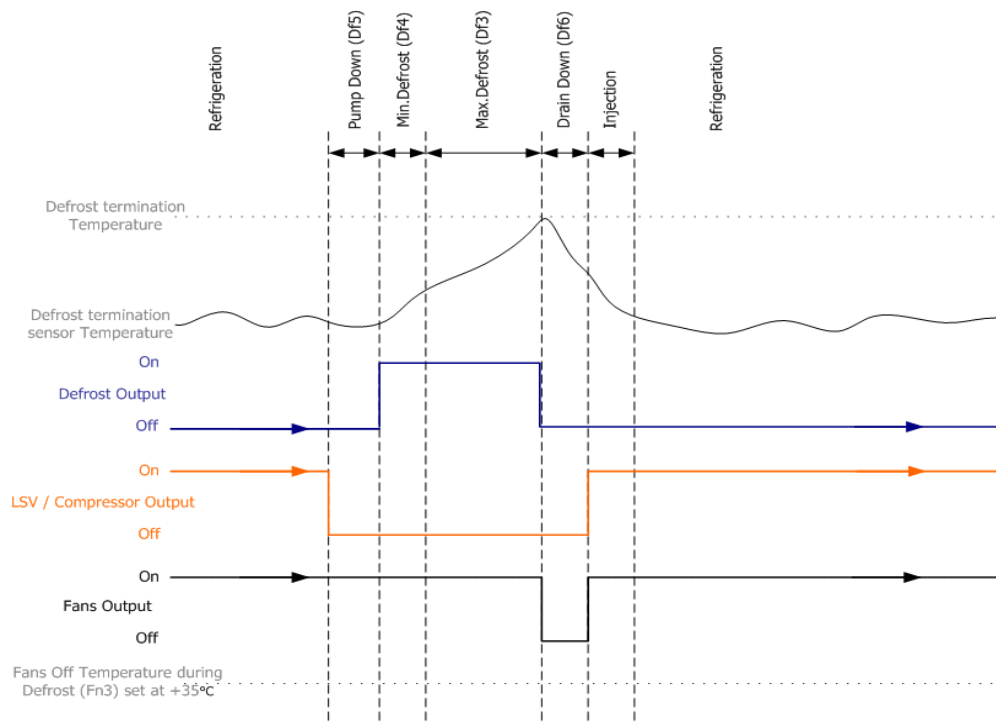
### Defrost Cycle (Fans Off)





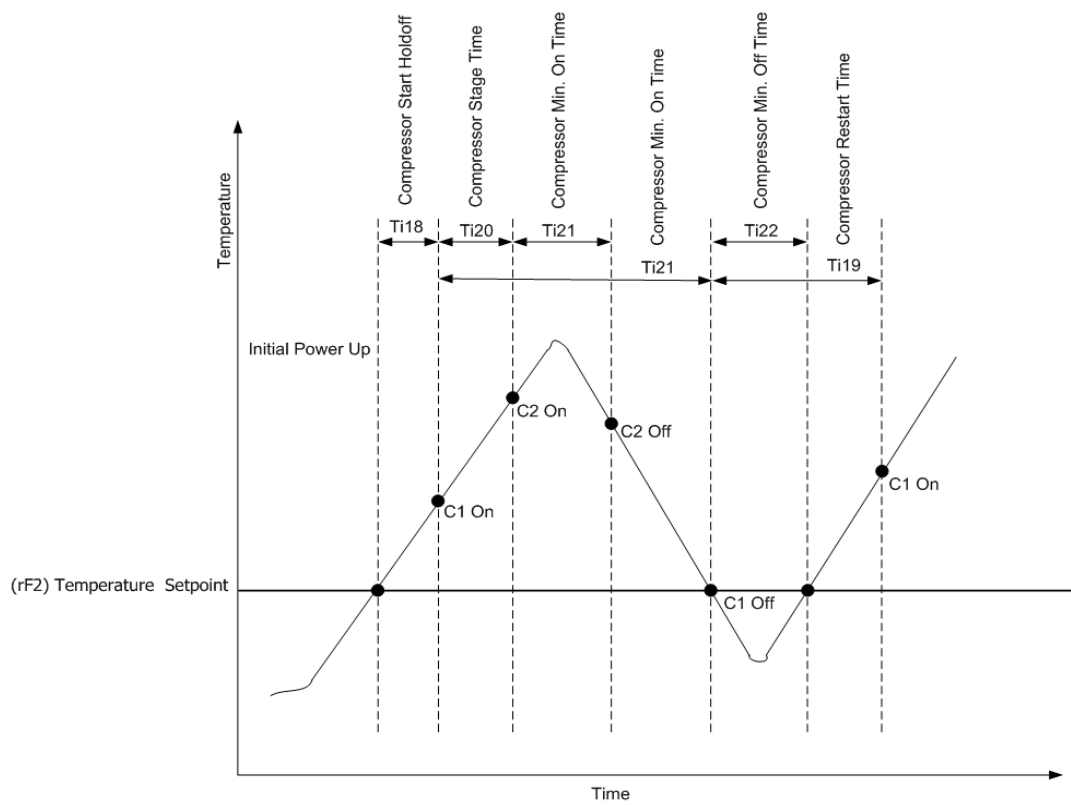
## Appendix 3

### Defrost Cycle (Fans On)



## Appendix 4

### Integral Compressor Action



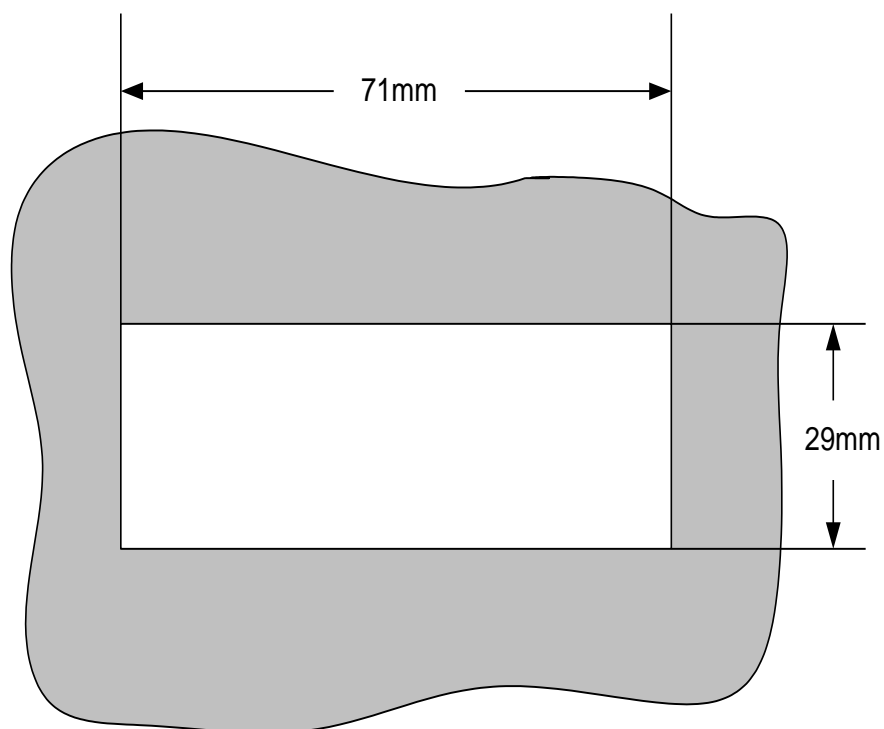
## Appendix 5

### 9.5 Remote Display

The Eden Compact range of controllers are available in configurations to support remote display requirements.

The Eden Compact remote display unit maintains exactly the same fascia dimensions as the compact controller.

#### 9.5.1 Panel Cut-out:



Please allow 35mm behind panel for display module and cable clearance.

## 9.5.2 Remote Display

The remote display unit is robustly held in position by the use of sprung clips at either end of the enclosure. These have been designed to allow the fitment of the module through a panel cut-out from the front.

## 9.5.3 Retaining Clips:



The remote display unit maintains exactly the same functionality as the integral display variant of the Eden Compact with menu access, parameter management and setup the same as previously described within this document.

## 9.5.4 Remote Display Module: (Front view)



# 10. European Declaration of Conformity

We of RCS Energy Management Limited  
RMS House, Kennet Side, Bone Lane, Newbury, Berkshire, RG14 5PX

In accordance with the following directive(s):

<b>EN 60730-1</b> (Fourth Edition) 2010	Automatic electrical controls for household and similar use.
<b>2006/95/EC</b>	Low voltage Directive
<b>EN 55014-1: 2006 A2</b>	EMC requirements for household appliances, electric tools and similar apparatus – Emissions.
<b>EN 55014-2: 1997 A2</b>	EMC requirements for household appliances, electric tools and similar apparatus – Immunity.

Hereby declare that:

Equipment	Eden Avanta Controller
Model Number(s)	EA2111, EA2112, EA2121, EA2122, EA2131, EA2132, EA2211, EA2112, EA2221, EA2222, EA2231, EA2232

Is in conformity with the applicable requirements of the afore mentioned standards / directives.

The Technical construction file is maintained at RMS House, Kennet Side, Bone Lane, Newbury, Berkshire, RG14 5PX by S. Liddiard (Product Manager)

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced directives. The unit complies with all applicable requirements of these directives.

Signed: *S Liddiard*

Name: Mr. Simon Liddiard

Position: Product Manager

Date: 20 March 2013