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1. Introduction

This document discusses the operation of Weighing Controller. Here, weighing scale is interface with controller with RS-232 hardware structure and UART communication protocol. Also controller interface with centralized SQL server with Ethernet.

2. Basic Specification

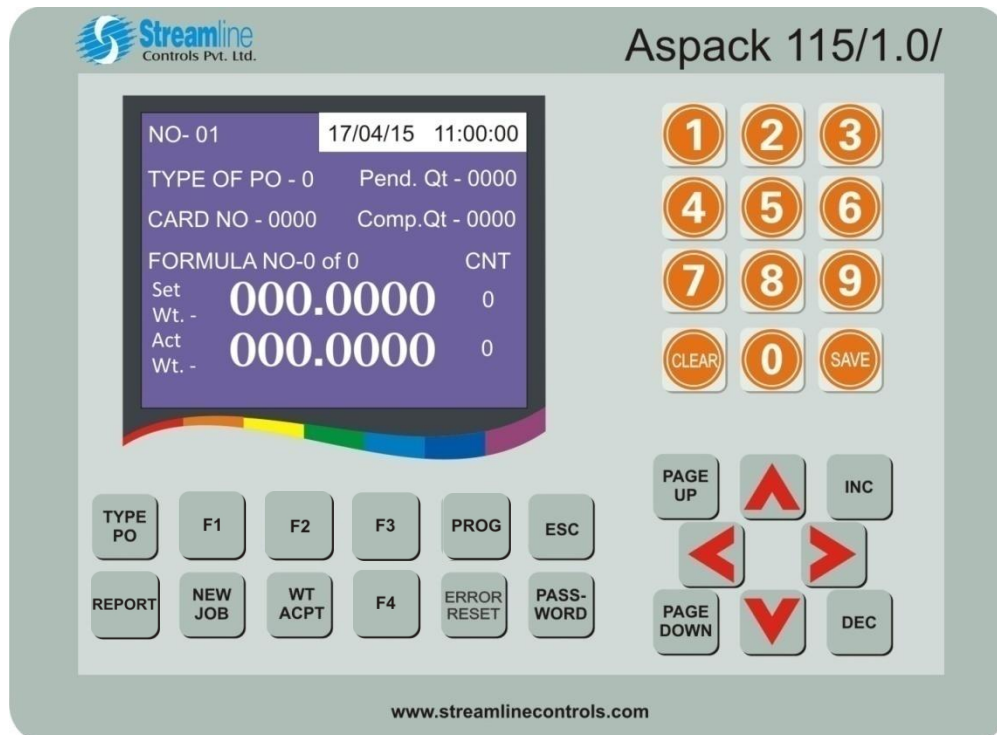
Power Supply: 24 VAC supply

Display: 3.5" Color TFT Display with 24 bit 240*320 pixel color resolution

Keyboard: 32 Keys

Mechanical Dimensions: Depth × Width × Height
62mm × 197 mm × 147mm

Interface: 9-pin D-type Male & RJ 45



3. Keyboard

TYPE PO : This key is used to enter the type of PO and Card Number.

REPORT : This key is used to display Incentive of the operator.

F1 : This key is not used.

NEW JOB : This key is used to perform next job weight.

F2 : This key is not used.

WT ACPT : This key is used to accept the performed weight.

F3 : This key is used to enter in the configuration pages during power on time.

F4 : This key is used to enter in test mode page where user can check all input and output.

PROG : This key is used to enter in the program page where user can set various programmable parameters.

ERROR RESET : This key is used to acknowledge the error or alarm messages.

ESC : This key is used to return from the entry type page without performing any action.

PASSWORD : This key is used to open the password page.

NUMERIC KEYS : This keys are used to enter the numeric values.

CLEAR : This key is used to clear the parameter value.

SAVE : This key is used to save the parameter whenever it is changed.

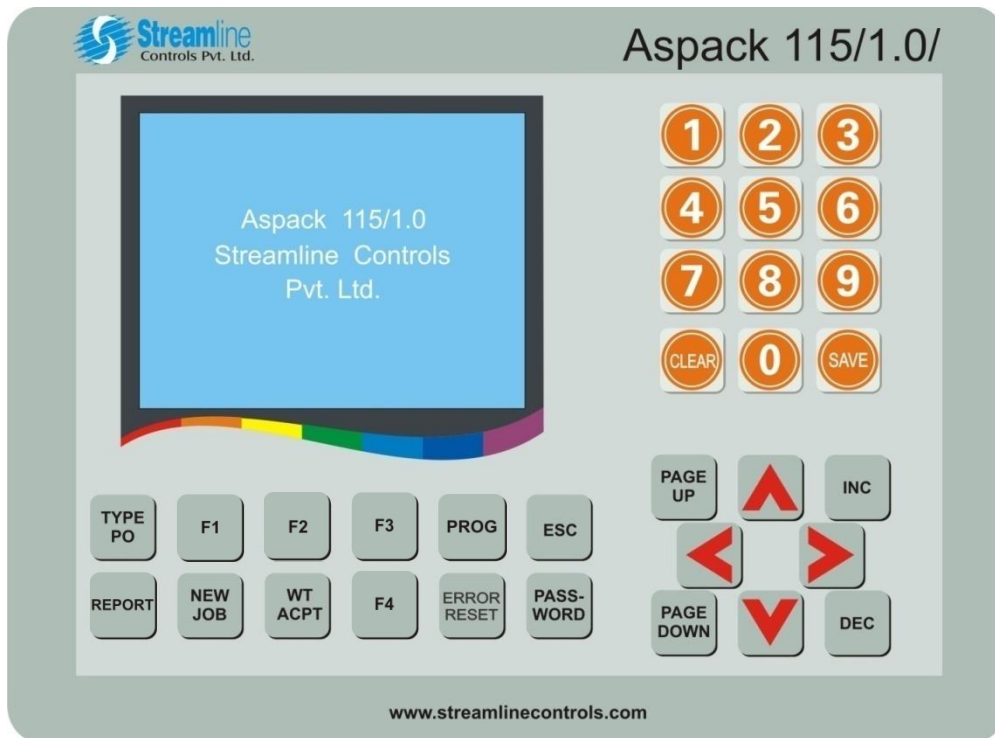
PAGE UP & PAGE DOWN : These keys are used to navigate through different pages in drive parameter page. Page up is used to increment the page & page down is used to decrement the page.

INC & DEC : This key is used to save the parameter whenever it is changed.

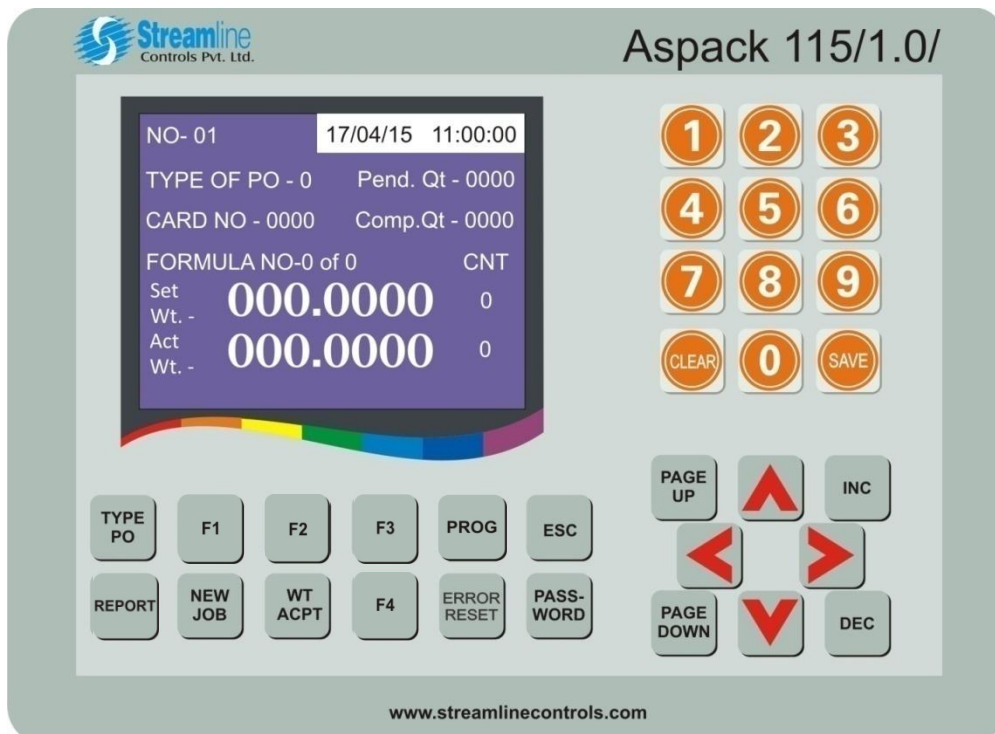
CURSOR KEYS : This key are used to move the cursor to the parameter upside, downside, right side or to the left side of the current parameter.

4. Display Detail

At power ON, the following screen appears.



After few seconds of power on, if weighing scale becomes active for operation, controller unit Home Screen appears as follows.



NO-XX displays unit number. User may change it using program parameters. This number must match with Machine No. in application with assigned IP address for respective unit.

DD/MM/YY HH:MM:SS displays current date and time. User may set as per requirement using programmable parameter.

Type of PO-XX This displays entered PO type i.e. 1 for PO, 2 for EPO, 3 for DPO and 4 for RPO. At power ON or whenever user completes weight for total no. of wheel quantity, **TYPE OF PO-XX** displays 00.

CARD NO-XXXX This displays the entered Production Card Number. At power ON or whenever user completes weight for total no. of wheel quantity, **CARD NO-XXXX** displays 0000.

Pend. Qt-XXXX This displays the total pending quantity of job that is fetched at every wheel weight complete. It will decrease every wheel complete.

Comp. Qt-XXXX This displays the total completed quantity of job on respective controller unit.

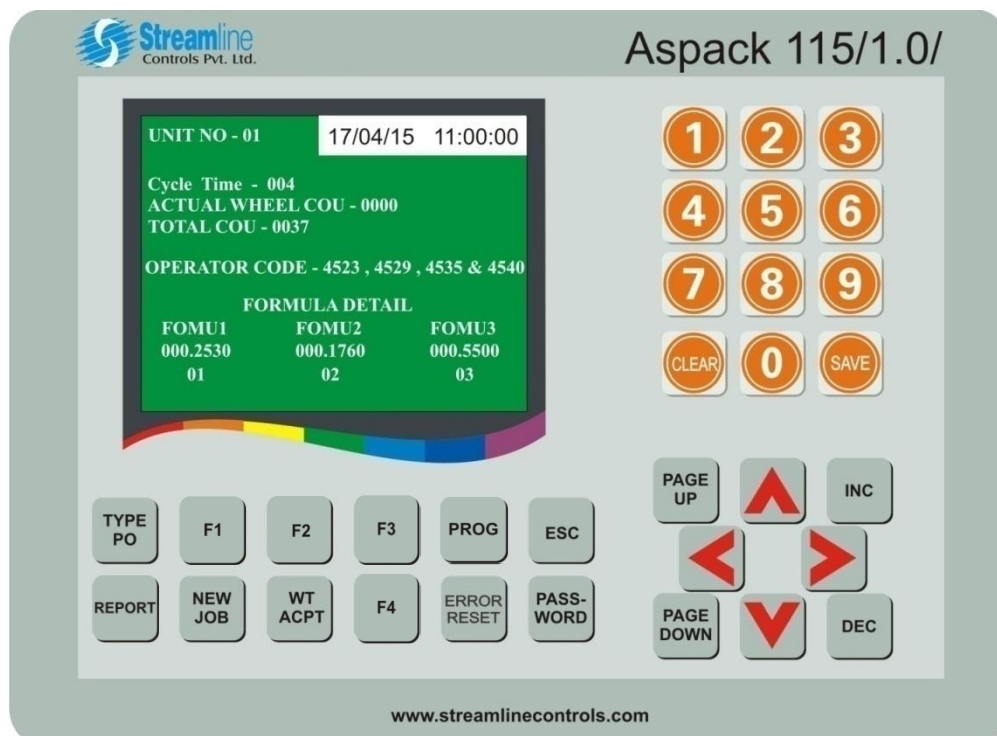
FORMULA NO- X of X This displays the current formula number from total formula of current production card.

CNT This displays the division of respective PO number.

Set Wt. This displays the weight of respective PO number that would be performed by operator.

Act Wt. This displays the weight that is being performed on weighing scale.

Now press Page Up key and following screen appears on display.



(Note : If user press Page Up key without entering password and toggle between all pages then these are read only pages.)

Cycle Time-XXX This displays total time that elapsed to perform all weight of a job.

ACTUAL WHEEL COU-XXXX This displays the total number of wheel weight completed for current PO number on this unit.

TOATL COU-XXXX This displays the total number of wheel weight completed on this unit. This counter can be reset with totalizer reset parameter.

OPERATOR CODE - XXXX , XXXX , XXXX & XXXX This displays the operator codes that are working on respective unit.

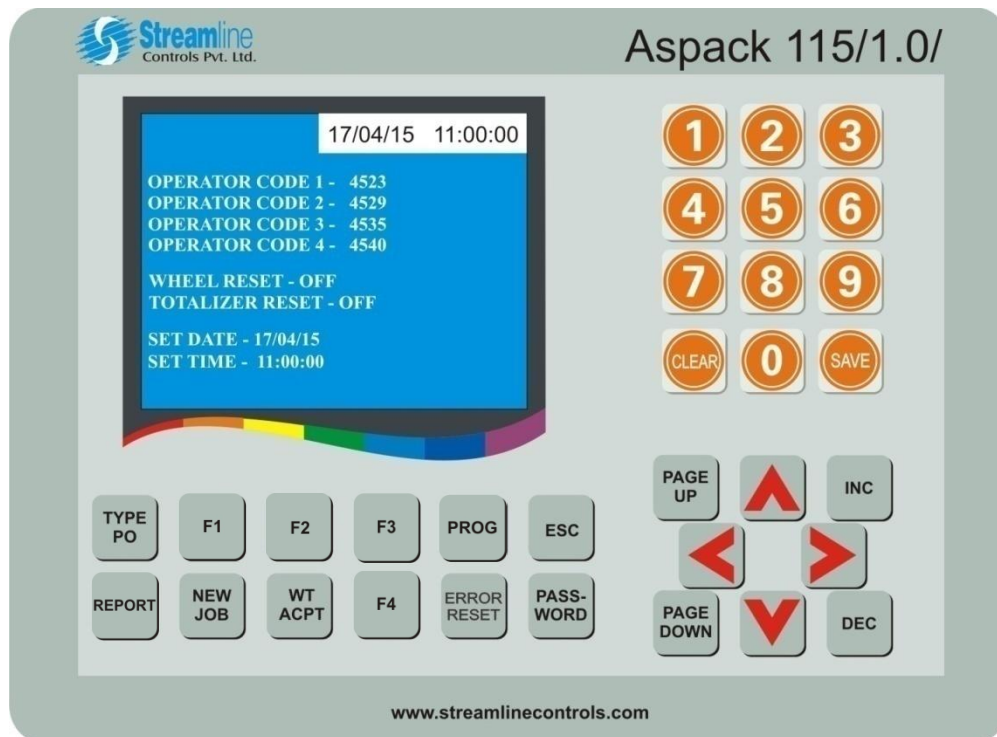
FORMULA DETAIL This displays the current PO number formula detail.

FOMU1 **FOMU2** **FOMU3** This displays formula number of respective PO number.

XXX.XXXX **XXX.XXXX** **XXX.XXXX** This displays weight of respective formula.

XX **XX** **XX** This displays division of respective formula.

Now press Page Up key and following screen appears.



OPERATOR CODE 1 - XXXX This displays operator 1 code.

OPERATOR CODE 2 - XXXX This displays operator 2 code.

OPERATOR CODE 3 - XXXX This displays operator 3 code.

OPERATOR CODE 4 - XXXX This displays operator 4 code.

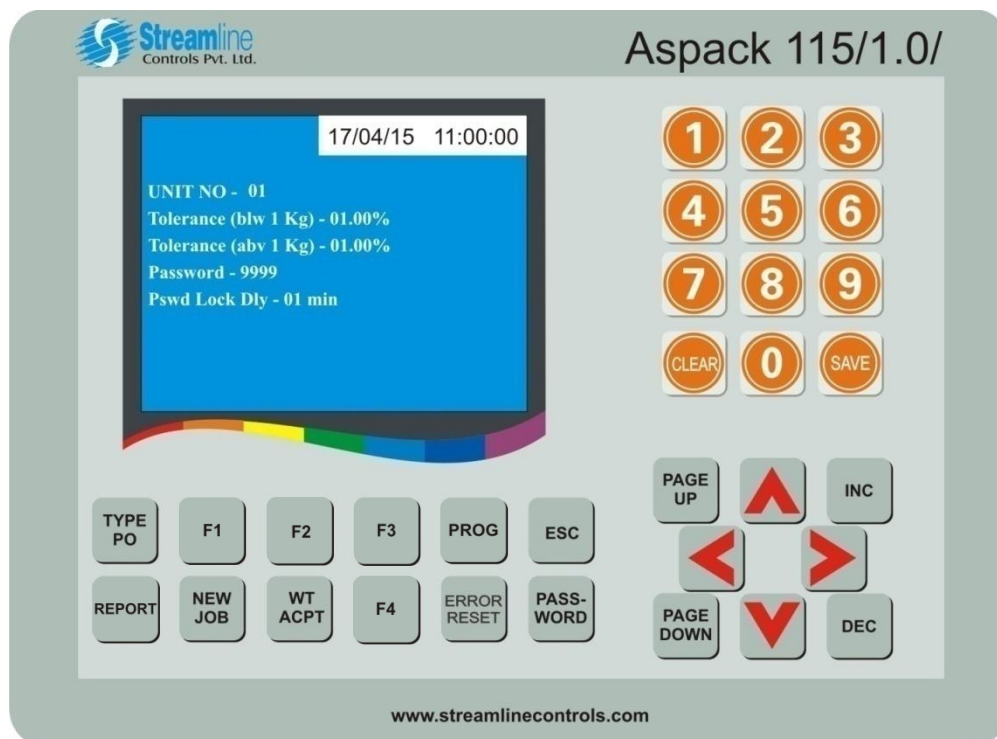
WHEEL RESET - OFF This displays the wheel reset parameter status.

TOTALIZER RESET - OFF This displays the total wheel reset parameter status.

SET DATE - DD/MM/YY This displays the settled date of unit.

SET TIME - HH:MM:SS This displays the settled time of unit.

Now press Page Up key and following screen appears.



UNIT NO - XX This displays assigned unique identification number to this unit.

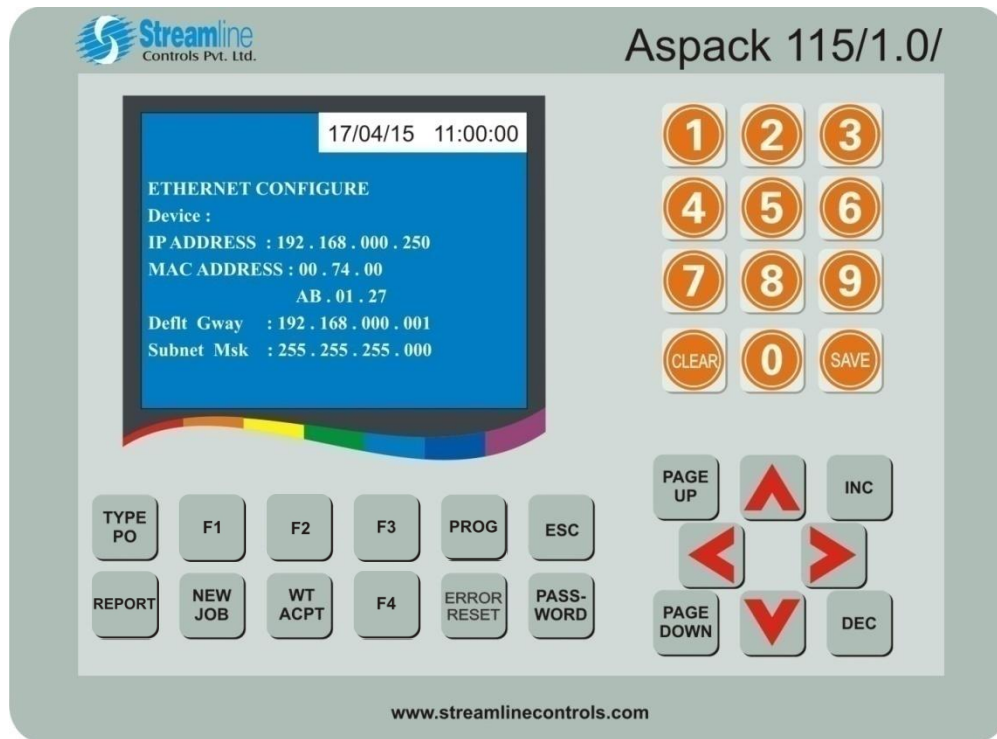
Tolerance (blw 1Kg) - XX.XX % This displays the defined weight tolerance value for below 1 Kg of weight.

Tolerance (abv 1Kg) - XX.XX % This displays the defined weight tolerance value for above 1 Kg of weight.

Password - **** This displays assigned password.

Pswd Lock Dly - XX min This displays the password lock delay time. If keyboard remains inactive , user have to enter correct password again to edit any parameter.

Now press Page Up key and following screen appears.



ETHERNET CONFIGURE

Device :

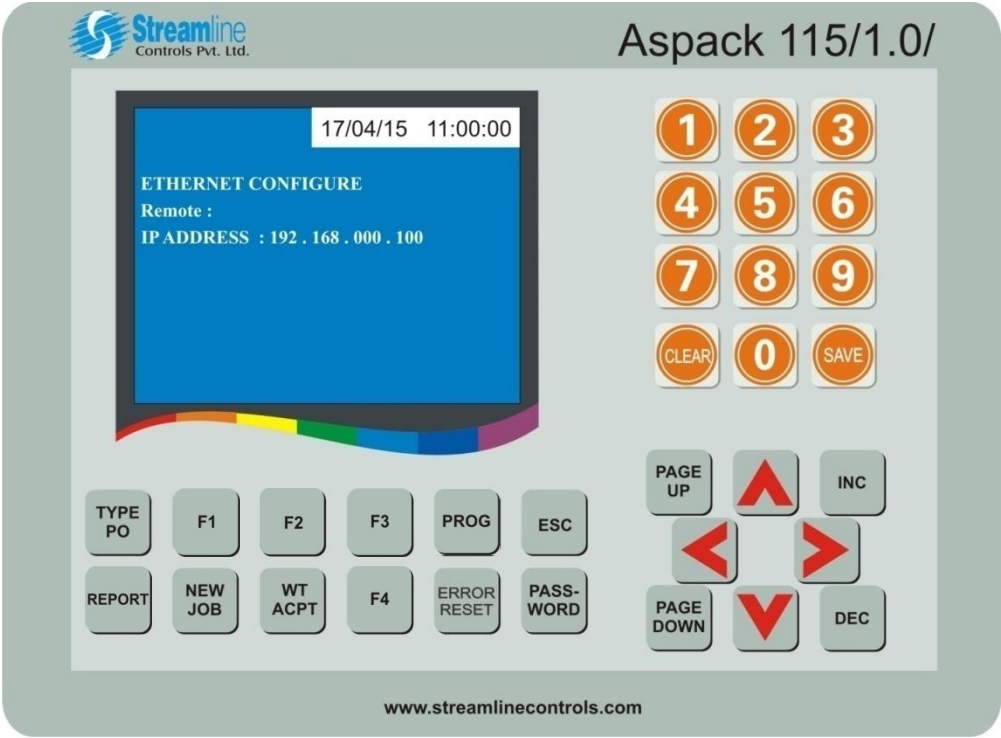
IP ADDRESS : XXX.XXX.XXX.XXX This displays assigned IP address to the respective unit.

MAC ADDRESS : XX.XX.XX This displays assigned MAC address to the respective unit.

XX.XX.XX

Deflt Gway : XXX.XXX.XXX.XXX This displays assigned define default gateway and subnet mask to the respective unit.
Subnet Msk : XXX.XXX.XXX.XXX

Now press Page Up key and following screen appears.



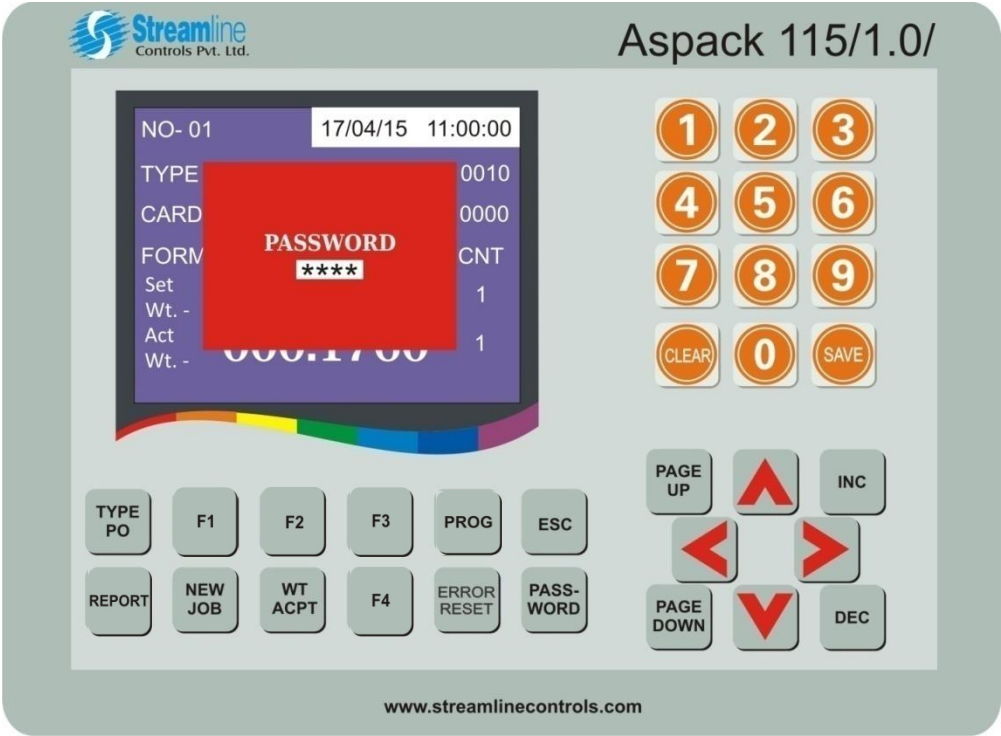
ETHERNET CONFIGURE

Remote :

IP ADDRESS : XXX.XXX.XXX.XXX This displays assigned IP address of Remote PC where application is installed.

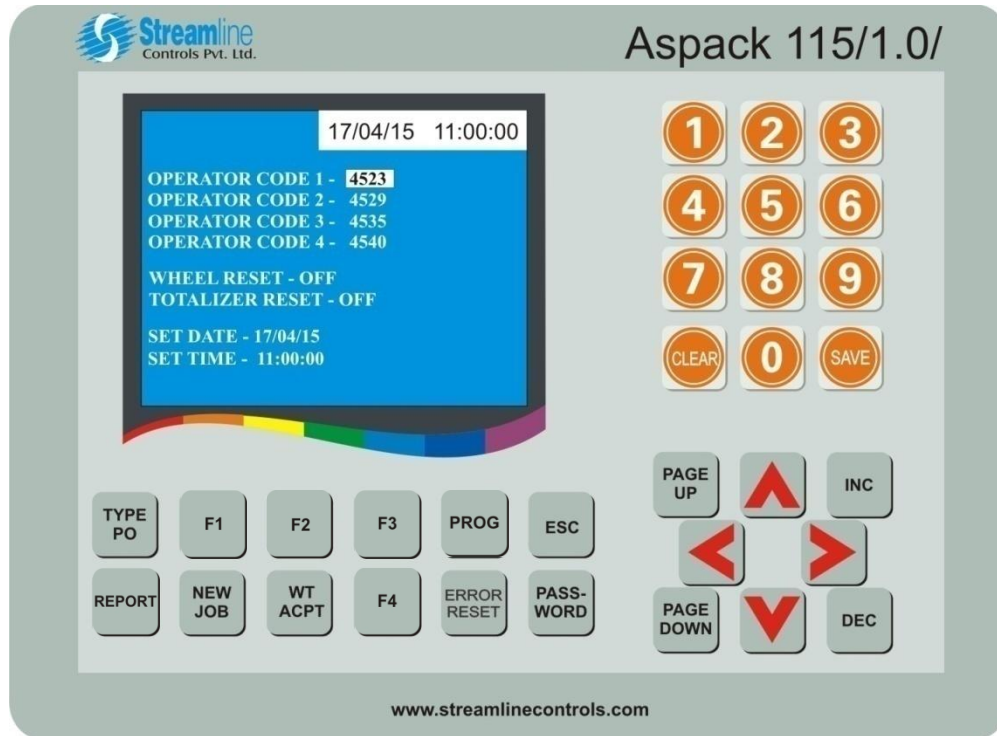
5. Parameters Detail

All parameters are password protected. User have to enter correct password to add/edit parameters. To enter password, press PASSWORD Key and following screen appears:



Here, enter correct password and press save key to enter it.

Now User have to press the **SET PROG** key to enter in the program page where user can set or edit following various programmable parameters. Use **CURSOR** keys and **NUMERIC** keys to edit parameter value.



- OPERATOR CODE 1 - XX** This parameter is used to enter the Operator name code.
- OPERATOR CODE 2 - XX** This parameter is used to enter the Operator name code.
- OPERATOR CODE 3 - XX** This parameter is used to enter the Operator name code.
- OPERATOR CODE 4 - XX** This parameter is used to enter the Supervisor name code.

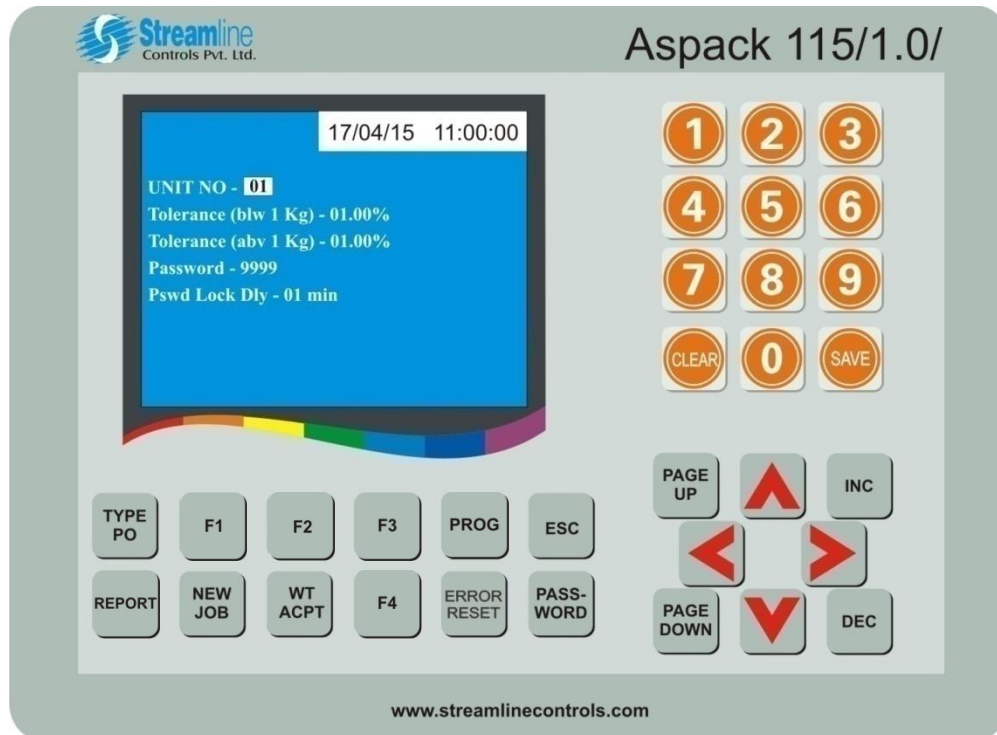
WHEEL RESET - OFF This parameter is used to reset the wheel quantity counter displayed on the home screen. To reset the counter, go to this parameter using **CURSOR** keys and then press **INC** key to make it ON and press **SAVE** key. This will reset your wheel counter. To make it OFF, just press **DEC** key.

TOTALIZER RESET - OFF This parameter is used reset the total wheel counter using same process as described above.

SET DATE - DD/MM/YY This parameter is used to set current date.

SET TIME - HH/MM/SS This parameter is used to set current time.

Now press **PAGE UP** key and it will let user into next program page. Here user will find following parameters.



UNIT NO - XX This parameter is used to set the controller unit number.

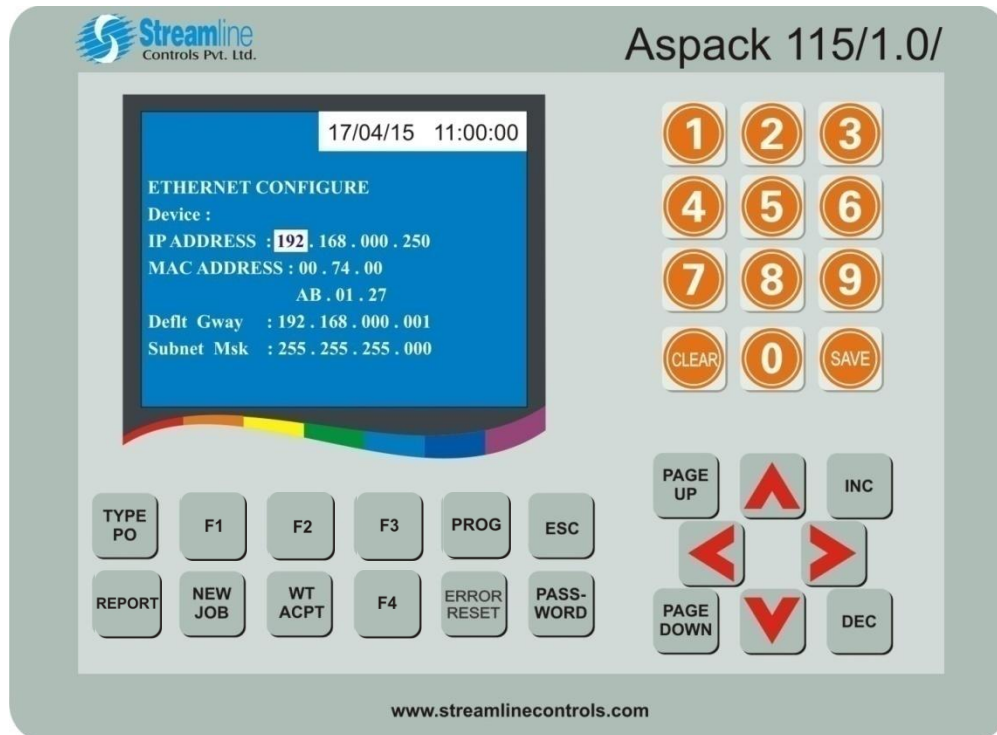
TOLERANCE (blw 1Kg) - XX.XX % : This parameter is used to set tolerance value of weight for below 1 Kg of weight.

TOLERANCE (abv 1Kg) - XX.XX % : This parameter is used to set tolerance value of weight for above 1 Kg of weight.

PASSWORD - XXXX : This parameter is set user password to enter in the program page.

PSWD LOCH DLY - XX MIN: This parameter is used to set password lock delay time. If user left keyboard unused for this time, it will automatically come out from program page and user have to enter correct password again to enter in the program page.

Now press **PAGE UP** key and it will let user into next program page. Here user will find following parameters.



ETHERNET CONFIGURE

DEVICE :

IP ADDRESS : XXX.XXX.XXX.XXX

This parameter is used to assign IP address to device.

MAC ADDRESS : XX.XX.XX

This parameter is used to assign MAC address to device.

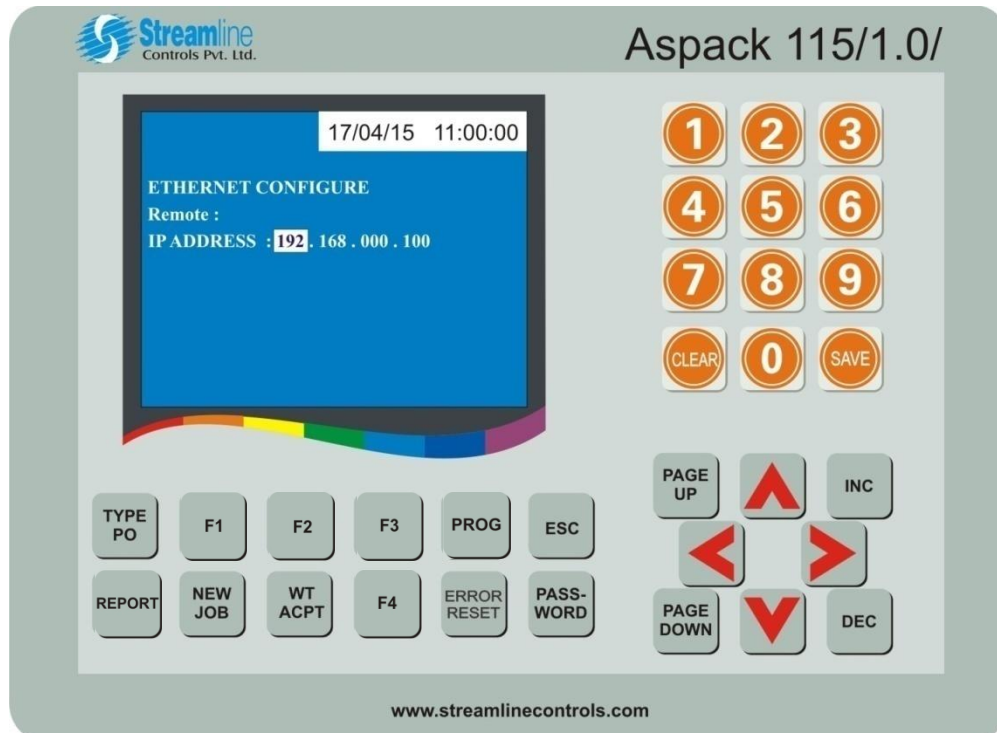
XX.XX.XX

Deflt Gway : XXX.XXX.XXX.XXX

This parameter are used to define default gateway and subnet mask for device.

Subnet Msk : XXX.XXX.XXX.XXX

Now press **PAGE UP** key and it will let user into next program page. Here user will find following parameters.



ETHERNET CONFIGURE

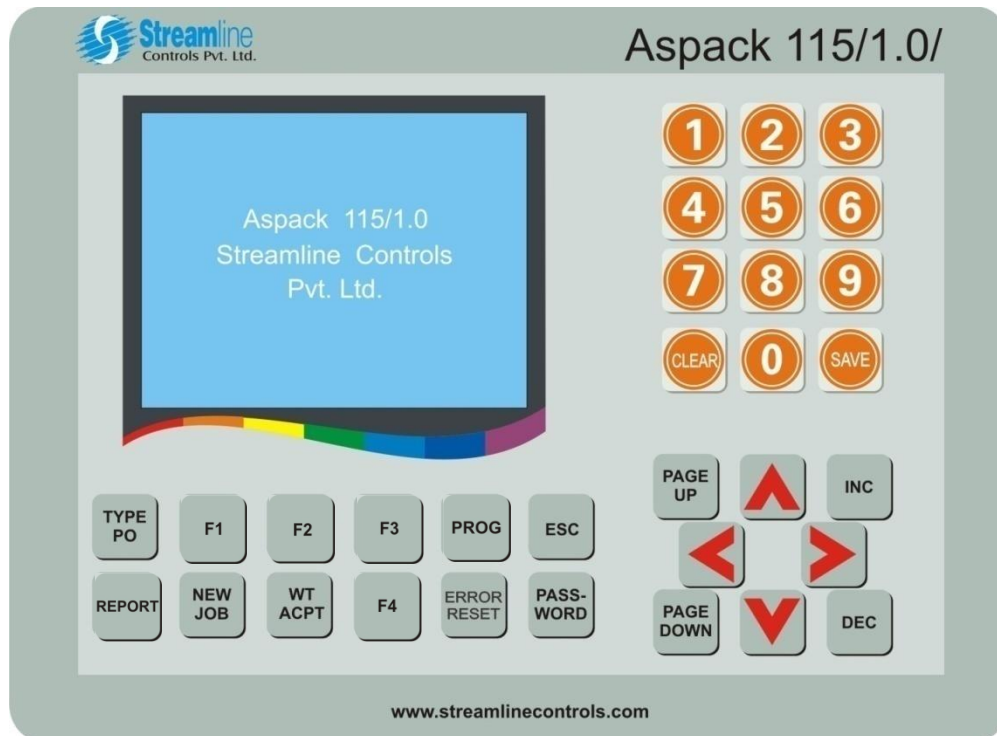
Remote :

IP ADDRESS : XXX.XXX.XXX.XXX

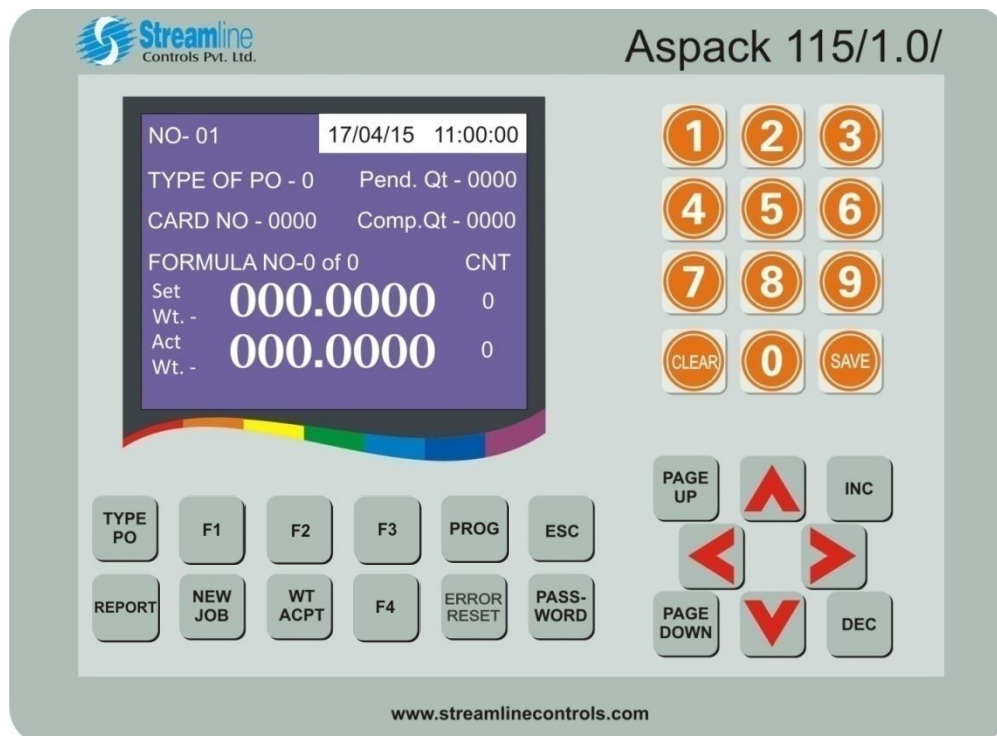
This parameter is used to assign IP address of Remote PC where application is installed.

6. Operating Instruction

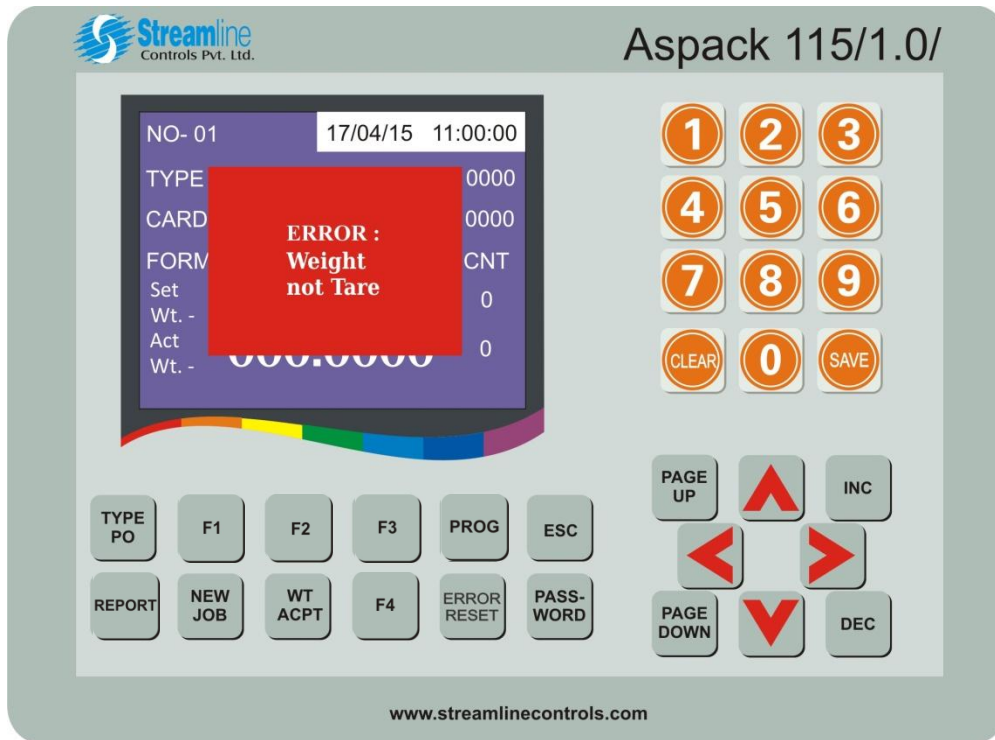
First of all, switch on the power supply to the controller and following screen would appears.



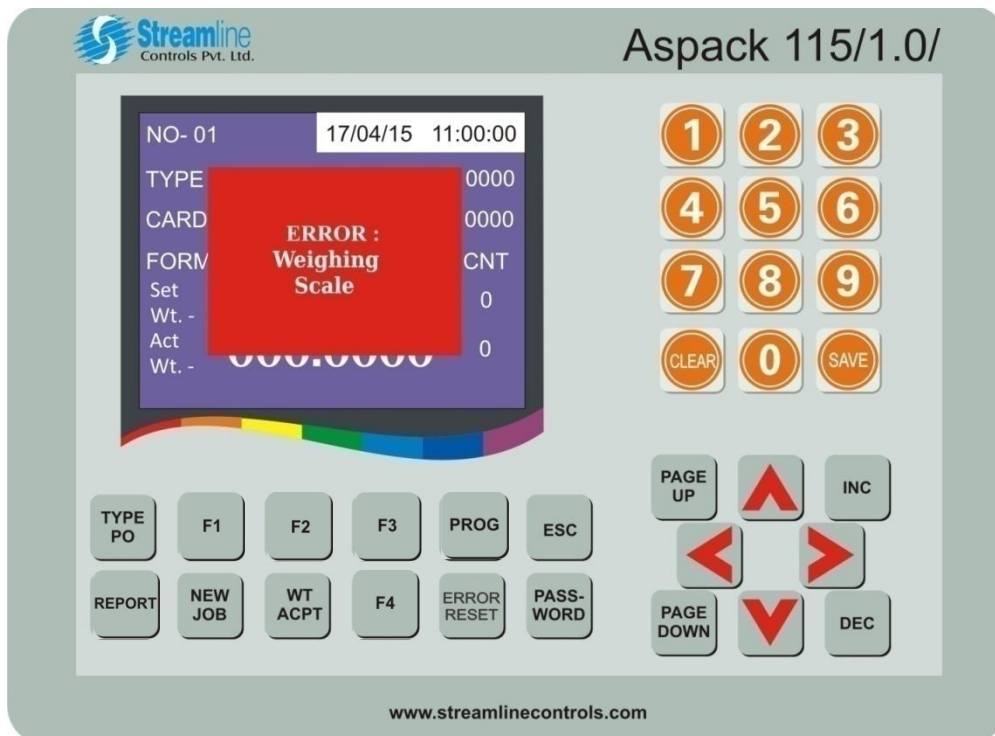
Now after weighing scale becomes ready for operation, controller home screen appears as follows:



Also, if weight is not tare, then following screen appears:

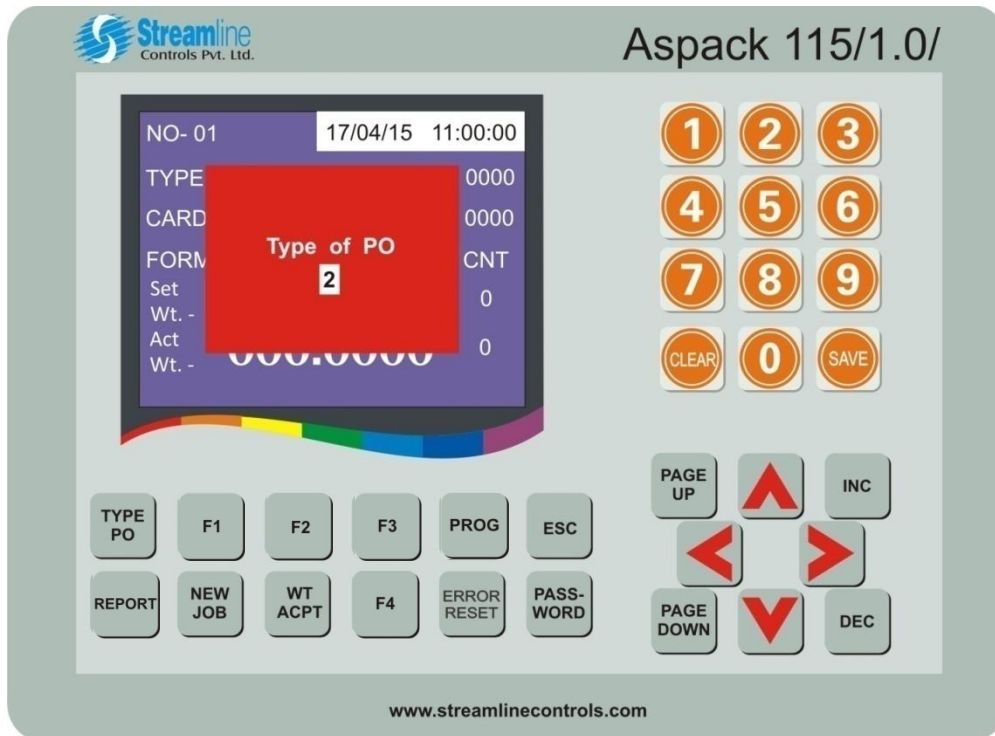


Here, if weighing scale is not connected to the controller then following screen appears .

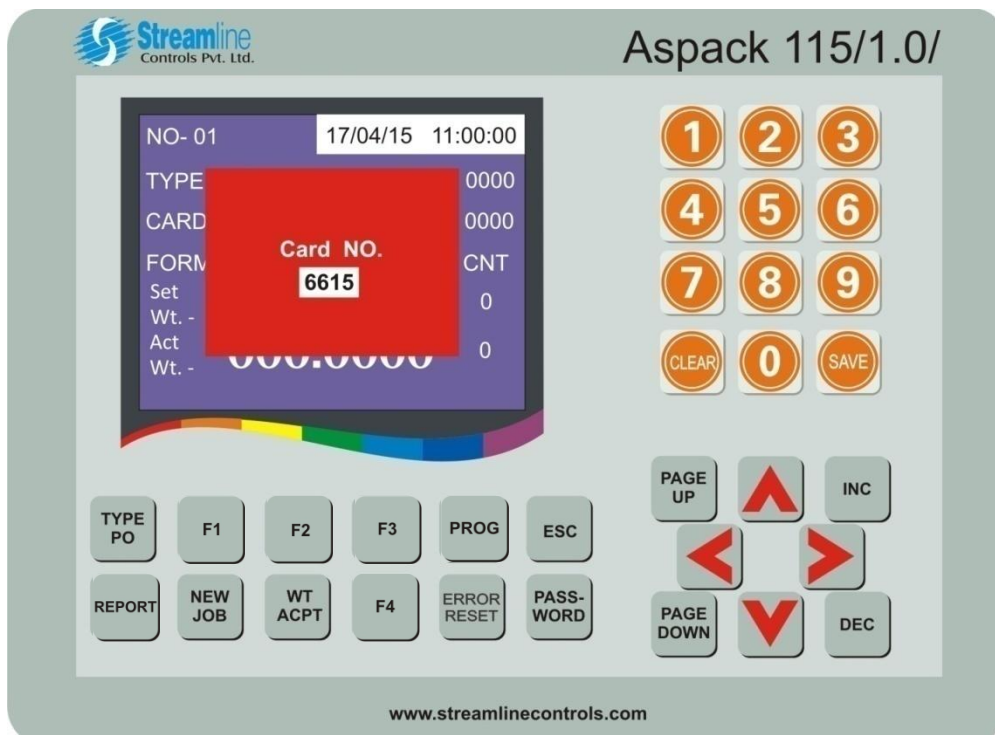


Just check serial cable is connected to weighing and press **ERROR RESET** key.

Now to work on particular production card, just press **TYPE PO** key and following screen would appears.

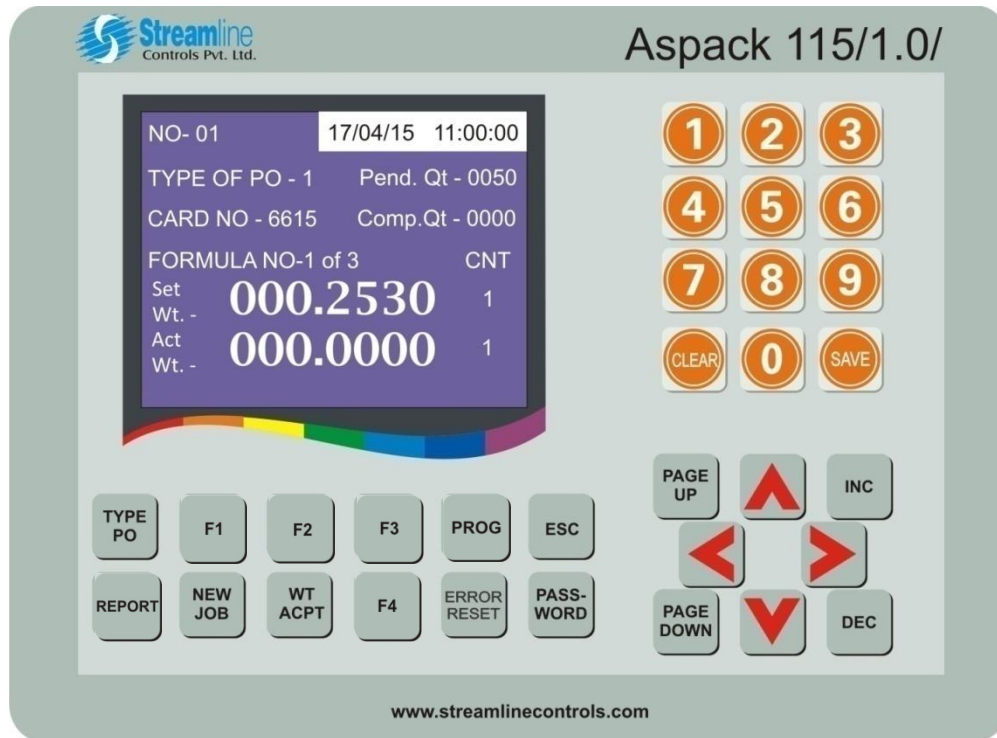


Here, press appropriate type of PO i.e. press **1 for PO, 2 for EPO, 3 for DPO and 4 for RPO**. After writing appropriate PO type, press **SAVE** key. If user wants to cancel typed number, just press number you want. It will overwrite to existing number. After pressing **SAVE** key, following screen would appears :

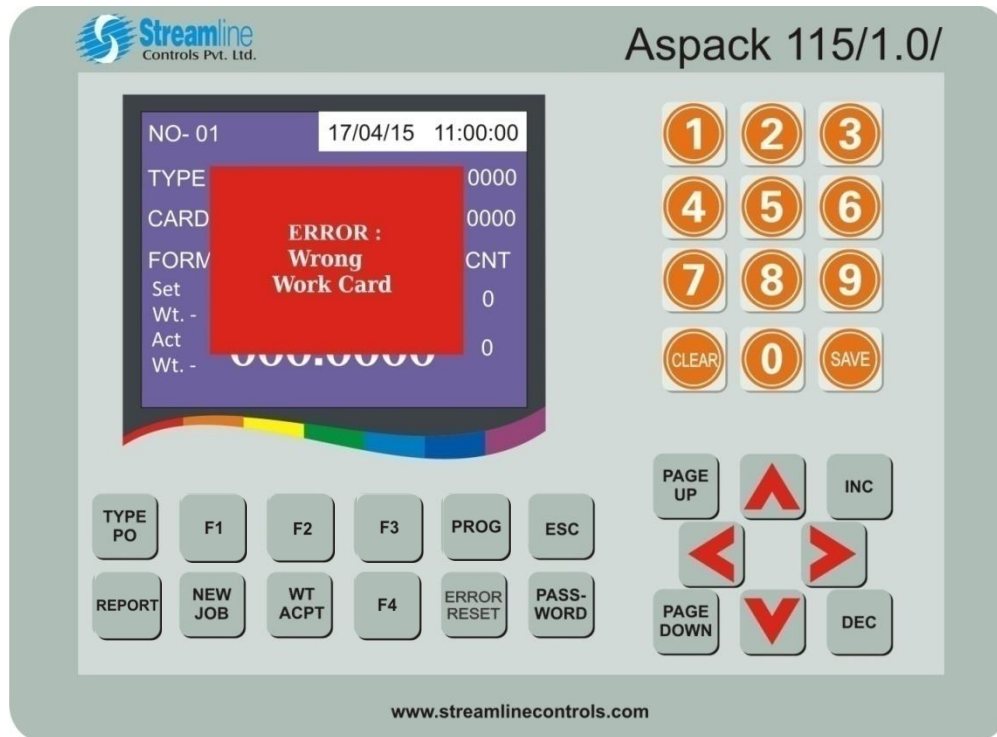


Here, enter production work card number using numeric keyboard. User may clear all typed number by pressing **CLEAR** key. After entering correct card number, press **SAVE** key. Now, controller tries to fetch the weight details from the centralized system.

If the entered card number is correct then controller unit fetches the weight information from the centralized PC application. This time following screen appears:



If the entered card number is wrong then wrong work card error message comes as following screen.



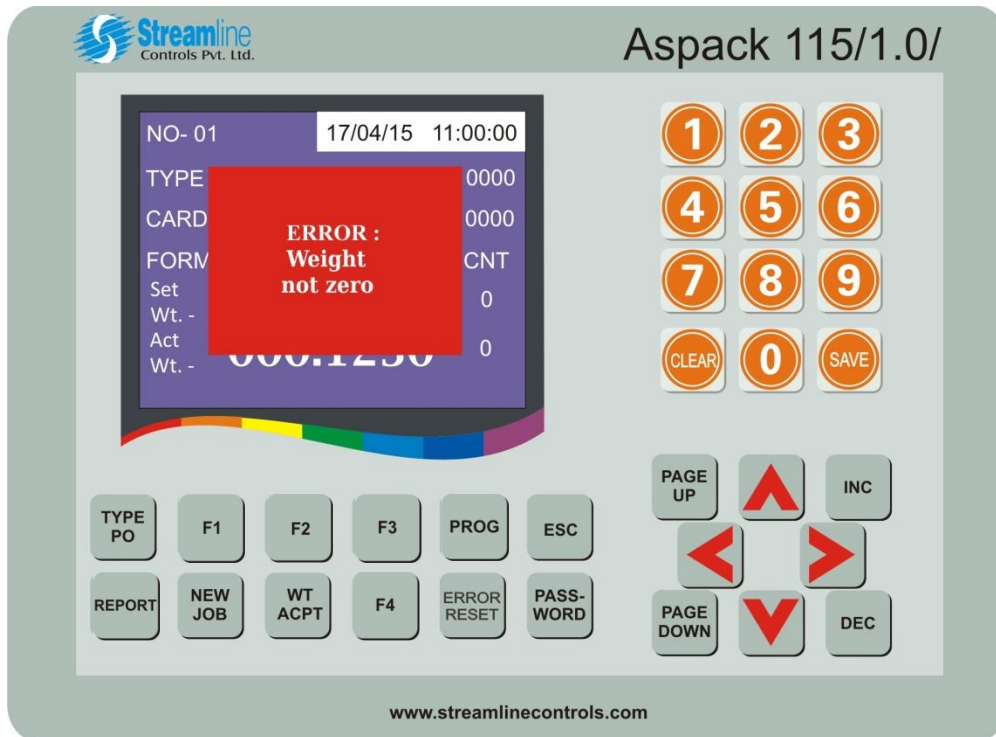
Here, press **ERROR RESET** key to acknowledge the error message and to turn off the buzzer. After that user can again enter right work card number as described earlier.

Note : Every time use **ERROR RESET** key to acknowledge the error message.

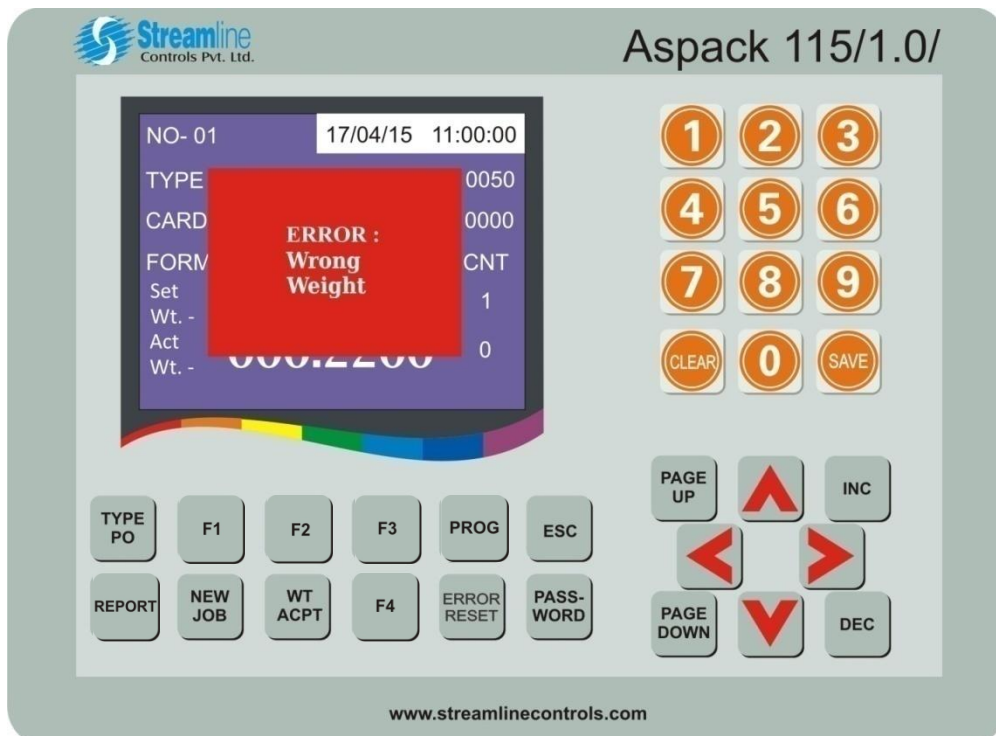
If correct card number weight appears on the screen, follow the next steps.

Perform the formula weight as displayed and when actual weight becomes equal to the set weight, press **WT ACPT** key or press Weight Accept push button on BOX. If the performed weight is equal or in the range of accepted weight with tolerance, correct weight message comes on the bottom line of screen. It will send corrected weight details to the system and do the next weight of same formula or next formula.

Here, if user tries to press **WT ACPT** key or Weight Accept push button on BOX again without removing previously done weight , following screen appears :



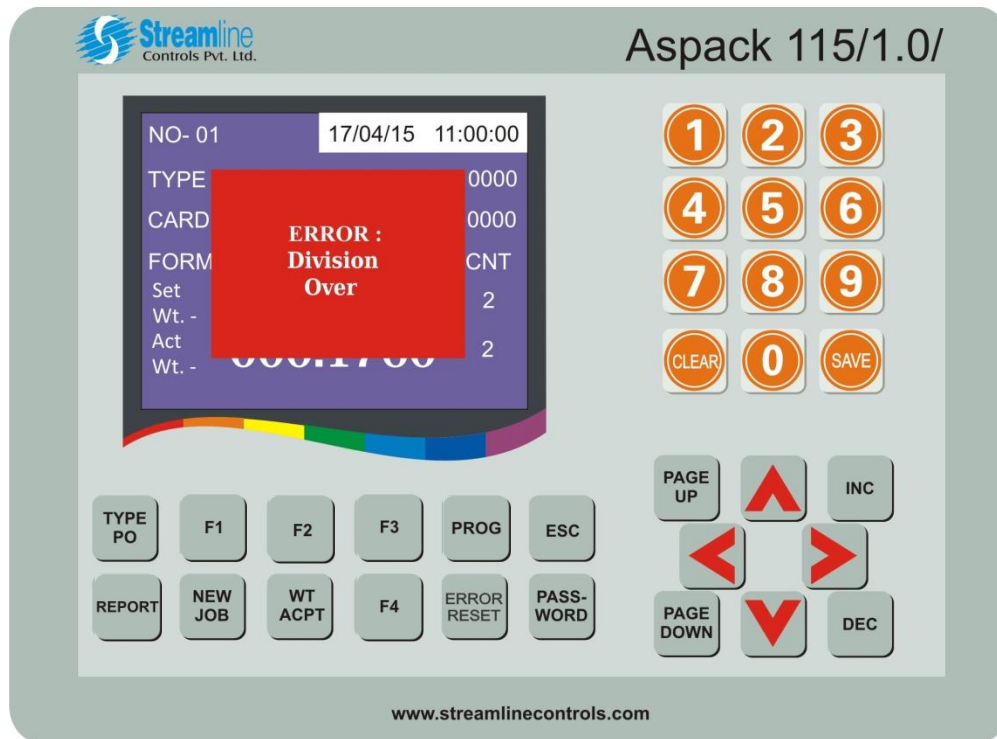
If performed weight is not equal or out of the tolerable range that means incorrect weight, wrong weight error message appears on the screen with buzzer as follows.



Now clear the alarm messages and perform the correct weight and press weight accept key. This way perform all weight of that formula that means perform that weight for number of division times.

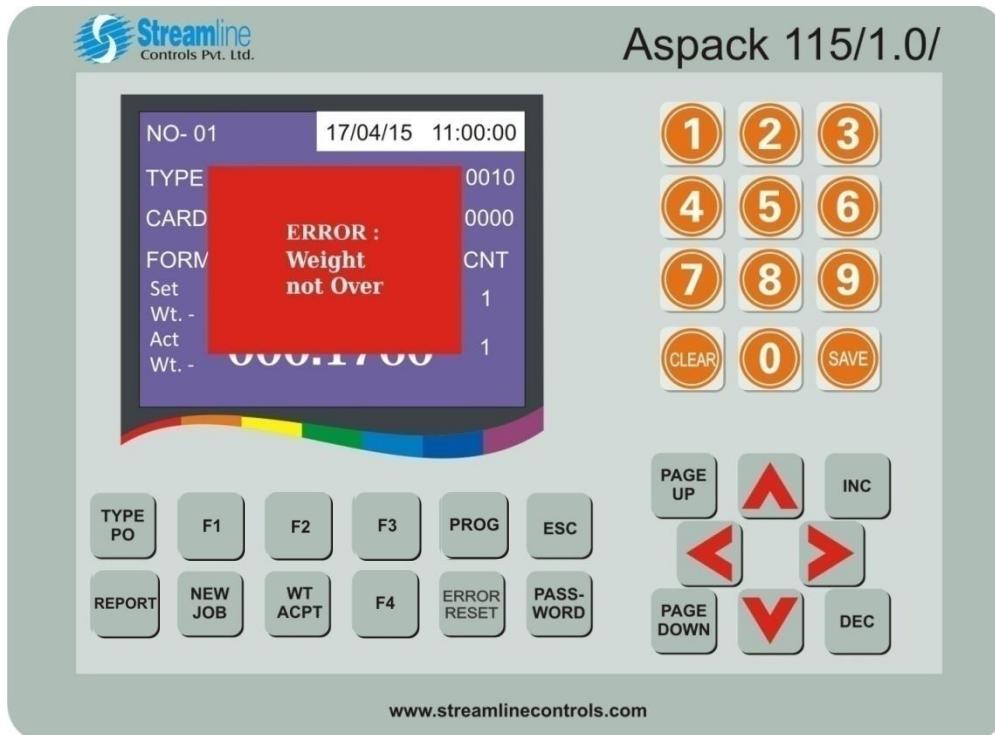
If the entered card number has more than one formula then whenever division overs for one formula, it will automatically switched to next formula weight. Now follow the same procedure for number of division count for this formula and perform correct weight.

After all formula weight is over, Division Over message appears with following screen.

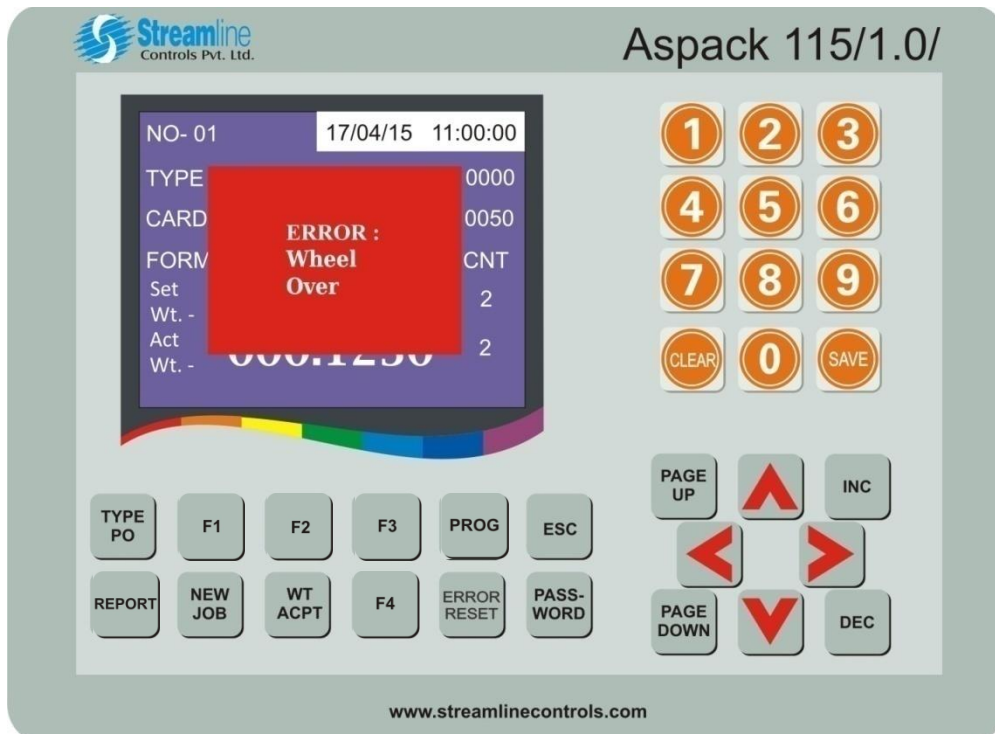


Whenever all formula weight is/are completed, user have to press **NEW JOB** key or **NEW JOB** push button on the box to complete job and again first formula weight is displayed. User have to follow this procedure up to pending quantity displayed on the screen becomes zero.

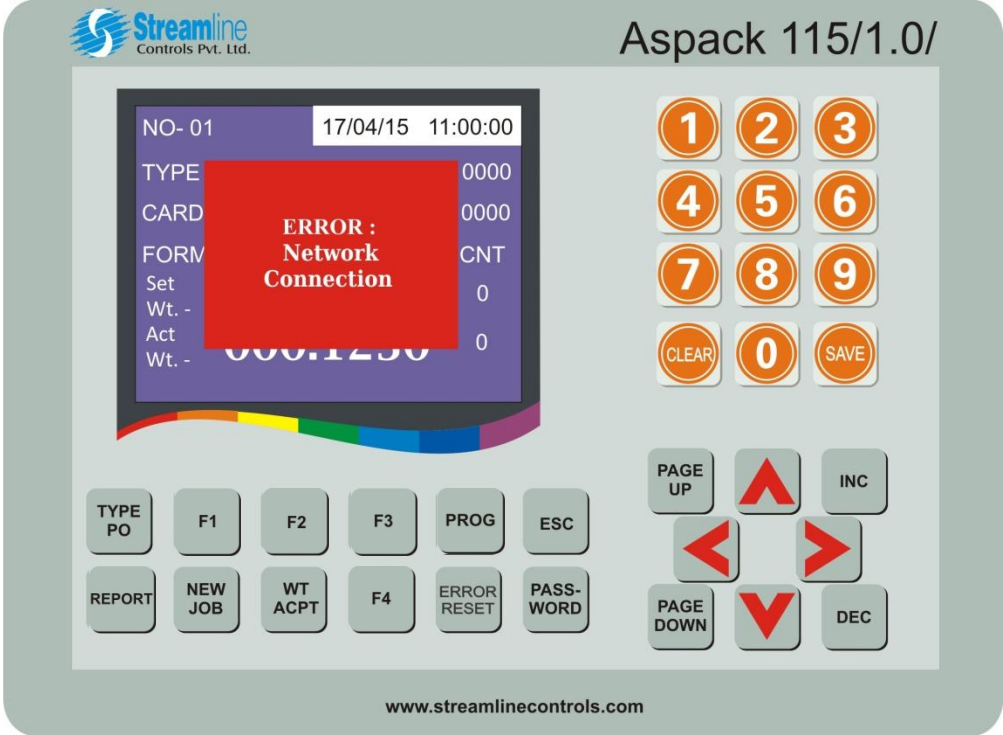
If user is performing weight of a formula and in between user press **NEW JOB** key then weight not over error message comes as following screen:



If all formula weight for total wheel quantity is completed and pending quantity becomes zero, after completing last weight and pressing NEW JOB push button, following screen appears for Wheel Over.



During operation, when user types new PO number or accepting correct weight and if no reply comes from the system application then network connection appears with following screen.



Check network cable connection or IP address settings of both controller and system.

7. Input Output Detail

Input No.	Description
Input 1	Accept
Input 2	New Job

8. Cable Detail

9 Pin HMI to Weighing Scale Serial Cable Detail

HMI 9 Pin Female	Weighing Scale 9 Pin Male
2	2
3	3
5	5