

**Software Reference for the**  
**6622CC / 6721CC / 6723CC**

**Delta C (extend)**  
**Delta Wave (extend)**  
**Delta MAX**

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Software versions with specific alarm messages are described in the last part of this file.

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# ALARM MESSAGES 6622CC/6721CC/6723CC.

## “Deviation Alarm” (@00)

### Case: Zone 0 Calrod.

**Machineaction:** Machine will be **Blocked**.

**Software Version:** V08.00.00.00 and higher, **for Delta C Extend only.**

**Possible cause:** The Pt100 is broken, the mechanical connection of the Pt100 to the heating element is not good, the set deviation limits are too small, or the PID settings are not correct.

**When generated:** Zone 0 has reached setpoint, and the measured value is seen outside one of its set deviation limits, for at least 3 seconds.

**How to Resolve:** Wait until the preheat temperature zone 0 is between the low and high deviation setting, set in seTup => Parameter => Zone 0 Calrod, or in case the Pt100 is broken replace it, then you are able to reset the alarm.

**Additional info:** Deviation must be seen for at least 3 seconds, outside its set deviation limits. If the PID settings are not correct goto seTup => Parameter => Zone 0 Calrod and click the <Restore> button and afterwards the <Accept> button.

When the local power supply fluctuates, or when there is a strange airstream trough the machine it is also possible that this alarm will be generated.

With Software version V05.00.00.00 and higher the default PID settings are P-action 15, I-action 150 and D-action 0, this will give in normal circumstances a stable control, to get a faster response you can try P-action 30, I-action 75 and D-action 0.

The Zone 0 Calrod in the **Delta Extend** has no Deviation Alarm because it's connected parallel to the Zone 1 Calrod, and therefore controlled by the Zone 1 Calrod PID-controller.

MMS1-02 = Analogue Input Main Module Slot 1 – Channel 02.

**Delta C Extend:** The Pt100 itself can be found mechanical attached at the second calrod heating element E14 in Zone 0, the Pt100 has the number R2 (MMS1-02).

### Case: Zone 1 Forced.

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is broken, the deviation settings are too small, or the PID settings are not correct.

**When generated:** Zone 1 has reached setpoint, and the measured value is seen outside one of its set deviation limits, for at least 3 seconds.

**How to Resolve:** Wait until the preheat temperature zone 1 is between the low and high deviation setting, set in seTup => Parameter => Zone 1 Forced, or in case the Pt100 is broken replace it, then you are able to reset the alarm.

**Additional info:** Deviation must be seen for at least 3 seconds, outside its set deviation limits. If the PID settings are not correct goto seTup => Parameter => Zone 1 Forced and click the <Restore> button and afterwards the <Accept> button.

With Software version V05.00.00.00 and higher the default PID settings are P-action 15, I-action 150 and D-action 0, this will give in normal circumstances a stable control, to get a faster response you can try P-action 30, I-action 75 and D-action 0.

MMS1-02 = Analogue Input Main Module Slot 1 – Channel 02.

MMS1-03 = Analogue Input Main Module Slot 1 – Channel 03.

**Delta C (Extend):** The Pt100 itself can be found in preheater zone 1 and the Pt100 has the number R7 (MMS1-03).

**Delta (Extend):** The Pt100 itself can be found in preheater zone 1 and the Pt100 has the number R6 (MMS1-02).

**DeltaMAX:** The Pt100 itself can be found in preheater zone 1 and the Pt100 has the number R12 (MMS1-02).

### Case: Zone 1 Calrod.

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is broken, the mechanical connection of the Pt100 to the heating element is not good, the set deviation limits are too small, or the PID settings are not correct.

**When generated:** Zone 1 has reached setpoint, and the measured value is seen outside one of its set deviation limits, for at least 3 seconds.

**How to Resolve:** Wait until the preheat temperature zone 1 is between the low and high deviation setting, set in seTup => Parameter => Zone 1 Calrod, or in case the Pt100 is broken replace it, then you are able to reset the alarm.

**Additional info:** Deviation must be seen for at least 3 seconds, outside its set deviation limits. If the PID settings are not correct goto seTup => Parameter => Zone 1 Calrod and click the <Restore> button and afterwards the <Accept> button.  
When the local power supply fluctuates, or when there is a strange airstream trough the machine it is also possible that this alarm will be generated.  
With Software version V05.00.00.00 and higher the default PID settings are P-action 15, I-action 150 and D-action 0, this will give in normal circumstances a stable control, to get a faster response you can try P-action 30, I-action 75 and D-action 0.  
MMS1-02 = Analogue Input Main Module Slot 1 – Channel 02.  
MMS1-03 = Analogue Input Main Module Slot 1 – Channel 03.

**Delta C (Extend):** The Pt100 itself can be found mechanical attached at the second calrod heating element E45 in Zone 1, the Pt100 has the number R3 (MMS1-03).

**Delta (Extend):** The Pt100 itself can be found mechanical attached at the second calrod heating element E14 in Zone 1, the Pt100 has the number R2 (MMS1-02).

**DeltaMAX:** The Pt100 itself can be found mechanical attached at the second calrod heating element E14 in Zone 1, the Pt100 has the number R2 (MMS1-02).

### **Case: Zone 2 Forced.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is broken, the deviation settings are too small, or the PID settings are not correct.

**When generated:** Zone 2 has reached setpoint, and the measured value is seen outside one of its set deviation limits, for at least 3 seconds.

**How to Resolve:** Wait until the preheat temperature zone 2 is between the low and high deviation setting, set in seTup => Parameter => Zone 2 Forced, or in case the Pt100 is broken replace it, then you are able to reset the alarm.

**Additional info:** Deviation must be seen for at least 3 seconds, outside its set deviation limits. If the PID settings are not correct goto seTup => Parameter => Zone 2 Forced and click the <Restore> button and afterwards the <Accept> button.  
With Software version V05.00.00.00 and higher the default PID settings are P-action 15, I-action 150 and D-action 0, this will give in normal circumstances a stable control, to get a faster response you can try P-action 30, I-action 75 and D-action 0.  
MMS1-03 = Analogue Input Main Module Slot 1 – Channel 03.  
MMS1-04 = Analogue Input Main Module Slot 1 – Channel 04.

**Delta C (Extend):** The Pt100 itself can be found in preheater zone 2 and the Pt100 has the number R8 (MMS1-04).

**Delta (Extend):** The Pt100 itself can be found in preheater zone 2 and the Pt100 has the number R7 (MMS1-03).

**DeltaMAX:** The Pt100 itself can be found in preheater zone 2 and the Pt100 has the number R13 (MMS1-03).

### **Case: Zone 2 Calrod.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is broken, the mechanical connection of the Pt100 to the heating element is not good, the set deviation limits are too small, or the PID settings are not correct.

**When generated:** Zone 2 has reached setpoint, and the measured value is seen outside one of its set deviation limits, for at least 3 seconds.

**How to Resolve:** Wait until the preheat temperature zone 2 is between the low and high deviation setting, set in seTup => Parameter => Zone 2 Calrod, or in case the Pt100 is broken replace it, then you are able to reset the alarm.

**Additional info:** Deviation must be seen for at least 3 seconds, outside its set deviation limits. If the PID settings are not correct goto seTup => Parameter => Zone 2 Calrod and click the <Restore> button and afterwards the <Accept> button.  
When the local power supply fluctuates, or when there is a strange airstream trough the machine it is also possible that this alarm will be generated.  
With Software version V05.00.00.00 and higher the default PID settings are P-action 15, I-action 150 and D-action 0, this will give in normal circumstances a stable control, to get a faster response you can try P-action 30, I-action 75 and D-action 0.  
MMS1-03 = Analogue Input Main Module Slot 1 – Channel 03.  
MMS1-03 = Analogue Input Main Module Slot 1 – Channel 04.

**Delta C (Extend):** The Pt100 itself can be found mechanical attached at the second calrod heating element E76 in Zone 2, the Pt100 has the number R4 (MMS1-04).

**Delta (Extend):** The Pt100 itself can be found mechanical attached at the second calrod heating element E45 in Zone 2, the Pt100 has the number R3 (MMS1-03).

**DeltaMAX:** The Pt100 itself can be found mechanical attached at the second calrod heating element E53 in Zone 2, the Pt100 has the number R3 (MMS1-03).

### **Case: Zone 3 Forced.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, **for Delta (Extend) and DeltaMAX only.**

**Possible cause:** The Pt100 is broken, the deviation settings are too small, or the PID settings are not correct.

**When generated:** Zone 3 has reached setpoint, and the measured value is seen outside one of its set deviation limits, for at least 3 seconds.

**How to Resolve:** Wait until the preheat temperature zone 3 is between the low and high deviation setting, set in seTup => Parameter => Zone 3 Forced, or in case the Pt100 is broken replace it, then you are able to reset the alarm.

**Additional info:** Deviation must be seen for at least 3 seconds, outside its set deviation limits. If the PID settings are not correct goto seTup => Parameter => Zone 3 Forced and click the <Restore> button and afterwards the <Accept> button.  
With Software version V05.00.00.00 and higher the default PID settings are P-action 15, I-action 150 and D-action 0, this will give in normal circumstances a stable control, to get a faster response you can try P-action 30, I-action 75 and D-action 0.  
MMS1-04 = Analogue Input Main Module Slot 1 – Channel 04.

**Delta (Extend):** The Pt100 itself can be found in preheater zone 3 and the Pt100 has the number R8 (MMS1-04).

**DeltaMAX:** The Pt100 itself can be found in preheater zone 3 and the Pt100 has the number R14 (MMS1-04).

### **Case: Zone 3 Calrod.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, **for Delta (Extend) and DeltaMAX only.**

**Possible cause:** The Pt100 is broken, the mechanical connection of the Pt100 to the heating element is not good, the set deviation limits are too small, or the PID settings are not correct.

**When generated:** Zone 3 has reached setpoint, and the measured value is seen outside one of its set deviation limits, for at least 3 seconds.

**How to Resolve:** Wait until the preheat temperature zone 3 is between the low and high deviation setting, set in seTup => Parameter => Zone 3 Calrod, or in case the Pt100 is broken replace it, then you are able to reset the alarm.

**Additional info:** Deviation must be seen for at least 3 seconds, outside its set deviation limits. If the PID settings are not correct goto seTup => Parameter => Zone 3 Calrod and click the <Restore> button and afterwards the <Accept> button.  
When the local power supply fluctuates, or when there is a strange airstream trough the machine it is also possible that this alarm will be generated.  
With Software version V05.00.00.00 and higher the default PID settings are P-action 15, I-action 150 and D-action 0, this will give in normal circumstances a stable control, to get a faster response you can try P-action 30, I-action 75 and D-action 0.  
MMS1-04 = Analogue Input Main Module Slot 1 – Channel 04.

**Delta (Extend):** The Pt100 itself can be found mechanical attached at the second calrod heating element E76 in Zone 3, the Pt100 has the number R4 (MMS1-04).

**DeltaMAX:** The Pt100 itself can be found mechanical attached at the second calrod heating element E92 in Zone 3, the Pt100 has the number R4 (MMS1-04).

### **Case: Solder Temperature.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is broken or the addition of solder is too fast or the PID settings are not correct. Another possibility is that the waves are switched on straight away after the solderpot has reached temperature.

**When generated:** The Solderpot has reached setpoint, and the measured value is seen outside one of its set deviation limits, for at least 3 seconds.

**How to Resolve:** Wait until the solder temperature is between the low and high deviation setting, set in seTup => Parameter => Solder temperature, or in case the Pt100 is broken replace it, then you are able to reset the alarm.

**Additional info:** Deviation must be seen for at least 3 seconds, outside its set deviation limits. If the PID settings are not correct goto seTup => Parameter => Solder temperature and click the <Restore> button and afterwards the <Accept> button.  
MMS1-01 = Analogue Input Main Module Slot 1 – Channel 01.

**Delta C (Extend):** The Pt100 itself can be found at the backside of the machine in the solderpot, the Pt100 has the number R1 (MMS1-01).

**Delta (Extend):** The Pt100 itself can be found at the backside of the machine in the solderpot, the Pt100 has the number R1 (MMS1-01).

**DeltaMAX:** The Pt100 itself can be found at the backside of the machine in the solderpot, the Pt100 has the number R1 (MMS1-01).

### **Case: Pyrometer.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The preheat settings are too low or too high, the deviation settings are set too small, or the tracking area of the pyrometer is wrong.

**When generated:** The pyrometer is switched on by tracking, and the alarm check box is **on** in the Parameter screen, and the measured value is seen outside one of its set deviation limits, for at least 3 seconds.

**How to Resolve:** Change the preheat settings or the pyrometer setpoint.

**Additional info:** If the Deviation settings are not correct goto seTup => Parameter => Parameter and click the <Restore> button and afterwards the <Accept> button.  
MMS2-07 = Analogue Input Main Module Slot 2 – Channel 07.

**Delta C (Extend):** The pyrometer B5 (MMS2-07) can be found above the area between preheater 3 and the solderpot.

**Delta (Extend):** The pyrometer B5 (MMS2-07) can be found above the area between preheater 3 and the solderpot.

**DeltaMAX:** The pyrometer B56 (MMS2-07) can be found above the area between preheater 3 and the solderpot.

### **Case: SG-Unit.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The deviation settings are set to small, you added too much thinner or flux, or the difference between the original flux SG-value and the required SG-value is too big.

**When generated:** The SG-Unit pump (M12 for Delta C (Extend) and Delta (Extend), M14 for DeltaMAX) must run for at least 3 minutes, the SG-Unit has reached setpoint, and the measured value is seen outside one of its set deviation limits, for at least 3 seconds.

**How to Resolve:** Wait until the SG-Unit is between the low and high deviation setting, set in seTup => Parameter => SG-Unit, then you are able to reset the alarm.

**Additional info:** Deviation must be seen for at least 3 seconds, outside its set deviation limits.

The temperature compensation in the SG-Unit compensates per degree Celsius 0.0008 kg/m<sup>3</sup>, 20 degrees Celsius is the 0 level. (30 °C will increase the measured value with 0.010 kg/ m<sup>3</sup>)

This alarm can also be generated when the pump creates pressure fluctuations in the hose to the SG-tank. (You can feel this when you grab the hose between the pump and the SG-Unit itself.)

In software version V04.02.00.00 and earlier the Thinner addition shot is a fixed time of 5 seconds, afterwards the Thinner shot can be adjusted in seTup => Vessel Settings.

It is also possible that the integration time of the transducer is not correct adjusted. The high and low deviation settings in the parameter screen are reversed. (High is low and low is high)

MMS2-08 = Analogue Input Main Module Slot 2 – Channel 08.

**Delta C (Extend):** The SG-Unit itself can be found at the entrance back side of the machine, the SG-Meter B6 (MMS2-08) is the bleu measurement underneath the SG-Unit, and the number of the temperature compensation Pt100 is R5 (MMS1-05).

**Delta (Extend):** The SG-Unit itself can be found at the entrance back side of the machine, the SG-Meter B6 (MMS2-08) is the bleu measurement underneath the SG-Unit, and the number of the temperature compensation Pt100 is R5 (MMS1-05).

**DeltaMAX:** The SG-Unit itself can be found at the entrance back side of the machine, the SG-Meter B19 (MMS2-08) is the bleu measurement underneath the SG-Unit, and the number of the temperature compensation Pt100 is R5 (MMS1-05).

### **Case: Switchbox Temperature.**

**Machineaction:** Only message.

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** The switch box doors are open, the Pt100 R6 (MMS1-06) is broken, the fans M11 and M12 are not working, the fan filters before M11 and M12 are blocked or the door switch S35 is wrongly adjusted or broken.

**When generated:** When the switchbox temperature is above 40°C, this alarm will be generated.

**How to Resolve:** Cool the switch box down then you are able to reset the alarm.

**Additional info:** The switch box temperature measured value can be checked via the trends screen. MMS1-06 = Analogue Input Main Module Slot 1 – Channel 06.

**DeltaMAX:** The Pt100 itself can be found in the switchbox, mounted at the topside on the mounting plate, the Pt100 has the number R6 (MMS1-06).

### **Case: Machine Temperature.**

**Machineaction:** Only message.

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** The exhaust is not working very well or the Pt100 R7 (MMS1-07) is broken.

**When generated:** When the machine temperature is above 140°C, this alarm will be generated.

**How to Resolve:** Cool the machine down then you are able to reset the alarm.

**Additional info:** The switch box temperature measured value can be checked via the trends screen. MMS1-07 = Analogue Input Main Module Slot 1 – Channel 07.

**DeltaMAX:** The Pt100 itself can be found in the machine, above the solderpot, the Pt100 has the number R7 (MMS1-07).

### **Case: Exhaust.**

**Software Version:** **For DeltaMAX only**, not implemented yet.

## **“Possible Pt100 disconnection” (@01)**

### **Case: Zone 0 Calrod.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** V08.00.00.00 and higher, **for Delta C Extend only.**

**Possible cause:** The Pt100 is either disconnected or broken.

**When generated:** The measured value is seen below 6 degrees C.

**How to Resolve:** Check the Pt100 connection at connector underneath the preheater zone 0, or at the connector on the analogue input card (MMS1-02), or replace the Pt100.

**Additional info:** When you measure the resistance by an external Ohm meter, the resistor value is 100Ω at 0°Celsius, 138,5Ω at 100°Celsius, 175,84Ω at 200°Celsius, 212,03Ω at 300°Celsius and 247,06Ω at 400°Celsius. (Be sure to measure the resistance between the two resistance wires and not between the two compensation wires, see electrical drawing) In PLC software version V05.00.00.00, V05.01.00.00 and V05.02.00.00 there was a problem with the preheat configuration determination, and this alarm message was generated without reason.

The Zone 0 Calrod in the **Delta Extend** has no Possible Pt100 Disconnection Alarm because it's connected parallel to the Zone 1 Calrod, and therefore controlled by the Zone 1 Calrod PID-controller.

MMS1-02 = Analogue Input Main Module Slot 1 – Channel 02.

**Delta C Extend:** The Pt100 itself can be found mechanical attached at the second calrod heating element E14 in Zone 0, the Pt100 has the number R2 (MMS1-02).

### **Case: Zone 1 Forced.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is either disconnected or broken.

**When generated:** The measured value is seen below 6 degrees C.

**How to Resolve:** Check the Pt100 connection at connector underneath the preheater zone 1 or at the connector on the analogue input card (MMS1-02 or MMS1-03), or replace the Pt100.

**Additional info:** When you measure the resistance by an external Ohm meter, the resistor value is 100Ω at 0°Celsius, 138,5Ω at 100°Celsius, 175,84Ω at 200°Celsius, 212,03Ω at 300°Celsius and 247,06Ω at 400°Celsius. (Be sure to measure the resistance between the two resistance wires and not between the two compensation wires, see electrical drawing) In PLC software version V05.00.00.00, V05.01.00.00 and V05.02.00.00 there was a problem with the preheat configuration determination, and this alarm message was generated without reason.

MMS1-02 = Analogue Input Main Module Slot 1 – Channel 02.

MMS1-03 = Analogue Input Main Module Slot 1 – Channel 03.

**Delta C (Extend):** The Pt100 itself can be found in preheater zone 1 and the Pt100 has the number R7 (MMS1-03).

**Delta (Extend):** The Pt100 itself can be found in preheater zone 1 and the Pt100 has the number R6 (MMS1-02).

**DeltaMAX:** The Pt100 itself can be found in preheater zone 1 and the Pt100 has the number R12 (MMS1-02).

### **Case: Zone 1 Calrod.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is either disconnected or broken.

**When generated:** The measured value is seen below 6 degrees C.

**How to Resolve:** Check the Pt100 connection at connector underneath the preheater zone 1, or at the connector on the analogue input card (MMS1-02 or MMS1-03), or replace the Pt100.

**Additional info:** When you measure the resistance by an external Ohm meter, the resistor value is 100Ω at 0°Celsius, 138,5Ω at 100°Celsius, 175,84Ω at 200°Celsius, 212,03Ω at 300°Celsius and 247,06Ω at 400°Celsius. (Be sure to measure the resistance between the two resistance wires and not between the two compensation wires, see electrical drawing) In PLC software version V05.00.00.00, V05.01.00.00 and V05.02.00.00 there was a problem with the preheat configuration determination, and this alarm message was generated without reason.

MMS1-02 = Analogue Input Main Module Slot 1 – Channel 02.

MMS1-03 = Analogue Input Main Module Slot 1 – Channel 03.

**Delta C (Extend):** The Pt100 itself can be found mechanical attached at the second calrod heating element E45 in Zone 1, the Pt100 has the number R3 (MMS1-03).

**Delta (Extend):** The Pt100 itself can be found mechanical attached at the second calrod heating element E14 in Zone 1, the Pt100 has the number R2 (MMS1-02).

**DeltaMAX:** The Pt100 itself can be found mechanical attached at the second calrod heating element E14 in Zone 1, the Pt100 has the number R2 (MMS1-02).

### **Case: Zone 2 Forced.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is either disconnected or broken.

**When generated:** The measured value is seen below 6 degrees C.

**How to Resolve:** Check the Pt100 connection at connector underneath the preheater zone 2 or at the connector on the analogue input card (MMS1-03 or MMS1-04), or replace the Pt100.

**Additional info:** When you measure the resistance by an external Ohm meter, the resistor value is 100Ω at 0°Celsius, 138,5Ω at 100°Celsius, 175,84Ω at 200°Celsius, 212,03Ω at 300°Celsius and 247,06Ω at 400°Celsius. (Be sure to measure the resistance between the two resistance wires and not between the two compensation wires, see electrical drawing) In PLC software version V05.00.00.00, V05.01.00.00 and V05.02.00.00 there was a problem with the preheat configuration determination, and this alarm message was generated without reason.

MMS1-03 = Analogue Input Main Module Slot 1 – Channel 03.

MMS1-04 = Analogue Input Main Module Slot 1 – Channel 04.

**Delta C (Extend):** The Pt100 itself can be found in preheater zone 2 and the Pt100 has the number R8 (MMS1-04).

**Delta (Extend):** The Pt100 itself can be found in preheater zone 2 and the Pt100 has the number R7 (MMS1-03).

**DeltaMAX:** The Pt100 itself can be found in preheater zone 2 and the Pt100 has the number R13 (MMS1-03).

### **Case: Zone 2 Calrod.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is either disconnected or broken.

**When generated:** The measured value is seen below 6 degrees C.

**How to Resolve:** Check the Pt100 connection at connector underneath the preheater zone 2, or at the connector on the analogue input card (MMS1-03 or MMS1-04), or replace the Pt100.

**Additional info:** When you measure the resistance by an external Ohm meter, the resistor value is 100Ω at 0°Celsius, 138,5Ω at 100°Celsius, 175,84Ω at 200°Celsius, 212,03Ω at 300°Celsius and 247,06Ω at 400°Celsius. (Be sure to measure the resistance between the two resistance wires and not between the two compensation wires, see electrical drawing) In PLC software version V05.00.00.00, V05.01.00.00 and V05.02.00.00 there was a problem with the preheat configuration determination, and this alarm message was generated without reason.

MMS1-03 = Analogue Input Main Module Slot 1 – Channel 03.

MMS1-04 = Analogue Input Main Module Slot 1 – Channel 04.

**Delta C (Extend):** The Pt100 itself can be found mechanical attached at the second calrod heating element E76 in Zone 2, the Pt100 has the number R4 (MMS1-04).

**Delta (Extend):** The Pt100 itself can be found mechanical attached at the second calrod heating element E45 in Zone 2, the Pt100 has the number R3 (MMS1-03).

**DeltaMAX:** The Pt100 itself can be found mechanical attached at the second calrod heating element E53 in Zone 2, the Pt100 has the number R3 (MMS1-03).

### **Case: Zone 3 Forced.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is either disconnected or broken.

**When generated:** The measured value is seen below 6 degrees C.

**How to Resolve:** Check the Pt100 connection at connector underneath the preheater zone 3, or at the connector on the analogue input card (MMS1-04), or replace the Pt100.

**Additional info:** When you measure the resistance by an external Ohm meter, the resistor value is 100Ω at 0°Celsius, 138,5Ω at 100°Celsius, 175,84Ω at 200°Celsius, 212,03Ω at 300°Celsius and 247,06Ω at 400°Celsius. (Be sure to measure the resistance between the two resistance wires and not between the two compensation wires, see electrical drawing) In PLC software version V05.00.00.00, V05.01.00.00 and V05.02.00.00 there was a problem with the preheat configuration determination, and this alarm message was generated without reason.  
MMS1-04 = Analogue Input Main Module Slot 1 – Channel 04.

**Delta (Extend):** The Pt100 itself can be found in preheater zone 3 and the Pt100 has the number R8 (MMS1-04).

**DeltaMAX:** The Pt100 itself can be found in preheater zone 3 and the Pt100 has the number R14 (MMS1-04).

### **Case: Zone 3 Calrod.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is either disconnected or broken.

**When generated:** The measured value is seen below 6 degrees C.

**How to Resolve:** Check the Pt100 connection at connector underneath the preheater zone 3, or at the connector on the analogue input card (MMS1-04), or replace the Pt100.

**Additional info:** When you measure the resistance by an external Ohm meter, the resistor value is 100Ω at 0°Celsius, 138,5Ω at 100°Celsius, 175,84Ω at 200°Celsius, 212,03Ω at 300°Celsius and 247,06Ω at 400°Celsius. (Be sure to measure the resistance between the two resistance wires and not between the two compensation wires, see electrical drawing) In PLC software version V05.00.00.00, V05.01.00.00 and V05.02.00.00 there was a problem with the preheat configuration determination, and this alarm message was generated without reason.  
MMS1-04 = Analogue Input Main Module Slot 1 – Channel 04.

**Delta (Extend):** The Pt100 itself can be found mechanical attached at the second calrod heating element E76 in Zone 3, the Pt100 has the number R4 (MMS1-04).

**DeltaMAX:** The Pt100 itself can be found mechanical attached at the second calrod heating element E92 in Zone 3, the Pt100 has the number R4 (MMS1-04).

### **Case: Solder Temperature.**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The Pt100 is either disconnected or broken.

**When generated:** The measured value is seen below 6 degrees C.

**How to Resolve:** Check the Pt100 connection at connector on the backside of the solderpot, or at the connector on the analogue input card (MMS1-01), or replace the Pt100.

**Additional info:** When you measure the resistance by an external Ohm meter, the resistor value is 100Ω at 0°Celsius, 138,5Ω at 100°Celsius, 175,84Ω at 200°Celsius, 212,03Ω at 300°Celsius and 247,06Ω at 400°Celsius. (Be sure to measure the resistance between the two resistance wires and not between the two compensation wires, see electrical drawing) In PLC software version V05.00.00.00, V05.01.00.00 and V05.02.00.00 there was a problem with the preheat configuration determination, and this alarm message was generated without reason.  
MMS1-01 = Analogue Input Main Module Slot 1 – Channel 01.

**Delta C (Extend):** The Pt100 itself can be found at the backside of the machine in the solderpot, the Pt100 has the number R1 (MMS1-01).

**Delta (Extend):** The Pt100 itself can be found at the backside of the machine in the solderpot, the Pt100 has the number R1 (MMS1-01).

**DeltaMAX:** The Pt100 itself can be found at the backside of the machine in the solderpot, the Pt100 has the number R1 (MMS1-01).

## “Motor Alarm / Pulse Failure” (@02)

### Case: Transport.

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The frequency inverter can be broken, or the frequency inverter is in a certain alarm status, the encoder can be broken, the mechanical connection between the encoder and the transport can be loose, or the transport is mechanical blocked and can not run.

**When generated:** The motor is controlled by the PLC and the measured value is seen 0 for at least 5 seconds (for Hanning inverters) or 15 seconds (for Yaskawa inverters).

**How to Resolve:** Check the hardware, and see if you can locate the problem reset the alarm and you can start the machine again.

**Additional info:** In software version V04.02.00.00 and earlier this alarm was not generated when there was a calibration value in the parameter screen.

MMS3-02 = Digital Input Main Module Slot 3 – Channel 02.

**Delta C (Extend):** The frequency inverter U1 is located in the switchbox and the encoder B10 (MMS3-02) can be found at the exit side of the machine mounted at the transport.

**Delta (Extend):** The frequency inverter U1 is located in the switchbox and the encoder B10 (MMS3-02) can be found at the exit side of the machine mounted at the transport.

**DeltaMAX:** The frequency inverter U1 is located in the switchbox and the encoder B5 (MMS3-02) can be found at the exit side of the machine mounted at the transport.

### Case: Sprayfluxer.

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for **Delta C (Extend) & Delta (Extend) only**.

**Possible cause:** The spray drum is not present, the frequency inverter can be broken, the frequency inverter is in a certain alarm status. The encoder can be broken, the mechanical connection between the encoder and the fluxer drum can be loose or the fluxer drum is mechanical blocked and can not run.

**When generated:** The motor is controlled by the PLC and the measured value is seen 0 for at least 5 seconds (for Hanning inverters) or 15 seconds (for Yaskawa inverters).

**How to Resolve:** Check the hardware, and see if you can locate the problem, reset the alarm and you can start the machine again.

**Additional info:** In software version V04.02.00.00 and earlier this alarm was not generated when there was a calibration value in the parameter screen.

MMS3-06 = Digital Input Main Module Slot 3 – Channel 06.

**Delta C (Extend):** The frequency inverter U3 is located in the switchbox and the encoder B13 (MMS3-06) can be found at the front side of the machine mounted at the fluxer.

**Delta (Extend):** The frequency inverter U3 is located in the switchbox and the encoder B13 (MMS3-06) can be found at the front side of the machine mounted at the fluxer.

### Case: Chipwave.

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The frequency inverter can be broken, the frequency inverter is in a certain alarm status, the sensor can be broken, the timing belt is broken or the chipwave is mechanical blocked and can not run.

**When generated:** The option READ OUT VALUES is available and the motor is controlled by the PLC and the measured value is seen 0 for at least 5 seconds (for Hanning inverters) or 15 seconds (for Yaskawa inverters)..

**How to Resolve:** Check the inverter and the encoder and see if you can locate the problem, reset the alarm and you can start the machine again.

**Additional info:** In software version V04.02.00.00 and earlier this alarm was not generated when there was a calibration value in the parameter screen.

MMS3-10 = Digital Input Main Module Slot 3 – Channel 10.

**Delta C (Extend):** The frequency inverter U4 is located in the switchbox and the encoder B14 (MMS3-10) can be found back side of the machine above the solderpot

**Delta (Extend):** The frequency inverter U4 is located in the switchbox and the encoder B14 (MMS3-10) can be found back side of the machine above the solderpot.  
**DeltaMAX:** The frequency inverter U4 is located in the switchbox and the encoder B27 (MMS3-10) can be found back side of the machine above the solderpot.

### **Case: Smartwave.**

**Machineaction:** Machine will be **Blocked**.  
**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.  
**Possible cause:** The frequency inverter can be broken, or the frequency inverter is in a certain alarm status, the sensor can be broken, the timing belt is broken or the smartwave is mechanical blocked and can not run.  
**When generated:** The option READ OUT VALUES is available and the motor is controlled by the PLC and the measured value is seen 0 for at least 10 seconds (for Hanning inverters) or 20 seconds (for Yaskawa inverters)..  
**How to Resolve:** Check the inverter and the encoder, and see if you can locate the problem, reset the alarm and you can start the machine again.  
**Additional info:** In software version V04.02.00.00 and earlier this alarm was not generated when there was a calibration value in the parameter screen.  
MMS3-11 = Digital Input Main Module Slot 3 – Channel 11.

**Delta C (Extend):** The frequency inverter U5 is located in the switchbox and the encoder B15 (MMS3-11) can be found back side of the machine above the solderpot.

**Delta (Extend):** The frequency inverter U5 is located in the switchbox and the encoder B15 (MMS3-11) can be found back side of the machine above the solderpot.

**DeltaMAX:** The frequency inverter U5 is located in the switchbox and the encoder B28 (MMS3-11) can be found back side of the machine above the solderpot.

### **Case: Mainwave.**

**Machineaction:** Machine will be **Blocked**.  
**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.  
**Possible cause:** The frequency inverter can be broken, or the frequency inverter is in a certain alarm status, the sensor can be broken, the timing belt is broken or the mainwave is mechanical blocked and can not run.  
**When generated:** The option READ OUT VALUES is available and the motor is controlled by the PLC and the measured value is seen 0 for at least 5 seconds (for Hanning inverters) or 15 seconds (for Yaskawa inverters).  
**How to Resolve:** Check the inverter and the encoder and see if you can locate the problem, reset the alarm and you can start the machine again.  
**Additional info:** In software version V04.02.00.00 and earlier this alarm was not generated when there was a calibration value in the parameter screen.  
MMS3-12 = Digital Input Main Module Slot 3 – Channel 12.

**Delta C (Extend):** The frequency inverter U6 is located in the switchbox and the encoder B16 (MMS3-12) can be found back side of the machine above the solderpot.

**Delta (Extend):** The frequency inverter U6 is located in the switchbox and the encoder B16 (MMS3-12) can be found back side of the machine above the solderpot.

**DeltaMAX:** The frequency inverter U6 is located in the switchbox and the encoder B29 (MMS3-12) can be found back side of the machine above the solderpot.

### **Case: Lead Clearance.**

**Software Version:** For Delta C (Extend), Delta (Extend) and DeltaMAX. **Not implemented yet.**  
If this alarm occur check the inverter U8 and encoder B40 Delta Max or B45 Delta Wave

## **“RS485 Failure” (@03)**

### **Case: Transport.**

**Machineaction:** Only Message.  
**Software Version:** Before V09.00.00.00:  
**Hanning:** for Delta C (Extend), Delta (Extend) and DeltaMAX.

V09.00.00.00 and higher:

**Yaskawa:** for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Displayed text is identical with version 10.00.00.00** The used text in version 09 is slightly different but this text is usable for both versions.

**For Yaskawa frequency inverters:**

**Possible cause:** Inverter not in normal operation mode. (The green run led must be on or blinking and the red alarm led on the inverter must be off for normal operation of the inverter.)

Wiring problem such as a bad connection.

It is very likely that the mentioned inverter is causing the problem but sometimes also another inverter or the communication card in the PLC can cause the problem.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter.

This alarm can also appear in combination with infeed- or outfeed conveyor when there is no infeed- or outfeed conveyor present and the percentage for speed of these conveyors isn't zero.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter, communication interface, communication card in the PLC and connections.

**For Hanning frequency inverters:**

**Possible cause:** The machine is in E-stop, the frequency inverter is broken or there is a wiring problem with the serial connection on the frequency inverter.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter. The PLC will not communicate with the frequency inverter until the alarm is reset.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter and connections.

**Additional info:** This alarm is not available for the infeed- and outfeed transport.

This alarm is not released for the lead clearance yet.

**Delta C (Extend):** The frequency inverter U1 can be found in the switchbox.

**Delta (Extend):** The frequency inverter U1 can be found in the switchbox.

**DeltaMAX:** The frequency inverter U1 can be found in the switchbox.

### **Case: Sprayfluxer.**

**Machineaction:** Only Message.

**Software Version:** Before V09.00.00.00:

**Hanning:** for Delta C (Extend) and Delta (Extend) only.

V09.00.00.00 and higher:

**Yaskawa:** for Delta C (Extend) and Delta (Extend) only.

**Displayed text is identical with version 10.00.00.00** The used text in version 09 is slightly different but this text is usable for both versions.

**For Yaskawa frequency inverters:**

**Possible cause:** Inverter not in normal operation mode. (The green run led must be on or blinking and the red alarm led on the inverter must be off for normal operation of the inverter.)

Wiring problem such as a bad connection.

It is very likely that the mentioned inverter is causing the problem but sometimes also another inverter or the communication card in the PLC can cause the problem.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter.

This alarm can also appear in combination with infeed- or outfeed conveyor when there is no infeed- or outfeed conveyor present and the percentage for speed of these conveyors isn't zero.

It is also possible that the mentioned option was switched on at the moment that it was taken out of the configuration. When you activate the option in the configuration screen it is possible to check if it is switched on or off.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter, communication interface, communication card in the PLC and connections.

**For Hanning frequency inverters:**

**Possible cause:** The machine is in E-stop, the frequency inverter is broken or there is a wiring problem with the serial connection on the frequency inverter.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter. The PLC will not communicate with the frequency inverter until the alarm is reset.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter, communication interface, communication card in the PLC and connections.

**Additional info:** This alarm is not available for the infeed- and outfeed transport.  
This alarm is not released for the lead clearance yet.

**Delta C (Extend):** The frequency inverter U3 can be found in the switchbox.

**Delta (Extend):** The frequency inverter U3 can be found in the switchbox.

### **Case: Nozzle Fluxer pump.**

**Machineaction:** Only Message.

**Software Version:** Before V09.00.00.00:

**Hanning:** for Delta C (Extend), Delta (Extend) and DeltaMAX.

V09.00.00.00 and higher:

**Yaskawa:** for Delta C (Extend) and Delta (Extend) only.

**Displayed text is identical with version 10.00.00.00** The used text in version 09 is slightly different but this text is usable for both versions.

#### **For Yaskawa frequency inverters:**

**Possible cause:** Inverter not in normal operation mode. (The green run led must be on or blinking and the red alarm led on the inverter must be off for normal operation of the inverter.)  
Wiring problem such as a bad connection.

It is very likely that the mentioned inverter is causing the problem but sometimes also another inverter or the communication card in the PLC can cause the problem.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter.

This alarm can also appear in combination with infeed- or outfeed conveyor when there is no infeed- or outfeed conveyor present and the percentage for speed of these conveyors isn't zero.

It is also possible that the mentioned option was switched on at the moment that it was taken out of the configuration. When you activate the option in the configuration screen it is possible to check if it is switched on or off.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter, communication interface, communication card in the PLC and connections.

#### **For Hanning frequency inverters:**

**Possible cause:** The machine is in E-stop, the frequency inverter is broken or there is a wiring problem with the serial connection on the frequency inverter.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter. The PLC will not communicate with the frequency inverter until the alarm is reset.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter, communication interface, communication card in the PLC and connections.

**Additional info:** This alarm is not available for the infeed- and outfeed transport.

This alarm is not released for the lead clearance yet.

**Delta C (Extend):** The frequency inverter U3 can be found in the switchbox.

**Delta (Extend):** The frequency inverter U3 can be found in the switchbox.

**DeltaMAX:** The frequency inverter U3 can be found in the switchbox.

### **Case: Chipwave.**

**Machineaction:** Only Message.

**Software Version:** Before V09.00.00.00:

**Hanning:** for Delta C (Extend), Delta (Extend) and DeltaMAX.

V09.00.00.00 and higher:

**Yaskawa:** for Delta C (Extend) and Delta (Extend) only.

**Displayed text is identical with version 10.00.00.00** The used text in version 09 is slightly different but this text is usable for both versions.

#### **For Yaskawa frequency inverters:**

**Possible cause:** Inverter not in normal operation mode. (The green run led must be on or blinking and the red alarm led on the inverter must be off for normal operation of the inverter.)

Wiring problem such as a bad connection.

It is very likely that the mentioned inverter is causing the problem but sometimes also another inverter or the communication card in the PLC can cause the problem.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter. This alarm can also appear in combination with infeed- or outfeed conveyor when there is no infeed- or outfeed conveyor present and the percentage for speed of these conveyors isn't zero.

It is also possible that the mentioned option was switched on at the moment that it was taken out of the configuration. When you activate the option in the configuration screen it is possible to check if it is switched on or off.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter, communication interface, communication card in the PLC and connections.

**For Hanning frequency inverters:**

**Possible cause:** The machine is in E-stop, the frequency inverter is broken or there is a wiring problem with the serial connection on the frequency inverter.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter. The PLC will not communicate with the frequency inverter until the alarm is reset.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter, communication interface, communication card in the PLC and connections.

**Additional info:** This alarm is not available for the infeed- and outfeed transport.

This alarm is not released for the lead clearance yet.

**Delta C (Extend):** The frequency inverter U4 can be found in the switchbox.

**Delta (Extend):** The frequency inverter U4 can be found in the switchbox.

**DeltaMAX:** The frequency inverter U4 can be found in the switchbox.

**Case: Smartwave.**

**Machineaction:** Only Message.

**Software Version:** Before V09.00.00.00:

**Hanning:** for Delta C (Extend), Delta (Extend) and DeltaMAX. V09.00.00.00 and higher:

**Yaskawa:** for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Displayed text is identical with version 10.00.00.00** The used text in version 09 is slightly different but this text is usable for both versions.

**For Yaskawa frequency inverters:**

**Possible cause:** Inverter not in normal operation mode. (The green run led must be on or blinking and the red alarm led on the inverter must be off for normal operation of the inverter.) Wiring problem such as a bad connection.

It is very likely that the mentioned inverter is causing the problem but sometimes also another inverter or the communication card in the PLC can cause the problem.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter. This alarm can also appear in combination with infeed- or outfeed conveyor when there is no infeed- or outfeed conveyor present and the percentage for speed of these conveyors isn't zero.

It is also possible that the mentioned option was switched on at the moment that it was taken out of the configuration. When you activate the option in the configuration screen it is possible to check if it is switched on or off.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter, communication interface, communication card in the PLC and connections.

**For Hanning frequency inverters:**

**Possible cause:** The machine is in E-stop, the frequency inverter is broken or there is a wiring problem with the serial connection on the frequency inverter.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter. The PLC will not communicate with the frequency inverter until the alarm is reset.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter, communication interface, communication card in the PLC and connections.

**Additional info:** This alarm is not available for the infeed- and outfeed transport.

This alarm is not released for the lead clearance yet.  
**Delta C (Extend):** The frequency inverter U5 can be found in the switchbox.  
**Delta (Extend):** The frequency inverter U5 can be found in the switchbox.  
**DeltaMAX:** The frequency inverter U5 can be found in the switchbox.

### **Case: Mainwave.**

**Machineaction:** Only Message.

**Software Version:** Before V09.00.00.00:

**Hanning:** for Delta C (Extend), Delta (Extend) and DeltaMAX.

V09.00.00.00 and higher:

**Yaskawa:** for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Displayed text is identical with version 10.00.00.00** The used text in version 09 is slightly different but this text is usable for both versions.

#### **For Yaskawa frequency inverters:**

**Possible cause:** Inverter not in normal operation mode. (The green run led must be on or blinking and the red alarm led on the inverter must be off for normal operation of the inverter.)  
Wiring problem such as a bad connection.

It is very likely that the mentioned inverter is causing the problem but sometimes also another inverter or the communication card in the PLC can cause the problem.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter.

This alarm can also appear in combination with infeed- or outfeed conveyor when there is no infeed- or outfeed conveyor present and the percentage for speed of these conveyors isn't zero.

It is also possible that the mentioned option was switched on at the moment that it was taken out of the configuration. When you activate the option in the configuration screen it is possible to check if it is switched on or off.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter, communication interface, communication card in the PLC and connections.

For Delta MAX with wave height management you have also to check that the correct green connector is put into the front of the inverter. One connector is for installing the inverter and the other is for normal operation.

#### **For Hanning frequency inverters:**

**Possible cause:** The machine is in E-stop, the frequency inverter is broken or there is a wiring problem with the serial connection on the frequency inverter.

**When generated:** The PLC can not communicate, for 3 times, with the frequency inverter. The PLC will not communicate with the frequency inverter until the alarm is reset.

**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter, communication interface, communication card in the PLC and connections.

**Additional info:** This alarm is not available for the infeed- and outfeed transport.

This alarm is not released for the lead clearance yet.

**Delta C (Extend):** The frequency inverter U6 can be found in the switchbox.

**Delta (Extend):** The frequency inverter U6 can be found in the switchbox.

**DeltaMAX:** The frequency inverter U6 can be found in the switchbox.

### **Case: Lead Clearance.**

**Software Version:** For Delta C (Extend), Delta (Extend) and DeltaMAX. **Not implemented yet.**

## **“Motor Current Too High” (@04)**

### **Case: Transport.**

**Machineaction:** Only Message.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The tension of the chain too high, the chain is too dirty or the bearings are seized up.

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter reads an actual motor current which exceeds 110% of the nominal current (the nominal current

is set to 2.0 Amp) for a certain time this alarm is activated. The time period depends on the nominal current value; it is equals 60 seconds by 150%.

**How to Resolve:** Check and clean the chain.

**Additional info:** This alarm is only available for **Hanning** frequency inverters.

This alarm is not available for the infeed- and outfeed transport. The error number found under seTup => Motor Controls => Data refers to the following:

**Alarmcode Tabel Hanning Frequency Inverters:**

<b>Code</b>	<b>Fault Message</b>	<b>Display Message</b>
0	<b><u>No Fault</u></b>	
1	<b><u>Undervoltage</u></b> <ul style="list-style-type: none"> <li>Disconnection if the voltage in the link circuit is too low.</li> </ul>	<b><u>Undervlt</u></b>
2	<b><u>Overvoltage</u></b> <ul style="list-style-type: none"> <li>Disconnection if the voltage in the link circuit is too high.</li> <li>The set braking speed (parameter "Brake") is so high that the link circuit and an external resistor can no longer absorb the recovered power.</li> </ul>	<b>OverVolt</b>
4	<b><u>Inverter Overheating</u></b> <ul style="list-style-type: none"> <li>This message is output when the temperature of the heat sink in the frequency inverter rises too high.</li> <li>The inverter is not cooled sufficiently, e.g. because the fan is defective, the air circulation inadequate or the ambient temperature is too high.</li> </ul>	<b>&gt;InvTemp</b>
5	<b><u>Motor Overheating</u></b> <ul style="list-style-type: none"> <li>The parameter "Motor PTC" must be active.</li> <li>An excessively high temperature has been signalled by the motor temperature sensor ( PTC or NC contact )</li> <li>The motor can not be restarted until it is cooled down.</li> </ul>	<b>&gt;MotTemp</b>
6	<b><u>Motor Overcurrent</u></b> <ul style="list-style-type: none"> <li>The fault is signalled when the motor current exceeds the set nominal current by more than 110%.</li> <li>The release time depends on the magnitude of the overcurrent. It equals 60 seconds at 150% of I nominal.</li> </ul>	<b>I-Mot</b>
7	<b><u>Inverter Overcurrent</u></b> <ul style="list-style-type: none"> <li>The motor current exceeds the maximum current of the inverter.</li> </ul>	<b>I-Max</b>
8	<b><u>EEPROM fault</u></b> <ul style="list-style-type: none"> <li>The reliability of the data in the EEPROM is checked with every read/write operation. ( at power on or at parameter change )</li> </ul>	<b>EEPROM</b>
16	<b><u>No enable signal</u></b> <ul style="list-style-type: none"> <li>No enable signal at EN. ( 24Vdc )</li> </ul>	<b>Enable</b>
32	<b><u>24V auxiliary output overloaded</u></b> <ul style="list-style-type: none"> <li>Internal 24 Vdc supply overloaded. ( connections are GND and + 24 V )</li> </ul>	<b>24V Outp</b>
64	<b><u>Short circuit / ground fault</u></b> <ul style="list-style-type: none"> <li>The inverter has been severely overloaded. ( even if only briefly )</li> <li>The fault may be due to a short circuit or ground fault in the motor or in the feed lines</li> </ul>	<b><u>Short</u></b>
250	<b><u>Reset by watchdog</u></b> <ul style="list-style-type: none"> <li>A watchdog timer monitors the inverter control system. If the faults occur in</li> </ul>	<b><u>WatchDog</u></b>

255	<p>the internal program sequence, the control system is reset and this message is generated.</p> <ul style="list-style-type: none"> <li>The inverter can be started again when the alarm is reset.</li> </ul> <p><b><u>Serial Interface Time out</u></b></p> <ul style="list-style-type: none"> <li>This message appears when the time between two telegrams at the RS 485 interface exceeds the set maximum. At the parameter "Timeout" the maximum time is set.</li> </ul>	<b><u>Time Out</u></b>
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**Delta C (Extend):** The frequency inverter U1 can be found in the switchbox, motor M16 can be found left of the solderpot at the backside of the machine.

**Delta (Extend):** The frequency inverter U1 can be found in the switchbox, motor M16 can be found left of the solderpot at the backside of the machine.

**DeltaMAX:** The frequency inverter U1 can be found in the switchbox, motor M20 can be found left of the solderpot at the backside of the machine.

**Case: Sprayfluxer.**

**Machineaction:** Only Message.

**Software Version:** All, for Delta C (Extend) and Delta (Extend) only.

**Possible cause:** The motor or the gearwheels are blocked, a bad motor connection or the fluxer drum itself rotates too heavy.

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter reads an actual motor current which exceeds 110% of the nominal current (the nominal current is set to 2.0 Amp) for a certain time this alarm is activated. The time period depends on the nominal current value; it is equals 60 seconds by 150%.

**How to Resolve:** Remove the blockage, or check why there is an overcurrent.

**Additional info:** This alarm is only available for **Hanning** frequency inverters. More information about the frequency inverter messages can be found at the alarm message "**Motor Current Too High**" "**Case: Transport.**" This alarm is not available for the infeed- and outfeed transport.

**Delta C (Extend):** The frequency inverter U3 can be found in the switchbox, motor M18 can be found below the fluxer itself.

**Delta (Extend):** The frequency inverter U3 can be found in the switchbox, motor M18 can be found below the fluxer itself.

**Case: Nozzle Fluxer pump.**

**Machineaction:** Only Message.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The pump is blocked or a bad motor connection.

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter reads an actual motor current which exceeds 110% of the nominal current (the nominal current is set to 2.0 Amp) for a certain time this alarm is activated. The time period depends on the nominal current value; it is equals 60 seconds by 150%.

**How to Resolve:** Remove the blockage, or check the motor.

**Additional info:** This alarm is only available for **Hanning** frequency inverters. More information about the frequency inverter messages can be found at the alarm message "**Motor Current Too High**" "**Case: Transport.**" This alarm is not available for the infeed- and outfeed transport.

**Delta C (Extend):** The frequency inverter U3 can be found in the switchbox, motor M19 for nozzle 1 and motor M25 for nozzle 2 can be found below the fluxer itself.

**Delta (Extend):** The frequency inverter U3 can be found in the switchbox, motor M19 for nozzle 1 and motor M25 for nozzle 2 can be found below the fluxer itself.

**DeltaMAX:** The frequency inverter U3 can be found in the switchbox, motor M22 for nozzle 1 and motor M23 for nozzle 2 can be found below the fluxer itself.

### **Case: Chipwave.**

**Machineaction:** Only Message.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The tension of timing belt is too high, a bad motor connection, too much dross in the solderpot or the bearings are seized up.

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter reads an actual motor current which exceeds 110% of the nominal current (the nominal current is set to 2.0 Amp) for a certain time this alarm is activated. The time period depends on the nominal current value; it is equals 60 seconds by 150%.

**How to Resolve:** Check the tension of the timing belt, the bearings or the motor itself.

**Additional info:** This alarm is only available for **Hanning** frequency inverters. More information about the frequency inverter messages can be found at the alarm message "**Motor Current Too High**" "**Case: Transport.**" This alarm is not available for the infeed- and outfeed transport.

This alarm can also be generated when the solderpot temperature just reached the 230°C, and the pump start to run for the first time, or when the spring pressure of the pumpshaft sealing is too high.

**Delta C (Extend):** The frequency inverter U4 can be found in the switchbox, motor M20 can be found at the solderpot at the backside of the machine.

**Delta (Extend):** The frequency inverter U4 can be found in the switchbox, motor M20 can be found at the solderpot at the backside of the machine.

**DeltaMAX:** The frequency inverter U4 can be found in the switchbox, motor M25 can be found at the solderpot at the backside of the machine.

### **Case: Smartwave.**

**Machineaction:** Only Message.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The tension of timing belt is too high, a bad motor connection, too much dross in the solderpot or the bearings are seized up.

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter reads an actual motor current which exceeds 110% of the nominal current (the nominal current is set to 2.0 Amp) for a certain time this alarm is activated. The time period depends on the nominal current value; it is equals 60 seconds by 150%.

**How to Resolve:** Check the tension of the timing belt, the bearings or the motor itself.

**Additional info:** This alarm is only available for **Hanning** frequency inverters. More information about the frequency inverter messages can be found at the alarm message "**Motor Current Too High**" "**Case: Transport.**" This alarm is not available for the infeed- and outfeed transport.

**Delta C (Extend):** The frequency inverter U5 can be found in the switchbox, motor M21 can be found at the solderpot at the backside of the machine.

**Delta (Extend):** The frequency inverter U5 can be found in the switchbox, motor M21 can be found at the solderpot at the backside of the machine.

**DeltaMAX:** The frequency inverter U5 can be found in the switchbox, motor M26 can be found at the solderpot at the backside of the machine.

### **Case: Mainwave.**

**Machineaction:** Only Message.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The tension of timing belt is too high, a bad motor connection, too much dross in the solderpot or the bearings are seized up.

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter reads an actual motor current which exceeds 110% of the nominal current (the nominal current is set to 2.0 Amp) for a certain time this alarm is activated. The time period depends on the nominal current value; it is equals 60 seconds by 150%.

**How to Resolve:** Check the tension of the timing belt, the bearings or the motor itself.

**Additional info:** This alarm is only available for **Hanning** frequency inverters. More information about the frequency inverter messages can be found at the alarm message "**Motor Current Too High**" "**Case: Transport.**" This alarm is not available for the infeed- and outfeed transport.

This alarm can also be generated when the solderpot temperature just reached the 230°C, and the pump start to run for the first time, or when the spring pressure of the pumpshaft sealing is too high.

**Delta C (Extend):** The frequency inverter U6 can be found in the switchbox, motor M22 can be found at the solderpot at the backside of the machine.

**Delta (Extend):** The frequency inverter U6 can be found in the switchbox, motor M22 can be found at the solderpot at the backside of the machine.

**DeltaMAX:** The frequency inverter U6 can be found in the switchbox, motor M27 can be found at the solderpot at the backside of the machine.

### **Case: Lead Clearance.**

**Software Version:** For Delta C (Extend), Delta (Extend) and DeltaMAX. **Not implemented yet.**

## **“Possible Heater Element Failure” (@05)**

**Machineaction:** Only Message.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** A heating element is broken, or the “set expected current” is wrong.

**When generated:** The option ELEMENT CHECK is available and during the automatic scheduled element check, the measured current of a certain zone, is seen different from the expected current.

**How to Resolve:** Either double-click at the alarm message “Possible Heater Element Failure”, or go via the Options => Element Check => Report to the Element report, where you can see which item has generated the alarm.

When the machine is in **Stop mode**, you are able to start manual, an element check per element. If a heating element is broken, it will be detected here, and afterwards you are able to view the report, where you can see which element has generated the alarm.

If the expected current is wrong, just click on the zones at the top of the screen and click on the Set Expected Button.

**Additional info:** The current values in the report are the measured values on the two phases, not the expected values.

## **“Serial connection time out motor” (@06)**

### **Case: Transport.**

**Machineaction:** Only Message.

**Software Version:** Before V06.00.00.00.

**Possible cause:** This alarm is not in use any more, to detect a bad communication we generate a “RS485 failure”.

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter parameter “Time Out” is set to a certain time in seconds, the inverter has to receive an RS 485 telegram within this time. In early software versions we used this, so it is possible that the parameter “Time Out” in the inverter is set to a certain value.

**How to Resolve:** Set the parameter “Time Out” to 0 sec, and then archive the setting via the handheld programmer.

**Additional info:** More information about the frequency inverter messages can be found at the alarm message “**Motor Current Too High**” “**Case: Transport.**” This alarm is not available for the infeed- and outfeed transport.

**Delta:** The frequency inverter U1 can be found in the switchbox.

**DeltaMAX:** The frequency inverter U1 can be found in the switchbox.

### **Case: Sprayfluxer.**

**Machineaction:** Only Message.

**Software Version:** Before V06.00.00.00, **Delta only.**

**Possible cause:** This alarm is not in use any more, to detect a bad communication we generate a “RS485 failure”.

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter parameter "Time Out" is set to a certain time in seconds, the inverter has to receive an RS 485 telegram within this time. In early software versions we used this, so it is possible that the parameter "Time Out" in the inverter is set to a certain value.

**How to Resolve:** Set the parameter "Time Out" to 0 sec, and then archive the setting via the handheld programmer.

**Additional info:** More information about the frequency inverter messages can be found at the alarm message "**Motor Current Too High**" "Case: Transport." This alarm is not available for the infeed- and outfeed transport.

**Delta:** The frequency inverter U3 can be found in the switchbox.

#### **Case: Nozzle Fluxer pump.**

**Machineaction:** Only Message.

**Software Version:** Before V06.00.00.00.

**Possible cause:** This alarm is not in use any more, to detect a bad communication we generate a "RS485 failure".

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter parameter "Time Out" is set to a certain time in seconds, the inverter has to receive an RS 485 telegram within this time. In early software versions we used this, so it is possible that the parameter "Time Out" in the inverter is set to a certain value.

**How to Resolve:** Set the parameter "Time Out" to 0 sec, and then archive the setting via the handheld programmer.

**Additional info:** More information about the frequency inverter messages can be found at the alarm message "**Motor Current Too High**" "Case: Transport." This alarm is not available for the infeed- and outfeed transport.

**Delta:** The frequency inverter U3 can be found in the switchbox.

**DeltaMAX:** The frequency inverter U3 can be found in the switchbox.

#### **Case: Chipwave.**

**Machineaction:** Only Message.

**Software Version:** Before V06.00.00.00.

**Possible cause:** This alarm is not in use any more, to detect a bad communication we generate a "RS485 failure".

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter parameter "Time Out" is set to a certain time in seconds, the inverter has to receive an RS 485 telegram within this time. In early software versions we used this, so it is possible that the parameter "Time Out" in the inverter is set to a certain value.

**How to Resolve:** Set the parameter "Time Out" to 0 sec, and then archive the setting via the handheld programmer.

**Additional info:** More information about the frequency inverter messages can be found at the alarm message "**Motor Current Too High**" "Case: Transport." This alarm is not available for the infeed- and outfeed transport.

**Delta:** The frequency inverter U4 can be found in the switchbox.

**DeltaMAX:** The frequency inverter U4 can be found in the switchbox.

#### **Case: Smartwave.**

**Machineaction:** Only Message.

**Software Version:** Before V06.00.00.00.

**Possible cause:** This alarm is not in use any more, to detect a bad communication we generate a "RS485 failure".

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter parameter "Time Out" is set to a certain time in seconds, the inverter has to receive an RS 485 telegram within this time. In early software versions we used this, so it is possible that the parameter "Time Out" in the inverter is set to a certain value.

**How to Resolve:** Set the parameter "Time Out" to 0 sec, and then archive the setting via the handheld programmer.

**Additional info:** More information about the frequency inverter messages can be found at the alarm message “**Motor Current Too High**” “**Case: Transport.**” This alarm is not available for the infeed- and outfeed transport.

**Delta:** The frequency inverter U5 can be found in the switchbox.

**DeltaMAX:** The frequency inverter U5 can be found in the switchbox.

### **Case: Mainwave.**

**Machineaction:** Only Message.

**Software Version:** Before V06.00.00.00.

**Possible cause:** This alarm is not in use any more, to detect a bad communication we generate a “RS485 failure”.

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter parameter “Time Out” is set to a certain time in seconds, the inverter has to receive an RS 485 telegram within this time. In early software versions we used this, so it is possible that the parameter “Time Out” in the inverter is set to a certain value.

**How to Resolve:** Set the parameter “Time Out” to 0 sec, and then archive the setting via the handheld programmer.

**Additional info:** More information about the frequency inverter messages can be found at the alarm message “**Motor Current Too High**” “**Case: Transport.**” This alarm is not available for the infeed- and outfeed transport.

**Delta:** The frequency inverter U6 can be found in the switchbox.

**DeltaMAX:** The frequency inverter U6 can be found in the switchbox.

## **“General Inverter Alarm” (@07)**

### **Common info followed by option specific information.**

**Software Version:** V09.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

### **Case: Transport.**

**Machineaction:** Only Message.

**Software Version:** V09.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** Various; check the alarm code on the display on the inverter.

In the technical manual chapter troubleshooting there is a table with an overview of all possible alarm codes. This table is also added to this document, please scroll down.

OL1 means over current.

**Example:** **Case ‘OL1’: Motor current is too high:**

The tension of timing belt is too high, a bad motor connection, too much dross in the solderpot or the bearings are seized up.

**When generated:** This alarm is read from the frequency inverter.

**Case ‘OL1’: Motor current is too high:**

When the frequency inverter reads an actual motor current which exceeds the nominal current (the nominal current is set to 1.9 Amp) for a certain time.

**How to Resolve:** Check the alarm code on the display and search for a related cause.

**Case ‘OL1’: Motor current is too high:**

Check the motor and the conveyor system.

**Additional info:** This alarm is only available for **Yaskawa** frequency inverters and is not available for the infeed- and outfeed transport.

More information about the frequency inverter messages can be found in the inverter manual.

**Delta C (Extend):** The frequency inverter U1 can be found in the switchbox, motor M16 can be found left of the solderpot at the backside of the machine.

**Delta (Extend):** The frequency inverter U1 can be found in the switchbox, motor M16 can be found left of the solderpot at the backside of the machine.

**DeltaMAX:** The frequency inverter U1 can be found in the switchbox, motor M20 can be found left of the solderpot at the backside of the machine.

### **Case: Sprayfluxer.**

**Machineaction:** Only Message.

**Software Version:** V09.00.00.00 and higher, **for Delta C (Extend) and Delta (Extend) only.**

**Possible cause:** Various; check the alarm code on the display on the inverter.

In the technical manual chapter troubleshooting there is a table with an overview of all possible alarm codes. This table is also added to this document, please scroll down.

OL1 means over current.

**Example:** **Case 'OL1': Motor current is too high:**

The motor or the gearwheels are blocked, a bad motor connection or the fluxer drum itself rotates too heavy.

**When generated:** This alarm is read from the frequency inverter.

**Case 'OL1': Motor current is too high:**

When the frequency inverter reads an actual motor current which exceeds the nominal current (the nominal current is set to 1.9 Amp) for a certain time.

**How to Resolve:** Check the alarm code on the display and search for a related cause.

**Case 'OL1': Motor current is too high:**

Remove the blockage, or check why there is an overcurrent.

**Additional info:** This alarm is only available for **Yaskawa** frequency inverters and is not available for the infeed- and outfeed transport.

More information about the frequency inverter messages can be found in the inverter manual.

**Delta C (Extend):** The frequency inverter U3 can be found in the switchbox, motor M18 can be found below the fluxer itself.

**Delta (Extend):** The frequency inverter U3 can be found in the switchbox, motor M18 can be found below the fluxer itself.

### **Case: Nozzle Fluxer pump.**

**Machineaction:** Only Message.

**Software Version:** V09.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** Various; check the alarm code on the display on the inverter.

In the technical manual chapter troubleshooting there is a table with an overview of all possible alarm codes. This table is also added to this document, please scroll down.

OL1 means over current.

**Example:** **Case 'OL1': Motor current is too high:**

The pump is blocked or a bad motor connection.

**When generated:** This alarm is read from the frequency inverter.

**Case 'OL1': Motor current is too high:**

When the frequency inverter reads an actual motor current which exceeds the nominal current (the nominal current is set to 1.9 Amp) for a certain time.

**How to Resolve:** Check the alarm code on the display and search for a related cause.

**Case 'OL1': Motor current is too high:**

Remove the blockage, or check the motor.

**Additional info:** This alarm is only available for **Yaskawa** frequency inverters and is not available for the infeed- and outfeed transport.

More information about the frequency inverter messages can be found in the inverter manual.

**Delta C (Extend):** The frequency inverter U3 can be found in the switchbox, motor M19 for nozzle 1 and motor M25 for nozzle 2 can be found below the fluxer itself.

**Delta (Extend):** The frequency inverter U3 can be found in the switchbox, motor M19 for nozzle 1 and motor M25 for nozzle 2 can be found below the fluxer itself.

**DeltaMAX:** The frequency inverter U3 can be found in the switchbox, motor M22 for nozzle 1 and motor M23 for nozzle 2 can be found below the fluxer itself.

### **Case: Chipwave.**

**Machineaction:** Only Message.

**Software Version:** V09.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** Various; check the alarm code on the display on the inverter.

In the technical manual chapter troubleshooting there is a table with an overview of all possible alarm codes. This table is also added to this document, please scroll down.

OL1 means over current.

**Example:**

**Case 'OL1': Motor current is too high:**

The tension of timing belt is too high, a bad motor connection, too much dross in the solderpot or the bearings are seized up.

**When generated:**

This alarm is read from the frequency inverter.

**Case 'OL1': Motor current is too high:**

When the frequency inverter reads an actual motor current which exceeds the nominal current (the nominal current is set to 1.9 Amp) for a certain time.

**How to Resolve:**

Check the alarm code on the display and search for a related cause.

**Case 'OL1': Motor current is too high:**

Check the tension of the timing belt, the bearings or the motor itself.

**Additional info:**

This alarm is only available for **Yaskawa** frequency inverters and is not available for the infeed- and outfeed transport.

More information about the frequency inverter messages can be found in the inverter manual.

This alarm can also be generated when the solderpot temperature just reached the 230°C, and the pump start to run for the first time, or when the spring pressure of the pumpshaft sealing is too high.

**Delta C (Extend):**

The frequency inverter U4 can be found in the switchbox, motor M20 can be found at the solderpot at the backside of the machine.

**Delta (Extend):**

The frequency inverter U4 can be found in the switchbox, motor M20 can be found at the solderpot at the backside of the machine.

**DeltaMAX:**

The frequency inverter U4 can be found in the switchbox, motor M25 can be found at the solderpot at the backside of the machine.

**Case: Smartwave.**

**Machineaction:** Only Message.

**Software Version:** V09.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:**

Various; check the alarm code on the display on the inverter.

In the technical manual chapter troubleshooting there is a table with an overview of all possible alarm codes. This table is also added to this document, please scroll down.

OL1 means over current.

**Example:**

**Case 'OL1': Motor current is too high:**

The tension of timing belt is too high, a bad motor connection, too much dross in the solderpot or the bearings are seized up.

**When generated:**

This alarm is read from the frequency inverter.

**Case 'OL1': Motor current is too high:**

When the frequency inverter reads an actual motor current which exceeds the nominal current (the nominal current is set to 1.9 Amp) for a certain time.

**How to Resolve:**

Check the alarm code on the display and search for a related cause.

**Case 'OL1': Motor current is too high:**

Check the tension of the timing belt, the bearings or the motor itself.

**Additional info:**

This alarm is only available for **Yaskawa** frequency inverters and is not available for the infeed- and outfeed transport.

More information about the frequency inverter messages can be found in the inverter manual.

**Delta C (Extend):**

The frequency inverter U5 can be found in the switchbox, motor M21 can be found at the solderpot at the backside of the machine.

**Delta (Extend):**

The frequency inverter U5 can be found in the switchbox, motor M21 can be found at the solderpot at the backside of the machine.

**DeltaMAX:**

The frequency inverter U5 can be found in the switchbox, motor M26 can be found at the solderpot at the backside of the machine.

**Case: Mainwave.**

**Machineaction:** Only Message.

**Software Version:** V09.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** Various; check the alarm code on the display on the inverter.

In the technical manual chapter troubleshooting there is a table with an overview of all possible alarm codes. This table is also added to this document, please scroll down.

OL1 means over current.

**Example:** **Case 'OL1': Motor current is too high:**

The tension of timing belt is too high, a bad motor connection, too much dross in the solderpot or the bearings are seized up.

**When generated:** This alarm is read from the frequency inverter.

**Case 'OL1': Motor current is too high:**

When the frequency inverter reads an actual motor current which exceeds the nominal current (the nominal current is set to 1.9 Amp) for a certain time.

**How to Resolve:** Check the alarm code on the display and search for a related cause.

**Case 'OL1': Motor current is too high:**

Check the tension of the timing belt, the bearings or the motor itself.

**Additional info:** This alarm is only available for **Yaskawa** frequency inverters and is not available for the infeed- and outfeed transport.

More information about the frequency inverter messages can be found in the inverter manual.

**Delta C (Extend):** The frequency inverter U6 can be found in the switchbox, motor M22 can be found at the solderpot at the backside of the machine.

**Delta (Extend):** The frequency inverter U6 can be found in the switchbox, motor M22 can be found at the solderpot at the backside of the machine.

**DeltaMAX:** The frequency inverter U6 can be found in the switchbox, motor M27 can be found at the solderpot at the backside of the machine.

**Case: Lead Clearance.**

**Software Version:** For Delta C (Extend), Delta (Extend) and DeltaMAX. **Not implemented yet.**

**Table with alarm messages of the Yaskawa inverter:**

1. Frequency Inverter

Alarms and Corrective Actions frequency inverter



**Troubleshooting Frequency inverter**

ALARM DISPLAY		INVERTER STATUS	EXPLANATION	CAUSES AND CORRECTIVE ACTIONS
DIGITAL OPERATOR	RUN (GREEN) ALARM (RED)			
		Warning	UV (Main circuit low voltage) Main circuit DC voltage drops below the low-voltage detection level while the inverter output is OFF. 200V: Main circuit DC voltage become lowered below approx. 200V (160V for single phase). 400V: Main circuit DC voltage become lowered below approx. 400V.	Check the following: <ul style="list-style-type: none"> <li>• Power supply voltage</li> <li>• Main circuit power supply wiring is connected</li> <li>• Terminal screws are securely tightened</li> </ul>
			OV (Main circuit over voltage) Main circuit DC voltage exceeds the over voltage detection level while the inverter output is OFF. Detection level: approx 410V or more (approx. 820V for 400V class).	Check the power supply voltage

		Fault contacts do not change state.	OH (Cooling fin overheat) Intake air temperature rises while the inverter output is OFF.	Check the intake air temperature
			CAL (MEMOBUS communications waiting) Correct data has not been received from the PLC when the parameters n02 (operation command selection) is 2 or n03 (frequency reference selection) is 6, and power is turned ON.	Check communication devices and transmission signals
			  OP $\square$ (parameters setting error when the parameters setting is performed through the MEMOBUS) OP1: Two or more values are set for multi-function input selection. (parameters n036 to n039) OP2: Relationship among V / f parameters is not correct. (parameters n09, n011, n012 and n014) OP3: Setting value of motor rated current exceeds 120% of inverter rated current. (parameter n32) OP4: Upper/lower limit of frequency reference is reversed. (parameters n030, n031) OP5: Setting values of jump Frequencies 1 and 2 are not appropriate. (parameters n049 to n050) OP9: Carrier Frequency setting is incorrect. (parameter n46)	Check the setting values
		Warning Fault contacts do not change state	OL3: (Over torque detection) Motor current exceeded the preset value in parameter n098	Reduce the load, and expand the accel/decel time
			SER (sequence error) Inverter receives LOCAL/REMOTE select command or communication/control circuit terminal changing signals from the multi-function terminal while the inverter is outputting	Check the external circuit (sequence)
	  OR  	Warning Fault contacts do not change state	BB (external base blocked) Base block command at multifunction terminal is active. The inverter output is shut OFF (motor coasting). Temporary condition is cleared when input command is removed	Check the external circuit (sequence)
			EF (simultaneous FWD/REV run command) When FWD and REV run commands are simultaneously input for over 500ms, the inverter stops according to parameter n04	Check the external circuit (sequence)
			STP (Operator function stop) STOP/RESET is pressed during running by the control circuit terminals FWD/REV command, or by the run command from communications. The inverter stops according to parameter n04 STP (emergency stop). Inverter receives emergency stop alarm signal. Inverter stops according to parameter n04	<ul style="list-style-type: none"> <li>Open FWD/REV command of control circuit terminals</li> <li>Check the external circuit (sequence)</li> </ul>
			FAN (Cooling fan fault) Cooling fan is locked	Check the followings: <ul style="list-style-type: none"> <li>Cooling fan</li> <li>Cooling fan wiring is not connected</li> </ul>
			CE (MEMOBUS communication fault)	Check the communication devices or communication signals

OC			OC (over current) Inverter output current momentarily exceeds approx. 200% of rated current. (Control power supply fault) Voltage fault of control power supply is detected	<ul style="list-style-type: none"> <li>Short-circuit or grounding at inverter output side</li> <li>Excessive load GD</li> <li>Extremely rapid accel/decel time (parameters n019 to n022)</li> <li>Special motor used</li> <li>Starting motor during coasting</li> <li>Motor of a capacity greater than the inverter rating has been started</li> <li>Magnetic contactor open/closed at the inverter output side</li> </ul>
GF			GF (Ground fault) Ground fault current at the inverter output exceeded inverter rated current	<ul style="list-style-type: none"> <li>Check the motor insulation</li> <li>Check that the connection between inverter and motor is not damaged</li> </ul>
OV			OV (Main circuit over voltage) Main circuit DC voltage exceeds the overfatigue detection level because of excessive regenerative energy from the motor. Detection level: 200V: Stops at main circuit DC voltage below approx. 410V 400V: Stops at main circuit DC voltage approx. 820V or more	<ul style="list-style-type: none"> <li>Insufficient decel time (parameters n020 and n022)</li> <li>Lowering of overhauling load (elevator, etc.) ↓</li> <li>Increase decel time</li> </ul>
UVI			UVI (main Circuit low voltage) Main Circuit DC voltage drops below the low voltage detection level while inverter output is ON. Detection level: 200V: Stops at main circuit DC voltage below approx. 200V (160V for single phase) 400V: Stops at main circuit DC voltage approx. 400V or more	<ul style="list-style-type: none"> <li>Reduction of input power supply voltage</li> <li>Open phase of input supply</li> <li>Occurrence or momentary power loss ↓</li> </ul> <p>Check the following:</p> <ul style="list-style-type: none"> <li>Power supply voltage</li> <li>Main circuit power supply wiring is connected</li> <li>Terminal screws are securely tightened</li> </ul>
OH		Protective Operation Output is shut OFF and motor coasts to a stop	OH (cooling fin overheat) Temperature rise because of inverter overload operation or intake air temperature rise	<ul style="list-style-type: none"> <li>Excessive load</li> <li>Improper V/f pattern setting</li> <li>Insufficient accel time if the fault occurs during acceleration</li> <li>Intake air temperature exceeding 50°C (120°F)</li> <li>Cooling fan is stopped ↓</li> </ul> <p>Check the following:</p> <ul style="list-style-type: none"> <li>Load size</li> <li>V/f pattern setting (n11 to n017)</li> <li>Intake air temperature</li> </ul>
OL1			OL1 (motor overload) Motor overload protection operates by built-in electronic thermal overload relay	<ul style="list-style-type: none"> <li>Check the load size or V/f pattern setting (n09 to n015)</li> <li>Set the motor rated current shown on the nameplate by parameter n36</li> </ul>
OL2			OL2 (inverter overload) Inverter overload protection operates by built-in electronic thermal overload relay	<ul style="list-style-type: none"> <li>Check the load size or V/f pattern setting (parameters n09 to n015)</li> <li>Check the inverter capacity</li> </ul>

OL3			OL3 (Over torque detection) Inverter output current exceeded the preset value in parameter n060. When over torque is detected, inverter performs operation according to the preset setting of parameter n059	Check the driven machine and correct the cause of the fault, or increase the value of n060 up to the highest value allowed for the machine
EF□			EF□ (external fault) Inverter received an external fault input from control circuit terminal. EF0: External fault reference through MEMOBUS communications EF2: External fault input command from control circuit terminal S2 EF3: External fault input command from control circuit terminal S3 EF4: External fault input command from control circuit terminal S4 EF5: External fault input command from control circuit terminal S5	Check the external circuit (sequence)
F00	●	Protective Operation Output is shut OFF and motor coasts to a stop	CPF-00 Initial memory fault is detected	Cycle power. If the fault remains, replace the digital operator or inverter
F01	☀		CPF-01 ROM error is detected	Cycle power. If the fault remains, replace the digital operator or inverter
F04			CPF-04 EEPROM fault of inverter control circuit is detected	<ul style="list-style-type: none"> <li>Record all parameter data and initialize the parameters</li> <li>Cycle power. If the fault remains, replace the inverter</li> </ul>
F05			CPF-05 A/D converter fault is detected	Cycle power. If the fault remains, replace the inverter
F06			CPF-06 <ul style="list-style-type: none"> <li>Optional card connection fault</li> <li>A non-corresponding option card is connected</li> </ul>	Remove power to the inverter. Check the connection of the digital operator. Verify inverter software number (n179)
F07			CPF-07 Operator control circuit (EEPROM or A/D converter fault)	Cycle power. If fault remains, replace the digital operator or inverter
CE				CE (MEMOBUS communications fault) Normal reception of communication data is not possible
STP	☀ V /H OR ● ☀		STP (emergency stop) The inverter stops according to parameter n04 after receiving the emergency stop fault signal	Check the external circuit (sequence)
(OFF)	● ●	Stops according to constant setting	<ul style="list-style-type: none"> <li>Insufficient power supply voltage</li> <li>Control power supply fault</li> <li>Hardware fault</li> </ul>	Check the following: <ul style="list-style-type: none"> <li>Power supply voltage</li> <li>Main circuit power supply wiring is connected</li> <li>Terminal screws are securely tightened</li> <li>Control sequence</li> <li>Replace the inverter</li> </ul>

## “Communication buffer Overflow” (@08)

- Machineaction:** Machine will not work correctly.
- Software Version:** V09.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.
- Possible cause:** The inverters didn't receive all data send by the PLC.
- When generated:** In the PLC software a number of tasks will be generated that have to be sent to the inverter. For instance start running or stop, motor speed, request for motor current, error message or initialisation of the inverter. Because the PLC can generate these tasks faster as they can be sent to the inverter there is a buffer for these tasks. If it is not possible to put more tasks in the buffer this alarm will be generated. If there are no other alarm messages related to motors or inverters you can try to reinstall the inverters to determine what is causing the problem. If there are alarms related to other motors or inverters try to solve these problems first.
- How to Resolve:** Check the wiring and data communication between the PLC and the inverters. If you want to reinstall the inverters reset all alarm messages. Install the inverters that are present one by one and check each time for the occurrence of new alarm messages. If it is difficult to reset this alarm message try it again while the machine is in e-stop.
- Additional info:** This alarm is only available for **Yaskawa** frequency inverters and is not available for the infeed- and outfeed transport.
- Delta C (Extend):** The PLC and frequency inverters can be found in the switch box.
- Delta (Extend):** The PLC and frequency inverters can be found in the switch box.
- DeltaMAX):** The PLC and frequency inverters can be found in the switch box.

## “Shifted recipes in automenu” (@09)

- Machineaction:** Machine will be Blocked.
- Software Version:** Version 10 and higher. Some older versions can also have shifted recipe detection. The main difference between this version and the older versions is that in the older versions presentation of the alarms goes in combination with preheater zone 1, preheater zone 2, main wave etc. When version 10 is used this alarm message goes only in combination with the conveyor so the alarm can occur only once in the window for alarm messages.
- Possible cause:** PCB's are soldered with wrong recipes. Most likely that pcb's are manually moved on infeed section or wrong reset of automenu and tracking system. Automenu and tracking reset must be done with empty infeed conveyor. Also it can be possible that the sensors aren't able to detect the pcb correct which can result in a situation that one pcb will be seen as two pcb's. When black coloured pallets or polluted pallets are being used or when there are bigger holes in the pcb's this can be the problem. Pcb entering the machine when the inputblocking or smema was intend to block the incoming pcb's  
IMPORTANT when preheaters with lamps are used: check also the distances between the PCB's. Depending on the recipe change a minimum distance is needed. If the real distance was less this alarm will also be generated.
- When generated:** When a pcb is being soldered with another recipe as expected.
- How to Resolve:** Stop the infeed of new pcb's and empty the machine. Make a tracking reset and automenu reset.
- Additional info:** The orange lamp will light up.  
MMS7-01 = Digital Output Main Module Slot 7 – Channel 02.

## “Spare” (@10)

## “Spare” (@11)

## “Spare” (@12)

## “Spare” (@13)

## “Spare” (@14)

## “Spare” (@15)

## “E-stop” (@16)

**Machineaction:** Machine will be **Blocked**, the E-stop will switch off every motor via hardware.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** There is an E-stop button pressed, the PLC detected a crash detection alarm, or one of the PLC run relays, stopped working.

**When generated:** When PLC Input MMS3-09 is detected “0”.

**How to Resolve:** Click on the E-stop button in the screen and the question “Reset E-stop ?” will appear and click on the OK button. The PLC will switch on the reset relay for little time.

**Additional info:** The red lamp will light up.

MMS7-01 = Digital Output Main Module Slot 7 – Channel 01.

**Delta C (Extend):** The E-stop button S1 can be found at the left front corner, S2 at the right front corner, S3 at the left back corner, S4 at the right back corner, S24 at the left front corner of the extension module and S25 at the left back corner of the extension module, the crash detection relay is K68. The run relay for the main module is K44 (MMS7-08), for the slave module-1 K47 (SM1S5-02) and for the SelectX module is K82 (SXMS5-06). H3 (MMS7-01) is the E-stop lamp. The reset relay is K46 (MMS8-08).

**Delta (Extend):** The E-stop button S1 can be found at the left front corner, S2 at the right front corner, S3 at the left back corner, S4 at the right back corner, S24 at the left front corner of the extension module and S25 at the left back corner of the extension module, the crash detection relay is K68. The run relay for the main module is K44 (MMS7-08), for the slave module-1 K47 (SM1S5-02) and for the SelectX Module K3 (SXMS5-06) which is connected between terminals X6-15 and X6-16 (the PLC and run relay K3 for the SelectX are located in the SelectX Module controlbox). H3 (MMS7-01) is the E-stop lamp. The reset relay is K46 (MMS8-08).

**DeltaMAX:** The E-stop button S1 can be found at the left front corner, S2 at the right front corner, S3 at the left back corner, S4 at the right back corner, the crash detection relays are K65 and K66. (When switched off, bypassed via K87) The run relay for the main module is K75 (MMS7-08), for the slave module-1 K76 (SM1S5-02), for the slave module-2 K77 (SM2S6-01), for the SelectX module K20 (SXMS5-06) and for the Wave Height Measurement module K104 (SWMS5-02). H3 (MMS7-01) is the E-stop lamp. The reset relay is K79 (MMS8-08). The DeltaMAX will go into E-stop with an over temperature alarm of the forced convection preheater(s) as well.

## “No Air Pressure” (@17)

**Machineaction:** Machine will be **Blocked**

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** No air pressure present, the pressure switch is broken or the supplied air pressure is too low.

**When generated:** When PLC Input MMS3-04 is detected “0”.

**How to Resolve:** Adjust the air pressure reducer, or supply air pressure. When the air pressure is present the pressure switch can be broken. The air pressure switch must be adjusted at 6 bar (switch level is about 4.8 bar).

- Additional info:** This alarm is not generated in timer mode.  
MMS3-04 = Digital Input Main Module Slot 3 – Channel 04.
- Delta C (Extend):** The air pressure sensor S16 (MMS3-04) can be found at the backside of the machine just below the main switch Q1, mounted onto the air reducer.
- Delta (Extend):** The air pressure sensor S16 (MMS3-04) can be found at the backside of the machine just below the main switch Q1, mounted onto the air reducer.
- DeltaMAX:** The air pressure sensor S28 (MMS3-04) can be found at the backside of the machine just below the main switch Q1, mounted onto the air reducer.

## “Lo Level Alarm Flux” (@18)

- Machineaction:** Only message
- Software Version:** All, for **Delta C (Extend) and Delta (Extend) only.**
- Possible cause:** The level of the 1<sup>st</sup> fluxtank is too low, the level sensor / pressure switch B7 (MMS2-09) is broken or needs adjusting.
- When generated:** **For the older Delta systems with an analogue ultrasonic sensor:**  
When the PLC detects the analogue voltage on MMS2-09 at a certain level, that the calculation of the measured value is seen below the low level setting of the flux vessel.  
**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**  
A continues flow of air will be blown through a tube who's end is situated in the fluxtank. As long as the end of the tube is underneath the flux level, the airpressure meets with a counter-pressure. When the end of the tube is above the flux level, the air can stream out freely and pressure switch B7 (MMS2-09) will switch.
- How to Resolve:** **For the older Delta systems with an analogue ultrasonic sensor:**  
Fill the fluxtank and reset the alarm, replace the level sensor B7 (MMS2-09) or adjust the level sensor according to the adjustment procedure in the manual.  
**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**  
Fill the fluxtank and reset the alarm, replace the pressure switch B7 (MMS2-09) or adjust the pressure switch according to the adjustment procedure in the manual.
- Additional info:** MMS2-09 = Analogue Input Main Module Slot 2 – Channel 09.  
SM2S2-01 = Digital Input Slave Module 2 Slot 2 – Channel 01.
- Older Delta:** The level sensor B7 (MMS2-09) can be found in the flux tank for nozzle 1.
- Delta C (Extend):** The pressure switch B7 (MMS2-09) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.
- Newer Delta (Ext.):** The pressure switch B7 (MMS2-09) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

## “Lo Level Alarm Thinner” (@19)

- Machineaction:** Only message
- Software Version:** All, for **Delta C (Extend) and Delta (Extend) only.**
- Possible cause:** The level of the thinnertank is too low, the level sensor / pressure switch B8 (MMS2-10) is broken or needs adjusting.
- When generated:** **For the older Delta systems with an analogue ultrasonic sensor:**  
When the PLC detects the analogue voltage on MMS2-10 at a certain level, that the calculation of the measured value is seen below the low level setting of the thinner vessel.  
**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**  
A continues flow of air will be blown through a tube who's end is situated in the thinner tank. As long as the end of the tube is underneath the thinner level, the airpressure meets with a counter-pressure. When the end of the tube is above the thinner level, the air can stream out freely and pressure switch B8 (MMS2-10) will switch.
- How to Resolve:** **For the older Delta systems with an analogue ultrasonic sensor:**  
Fill the thinnertank and reset the alarm, replace the level sensor B8 (MMS2-10) or adjust the level sensor according to the adjustment procedure in the manual.  
**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**

- Additional info:** Fill the thinnertank and reset the alarm, replace the pressure switch B8 (MMS2-10) or adjust the pressure switch according to the adjustment procedure in the manual.  
This alarm is only generated when in the PC program the “flux density” option is configured. The ultrasonic level sensor in the older Delta systems has a “dead area”, which means it can not detect a level in the first 6 to 8 Cm.  
MMS2-10 = Analogue Input Main Module Slot 2 – Channel 10.  
SM2S2-02 = Digital Input Slave Module 2 Slot 2 – Channel 02.
- Older Delta:** The level sensor B8 (MMS2-10) can be found in the thinner tank.
- Delta C (Extend):** The pressure switch B8 (MMS2-10) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.
- Newer Delta (Ext.):** The pressure switch B8 (MMS2-10) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

## “No Fluxer Configured” (@20)

- Machineaction:** Only message
- Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.
- Possible cause:** The fluxer is taken out, or the configuration connector is disconnected.
- When generated:** In run mode, when the PLC does not detect an input on MMS3-05, MMS3-07 or MMS3-08.
- How to Resolve:** Connect the fluxer configuration connector, or check the wiring.

### **Delta C (Extend) & Delta (Extend) with foamfluxer, wavefluxer or old type nozzlefluxer:**

The configuration bridges on terminalstrip X41 can be found in the air panel for the foam- or nozzlefluxer or in the junctionbox on the wavefluxer. Check wiring at X7-5, X7-7 and X7-8 in the controlbox.

### **Delta C (Extend) & Delta (Extend) with improved nozzlefluxer:**

The configuration bridges on terminalstrip X45 can be found in the junctionbox at the backside of the nozzlefluxer module. Check wiring at X7-7 and X7-8 in the controlbox.

### **DeltaMAX:**

The configuration bridge for the foamfluxer can be found on terminalstrip X51 in the air panel for the foamfluxer, the configuration bridges for the nozzlefluxer can be found on terminalstrip X53 in junctionbox at the backside of the nozzlefluxer module and the configuration bridge for the wavefluxer can be found in the junctionbox at the backside of the wavefluxer. Check wiring at X11-17, X11-19 and X11-20 in the controlbox.

## “Lo Level Finger Cleaner” (@21)

- Machineaction:** Only message
- Software Version:** All, for Delta C (Extend) and Delta (Extend) only.
- Possible cause:** The level of the finger cleaner tank is too low, the level sensor / pressure switch B32 (MMS2-11) is broken or needs adjusting.
- When generated:** **For the older Delta systems with an analogue ultrasonic sensor:**  
When the PLC detects the analogue voltage on MMS2-11 at a certain level, that the calculation of the measured value is seen below the low level setting of the finger cleaner vessel.
- For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**  
A continues flow of air will be blown through a tube who's end is situated in the finger cleaner tank. As long as the end of the tube is underneath the finger cleaner level, the airpressure meets with a counter-pressure. When the end of the tube is above the the finger cleaner level, the air can stream out freely and pressure switch B32 (MMS2-11) will switch.
- How to Resolve:** **For the older Delta systems with an analogue ultrasonic sensor:**  
Fill the finger cleaner tank and reset the alarm, replace the level sensor B32 (MMS2-11) or adjust the level sensor according to the adjustment procedure in the manual.
- For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**

Fill the finger cleaner tank and reset the alarm, replace the pressure switch B32 (MMS2-11) or adjust the pressure switch according to the adjustment procedure in the manual.

**Additional info:** This alarm is only activated when in the PC program the “finger cleaner” option is configured. The ultrasonic level sensor in the older Delta systems has a “dead area”, which means it can not detect a level in the first 6 to 8 Cm.  
MMS2-11 = Analogue Input Main Module Slot 2 – Channel 11.  
SM2S2-03 = Digital Input Slave Module 2 Slot 2 – Channel 03.

**Older Delta:** The level sensor B32 (MMS2-11) can be found in the finger cleaner tank.

**Delta C (Extend):** The pressure switch B32 (MMS2-11) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

**Newer Delta (Ext.):** The pressure switch B32 (MMS2-11) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

## “Lo Level Finger Wetting” (@22)

**Machineaction:** Only message

**Software Version:** All, for Delta C (Extend) and Delta (Extend) only.

**Possible cause:** The level of the finger wetting tank is too low, the level sensor / pressure switch B33 (MMS2-12) is broken or needs adjusting.

**When generated:** **For the older Delta systems with an analogue ultrasonic sensor:**

When the PLC detects the analogue voltage on MMS2-12 at a certain level, that the calculation of the measured value is seen below the low level setting of the finger wetting vessel.

**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**

A continues flow of air will be blown through a tube who’s end is situated in the finger wetting tank. As long as the end of the tube is underneath the finger wetting level, the airpressure meets with a counter-pressure. When the end of the tube is above the finger wetting level, the air can stream out freely and pressure switch B33 (MMS2-12) will switch.

**How to Resolve:** **For the older Delta systems with an analogue ultrasonic sensor:**

Fill the finger wetting tank and reset the alarm, replace the level sensor B33 (MMS2-12) or adjust the level sensor according to the adjustment procedure in the manual.

**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**

Fill the finger wetting tank and reset the alarm, replace the pressure switch B33 (MMS2-12) or adjust the pressure switch according to the adjustment procedure in the manual.

**Additional info:** This alarm is only activated when in the PC program the “finger wetting” option is configured. The ultrasonic level sensor in the older Delta systems has a “dead area”, which means it can not detect a level in the first 6 to 8 Cm.

MMS2-12 = Analogue Input Main Module Slot 2 – Channel 12.

SM2S2-04 = Digital Input Slave Module 2 Slot 2 – Channel 04.

**Older Delta:** The level sensor B33 (MMS2-12) can be found in the finger wetting tank.

**Delta C (Extend):** The pressure switch B33 (MMS2-12) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

**Newer Delta (Ext.):** The pressure switch B33 (MMS2-12) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

## “Finger Cleaner Empty” (@23)

**Machineaction:** Finger Cleaner pump will be switched off.

**Software Version:** All, for Delta C (Extend) and Delta (Extend) only.

**Possible cause:** The Finger Cleaner tank is below the empty level or the level switch / pressure switch B32 (MMS2-11) is broken or not correct adjusted.

**When generated:** **For the older Delta systems with an analogue ultrasonic sensor:**

When the PLC detects the analogue voltage on MMS2-11 at a certain level, that the calculation of the measured value is seen below the low level setting of the finger cleaner vessel.

**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**

A continues flow of air will be blown through a tube who's end is situated in the finger cleaner tank. As long as the end of the tube is underneath the finger cleaner level, the airpressure meets with a counter-pressure. When the end of the tube is above the the finger cleaner level, the air can stream out freely and pressure switch B32 (MMS2-11) will switch.

**How to Resolve:** **For the older Delta systems with an analogue ultrasonic sensor:**

Fill the finger cleaner tank and reset the alarm, replace the level sensor B32 (MMS2-11) or adjust the level sensor according to the adjustment procedure in the manual.

**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**

Fill the finger cleaner tank and reset the alarm, replace the pressure switch B32 (MMS2-11) or adjust the pressure switch according to the adjustment procedure in the manual.

**Additional info:** This alarm can only be generated when in the PC program the finger cleaner option is configured.

MMS2-11 = Analogue Input Main Module Slot 2 – Channel 11.

SM1S7-05 = Digital Output Slave Module 1 Slot 7 – Channel 05.

**Older Delta:** The finger cleaner pump M13 (SM1S7-05) can be found behind the finger cleaner tank, and the level sensor B32 (MMS2-11) can be found above the finger cleaner tank.

**Delta C (Extend):** The finger cleaner pump M13 (SM1S7-05) can be found behind the finger cleaner tank, the pressure switch B32 (MMS2-11) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

**Newer Delta (Ext.):** The finger cleaner pump M13 (SM1S7-05) can be found behind the finger cleaner tank, the pressure switch B32 (MMS2-11) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

## “Finger Wetting Empty” (@24)

**Machineaction:** **Finger Wetting pump** will be switched **off**.

**Software Version:** All, **for Delta C (Extend) and Delta (Extend) only**.

**Possible cause:** The Finger Wetting tank is below the empty level or the level switch / pressure switch B33 (MMS2-12) is broken or not correct adjusted.

**When generated:** **For the older Delta systems with an analogue ultrasonic sensor:**

When the PLC detects the analogue voltage on MMS2-12 at a certain level, that the calculation of the measured value is seen below the low level setting of the finger wetting vessel.

**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**

A continues flow of air will be blown through a tube who's end is situated in the finger wetting tank. As long as the end of the tube is underneath the finger wetting level, the airpressure meets with a counter-pressure. When the end of the tube is above the the finger wetting level, the air can stream out freely and pressure switch B33 (MMS2-12) will switch.

**How to Resolve:** **For the older Delta systems with an analogue ultrasonic sensor:**

Fill the finger wetting tank and reset the alarm, replace the level sensor B33 (MMS2-12) or adjust the level sensor according to the adjustment procedure in the manual.

**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**

Fill the finger wetting tank and reset the alarm, replace the pressure switch B33 (MMS2-12) or adjust the pressure switch according to the adjustment procedure in the manual.

**Additional info:** This alarm can only be generated when in the PC program the finger wetting option is configured.

MMS2-12 = Analogue Input Main Module Slot 2 – Channel 12.

SM1S5-03 = Digital Output Slave Module 1 Slot 5 – Channel 03.

**Older Delta:** The finger wetting pump M14 (SM1S5-03) can be found behind the finger wetting tank, and the level sensor B33 (MMS2-12) can be found above the finger wetting tank.

**Delta C (Extend):** The finger wetting pump M14 (SM1S5-03) can be found behind the finger wetting tank, the pressure switch B33 (MMS2-12) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

**Newer Delta (Ext.):** The finger wetting pump M14 (SM1S5-03) can be found behind the finger wetting tank, the pressure switch B33 (MMS2-12) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

## “Lo Level Alarm Flux 2” (@25)

**Machineaction:** Only message

**Software Version:** All, for Delta C (Extend) and Delta (Extend) only.

**Possible cause:** The level of the 2<sup>nd</sup> fluxtank is too low, the level sensor / pressure switch B12 (MMS2-06) is broken or needs adjusting.

**When generated:** **For the older Delta systems with an analogue ultrasonic sensor:**  
When the PLC detects the analogue voltage on MMS2-06 at a certain level, that the calculation of the measured value is seen below the low level setting of the flux vessel.

**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**

A continues flow of air will be blown through a tube who's end is situated in the fluxtank. As long as the end of the tube is underneath the flux level, the airpressure meets with a counter-pressure. When the end of the tube is above the flux level, the air can stream out freely and pressure switch B12 (MMS2-06) will switch.

**How to Resolve:** **For the older Delta systems with an analogue ultrasonic sensor:**  
Fill the fluxtank and reset the alarm, replace the level sensor B12 (MMS2-06) or adjust the level sensor according to the adjustment procedure in the manual.

**For the newer Delta C (Extend) & Delta (Extend) systems with pressure switch:**

Fill the fluxtank and reset the alarm, replace the pressure switch B12 (MMS2-06) or adjust the pressure switch according to the adjustment procedure in the manual.

**Additional info:** This alarm is only generated when in the PC program the “flux supply 2” option is configured.

MMS2-06 = Analogue Input Main Module Slot 2 – Channel 06.

SM2S2-02 = Digital Input Slave Module 2 Slot 2 – Channel 02.

**Older Delta:** The level sensor B12 (MMS2-06) can be found in the flux tank for nozzle 2.

**Delta C (Extend):** The pressure switch B12 (MMS2-06) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

**Newer Delta (Ext.):** The pressure switch B12 (MMS2-06) can be found in the low level detection module which is located on the underframe, underneath the fluxer module.

## “PCB expected at exit” (@26)

**Machineaction:** Machine will be **blocked**

**Software Version:** V05.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The PCB shifted through the fingers, the outfeed sensor is not working or the exit-tracking value is not good.

**When generated:** The default distance from the infeed sensor(s) to the outfeed sensor(s) is:

- 2348 MM for the Delta C,
- 3143 MM for the Delta C Extend,
- 2948 MM for the Delta,
- 3743 MM for the Delta Extend,
- 3690 MM for the DeltaMAX.

When the PCB is seen at the infeed sensor(s), it should be seen by the outfeed sensor(s) after the set distance, if not this alarm will be active.

**How to Resolve:** Reset the alarm, and if applicable replace the outfeed sensor(s).

**Additional info:** MMS3-03 = Digital Input at Main Module Slot 3 – Channel 03.

**Delta C (Extend):** The tracking value can be found in the *parameter.dat* file;  
**For the Delta C (V08.00.00.00 and higher):**  
In the 1<sup>st</sup> column at line 0032 of the third block of lines (0000 – 0039), the 11<sup>th</sup> column, should be 2348.  
**For the Delta C Extend (V08.00.00.00 and higher):**  
In the 1<sup>st</sup> column at line 0032 of the fourth block of lines (0000 – 0039), the 11<sup>th</sup> column, should be 3143.  
After changing the tracking value, you have to select “Restore Setup” function in the “File” menu to sent the new tracking value to the machine. The infeed sensor B9 (MMS3-01) and outfeed sensor B11 (MMS3-03) can be found in the finger transport at entrance and exit side.

**Delta (Extend):** The tracking value can be found in the *parameter.dat* file;  
**For the Delta (V05.00.00.00 and lower):**  
In the 1<sup>st</sup> column at line 0024 of the first block of lines (0000 – 0039), the 11<sup>th</sup> column, should be 2948.  
**For the Delta (V08.00.00.00 and higher):**  
In the 1<sup>st</sup> column at line 0032 of the first block of lines (0000 – 0039), the 11<sup>th</sup> column, should be 2948.  
**For the Delta Extend (V10.00.00.00 and higher):**  
In the 1<sup>st</sup> column at line 032 of the fifth block of lines (0000 – 0039), the 11<sup>th</sup> column, should be 3743.  
After changing the tracking value, you have to select “Restore Setup” function in the “File” menu to sent the new tracking value to the machine. The infeed sensor B9 (MMS3-01) and outfeed sensor B11 (MMS3-03) can be found in the finger transport at entrance and exit side.

**DeltaMAX:** The tracking value can be found in the *parameter.dat* file;  
**For the DeltaMAX (V06.00.00.00 and higher):**  
In the 1<sup>st</sup> column at line 0032 of the second block of lines (0000 – 0039), the 11<sup>th</sup> column, should be 3690.  
After changing the tracking value, you have to select “Restore Setup” function in the “File” menu to sent the new tracking value to the machine. The infeed sensors B1 (SM2S3-08) and B2 (SM2S3-09) and outfeed sensors B3 (SM2S3-10) and B4 (SM2S3-11) can be found in the finger transport at entrance and exit side.

**“Spare” (@27)**

**“Spare” (@28)**

**“Spare” (@29)**

**“Spare” (@30)**

**“Spare” (@31)**

### **Buffer overflow inverters (@32)**

**Displayed text is identical with version 10.00.00.00** The used text in version 09 is different but this text is usable for both versions.

Machine action: The machine doesn't work as displayed on the screen because the inverters receive not all data send by the PLC.

Possible cause: Parameters for address and communication settings are wrong. In the technical manual chapter parts and adjustments you can find detailed information how to check for correct address and communication settings If this alarm message occurs in

combination with a RS485 failure alarm. Please try to solve the RS485 failure alarm first.

**When generated:** This alarm will be generated if the program can generate more data that has to be send to the inverters as actually can be send to the inverters. Most likely is that this alarm message is the result of another alarm.

**How to Resolve:**

When this alarm occurs during normal operation:  
Turn off all motors and the machine run status on the PC screen. Now turn back on the machine and all motors again.  
Follow also the instructions belonging to the other alarm messages.

When this alarm occurs when an inverter is being (re)installed which can be done by the Delta program:  
Check the address and communication settings of the inverter that has to be installed.

After changing parameters in the inverter by hand perform an e-stop to switch off the power of the inverter. Switching off the power is necessary to make the inverter work with the new parameters.

**Additional info:** This alarm is only dedicated to Yaskawa frequency inverters

## Common RS485 alarm (@33)

Used text for version 10.00.00.00 and higher:

**Machineaction:** The machine doesn't work correctly.

**Possible cause:** Data is being send to an inverter that is not able to respond or to a not existing inverter. Check if the inverters in the switchbox are in normal operating mode. This alarm can occur during installation of the inverter or during normal operation. The green run led must be on or blinking and the red alarm led on the inverter must be off for normal operation of the inverter.

**When generated:** Alarm will be generated if the inverter where the data is send to doesn't exist or doesn't respond even after 3 retries.

**How to resolve:** When the alarm does not disappear after an alarm reset or occur repetitively, you have to check the frequency inverter and connections. Also check if the wiring and shield of the communication cable is connected correctly and according the schematics. Make sure that the communication cable can't pick up heavy disturbing signals.

Used text in version 09.00.00.00:

Data is being send to an inverter that is not able to respond. Check if the inverters in the switchbox are in normal operating mode. FREF must be lighted up green. No alarm messages may be displayed. Check the green connector on the front of the inverter. Check the configuration to be sure that no data is being send to a not existing inverter.

For Delta MAX with wave height management you have also to check that the correct green connector is put into the front of the inverter. One connector is for installing the inverter and the other is for normal operation.

**“Spare” (@34)**

**“Spare” (@35)**

**“Spare” (@36)**

**“Spare” (@37)**

**“Spare” (@38)**

**“Spare” (@39)**

**“Spare” (@40)**

**“Spare” (@41)**

**“Spare” (@42)**

**“Spare” (@43)**

**“Spare” (@44)**

**“Spare” (@45)**

**“Spare” (@46)**

**“Spare” (@47)**

### **“Exhaust not Active” (@48)**

**Machineaction:** Machine will be **Blocked**, and when the number of PCB's in the machine is 0, the machine will go into **stop mode**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX. (When the “deviation alarm exhaust” is available for the DeltaMAX, this alarm will be for the Delta C (Extend) and Delta (Extend) only).

**Possible cause:** The exhaust is switched off, the exhaust switch is not adjusted correct or the jumper wire on X7-29 => +24Vdc is not present (for the DeltaMAX X11-41).

**When generated:** When starting up the machine after timer mode, or when switching on the machine the exhaust signal is ignored for 1 minute. Then, the signal on SM1S3-05 must be “0” for minimal 10 seconds.

**How to Resolve:** Start the exhaust, adjust the exhaust switch or put the jumperwire in on X7-29 => +24Vdc (for the DeltaMAX X11-41).

**Additional info:** The exhaust switch is not delivered with the machine.  
SM1S3-05 = Digital Input Slave Module 1 Slot 3 – Channel 05.

### **“Low Solder level”(@49)**

**Machineaction:** Only message

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.  
**Possible cause:** The solder level in the solderpot is too low, or the solder level sensor is not correct adjusted.  
**When generated:** The automatic solder feeder is not present or switched off and the solder level sensor, is seen "1" for at least 20 seconds.  
**How to Resolve:** Refill the solderpot, or check the solder level sensor.  
**Additional info:** When the waves are switched off, the solder level should be about 10 MM below the topside of the solderpot.  
SM1S4-10 = Digital Input Slave Module 1 Slot 4 – Channel 10.  
**Delta C (Extend):** The solder level sensor B30 (SM1S4-10) can be found at the backside of the solderpot.  
**Delta (Extend):** The solder level sensor B30 (SM1S4-10) can be found at the backside of the solderpot.  
**DeltaMAX:** The solder level sensor B17 (SM1S4-10) can be found at the backside of the solderpot.

## “Solder feeder Empty” (@50)

**Machineaction:** Only message  
**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.  
**Possible cause:** The automatic solder feeder is empty or the solder bar sensor is broken.  
**When generated:** The automatic solder feeder is configured and the PLC input for the solder bar sensor SM1S4-11 is seen "0".  
**How to Resolve:** Refill the automatic solder feeder with solder bars, or replace the solder bar sensor.  
**Additional info:** SM1S4-11 = Digital Input Slave Module 1 Slot 4 – Channel 11.  
**Delta C (Extend):** The solder bar sensor B31 (SM1S4-11) can be found above the solderpot on the topside of the machine.  
**Delta (Extend):** The solder bar sensor B31 (SM1S4-11) can be found above the solderpot on the topside of the machine.  
**DeltaMAX:** The solder bar sensor B18 (SM1S4-11) can be found above the solderpot on the topside of the machine.

## “Nozzle Fluxer Not Moving” (@51)

**Machineaction:** Before software version 06.00.00.00 only message, afterwards **blocked** state.  
**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.  
**Possible cause:** The analogue output card SM1S1, the proportional valve for the traverse movement, the pulse sensor(s), the nozzle can not move due to blockage of the cylinder or the settings for the fluxer (start and stop time) are corrupted.  
**When generated:** When the nozzle fluxer is ordered to move, but the PLC does not detect any pulses from the pulse sensor(s)/encoder. Means the PLC does not detect a traverse movement of the nozzle.  
**How to Resolve:** Check the hardware or the parameter settings.  
**Additional info:** In automenu mode it can happen that you have corrupted nozzle settings, due to the blocking which does not work correct. I.e. when an “automenu alarm” is active and the PCB enters the machine anyway. When the analogue voltage is between 5 and 10Vdc the nozzle should move to the backside of the machine, a voltage between 0 and 5Vdc should give a movement to the front side of the machine.  
SM1S3-03 = Digital Input Slave Module 1 Slot 3 – Channel 03.  
SM1S1-01 = Analogue Output at Slave Module 1 Slot 1 – Channel 01.  
**Delta C (Extend):** **Old type nozzlefluxer with fork switches:**  
The proportional valve Y4 (SM1S1-1) can be found on the pneumatic panel, the pulse sensors B19 (SM1S3-03) and B20 (SM1S3-04) can be found next to the cylinder for the traverse movement.  
**Improved nozzlefluxer with rotary encoder:**

The proportional valve Y4 (SM1S1-1) can be found on the pneumatic panel, rotary encoder B19 (SM1S3-03 and SM1S3-04) can be found next to the cylinder for the traverse movement.

**Delta (Extend):**

**Old type nozzlefluxer with fork switches:**

The proportional valve Y4 (SM1S1-1) can be found on the pneumatic panel, the pulse sensors B19 (SM1S3-03) and B20 (SM1S3-04) can be found next to the cylinder for the traverse movement.

**Improved nozzlefluxer with rotary encoder:**

The proportional valve Y4 (SM1S1-1) can be found on the pneumatic panel, rotary encoder B19 (SM1S3-03 and SM1S3-04) can be found next to the cylinder for the traverse movement.

**DeltaMAX:**

The proportional valve Y16 (SM1S1-1) can be found at the backside, underneath the fluxer module, the encoder B36 (SM1S3-03 and SM1S3-04) can be found next to the cylinder for the traverse movement.

## “No Flow Nozzle Fluxer 1” (@52)

**Machineaction:** Machine will be **Blocked**

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** Air bubbles in the flux system, broken flow sensor, broken amplifier or hoses to the nozzle are swapped or disconnected.

**When generated:** When the spray valve is switched off, (i.e. in single spray mode, at every stop position and in double spray mode at the end of the movement.) the PLC checks if the flow sensor(s) detects flow.

**How to Resolve:** Purge the nozzle fluxer system, check hardware and hoses.

**Additional info:** In software version 04.02.00.00 and earlier the no flow alarm did not work correct in single spray mode. When the green sensor is positioned too low it can detect the steel part of the flow sensor itself, and generate false alarms. The amplifier(s) have a green and red led, if the red led lights, up it indicates a broken or disconnected sensor or swapped wires. The green led is the status of the flow sensor itself, led on => no flow.

SM1S3-01 = Digital Input Slave Module 1 Slot 3 – Channel 01.

**Delta C (Extend):** The amplifier B34 (SM1S3-01) is located in the switchbox itself, the flow sensors B17 itself can be found at the backside of the nozzle fluxer.

**Delta (Extend):** The amplifier B34 (SM1S3-01) is located in the switchbox itself, the flow sensors B17 itself can be found at the backside of the nozzle fluxer.

**DeltaMAX:** The amplifier B31 (SM1S3-01) is located in the switchbox itself, the flow sensors B33 itself can be found at the backside of the nozzle fluxer.

## “Preheater Zone 2 Not Configured” (@53)

**Machineaction:** Only message

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** Disconnected configuration connector or a bad connection.

**When generated:** When the machine is in Run mode, and the PLC does not detect a digital input on SM1S2-03 or SM1S2-04.

**How to Resolve:** Connect the connector or check the hardware.

**Additional info:** This alarm is only activated for zone 2 and 3 (in Delta C (Extend) these zones are called zone 1 and 2), because the machine must be able to work without preheater 0 and 1.

SM1S2-03 = Digital Input Slave Module 1 Slot 2 – Channel 03.

SM1S2-04 = Digital Input Slave Module 1 Slot 2 – Channel 04.

**Location:** The configuration connector is located underneath the preheater itself.

## “Preheater Zone 3 Not Configured” (@54)

<b>Machineaction:</b>	Only message
<b>Software Version:</b>	All, for Delta C (Extend), Delta (Extend) and DeltaMAX.
<b>Possible cause:</b>	Disconnected configuration connector or a bad connection.
<b>When generated:</b>	When the machine is in Run mode, and the PLC does not detect a digital input on SM1S2-05 or SM1S2-06.
<b>How to Resolve:</b>	Connect the connector or check the hardware.
<b>Additional info:</b>	This alarm is only activated for zone 2 and 3 (in Delta C (Extend) these zones are called zone 1 and 2), because the machine must be able to work without preheater 0 and 1. SM1S2-05 = Digital Input Slave Module 1 Slot 2 – Channel 05. SM1S2-06 = Digital Input Slave Module 1 Slot 2 – Channel 06.
<b>Location:</b>	The configuration connector is located underneath the preheater itself.

## “Automenu Error” (@55)

### Case: Pincode.

<b>Machineaction:</b>	Machine will be <b>Blocked</b>
<b>Software Version:</b>	All, for Delta C (Extend), Delta (Extend) and DeltaMAX.
<b>Possible cause:</b>	No pincode available on the carrier, a bad adjusted strobe sensor, the PCB type 1 => 15 is/are not available or a bad serial communication with the machine.
<b>When generated:</b>	When the board in position sensor detects a trailing edge of a PCB in automenu, the PLC must have received a new recipe within 10 seconds.
<b>How to Resolve:</b>	Check the position of the strobe sensor, is the PCB type available? To solve the automenu alarm just for one PCB, you can, when the alarm got activated select a recipe by hand (only once, introduced with software version 05.00.00.00) and then reset the alarm.
<b>Additional info:</b>	When the machine detects a new pincode via the PLC inputs SM1S4-04 => SM1S4-07, it is sent with the monitor information to the PC, the PC search for the corresponding PCB type 1 => 15, then the recipe is sent to the machine with the RS485 command @0R. SM1S4-03 = Digital Input Slave Module 1 Slot 4 – Channel 03.
<b><u>Delta C (Extend):</u></b>	The pincode station is located at the infeed transport just before sensor B29 (SM1S4-09) and the strobe sensor is B23 (SM1S4-03). The bit 0 sensor is B24 (SM1S4-04), the bit 1 sensor is B25 (SM1S4-05), the bit 2 sensor is B26 (SM1S4-06) and the bit 3 sensor is B26 (SM1S4-07).
<b><u>Delta (Extend):</u></b>	The pincode station is located at the infeed transport just before sensor B29 (SM1S4-09) and the strobe sensor is B23 (SM1S4-03). The bit 0 sensor is B24 (SM1S4-04), the bit 1 sensor is B25 (SM1S4-05), the bit 2 sensor is B26 (SM1S4-06) and the bit 3 sensor is B26 (SM1S4-07).
<b><u>DeltaMAX:</u></b>	The pincode station is located at the infeed transport just before sensor B9 (SM1S4-09) and the strobe sensor is B7 (SM1S4-03). The bit 0 sensor is B10 (SM1S4-04), the bit 1 sensor is B11 (SM1S4-05), the bit 2 sensor is B12 (SM1S4-06) and the bit 3 sensor is B13 (SM1S4-07).

### Case: Barcode.

<b>Machineaction:</b>	Machine will be <b>Blocked</b>
<b>Software Version:</b>	All, for Delta C (Extend), Delta (Extend) and DeltaMAX.
<b>Possible cause:</b>	No barcode label present, the barcode reader could not read the label, the PCB type is not available, or a bad serial communication with the machine. The barcode reader is switched off, wrong communication settings in seTup =>Commport Settings or the barcode settings in seTup =>Barcode Settings are not according to the settings in the barcode reader.
<b>When generated:</b>	When the board in position sensor detects a trailing edge of a PCB in automenu, the PLC must have received a new recipe within 10 seconds.

**How to Resolve:** First of all check the barcode history, see if you received a barcode string just prior to when the alarm was activated, is the PCB type available, is the communication to the machine correct. To solve the automenu alarm just for one PCB, you can, when the alarm got activated select a recipe by hand (only once, introduced with software version 05.00.00.00) and then reset the alarm.

**Additional info:** With software version V05.00.00.00 we introduced a barcode history function, via Log => View Barcode History (First you have to activate it in Log => Logging Status), this gives you exactly what the PC received from the barcode reader together with the control characters. Check the barcode manual for more information. When Optimize Automenu is activated the PCB's are separated from each other by the speed difference between the finger transport and infeed transport; the board in position sensor should see an opening from about 2 Cm. The PC sent the recipe to the machine with the RS485 command @0R.  
SM1S4-09 = Digital Input Slave Module 1 Slot 4 – Channel 09.

**Delta C (Extend):** The barcode reader and the board in position sensor B29 (SM1S4-09) can be found at the entrance side of the machine.

**Delta (Extend):** The barcode reader and the board in position sensor B29 (SM1S4-09) can be found at the entrance side of the machine.

**DeltaMAX:** The barcode reader and the board in position sensor B9 (SM1S4-09) can be found at the entrance side of the machine.

## “Solderpot not in position” (@56)

**Machineaction:** Machine will be **Blocked**.

**Software Version:** All, for **Delta C (Extend) and Delta (Extend) only**.

**Possible cause:** The solderpot is not raised until the solderpot in position sensor is activated, the solderpot in position sensor or the solderpot in upward position sensor is broken or not correct adjusted.

**When generated:** When SM1S4-12 is seen “0”. When the solderpot is lowered the alarm should be active almost immediately.

**How to Resolve:** Raise the solderpot and reset the alarm in the reset menu, adjust or replace the solderpot in position sensor or check the solderpot in upward position sensor.

**Additional info:** The signal on SM1S4-12 has a holding circuit, which is reset as soon the solderpot moves down. Raising the solderpot is only possible when the alarm is active, if not you have to lower the solderpot first, if the solderpot is on its lower limit switch, you have to raise the activation pin and move down for a few MM.  
SM1S4-12 = Digital Input Slave Module 1 Slot 4 – Channel 12.

**Delta C (Extend):** The solderpot in position sensor S21 and the solderpot in upward position sensor S11 are at the front side of the machine just above the solderpot on the conveyor rail. The solderpot in downward position sensor S6 can be found at the backside of the solderpot.

**Delta (Extend):** The solderpot in position sensor S21 and the solderpot in upward position sensor S11 are at the front side of the machine just above the solderpot on the conveyor rail. The solderpot in downward position sensor S6 can be found at the backside of the solderpot.

## “Temperature overload solderpot” (@57)

**Machineaction:** **Machine will be Blocked**

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The solid state relay for the solderpot is broken, the Pt100 for the solderpot is broken or the PLC program has lost control.

**When generated:** As soon as SM1S2-09 has detected “0”.

**How to Resolve:** Wait until the solder temperature has dropped to a normal level and reset the alarm or adjust/replace the temperature limit switch.

**Additional info:** The temperature limit switch is adjusted at about 320°C.  
SM1S2-09 = Digital Input Slave Module 1 Slot 2 – Channel 09.

MMS5-01 = Digital Output Main Module Slot 5 – Channel 01.  
MMS1-01 = Analogue Input Main Module Slot 1 – Channel 01.

**Delta C (Extend):** The temperature limit switch S17 is mounted at the backside of the solderpot and controls K36 (SM1S2-09). The solid state relay is K8 (MMS5-01), the Pt100 is R1 (MMS1-01).

**Delta (Extend):** The temperature limit switch S17 is mounted at the backside of the solderpot and controls K36 (SM1S2-09). The solid state relay is K8 (MMS5-01), the Pt100 is R1 (MMS1-01).

**DeltaMAX:** The temperature limit switch S27 is mounted at the backside of the solderpot and controls K56 (SM1S2-09). The solid state relays are K7 and K8 (MMS5-01), the Pt100 is R1 (MMS1-01).

## “Width adjustment not moving” (@58)

**Machineaction:** Machine will be **blocked**

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The automatic width adjustment is jammed, the relay conveyor width wider or conveyor width smaller is broken, the motor for the width adjustment movement is broken, the motor protection relay is switched off or the encoder does not work.

**When generated:** When the automatic width adjustment should move, the relay conveyor width wider or conveyor width smaller is switched on and the PLC does not receive any pulses from the encoder, connected on SM1S3-08.

**How to Resolve:** Check the hardware, select a reference width adjustment in the reset menu, and reset the alarm. Before software version 06.00.00.00, toggle the status in the machine status screen to on.

**Additional info:** Before software version 06.00.00.00 the automatic width adjustment will go to off state, with software version 06.00.00.00 and higher the status will remain on.

SM1S3-08 = Digital Input at Slave Module 1 Slot 3 – Channel 08.

SM1S8-01 = Digital Output Slave Module 1 Slot 8 – Channel 01.

SM1S8-02 = Digital Output Slave Module 1 Slot 8 – Channel 02.

**Delta C (Extend):** The relays conveyor width wider K27 (SM1S8-01), conveyor width smaller K28 (SM1S8-02) and thermal relay Q6 are located in the switchbox, the motor M4 is mounted at the conveyor, the encoder B21 (SM1S3-08) is mounted onto the conveyor.

**Delta (Extend):** The relays conveyor width wider K27 (SM1S8-01), conveyor width smaller K28 (SM1S8-02) and thermal relay Q6 are located in the switchbox, the motor M4 is mounted at the conveyor, the encoder B21 (SM1S3-08) is mounted onto the conveyor.

**DeltaMAX:** The relays conveyor width wider K42 (SM1S8-01), conveyor width smaller K43 (SM1S8-02) and thermal relay Q5 are located in the switchbox, the motor M4 is mounted at the conveyor, the encoder B38 (SM1S3-08) is mounted onto the conveyor.

## “Width adjustment in reference switch” (@59)

**Machineaction:** Before software version 06.00.00.00 only message, afterwards **blocked** state.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The relay, conveyor width adjustment smaller is stuck or the reference switch is broken.

**When generated:** When the automatic width adjustment status is on and the machine is in Run mode, the “reference width adjustment” is finished and PLC input SM1S3-06 is seen “0”.

**How to Resolve:** Select a reference width adjustment in the reset menu, or replace reference switch.

**Additional info:** SM1S3-06 = Digital Input at Slave Module 1 Slot 3 – Channel 06.

SM1S8-02 = Digital Output Slave Module 1 Slot 8 – Channel 02.

**Delta C (Extend):** The relay conveyor width adjustment smaller K28 (SM1S8-02) and relay K61 for reference switch S18 (SM1S3-06) are located in the switchbox, the reference switch S18 is mounted on the fixed conveyor rail.

**Delta (Extend):** The relay conveyor width adjustment smaller K28 (SM1S8-02) and relay K61 for reference switch S18 (SM1S3-06) are located in the switchbox, the reference switch S18 is mounted on the fixed conveyor rail.

**DeltaMAX:** The relay conveyor width adjustment smaller K43 (SM1S8-02) and relay K61 for reference switch S20 (SM1S3-06) are located in the switchbox, the reference switch S20 is mounted on the fixed conveyor rail.

## “Width adjustment in outer end switch” (@60)

**Machineaction:** Before software version 06.00.00.00, only message afterwards **blocked** state.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** Relay conveyor width adjustment wider is stuck or the outer end switch is broken.

**When generated:** When the automatic width adjustment status is on and the machine is in Run mode, and PLC input SM1S3-07 is seen “0”.

**How to Resolve:** Select a “reference width adjustment” in the reset menu, or replace the outer limit switch.

**Additional info:** SM1S3-07 = Digital Input at Slave Module 1 Slot 3 – Channel 07.

SM1S8-01 = Digital Output Slave Module 1 Slot 8 – Channel 01.

**Delta C (Extend):** The relay conveyor width adjustment wider K27 (SM1S8-01) and relay K62 for reference switch S19 (SM1S3-07) are located in the switchbox, the reference switch S19 is mounted on the adjustable conveyor rail.

**Delta (Extend):** The relay conveyor width adjustment wider K27 (SM1S8-01) and relay K62 for reference switch S19 (SM1S3-07) are located in the switchbox, the reference switch S19 is mounted on the adjustable conveyor rail.

**DeltaMAX:** The relay conveyor width adjustment wider K42 (SM1S8-01) and relay K62 for reference switch S21 (SM1S3-07) are located in the switchbox, the reference switch S21 is mounted on the adjustable conveyor rail.

## “PCB support not moving” (@61)

**Machineaction:** Machine will be **blocked**.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The automatic PCB support is jammed, the relay PCB support wider or PCB support smaller is broken, the motor for the PCB support movement is broken, the motor protection relay is switched off or the encoder does not work.

**When generated:** When the automatic PCB support should move, the relay PCB support wider or PCB support smaller is switched on and the PLC does not receive any pulses from the encoder, connected on SM1S3-11.

**Additional info:** SM1S3-11 = Digital Input at Slave Module 1 Slot 3 – Channel 11.

SM1S8-03 = Digital Output Slave Module 1 Slot 8 – Channel 03.

SM1S8-04 = Digital Output Slave Module 1 Slot 8 – Channel 04.

**Delta C (Extend):** The relays PCB support wider K29 (SM1S8-03), PCB support smaller K30 (SM1S8-04) and thermal relay Q7 are located in the switchbox, the motor M5 is mounted at the conveyor, the encoder B22 (SM1S3-11) is mounted onto the conveyor.

**Delta (Extend):** The relays PCB support wider K29 (SM1S8-03), PCB support smaller K30 (SM1S8-04) and thermal relay Q7 are located in the switchbox, the motor M5 is mounted at the conveyor, the encoder B22 (SM1S3-11) is mounted onto the conveyor.

**DeltaMAX:** The relays PCB support wider K44 (SM1S8-03), PCB support smaller K45 (SM1S8-04) and thermal relay Q6 are located in the switchbox, the motor M5 is mounted at the conveyor, the encoder B39 (SM1S3-11) is mounted onto the conveyor.

## “PCB support in reference switch” (@62)

**Machineaction:** Before software version 06.00.00.00, only message afterwards **blocked** state.

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.  
**Possible cause:** The relay, PCB support smaller is stuck or the reference switch is broken.  
**When generated:** When the automatic PCB support status is on and the machine is in Run mode, the “reference width adjustment” is finished and PLC input SM1S3-09 is seen “0”.  
**How to Resolve:** Select a “reference width adjustment” in the reset menu, or replace the reference switch.  
**Additional info:** SM1S3-09 = Digital Input at Slave Module 1 Slot 3 – Channel 09.  
SM1S8-04 = Digital Output Slave Module 1 Slot 8 – Channel 04.  
**Delta C (Extend):** The relay PCB support width adjustment smaller K30 (SM1S8-04) and relay K63 for reference switch S22 (SM1S3-09) are located in the switchbox, the reference switch S22 is mounted on the fixed conveyor rail.  
**Delta (Extend):** The relay PCB support width adjustment smaller K30 (SM1S8-04) and relay K63 for reference switch S22 (SM1S3-09) are located in the switchbox, the reference switch S22 is mounted on the fixed conveyor rail.  
**DeltaMAX:** The relay PCB support width adjustment smaller K45 (SM1S8-04) and relay K63 for reference switch S22 (SM1S3-09) are located in the switchbox, the reference switch S22 is mounted on the fixed conveyor rail.

### “PCB support in outer end switch” (@63)

**Machineaction:** Before software version 06.00.00.00, only message afterwards **blocked** state.  
**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.  
**Possible cause:** Relay PCB support wider is stuck or the outer end switch is broken.  
**When generated:** When the automatic width adjustment status is on and the machine is in Run mode, and PLC input SM1S3-10 is seen “0”.  
**How to Resolve:** Select a “reference width adjustment” in the reset menu, or replace the outer limit switch.  
**Additional info:** SM1S3-10 = Digital Input at Slave Module 1 Slot 3 – Channel 10.  
SM1S8-03 = Digital Output Slave Module 1 Slot 8 – Channel 03.  
**Delta C (Extend):** The relay PCB support width adjustment wider K29 (SM1S8-03) and relay K64 for reference switch S23 (SM1S3-10) are located in the switchbox, the reference switch S23 is mounted on the fixed conveyor rail.  
**Delta (Extend):** The relay PCB support width adjustment wider K29 (SM1S8-03) and relay K64 for reference switch S23 (SM1S3-10) are located in the switchbox, the reference switch S23 is mounted on the fixed conveyor rail.  
**DeltaMAX:** The relay PCB support width adjustment wider K44 (SM1S8-03) and relay K64 for reference switch S23 (SM1S3-10) are located in the switchbox, the reference switch S23 is mounted on the fixed conveyor rail.

### “Outfeed Full” (@64)

**Machineaction:** Machine will be **blocked**.  
**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.  
**Possible cause:** The outfeed sensor is activated for the overload time set in seTup => Parameter => Speed.  
**When generated:** When PLC input SM1S3-12 is seen “1” for at least the amount of time set in “Overload at exit time-out” in seTup => Parameter => Speed.  
**How to Resolve:** Remove the PCB from outfeed sensor, the alarm status resets itself.  
**Additional info:** SM1S3-12 = Digital Input at Slave 1 Module Slot 3 – Channel 12.  
**Delta C (Extend):** The outfeed full sensor B35 (SM1S3-12) is located at the outfeed transport.  
**Delta (Extend):** The outfeed full sensor B35 (SM1S3-12) is located at the outfeed transport.  
**DeltaMAX:** The outfeed full sensor B6 (SM1S3-12) is located at the outfeed transport.

### “Transport crash detection at Infeed” (@65)

**Machineaction:** Machine will go in **E-stop**, via hardware.

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**  
**Possible cause:** A PCB is crashed in the finger transport at the infeed side.  
**When generated:** When, the PLC input at SM1S2-07 is seen "1" via a contact from relay K65.  
**How to Resolve:** Remove the jammed PCB, reset the E-stop situation and start the machine.  
**Additional info:** Before software version 06.00.00.00, this alarm number was "Transport Crash Detection", which is now moved over to (@70) for the normal Delta.  
SM1S2-07 = Digital Input at Slave 1 Module Slot 2 – Channel 07.

**DeltaMAX:** The relay K65 (SM1S2-07) is located in the switch box, the crash detection plates can be found at the finger transport above the fluxer.

## “UPS Line Fail” (@66)

**Machineaction:** Machine will be **Blocked**.  
**Software Version:** V04.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.  
**Possible cause:** The UPS gives the output "line fail" to the PLC.  
**When generated:** The UPS system is configured, and SM1S2-11 is seen "0", means the power supply to the UPS is switched off.  
**How to Resolve:** Check the power supply to the UPS / machine.  
**Additional info:** More information regarding the UPS can be found in the manual.  
SM1S2-11 = Digital Input at Slave 1 Module Slot 2 – Channel 11.  
**Location:** The UPS system can be found at the exit side of the machine.

## “UPS Line Fail Time-out” (@67)

**Machineaction:** Machine will be **Blocked**, and when the number of PCB's in the machine is 0, the machine will go into **stop mode** (stop machine and shut down UPS).  
**Software Version:** V04.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.  
**Possible cause:** The UPS gives the output "line fail" to the PLC, means the power supply to the UPS is switched off.  
**When generated:** The UPS system is configured, and SM1S2-11 is seen "0", for the amount of time set in seTup => UPS setup.  
**How to Resolve:** Check the power supply to the UPS / machine.  
**Additional info:** More information regarding the UPS can be found in the manual.  
SM1S2-11 = Digital Input at Slave 1 Module Slot 2 – Channel 11.  
**Location:** The UPS system can be found at the exit side of the machine.

## “UPS Low Battery” (@68)

**Machineaction:** Only message.  
**Software Version:** V04.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.  
**Possible cause:** The UPS gives the output "low battery" to the PLC.  
**When generated:** The UPS system is configured, and SM1S2-12 is seen "1".  
**How to Resolve:** Give the UPS a change to charge.  
**Additional info:** More information regarding the UPS can be found in the manual.  
SM1S2-12 = Digital Input at Slave 1 Module Slot 2 – Channel 12.  
**Location:** The UPS system can be found at the exit side of the machine.

## “SMEMA Alarm” (@69)

**Machineaction:** Machine will be **Blocked**.  
**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The next machine in line is switched off or in a certain alarm state, or the SMEMA connector at the outfeed side is disconnected.

**When generated:** SMEMA is configured, and the next “busy” signal SM1S4-02 is not available for the overload time set in seTup => Parameter => Speed

**How to Resolve:** Switch on the next machine, reset the alarm status from the next machine, connect the SMEMA connector at the outfeed side or when the outfeed SMEMA is not used, jumperwire SM1S4-02.

**Additional info:** The alarm status resets itself.  
SM1S4-02 = Digital Input at Slave 1 Module Slot 4 – Channel 02.

**Delta C (Extend):** The SMEMA connector X72 is located at the outfeed side of the machine, the PLC input SM1S4-02 can be jumperwired with X7-38 to 24Vdc.

**Delta (Extend):** The SMEMA connector X72 is located at the outfeed side of the machine, the PLC input SM1S4-02 can be jumperwired with X7-38 to 24Vdc.

**DeltaMAX:** The SMEMA connector X46 is located at the outfeed side of the machine, the PLC input SM1S4-02 can be jumperwired with X11-50 to 24Vdc.

## “Transport Crash Detection” (@70)

**Machineaction:** Machine will go in **E-stop**, via hardware.

**Software Version:** V04.00.00.00 and higher, **for the Delta C (Extend) and Delta (Extend) only.**

**Possible cause:** A PCB is crashed in the finger transport at the infeed or outfeed side.

**When generated:** When, the PLC input at SM1S2-07 is seen “1” via a contact from relay K68.

**How to Resolve:** Remove the jammed PCB, reset the E-stop situation and start the machine.  
SM1S2-07 = Digital Input at Slave 1 Module Slot 2 – Channel 07.

**Delta C (Extend):** The relay K68 (SM1S2-07) is located in the switch box, the crash detection plates can be found at the finger transport above the fluxer and above the waves.

**Delta (Extend):** The relay K68 (SM1S2-07) is located in the switch box, the crash detection plates can be found at the finger transport above the fluxer and above the waves.

## “No Reference Sensor detected Nozzle fluxer” (@71)

**Machineaction:** Only message.

**Software Version:** V05.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The nozzle fluxer reference sensor is disconnected from the pneumatic panel, the reference sensor is broken, and the nozzle can not go into its home position.

**When generated:** When the nozzle is not supposed to move, and the PLC input SM1S3-02 is detected “0”.

**How to Resolve:** Check the position and function of the reference sensor, and see if the nozzle can go into its home position.

**Additional info:** When the machine is in E-stop status, the nozzle will move to the backside of the machine and this alarm will be active.  
SM1S3-02 = Digital Input at Slave Module 1 Slot 3 – Channel 02.

**Delta C (Extend):** The reference sensor B18 (SM1S3-02) is a small reed switch, which can be found at the cylinder for the traverse movement.

**Delta (Extend):** The reference sensor B18 (SM1S3-02) is a small reed switch, which can be found at the cylinder for the traverse movement.

**DeltaMAX:** The reference sensor B35 (SM1S3-02) is a small reed switch, which can be found at the cylinder for the traverse movement.

## “No Flow Nozzle 2” (@72)

**Machineaction:** Machine will be **Blocked**

**Software Version:** All, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** Air bubbles in the flux system, broken flow sensor, broken amplifier or hoses to the nozzle are swapped or disconnected.

**When generated:** When the spray valve is switched off, (i.e. in single spray mode, at every stop position and in double spray mode at the end of the movement.) the PLC checks if the flow sensor(s) detects flow. When the nozzle should not spray, but the PLC input(s) for the flow sensor(s) detects a flow for at least 5 seconds. If you have two flux supplies the alarm can be generated for 4 different items.

**How to Resolve:** Purge the nozzle fluxer system, check hardware and hoses.

**Additional info:** In software version 04.02.00.00 and earlier the no flow alarm did not work correct in single spray mode. When the green sensor is positioned too low it can detect the steel part of the flow sensor itself, and generate false alarms. The amplifier(s) have a green and red led, if the red led lights, up it indicates a broken or disconnected sensor or swapped wires. The green led is the status of the flow sensor itself, led on => no flow.  
SM1S2-10 = Digital Input Slave Module 1 Slot 2 – Channel 10.

**Delta C (Extend):** The amplifier B36 (SM1S2-10) is located in the switchbox itself, the flow sensors B37 itself can be found at the backside of the nozzle fluxer.

**Delta (Extend):** The amplifier B36 (SM1S2-10) is located in the switchbox itself, the flow sensors B37 itself can be found at the backside of the nozzle fluxer.

**DeltaMAX:** The amplifier B32 (SM1S2-10) is located in the switchbox itself, the flow sensors B34 itself can be found at the backside of the nozzle fluxer.

## “Leaking Hoses / Airbubbles Nozzle 1” (@73)

**Machineaction:** Machine will be **Blocked**

**Software Version:** V07.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** Air bubbles in the flux system, broken flow sensor, broken amplifier or hoses to the nozzle are swapped or disconnected.

**When generated:** When the nozzle should not spray, but the PLC input(s) for the flow sensor(s) detects a flow for at least 5 seconds. If you have two flux supplies the alarm can be generated for 4 different items.

**How to Resolve:** Purge the nozzle fluxer system, check hardware and hoses.

**Additional info:** In software version 04.02.00.00 and earlier the no flow alarm did not work correct in single spray mode. When the green sensor is positioned too low it can detect the steel part of the flow sensor itself, and generate false alarms. The amplifier(s) have a green and red led, if the red led lights, up it indicates a broken or disconnected sensor or swapped wires. The green led is the status of the flow sensor itself, led on => no flow.  
SM1S3-01 = Digital Input Slave Module 1 Slot 3 – Channel 01.

**Delta C (Extend):** The amplifier B34 (SM1S3-01) is located in the switchbox itself, the flow sensors B17 itself can be found at the backside of the nozzle fluxer.

**Delta (Extend):** The amplifier B34 (SM1S3-01) is located in the switchbox itself, the flow sensors B17 itself can be found at the backside of the nozzle fluxer.

**DeltaMAX:** The amplifier B31 (SM1S3-01) is located in the switchbox itself, the flow sensors B33 itself can be found at the backside of the nozzle fluxer.

## “Leaking Hoses / Airbubbles Nozzle 2” (@74)

**Machineaction:** Machine will be **Blocked**

**Software Version:** V07.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** Air bubbles in the flux system, broken flow sensor, broken amplifier or hoses to the nozzle are swapped or disconnected.

**When generated:** When the nozzle should not spray, but the PLC input(s) for the flow sensor(s) detects a flow for at least 5 seconds. If you have two flux supplies the alarm can be generated for 4 different items.

**How to Resolve:** Purge the nozzle fluxer system, check hardware and hoses.

**Additional info:** In software version 04.02.00.00 and earlier the no flow alarm did not work correct in single spray mode. When the green sensor is positioned too low it can detect the steel part of the flow sensor itself, and generate false alarms. The amplifier(s) have a

green and red led, if the red led lights, up it indicates a broken or disconnected sensor or swapped wires. The green led is the status of the flow sensor itself, led on => no flow.

SM1S2-10 = Digital Input Slave Module 1 Slot 2 – Channel 10.

**Delta C (Extend):** The amplifier B36 (SM1S2-10) is located in the switchbox itself, the flow sensors B37 itself can be found at the backside of the nozzle fluxer.

**Delta (Extend):** The amplifier B36 (SM1S2-10) is located in the switchbox itself, the flow sensors B37 itself can be found at the backside of the nozzle fluxer.

**DeltaMAX:** The amplifier B32 (SM1S2-10) is located in the switchbox itself, the flow sensors B34 itself can be found at the backside of the nozzle fluxer.

**“Spare” (@75)**

**“Spare” (@76)**

**“Spare” (@77)**

**“Spare” (@78)**

**“Spare” (@79)**

### **“Transport Crash Detection at Outfeed” (@80)**

**Machineaction:** Machine will go in **E-stop**, via hardware.

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** A PCB is crashed in the finger transport at the outfeed side.

**When generated:** When, the PLC input at SM2S1-03 is seen “1” via a contact from relay K66.

**How to Resolve:** Remove the jammed PCB, reset the E-stop situation and start the machine.  
SM2S1-03 = Digital Input Slave Module 2 Slot 1 – Channel 03.

**DeltaMAX:** The relay K66 (SM2S1-03) is located in the switch box, the crash detection plates can be found at the finger transport above the waves.

### **“Broken Wire PCB support” (@81)**

**Machineaction:** Machine will go into **Stop mode.**

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** The PCB wire support wire is broken or sensor B57 is not correct adjusted or broken.

**When generated:** When the PLC input SM2S3-12 detects “1”.

**How to Resolve:** Replace the PCB wire support wire, or adjust / replace sensor B57.  
SM2S3-12 = Digital Input Slave Module 2 Slot 3 – Channel 12.

**DeltaMAX:** The position of the PCB wire support sensor B57 (SM2S3-12) is not known at this moment of time.

### **“Lo Level Alarm Flux” (@82)**

**Machineaction:** Only message.

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** The level of the 1<sup>st</sup> fluxtank is too low, the pressure switch B20 (SM2S2-01) is broken or needs adjusting.

**When generated:** When the first flux tank is configured and the PLC detects SM2S2-01 “0”. A continues flow of air will be blown through a tube who’s end is situated in the fluxtank. As long

as the end of the tube is underneath the flux level, the airpressure meets with a counter-pressure. When the end of the tube is above the flux level, the air can stream out freely and pressure switch B20 (SM2S2-01) will switch.

**How to Resolve:** Refill the fluxtank and reset the alarm, replace the pressure switch B20 (SM2S2-01) or adjust the pressure switch according to the adjustment procedure in the manual.

**Additional info:** This is a digital system.

SM2S2-01 = Digital Input Slave Module 2 Slot 2 – Channel 01.

**DeltaMAX:** The pressure switch B20 (SM2S2-01) can be found in the low level detection module which is located on the underframe, underneath the first preheater or on the fluxertrolley.

## “Lo Level Alarm Thinner” (@83)

**Machineaction:** Only message.

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** The level of the thinnertank is too low, the pressure switch B21 (SM2S2-02) is broken or needs adjusting.

**When generated:** When the SG-unit is configured and the PLC detects SM2S2-02 “0”. A continues flow of air will be blown through a tube who’s end is situated in the thinnertank. As long as the end of the tube is underneath the thinner level, the airpressure meets with a counter-pressure. When the end of the tube is above the thinner level, the air can stream out freely and pressure switch B21 (SM2S2-02) will switch.

**How to Resolve:** Refill the thinnertank and reset the alarm, replace the pressure switch B21 (SM2S2-02) or adjust the pressure switch according to the adjustment procedure in the manual.

**Additional info:** This is a digital system, and this is the same PLC input as the second flux tank.

SM2S2-02 = Digital Input Slave Module 2 Slot 2 – Channel 02.

**DeltaMAX:** The pressure switch B21 (SM2S2-02) can be found in the low level detection module which is located on the underframe, underneath the first preheater or on the fluxertrolley.

## “Power Phase Sequence is not Correct” (@84)

**Machineaction:** Only message.

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** The 3 phases sequence of the incoming power is wrong, one or two phases have no voltage, the phase check relay K36 is broken.

**When generated:** The PLC detects input SM2S3-01 “0”.

**How to Resolve:** Change the sequence of the 3 phases or check the incoming voltage.

**Additional info:** The sequence of the incoming power is important for the solderpot roll-out, solderpot elevation, solder feeder, automatic width adjustment, automatic PCB support and the forced convection fans.

SM2S3-01 = Digital Input Slave Module 2 Slot 3 – Channel 01.

**DeltaMAX:** The power phase check relay K36 (SM2S3-01) can be found in the switch box.

## “Lo Level Finger Cleaner” (@85)

**Machineaction:** Only message.

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** The level of the finger cleaner tank is too low, the pressure switch B22 (SM2S2-03) is broken or needs adjusting.

**When generated:** When the finger cleaner is configured and the PLC detects SM2S2-03 “0”. A continues flow of air will be blown through a tube who’s end is situated in the finger cleaner tank. As long as the end of the tube is underneath the the finger cleaner level, the airpressure meets with a counter-pressure. When the end of the

tube is above the the finger cleaner level, the air can stream out freely and pressure switch B22 (SM2S2-03) will switch.

**How to Resolve:** Refill the finger cleaner tank and reset the alarm, replace the pressure switch B22 (SM2S2-03) or adjust the pressure switch according to the adjustment procedure in the manual.

**Additional info:** This is a digital system.  
SM2S2-03 = Digital Input Slave Module 2 Slot 2 – Channel 03.

**DeltaMAX:** The pressure switch B22 (SM2S2-03) can be found in the low level detection module which is located on the underframe, underneath the first preheater.

## “Lo Level Finger Wetting” (@86)

**Machineaction:** Only message.

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** The level of the finger wetting tank is too low, the pressure switch B23 (SM2S2-04) is broken or needs adjusting.

**When generated:** When the finger wetting is configured and the PLC detects SM2S2-04 “0”. A continues flow of air will be blown through a tube who’s end is situated in the the finger wetting tank. As long as the end of the tube is underneath the the finger wetting level, the airpressure meets with a counter-pressure. When the end of the tube is above the the finger wetting level, the air can stream out freely and pressure switch B23 (SM2S2-04) will switch.

**How to Resolve:** Refill the finger wetting tank and reset the alarm, replace the pressure switch B23 (SM2S2-04) or adjust the pressure switch according to the adjustment procedure in the manual.

**Additional info:** This is a digital system.  
SM2S2-04 = Digital Input Slave Module 2 Slot 2 – Channel 04.

**DeltaMAX:** The pressure switch B23 (SM2S2-04) can be found in the low level detection module which is located on the underframe, underneath the first preheater.

## “No N2 Pressure” (@87)

**Machineaction:** Only message.

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** No N2 pressure present or the pressure switch S29 is broken.

**When generated:** When PLC Input SM2S3-02 is detected “0”.

**How to Resolve:** Adjust the N2 pressure reducer, or supply N2 pressure. When the N2 pressure is present the pressure switch S29 can be broken. The pressure switch S29 must be adjusted at 6 bar (switch level is about 4.8 bar).

SM2S3-02 = Digital Input Slave Module 2 Slot 3 – Channel 02.

**DeltaMAX:** The pressure switch S29 (SM2S3-02) is located, at the right backside of the machine.

## “Fluxer Trolley not in Position” (@88)

**Machineaction:** Machine will be **blocked**.

**Software Version:** V07.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** The fluxer trolley is not in position, switch B78 is broken or when the optional fluxer trolley is not present the jumper wire is also not present.

**When generated:** When PLC Input Slave Module-2 S2-08 is detected "0" and the machine is in Run mode.

**How to Resolve:** Put the fluxer trolley in position and lock it or replace the sensor B78.

**Additional info:** When the option fluxer trolley is not present, there must be a jumper wire from +24Vdc to X11-72.

**DeltaMAX:** The trolley in position switch B78 (Slave Module-2 S2-08) is located, at the machine where the trolley is positioned.

## “Lo Level Alarm Flux 2” (@89)

- Machineaction:** Only message.
- Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**
- Possible cause:** The level of the 2<sup>nd</sup> fluxtank is too low, the pressure switch B21 (SM2S2-02) is broken or needs adjusting.
- When generated:** When the second nozzle is configured and the PLC detects SM2S2-02 “0”. A continues flow of air will be blown through a tube who’s end is situated in the fluxtank. As long as the end of the tube is underneath the flux level, the airpressure meets with a counter-pressure. When the end of the tube is above the flux level, the air can stream out freely and pressure switch B21 (SM2S2-02) will switch.
- How to Resolve:** Refill the fluxtank and reset the alarm, replace the pressure switch B21 (SM2S2-02) or adjust the pressure switch according to the adjustment procedure in the manual.
- Additional info:** This is a digital system, and this is the same PLC input as the Thinner tank.  
SM2S2-02 = Digital Input Slave Module 2 Slot 2 – Channel 02.
- DeltaMAX:** The pressure switch B21 (SM2S2-02) can be found in the low level detection module which is located on the underframe, underneath the first preheater or on the fluxertrolley.

## “Dross Grabber failure” (@90)

- Machineaction:** Only Message.
- Software Version:** **Version 10 and higher.**
- Possible cause:** The machine is in E-stop, there’s no air pressure, one of the sensors B70 or B71 (B80 or B81 for the DeltaMAX) is broken or the drossgrabber can not move due to a blocked cylinder.
- When generated:** When the drossgrabber is ordered to move, but the PLC does not detect it’s arrival at the opposite side within a certain time.  
It can also be generated when the moving part in the drossgrabber didn’t activate B70 (B80 for Delta MAX) for a number of times due to a heavy polluted drosscompartment.
- How to Resolve:** Check the air pressure and hardware. Check if the drossgrabber is not blocked.
- Additional info:** Y72 is the main valve which releases the air for the drossgrabber, Y70 is for the lineair movement and Y71 is for the turn movement of the knives.  
SM2S4-09 = Digital Input Slave Module 2 Slot 4 – Channel 00.  
SM2S4-10 = Digital Input Slave Module 2 Slot 4 – Channel 10.  
SM2S7-05 = Digital Input Slave Module 2 Slot 7 – Channel 05.  
SM2S7-07 = Digital Input Slave Module 2 Slot 7 – Channel 07.
- Delta C (Extend):** The home position sensor B70 (SM2S4-09) can be found at the right side on the drossgrabber, the limit sensor B71 (SM2S4-10) on the left side. B72 (SM2S4-11) is the sensor in the middle. Main valve Y72 (SM2S7-07), rotation valve Y71 (SM2S7-06) and movement valve Y70 (SM2S7-05) can be found against the right side cover inside the machine.
- Delta (Extend):** The home position sensor B70 (SM2S4-09) can be found at the right side on the drossgrabber, the limit sensor B71 (SM2S4-10) on the left side. B72 (SM2S4-11) is the sensor in the middle. Main valve Y72 (SM2S7-07), rotation valve Y71 (SM2S7-06) and movement valve Y70 (SM2S7-05) can be found against the right side cover inside the machine.
- DeltaMAX:** The home position sensor B80 (SM2S4-09) can be found at the right side on the drossgrabber, the limit sensor B81 (SM2S4-10) on the left side. . B82 (SM2S4-11) is the sensor in the middle. Main valve Y72 (SM2S7-07), rotation valve Y71 (SM2S7-06) and movement valve Y70 (SM2S7-05) can be found against the right side cover inside the machine.

## “Flux Level 1 Empty” (@91)

- Software Version:** V06.00.00.00, **for DeltaMAX only**, not implemented yet.

## “Flux Level 2 Empty” (@92)

**Software Version:** V06.00.00.00, for DeltaMAX only, not implemented yet.

## “Over temperature Preheater Zone 1” (@93)

**Machineaction:** Machine will go in **E-stop**, via hardware.

**Software Version:** V06.00.00.00 and higher, for DeltaMAX only.

**Possible cause:** Overheating switch S24 is not correct adjusted or broken, the forced convection fan M6 stopped, the separate connector X66 is disconnected, solid state relay K9 or K10 is broken, the Pt100 R12 is broken or the PLC program has lost control.

**When generated:** Zone 1 is a forced convection preheater and the PLC detects SM2S2-10 “0” (K67).

**How to Resolve:** Wait until the preheat temperature has dropped to a normal level and reset the E-stop and the alarm, adjust/replace the over temperature switch S24 or check the other hardware.

**Additional info:** The over heating sensor S24 is adjusted at 320°Celsius, which is according to an air temperature of about 265°Celsius. When zone 1 is not a forced convection preheater the sensor S24 is bypassed with relay K89.

SM2S2-10 = Digital Input Slave Module 2 Slot 2 – Channel 10.

MMS5-02 = Digital Output Main Module Slot 5 – Channel 02.

**DeltaMAX:** The overheating switch S24 (SM2S2-10) is mounted inside the forced convection preheater 1, the connector X66 is below the first preheater, the Pt100 R12 (MMS1-02) is located into the first convection preheater and the solid state relays K9 (MMS5-02) and K10 (MMS5-02) can be found in the switch box.

## “Over temperature Preheater Zone 2” (@94)

**Machineaction:** Machine will go in **E-stop**, via hardware.

**Software Version:** V06.00.00.00 and higher, for DeltaMAX only.

**Possible cause:** Overheating switch S25 is not correct adjusted or broken, the forced convection fan M7 stopped, the separate connector X67 is disconnected, solid state relay K11 or K12 is broken, the Pt100 R13 is broken or the PLC program has lost control.

**When generated:** Zone 2 is a forced convection preheater and the PLC detects SM2S2-11 “0” (K68).

**How to Resolve:** Wait until the preheat temperature has dropped to a normal level and reset the E-stop and the alarm, adjust/replace the over temperature switch S25 or check the other hardware.

**Additional info:** The over heating sensor S25 is adjusted at 320°Celsius, which is according to an air temperature of about 265°Celsius. When zone 2 is not a forced convection preheater the sensor S25 is bypassed with relay K90.

SM2S2-11 = Digital Input Slave Module 2 Slot 2 – Channel 11.

MMS5-03 = Digital Output Main Module Slot 5 – Channel 03.

**DeltaMAX:** The overheating switch S25 (SM2S2-11) is mounted inside the forced convection preheater 2, the connector X67 is below the second preheater. The Pt100 R13 (MMS1-03) is located into the second convection preheater and the solid-state relays K11 (MMS5-03) and K12 (MMS5-03) can be found in the switch box.

## “Over temperature Preheater Zone 3” (@95)

**Machineaction:** Machine will go in **E-stop**, via hardware.

**Software Version:** V06.00.00.00 and higher, for DeltaMAX only.

**Possible cause:** Overheating switch S26 is not correct adjusted or broken, the forced convection fan M8 stopped, the separate connector X68 is disconnected, solid state relay K13 or K14 is broken, the Pt100 R14 is broken or the PLC program has lost control.

**When generated:** Zone 3 is a forced convection preheater and the PLC detects SM2S2-12 “0” (K69).

**How to Resolve:** Wait until the preheat temperature has dropped to a normal level and reset the E-stop and the alarm, adjust/replace the over temperature switch S26 or check the other hardware.

**Additional info:** The over heating sensor S26 is adjusted at 320°Celsius, which is according to an air temperature of about 265°Celsius. When zone 3 is not a forced convection preheater the sensor S26 is bypassed with relay K91.  
SM2S2-12 = Digital Input Slave Module 2 Slot 2 – Channel 12.  
MMS5-04 = Digital Output Main Module Slot 5 – Channel 04.

**DeltaMAX:** The overheating switch S26 (SM2S2-12) is mounted inside the forced convection preheater 3, the connector X68 is below the third preheater. The Pt100 R14 (MMS1-04) is located into the third convection preheater and the solid-state relays K13 (MMS5-04) and K14 (MMS5-04) can be found in the switch box.

## “Lead Clearance adjustment not moving” (@96)

**Machineaction:** Machine will be **blocked**

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**  
V10.00.00.00 and higher also available for Delta Wave

**Possible cause:** The automatic lead clearance adjustment is jammed, the frequency inverter U8 is broken or in alarm status, the motor for the lead clearance adjustment movement is broken or the encoder does not work.

**When generated:** When the automatic lead clearance adjustment should move, the PLC output (SM2S5-05) solderpot height up or solderpot height down (SM2S5-06) is switched on and the PLC does not receive any pulses from the encoder B40 (SM2S2-05 and SM2S2-06).

**How to Resolve:** Check the hardware, select a reference solderpot adjustment in the reset menu, and reset the alarm.

**Additional info:** SM2S2-05 = Digital Input at Slave Module 2 Slot 2 – Channel 05.  
SM2S2-06 = Digital Input at Slave Module 2 Slot 2 – Channel 06.  
SM2S5-05 = Digital Output Slave Module 2 Slot 5 – Channel 05.  
SM2S5-06 = Digital Output Slave Module 2 Slot 5 – Channel 06.

**Delta (Extend):** The frequency inverter U8 is located in the switchbox, the motor M2 and the encoder B45 (SM2S2-05 and SM2S2-06) are mounted underneath the solderpot.

**DeltaMAX:** The frequency inverter U8 is located in the switchbox, the motor M2 and the encoder B40 (SM2S2-05 and SM2S2-06) are mounted underneath the solderpot.

## “Lead Clearance adjustment in reference switch” (@97)

**Machineaction:** Machine will be **blocked**

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**  
V10.00.00.00 and higher also available for Delta Wave

**Possible cause:** The frequency inverter U8 is broken or the reference switch is broken.

**When generated:** When the automatic lead clearance adjustment status is on and the machine is in Run mode, the “reference solderpot adjustment” is finished and PLC input SM2S1-10 is seen “1”.

**How to Resolve:** Select a reference solderpot adjustment in the reset menu, or replace reference switch.

**Additional info:** SM2S1-10 = Digital Input Slave Module 2 Slot 1 – Channel 10.

**Delta (Extend):** The frequency inverter U8 is located in the switchbox, the reference switch S21 is mounted on the fixed conveyor rail.

**DeltaMAX:** The frequency inverter U8 is located in the switchbox, the reference switch S16 is mounted on the fixed conveyor rail.

## “Lead Clearance adjustment in lower end switch” (@98)

<b>Machineaction:</b>	Machine will be <b>blocked</b>
<b>Software Version:</b>	V06.00.00.00 and higher, <b>for DeltaMAX only.</b> V10.00.00.00 and higher also available for Delta Wave
<b>Possible cause:</b>	The frequency inverter U8 is stuck or the lower end switch is broken.
<b>When generated:</b>	When the lead clearance adjustment status is on and the machine is in Run mode, and PLC input SM2S1-07 is seen “1”.
<b>How to Resolve:</b>	Select a reference solderpot adjustment in the reset menu, or replace lower end switch.
<b>Additional info:</b>	SM2S1-07 = Digital Input Slave Module 2 Slot 1 – Channel 07.
<b><u>Delta (Extend):</u></b>	The frequency inverter U8 is located in the switchbox, the end switch S6 is mounted below the solderpot.
<b><u>DeltaMAX:</u></b>	The frequency inverter U8 is located in the switchbox, the end switch S13 is mounted below the solderpot.

## “Safety Pins not in Position” (@99)

<b>Machineaction:</b>	Machine is <b>blocked</b>
<b>Software Version:</b>	V06.00.00.00 and higher, <b>for DeltaMAX only.</b>
<b>Possible cause:</b>	The safety pins are not in position, one of the safety pin sensors B58-B59-B60-B61 is broken or relay K59 is broken.
<b>When generated:</b>	When the solderpot is down (S13), the pushbutton “Solderpot Out” is activated and relay K59 does not give an input to the PLC (SM2S2-07).
<b>How to Resolve:</b>	Place the safety pins or otherwise check the hardware.
<b>Additional info:</b>	SM2S2-07 = Digital Input Slave Module 2 Slot 2 – Channel 07.
<b><u>DeltaMAX:</u></b>	Relay K59 is located in the switchbox, the end switch S13 is mounted below the solderpot and the safety pin sensors are mounted on the roll out frame.

## “Solderpot not in down Position” (@100)

<b>Machineaction:</b>	Machine is <b>blocked</b>
<b>Software Version:</b>	V06.00.00.00 and higher, <b>for DeltaMAX only.</b> V10.00.00.00 and higher also available for Delta Wave.
<b>Possible cause:</b>	The solderpot down sensor S13 Delta Max or S6 Delta Wave is broken or the solderpot is not down.
<b>When generated:</b>	When the solderpot is not seen in down position S13 Delta Max or S6 Delta Wave (SM2S1-07), and the pushbutton “Solderpot In” S12 Delta Max or S9 Delta Wave (SM2S3-04) or “Solderpot Out” S11 Delta Max or S8 Delta wave (SM2S3-03) is activated.
<b>How to Resolve:</b>	Activate the “Solderpot Down” button until the solderpot has reached S13 Delta Max or S6 Delta Wave.
<b>Additional info:</b>	SM2S1-07 = Digital Input Slave Module 2 Slot 1 – Channel 07. SM2S3-03 = Digital Input Slave Module 2 Slot 3 – Channel 03. SM2S3-04 = Digital Input Slave Module 2 Slot 3 – Channel 04.
<b><u>Delta (Extend):</u></b>	The end switch S6 is mounted below the solderpot and the pushbuttons S8 and S9 Delta Wave are mounted at the rear side of the solderpot area in the machine.
<b><u>DeltaMAX:</u></b>	The end switch S13 is mounted below the solderpot and the pushbuttons S11 and S12 are mounted at the rear side of the solderpot area in the machine.

## “Solderpot too far Up” (@101)

<b>Machineaction:</b>	Machine is <b>blocked</b>
<b>Software Version:</b>	V06.00.00.00 and higher, <b>for DeltaMAX only.</b> V10.00.00.00 and higher also available for Delta Wave.

**Possible cause:** The frequency inverter U8 is broken, the reference switch S16 Delta Max or S21 Delta Wave does not work.

**When generated:** When the solderpot is detected by the safety switch S17 Delta Max or S16 Delta Wave. (SM2S1-11)

**How to Resolve:** Activate the “Solderpot Down” button (S8 or S9 Delta Max or S5 or S7 Delta Wave) until the solderpot has left S17Delta Max or S11 Delta Wave.

**Additional info:** SM2S1-11 = Digital Input Slave Module 2 Slot 1 – Channel 11.  
SM2S3-07 = Digital Input Slave Module 2 Slot 3 – Channel 07.

**Delta (Extend):** The reference switch S21 and safety switch S16 are mounted above the solderpot at the conveyor rail, the pushbuttons are mounted at the front side (S5) and the rear side (S7) of the solderpot area in the machine.

**DeltaMAX:** The reference switch S16 and safety switch S17 are mounted above the solderpot at the conveyor rail, the pushbuttons are mounted at the front side (S8) and the rear side (S9) of the solderpot area in the machine.

### “Solderpot not totally In or totally Out” (@102)

**Machineaction:** Machine is **blocked**

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**  
V10.00.00.00 and higher also available for Delta Wave.

**Possible cause:** The position sensors Solderpot In (S14 Delta Max or S10 Delta Wave) or Solderpot Out (S15 Delta Max or S13 Delta Wave) are not activated or broken.

**When generated:** When the solderpot is not detected by the position sensors S14 Delta Max or S10 Delta Wave (SM2S1-08) or S15 Delta Max or S13 Delta Wave (SM2S1-09) and one of the pushbuttons “Solderpot Up” (rear: S7 Delta Max or S12 Delta Wave (SM2S3-06), front: S10 Delta Max or S15 Delta Wave (SM2S3-05)) is activated.

**How to Resolve:** Activate the “Solderpot In” or “Solderpot Out” pushbutton until the solderpot has reached on of the position sensors.

**Additional info:** SM2S1-08 = Digital Input Slave Module 2 Slot 1 – Channel 08.  
SM2S1-09 = Digital Input Slave Module 2 Slot 1 – Channel 09.  
SM2S3-05 = Digital Input Slave Module 2 Slot 3 – Channel 05.  
SM2S3-06 = Digital Input Slave Module 2 Slot 3 – Channel 06.

**Delta (Extend):** The position sensors S10 and S13 are mounted below the solderpot at the roll out unit, the pushbuttons are mounted at the front side (S15) and the rear side (S12) of the solderpot area in the machine.

**DeltaMAX:** The position sensors S14 and S15 are mounted below the solderpot at the roll out unit, the pushbuttons are mounted at the front side (S10) and the rear side (S7) of the solderpot area in the machine.

### “Solderpot is in Manual Mode” (@103)

**Machineaction:** Machine is **blocked**

**Software Version:** V06.00.00.00 and higher, **for DeltaMAX only.**  
V10.00.00.00 and higher also available for Delta Wave.

**Possible cause:** This is just a message to indicate that the solderpot is not in automatic mode anymore.

**When generated:** When the automatic solderpot option (= Lead Clearance) is selected and one of the pushbuttons “Solderpot Up” (front: S10 Delta Max or S15 Delta Wave (SM2S3-05)) or “Solderpot Down” (front: S8 / rear: S9 Delta Max or front: S5/ rear: S7 Delta Wave (SM2S3-07)) is activated.

**How to Resolve:** Activate the “Solderpot Up” pushbutton until the solderpot has reached the reference sensor S16 Delta Max or S21 Delta Wave (SM2S1-10).

**Additional info:** SM2S1-10 = Digital Input Slave Module 2 Slot 1 – Channel 10.  
SM2S3-06 = Digital Input Slave Module 2 Slot 3 – Channel 06.  
SM2S3-07 = Digital Input Slave Module 2 Slot 3 – Channel 07.

**Delta (Extend):** The reference sensor S21 is mounted on the fixed conveyor rail.

**DeltaMAX:** The reference sensor S16 is mounted on the fixed conveyor rail.

## “Solderpot not in Position” (@104)

- Machineaction:** Machine will be **Blocked**.
- Software Version:** V06.00.00.00 and higher, **for DeltaMAX only**.
- Possible cause:** The solderpot is not raised until the solderpot in position sensor S16 is activated, the solderpot in position sensor or the solderpot is too far up sensor S17 is broken or not correct adjusted.
- When generated:** When SM2S1-10 is seen “0”. When the solderpot is lowered the alarm should be active almost immediately.
- How to Resolve:** Raise the solderpot and reset the alarm in the reset menu, adjust or replace the solderpot in position sensor or check the solderpot is too far up sensor.
- Additional info:** SM2S1-10 = Digital Input Slave Module 2 Slot 1 – Channel 10.  
SM2S1-11 = Digital Input Slave Module 2 Slot 1 – Channel 11.
- DeltaMAX:** The solderpot in position sensor S16 and the solderpot too far up sensor S17 are at the front side of the machine just above the solderpot on the conveyor rail. The solderpot in downward position sensor S13 can be found at the backside of the solderpot.

## “Backplate adjustment not moving” (@105)

- Machineaction:** Machine will be **Blocked**.
- Software Version:** V07.00.00.00 and higher, **for DeltaMAX only**.
- Possible cause:** The automatic backplate adjustment is jammed, the relays K49 or K50 are not working, the motor for the backplate adjustment movement is broken or the encoder does not work.
- When generated:** When the automatic backplate adjustment should move, the PLC output (SM2S7-01) backplate height up or backplate height down (SM2S7-02) is switched on and the PLC does not receive any pulses from the encoder B75, connected on SM2S4-02 (pulse input) and SM2S4-01 (direction input).
- How to Resolve:** Check the hardware, select a reference backplate adjustment in the reset menu, and reset the alarm.
- Additional info:** SM2S4-01 = Digital Input Slave Module 2 Slot 4 – Channel 01.  
SM2S4-02 = Digital Input Slave Module 2 Slot 4 – Channel 02.  
SM2S7-01 = Digital Output Slave Module 2 Slot 7 – Channel 01.  
SM2S7-02 = Digital Output Slave Module 2 Slot 7 – Channel 02.
- DeltaMAX:** The relays K49 and K50 are mounted in the switchbox, the motor M19 is mounted at the solderpot and the encoder B75 (SM2S4-01 and SM2S4-02) is mounted underneath the backplate adjustment motor M19.

## “Backplate adjustment at reference switch” (@106)

- Machineaction:** Machine will be **Blocked**.
- Software Version:** V07.00.00.00 and higher, **for DeltaMAX only**.
- Possible cause:** The relay K49 is broken or the reference switch B77 is broken.
- When generated:** When the automatic backplate adjustment status is on and the machine is in Run mode, the "reference backplate adjustment" is finished and PLC input SM2S4-04 is seen "0".
- How to Resolve:** Select a reference backplate adjustment in the reset menu, or replace reference switch.
- Additional info:** This alarm can also be generated when the readout calibration in the parameter menu is not correct. B77 is a normally closed sensor.  
SM2S4-04 = Digital Input Slave Module 2 Slot 4 – Channel 04.  
SM2S7-01 = Digital Output Slave Module 2 Slot 7 – Channel 01.
- DeltaMAX:** The relay K49 is located in the switchbox, the reference switch B77 is mounted on the backplate motor M19.

## “Backplate adjustment at end switch” (@107)

<b>Machineaction:</b>	Machine will be <b>Blocked</b> .
<b>Software Version:</b>	V07.00.00.00 and higher, <b>for DeltaMAX only</b> .
<b>Possible cause:</b>	The relay K50 is broken or the reference switch B76 is broken.
<b>When generated:</b>	When the automatic backplate adjustment status is on and the machine is in Run mode and PLC input SM2S4-03 is seen "0".
<b>How to Resolve:</b>	Select a reference backplate adjustment in the reset menu, or replace the end switch.
<b>Additional info:</b>	This alarm can also be generated when the readout calibration in the parameter menu is not correct. B76 is a normally closed sensor. SM2S4-03 = Digital Input Slave Module 2 Slot 4 – Channel 03. SM2S7-02 = Digital Output Slave Module 2 Slot 7 – Channel 02.
<b><u>DeltaMAX:</u></b>	The relay K50 is located in the switchbox, the reference switch B76 is mounted on the backplate motor M19.

## “Over temperature Alarm Backplate Motor” (@108)

<b>Machineaction:</b>	Machine will be <b>Blocked</b> .
<b>Software Version:</b>	V07.00.00.00 and higher, <b>for DeltaMAX only</b> .
<b>Possible cause:</b>	The backplate motor is stuck, the overtemperature switch in M19 is broken or the connector in between X90 is loose.
<b>When generated:</b>	When the automatic backplate adjustment status is on and the machine is in Run mode and PLC input SM2S4-05 is seen "0".
<b>How to Resolve:</b>	Check what the problem is and resolve that.
<b>Additional info:</b>	This alarm can also be generated when the readout calibration in the parameter menu is not correct. B76 is a normally closed sensor. SM2S4-05 = Digital Input Slave Module 2 Slot 4 – Channel 05.
<b><u>DeltaMAX:</u></b>	The overtemperature switch is mounted inside backplate motor M19.

## “Wrong Direction Detected Backplate Motor” (@109)

<b>Machineaction:</b>	Machine will be <b>Blocked</b> .
<b>Software Version:</b>	V07.00.00.00 and higher, <b>for DeltaMAX only</b> .
<b>Possible cause:</b>	The backplate motor is running in the wrong direction or the pulse switch B75 is broken.
<b>When generated:</b>	When the backplate adjustment is moving upwards and PLC input SM2S4-01 is seen "1", or when the backplate adjustment is moving downwards and PLC input SM2S4-01 is seen "0".
<b>How to Resolve:</b>	Check when K49 is activated, if the backplate is going up. If that is correct the sensor B75 is probably not working.
<b>Additional info:</b>	The sensor B75 has two inputs, a direction input connected to PLC input SM2S4-01 and a pulse input connected to SMS2S4-02. The direction input must be "0" when moving up and "1" when moving down. SM2S4-01 = Digital Input Slave Module 2 Slot 4 – Channel 01. SM2S4-02 = Digital Input Slave Module 2 Slot 4 – Channel 02.
<b><u>DeltaMAX:</u></b>	The sensor B75 is mounted below the backplate motor M19.

## “Backplate can not reach reference switch” (@110)

<b>Machineaction:</b>	Machine will be <b>Blocked</b> .
<b>Software Version:</b>	V07.00.00.00 and higher, <b>for DeltaMAX only</b> .
<b>Possible cause:</b>	The backplate motor does a reference, but it does not reach the reference switch within 3000 pulses from B75 or 16 seconds.
<b>When generated:</b>	When the backplate adjustment is referencing and PLC input SM2S4-04 is not seen "0", within 3000 pulses or 16 seconds (in case B75 is not working).
<b>How to Resolve:</b>	Check if, the reference sensor B77 is probably not working, and if the backplate motor is able to move the backplate.

**Additional info:** SM2S4-04 = Digital Input Slave Module 2 Slot 4 – Channel 04.  
**DeltaMAX:** The sensor B77 is mounted on the backplate motor M19.

### “Breakpin Backplate driveunit propably broken” (@111)

**Machineaction:** Machine will be **blocked**  
**Software Version:** V07.00.00.00 and higher, **for DeltaMAX only.**  
**Possible cause:** The breakpin in the backplate driveunit is broken or sensor B79 is not correct adjusted or broken.  
**When generated:** When the backplate adjustment is referencing and PLC input SM2S4-06 is not seen “0”, or when the backplate stops after referencing before the backplate will move upwards to setpoint and the PLC input SM2S4-07 is not seen “1”.  
**How to Resolve:** Replace the breakpin, adjust or replace the breakpin sensor B79.  
**Additional Info:** SM2S4-07 = Digital Input at Slave Module 2 Slot 4 – Channel 07.  
**DeltaMAX:** The sensor B79 is mounted on the motor bracket, for the backplate motor M19.

### “RS232 Failure Waveheight Controller” (@112)

**Machineaction:** Only Message.  
**Software Version:** V07.00.00.00 and higher, **for DeltaMAX only.**  
**Possible cause:** The stepper motor controller U12 has no 24Vdc, the program in the stepper motor controller U12 is not running, the RS232 cable is disconnected or the stepper motor can not complete its reference cycle.  
**When generated:** The waveheight PLC (WHM) can not communicate, with the stepper motor controller for more then 5 seconds.  
**How to Resolve:** Check the stepper motor controller U12 and its connections, or in case the stepper motor controller can not complete its reference cycle check the reference sensor B72.  
**DeltaMAX:** The stepper motor controller U12 can be found in the switchbox, the reference switch is the upper sensor on the wavemeasuring unit.

### “RS485 Failure Mainwave motor” (@113)

**Machineaction:** Machine will be Blocked.  
**Software Version:** V07.00.00.00 and higher, **for DeltaMAX only.**  
**Possible cause:** The machine is in E-stop, the frequency inverter is broken or there is a wiring problem with the serial connection on the frequency inverter.  
**When generated:** The waveheight PLC (WHM) can not communicate, with the frequency inverter for more then 10 seconds.  
**How to Resolve:** When the alarm does not disappear after an alarm reset, you have to check the frequency inverter and connections.  
**DeltaMAX:** The frequency inverter U6 can be found in the switchbox.

### “Collision Waveheight Sensor and Leadclearance” (@114)

**Machineaction:** Machine will be **blocked**  
**Software Version:** V07.00.00.00 and higher, **for DeltaMAX only.**  
**Possible cause:** The Waveheight sensor position is too low, when the solderpot (Leadclearance) is going up, the waveheight sensor is moving too deep into the sump or sensor B73 is broken.  
**When generated:** When PLC input WHMS3-06 is seen “0”.  
**How to Resolve:** Check the reason of the collision, and solve then the error. Replace sensor B73 when broken.  
**Additional info:** When the sensor B73 detects a collision the upward movement of the solderpot (leadclearance) will stop. The upward movement is interlocked via relay K105. When the solderpot moves, the enable output SM2S7-03 becomes “0” and because of that the waveheight measuring sensor should go up.

SM2S7-03 = Digital Output at Slave Module 2 Slot 7 – Channel 03.

**DeltaMAX:** The sensor B73 is mounted in the waveheight measure unit, the activation of the sensor B73 is done via a pin which is next to the waveheight measuring sensor.

### “Motor Current to High Mainwave motor” (@115)

**Machineaction:** Only Message.

**Software Version:** V07.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** The tension of timing belt is too high, a bad motor connection, too much dross in the solderpot or the bearings are seized up.

**When generated:** This alarm is read from the frequency inverter. When the frequency inverter reads an actual motor current which exceeds 110% of the nominal current (the nominal current is set to 2.0 Amp) for a certain time this alarm is activated. The time period depends on the nominal current value; it is equals 60 seconds by 150%.

**How to Resolve:** Check the tension of the timing belt, the bearings or the motor itself.

**Additional info:** More information about the frequency inverter messages can be found at the alarm message “**Motor Current Too High**” “**Case: Transport.**” This alarm can also be generated when the solderpot temperature just reached the 230°C, and the pump start to run for the first time, or when the spring pressure of the pumpshaft sealing is too high.

**DeltaMAX:** The frequency inverter U6 can be found in the switchbox, motor M27 can be found at the solderpot at the backside of the solderpot.

### “WaveHeight Stepper Motor Control Alarm Nr: ” (@116)

**Machineaction:** Machine will be **Blocked.**

**Software Version:** V07.00.00.00 and higher, **for DeltaMAX only.**

**Possible cause:** Check the table below at the corresponding nr. for a possible cause.

**When generated:** This alarm is read from the stepper motor controller and the number which appears behind the alarm message in the alarm screen refers to the table below.

**How to Resolve:** Check the table below at the corresponding nr. for a possible rectification.

**Additional info:** The number on the stepper motor controller display will be 98.

**DeltaMAX:** The stepper motor controller U12 can be found in the main switchbox.

#### **Alarmcode Tabel POS/TEC Stepermotor Controller:**

<b><u>Nr</u></b>	<b><u>Cause</u></b>	<b><u>Rectification</u></b>
03	<u>Motor lead short-circuit</u>	Check the motor wiring.
04	<u>Motor controller not ready</u>	Switch on the voltage or check wiring.
05	<u>Over voltage on motor controller</u>	Connect a bleed resistor, see Berger Lahr manual chapter 6.2.4.
07	<u>Motor controller over temperature</u>	Let the motor controller cool down, while the motor is at standstill.
09	<u>Motor over temperature</u>	Reduce the phase current/load.
11	<u>Power motor controller under voltage (&lt;200Vac)</u>	Check the voltage supply.
12	<u>Rotation monitoring active, contouring error</u>	Check mechanical components for ease of movement.
14	<u>Motor controller without voltage supply / internal power supply broken</u>	Check voltage supply.
16	<u>Short circuit on an digital output</u>	Check the signal wiring connector.
20	<u>Malfuction of limit switch B52</u>	<u>Check wiring and function of the limit switch B74 (LIMP).</u>
21	<u>Malfuction of limit switch B51</u>	<u>Check wiring and function of the limit switch B72 (LIMN).</u>
22	<u>Limit switch B52 reached</u>	When the alarm is reset on the PC, the Waveheight references, which should solve this alarm.
23	<u>Limit switch B51 reached</u>	When the alarm is reset on the PC, the Waveheight

26	<u>Reference switch disconnected or defective</u>	references, which should solve this alarm. Check reference switch B72 (LIMN)
30	<u>STOP input active</u>	Deactivate the STOP input.
40	<u>Error during initialisation</u>	Contact agent or helpdesk.
41	<u>Error in SEQUENCE component</u>	Contact agent or helpdesk.
42	<u>Error in PLC component</u>	Contact agent or helpdesk.
48	<u>OED3 operating system not found on controller</u>	Contact agent or helpdesk.
55	<u>System defective</u>	Contact agent or helpdesk.
56	<u>No EEPROM available</u>	Contact agent or helpdesk.
57	<u>EEPROM write error</u>	Contact agent or helpdesk.
80	<u>Back up battery voltage low</u>	Replace the battery. After switching off the supply to controller, data or the application may be lost.

### “Deviation Alarm Waveheight” (@117)

**Machineaction:** Machine will be **Blocked**.

**Software Version:** V07.00.00.00 and higher, **for DeltaMAX only**.

**Possible cause:** The Waveheight sensor B71 is broken or wrong adjusted (WHMS1-01), the deviation settings are too small, or the mainwave is too unstable.

**When generated:** The waveheight system has reached setpoint and the measured value is seen outside its deviation limits for more then 3 seconds.

**How to Resolve:** Wait until the waveheight is between the low and high deviation setting, set in seTup => Parameter => Waveheight, then you are able to reset the alarm.

**Additional info:** The waveheight sensor B71 can be calibrated via the calibration procedure in the manual.

WHMS1-01 = Analogue Input WHM Module Slot 1 – Channel 01.

**DeltaMAX:** The waveheight sensor B71 (WHMS1-01) is mounted in the fixed conveyor rail above the mainwave.

### “Waveheight Stepper Motor at Reference Switch” (@118)

**Machineaction:** Machine will be **Blocked**.

**Software Version:** V07.00.00.00 and higher, **for DeltaMAX only**.

**Possible cause:** The Waveheight reference sensor B72 is broken (WHMS3-05), or the stepper motor can not free the reference sensor.

**When generated:** The waveheight measurement is switched on and the machine is in Run mode, then the reference sensor B72 can be seen for a few seconds, after that the reference sensor must be “1”. (“1” is not activated)

**How to Resolve:** Check or replace the reference sensor B72.

**Additional info:** The alarm “RS232 Failure Waveheight Controller” will also be active.

WHMS3-05 = Digital Input WHM Module Slot 3 – Channel 05.

**DeltaMAX:** The reference sensor B72 (WHMS3-05) is mounted above the fixed conveyor rail above the mainwave.

### “Common RS485 alarm for Main Wave” (@119)

Used text for version 10.00.00.00 and higher:

**Machineaction:** The machine doesn't work correctly.

**Possible cause:** Data is being send to an inverter that is not able to respond or to a not existing inverter. Check if the inverters in the switchbox are in normal operating mode. This alarm can occur during installation of the inverter or during normal operation. The green run led must be on or blinking and the red alarm led on the inverter must be off for normal operation of the inverter.

When generated: Alarm will be generated if the inverter where the data is send to doesn't exist or doesn't respond even after 3 retries. This alarm can only occur if a WHM system is configured.

How to resolve: When the alarm does not disappear after an alarm reset or occurs repetitively, you have to check the frequency inverter and connections. Also check if the wiring and shield of the communication cable is connected correctly and according the schematics. Make sure no heavy disturbing signals can be picked up by the communication cable.

Additional info: This alarm is only dedicated to Yaskawa frequency inverters.

### **“General inverter alarm for Main Wave” (@120)**

Used text for version 10.00.00.00 and higher:

**Machineaction:** Only message.

**Possible cause:** Various; check the alarm code on the display on the inverter. In the technical manual chapter troubleshooting there is a table with an overview of all possible alarm codes. OL1 means over current.

**When generated:** When the inverter sends an alarm to the PLC.

**How to Resolve:** Check the alarm code on the display on the inverter, consult the inverter manual for more detailed information and see if you can locate the problem.

**Additional info:** This alarm is only dedicated to Yaskawa frequency inverters.

### **“Spare” (@121)**

### **“Spare” (@122)**

### **“Spare” (@123)**

### **“Spare” (@124)**

### **“Spare” (@125)**

### **“Spare” (@126)**

### **“Spare” (@127)**

### **“No Pressure on SelectX” (@128)**

**Machineaction:** Machine will be **Blocked**.

**Software Version:** V06.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** No air pressure present or the pressure switch is broken.

**When generated:** When PLC Input SXMS3-01 is detected “0” and the SelectX is turned on for about 10 seconds.

**How to Resolve:** Adjust the air pressure reducer, or supply air pressure. When the air pressure is present the pressure switch can be broken. The air pressure switch must be adjusted at 3.5 bar.

**Additional info:** SXMS3-01 = Digital Input SelectX Module Slot 3 – Channel 01.

**Delta C (Extend):** The air pressure sensor S53 (SXMS3-01) can be found at the outfeed side of the machine.

**Delta (Extend):** The air pressure sensor S53 (SXMS3-01) can be found at the outfeed side of the machine.

**DeltaMAX:** The air pressure sensor S33 (SXMS3-01) can be found at the outfeed side of the machine.

## “No flow on SelectX” (@129)

**Machineaction:** Machine will be **Blocked**.

**Software Version:** V06.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The proportional flow valve, broken or disconnected hoses, wrongly adjusted or broken pressure sensor.

**When generated:** When PLC Input SXMS3-02 is detected “0” and the SelectX is turned on for about 10 seconds.

**How to Resolve:** Check the hardware concerning the above mentioned issues, or check voltage at the terminal connection mentioned below at **Location**.

**Additional info:** The pressure sensor is adjusted according the following procedure, the flow must be set in the software at 10%, this should be a flow rate of about 22L/min. Reduce the incoming pressure and when the flowmeter has reached 10L/min this alarm should be activated.

SXMS3-02 = Digital Input SelectX Module Slot 3 – Channel 02.

SXMS2-01 = Analogue Output SelectX Module Slot 2 – Channel 01.

**Delta C (Extend):** The pressure sensor S54 (SXMS3-02) and the proportional flow valve Y50 (SXMS2-01) are mounted onto the SelectX next to the solderpot.

The terminal connections to measure voltage are X8-56 (0-10Vdc), X8-55 (+24Vdc) and X8-57 / X8-58 (0Vdc).

**Delta (Extend):** The pressure sensor S54 (SXMS3-02) and the proportional flow valve Y50 (SXMS2-01) are mounted onto the SelectX next to the solderpot.

The terminal connections to measure voltage are X3-2 (0-10Vdc), X3-1 (+24Vdc) and X3-3 / X3-4 (0Vdc).

**DeltaMAX:** The pressure sensor S34 (SXMS3-02) and the proportional flow valve Y19 (SXMS2-01) are mounted onto the SelectX next to the solderpot.

The terminal connections to measure voltage are X65-1 (0-10Vdc), X65+ (+24Vdc) and X65- (0Vdc).

## “SelectX Stepper Motor Control Alarm Nr: ”(@130)

**Machineaction:** Machine will be **Blocked**.

**Software Version:** V06.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** Check the table below at the corresponding nr. for a possible cause.

**When generated:** This alarm is read from the stepper motor controller and the number which appears behind the alarm message in the alarm screen refers to the table below.

**How to Resolve:** Check the table below at the corresponding nr. for a possible rectification.

**Additional info:** The number on the stepper motor controller display will be 98.

**Delta C (Extend):** The stepper motor controller U30 can be found in the main switchbox.

**Delta (Extend):** The stepper motor controller U30 can be found in the separate switchbox.

**DeltaMAX:** The stepper motor controller U11 can be found in the main switchbox.

### **Alarmcode Tabel POS/TEC Steppermotor Controller:**

Nr	Cause	Rectification
A...	Self-test Error	Contact agent or helpdesk.
03	<u>Motor lead short-circuit</u>	Check the motor wiring.
04	<u>Motor controller not ready</u>	Switch on the voltage or check wiring.
05	<u>Over voltage on motor controller</u>	Connect a bleed resister, see Berger Lahr manual chapter 6.2.4.
07	<u>Motor controller over temperature</u>	Let the motor controller cool down, while the motor is

08	<u>Encoder error</u>	at standstill. Check encoder wiring, see Berger Lahr manual chapter 2.4.6.
09	<u>Motor over temperature</u>	Reduce the phase current/load.
11	<u>Power motor controller under voltage (&lt;200Vac)</u>	Check the voltage supply.
12	<u>Rotation monitoring active, contouring error</u>	Check mechanical components for ease of movement.
14	<u>Motor controller without voltage supply / internal power supply broken</u>	Check voltage supply.
16	<u>Short circuit on an digital output</u>	Check the signal wiring connector.
20	<u>Malfuction of limit switch B52</u>	Check wiring and function of the limit switch B52 (LIMP). B52 must be approached with CW rotation of the motor.
21	<u>Malfuction of limit switch B51</u>	Check wiring and function of the limit switch B51 (LIMN). B51 must be approached with CCW rotation of the motor.
22	<u>Limit switch B52 reached</u>	When the alarm is reset on the PC, the SelectX references, which should solve this alarm.
23	<u>Limit switch B51 reached</u>	When the alarm is reset on the PC, the SelectX references, which should solve this alarm.
26	<u>Reference switch disconnected or defective</u>	Check reference switch B51 (LIMN)
30	<b><u>STOP input active</u></b>	Deactivate the STOP input.
40	<b><u>Error during initialisation</u></b>	Contact agent or helpdesk.
41	<b><u>Error in SEQUENCE component</u></b>	Contact agent or helpdesk.
42	<b><u>Error in PLC component</u></b>	Contact agent or helpdesk.
48	<b><u>OED3 operating system not found on controller</u></b>	Contact agent or helpdesk.
55	<b><u>System defective</u></b>	Contact agent or helpdesk.
56	<b><u>No EEPROM available</u></b>	Contact agent or helpdesk.
57	<b><u>EEPROM write error</u></b>	Contact agent or helpdesk.
80	<b><u>Back up battery voltage low</u></b>	Replace the battery. After switching off the supply to controller, data or the application may be lost.
98	<b><u>Error handling by OED3 application program</u></b>	Contact agent or helpdesk.
99	<b><u>Error display by ProOED3 error menu</u></b>	Contact agent or helpdesk

## “SelectX not moving” (@131)

**Machineaction:** Machine will be **Blocked**.

**Software Version:** V06.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** The nozzle can not move mechanically, the stepper motor controller is not in Run mode or the stepper motor controller has no power.

**When generated:** When the nozzle is supposed to move, the PLC checks the input SXMS4-04 from the stepper motor controller, on every rotation point of the movement the PLC counts up a counter, when the counter is smaller then 2 after the PCB, this alarm is activated.

**How to Resolve:** Check hardware, and reset the alarm.

**Additional info:** The PLC input SXMS4-04 is supposed to be high during the movement of the nozzle to the front position of the machine.  
SXMS4-04 = Digital Input SelectX Module Slot 4 – Channel 04.

**Delta C (Extend):** The stepper motor controller U30 can be found in the main switchbox.

**Delta (Extend):** The stepper motor controller U30 can be found in the separate switchbox.

**DeltaMAX:** The stepper motor controller U11 can be found in the main switchbox.

## “Deviation Alarm Heater SelectX” (@132)

<b>Machineaction:</b>	Machine will be <b>Blocked</b> .
<b>Software Version:</b>	V06.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.
<b>Possible cause:</b>	One of the Pt100's is broken or the deviation settings are too small.
<b>When generated:</b>	The SelectX heater has reached setpoint, and the measured value is seen outside one of its set deviation limits, for at least 3 seconds.
<b>How to Resolve:</b>	Wait until the SelectX temperature is between the low and high deviation setting, set in seTup => Parameter => SelectX, or in case the Pt100 is broken replace it, then you are able to reset the alarm.
<b>Additional info:</b>	Deviation must be seen for at least 3 seconds, outside its set deviation limits. SXMS1-01 = Analogue Input SelectX Module Slot 1 – Channel 01.
<b><u>Delta C (Extend):</u></b>	The Pt100 R50 (SXMS1-01) can be found in the heater chamber, the stream Pt100 R51 (SXMS1-02) is located above the nozzle in parkposition near the adjustable conveyor rail. Note: Pt100 R51 is dropped in the newer SelectX modules.
<b><u>Delta (Extend):</u></b>	The Pt100 R50 (SXMS1-01) can be found in the heater chamber, the stream Pt100 R51 (SXMS1-02) is located above the nozzle in parkposition near the adjustable conveyor rail. Note: Pt100 R51 is dropped in the newer SelectX modules.
<b><u>DeltaMAX:</u></b>	The Pt100 R21 (SXMS1-01) can be found in the heater chamber, the stream Pt100 R22 (SXMS1-02) is located above the nozzle in parkposition near the adjustable conveyor rail. Note: Pt100 R52 is dropped in the newer SelectX modules.

## “Possible PT100 disconnection SelectX” (@133)

<b>Machineaction:</b>	Machine will be <b>Blocked</b> .
<b>Software Version:</b>	V06.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.
<b>Possible cause:</b>	The Pt100 in the heating chamber or in the airstream Pt100 is either disconnected or broken.
<b>When generated:</b>	The measured value of one of the two Pt100's is seen below 6 °C, for at least 10 seconds.
<b>How to Resolve:</b>	First, check in the SelectX window (right down corner) which temperature gives the alarm, the measured value between the brackets is the Pt100 in the heating chamber. Then check the Pt100 connection or at the connector on the analogue input card SXMS1-01, or replace the corresponding Pt100.
<b>Additional info:</b>	When you measure the resistance by an external Ohm meter, the resistor value is 100Ω at 0°Celsius, 138,5Ω at 100°Celsius, 175,84Ω at 200°Celsius, 212,03Ω at 300°Celsius and 247,06Ω at 400°Celsius. (Be sure to measure the resistance between the two resistance wires and not between the two compensation wires, see electrical drawing SXMS1-01 = Analogue Input SelectX Module Slot 1 – Channel 01.
<b><u>Delta C (Extend):</u></b>	The Pt100 R50 (SXMS1-01) can be found in the heater chamber, the stream Pt100 R51 (SXMS1-02) is located above the nozzle in parkposition near the adjustable conveyor rail. Note: Pt100 R51 is dropped in the newer SelectX modules.
<b><u>Delta (Extend):</u></b>	The Pt100 R50 (SXMS1-01) can be found in the heater chamber, the stream Pt100 R51 (SXMS1-02) is located above the nozzle in parkposition near the adjustable conveyor rail. Note: Pt100 R51 is dropped in the newer SelectX modules.
<b><u>DeltaMAX:</u></b>	The Pt100 R21 (SXMS1-01) can be found in the heater chamber, the stream Pt100 R22 (SXMS1-02) is located above the nozzle in parkposition near the adjustable conveyor rail. Note: Pt100 R22 is dropped in the newer SelectX modules.

## “SelectX Reference Temp. is not Changing” (@134)

<b>Machineaction:</b>	Machine will be <b>Blocked</b> .
<b>Software Version:</b>	V06.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.
<b>Possible cause:</b>	The parkposition is wrong selected, the 230Vac fuse is tripped, the solid state relay is broken or the heating element is broken/disconnected.
<b>When generated:</b>	When the output of the heating control is at 100%, means machine must be in RUN mode and the SelectX must be switched on, for more then 20 minutes.

**How to Resolve:** Check if the nozzle is below the airstream Pt100, otherwise check the hardware for the heating element.

**Additional info:** SXMS1-02 = Analogue Input SelectX Module Slot 1 – Channel 02.  
SXMS5-01 = Digital Output SelectX Module Slot 5 – Channel 01.

**Delta C (Extend):** The fuse F30 and solid state relay K81 (SXMS5-01) are located in the main switchbox, the heating element E150 is just below the nozzle and the Pt100 R51 (SXMS1-02) is located above the nozzle in parkposition near the adjustable conveyor rail. Note: Pt100 R51 is dropped in the newer SelectX modules.

**Delta (Extend):** The fuse F2 and solid state relay K2 (SXMS5-01) are located in the separate switchbox, the heating element E150 is just below the nozzle and the Pt100 R51 (SXMS1-02) is located above the nozzle in parkposition near the adjustable conveyor rail. Note: Pt100 R51 is dropped in the newer SelectX modules.

**DeltaMAX:** The fuse F11 and solid state relay K19 (SXMS5-01) are located in the main switchbox, the heating element E140 is just below the nozzle and the Pt100 R22 (SXMS1-02) is located above the nozzle in parkposition near the adjustable conveyor rail. Note: Pt100 R22 is dropped in the newer SelectX modules.

### “SelectX Air Temperature is too hot” (@135)

**Machineaction:** Machine will be **Blocked**.

**Software Version:** V06.00.00.00 till V06.02.00.00 for Delta and DeltaMAX.

**Possible cause:** The solid state relay is broken or the temperature setting of the SelectX is too high.

**When generated:** When the measured temperature value of the airstream PT100 is exceeding the 170°Celsius, the machine is in RUN mode and the SelectX is switched on.

**How to Resolve:** Replace the solid state relay, change the temperature setpoint or parkposition of the Select X.

**Additional info:** SXMS1-02 = Analogue Input SelectX Module Slot 1 – Channel 02.

**Delta:** The solid state relay K2 (SXMS5-01) is located in the separate switchbox, the heating element E150 is just below the nozzle and the Pt100 R51 (SXMS1-02) is located above the nozzle in parkposition near the adjustable conveyor rail. Note: Pt100 R51 is dropped in the newer SelectX modules.

**DeltaMAX:** The solid state relay K19 (SXMS5-01) are located in the main switchbox, the heating element E140 is just below the nozzle and the Pt100 R22 (SXMS1-02) is located above the nozzle in parkposition near the adjustable conveyor rail. Note: Pt100 R51 is dropped in the newer SelectX modules.

### “Doors Open, SelectX stopped !” (@136)

**Machineaction:** SelectX will be **stopped**.

**Software Version:** V06.00.00.00 and higher, for Delta C (Extend), Delta (Extend) and DeltaMAX.

**Possible cause:** One of the doors is open and the key switch does not overrule this signal.

**When generated:** The SelectX is switched on, and PLC input (SXMS3-04) is seen “0”.

**How to Resolve:** Close the door, overrule the signal by the key switch or replace the door switch.

**Additional info:** SXMS3-04 = Digital Input SelectX Module Slot 3 – Channel 04.

**Delta C (Extend):** The door switches are on the front (S50) and back (S51) doors. The overrule keyswitch (S55) is on the side cover of the machine at the height of the PC-arm.

**Delta (Extend):** The door switches are on the front (S50) and back (S51) doors. The overrule keyswitch (S55) is on the top of the separate switchbox.

**DeltaMAX:** The door switches are on the front (S36, S37 and S38) and back (S39) doors. The overrule keyswitch (S40) is on the side cover of the machine at the height of the PC-arm.

### “Spare” (@137)

**“Spare” (@138)**

**“Spare” (@139)**

**“Spare” (@140)**

**“Spare” (@141)**

**“Spare” (@142)**

**“Spare” (@143)**

**Alarm explanations for (customer) specific software versions.**

**“Special additional info for PC version 00.00.00.00” (@000)**

No customer specific alarms available.