



Formula Color™

User's Manual



FORMULA COLOR™

USER'S MANUAL





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Formula Color™ – User's Manual

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REFERENCES

CONVENTIONS

This manual uses the following conventions:

"User" refers to anyone using a Formula Color™ terminal.

"Terminal" refers to the Formula Color™ terminal.

"You" refers to the System Administrator or Technical Support person using this manual to install, configure, operate, maintain or troubleshoot a Formula Color™ terminal.

REFERENCE DOCUMENTATION

For further information regarding Formula Color™ configuration, please refer to the following users' manuals:

- DL DTP User's Manual
- TDTPClient Reference Manual
- DS for Formula DOS Development System Manual

SERVICE, SUPPORT AND WARRANTY

Datalogic provides several services as well as technical support through its website. Log on to **www.datalogic.com/services** and click on the links indicated for further information including:

- **[Datalogic Services](#)** - Warranty Extensions and Maintenance Agreements
- **[Downloads](#)** - Software Downloads, Manuals and Catalogues
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SAFETY REGULATIONS



NOTE

Read this manual carefully before performing any type of connection to the Formula Color™ terminal.

The user is responsible for any damages caused by incorrect use of the equipment or by inobservance of the indication supplied in this manual.

GENERAL SAFETY RULES

Use only the components supplied by the manufacturer for the specific Formula Color™ terminal being used. The use of cradles other than those supplied with the Formula Color™ terminal or indicated in the list in par. 1.3 could cause serious damage to the Formula Color™ terminal.

Do not attempt to disassemble the Formula Color™ terminal, as it does not contain parts that can be repaired by the user. Any tampering will invalidate the warranty.

When replacing the batteries or at the end of the operative life of the Formula Color™ terminal, disposal must be performed in compliance with the laws in force.

Do not submerge the terminal in liquid products.

LASER SAFETY

The laser light is visible to the human eye and is emitted from the window indicated in the figure.

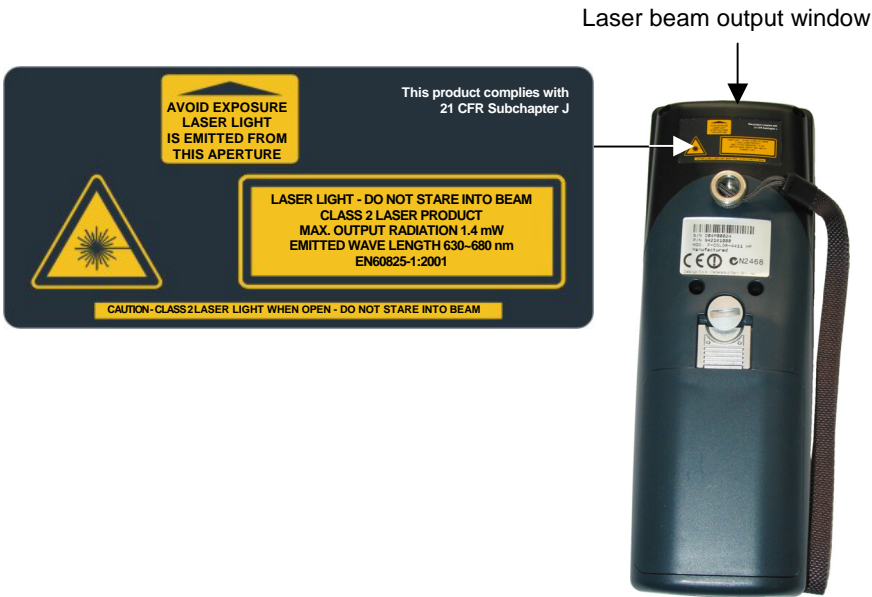


Figure 1 – Formula Color™ Laser Safety and Data Label

I	D	F	E
La luce laser è visibile all'occhio umano e viene emessa dalla finestra indicata nella figura.	Die Laserstrahlung ist für das menschliche Auge sichtbar und wird am Strahlaustrittsfenster ausgesendet (siehe Bild).	Le rayon laser est visible à l'oeil nu et il est émis par la fenêtre désignée sur l'illustration dans la figure.	La luz láser es visible al ojo humano y es emitida por la ventana indicada en la figura.
LUCE LASER NON FISSARE IL FASCIO APPARECCHIO LASER DI CLASSE 2 MINIMA POTENZA DI USCITA: LUNGHEZZA D'ONDA EMESSA: CONFORME A EN 60825-1 (2001).	LASERSTRAHLUNG NICHT IN DER STRAHL BLINKEN PRODUKT DER LASERKLASSE 2 MAXIMALE AUSGANGLEISTUNG: WELLENLÄNGE: ENTSPR. EN 60825-1 (2001).	RAYON LASER EVITER DE REGARDER LE RAYON APPAREIL LASER DE CLASSE 2 PUISSANCE DE SORTIE: LONGUER D'ONDE EMISE: CONFORME A EN 60825-1 (2001).	RAYO LÁSER NO MIRAR FIJO EL RAYO APARATO LÁSER DE CLASE 2 MÁXIMA POTENCIA DE SALIDA: LONGITUD DE ONDA EMITIDA: CONFORME A EN 60825-1 (2001).

ENGLISH

The following information is provided to comply with the rules imposed by international authorities and refers to the correct use of your terminal.

STANDARD LASER SAFETY REGULATIONS

This product conforms to the applicable requirements of both CDRH 21 CFR 1040 and EN 60825-1 at the date of manufacture.

For installation, use and maintenance, it is not necessary to open the device.



WARNING

Use of controls or adjustments or performance of procedures other than those specified herein may result in exposure to hazardous visible laser light.

The product utilizes a low-power laser diode. Although staring directly at the laser beam momentarily causes no known biological damage, avoid staring at the beam as one would with any very strong light source, such as the sun. Avoid that the laser beam hits the eye of an observer, even through reflective surfaces such as mirrors, etc.

ITALIANO

Le seguenti informazioni vengono fornite dietro direttive delle autorità internazionali e si riferiscono all'uso corretto del terminale.

NORMATIVE STANDARD PER LA SICUREZZA LASER

Questo prodotto risulta conforme alle normative vigenti sulla sicurezza laser alla data di produzione: CDRH 21 CFR 1040 e EN 60825-1.

Non si rende mai necessario aprire l'apparecchio per motivi di installazione, utilizzo o manutenzione.



ATTENZIONE

L'utilizzo di procedure o regolazioni differenti da quelle descritte nella documentazione può provocare un'esposizione pericolosa a luce laser visibile.

Il prodotto utilizza un diodo laser a bassa potenza. Sebbene non siano noti danni riportati dall'occhio umano in seguito ad una esposizione di breve durata, evitare di fissare il raggio laser così come si eviterebbe qualsiasi altra sorgente di luminosità intensa, ad esempio il sole. Evitare inoltre di dirigere il raggio laser negli occhi di un osservatore, anche attraverso superfici riflettenti come gli specchi.

DEUTSCH

Die folgenden Informationen stimmen mit den Sicherheitshinweisen überein, die von internationalen Behörden auferlegt wurden, und sie beziehen sich auf den korrekten Gebrauch vom Terminal.

NORM FÜR DIE LASERSICHERHEIT

Dies Produkt entspricht am Tag der Herstellung den gültigen EN 60825-1 und CDRH 21 CFR 1040 Normen für die Lasersicherheit.

Es ist nicht notwendig, das Gerät wegen Betrieb oder Installations-, und Wartungsarbeiten zu öffnen.



ACHTUNG

Jegliche Änderungen am Gerät sowie Vorgehensweisen, die nicht in dieser Betriebsanleitung beschrieben werden, können ein gefährliches Laserlicht verursachen.

Der Produkt benutzt eine Laserdiode. Obwohl zur Zeit keine Augenschäden von kurzen Einstrahlungen bekannt sind, sollten Sie es vermeiden für längere Zeit in den Laserstrahl zu schauen, genauso wenig wie in starke Lichtquellen (z.B. die Sonne). Vermeiden Sie es, den Laserstrahl weder gegen die Augen eines Beobachters, noch gegen reflektierende Oberflächen zu richten.

FRANÇAIS

Les informations suivantes sont fournies selon les règles fixées par les autorités internationales et se réfèrent à une correcte utilisation du terminal.

NORMES DE SECURITE LASER

Ce produit est conforme aux normes de sécurité laser en vigueur à sa date de fabrication: CDRH 21 CFR 1040 et EN 60825-1.

Il n'est pas nécessaire d'ouvrir l'appareil pour l'installation, l'utilisation ou l'entretien.



ATTENTION

L'utilisation de procédures ou réglages différents de ceux donnés ici peut entraîner une dangereuse exposition à lumière laser visible.

Le produit utilise une diode laser. Aucun dommage aux yeux humains n'a été constaté à la suite d'une exposition au rayon laser. Eviter de regarder fixement le rayon, comme toute autre source lumineuse intense telle que le soleil. Eviter aussi de diriger le rayon vers les yeux d'un observateur, même à travers des surfaces réfléchissantes (miroirs, par exemple).

ESPAÑOL

Las informaciones siguientes son presentadas en conformidad con las disposiciones de las autoridades internacionales y se refieren al uso correcto del terminal.

NORMATIVAS ESTÁNDAR PARA LA SEGURIDAD LÁSER

Este aparato resulta conforme a las normativas vigentes de seguridad láser a la fecha de producción: CDRH 21 CFR 1040 y EN 60825-1.

No es necesario abrir el aparato para la instalación, la utilización o la manutenzione.



ATENCIÓN

La utilización de procedimientos o regulaciones diferentes de aquellas descritas en la documentación puede causar una exposición peligrosa a la luz láser visible.

El aparato utiliza un diodo láser a baja potencia. No son notorios daños a los ojos humanos a consecuencia de una exposición de corta duración. Eviten de mirar fijo el rayo láser así como evitarían cualquiera otra fuente de luminosidad intensa, por ejemplo el sol. Además, eviten de dirigir el rayo láser hacia los ojos de un observador, también a través de superficies reflectantes como los espejos.

RADIO COMPLIANCE

In radio systems configured with portable terminals and access points, the frequencies to be used must be allowed by the spectrum authorities of the specific country in which the installation takes place. Be absolutely sure that the system frequencies are correctly set to be compliant with the spectrum requirements of the country. The Radio Card used in this product automatically adapts to the frequencies set by the system and does not require any parameter settings.

Information for the User

ENGLISH

Contact the competent authority responsible for the management of radio frequency devices of your country to verify the eventual necessity of a user license. Refer to the web site <http://europa.eu.int/comm/enterprise/rtte/spectr.htm> for further information.

ITALIANO

Prendi contatto con l'autorità competente per la gestione degli apparati a radio frequenza del tuo paese, per verificarne l'eventuale necessità della licenza d'uso.

Inoltre puoi trovare ulteriori informazioni al sito:

<http://europa.eu.int/comm/enterprise/rtte/spectr.htm>.

FRANÇAIS

Contactez l'autorité compétente en la gestion des appareils à radio fréquence de votre pays pour vérifier la nécessité du permis d'usage. Pour tout renseignement vous pouvez vous adresser au site web:

<http://europa.eu.int/comm/enterprise/rtte/spectr.htm>.

DEUTSCH

Um die Notwendigkeit der Verwendungslizenz zu prüfen, wenden Sie sich an die Behörde, die auf der Radiofrequenzgerätsführung Ihres Lands bewandert ist. Weitere Informationen sind verfügbar auf dem Web Site:

<http://europa.eu.int/comm/enterprise/rtte/spectr.htm>.

ESPAÑOL

Contacta con la autoridad competente para la gestión de los dispositivos de radio frecuencia de tu país, para verificar si es necesario la licencia de uso. Además se puede encontrar mas información en el sitio web:

<http://europa.eu.int/comm/enterprise/rtte/spectr.htm>.



FCC COMPLIANCE

The following compliance refers only to the Formula Color™ batch model.

This device complies with PART 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference which may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

GENERAL VIEW

FORMULA COLOR™



Figure 2 – Formula Color™ Terminal Overview

Key:

- A) Good Read / Battery Status / Programmable LED
- B) Laser beam output window
- C) Scan key
- D) Battery charge and RS232 serial contacts
- E) IrDA Port
- F) Navigation key

QUICK START

Verify that the Formula Color™ and all the parts supplied with the equipment are present and intact when opening the packaging. Contact the nearest Datalogic distributor for further information.

Keep this package should it be necessary for shipping to technical assistance centre.

Formula Color™ All Models

When using the Formula Color™ terminal for the first time:

- 1) remove the **battery pack** and the Formula Color™ **terminal** from the packaging;
- 2) **charge the battery pack** by either:
 - a) correctly inserting the battery pack into the Formula Color™ terminal (refer to par. 5.2 in this manual) and positioning it into the Formula Color™ single cradle. The cradle must be powered through the FPS18 power supply (refer to par. 2.1 and 5.1 in this manual and the Formula Color™ single cradle manual for further details);
 - b) inserting the battery pack directly into the MBC8600 multi-slot battery charger. The battery charger must be powered through the FPS18 power supply (refer to the MBC8600 manual for further details). Then, insert the charged battery pack into the terminal (refer to par. 5.2 in this manual);
- 3) as soon as the charged battery is inserted into the terminal, the boot sequence is run until the start up menu is displayed on the terminal. Then, the terminal is ready. There are two different flash disks. Disk C: allows both reading and writing, while Disk A: is read-only and contains the operating system and general files including some tools.

After the boot sequence the keyboard is in “numeric mode” allowing to type the numbers when pressing the keys (see par. 4.3). For typing letters and special characters first press the “alpha” white key. Press it again to exit this mode and re-enter “numeric mode”.
- 4) **configure the BIOS** parameters keeping in mind that their management may influence the battery duration (refer to chapter 3 in this manual);
- 5) once the system prompt (C:\>) is displayed, it is possible to **run all DOS commands**. At first start-up it is suggested to configure the system date and time through the “date” and “time” DOS commands. The “dir” command allows displaying a list of the files that are in the current directory, while the “cd” command allows changing the current directory. For further details about the DOS operating system refer to the documentation provided within the CD-ROM included in the packaging;
- 6) for transferring files between the terminal (Disk A: is read-only) and a PC it is necessary to **run the serial communication server** based on the Datalogic

DTPS protocol by typing ds.bat and pressing the [Enter] key to activate the communication server. For correct communication with the terminal, it is necessary that a client application program based on the DTP protocol is running on PC side.

The CD-ROM provided within the packaging contains the WinDTP and DL Mobile Configurator™ tools which allow managing and configuring the terminal and its C: Disk. In particular, WinDTP is a software package managing the terminal disk and its files, while DL Mobile Configurator™ allows installing and configuring DL TCL™.

Be careful that both the Server and Client serial communication parameters share the same value. Default parameters are: baud rate = 115000, parity = none, stop bit = 1, data bits = 8.

The Formula Color™ batch model is now ready to be loaded with the software application program.

Formula Color™ Radio Models Only

This terminal contains an 802.11b radio module. The net.cfg file, containing radio configuration parameters, and the socket.cfg file, containing the TCP/IP protocol configuration parameters, are already installed on Disk C:.

When using the Formula Color™ Wi-Fi terminal for the first time:

- 1) repeat the procedure given for all Formula Color™ models from step 1 to step 6;
- 7) edit the net.cfg file available in the C:\RF directory to **configure the radio parameters**:

The most significant parameters are listed below:

ESS_ID

Encrypt_Enable

Encrypt_Key_Index

Encrypt_Key1

Encrypt_Key2

Encrypt_Key3

Encrypt_Key4

ESS_ID configures the Server Set Identifier (Network Name); while the other parameters enable WEP.

The terminal can communicate with an access point sharing the same parameter values.

By default WEP is not activated, default values of the net.cfg parameters are:

```
ESS_ID tsunami
Encrypt_Enable N
Encrypt_Key_Index 1
Encrypt_Key1 11 11 11 11 11 11 11 11 11 11 11 11 11 11
Encrypt_Key2 22 22 22 22 22 22 22 22 22 22 22 22 22 22
Encrypt_Key3 33 33 33 33 33 33 33 33 33 33 33 33 33 33
Encrypt_Key4 44 44 44 44 44 44 44 44 44 44 44 44 44 44
```

8) edit the socket.cfg file to **configure the TCP/IP protocol**:

The most significant parameters are listed below:

```
IP address
route add default if0
domain server
```

IP address is the terminal IP address, route add default if0 configures the default Gateway, while domain server configures the DNS.

By default IP address = 0.0.0.1 which indicates that the DHCP server is enabled.

For further details consult the LAN administrator or qualified personnel.

The Formula Color™ radio models are now ready to be loaded with the software application program.

1 INTRODUCTION

1.1 FORMULA COLOR™ TERMINAL DESCRIPTION

The Formula Color™ professional mobile computer has been designed to satisfy a wide range of data collection tasks in retail, light industrial, and health care environments.

Formula Color™ offers operators compact-sized ergonomics combined with a very intuitive user interface, which includes the “green spot” (Datalogic patent application), providing “good read” feedback directly on the code, where the user usually tends to be looking.

Furthermore, the large, bright, easy-to-read color display is ideal for indoor/outdoor use and helps users work more efficiently, while the practical 30-key “mobile phone-like” keypad allows data, codes and descriptions to be input very quickly.

The best performance in barcode data capture is granted by Formula Color's™ miniature scanning engine, providing a very bright laser beam and great reading results on any kind of code or surface. In addition, to support long-term scan-intensive warehousing operations, Formula Color™ takes advantage of a removable/rechargeable Li-ION high power battery pack.

Fast data computing is performed by the powerful hardware platform, based on PC technology, supported by the oversized standard memory: 8 MB Ram + 8 MB Flash that can be upgraded to 512 MB through a standard compact flash memory card.

The integrated Wi-Fi card for Wireless standard IEEE802.11b communication, allows Formula Color™ to access any Wi-Fi compliant WLAN infrastructure and be immediately on line with any WMS through DL-TCL, Datalogic's terminal emulator software that supports both VT100/220 and IBM5250 standards.

Formula Color™ also offers a large selection of peripherals and accessories. It is compatible with most of Datalogic's software tools, such as DL Mobile Configurator™, DL Keep Connecting™, DL TN Link™, DL Web-Link™ and MCL Collection™ Suite for programming, monitoring and configuration operations.

1.2 PACKAGE CONTENTS



The Formula Color™ terminal package contains:

- Formula Color™ terminal;
- Li-Ion rechargeable battery pack;
- Belt clip;
- User's manual;
- CD-ROM containing the DS for Formula DOS Development System, Datalight ROM-DOS 7.0, and Utility program software and relative documentation;

Any other packages will contain the accessories necessary for the Formula Color™ terminal connection to the host computer and to the network: the cradle, power supply, and one or more connection cables.

Remove all the components from their packaging, check their integrity and congruity with the packing documents.



CAUTION

Keep the original packaging for use when sending products to the technical assistance center. Damage caused by improper packaging is not covered under the warranty.

**NOTE**

Rechargeable battery packs are not initially charged. Therefore the first operation to perform is to charge them in the appropriate cradle. See paragraph 5.1.

1.3 ACCESSORIES

❑ **Cradle**

- 94A151092 F-Color Single Cradle (RS232).
- 94A151094 F-Color Vehicle Cradle (RS232).
- 94A151095 F-Color Modem Cradle (RS232).
- 94A151091 F-Color Multiple Cradle (RS232, 4 slots).

❑ **Charger**

- 94A151030 MBC8600 Multi-Battery Charger.

❑ **Batteries**

- 94ACC1290 F-Color Li-Ion Battery Pack.
- 94ACC1284 F-Color Alkaline Battery Pack.

❑ **Software**

DL TCL™ and DL Mobile Configurator™, the Datalogic Terminal Emulation Client (DL TCL) providing VT100, VT220 and IBM5250 Telnet terminal emulation and the Datalogic terminal configuration utility.

DL Mobile Configurator™ Enterprise, the Datalogic Windows-based utility tool allowing to configure and monitor a radio frequency network terminal with DL TCL™ Terminal Emulation.

DL Keep Connecting™, the Datalogic middleware software designed to monitor, manage, route and maintain the terminal network installation, ensuring connection and operability.

❑ **Case**

- 94ACC1285 Formula Color™ Functional Case

2 CONNECTIONS

2.1 CRADLES

2.1.1 F-Color Single Cradle

With the Formula Color™ terminal, both the standard F-Color single cradle and the vehicle version can be used.

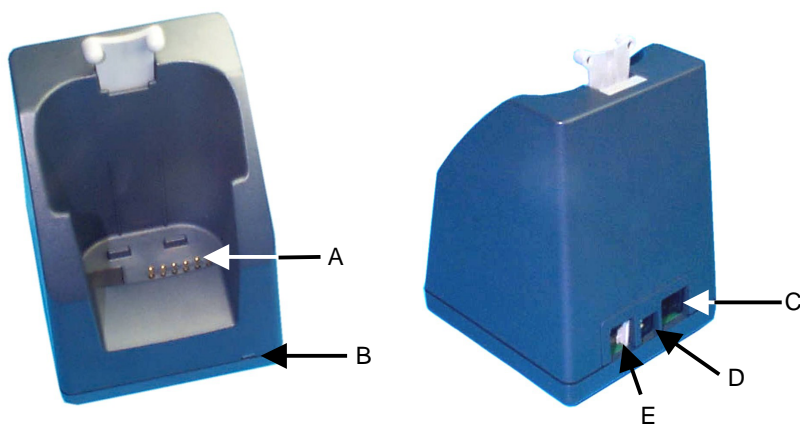


Figure 3 – F-Color Single Cradle Overview

Key:

- A) Formula Color™ terminal battery recharge contacts
- B) Power indicator LED
- C) Connector for host computer connection (RS232)
- D) Power supply connector
- E) Modem connector (F-Color modem cradle only)

The F-Color single cradle is a battery charger and also functions as a serial communication interface between the host computer (RS232) and the RS232 interface on the Formula Color™ terminal.

By inserting the Formula Color™ terminal into the cradle as shown in the figure, its batteries can be charged. Insert the terminal from the top of the cradle and push the terminal down until the cradle clip clicks.



Figure 4 - Terminal Insertion

To remove the terminal from the F-COLOR single cradle, simply pull it upwards while firmly holding down the cradle.

Terminal Battery Status LED

When the terminal is inserted into the cradle, the terminal LED signals the status of the its batteries:

COLOR	STATUS
Green blinking	Battery slow charging or waiting precharge timeout
Constant red	Battery fast charging
Constant green	Battery charged
Orange blinking	Battery failure
Off	Alkaline battery

2.1.2 F-Color Vehicle Cradle

The F-Color vehicle cradle comes with its accessories already assembled. To install it inside a vehicle driving compartment, proceed as follows:

- 1) mount the metal bracket;
- 2) connect a regulated power supply between the vehicle's battery and the F-Color single cradle.



CAUTION

*Do not connect the cradle directly to the vehicle's battery.
Possible voltage surges can damage the cradle or cause it to malfunction.*

Power Cable Specifications:

The power supply cable must have the following characteristics:

Min Current Capacity	1A	
Male Plug	Polarity:	positive external negative internal
	Mechanical dimensions:	external diameter: 5.5 mm internal diameter: 2.1 mm
	Metal plug length:	14 mm

Insert the Formula Color™ terminal only after mounting the cradle in the vehicle.

Terminal Battery Status LED

When the terminal is inserted into the cradle, the terminal LED signals the status of the its batteries:

COLOR	STATUS
Green blinking	Battery slow charging or waiting precharge timeout
Constant red	Battery fast charging
Constant green	Battery charged
Orange blinking	Battery failure
Off	Alkaline battery

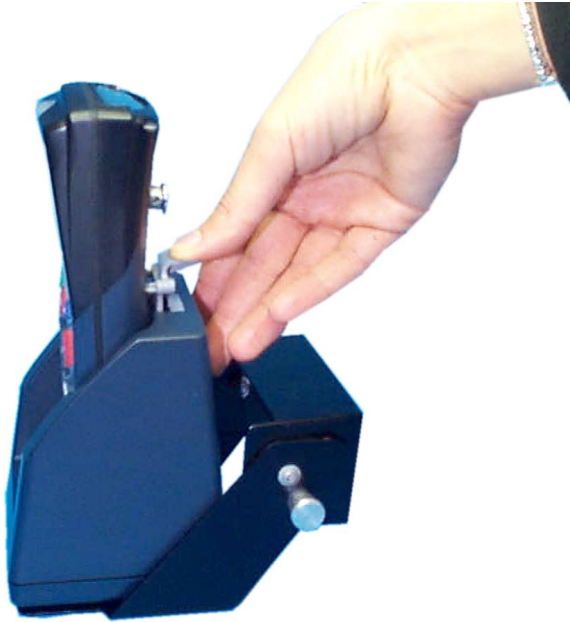


Figure 5 – Removing Formula Color™ from the F-Color Vehicle Cradle

To remove the Formula Color™ terminal from the F-Color vehicle cradle, you must first press the plastic retaining clip shown in the figure and pull the Formula Color™ terminal upwards.

2.2 CONNECTION TO THE HOST COMPUTER



CAUTION

Before continuing with this phase be sure both the computer and the F-Color cradle are turned off.

2.2.1 RS232 Connection via Cradle

To connect the F-Color single cradle to the host computer proceed as follows:

- 1 - Connect the cable to the serial port of the host computer;
- 2 - Connect the other end of the same cable (RJ connector) to the RS232 port of the cradle;
- 3 - Insert the power-supply plug into the outlet on the base of the cradle;
- 4 - Attach the power supply to a power outlet;
- 5 - Turn on the computer;
- 6 - Put the Formula Color™ terminal into its cradle.

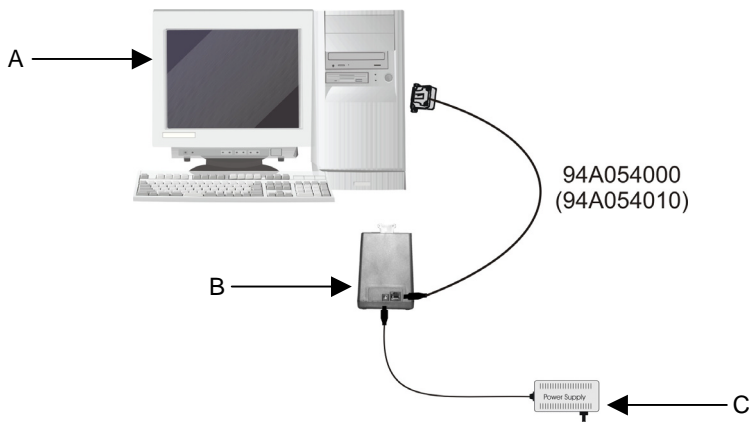


Figure 6 – RS232 Cradle Connection

Key:

- A) Host Computer
- B) F-Color Single Cradle
- C) Power Supply

2.2.2 RF Connection

Formula Color™ Wi-Fi versions can communicate with the host using the on-board radio frequency module and an Access Point connected to the host computer.

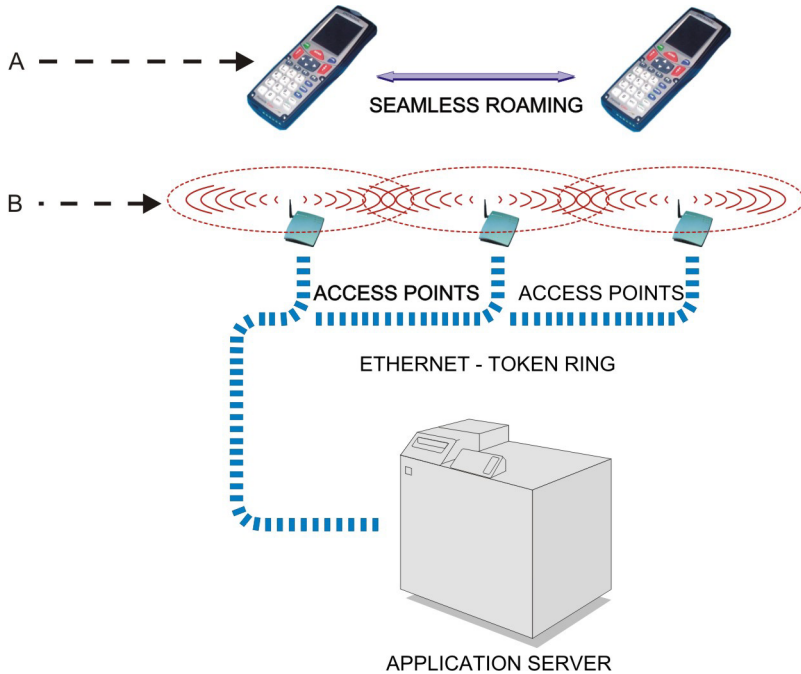


Figure 7 – RF Connection

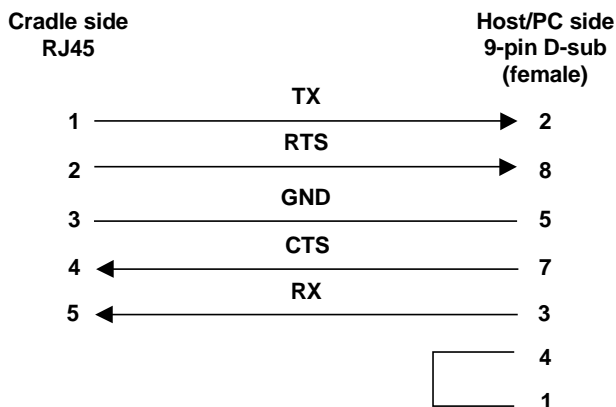
Key:

- A) Formula Color™ Wi-Fi Terminal
- B) Access Point

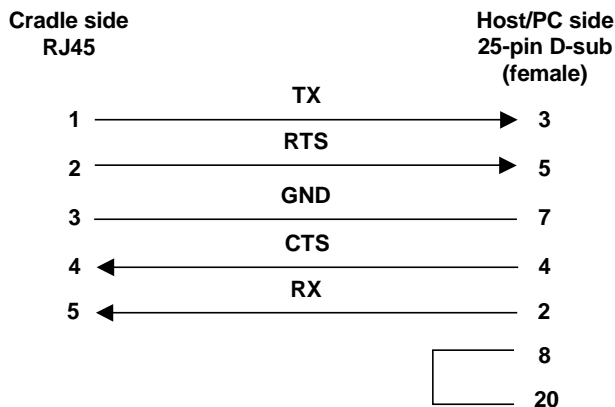
2.3 CONNECTION CABLES

The following cables are available depending on the type of computer and connection. The cables and cable kits are listed with their order number.

❑ RS232 Cable with 9-pin Host Connector: 94A054000



❑ RS232 Cable with 25-pin Host Connector: 94A054010



3 BIOS SETUP MENU

3.1 GENERAL INFORMATION

The Formula Color™ terminal is very versatile and can be adapted to suit many special requirements by configuring certain parameters which can be changed after the Formula Color™ terminal's boot sequence.

The activities of accessing the parameters and their modification are commonly referred to as Formula Color™ terminal setup activities.

The parameters have their default values, which are loaded automatically during the booting sequence if the following conditions occur:

- the first time the Formula Color™ terminal is booted, as initial setup of the parameters themselves;
- if, during the boot sequence, the BIOS notes that the previously-set configuration parameters might not be complete or correct.

3.2 ACTIVATING THE SETUP PROCEDURE

The BSETUP.EXE program is the only way to modify the Formula Color™ terminal parameters. It is a normal DOS program and can be invoked after the Formula Color™ terminal's boot sequence.

The application has the following two options:

BSETUP -C the program checks the status of the CMOS. If the parameters are incorrect, it asks if you want to modify them. Otherwise the program exits. Default is no check;

BSETUP -D with this option you can load the DEFAULT configuration.

In the NEWAUTO.BAT file it is useful to invoke "BSETUP -C", so that if for some reasons the CMOS RAM is corrupted the user is notified.

The application does not provide a method to change date/time, since you can use the DOS commands DATE and TIME.

3.3 PASSWORD

The password mechanism is used for protecting access to Formula Color™ terminal parameters. If BSETUP.EXE is run with the -C option, it will warn the user about an eventual CMOS corruption before asking for the password. No password is required to be warned about the CMOS memory.

This protection applies only to the setup procedure, so the check option "BSETUP - C" is not protected; this means that everybody can know the nature of loaded parameters (CMOS, EEPROM or factory configuration).

The application recognizes two passwords which are case sensitive:

- A) user defined
- B) the string "degibkdr"

If the user forgets the password, the fixed (B) password provides the key to access the setup procedure.

If a wrong password is entered, the program ends returning to the DOS prompt. Notice that the password protects only the Formula Color™ terminal parameters, not the terminal itself.

The password can be disabled by entering a null string.

3.4 THE SETUP MENU AND ITS CONFIGURABLE ITEMS

The actual items present in the BSETUP menus may depend on the BSETUP.BIN file and the BIOS version. If the BSETUP.BIN does not match with the BIOS version, BSETUP.EXE will produce an error message.

The setup menu is composed of several pages, every page contains a list of items and every item corresponds to a terminal parameter. There is also an exit page, that allows you to save or discard the modifications.

Every page has its own title, written in the upper row of the screen. Every item has a title and a value (the current value). The title is written on the left, the value on the right. The current item is characterized by a dot between the title and the value.

You can navigate through pages, move between items and modify them. You can recognize two types of parameters: valued and ranged. With the ranged parameters, you must enter a valid value. Erroneous values are recognized, and you must re-enter a correct number. Erroneous values cannot be introduced with valued parameters because you can only select from the ones shown.

3.5 CHANGING THE VALUES OF THE MENU ITEMS

To change the values of the menu items, you must use the Formula Color™ terminal keyboard.

To change an item, first go to its page and then select it by moving the dot.

To change the value of the items, you will have to use the keys indicated in the table below.

KEY	FUNCTION
[ESC]	Activates the exit page
Right Arrow	Next page
Left Arrow	Previous page
Down Arrow	Next item
Up Arrow	Previous item
[SPACE][ENTER]	Valued items: change value cycling through the valid ones
[SPACE][ENTER]	Ranged items: enter the modify mode
[ENTER]	Ranged items: leave the modify mode

3.6 STRUCTURE OF THE FORMULA COLOR™ SETUP PAGES

The tables below describe the SETUP pages which are available as well as the SETUP items relating to each page.

In the VALUES column, an asterisk or a value in parenthesis indicates the default value.

3.6.1 Console

ITEM	VALUES	DESCRIPTION	NOTE
Scroll	Software Track Virt Both (*)	Scrolling mode	See Scrolling Mode note below
Contrast	Ranged: 0..127 (65)	LCD contrast	See Contrast note below
Light	always on (*) 5s, 10s, 15s, 30s, 1m, 2m, 3m, 5m, 10m, 15m, 30m	Timeout for the backlight	
Intensity	Low High (*)	Backlight intensity	
Kbd click	Enable (*) Disable	Keyboard click	
Kbd freq.	Ranged: 1..100 (3)	Keyboard click Frequency (100 Hz steps)	
Password	String up to 8 characters	Selection of the new password to enter setup	Simply press [ENTER] to disable the password

Scrolling Mode

The Formula Color™ display adapter allows the application to write on a virtual 25 lines by 80 columns display. On the other hand, the user can see only a portion of this virtual display at a time, which we call the physical display.

The "scroll" parameter controls which portion of the virtual display is seen by the user. The display can always be scrolled by the application program.

Software: the physical display position is fixed. It can be moved only by the application program.

Track: the physical display follows the cursor vertically only through BIOS.

Virt: it is only possible to scroll the display by the keyboard.

Both: Both the Virtual and Track mode are enabled.

Contrast

The CMOS value of LCD contrast represents the only parameter that can be modified outside the BSETUP.EXE application. As a matter of fact, selecting the contrast mode [FUNC]-[4] gives you the ability to change this value using the up and down arrows; this changing does not affect the EEPROM value.

3.6.2 Status Bar

ITEMS	VALUES	DESCRIPTION	NOTE
Bar	Visible (*) Hidden	Shows the status bar.	You can later hide / show the bar using keyboard
Clock	Enabled (*) Disabled	Enables the clock icon on the status bar.	
Battery	Enabled (*) Disabled	Enables the icon showing the battery satus.	
Arrows	Enabled (*) Disabled	Enables the icon showing the current arrows function.	
Kb Status	Enabled (*) Disabled	Enables the icon showing the current keys function.	
Sel. Key	Enabled (*) Disabled	Enables the icon showing the currently selected letter when using the keyboard alpha mode.	

3.6.3 Indications

ITEMS	VALUES	DESCRIPTION	NOTE
Battery warning	ON (*) OFF	Enables / disables Low battery notification	When battery notification is enabled, the terminal will signal when batteries are completely run down. 3 beeps will be heard and the red LED will start blinking.
Cradle Ins / Ext	ON (*) OFF	Enables / disables Cradle insertion notification	When cradle notification is enabled, the terminal will emit 1 beep on cradle insertion, and 2 beeps on cradle extraction.
Charger Status	ON (*) OFF	Enables / disables battery status signaling when the terminal is inserted into the cradle.	

3.6.4 Devices

ITEM	VALUES	DESCRIPTION	NOTES
Com 1	Off Elect Elect+wu(*) Optical	Selects type and use of COM 1.	
CF Sleep	Off On (*) Wakeup	Status of the card when the terminal is off. When in Wake-up, the card is powered and can wake the terminal in case of data reception.	
Keyboard	On (*) Wakeup	Enables / disables keyboard as a wakeup source	
RTC	On Wakeup (*)	Enables / disables the RTC alarm as a wakeup source.	
LCD sleep	On Off (*)	If on, keeps the display on when the terminal goes into SUSPEND mode	If LCD is on, it is strongly recommended to also set the Keyboard to Wakeup
Precharge	None (*) 30 m, 60 m, 120 m, infinite	Once the terminal is inserted into the cradle, the terminal waits the precharge timeout before it starts charging.	

3.6.5 PMU Config

ITEM	VALUES	DESCRIPTION
Automatic	On (*) Off	Enables automatic power management
High speed	8 MHz 16 MHz (*) 32 MHz	Clock frequency in ON state. See description of Power Management for further information
Low speed	8 MHz 4 MHz 2 MHz 1 MHz (*)	Clock frequency in IDLE state
High->low	1/8 s 1/4 s 1/2 s (*) 1 s 4 s 8 s 16 s	Selects the period without Primary activity (see Activities) before passing from High speed to the IDLE state (Low speed)
Low->sleep	8 s 16 s (*) 32 s 1 m 4 m 8 m 16 m	Selects the period without any activity before passing from the IDLE state (Low speed) to SUSPEND (Off).

Automatic

If the Automatic parameter is OFF, all other Power Management parameters have no meaning.

When the Automatic parameter is ON, the Power Management proceeds as follows:

- after the high-low timeout selected time the CPU automatically reduces its clock frequency and passes from High speed to Low speed (both frequencies can be set through setup);
- once the CPU is in Low speed and no activity occurs after the programmed timeout it enters the SUSPEND state. The CPU resumes operations when a WAKEUP event occurs, or when the SCAN key is pressed;
- when the CPU is in SUSPEND and no WAKEUP event occurs after the programmed time, it enters the OFF state through which all peripherals are disabled. The CPU resumes operation only when pressing the SCAN key.

3.6.6 Activities

If the Power Management - Automatic parameter is selected OFF, all Activities parameters have no meaning. The primary activities cause the CPU to pass to High speed, while the secondary ones allow the CPU to stay in Low speed if it is already in this state (see par. 3.6.5). The value OFF indicates that activity on the device has no effect on the CPU.

ITEM	VALUES	DESCRIPTION
Com 1	Off Primary (*) Secondary	Indicates the level of activity for the UART/IR interface.
CF	Off (*) Primary Secondary	Indicates the level of activity for the radio frequency module.
LCD	Off Primary (*) Secondary	Indicates the level of activity for video operations (excluding cursor blink).
Keyboard	Off Primary (*) Secondary	Indicates the level of activity for the keyboard.
Disk	Off Primary (*) Secondary	Indicates the level of activity for all accesses to flash disk (boot and non-boot).

3.7 EXIT FROM THE SETUP PROCEDURE

To end the SETUP procedure, you will have to:

- 1 - Select the Exit menu by pressing [ESC]
- 2 - Select one of the items by pressing the correct key (an erroneous one re-enters the setup procedure):

KEY	DESCRIPTION	ITEM
Press [S] to activate the function.	Saves the new values in the CMOS memory and EEPROM memory and exits.	CMOS+EEPROM Save & Exit
Press [C] to activate the function.	Saves the new values in the CMOS memory and exits.	CMOS Save & Exit
Press [Q] to activate the function.	Discards the new values and exits.	Discard
Press [D] to activate the function.	Load the default factory values.	Factory parameters

- If you exit with saving, a message appears notifying that the program is about to quit, and you can choose to reboot the Formula Color™ terminal to see the effects of the new configuration. Remember that the Formula Color™ terminal parameters are used by BIOS at boot-time.
- If you exit with the “Discard” command, no change will affect CMOS and EEPROM memories.
- If you choose the “factory parameters”, the application applies it and then re-enters the setup procedure.

4 USE AND FUNCTIONING

The use of the Formula Color™ terminal is subordinate to the application software loaded.

Once an application is loaded, barcode scanning can be performed by pressing the [SCAN] key.

4.1 TERMINAL STARTUP

The Formula Color™ terminal turns on when the SCAN key is pressed.

For batch models, the prompt is displayed or if present the application program starts.

For radio models, the following popup window is briefly displayed while the radio connects with the base station:



The terminal goes into low power consumption mode (display off), when it is no longer used for more than a programmable timeout (default 16 sec. - par. 3.6.5). In this mode it can be awakened (resuming operation) by external events such as SCAN key press, radio transmission, etc. see par. 3.6.4)

To turn the terminal off, press FUNC + ESC key.

4.2 BARCODE SCANNING

To scan barcodes, point the Formula Color™ terminal laser beam onto the code from within its readable range while pressing the [SCAN] key. See reading diagram in par. 7.3. The lighted band emitted by the laser must completely intercept the barcode as shown in the figure below. The terminal LED, the emission of an acoustic signal, and the green spot will indicate that the scan has taken place correctly.

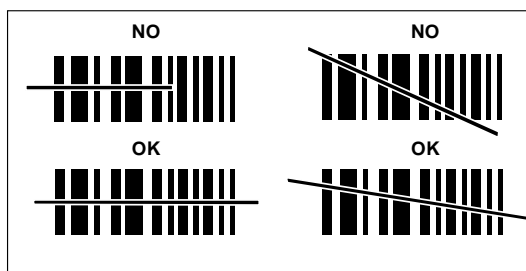
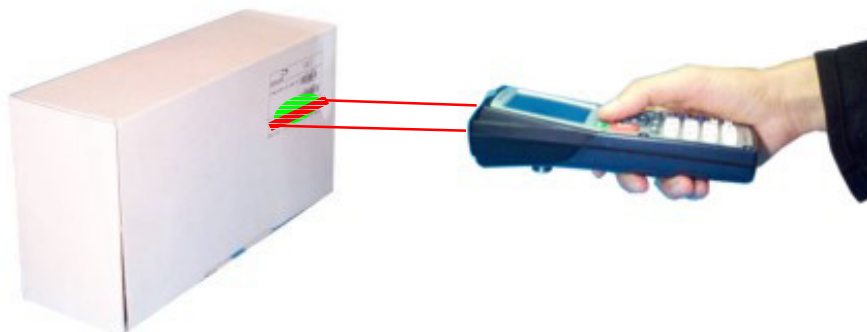


Figure 8 – Formula Color™ Terminal Scanning a Barcode



NOTE

The heat that can be felt in the area of the battery pack is not a symptom of a malfunction; rather, it is a normal state due to the Formula Color™ terminal being in use.

4.3 DESCRIPTION OF THE KEYS

The Formula Color™ terminal keyboard is made up of a total of 27 keys.



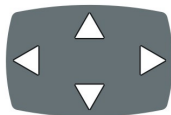
Figure 9 – Formula Color™ keyboard

POWER AND DISPLAY CONTROL KEYS



The [SCAN] key is used to turn ON the terminal and to activate the laser scanner for barcode reading. It is not possible to activate the laser scanner for barcode reading if the data collection software application program is not currently running on the terminal.

Turns OFF the terminal.



Has 4 different functions depending on its current state.

STATE	FUNCTION	HOW TO ENTER THE STATE
Normal	Acts as the PC arrows keys. (The keys are interpreted by the application).	It is the default state.
Scroll mode	Moves the physical screen window on the logical screen.	FUNC-2 toggles the state.
Contrast adjustment	The UP / DOWN arrows can be used to adjust the contrast.	FUNC-4 toggles the state.
Volume adjustment	The UP / DOWN arrows can be used to adjust the volume of the beeper.	FUNC-5 toggles the state.

The keyboard status can be displayed on the status bar if the keyboard status icon has been enabled in the bsetup program.

To show / hide the status bar, press FUNC-3.



NOTE

If the contrast is set too low (very faint), you will not be able to determine when the terminal is off.



[ENTER]: corresponds to the [ENTER] key on a PC.

ALPHANUMERIC KEYS



- A) Function of the key in Normal mode;
- B) Function of the key in FUNC mode;
- C) Function of the key in SHIFT mode;
- D) Function of the key in ALPHA mode;

When in ALPHA mode, press the key until the desired letter is displayed. The letter is entered if you wait a short timeout or if you press a different key.

To show on the status bar the current keyboard mode (FUNC, ALPHA, SHIFT, NORMAL) and / or the currently selected alpha symbol, enable the appropriate icons in bsetup.

CAPS



☐ ALPHA MODE

Switches keyboard from the alphabetical ALPHA mode to the number and symbol NORMAL mode.

The keyboard remains in this mode till the ALPHA key is pressed again.



☐ FUNC MODE

Switches keyboard to the FUNC mode from the ALPHA or NORMAL mode. The FUNC key press preceding any keyboard key enables the character / function in green positioned above the key. The keyboard remains in this mode until the next general key is pressed, then it returns to the previous mode.

For example, to select the [:] character, press [FUNC]-[0] in sequence.


























ALT



☐ SHIFT MODE

On the Formula Color™ terminal, the [SHIFT] key is not pressed at the same time with other keys. The keyboard remains in this new mode until the next general key is pressed, then it returns to the previous mode. For example, to select the [&] character, press [SHIFT] and [7] in sequence.

SPECIAL KEY SEQUENCES

Key sequence	Function
 	Turns on / off the display backlight.
 	Shows / hides the status bar.
  	The same as SHIFT - TAB on a PC keyboard.
  	The same as ALT key on a PC keyboard.
  	Locks / unlocks the keyboard.
  	Toggles UPPER / LOWER case letters.
     The keys at the four keyboard corners.	Software reset.
   	If pressed simultaneously, causes hardware reset.

4.4 FILE TRANSFER

The WinDTP file transfer utility included on the CD-ROM allows you to perform file transfer between the Host and Formula Color™ Terminal. See the DL-DTP User's Manual for details on installation and functioning.

5 MAINTENANCE

**NOTE**

Rechargeable battery packs are not initially charged. Therefore the first operation to perform is to charge them in the appropriate cradle. See the following paragraph.

5.1 CHARGING THE BATTERIES

The duration of the battery charge varies according to factors, such as the frequency of barcode scanning.

Recharging should be performed when the batteries are completely run down.

To recharge the batteries, insert the Formula Color™ terminal into the cradle.

5.2 REPLACING THE BATTERIES

To replace the battery pack, proceed as follows.

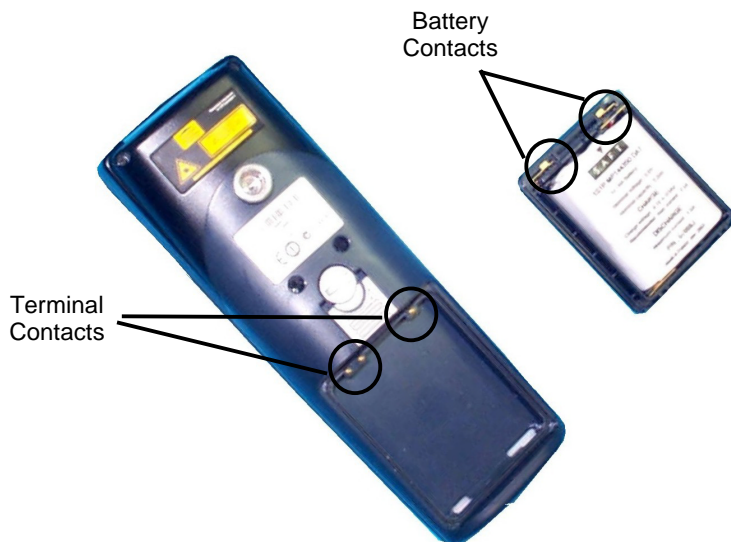
- 1 - Turn off the Formula Color™ terminal.
- 2 - Turn the terminal over and turn the lock into the "open" position (horizontal).



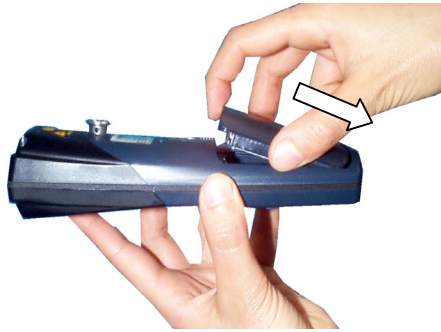
3 - Pull the lock runner as indicated in figure below:



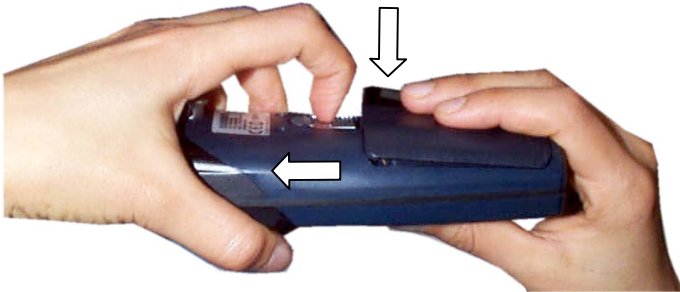
4 - Remove the battery pack.



- 5 - To correctly insert the batteries, first insert the tabs at the bottom of the battery pack into their corresponding slots in the terminal.



Then insert the upper part of the battery pack into the upper terminal lodging by keeping the lock runner pressed up. Once the battery pack is correctly inserted, release the lock runner.



- 6 - Turn the lock into the "close" position (vertical).



CAUTION

Dispose of the batteries as required by the relevant laws in force.

5.3 CLEANING THE TERMINAL

Periodically clean the Formula Color™ terminal with a slightly dampened cloth.

Do not use alcohol, corrosive products or solvents.

6 TROUBLESHOOTING



CAUTION

Opening Formula Color™ may damage internal components and causes warranty loss.

Before sending Formula Color™ to technical support, the Customer has the responsibility of saving the configuration and all data that have been stored on the terminal. Datalogic's only responsibility is the recovery of the exact hardware configuration of Formula Color™.

Problem	Possible Solution
The terminal does not respond to any type of input (keyboard entry, barcode scanning).	Wait some minutes, since the timeout of TCP/IP may be waiting for a transaction occurred in an area with no radio coverage (during such timeouts Formula Color™ Wi-Fi is suspended). Timeout normally takes 2 minutes. If problem persists, switch Formula Color™ Wi-Fi off then switch it on again.
When pressing the "SCAN" key, the terminal does not turn on.	Check whether one of the following conditions has occurred: <ul style="list-style-type: none"> - the battery pack has not been correctly inserted into the terminal (refer to par. 5.2 for details); - the battery pack may be discharged. In this case, substitute it with a new charged battery or insert the terminal in the F-Color single cradle (powered through the FPS18 power supply) to charge it; If problem persists, contact the nearest Datalogic distributor for technical assistance.
The terminal keeps on displaying the boot screen (Datalogic logo is displayed) and the terminal LED blinks red or green.	The terminal may be in "boot loading" status. Reset the terminal being careful not to press the "SCAN" key during the boot sequence. If problem persists, contact the nearest Datalogic distributor for technical assistance.

Problem	Possible Solution
When rebooting the terminal, an error message appears: "RADIO ERROR".	<p>Check configuration correctness, since one of the following conditions may have occurred:</p> <ul style="list-style-type: none"> - some files may have been deleted; - an incorrect driver may have been loaded for the Radio card mounted on the Formula Color™ Wi-Fi (please also refer to the driver manuals). <p>If problem persists, contact the nearest Datalogic distributor for technical assistance.</p>
The boot seems to be correct, but Formula Color™ Wi-Fi does not connect to the wireless LAN or cannot reach the host.	<p>Check configuration correctness, since one of the following conditions may have occurred:</p> <ul style="list-style-type: none"> - Formula Color™ Wi-Fi is out of access point coverage area; - radio configuration files (ESS_ID, Wep Encryption, safety parameters, etc.) may have been set incorrectly (please also refer to the driver's manual); - TCP/IP configuration files may have been set incorrectly (terminal IP address, Subnet Mask, Default Router, etc.); - the configuration files of running application may have been set incorrectly (DL-TCL, Web Client). <p>If problem persists, contact the nearest Datalogic distributor for technical assistance.</p>
Upon boot, the terminal locks up while executing a program or a driver.	<p>Reboot the terminal and press the "FUNC" - "F4" keys in sequence during the memory check. This implies a "Step-by-step" boot activation.</p> <p>Press the "y" key to confirm (execute) each program/driver until the one that locks the terminal. Once found the locking program/driver, repeat the procedure from the beginning and skip the execution of the incorrect program/driver by pressing the "n" key. Replace the program/driver.</p> <p>If problem persists, format the disk C: and load a fresh configuration.</p> <p>If problem still persists, contact the nearest Datalogic distributor for technical assistance.</p>

Problem	Possible Solution
Formula Color™ Wi-Fi is connected to a Wireless network but it works slowly.	<p>Ensure that the radio coverage of the working zone is correct and that the signal strength is enough to guarantee transactions.</p> <p>Get closer to an access point. If the terminal still works slowly, check the radio configuration and CPU speed since they may have been configured to save energy (optimisation of the battery pack duration). Increase the CPU speed and radio reactivity.</p> <p>If problem still persists, check the status of the Wireless LAN.</p>
The barcode reader emits no light source.	<p>Check whether one of the following conditions has occurred:</p> <ul style="list-style-type: none"> - ensure that the correct driver has been loaded; - ensure that the driver has been correctly configured; <p>If problem still persists, contact the nearest Datalogic distributor for technical assistance.</p>
The barcode reader does not read some code symbologies.	<p>Ensure that the laser driver has been correctly configured (refer to the DS for Formula DOS development system manual for further details).</p>
The barcode reader emits a laser beam but it hardly reads the barcode.	<p>Ensure that the reading window of the barcode reader is clean. If not, clean it with a slightly dampened cloth. Do not use alcohol, corrosive products or solvent, and avoid any abrasive substances.</p>
The serial Datalogic Transfer Protocol Server (DTPS) has been run through the related "ds.bat" command but it cannot communicate with other Datalogic client application programs running on PC side (WinDTP or DL Mobile Configurator™).	<p>Check whether one of the following conditions has occurred:</p> <ul style="list-style-type: none"> - the RS232 parameter settings of the DTPS program do not correspond to the settings of the program running on the PC. By default the DTPS transmission speed is 115.200 bps (for further details refer to the DTPS, WinDTP or DL Mobile Configurator™ manuals); - the terminal has been connected to the PC through a wrong cable (refer to chapter 2 for details).
The terminal is on but the keys do not work.	<p>Press "SHIFT" + "SCAN" to unlock the keyboard.</p>

Problem	Possible Solution
<p>After updating the Flash image, the terminal does not work properly (boot sequence not completed, terminal lock).</p>	<p>If the Flash image has been updated with a new image having a different dimension, ensure that Disk C: is formatted by using the FFDISK command (refer to the DL Flash Loader manual for further details).</p> <p>If problem persists, repeat both the Flash updating procedure and the Disk C: formatting, and ensure that all disk C: files have been reinstalled correctly (refer to the DL Mobile Configurator™ manual for further details about restoring Disk C: on terminal).</p> <p>In case the problem still persists, contact your nearest Datalogic distributor for technical assistance.</p>

7 TECHNICAL FEATURES

7.1 FORMULA COLOR™ TECHNICAL FEATURES

Optical Features	
Minimum resolution	0.13 mm / 5 mils
Skew angle	± 60°
Pitch angle	± 65°
Scan rate	50 ± 6 scans/sec
Depth of field	See reading diagram in par. 7.3.
Light source laser scanner	VLD, fixed wavelength in the range 630 ~ 680 nm
Safety Class	Class II EN 60825-1
Electrical Features	
Micro-controller	32 bit – AMD 486
FLASH	8 MB (512 KB used for BIOS-DOS)
RAM	8 MB
EEPROM	256 bytes
Calendar/clock	Quartz RT, date and time programmable with automatic management of leap years.
Power	Li-Ion battery pack 2300 mA/h
Physical Features	
Technology	SMT (Surface Mount Technology)
Dimensions (LxWxH)	179 x 63 x 46 mm 7 x 2.5 x 1.8 in
Weight	360 g / 12.6 oz (with battery)
Buzzer	Piezoelectric, programmable in frequency and duration
LED	Programmable red/green LED
Display	High contrast, back-lit LCD graphic display with 128 x 144 pixel
Keyboard	27 silicone rubber keys
Environmental Features	
Working temperature	0 °C to +50 °C (32 °F to +122 °F)
Storage temperature	-20 °C to +60 °C (-4 °F to +140 °F)
Relative humidity	95% without condensation
Degree of protection	Protected from rain and dust
Electrostatic charges EN 61000-4-2	4 KV AIR / 8 KV CONTACT
Drop resistance	IEC 68-2-32 up to 1.5 m (59 in) onto concrete
Laser safety	EN 60825-1 and CDRH class 2 laser product

Programming Features	
Barcodes decoded	Code 39 standard Code 39 full ASCII Code 39 CIP Interleaved 2/5 Industrial 2/5 Plessey UPC - EAN UPC only UPC/EAN + Addon 2 UPC/EAN + Addon 5 UPC-E only UPC 8 only UPC-A & EAN 13 only Codabar (NW7) Code 128 MSI Code 93 Code 11
Operating system	ROM-DOS 7.0
Transmission Features	
Optical Interface	IrDA 1.0
Serial interface	RS232*
Transmission speed	115 Kbits/sec
Formula Color™ Wi-Fi Transmission Features	
Frequency	2.4 GHz
Power emitted	In compliance with ETS 300-328

* Through F-Color cradle.

7.2 F-COLOR SINGLE CRADLE TECHNICAL FEATURES

Electrical Features	
Power supply	9 VDC Min – 30 VDC Max
Consumption	7 W Max
Charge time	8 hours Max
Communication Features	
Interface	RS232
Baudrate	9600 – 115200
Physical Features	
Dimensions	85 x 130 x 90 mm 3.3 x 5 x 3.5 in
Weight (without connection cables)	390 gr 12 oz
LED	Power LED
Environmental Features	
Working temperature	0 °C to +50 °C (32 °F to +122 °F)
Storage temperature	-20 °C to +60 °C (-4 °F to +140 °F)
Relative humidity	95% without condensation
Degree of protection EN 60529	IP64
Electrostatic discharge EN 61000-4-2	4 KV AIR / 8 KV CONTACT

7.3 READING DIAGRAM

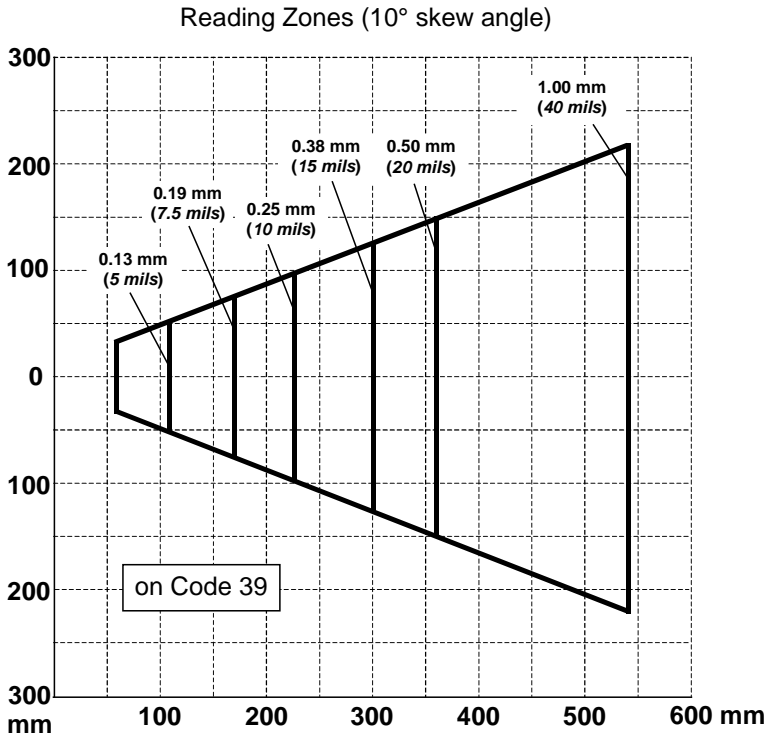


Figure 10 – Formula Color™ Reading Diagram

8 TEST CODES

High Density Codes

0.25 mm (10 mils)

Code 39



17162

2/5 Interleaved



0123456784

Code 128



test

80%

EAN 13



8012345000012

80%

EAN 8



645019723

Medium Density Codes

0.38 mm (15 mils)

Code 39



Interleaved 2/5

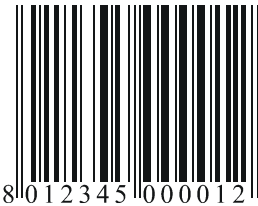


Code 128



100%

EAN 13



100%

EAN 8



Low Density Codes

0.50 mm (20 mils)

Code 39



Interleaved 2/5



Code 128



EAN 13



EAN 8



GLOSSARY

Access Point (AP)

A device that provides transparent access between Ethernet wired networks and IEEE 802.11 interoperable radio-equipped mobile units. Hand-held terminals, or other devices equipped with radio cards, communicate with wired networks using Access Points (AP). The mobile unit (terminal), may roam among the APs in the same subnet while maintaining a continuous, seamless connection to the wired network.

Barcode

A pattern of variable-width bars and spaces which represents numeric or alphanumeric data in binary form. The general format of a barcode symbol consists of a leading margin, start character, data or message character, check character (if any), stop character, and trailing margin. Within this framework, each recognizable symbology uses its own unique format.

Baud Rate

A measure for data transmission speed.

BIOS

Basic Input Output System. A collection of ROM-based code with a standard API used to interface with standard terminal hardware.

Bit

Binary digit. One bit is the basic unit of binary information. Generally, eight consecutive bits compose one byte of data. The pattern of 0 and 1 values within the byte determines its meaning.

Bits per Second (bps)

Number of bits transmitted or received per second.

Byte

On an addressable boundary, eight adjacent binary digits (0 and 1) combined in a pattern to represent a specific character or numeric value. Bits are numbered from the right, 0 through 7, with bit 0 the low-order bit. One byte in memory can be used to store one ASCII character.

Data Communications Equipment (DCE)

A device such as a modem that is designed to attach directly to a DTE (Data Terminal Equipment) device.

Data Terminal Equipment (DTE)

A device such as a terminal or printer that is designed to attach directly to a DCE (Data Communications Equipment) device.

Decode

To recognize a barcode symbology (e.g., Codabar, Code 128, Code 3 of 9, UPC/EAN, etc.) and analyze the content of the barcode scanned.

DOS

Disk Operating System. This is basic software that allows you to load and use software applications on your computer. Formula Color™ terminals use a product called Datalight ROM-DOS.

EEPROM

Electrically Erasable Programmable Read-Only Memory. An on-board non-volatile memory chip.

Flash Disk

Non-volatile memory for storing application and configuration files.

Host

A computer that serves other terminals in a network, providing services such as network control, database access, special programs, supervisory programs, or programming languages.

Liquid Crystal Display (LCD)

A display that uses liquid crystal sealed between two glass plates. The crystals are excited by precise electrical charges, causing them to reflect light outside according to their bias. They use little electricity and react relatively quickly. They require external light to reflect their information to the user.

Light Emitting Diode (LED)

A low power electronic light source commonly used as an indicator light. It uses less power than an incandescent light bulb but more than a Liquid Crystal Display (LCD).

RAM

Random Access Memory. Data in RAM can be accessed in random order, and quickly written and read.

RF

Radio Frequency.

RTC

Real Time Clock.

Terminal

A Datalogic portable computer product.

Terminal IP Address

The terminal's network address. Networks use IP addresses to determine where to send data that is being transmitted over a network. An IP address is a 32-bit number referred to as a series of 8-bit numbers in decimal dot notation (e.g., 130.24.34.03). The highest 8-bit number you can use is 254.

Transmission Control Protocol/Internet Protocol (TCP/IP)

A suite of standard network protocols that were originally used in UNIX environments but are now used in many others. The TCP governs sequenced data; the IP governs packet forwarding. TCP/IP is the primary protocol that defines the Internet.

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Basate sulle legislazioni degli Stati membri in relazione alla compatibilità elettromagnetica ed alla sicurezza dei prodotti.

On the approximation of the laws of Member States relating to electromagnetic compatibility and product safety.

Basée sur la législation des Etates membres relative à la compatibilité électromagnétique et à la sécurité des produits.

Über die Annäherung der Gesetze der Mitgliedsstaaten in bezug auf elektromagnetische Verträglichkeit und Produktsicherheit entsprechen.

Basado en la aproximación de las leyes de los Países Miembros respecto a la compatibilidad electromagnética y las Medidas de seguridad relativas al producto.

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Diese Erklärung basiert darauf, daß das Produkt den folgenden Normen entspricht:
Esta declaración se basa en el cumplimiento de los productos con las siguientes normas:

EN 55022, August 1994:

LIMITS AND METHODS OF MEASUREMENTS OF RADIO DISTURBANCE
CHARACTERISTICS OF INFORMATION TECHNOLOGY EQUIPMENT (ITE)

EN 55024, September 1998:

INFORMATION TECHNOLOGY EQUIPMENT. IMMUNITY CHARACTERISTICS.
LIMITS AND METHODS OF MEASUREMENTS.

Lippo di Calderara, 07.06.04

Ruggero Cacioppo
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Quality Assurance Laboratory Manager

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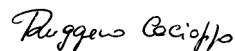
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|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN 60950-1, December 2001: | INFORMATION TECHNOLOGY EQUIPMENT – SAFETY – PART 1: GENERAL REQUIREMENTS. |
| ETSI EN 300 328-2, December 2001: | ELECTROMAGNETIC COMPATIBILITY AND RADIO SPECTRUM MATTERS (ERM); WIDE-BAND TRANSMISSION SYSTEMS; DATA TRANSMISSION EQUIPMENT OPERATING IN THE 2,4 GHZ ISM BAND AND USING SPREAD SPECTRUM MODULATION TECHNIQUES; PART 2: HARMONISED EN COVERING ESSENTIAL REQUIREMENTS UNDER ARTICLE 3.2 OF THE R & TTE DIRECTIVE. |
| ETSI EN 301 489-17, September 2000: | ELECTROMAGNETIC COMPATIBILITY AND RADIO SPECTRUM MATTERS (ERM); ELECTROMAGNETIC COMPATIBILITY (EMC) STANDARD FOR RADIO EQUIPMENT AND SERVICES; PART 17: SPECIFIC CONDITIONS FOR WIDEBAND DATA AND HIPERLAN EQUIPMENT. |

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