OPERATING MANUAL

SCHWING Stetter

- PLANT - M1.COMPARTMENT BATCHER

- CONTROL SYSTEM - MCI 360

Important Note :

The Data's indicated in this Operating Instruction may differ from plant to plant in accordance with constant improvement, and we reserve all right to change or modify any parts at any time without any prior notification.

1. Introduction on MCI 360

Micro Controller India -360 which is shortly called as MCI 360 is a complete automated solution for the concrete production industries. In the past concrete production the machinery was just used as a device which mixes few constituents and drops them out as a concrete but now in the new era it is not the way it happens.

M/s Schwing Stetter has changed the definition of this. In the early days Schwing Stetter introduced the MCI 300 control system which is user friendly system to control and monitor the productivity and performance of the machine, where as now it has come up with the new solution in to the concrete business which is MCI 360.

Main features of MCI 360 are as follows.

1. Schedule based batching – Not usable in case of generic interface enabling
2. Maintenance schedule
3. Cement batching silo can be changed in between in case of silo empty- Not usable in case of generic interface enabling
4. Automatic calibration and manual calibration available.
5. All kinds of statistical reports are available.
6. Slump measurement (optional)
7. PID control based batching (addition to the material in air control)
8. Automatic batching after power recovery
9. Centralized connection of load cell with plc
10. Common software for all Stetter plants ranging from M1 to H6
11. Introduction of touch panel
12. Introduction of membrane keypad instead of control desk
13. Connectivity to USB camera (optional)
14. Customer credit locking system (optional)- Not usable in case of generic interface enabling
16. Provision for slurry water batching
17. Introduction of authority based password control
18. Facility to divert the concrete from one customer to another (delivery docket) - Not usable in case of generic interface enabling
19. Possibility for networking the plants (optional)

In the below chapters we will have a brief look on all the features and advantages of the MCI 360 control system.

Customer Master: After entering in to the master details screen to access the customer master we need to click in the customer master button which will open the customer related details as shown in fig4.1.

Adding New Customer: Press Add new button to start with adding a new customer then start entering the values in the following fields

*Customer code - field size (75)
*Customer Name - field size (100)
Contact Person – field size (100)
*Customer Address – field size (80)
City – field size (100)
Pin code – field size (50)
Phone – field size (10).

Please note that in the above fields what ever is marked with "*" symbol is to be considered as mandatory fields and it should not be left blank while going for a save event. Once it is made sure that all the required fields are filled then we need to press save button to store the data into the database

Modifying Existing Customer: To modify an existing customer press customer code load button, this will load all the available customer code from database into the customer code field.
Select the customer code of which we need to modify the data. When we select the required customer for modification the system will automatically display all the relevant data in the corresponding fields, later which ever field need to be modified can be modified and saved back in to database by pressing the save button. Please note that except customer code we can modify all the fields

Deleting Existing Customer: To delete an existing customer press customer code load button, this will load all the available customer code from database into the customer code field
Select the customer code of which we need to delete. When we select the required customer for deletion the system will automatically display all the relevant data in the corresponding fields now we need to press the delete button to erase that particular selected customer completely form the database
Please note what ever records we are deleting will be separately stored in a temp table for our reference and fault analysis.

Site Master: To access the site master we need to click in the site master button which will open the site related details as shown in fig4.2.

*Order list for schedule – the available order need to selected for scheduling from the order list use “>>” button to select and “<<” button to unselect to list the available order click on list order button and select from the available list.
Please note that in the above fields what ever is marked with “*” symbol is to be considered as mandatory fields and it should not be left blank or zero while going for a save event. Once it is made sure that all the required fields are filled then we need to press save button to store the data into the database

Modifying Existing Schedule: To modify an existing schedule. Press schedule ID load button, this will load the entire available schedule id from database into the schedule id field. Select the schedule id of which we need to modify the data. When we select the required schedule for modification the system will automatically display all the relevant data in the corresponding fields, later which ever field need to be modified can be modified and saved back in to database by pressing the save button. Please note that except order no we can modify all the fields.

Deleting Existing Schedule: To delete an existing schedule press schedule ID load button, this will load the entire available schedule id from database into the schedule id field. Select the schedule id of which we need to delete. When we select the required schedule for deletion the system will automatically display all the relevant data in the corresponding fields now we need to press the delete button to erase that particular selected schedule completely form the database
Please note what ever records we are deleting will be separately stored in a temp table for our reference and fault analysis.

j) Calibration I
k) Calibration II
l) Calibration III
m) Calibration IV
n) Name setup
o) Other settings
p) Mixer / Moi calibration
q) Weigher Max Value

This chapter will brief us all about all the above plant setup parameters in detail.

a) Material in air: To perform any setup activity for this parameter we need to select Material in air option as shown in fig 7.2

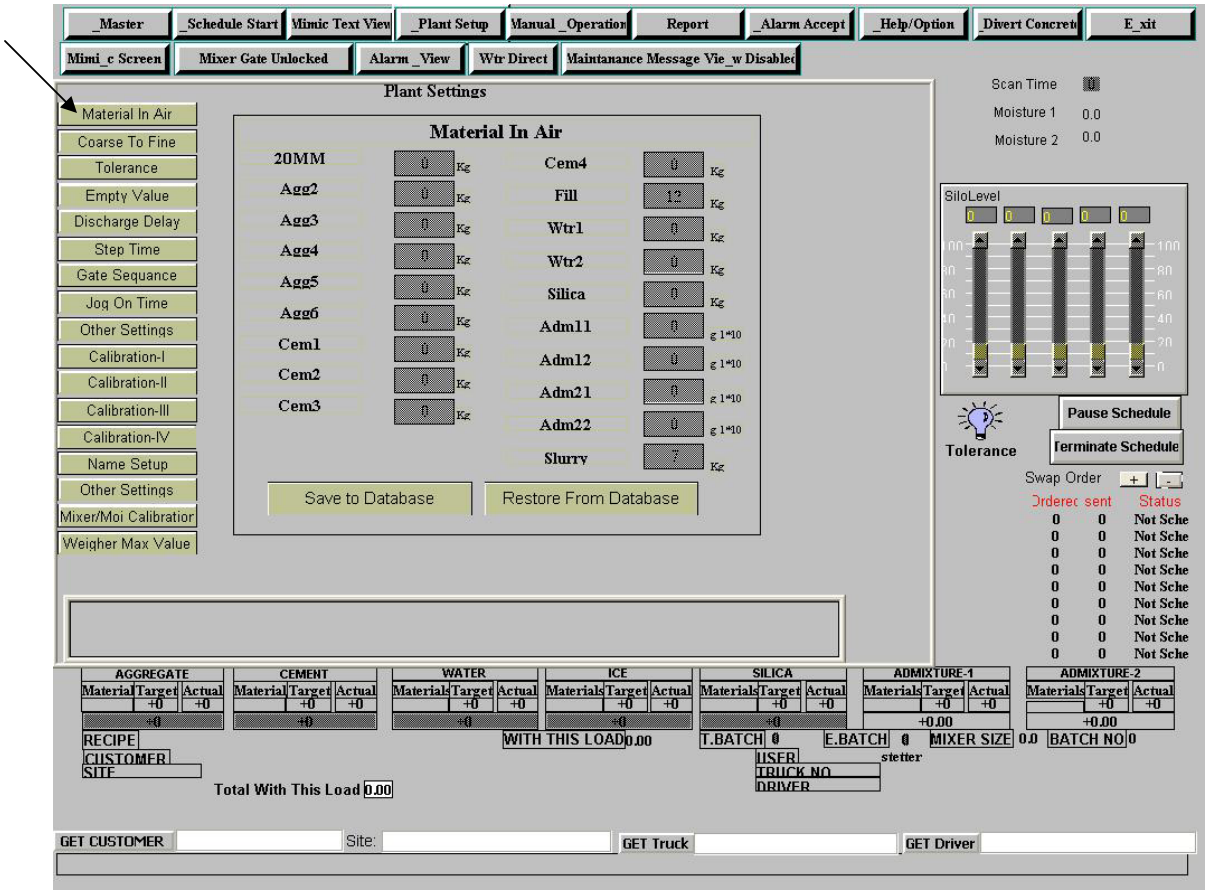


Fig 7.2

The terminology material in air or in flight weight is nothing but the assumed weight of material which remain in air for few milliseconds after closing of gate / withdrawing any (dosing / batching) output and before falling in to the weigher, this parameter value varies based on plant to plant, material to material, material density, material size and distance between the gate and weigher and this is applicable for all form of material like cement, water etc

Stop value for moisture in Kg: This parameter is vise versa to that of start here we need to specify when the system should stop taking the moisture samples while batching.
Docket Type: MCI360 has an optional facility of printing delivery docket apart from printing batch report and to get this option you are requested to place an order commercially and provide format in which you require the DC to be printed and based on your request the printing option will be made ready and a separate docket type will be assigned. Right now the docket type available is 1 – IJM, 2-RMC and 3 RDC.
Conveyor Runtime (Sec): This parameter defines the runtime check for the conveyor while discharge. Normally in all inline silo plants the material is weighed in the conveyor and once the weighing is complete the material is discharged into skip or in an inclined conveyor from the weighing conveyor. Incase the weighing conveyor remains running continuously because of not reaching empty value then the system will take the conveyor runtime parameter as reference and stop the conveyor after crossing the defined time delay in seconds to stop material wastage.
Mixing Time in Sec: This parameter is also available for configuration in recipe master in case if it is required to change while batching then we can do that from here.
Printer 1 on / off: This parameter is used to enable and disable printer. If we enter 1 in this field then it means enabled and 0 means disabled and this is for printer 1 connected to computers motherboard.
Printer 2 on / off: This parameter is used to enable and disable printer. If we enter 1 in this field then it means enabled and 0 means disabled and this is for printer 2 connected to computers motherboards add on card.
Cement Screw 1 flap disabled / enabled: In most of the higher capacity plants a butterfly valve will be provided in the dosing mouth end of cement screw conveyor which is near to that of cement weigher, if this flap is available then the cement 1 flap should be enabled if it is not available then it must be disabled. If this parameter is not set correctly the cement batching both in auto and manual will not happen it is because if we had enabled this parameter with out connecting flap then the system will look for flap feed back and stop batching and vice versa to the other way of selection.
If the flap is available then if it is enabled the system will look for flap feedback then switches on flap output first then cement screw on for dosing.
Cement Screw 2 flap disabled / enabled: similar to that of previous cement screw 1 flap disabled / enabled option
Cement Screw 3 flap disabled / enabled: similar to that of previous cement screw 1 flap disabled / enabled option
Cement Screw 4 flap disabled / enabled: similar to that of previous cement screw 1 flap disabled / enabled option
Cement Screw 5 flap disabled / enabled: similar to that of previous cement screw 1 flap disabled / enabled option
Teach Mode On / Off: Teach mode on / off option can be used to set material in air automatically for one batch to get an idea of approximate material in air but before switching this on we need make sure that all the values in material in air is kept 0

n) Weigher Max Value: To perform any setup activity for this parameter we need to click on the weigher max value button as shown in fig 7.18.

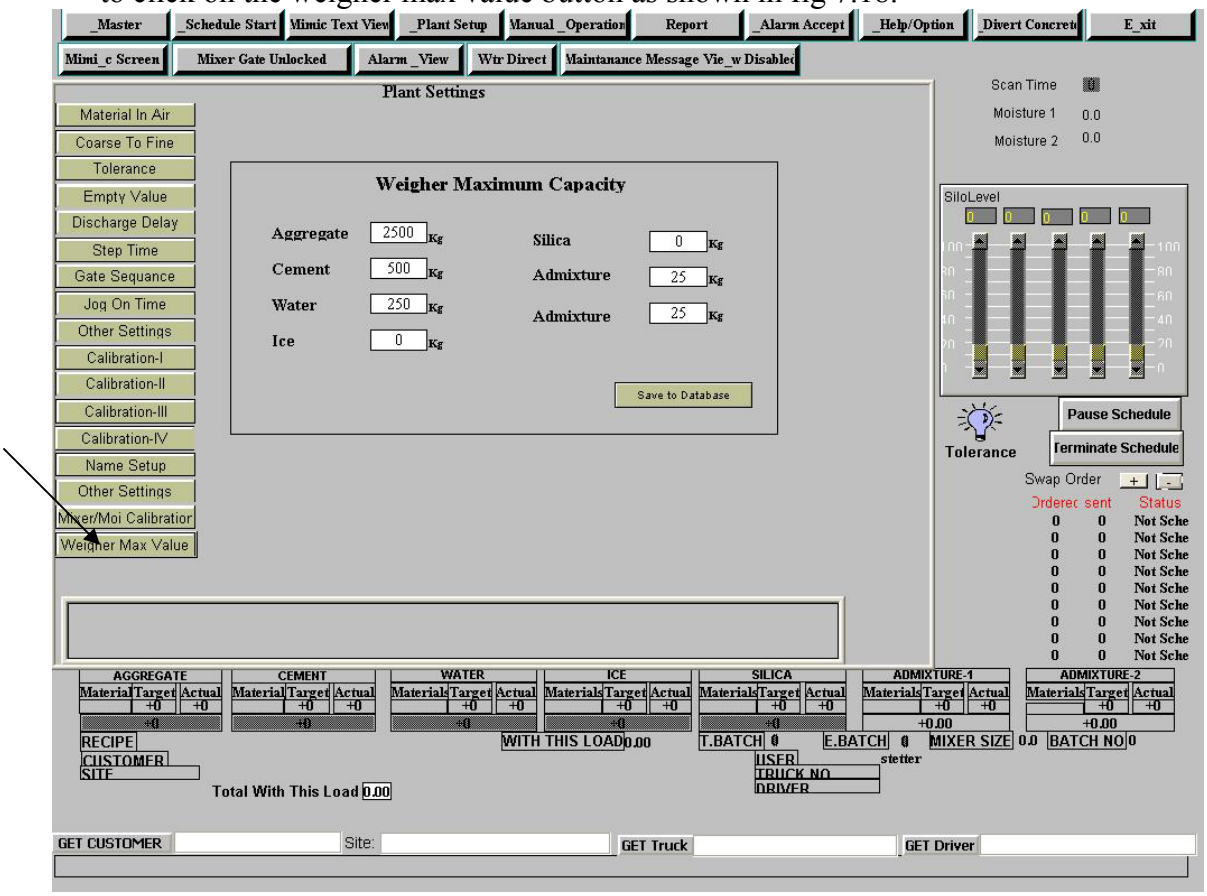


Fig 7.18

In this setup we need to specify the maximum capacity of all the weigher based on the plant capacity taking this as a reference the system will automatically validate for the wrong entry in the recipe master.

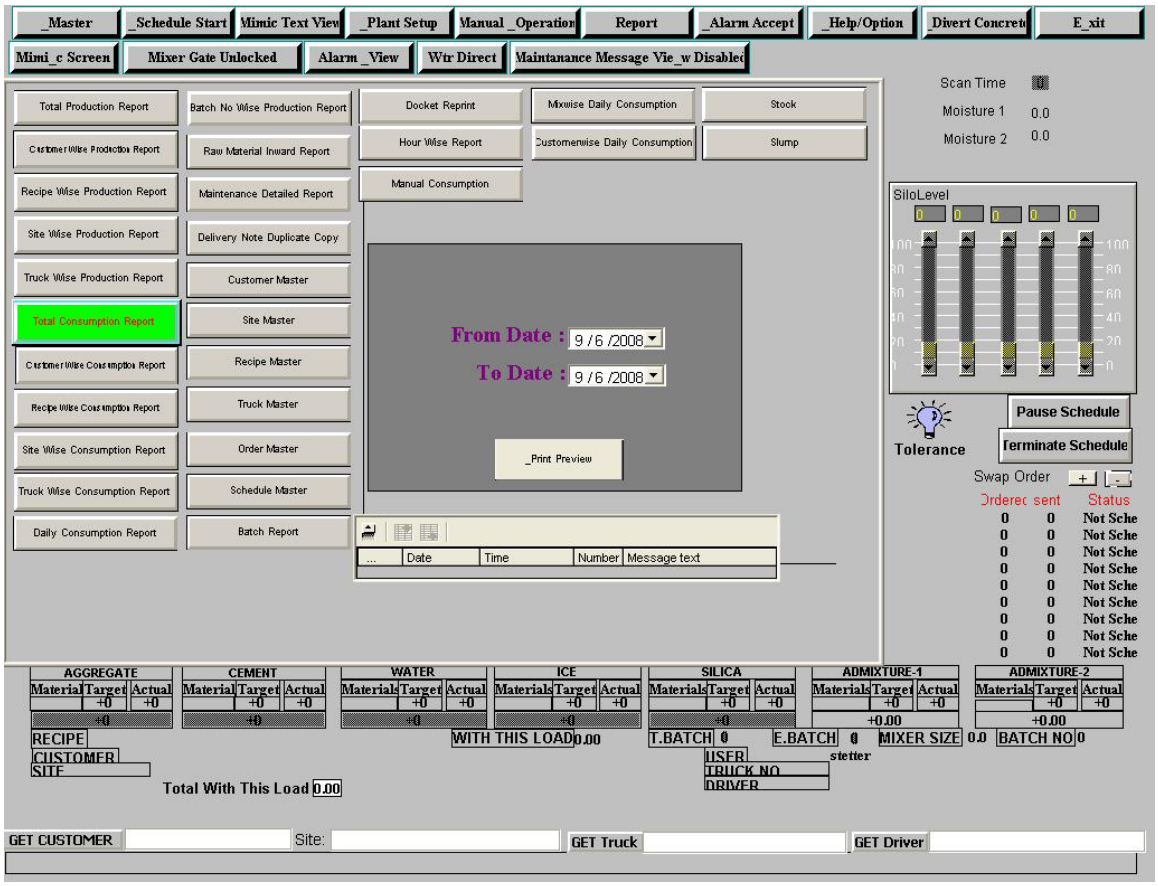


Fig 9.12

MCI 360 Control System

SCHWING
Stetter

Statestical Details: Total Cunsumption Details
Plant No:
From : **To :**

Materials	Actuals In Kgs	Targets In Kgs	Difference In Kgs

Total Production Quantity / Returned Quantit

Fig 9.13

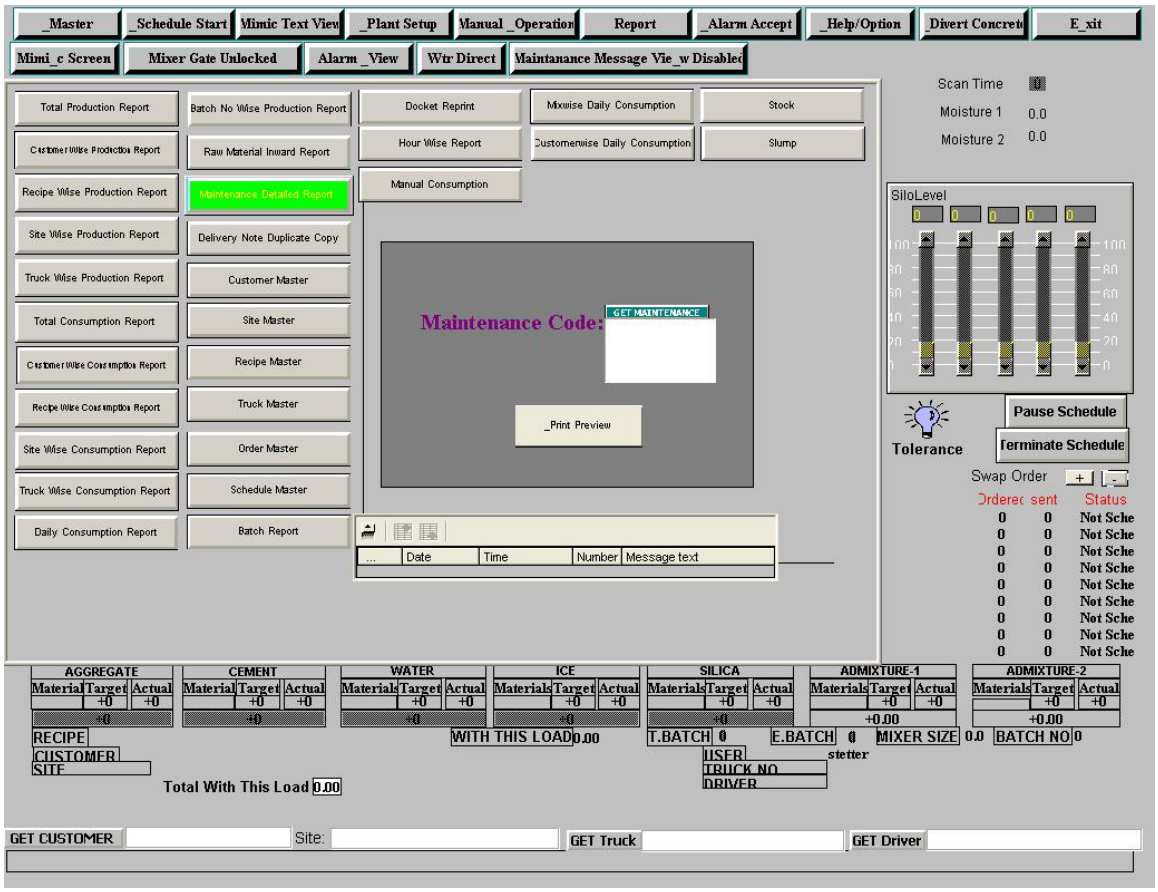


Fig 9.26

MCI 360 Control System

SCHWING
Stetter

Statestical Details: Maintenance Details

Maintainance_Code	Maintainance Description	Occurred_Date	Cleared_Date	User_While_Occurred	User_While_Cleared

Fig 9.27

Docket Reprint: This facility will be useful if we had opted for 2nd online printout which was discussed in our early chapter. Here we have an option of reprinting the printout duplicate copy. To reprint the docket enter batch no in the batch no field and then batch year then click on print button as shown in fig 9.44 and this will print the docket duplicate copy.

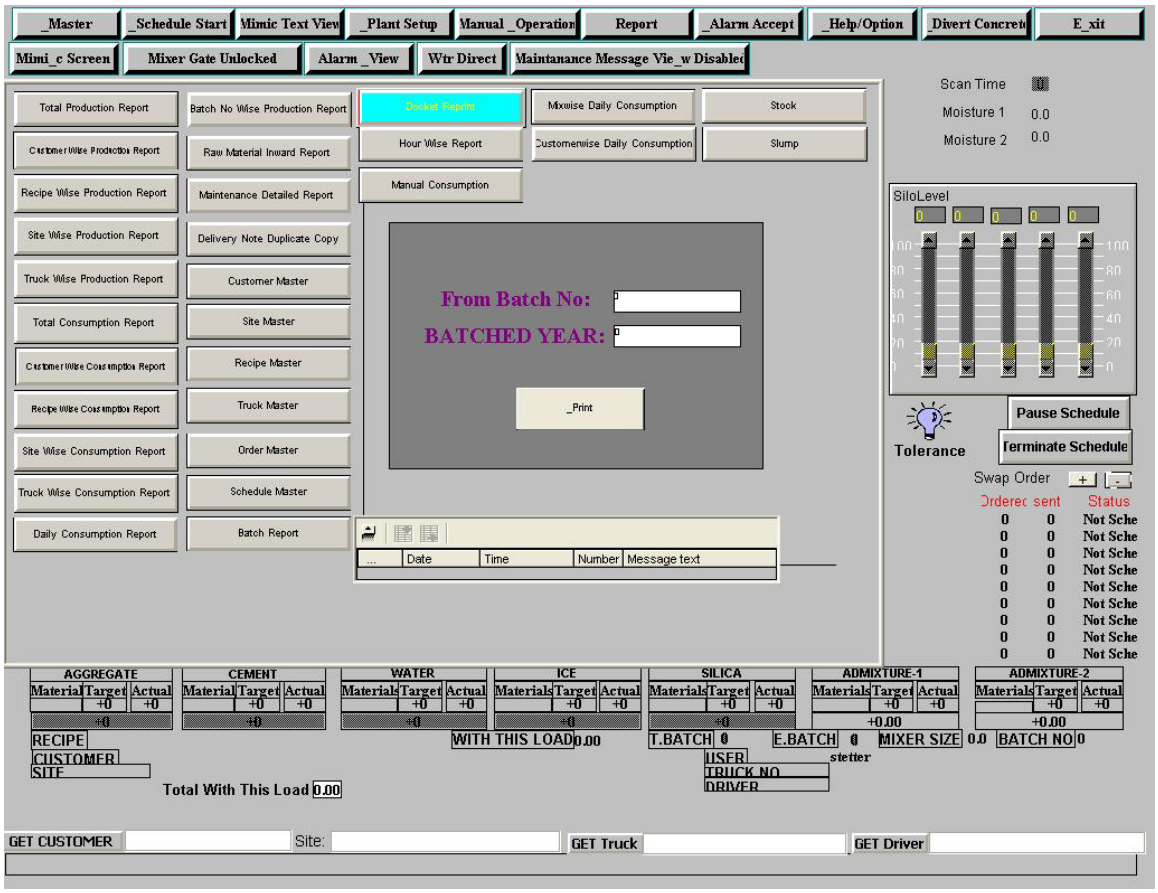


Fig 9.44

Hour wise Consumption Report: The hour wise consumption report gives us a statistical report on consumption made for all materials on hour basis to view this report We need to select the date for which we need to get the data then we need to specify from time in HH:MM AM / PM format and To time with the range of 1 hour in HH:MM AM/PM format and if interested to view the midnight report then if the data covers the next day then we need to click on next day check box as shown in fig 9.45 the click on print preview button to view the consumption details hour wise.

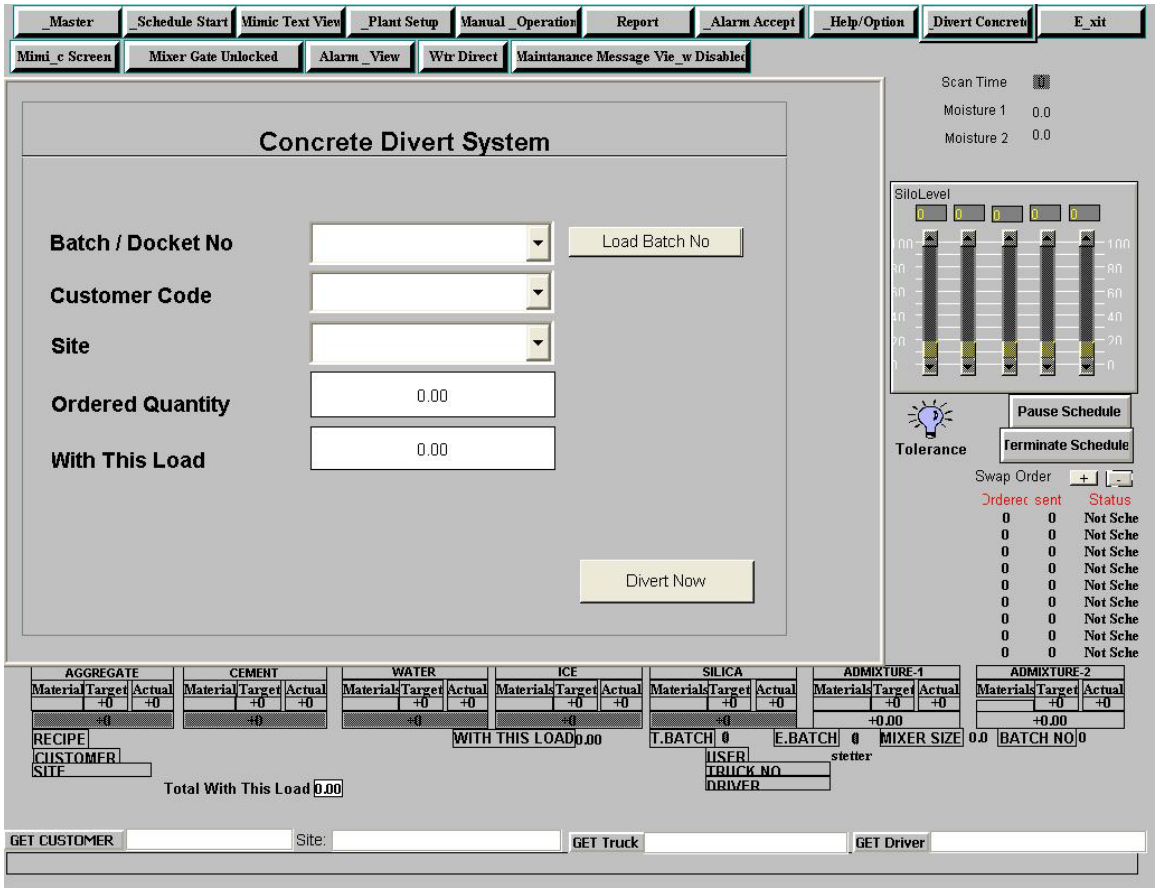


Fig 12.1

Please note that since master details are masked in MCI360 generic interface software divert concrete option will not be possible if you have opted for third party interface.

13. Exit

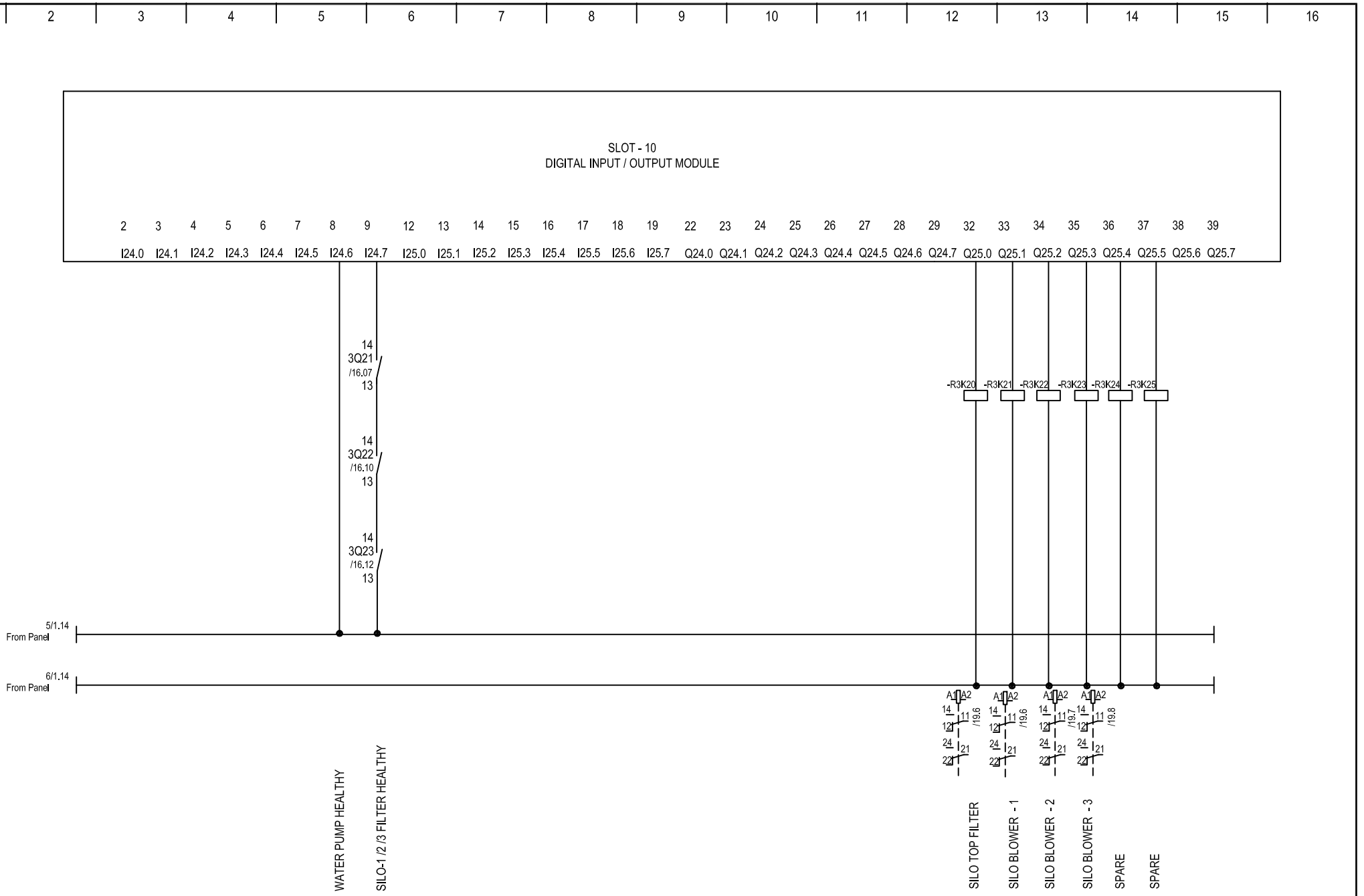
To close the software we need to press the exit button this will close the entire project including the MCI360 Generic interface Software.

14. MIMIC Screen

The mimic screen will give you the pictorial representation of the entire process that is going on in plant but please not it is just an animation and approximate occurrence of the event and please do not ever compare it with real time events. The other display of details is just as similar to that of mimic text view like display mixer running hours, mixer half open, mixer full open, mixer discharge time and mixing time etc.

Cable			From		Cable		To		Comments
S.No.	Size Of Cable	Mtrs	Name	Ferrule No.	Size Of Cable	Mtrs	Name	FerruleNo.	
28		9	6S33	1	2*1			X6:30	Mixer gate mid-position sensor
								X2:5	
29		9	S5	2	2*1			X6:33	Skip bottom sensor
								X2:5	
30		14	S2	3	2*1			X6:34	Slacksteel Sensor
								X2:5	
31		11	S4	4	2*1			X6:35	Skip Waiting position Sensor
								X2:5	
32		10	S3	5	2*1			X6:36	Skip Top Sensor
								X2:5	
33		9	6S31	6	2*1			X6:31	Mixer Gate open senor
								X2:5	
34		9	6S32	7	2*1			X6:32	Mixer Gate close sensor
								X2:5	
35		13	5S36	8	2*1			X6:29	Water scale gate open
								X2:5	
36		14	3S36	9	2*1			X6:28	Cement scale gate open
								X2:5	
37		15	4R1	12	2*1			X3:1	Skip Motor protection
			4R1	13				X3:2	Skip Motor protection
38		10	6R2	12	2*1			X3:3	Mixer Motor protection
			6R2	13				X3:4	Mixer Motor protection
39		15	6Y1	1	2*1			X6:75	Mixer Gate Open Solinoid
								X2:6	
40		15	6Y2	2	2*1			X6:76	Mixer Gate Close Solinoid
								X2:6	
41		15		3	2*1			10	Brake coil
				4				11	Brake coil
42		10	Z1	7	2*1			X3:5	Hooter
			Z1	8				X3:6	Hooter 230V Neutral
43		5	S6	9	2*1			X3:11	Skip bottom limit switch
		12	S8					X3:10	Mixer cover limit switch
		13	S7	10	2*1			X3:11	Skip Top limit switch

Control Panel
General Arrangement



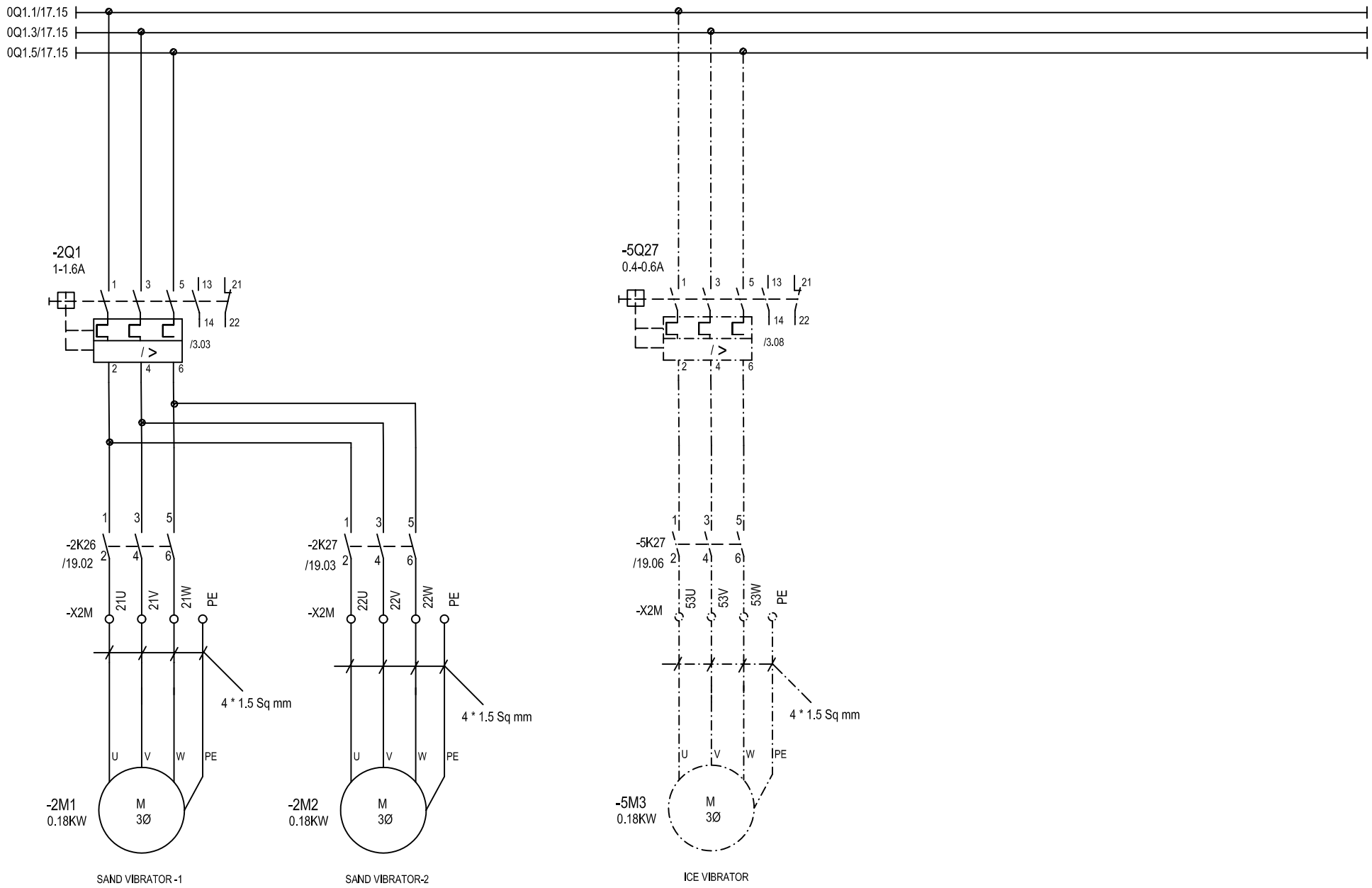
REV - NO:	DESCRIPTION	Date	Drawn	Checked	Approved
03					
02					
01					
00		10.06.2008	SATHISH	DHARMA	SBK

Schwing Stetter India Private Ltd.,
Chennai.

CONTROL SYSTEM : MCI 360 (COMPARTMENT BATCHER)

Description:
Circuit Diagram
Control Panel
Machine: M1

REV - NO: 00
Total Sheets 25 | Sheet No 8
80400510



REV - NO:	DESCRIPTION	Date	Drawn	Checked	Approved
03					
02					
01					
00		13.10.2007	SATHISH	DHARMA	SBK

Schwing Stetter India Private Ltd.,
Chennai.

CONTROL SYSTEM : MCI 360 (COMPARTMENT BATCHER)

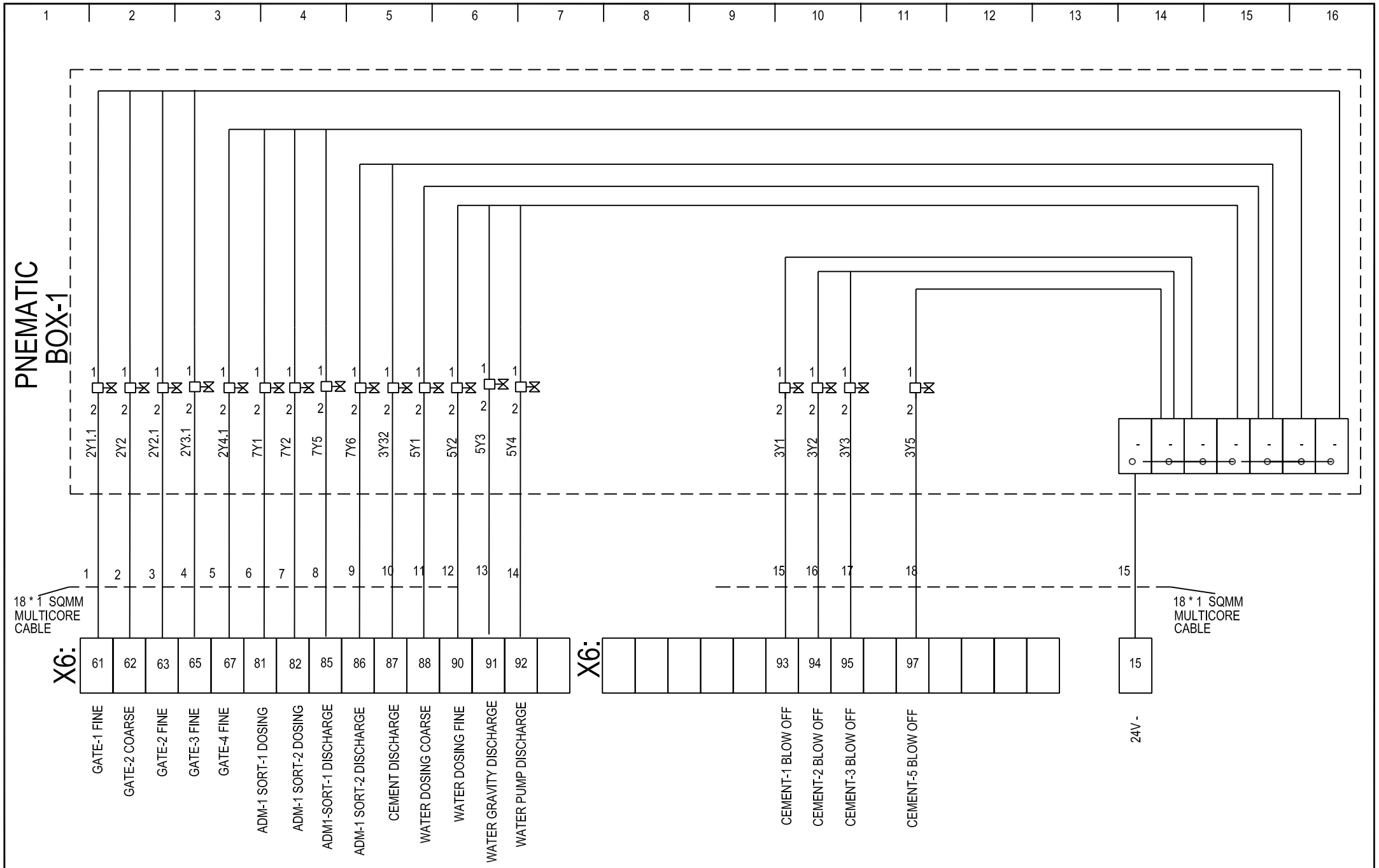
Description:
Circuit Diagram
Control Panel

Machine: M1

REV - NO: 00

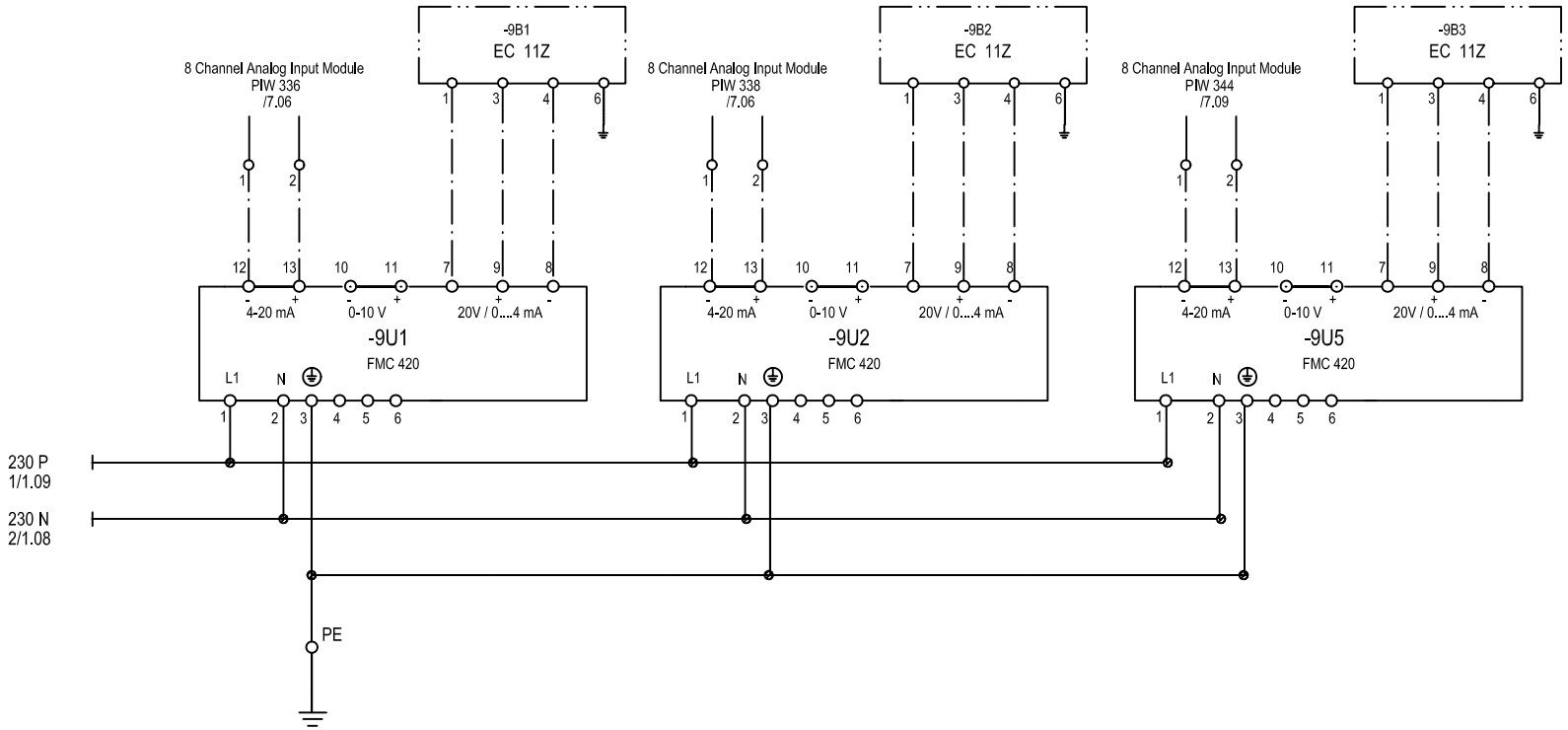
Total Sheets 25 | Sheet No 18

80400510



					Date	Name		Description:		
c							Schwing Stetter India Private Ltd., Chennai.			
b				Drawn	18.07.2005	J.Bhaskar		CEMENT PLATFORM		
a				Checked	18.07.2005	DKS		Pnematic Box Detail	Total Sheets 1	Sheet No 1
				Approved	18.07.2005	SBK	CONTROL SYSTEM : MCI 360	Machine: M1 COMPARTMENT	8040 0510	

CEMENT / SILO 1 CEMENT / SILO 2 CEMENT / SILO 5 WAITING HOPPER



OPTIONAL

c					Date	Name	Schwing Stetter India Private Ltd., Chennai.	Description:		
b				Drawn	18.07.2005	J.Bhaskar		Circuit Diagram		
a				Checked	18.07.2005	DKS		Silo Meter	Total Sheets 1	Sheet No 1
				Approved	18.07.2005	SBK	CONTROL SYSTEM : MCI-360	Machine: M1	8040 0510	

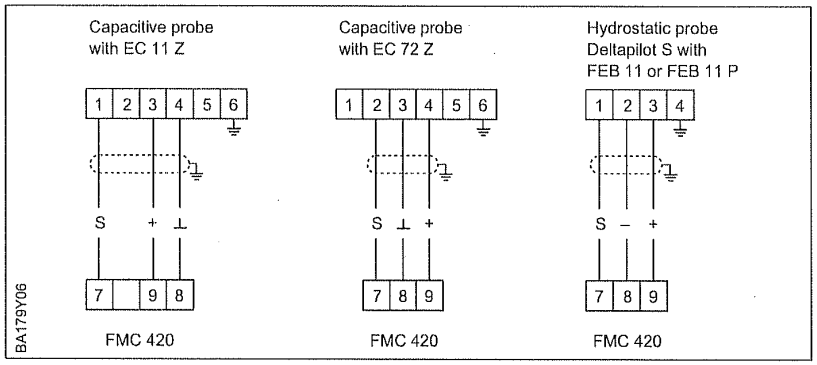
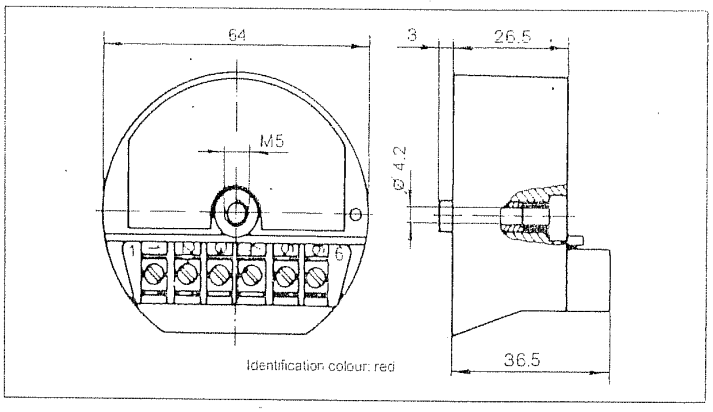
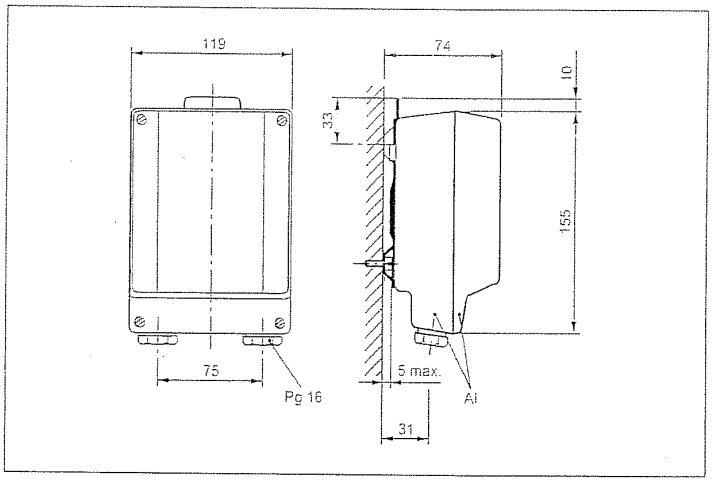


Fig. 6
Connecting probes to the Silometer (input)

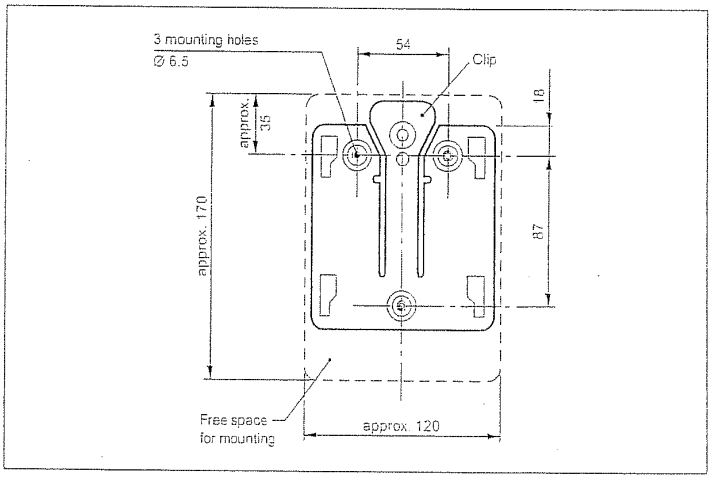
Dimensions



Dimensions in mm of the electronic inserts EC 11 Z and EC 72 Z



Dimensions in mm of the separate housing for EC 11 Z and EC 72 Z



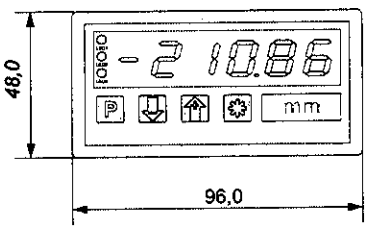
Drilling template for wall mounting of the mounting plate of the separate housing (dimensions in mm)

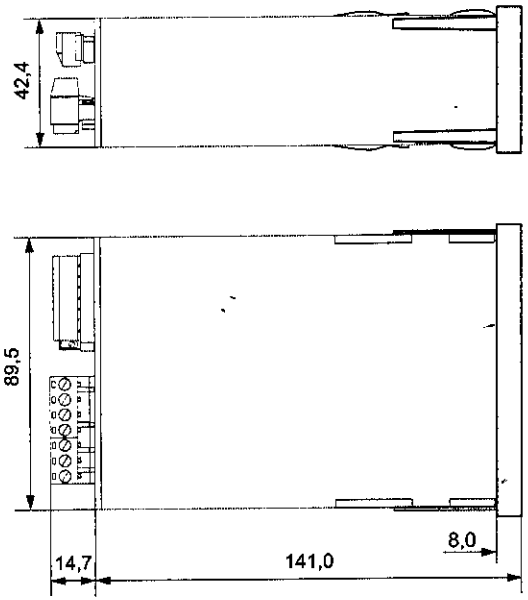
3.2.2. *Panel for mosaic systems*

- Insert the case into one of the following mosaic-systems:

  a) Mosaic system 8RU (M50x25) of Siemens

  b) Mosaic system from Subklev





Mosaic-Systems:

Siemens 8RU (M50x25)

Subklev

8.3.1. *Hints for the programming level 0*

The adjustment of the display range to the physical input value can be done by the adjustment of the desired display valus and the corresponding input values (user calibration).
Parameter 0-01 must be programmed with the desired value at the beginning of the displayed range.
Parameter 0-02 must be programmed with the corresponding input value (mV or uA).
Parameter 0-03 must be programmed with the desired value at the end of the displayed range.
Parameter 0-04 must be programmed with the corresponding input value (mV or uA).

Example:
Referring to an input voltage of 0.2V (beginning of the displayed range) the corresponding display shall be 500 and referring to an input voltage of 9.75 V (end of the displayed range) the the corresponding display shall be 8000. The parameters must be adjustet:

Parameter 0-01 => 500 (beginning of the diplayed range)
Parameter 0-02 => 200 (input voltage in mV for the beginning of diplayed range)
Parameter 0-03 => 8000 (end of the diplayed range)
Parameter 0-04 => 9750 (input voltage in mV for the end of diplayed range)

If the input value falls short of more than 1% of the parameter 0-01 undervoltage **"uuuuuu"** is displayed.
If the input value or exceeds more than 1% the parameter 0-03, overvoltage is **"nnnnnn"** is displayed.

Undervoltage or overvoltage is displayed at once, if the displayed range **falls short** of <0.00 or exceeds >999.99.

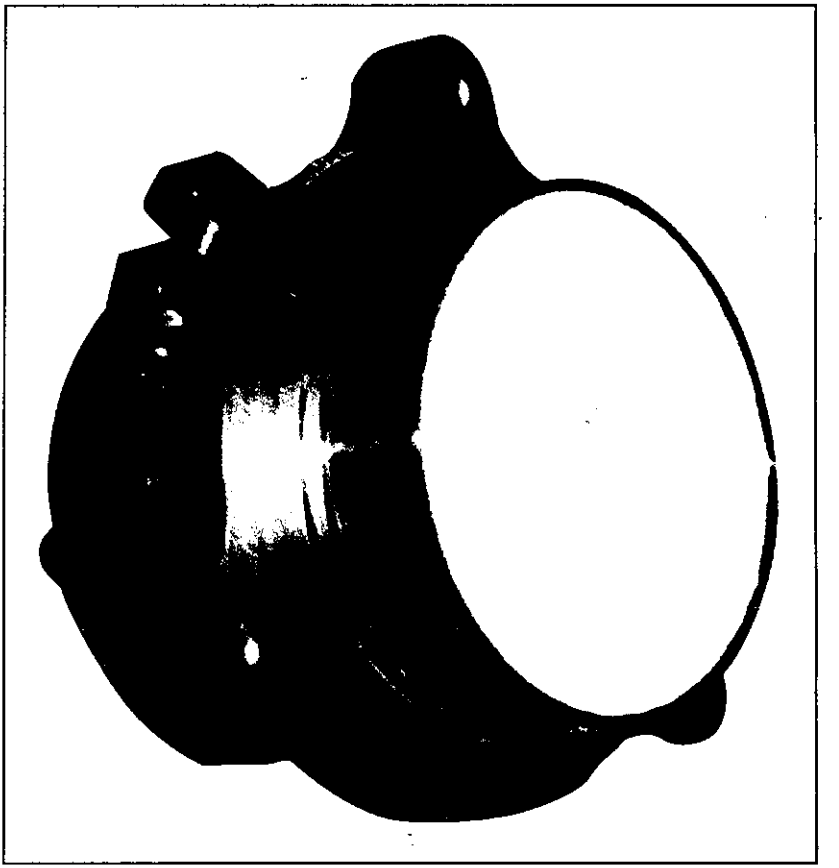
- When overflow is active the display shows **"nnnnnn"**
- When underflow is active the display shows **"uuuuuu"**

Offset value
The programmed offset value is added to to the displayed value!

All ranges are calibrated when delivering. For startup no calibration is required.

Installation Instructions and Calibration

In-Line Moisture Measuring Sensors (MMS)



Electric current! Risk of electrical shock!
Only skilled or instructed persons may carry out the following operations.
The national regulations/specifications must be observed for the installation of these devices

ACO
Automation Components