



Model No. OC-SW241040  
 Product Name : 24V-1/2/4A Switching Mode Automatic Battery Charger

Issue Date: 3/06/2008  
 Rev: 1.03

Battery Type: For 3AH-80AH 24V GEL, Sealed, WET, Calcium battery

| 1 AC power input Characteristics |  | Normal  | Withstand | Unit |
|----------------------------------|--|---------|-----------|------|
| 1-1                              | Input Voltage :  | 220-240 | 200-260   | Vac  |
| 1-2                              | Input Frequency :  | 50/60   | 47-63     | Hz   |
| 1-3                              | Unload input current :   | 80      | max.      | mAac |
| 1-4                              | Input Current consumption at 240Vac input, output 27.0V 4A loading | 1.0     | ±10%      | Aac  |
| 1-5                              | Nominal Efficiency: at 240Vac input, output 27.0V 4A               | >80%    |           |      |

| 2 Charging Output Control Characteristics |   |  |                                       | Unit               |
|---|---|--|---------------------------------------|--------------------|
| 2-1                                       | Charging Flow :   | <b>Manual Rejuvenation Charge→Battery condition check→ Soft Start Charge→Bulk Charge→ Absorption Charge→Manual Equalising Charge→Analysis→Float Charge(Full)</b> |                                       |                    |
| 2-2-1                                     | Manual Rejuvenation Charge Activity conditions:   | Pressing the "Select Equalisation" button (hold for 3S) and the battery is connected   |                                       |                    |
| 2-2-2                                     | Manual Rejuvenation Charge Time limited:  | Restart to charging process when timer out   | 24                                    | ±0.5 Hours         |
| 2-2-3                                     | Manual Rejuvenation Charge Stop condition:  | Pressing the "Select Equalisation" button again (hold for 3S) in the Rejuvenating stage then the charger restarts.   |                                       |                    |
| 2-3-1                                     | Soft Start Charging Activity conditions:  | Battery Voltage is between   | 6.0-21.0                              | ±0.5 Vdc           |
| 2-3-2                                     | Soft Start Charging output current control:   | Subject to Charging rate selected  | 0.25 / 0.5 / 1.0                      | ±0.2/±0.3/±0.4 Adc |
| 2-3-3                                     | Soft Start mode transit to Bulk mode when Battery voltage is over:  |  | 21.0                                  | ±0.5 Vdc           |
| 2-3-4                                     | Soft Start Charging Time limited:   | Stop charging if battery voltage cannot reach 21.0V after 6hrs   | 6                                     | ±0.5 Hours         |
| 2-4-1                                     | Bulk Charging Activity conditions:  | Battery Voltage is above 21.0V   | 21.0                                  | ±0.5 Vdc           |
| 2-4-2                                     | Bulk Charging Current control:  |  | 1 / 2 / 4                             | ±10% Adc           |
| 2-4-3                                     | Bulk mode transit to Absorption mode when Battery voltage is over(Subject to Battery type selected)   | Gel/Sealed&WET/Calcium   | 28.2/28.8/29.4                        | ±0.3 Vdc           |
| 2-4-4                                     | Bulk Charging Time( Tcc ) Limited:  | Stop charging if battery voltage cannot reach 28V after 24hrs  | 24                                    | ±1 Hours           |
| 2-5-1                                     | Absorption Charging Output Voltage control:   | Subject to Battery type selected   | Gel/Sealed&WET/Calcium 28.2/28.8/29.4 | ±0.3 Vdc           |
| 2-5-2                                     | Absorption Charging Time(Tcv) Limited:  | Force to Float mode when Time-out  | Tcv=1/2Tcc and 4≤Tcv≤8                | ±0.5 Hours         |
| 2-5-3                                     | Absorption Charging transit to Analysis or Float Charging when charging current is drop to  |  | 0.25 / 0.5 / 1.0                      | ±0.2/±0.3/±0.4 Adc |
| 2-6-1                                     | Equalising Charge Activity conditions:  | (Only Sealed&WET/Calcium Battery type have this charging Mode)   |                                       |                    |
|   | a) Selection Equalisation charging function---Pressing "Select Equalisation "button (less than 3 second),                                   |  |                                       |                    |
|   | b) If selected "Calcium" battery type, Equalisation function will be presented automatically.   |  |                                       |                    |
| 2-6-2                                     | Max. Equalising Charging output Voltage control:  | Subject to Battery type selected Gel/Sealed&WET/Calcium  | Forbidden/31.0/32.0                   | ±0.6 Vdc           |
| 2-6-3                                     | Equalising Charging current control:  | Subject to charging rate selected  | 0.25 / 0.5 / 1                        | ±0.2/±0.3/±0.4 Adc |
| 2-6-4                                     | Equalising Charging Time(Teq) Limited:  | When charging Sealed/WET Battery with Equalisation Selected:   | Teq1=Tcv and 1≤Teq≤3                  | ±0.2 Hours         |
|   |   | When charging Calcium Battery without Select Equalisation:   | Teq2=Tcv and 2≤Teq≤6                  | ±0.2 Hours         |
|   |   | When charging Calcium Battery with Equalisation Selected:  | Teq3=2XTeq2(4-12Hrs)                  | ±0.5 Hours         |
| 2-6-5                                     | Equalising Charging transits to Analysis mode after Battery voltage reaches Max. Equalising Charging Voltage and then holds for 30 minutes. |  |                                       |                    |
| 2-7                                       | Analysis process control: Stop charging for five minutes, the full LED will be Flashing if the battery voltage drops below                  |  | 25                                    | ±0.4 Vdc           |
| 2-8-1                                     | Float Charging output Voltage control:  | Gel/Sealed&WET/Calcium   | 26.8/27.0/27.2                        | ±0.25 Vdc          |
| 2-8-2                                     | Max. Float Charging current control:  | Subject to Charging rate selected  | 0.5 / 1.0 / 2.0                       | ±0.2/±0.3/±0.4 Adc |
| 2-8-3                                     | Restart to Bulk charging when the battery voltage is below:   |  | 26.0                                  | ±0.5 Vdc           |
| 2-9                                       | Unload output voltage when disconnected to the battery :  |  | 0.5                                   | Max. Vdc           |
| 2-10                                      | Output short-circuit current when disconnected to the battery :   |  | 1                                     | Max. mAac          |
| 2-11                                      | Battery flow back current (to the charger) when connected to 24V battery, AC Power disconnected :   |  | 1                                     | Max. mAac          |

**3 LED Indication & push button description**

|      | Bulk  | Absorption | Float(Full) | Rejuvenatio | FAULT |
|------|-------|------------|-------------|-------------|-------|
| 3-1  | Blue  | Green      | Green       | Yellow      | RED   |
| 3-2  | OFF   | OFF        | OFF         | OFF         | OFF   |
| 3-3  | OFF   | OFF        | OFF         | FLASH       | OFF   |
| 3-4  | FLASH | OFF        | OFF         | OFF         | OFF   |
| 3-5  | ON    | OFF        | OFF         | OFF         | OFF   |
| 3-6  | OFF   | ON         | OFF         | OFF         | OFF   |
| 3-7  | OFF   | FLASH      | OFF         | OFF         | OFF   |
| 3-8  | OFF   | OFF        | ON          | OFF         | OFF   |
| 3-9  | OFF   | OFF        | FLASH       | OFF         | OFF   |
| 3-10 | OFF   | OFF        | OFF         | OFF         | ON    |
| 3-11 | OFF   | OFF        | OFF         | OFF         | FLASH |
| 3-12 | FLASH | OFF        | OFF         | OFF         | FLASH |
| 3-13 | ON    | OFF        | OFF         | OFF         | FLASH |
| 3-14 | OFF   | OFF        | OFF         | OFF         | FLASH |

|    | 4A    | 2A    | 1A    |
|----|-------|-------|-------|
| 4A | GREEN | OFF   | OFF   |
| 2A | OFF   | GREEN | OFF   |
| 1A | OFF   | OFF   | GREEN |

|            | Calcium | Sealed/WET | GEL |
|------------|---------|------------|-----|
| Calcium    | RED     | OFF        | OFF |
| Sealed/WET | OFF     | RED        | OFF |
| GEL        | OFF     | OFF        | RED |

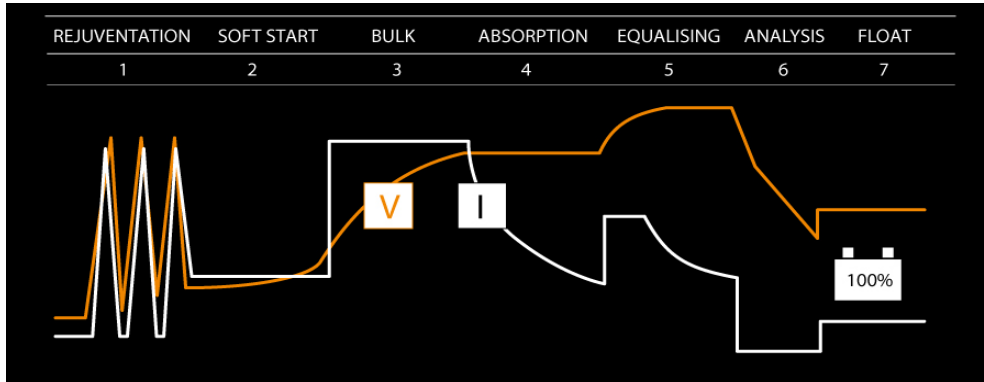
Equalisation  
 Equalisation is Selected RED

Remark: Equalisation is disabled when GEL battery is selected

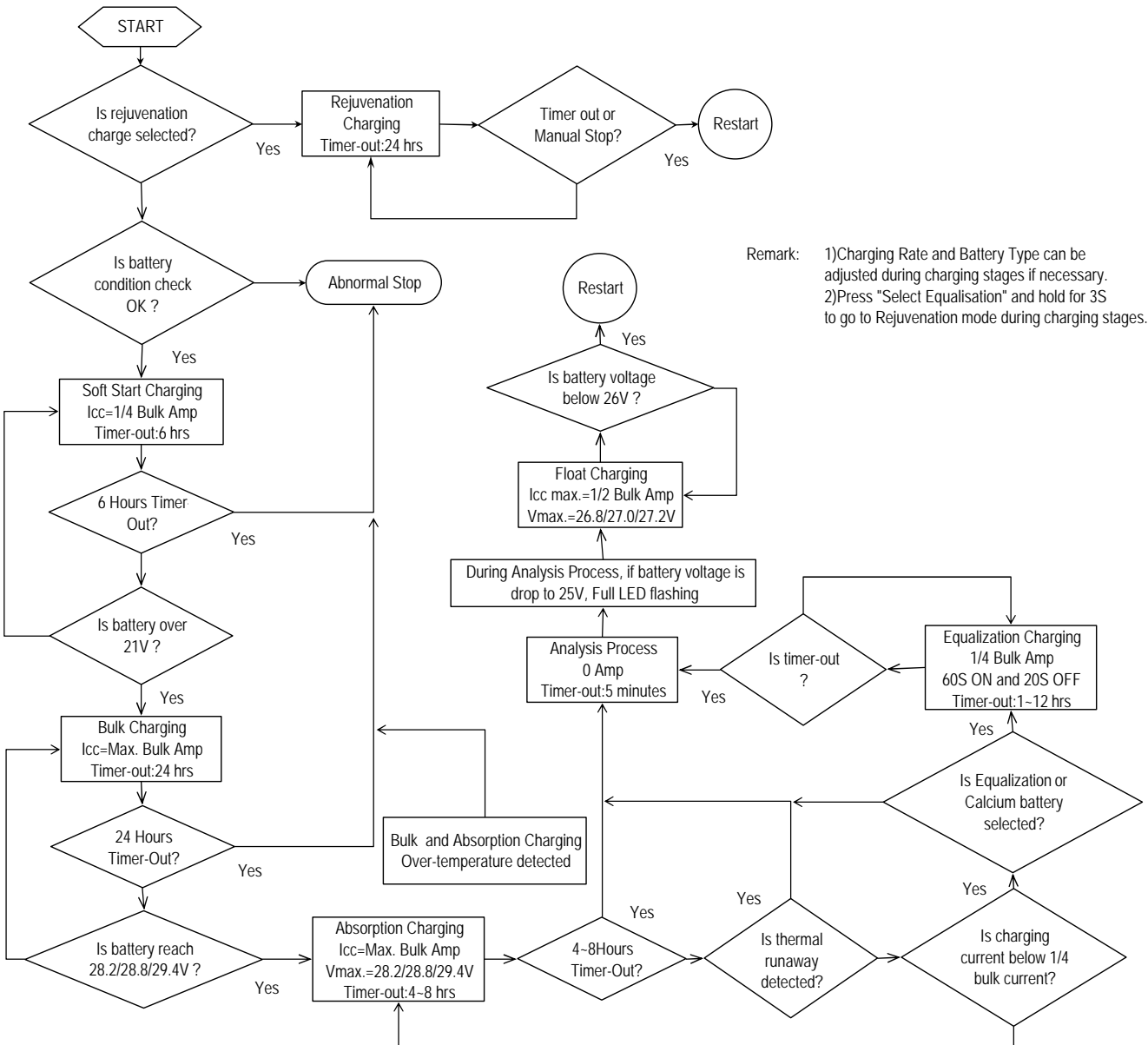
- 3-15 Press "Select Charging Rate" button: Select charging current , selected sequence is as 1A→ 2A → 4A
- 3-16 Press "Select Battery Type" button: Select battery type , selected sequence is as GEL→ Sealed / WET → Calcium
- 3-17 Press "select Equalisation" button: Select Equalisation function by press "Select Equalisation" button less than 3S .  
 Select Rejuvenation Charging by press "Select Equalisation" button over than 3S .

| 4 Safety & Protection |   |                                       | 5 Electrical Cable & Physical Parameters |                               |  |
|-----------------------|---|---------------------------------------|--|-------------------------------|--|
| 4-1                   | Safety Standards:                                 | EN 60335-2, EN 60335-2-29, AS/NZS     | 5-1                                      | Input Connector:              | 6 feet VDE H03VVH2-F 2X0.75mm <sup>2</sup> with 2PIN SAA plug. |
| 4-2                   | EMC Standards:                                    | EN 55014, C-Tick                      | 5-2                                      | Output cord :                 | 4 feet 18AWG X2 105°C with Quick connector.                    |
| 4-3                   | Input-Output insulation test :                    | 3000Vac 50/60Hz with 1 minutes, 5mAac | 5-3                                      | Extend cord:                  | 2 feet 18AWG X2 105°C with Battery Clip.                       |
| 4-4                   | Cooling:  | By Natural cooling                    | 5-4                                      | Plastic Enclosure Dimension : | 190 (L) x 92(W) x 55 (H) mm                                    |
| 4-5                   | Build-in temperature protection                   |                                       | 5-5                                      | Operating temperature :       | 0 to 40°C  |
| 4-6                   | Output short-circuit, reverse polarity Protection |                                       | 5-6                                      | Operating Humidity range :    | 0 to 90% RH  |
|                       |   |                                       |  | Storage temperature :         | -25 to 85°C  |
|                       |   |                                       |  | Weight:                       | 860g   |

### 6 Charging Curve :



### 7 Charging Flow Chart :



Remark: 1)Charging Rate and Battery Type can be adjusted during charging stages if necessary.  
2)Press "Select Equalisation" and hold for 3S to go to Rejuvenation mode during charging stages.