



**iMux Series ADF820SG iMUX (TM16)**

# **Auto Darkening Welding Helmet Owner's Manual**

\* Designed to be used with Freflow V1 PAPR blower unit





# TECMEN

## Professional Quality Welding Helmet

### SAFETY WARNINGS - READ BEFORE USING



#### WARNING

Read & Understand All Instructions Before Using



The auto-darkening welding helmets are designed to protect the eye and face from sparks, spatter and harmful radiation under normal welding conditions. This auto darkening filter will automatically turn on when pick it up. The filter automatically changes from a light state to a dark state when an arc is struck, and it returns to the light state when welding stops. This helmet are designed to be used together with Freflow V1 blower unit to protect against airborne contaminants.

**The Auto-Darkening welding helmet comes assembled. But before it can be used, it must be adjusted to fit the user properly. Check battery surfaces and contacts and clean it if necessary. Verify if the battery is in good condition and installed properly. Set up for delay time, sensitivity and shade number for your application.**

**The helmet should be stored in dry, cool and dark area and remove the battery, when not using it for a long time.**



#### WARNING



- Inspect face seal for damage and replace if necessary. Make sure the air is supplied to helmet.
- This Auto-Darkening welding helmet is not suitable for laser welding.
- Never place this helmet and Auto-Darkening filter on a hot surface.
- Never open or tamper with the Auto-Darkening filter.
- This Auto-Darkening welding helmet will not protect against severe impact hazards.
- This helmet will not protect against explosive devices or corrosive liquids.
- Do not make any modifications to either the filter or helmet, unless specified in this manual. Do not use replacement parts other than those specified in this manual. Unauthorized modifications and replacement parts will void the warranty and expose the operator to the risk of personal injury.
- Should this helmet not darken upon striking an arc, stop welding immediately and contact your supervisor or your dealer.
- Do not immerse the filter in water.
- Do not use any solvents on the filter screen or helmet components.
- Use only at temperatures: -10°C ~ +55°C (14°F ~ 131°F).
- Storing temperature: -20°C ~ +70°C (- 4°F ~ 158°F). The helmet should be stored in dry cool and dark area and remove the battery, when not using it for a long time.
- Protect filter from contact with liquid and dirt.
- Clean the filter surface regularly; do not use strong cleaning solutions. Always keep the sensors and solar cells clean using a clean lint-free tissue.
- Regularly replace the cracked / scratched / pitted front cover lens.
- The materials which may come into contact with the wearer's skin can cause allergic reactions in some circumstances.



#### WARNING

Severe personal injury could occur if the user fails to follow the above mentioned warnings, and/or fails to follow the operating instructions.



## COMMON PROBLEMS AND REMEDIES

### • Irregular Darkening Dimming

Headgear has been set unevenly and there is an uneven distance from the eyes to the filter lens (Reset the headgear to reduce the difference to the filter).

### • Auto-Darkening filter does not darken or flickers

- ① Front cover lens is soiled or damaged (Change the cover lens).
- ② Sensors are soiled (Clean the sensors surface).
- ③ Welding current is too low (Adjust the sensitivity level to higher).
- ④ Check battery and verify they are in good condition and installed properly. Also, check battery surfaces and contacts and clean if necessary. Please refer to the "**BATTERY INSTALLATION**" on page 2.

### • Slow response

Operating temperature is too low (Do not use at temperatures below -10 °C or 14 °F).

### • Poor vision

- ① Front / inside cover lens and / or the filter is soiled (Change lens).
- ② There is insufficient ambient light.
- ③ Shade number is incorrectly set (Reset the shade number).
- ④ Check if removing the film on the front cover lens.

### • Welding helmet slips

Headgear is not properly adjusted (Readjust the headgear).



### WARNING



The user must stop using the auto-darkening welding helmet immediately if the above-mentioned problems cannot be corrected. Contact the dealer.

## INSTRUCTIONS FOR USE

WARNING! Before using the helmet for welding, ensure that you have read and understood the safety instructions.

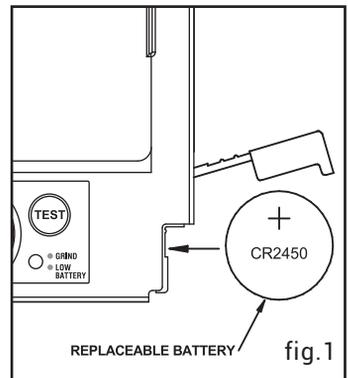
### • BATTERY INSTALLATION

When the indicator located on the lens starts to come to red (See fig.2), it is a warning for the battery to be replaced.

Slide the battery holder out of the auto darkening filter, (remove the used battery when you replacing battery), put new CR2450 batteries inside the battery holder, be sure Positive (+) side of battery faces up (See fig.1) and put the battery holder back into the auto darkening filter.

### • TEST

Before welding, press and hold "TEST" to preview shade selection (See fig.2). When released then viewing window will automatically return to the light state (3.5 Shade). Press "TEST", if viewing window does not turn to dark state, replace battery and try again.



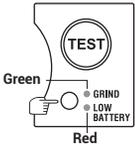


fig.2

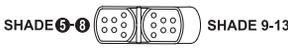


fig.3

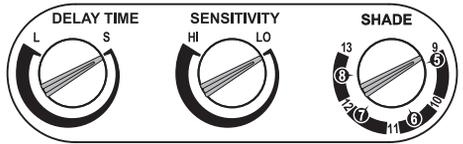


fig.4

**• SELECTING SHADE LEVEL**

Select the power shade number for your welding process by referring to the "Shade Guide Table" on the last page. The shade can be adjusted from shade 5 to 8 and 9 to 13 based upon welding process or application. Shade is adjusted by setting the shade range switch to the proper range (See fig.3), then turn the shade control knob to the shade number required (See fig.4).

**• SENSITIVITY**

The sensitivity can be set to "HI" (high) or "LO" (low) by using the infinitely dial knob on the back of the auto darkening filter. The "Mid-High" setting is the normal setting for everyday use. The maximum sensitivity level is appropriate for low welding current work, TIG, or special applications. Higher sensitivity setting is necessary if lens flashing on and off. Where the operation of the helmet is disturbed by excess ambient light, or another welding machine close by, use the "LO" setting (See fig.4). As a simple rule, for optimum performance, it is recommended to set sensitivity to the maximum at the beginning and then gradually reduce it, until the filter reacts only to the welding light flash and without annoying spurious triggering due to ambient light conditions (direct sun, intensive artificial light, neighbouring welder's arcs etc.).

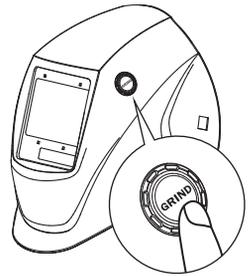


fig.5

**• SELECTING DELAY TIME**

When welding ceases, the viewing window automatically changes from dark back to light but with a pre-set delay to compensate for any bright afterglow on the workpiece. The delay time / response can be set to "S" (short: 0.1 sec.) or "L" (long: 1.0 sec.) as you require using the infinitely dial knob on the back of the auto darkening filter (See fig.4). It is recommended to use a shorter delay with spot welding applications and a longer delay with applications using higher currents. Longer delays can also be used for low current TIG welding, and TIG / MIG / MAG pulse.

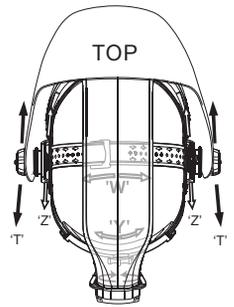


fig.6

**• SELECTING THE GRIND OPTION**

After weld / cutting work, long press "GRIND" button on grind control case for 2 seconds (See fig.5), the auto darkening filter will switch to grind mode. Under this situation, the indicator would turn green and flash every 3 seconds (See fig.2). Long press "GRIND" button for 1 second again, it will return to the previous mode.

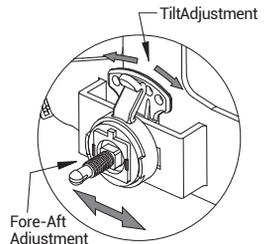


fig.7

**• ADJUSTING THE FIT OF THE HELMET**

The overall circumference of the headband can be made larger

or smaller by rotating the knob on the back of the headband. (See adjustment "Y" in fig.6). This can be done while wearing the helmet and allows just the right tension to be set to keep the helmet firmly on the head without it being too tight.

- If the headband is riding too high or too low on your head, adjust the strap which passes over the top of your head. To do this release the end of the band by pushing the locking pin out of the hole in the band. Slide the two portions of the band to a greater or lesser width as required and push the locking pin through the nearest hole. (See adjustment "W" in fig.6).

- Test the fit of the headband by lifting up and closing down the helmet a few times while wearing it. If the headband moves while tilting, re-adjust it until it is stable.

#### • **ADJUSTING THE DISTANCE BETWEEN THE HELMET AND THE FACE**

Step 1: Undo the block nut (See "T" in fig.6) to adjust the distance between the helmet and your face in the down position.

Step 2: Loosen the block nut on either side of the helmet and slide it nearer or further from your face. (See adjustment "Z" in fig.6). It is important that your eyes are each the same distance from the lens. Otherwise the darkening effect may appear uneven.

Step 3: Re-tighten the block nut when adjustment is complete.

#### • **ADJUSTING VIEW ANGLE POSITION**

TILT: Tilt adjustment is located on right side of helmet. Loosen the right headgear tension knob and push the top end of the adjustment lever outward until the lever's Stop Tab clears the notches. Then rotate the lever forward or back to the desired tilt position. The Stop will automatically engage again when released locking the helmet into position (See fig.7).

- You are now ready to use the helmet. The shading may be adjusted during use by re-setting the potentiometer control.

## MAINTENANCE

#### • **REPLACING FRONT COVER LENS**

Replace the front cover lens if it is damaged. Remove filter holder assembly (See fig.9). Remove front cover lens from helmet assembly. Carefully remove gasket from cover lens. Install new cover lens into gasket and assemble to helmet shell. Make sure to assemble cover lens and gasket into helmet shell the same way as it was removed.

#### • **REPLACING INSIDE COVER LENS**

Replace the inside clear lens if it is damaged. Place your fingernail in recess below view window and flex lens upwards until it releases from edges of view window.

#### • **REPLACING THE AUTO DARKENING FILTER**

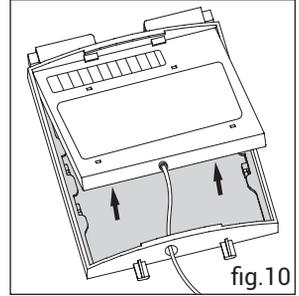
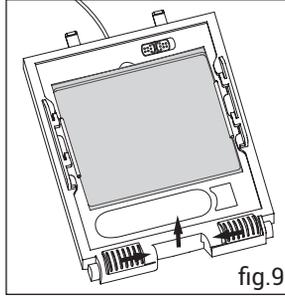
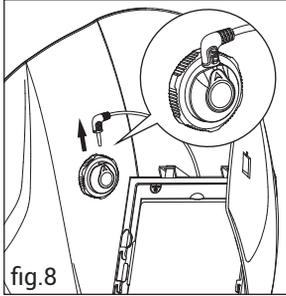
First, pull out plug of wire from grind control case (See fig.8). Second, take out wire from hole in the helmet window and remove filter holder assembly from helmet (See fig.9). Third, flex top end of holder to remove filter and revolve plug carefully from the hole in holder (See fig.10). When installing new filter, first, put wire through the hole in holder and make sure that filter is installed in holder correctly. Second, put wire through the hole in helmet window and install holder assembly into helmet shell. Third, insert plug of wire into grind control case.

## • CLEANING

Clean helmet by wiping with a soft cloth. Clean auto darkening filter surfaces regularly. Do not use strong cleaning solutions. Clean sensors and solar cells with methylated spirit and a clean cloth and wipe dry with a lint-free cloth.

## • FACE SEAL

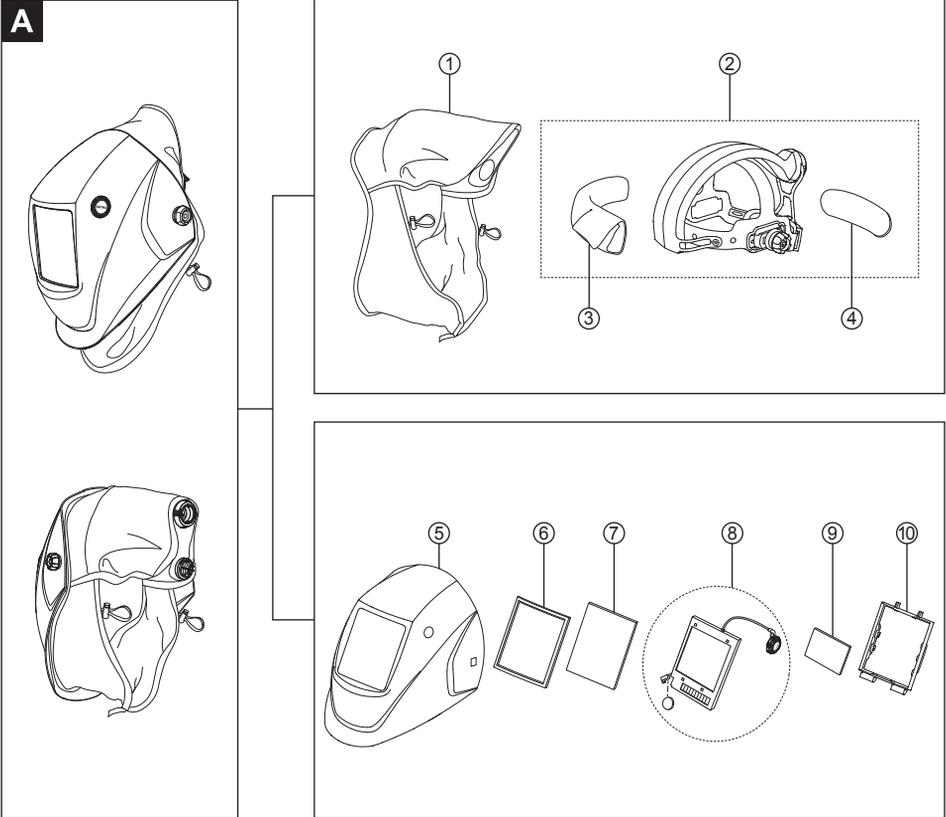
The face seal can be used to facilitate cleaning after disassembling from the shell, but it must be replaced if it is damaged.



## TECHNICAL SPECIFICATIONS

Optical Class:	1 / 1 / 1 / 1
Viewing Area:	95 x 85 mm (3.74" x 3.35")
Cartridge Size:	133 x 114 x 9 mm (5.25" x 4.50" x 0.35")
Arc Sensor:	4
Light State:	DIN 3.5
Dark State:	Variable Shade 5 ~ 8 / 9 ~ 13
Shade Control:	Internal, Variable Shade
Power On/Off:	Automatic On / Off
Sensitivity Control:	Low – High, by infinitely dial knob
UV/IR Protection:	Up to Shade DIN16 at all times
Power Supply:	Solar cell. Battery replaceable, 1 x CR2450 lithium battery
Switching Time:	1/25,000 s. from Light to Dark
Delay (Dark to Light):	0.1 ~ 1.0 s by infinitely dial knob
Low Amperage TIG Rated:	≥ 2 amps (DC); ≥ 2 amps (AC)
Grinding:	Yes
Battery Capacity Test:	Yes
Operating Temp.:	-10 °C ~ +55 °C (14 °F ~ 131 °F)
Storing Temp.:	-20 °C ~ +70 °C (- 4 °F ~ 158 °F)
Helmet Material:	High Impact Resistance Nylon
Application Range:	Stick Welding (SMAW); TIG DC&AC; TIG Pulse DC; TIG Pulse AC; MIG/MAG/CO2; MIG/MAG Pulse; Plasma Arc Cutting (PAC); Plasma Arc Welding (PAW); Air Carbon Arc Cutting (CAC-A); Oxyfuel Gas Welding (OFW); Oxygen Cutting (OC); Grinding
Approved:	DINplus, CE, ANSI Z87.1, CSA Z94.3, AS/NZS 1338.1

## PARTS LIST & ASSEMBLY



ITEM	PART NO.	DESCRIPTION
A-1	V1FS TM16 00	Face seal
A-2	V1HG TM16 00	Headgear (Including plenum, sweatband & soft pad)
A-3	V1SW TM3 00	Sweatband
A-4	V1SP TM3 00	Soft pad
A-5	V1PH TM16 01	Helmet shell
A-6	RF TM11 01	Rubber frame
A-7	FC TM05 01	Outside cover lens (133×114 mm)
A-8	ADF820SG iMUX	Auto darkening filter
A-9	IC TM820S 01	Inside cover lens (94.7 x 89.7 mm)
A-10	HD TM16 02	Lens holder

## SHADE GUIDE TABLE

### GUIDE FOR SHADE NUMBERS

OPERATION	ELECTRODE SIZE 1/32 in. (mm)	ARC CURRENT(A)	MINIMUM PROTECTIVW SHADE	SUGGRSTED <sup>(1)</sup> SHADE NO. (COMFORT)
Shielded metal arc welding	Less than 3 (2.5)	Less than 60	7	—
	3-5 (2.5-4)	60-160	8	10
	5-8 (4-6.4)	160-250	10	12
	More than 8 (6.4)	250-550	11	14
Gas metal arc welding and flux cored arc welding		Less than 60	7	—
		60-160	10	11
		160-250	10	12
		250-500	10	14
Gas tungsten arc welding		Less than 50	8	10
		50-150	8	12
		150-500	10	14
Air carbon Arc cutting	(Light)	Less than 500	10	12
	(Heavy)	500-1000	11	14
Plasma arc welding		Less than 20	6	6 to 8
		20-100	8	10
		100-400	10	12
		400-800	11	14
Plasma arc cutting	(Light) <sup>(2)</sup>	Less than 300	8	8
	(Medium) <sup>(2)</sup>	300-400	9	12
	(Heavy) <sup>(2)</sup>	400-800	10	14
Torch brazing		—	—	3 to 4
Torch soldering		—	—	2
Carbon arc welding		—	—	14
PLATE THICKNESS				
	in.	mm		
Gas welding	Under 1/8	Under 3.2		4 or 5
	1/8 to 1/2	3.2 to 12.7		5 or 6
	Over 1/2	Over 12.7		6 or 8
Oxygen cutting	Under 1	Under 25		3 or 4
	1 to 6	25 to 150		4 or 5
	Over 6	Over 150		5 or 6

<sup>(1)</sup> As a rule of thumb, start with a shade that is too dark, then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line the visible light of the (spectrum) operation.

<sup>(2)</sup> These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workpiece.