Firetrol, Inc.

Mark II Specifications
AS-2001
12Vdc Battery Charger w/Auxiliary 12Vdc Supply

Firetrol FTA1100J Diesel Controllers

1-26-03

Input Voltage: 120/240Vac ±10%, 50/60 Hz, Single Phase

Input Power: 260VA

Charger Output Current: 10Adc pulse-width modulated (80-100kHz)

Charger Output Voltage: 12Vdc nominal

Battery Types:
- Lead-acid Pb, Size 8D (BCI)
- NiCd 9 cell
- NiCd 10 cell

Charging Technology: Switching

Charging Method: Fully-automatic 4-Step charging cycle with a qualification stage followed by a **constant current** fast charge, a **constant potential** fast charge, and a **constant potential** maintenance or float charge.

Step 1: Qualification Stage: (Figure 1)
Qualifies battery for fast charge if battery voltage is greater than 10.5V. Otherwise, the battery is absent or defective, resulting in a fault condition with alarm output. Flashing yellow and green LEDs indicate battery qualification stage.

Step 2: Fast Charge, Constant Current Regulated: (Figure 1)
Fast charges battery at $\mathbf{I_{max}}$ of 10A until battery voltage reaches $\mathbf{V_{peak}}$ or 24 hours has elapsed, whereupon charger switches into constant potential mode for bulk charging at $\mathbf{V_{peak}}$. Battery voltage is a function of charging current. Solid yellow LED indicates fast charge mode.

Step 3: Fast Charge, Constant Voltage Regulated: (Figure 1)
Charges battery at a constant potential of $\mathbf{V_{peak}}$ until battery current falls below 500mA or 24 hours has elapsed, whereupon charger switches into constant potential mode for float (or maintenance charge). Solid yellow LED with green LED blinking every 4 sec indicates bulk charge mode.

Step 4: Maintenance or Float Charge: (Figure 1)
Trickle charges battery at a constant potential of $\mathbf{V_{float}}$ until battery current falls below 500mA or 24 hours has elapsed, whereupon charger switches into constant potential mode for float (or maintenance charge). Solid green LED indicates float charge mode. Float charge is selectable for the following battery types:

Battery Type	$\mathbf{V_{float}}$
• Pb lead acid	13.5±0.3 Vdc
• $NiCd_{9cell}$	13.0±0.2 Vdc
• $NiCd_{10cell}$	14.5±0.4 Vdc

Current Sensing: Precision shunt resistor

LED Indicators:

• Fault	Red solid
• Qualification	Yellow and green flashing
• Fast Charge	Yellow solid
• Bulk Charge	Yellow solid with green blinking every 4 sec
• Float Charge	Green solid

Metering Outputs: Scaled analog outputs for battery voltage, current, and AC incoming voltage:

- Battery Volts: 0.1V/V
- Battery Current: 0.25V/A
- AC power failure: 10mv/V

Alarm monitoring: Alarms:

- Missing battery
- Reverse polarity of battery (charger output fuse opens)
- AC power failure
- Battery switched off
- Shorted battery
- Charger malfunction (over voltage)
- Bad battery (does not pass qualification stage)
- Charger output fuse open

Alarm Outputs:

- Relay: SPDT drops out to alarm
  Rating: 175Vdc@1.5A, 5W maximum
- Digital Output: Negative True to alarm
  Rating: 5Vdc

Auxiliary 12Vdc Power: 12Vdc unregulated @ 4 amps, protected by resettable polyswitch

Protection:

- AC Input Fusing: 6A, 250Vac, Fast-acting

- DC Charger Output Fusing: 20A, 250Vac Fast-acting

Package: Aluminum chassis 9-1/2" x 4" x 2-1/2" with a single PC board

Environmental: 50° C

Applicable Codes & Standards:

- NFPA20
- BS5306 Part 2 1990 (LPC)
- UL1236, UL1564, UL218
- CE Marking

Firetrol® Inc.

Mark II Specifications
AS-2001
24Vdc Battery Charger w/Auxiliary 24Vdc Supply

Firetrol FTA1100J Diesel Controllers

1-26-03

Input Voltage: 120/240Vac ±10%, 50/60 Hz, Single Phase

Input Power: 492VA

Charger Output Current: 10Adc pulse-width modulated (80-100kHz)

Charger Output Voltage: 24Vdc nominal

Battery Types:
- Lead-acid Pb, Size 8D (BCI)
- NiCd 18 cell
- NiCd 20 cell

Charging Technology: Switching

Charging Method: Fully-automatic 4-Step charging cycle with a qualification stage followed by a **constant current** fast charge, a **constant potential** fast charge, and a **constant potential** maintenance or float charge.

Step 1: Qualification Stage: (Figure 1)
Qualifies battery for fast charge if battery voltage is greater than 10.5V. Otherwise, the battery is absent or defective, resulting in a fault condition with alarm output. Flashing yellow and green LEDs indicate battery qualification stage.

Step 2: Fast Charge, Constant Current Regulated: (Figure 1)
Fast charges battery at $\mathbf{I_{max}}$ of 10A until battery voltage reaches $\mathbf{V_{peak}}$ or 24 hours has elapsed, whereupon charger switches into constant potential mode for bulk charging at $\mathbf{V_{peak}}$. Battery voltage is a function of charging current. Solid yellow LED indicates fast charge mode.

Step 3: Fast Charge, Constant Voltage Regulated: (Figure 1)
Charges battery at a constant potential of $\mathbf{V_{peak}}$ until battery current falls below 500mA or 24 hours has elapsed, whereupon charger switches into constant potential mode for float (or maintenance charge). Solid yellow LED with green LED blinking every 4 sec indicates bulk charge mode.

Step 4: Maintenance or Float Charge: (Figure 1)

Trickle charges battery at a constant potential of $\mathbf{V_{float}}$ until battery current falls below 500mA or 24 hours has elapsed, whereupon charger switches into constant potential mode for float (or maintenance charge). Solid green LED indicates float charge mode. Float charge is selectable for the following battery types:

Battery Type	$\mathbf{V_{float}}$
• Pb lead acid	27.0±0.3 Vdc
• $NiCd_{18cell}$	26.0±0.2 Vdc
• $NiCd_{20cell}$	29.0±0.4 Vdc

Current Sensing: Precision shunt resistor

LED Indicators:

• Fault	Red solid
• Qualification	Yellow and green flashing
• Fast Charge	Yellow solid
• Bulk Charge	Yellow solid with green blinking every 4 sec
• Float Charge	Green solid

Metering Outputs: Scaled analog outputs for battery voltage, current, and AC incoming voltage:

- Battery Volts: 0.1V/V
- Battery Current: 0.25V/A
- AC power failure: 10mv/V

Alarm monitoring: Alarms:

- Missing battery
- Reverse polarity of battery (charger output fuse opens)
- AC power failure
- Battery switched off
- Shorted battery
- Charger malfunction (over voltage)
- Bad battery (does not pass qualification stage)
- Charger output fuse open

Alarm Outputs:

- Relay: SPDT drops out to alarm
  Rating: 175Vdc@1.5A, 5W maximum
- Digital Output: Negative True to alarm
  Rating: 5Vdc

Auxiliary 24Vdc Power:	24Vdc unregulated @ 2 amps, protected by resettable polyswitch
Protection:	• AC Input Fusing: 6A, 250Vac, Fast-acting • DC Charger Output Fusing: 20A, 250Vac Fast-acting
Package:	Aluminum chassis 9-1/2" x 4" x 2-1/2" with a single PC board
Environmental:	50° C

Applicable Codes & Standards:

- NFPA20
- BS5306 Part 2 1990 (LPC)
- UL1236, UL1564, UL218
- CE Marking

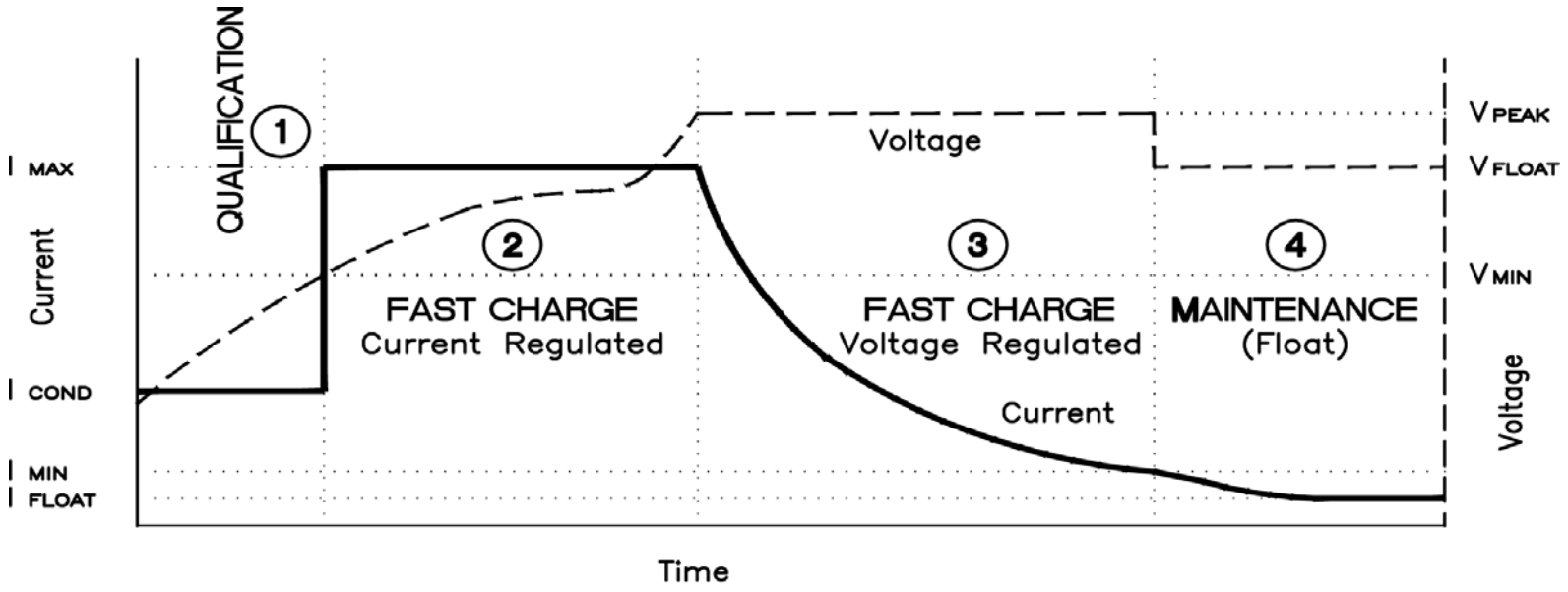
QUALIFICATION
1
2
3
4
MAX
Current
COND
MIN
FLOAT
Voltage
Current
FAST CHARGE
Current Regulated
FAST CHARGE
Voltage Regulated
MAINTENANCE
(Float)
VPEAK
VFLOAT
VMIN
Voltage
Time

figure 1