"TOYUG II"

The Other YN-622C User Guide II

YN622C • YN622C II • YN622C-TX • YN685

FOR CANON DSLR CAMERAS

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Hong Kong Yong Nuo Photographic Equipment Co. Ltd. is a branch of ShenZhen YongNuo Photographic Equipment Co. Ltd. Links to company and ebay websites are included at the rear. YongNuo has had no direct input into the contents of this guide.

Declaration of Interest

The author has no association with the manufacturer other than as a paying customer. I am thankful for some additional samples provided by Yongnuo.

Testing Equipment

EOS 50D, 7D and 6D
Speedlites 580EX II, 430EX II and 550EX
Yongnuo YN568EX and YN685 flashes, YN622C, YN622C II, YN622C-TX, YN560-TX triggers.
Canon cameras from 2012 on have not been personally tested

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ABBREVIATIONS AND DEFINITIONS

560-TX: A YN560-TX transmitter for Manual output control of 560 series flashes.

622C: A YN-622C transceiver (2012-2015). In context, it includes a 622C II.

622C II: A YN622C II transceiver (2015-current).

622C (rx): By default, the 622C switches on in receiver mode (Slave). Settings are made by a 622C (tx) or a 622C-TX (except for Channel and Group). A remote flash is connected by its hot-foot or a PC-sync cable.

622C (tx): A 622C auto-switches to transmitter mode (Master) when mounted and active on a camera's hot-shoe. Settings are made via camera's external flash control menus.

622C-TX: A YN622C-TX transmitter/controller (Master).

685: A YN685 Speedlite, with built-in 622 and 560 receivers.

Channels: A range of frequencies is available within the 2.4GHz bandwidth. The 622 system uses 7 "channels" which can be selected to avoid interference with other devices.

Cold-foot: A flash or adapter with a non-conducting square and a ¼ inch UNC screw socket for mounting on a stand.

Cold-shoe: A cold-shoe holds a hot-foot without making contact with the pins.

Controller: A YN-622C-TX controller for mounting on the camera's hot-shoe, providing full settings capability in place of the camera's flash control menus.

Firing Group: The set of groups that will be fired when triggered (A, B, C, AB, AC, BC, ABC)

Flash Exposure / **Output:** The amount of light output by a flash, as determined by the camera's E-TTL or by the user's power level setting.

Global: Applying to all groups (ALL; A+B+C).

Groups: There are three "groups" – Rx Groups, TX firing groups and Testing Groups.

High Speed Sync (HSS): A method of extending flash emission to provide light during shutter speeds faster than x-sync, when the shutter is a moving slit and never fully open. It involves starting the emission before the curtains start to open.

Hot-foot: The hot-foot has contacts and goes into a hot-shoe, e.g. bottom of a flash or transceiver. Care must be taken to ensure that the brand configuration of the contacts is right.

Hot-shoe: The hot-shoe is the accessory fitting on top of camera and each 622C.

Mix Control Mode: A user-set 622C (tx) mode for mixed remote and on-flash control.

Continued…

On-flash: Settings made using the controls on the individual remote or on-tx flash.

On-TX flash: A hot-shoe flash mounted on the 622C or 622C II transmitter. It has some special features. YongNuo refer to this as “set-top”. (The 622C-TX Controller does not have a hot-shoe to mount a flash.)

Optical Code: Information and commands carried by high-frequency light pulses, requiring a programmed decoder as receiver. Canon calls this “Wireless”. The 622C cannot send or read light-pulse codes.

Protocol: A set of rules for transmitting data between two communicating devices. (Frequency bands, IDs, data structures, handshakes and check digits).

Radio: Information and commands carried by radio signals at specific frequencies, requiring a programmed decoder as receiver. Canon RT, YongNuo 622 and other systems each have their own frequencies and data language.

Remote Mode: The default 622C/622C II (tx) mode, for remote control of flashes from the camera.

Rx: A remote receiver.

Rx Group: Each 622 receiver is assigned to an Rx lighting Group of one or more flashes The 622 will react to code commands addressed to that group.

Sync: Synchronous firing of flash when the camera’s shutter gives the command.

Supersync (SS): YongNuo’s technique for using studio flashes/heads at a shutter speed faster than the camera’s x-sync. The Supersync technique requires the flash to burn for long enough for the shutter slit to traverse the whole sensor.

Test Group: The lighting groups that will be fired when a 622C [TEST] button is pressed.

Tx: A transmitter.

Wireless: This term logically includes radio, sound, visual and light transmissions. See “Optical Code” and “Radio”. Its use in our setting is vague and confusing, arising from The Great War when telegraph wires were replaced by radio signals in battlefields!

X-Sync: A camera’s fastest shutter speed when both curtains are fully open to a flash. At shutter speeds faster than x-sync, the two shutter leaves form a moving slit and never fully open over the sensor.

Chapter 1
THE 622C SYSTEM

Reality…

I want drone flashes! No stands needed; self-positioning; with subject tracking and tree evasion. In the meantime, this is a look at one existing and reasonably-priced hot-shoe flash system.

The YongNuo 622 appealed to me as demonstrating intellectual competency in R & D and in assessing customer needs. Production and distribution quality has not always matched that, unfortunately,

My current target setup: YN622C-TX, YN560-TX, 2x YN685, 3x YN622C II, various legacy flashes. That provides versatile configurations and on-assignment backups.

I dislike the “assumption-as-fact” often presented on the forums, so I set out to determine by testing what the 622s could and could not do. This Guide is the result. The tight integration with Canon gear required adding in information from both camera and speedlite manuals.

INTRODUCTION

The Heart of the YN622C

This guide details how the Yong Nuo 622 series radio triggers are designed primarily to fit between Canon cameras and Canon hot-shoe Speedlites, using the camera's external flash control menus (Type A cameras) and the remote flashes' own control settings (Class 1 and Class 2 flashes).

The various devices each have a 2.4GHz transceiver radio, which communicate both ways. One 622 is mounted on the camera's hot-shoe and acts as the "Master" transmitter. Others are used remotely as "Slave" receiver units. In fact, they communicate back and forth, enabling them to understand their whole environment.

But they do more than that – they form a four-microprocessor (µP) network, working into cameras and flashes manufactured and programmed by other developers.

Camera µP	⇆ hot-shoe ⇆	**Master 622C µP**	⇆ radio ⇆	**Slave 622C µP**	⇆ hot-foot ⇆	**Flash µP**

CONTROL DEVICES

There needs to be a way for users to input and to read the settings they use.

- **Canon DSLR Cameras** from 2007 use external flash control menus on the LCD back panel, and buttons to make settings.
- The **622C and 622C II** when used as transmitters rely on the camera menus, but some communication settings are set by the 622C buttons and read from LED indicators.
  The same devices used as receivers also require communication settings by buttons and LEDs, but their functioning can differ from their meaning when used as a transmitter.
- The **622C-TX** has its own LCD panel to display settings, and buttons to make settings, so it can be programmed to do some things that Canon has not provided for.
- Canon originally set up **Speedlites** to act as a plug-in extension of the camera's processor, containing an LCD screen for feedback, more memory, and buttons for settings. The camera is now more capable, but still gets settings from the mounted stand-alone flash or Master.

Some settings on a device keep another device's settings in step; some ignore other settings; some hand over to the other devices; some add the settings together. The photographer needs to keep track of these effects.

Then there is the degree of control – full Remote from camera, or Mix mode where many settings can be determined on the flash without being over-written by the Master.

This user guide generally assumes the use of Remote Mode, a type A camera and a class 1 flash.

COMMUNICATION

The radio communication uses one of seven selectable bands from the 2.4GHz bandwidth (channels 1 to 7). Unlike early radio triggers, which used simple states (On/Off) or transitions, the 622 uses binary code word structures. It also speaks Canon E-TTL code to communicate with the camera and flash. It recognises the identity of other objects, performs handshakes to exclude interlopers, and uses addresses to give instructions to a sub-set of flashes (Groups A to C or F).

As Canon and YongNuo continue developments, the data structures and associated algorithms may be expanded. These can be updated using YN Firmware Updates.

OPERATING PROTOCOLS

There are two operating protocols built into parts of the 622 system – 622 and 560.

622 Protocol – E-TTL and Manual/Multi

The 622 protocol is found in:

- YN622C – tx and rx
- YN622C-TX – tx
- YN622C II - tx and rx
- YN685 – rx only

Example 622 Set-ups include:

On-Camera	Receiver	Extension
622C or 622C II transmitter		
622 II	→ 622 II + flash	
622 II + flash	→ 622 II + flash	
622 II	→ 685 Speedlite	
622 II	→ 622 + PC-sync	→ studio strobe
622C-TX transmitter (preferred; v1.08 or later)		
622-TX	→ 622 II + flash	
622-TX	→ 622 (rx) + flash	
622-TX	→ 685 Speedlite	
622-TX	→ 622 + PC-sync	→ studio strobe

560 Protocol – Manual/Multi

The 560 protocol is found in:

- YN622C from,January 2015 – rx only
- YN622C-TX – rx, which is converted and transmitted to remote 622s
- YN622C II – rx only
- YN685 – rx only

Example 560-TX or 560-IV Setups include:

On-Camera	Receiver	Extension
560 IV flash	→ 622 II + flash	
560-TX	→ 622 (from 1/2015) + flash	
560-TX	→ 622 II + flash	
560-TX	→ 622C-TX (560 mode)	→ 622 II (rx) + flash
560-TX	→ 685EX	
560-TX	→ 622C-TX (560 mode and C.Fn 05 EX Comp Enabled)	→ 622C + 550EX

Example 605 or 603 Setups include:

On-Camera	Receiver	Extension
603	→ 685EX	
603	→ 622 II + flash	

FLASH EXPOSURE / OUTPUT

Early electronic flashes controlled the amount of light emitted by the Xenon tube by limiting the burn time using a "quench" line or an autosensor. Modern flashes use components like an IGBT gate timed by a microprocessor to control the duration of the flash.

Either the user ("Manual") or the camera ("E-TTL" automatic) can determine the duration. "Manual" is expressed as a fraction of maximum, from 1/1 (full) to 1/64 or 1/128. Typically, Canon cameras can make use of two stops lower power (1/512) under E-TTL than can be set manually.

The 622 can trigger a flash without settings control, or with settings control.

Uncontrolled Output
A simple sync trigger uses only the main pin to fire the flash. The user must set the output on-flash as a Manual output or some other control.

The fastest shutter available using the 622 in this setup is 1/250s or less, depending on camera.

Controlled Output
An advanced trigger also uses the other pins in the standard Canon hot-shoe for providing various controls. Canon calls these controls "flash modes", although Multi is more an extension of Manual. The following chart shows their relationships, with "continuous" mode added, although it is not called a "flash mode".

Flash Modes

Mode	Exposure	Frames	Syncs
ETTL II	ETTL	1	1
Manual	Manual	1	1
Multi	Manual	1	Multiple
(Continuous)	ETTL, Manual	Multiple	1 per frame

"TTL" is used by Canon for their film cameras, and the setting should not be used for their digital cameras. "E-TTL" was used in early digital cameras, and is no longer fully supported by current 622 systems. Fully-compatible E-TTL cameras (from 2004 on) use E-TTL II; it is a function of the camera, not the trigger, and is fully supported by the 622.

SHUTTER SYNCHRONISATION

The flash can be synchronised with the camera shutter in several ways.

First Curtain Sync (1CS)
This is the standard sync used for slow shutter speeds to around 1/200S to 1/250S (depending on the camera model). As soon as the two shutter blades are fully open, the flash is instructed to fire.

Second Curtain Sync (2CS)
Action shots sometimes call for the flash just before the shutters close. This sync sets up a delay before the flash fires, providing a better sense of movement.

Because the light pulse command codes would be emitted at the start of the frame, a spurious ghosting would be produced, so Canon chose to make 2CS available only when the flash is on-camera. The 622s work around this, as the communication is by radio, but the user can unintentionally disable 2CS by turning Wireless Mode to On in the camera.

High Speed Sync (HSS)
At shutter speeds faster than the camera's x-sync, the curtains are never fully open, but produce a moving slit. The flash must produce an even light from before the shutters start exposing to after they have closed, so that no shadow is produced. This is achieved by exciting the xenon tube with a 50,000 Hertz voltage to produce a "flat light" rather than the usual peak output. The flash must have the right electronics to work with this mode.

Super Sync (SS)
This is YongNuo's version of the "flash burn" technique for studio strobes when using fast shutter speeds. It relies on the pre-shutter signal produced when the camera is in HSS mode. The 622C-TX can add a start time delay to optimise the output during the exposure.

Simple Sync
When firing a strobe or flash through the PC-sync port or main hot-shoe pin, the 622 will provide 1CS, 2CS or SS. The 622 overcomes a Canon limitation by converting the E-TTL streams that carry the 2CS and HSS data to signals on the PC-sync centre pin.

FLASH HEAD ZOOM

The xenon tube in a hot-shoe flash head can be moved forward to increase coverage and decrease intensity, or backwards to reduce coverage and increase intensity.

The 622 passes on auto-zoom settings based on a zoom lens's setting and the sensor factor (if enabled). Manual settings are also transmitted. In addition, the zoom on an individual flash can be set independently, especially where the lens focal length is irrelevant for remote flashes.

OTHER FEATURES

The 622 also handles the camera's:

- AF-Assist Beam
- LCD Live View triggering
- Modelling Light

COMPATIBILITY TIMELINE

For the YN-622C (and many other triggers) compatibility is about what each camera body provides for digital data in and out through the accessory shoe, and what the flash moves in and out through it's hot-foot. These capabilities are set by the manufacturers. The 622C, however, can massage the data as it transmits it back and forth, providing functions not provided by Canon.

1995-2003

There was an Accessory shoe on camera to mount a device, and a single-pin sync contact fired the flash. All settings were made on-flash. The camera did not know what they were. TTL (film) and A-TTL and E-TTL appeared, using more contact pins. The camera became increasingly aware of flash settings. Settings were still made on-flash.

Some flashes were designed for "I just want a photo in poor light" use, so do not have the means for the user to set output levels manually. They can handle the automatic exposure E-TTL commands through the hot-foot, however. (Class 3 flashes.)

There was no provision on some cameras for setting Manual output levels, so there was no need to have a control path through the flash's hot-foot. Settings were still on-flash. (Class 2 flashes.)

TTL – E-TTL	Class 1 flash	Class 2 flash	Class 3 flash	YongNuo
1D, 1Ds 10D 300D/DRebel		430EX 550EX	220EX 380EX 420EX	

2004-2006 (Type B Cameras)

Canon implemented E-TTL II with an off-camera system using a Master flash to drive one or more slaves using light-pulse coding. Communication was one-way. The camera was taught to read the Master flash's user settings, and act accordingly. FEC was added to the camera.

E-TTL II	Class 1 flash	Class 2 flash	Class 3 flash	YongNuo
1D II, 1Ds II, 1D II N 5D 20D, 20Da, 30D 350D/XT, 400D/XTi		580EX		

2007-2012 (Type A Cameras, with Flash Menus)

A better interface was required. Canon designed the External Flash menus (from 1D-III, March 2007 on) so that the camera could both read and set ALL settings in the flash. This meant that all flash settings needed to be digital (i.e. no positional switches). The only flashes which can be fully controlled by flash menus are ones that have the required communication through the hot-foot. (Class 1 flashes.)

The YN-622C was released in August 2012 as a substitute for the light-pulse coding and its limitations. Some functional improvements were added, without over-riding Canon facilities.

Ext. flash Menus	Class 1 flash	Class 2 flash	Class 3 flash	YongNuo
1D III, 1Ds III, 1D IV 5D II, 7D 40D, 50D, 60D 450/XSi, 500D/T1i 550D/T2i, 600D/T3i 1000D/XS, 1100D/T3	270EX II 430 II 580EX II		270EX	622C

2012-2015 (Type A Cameras with RT)

YongNuo had just released the YN-622C when Canon released the 5DIII, ST-E3, 1D X and 600EX-RT, which provide two-way radio communication. They also provided new features like mixed firing modes (ETTL/M/Auto), channels 5-15, Wireless IDs and groups D & E.

The 622C cannot use some of these extensions, and the camera must be used in “optical wireless” mode.

In June 2014, YongNuo released the YN-622C-TX. It provided full control of remote 622Cs by type B cameras, and an alternative control interface for type A cameras. The control interface is more convenient, removing the need to use the camera’s External Flash menus for most functions. It also has a better Groups mode than the 622C’s Mix Control Mode.

September 2015 saw the release of the YN622C II upgrade, and the YN685 Radio Slave Speedlite Also, YongNuo have upgraded the firmware of the 622C-TX to receive commands from the YN-560-TX (dedicated controller for the Manual-only YN-560-III flash). The 622C-TX will then use a “560 mode” to forward the commands from the 560-TX to remote 622Cs with mounted Manual or E-TTL flashes.

RT; Quick Flash Panel	Class 1 flash	Class 2 flash	Class 3 flash	YongNuo
1DX, 1D C 5D III, 5Ds, 5Ds R 6D, 7D II 60Da, 70D 100D/SL1 650D/T4i, 700D/T5i 750D/T6i, 760D/T6s 1200D/T5 EOS M3	600EX-RT 320EX 430EXIII-RT			622C-TX 622C II 685 flash

CAMERA COMPATIBILITY

Cameras can be put into one of three types for use with the 622C system. The “RT” capable flashes are currently classed as Type A. Both triggers work with all classes of camera and all types of flash. The question is: to what extent?

Key features of the 622C Transmitter are described, then the C-TX additions.

Type A Camera - Menu Control (2007 and on)

EOS
622C II Transmitter using class 1 flashes: Remote E-TTL, FEC and Ratios; remote Manual levels; HSS if available; fixed Supersync; Firing groups; Zoom Control. **C-TX Controller adds class 2 flashes and:** Variable Supersync; mixed Flash Mode Groups.
1D III, 1Ds III, 1D 4, 1DX 5D II, 5D III 6D 7D, 7D II 40D, 50D, 60D, 70D 450D, 500D, 550D, 600D, 650D, 700D XSi, T1i, T2i, T3i, T4i, T5i 100D, 1000D, 1100D SL, XS, T3 EOS-M (no AF-beam)

Power Shot
622C II Transmitter using class 1 flashes: Remote E-TTL and FEC; remote Manual levels; HSS if available; fixed Supersync; Zoom Control. **C-TX Controller adds class 2 flashes and:** Remote E-TTL Ratios; variable Supersync; Firing groups; mixed Flash Mode Groups.
G12, G15, G1X SX20 IS, SX30 IS, SX40 HS, SX50 HS.

Type B Camera – Flash Button Control (prior to 2007)

EOS
622C II Transmitter using class 1 flashes: Remote ETTL/FEC, on-flash Manual levels, HSS if available, fixed Supersync. **C-TX Controller adds class 2 flashes and:** Remote ETTL FEB and Ratio; remote Manual levels, Firing groups, mixed Flash Mode Groups, variable Supersync.
1D, 1Ds, 1D II, 1D II N, 1Ds II (NOT 1D, NOT 1Ds for 622C) 5D 10D, 20D, 30D 300D, 350D, 400D D-Rebel, XT, XTi

Type C Camera – Sync only

- Does not support HSS or E-TTL functions.
- Max speed sync is 1/250s or less.

622C II Transmitter and C-TX Controller using all flash classes: A "fire!" synchronised signal
• A camera with a standard single-pin hot-shoe. • A camera with a PC-sync-out connection. • A non-Canon ISO multi-pin hot-shoe with an adapter to allow only the centre (X-sync) pin to be accessible (e.g. Nikon). • A brand-specific hot-shoe with an adapter to Canon hot-shoe (e.g. Sony/Minolta).

FLASH COMPATIBILITY

The flashes have been grouped into five classes for remote control.

- The 622C is rated at only 6 volts on the trigger contact of its hot-shoe.

Class 1 Flash – Remote E-TTL; Remote Manual Levels

622C II: Set using External Flash menus not the on-flash buttons.

C-TX: Set on C-TX, or by External Flash menus. On-flash settings are available for special lighting.

Brand	HSS	No HSS
Canon	580EX II, 600EX-RT No Multi: 270EX II, 320EX, 430EX II	
Godox	Ving V860C	
Jessop		No Multi: 360AFDC
Metz	No Multi: 50 AF-1, 58 AF-2	
Neewer	NW680	
Nissin	Di866 II	
Phottix	Mitros	
Yongnuo	YN500EX, YN568EX II, YN685 II	YN465, YN468 II, YN565

Class 1B Flash – Remote E-TTL; Remote Manual Levels – 622C-TX Only

C-TX Set on C-TX, or by External Flash menus.
Remote Manual levels require C.Fn 05 set to "On", and the mode set on-flash to "E-TTL".

Brand	HSS	No HSS
Canon	550EX, 580EX. No Multi: 430EX	

Class 2 Flash – Remote E-TTL; Flash-set Manual Levels

622C II Set On-Camera: Sync mode (1CS, 2CS, HSS); ETTL (FEC, FEB, FEL and Ratio).
Set on-flash: Flash mode (ETTL, M, Multi); Zoom; Manual levels.
C-TX See Class 1 above

Brand	HSS	No HSS
Canon	550EX, 580EX. No Multi: 430EX	
Metz	No Multi: 48 AF-1, 48 AF-2, 54mz4 (Mix mode, Wireless disabled)	
Nissin	Di866	Di622 II
Pixel	Mago	
Sigma	No Multi: EF 500, 530, 610 DG Super	
Sunpak		No Multi: Z42X

Class 3 Flash – Remote E-TTL; Manual Levels not provided

622C II Set On-Camera: Sync mode (1CS, 2CS, HSS); ETTL (FEC, FEB, FEL and Ratio).
Set on-flash: Flash mode (ETTL, M, Multi); Zoom.

C-TX Set on-C-TX: or by External Flash menus For remote Manual levels, set C.Fn 05 to "On", and set the mode on-flash to "E-TTL".

Brand	HSS	No HSS
Canon	No Multi: 220EX, 270EX, 380EX, 420EX	

Class 4 Flash – No E-TTL provided; Flash-set Manual Levels

- Synchronises at up to 1/8000s (Supersync), limited by camera and studio flash. Otherwise the fastest shutter is 1/250s.
- A hot-shoe flash with only the centre pin effective will receive only a 1st Curtain sync signal.
- A flash connected by a PC-sync cable (including through a PC to Hot-shoe adapter) will receive a 1st Curtain, 2nd Curtain or pre-shutter sync signal.

622C II: No E-TTL; on-flash Manual.

C-TX Use variable timing Supersync with fast shutter speeds.

Brand	Model
Canon	540EZ (updates LCD info.)
Cheetah	CL180. CL360 incl. HSS. (Bare bulb)
Godox	Wistro AD180, AD360 incl. HSS. (Bare bulb)
MeiKe	MK 950
ProMaster/Mettle	D400R incl. HSS. (Bare bulb)
Vivitar	285, 285HV only if trigger voltage is 6 volts or less.
Yongnuo	YN460, YN460-II, YN560, YN560-II, YN560EX

Class 5 - Studio Flashes: No E-TTL; Sync Only

- A user-supplied PC-sync cable is required between remote 622C and studio flash's input. The PC-sync connection can withstand 300 volts.

622C II Standard Sync and Fixed Supersync. No HSS

C-TX Standard Sync and Variable Supersync. No HSS

Sync mode	Studio flash Model	Shutter
1st Curtain	Most studio flashes	X-sync and slower
2nd Curtain	Most studio flashes	1/30s to 1/60s and slower
Fixed Supersync	Jinbei Discovery 1200w Pioneer III 600w Calumet Genesis 300B Mettle 600ws Flashpoint Rovelight 600	Burn-time adequate, above x-sync
Fixed Supersync unusable	Alien Bee 400, 800, 1600 Bowens Travelite Einstein E640 Elinchrom D-Lite 2	Burn-time too short
Variable Supersync	Many studio flashes, and may include "unusable" ones above.	Start of burn time is adjustable

WORKING WITH OTHER SYSTEMS

YN560 Manual System

Some 622C devices can receive commands from:

- YN560-TX
- YN-560 III Speedlite from Jan. 2013
- YN560 IV Speedlite
- RF605 (603 mode)
- RF603

See pages 44, 72 for more details.

622C II Receiver
When switched to 560-RX Mode, it will receive 560 commands direct.

622C-TX Transmitter with 622C pre-2015
When Custom Function 06 (560) is set to “On”, it will receive 560 code, convert it to 622 code, and transmit it to a remote original 622C.

622C Receiver from 01/2015
If the 622C has a build date (QC sticker in the battery compartment) of 12/2014 or later, it has a YN560 Mode. When enabled, it will receive code direct from the YN560-TX.

685 Speedlite
The built-in receiver can be set to 560 (603) mode to receive commands directly.

RF602, Cybersync and Other Non-ETTL Triggers

- These can be mounted on a 622C (tx) transmitter, or a 622C (rx) receiver. They will in turn synchronise with their remote receivers.
- Simple radio triggers with a sync only can also be used, but only the main sync pin should make contact.

Combining 622C and C-TX Masters

- 622C and C-TX controllers can be mixed for 4 or more zones – see page 82-83

Hybrid (Radio + Canon “Wireless” Light Pulse)

- Hybrid mode with Canon Master/Slave Optical control – see page 79.

Fuji Cameras

- Some Fuji cameras will work in Remote Manual Control.
- Fuji X100, X100S and X-E1 have been reported to work in full remote Manual output and Zoom control, in 3 groups.
- High-speed sync up to 1/1000s has been reported.
- TTL and 2nd curtain sync are not available.
- The 622Cs are set to Remote mode.
- Compatible flashes, like the 580EXII must be used.
- The above cameras do not need Custom Function 04 Legacy Flash to be ON. The function is required only when the C-TX erroneously thinks that it is on a full E-TTL camera.
- Care is required when mounting the C-TX on the camera to ensure that the pins ride up and seat fully.
- Press the Test button after changing C-TX settings to update the remotes, before pressing the shutter.
- See page 62 for more detail on Custom Function 04.

What Does Not Work

- The 622C system cannot read Canon's "Wireless" optical code system.
- The Canon YN-622C is *NOT* compatible with the Nikon YN-622N. The camera codes are not the same.
- Triggers using Nikon TTL code systems.
- YN560 Speedlites cannot receive and process YN622C or YN622C-TX codes.
- 622Cs manufactured before 01/2015 cannot be updated to provide YN560 Mode.
- RF602 triggers cannot be read by the 622C, 622C II or C-TX in any mode
- RF603 and RF603 II triggers cannot be read by the 622C.
- RF603 triggers cannot be read by the 622C.II

GETTING STARTED – 622C II or C-TX

1. Prepare the Camera

- Set the camera to a Creative exposure mode - P, Av, Tv or M (not a Basic mode - Scenic, Sports or Flash-disabled.)
- Set External Flash menu to Flash Firing = Enabled, and Wireless = Disabled.
- Disable Silent Shooting mode.
- Enable AF-Assist Beam (e.g. C.Fn III/5 = 0, Enabled).
- Set AF mode to One-Shot.
- Disable Face Detection mode.

2. Prepare the Units

- Remove the protective film from each 622C's top plate and AF-assist beam's red cover.
- Wipe the contacts in both the hot-shoe and the hot-foot to remove oils and other dirt.
- Insert fresh, fully-charged batteries. They are critical. Do not make assumptions. Recommendation: load all units with good quality (i.e. more expensive) new Alkalines (1.5v) to start with. When all is working well, you can use good quality NiMH (1.2v).
- Do **NOT** use Lithium (1.6v).

3. Reset / Clear to restore Factory Defaults

- The units as delivered may not be in a factory-fresh state, or may be altered accidentally by a user. When first starting to use the units (or if they seem erratic), perform a Factory Defaults reset.

622C II Transmitter Reset (Clear)	C-TX Controller Reset (Clear)
• With the power On, hold down [CH SET] and [GP SET] at the same time. • Keep holding until the Status indicator has winked red-green alternately 3 times and then stays red. • Release the buttons. • Factory defaults will be restored to: 622C mode = Remote Flash mode = E-TTL Sync mode = HSS. • The C.Fn (AF-Assist Beam) setting is not changed.	• Hold down [MODE] plus [SYNC] at the same time. The display will show only a steady "CLR". • Keep holding until "CLR" winks slowly. • Release the buttons. • The Main screen will appear, showing all the groups in TTL. • Note: Updating the firmware performs this step automatically • If the CLR screen does not appear, navigate back to the Main screen, and try again.

4. Check the Firmware

622C II

First released in August 2015, it came with an USB port for upgrading the firmware. There had already been improvements, and had started with version 1.05. See page 32 for full details.

622C

First released in August 2012, the 622C does not have a user-upgrade facility.
Manufacturing changes can be identified by the QC sticker in the battery compartment. This list is not complete:

- 10 / 2012 fixed a transmitter mode problem when using 1D series bodies.
- 11 / 2012 matched a hardware change.
- 01 / 2015 added a YN560 Mode.

622C-TX

Firmware in the 622C-TX can be updated by the user. First released in June 2014, several firmware upgrades have become available. For use with the new 622C IIs, each 622C-TX should be upgraded to v.1.08 or later. See Page 53 for full details.

5. Instal a 622C II Transmitter or C-TX Controller

- Ensure the locking lever is fully moved to the left. This withdraws the locating pin. (The 622C uses a locking ring which should be screwed up to the case to fully.)
- Mount the unit in the camera's hot-shoe. Use the thumb to press the foot firmly forward.
- Move the locking lever to the right until the lock release button clicks in. The locating pin will engage. (For 622C, clamp the locking ring onto the hot-shoe.)
- Turn on camera and transmitter/controller.
- If the unit is a 622C Transmitter, press half-shutter or open External Flash menus to activate. (Not needed for 622C II).

6. Configure Transmitter

Using Type A Cameras

622C	C-TX
• Keep Transmitter in Remote mode.	
• Set a channel for the Transmitter (1 to 4).using the Wireless function menu, or press [CH Set] repeatedly for 1 to 7.	• Set a channel (1 to 7) for the Controller using a long-press [Ch], then [Right] or [Left] repeatedly.
• Leave the default E-TTL settings, or use External Flash menus to set a desired global Flash mode and Zoom setting.	• Leave the default E-TTL settings, or use [Mode] and [Zoom] to set group parameters. Use [Gr] to move between groups.
• With Wireless = Disabled, the firing group is All (A+B+C), and all groups of flashes use the same global settings.	• There are three Firing Groups, and the individual group settings will apply.

Using Type B Cameras

622C	C-TX
• Enable Mix control mode on the transmitter by pressing ([CH SET] for several seconds.	
• Press [CH SET] repeatedly to set the communication channel 1 to 7.	• Set a channel (1 to 7) for the Controller using a long-press [Ch] repeatedly.
• Set on-flash the required flash mode (E-TTL, Manual), and individual Zooms. • Multi mode requires several parameters to be set on-flash. • Manual mode requires the output level to be set on-flash.	• Use [Mode] and [Zoom] to set group parameters. Use [Gr] to move between groups. • Multi mode parameters are set on the C-TX. • For remote Manual, set the Flash mode on-flash to E-TTL, and set the group levels on the C-TX.
• Press [GP SET] to set the Firing Group to be used. Default is “All”, A+B+C.	• Use the three Group Mode settings to control which groups fire.

Using Type C Cameras

622C	C-TX
• Enable Mix control mode on the transmitter by pressing [CH SET] for several seconds.	• Set the group mode to Manual by pressing [Gr] for required Group, then [Mode] repeatedly.
• Press [CH SET] repeatedly to set the communication channel 1 to 7.	• Set a channel (1 to 7) for the Controller using a long-press [Ch], then [Right] or [Left] repeatedly.
• On-flash, set its Flash mode to Manual	• On-flash, set its Flash mode to Manual
• On-flash, set the required Manual output	• On-flash, set the required Manual output
• Set the Firing Group(s) for the 622C transmitter. Hold down [Test] and repeatedly press [GP SET] to cycle through the seven groups. When the desired group is shown, release [Test]. Default is “All”, A+B+C.	• On-C-TX: Use the Group Mode settings to control which groups fire.

7. Mount Remote Flash on a Remote 622C II

- Loosen the locking ring or lever on the flash to withdraw the locating pin.
- Mount the flash on the 622C. Press the foot firmly forward to ensure all contacts are secure.
- Tighten the flash's locking ring or lever.
- Mount the 622C direct on a mini stand, or on a light stand using a cold-shoe adapter.

8. Prepare the 622C II Receiver

- Slide Receiver power switch to [ON]. The channel and group indicators light briefly. The Status indicator turns steady red. The flash may fire once when turning the 622C on or off.
- Set Receiver to the same channel as the Transmitter, using [CH]. The channel indicator will light for several seconds to indicate the current channel.
- While the channel indicator is lit, quickly press [CH] repeatedly to change the channel.
- Set the Rx Group to A or B or C using [GP] to select the desired Rx Group.

9. Prepare Flash

- Set the Off/Master/Slave switch to Off (if present).
- Turn On the flash.
- Check that the flash indicates it is Ready.
- If using a C-TX with a class 2 flash, set the C-TX's Fn 05 Eco = On and press [Set/OK].
- If using a C-TX with a class 3 flash, set on-flash Mode = E-TTL.
- Press Pilot/Test on the flash; the flash should fire. If it does not, or is slow to recover, replace the flash's batteries.

10. On-TX Flash (622C II Transmitter only)

A flash can be installed on the 622C transmitter on top of the camera. It behaves much like a Remote flash, but there are differences:

- Supports E-TTL, Manual levels and Multi (stroboscopic) modes.
- The On-TX flash output settings follow Group A settings.
- The On-TX flash has no channel. It is effectively direct-connected to the camera.
- The zoom setting is NOT controlled by the camera menu. It must be separately set on-flash as Auto or 24mm to 105mm Manual zoom. This is independent of a global zoom setting.
- The on-TX flash may provide an AF-assist beam additional to the Transmitter's AF-assist beam, if that is enabled.

11. Testing the Lighting Setup

The setup can be tested to ensure that all devices are powered up and that the communication is working. In addition, actual lighting outputs can be metered if manual levels are being used.

- The [Test] button can awaken the flashes and test whether they can be triggered. The test works through both the Receiver's hot-shoe and the PC-sync port
- If the flash does not wake, manually awaken it. Use the PC-sync port to connect a flash which does not have the awakening function.
- All the indicators go out when flash fires.

622C Transmitter	C-TX Controller
• Any 622C or C-TX can trigger a test on all other powered-up units on the same Channel.	
• Those flashes in the "Test Group" will be awoken on pressing and holding [Test], and fired when released.	• Those flashes in groups whose Mode is not "Off" will be awoken on pressing and holding [Test], and fired when released.
• An on-TX flash will also fire if the 622C transmitter's Rx Group (A or B or C) is included in the test group.	• An on-TX flash on another camera using the same channel will fire if the C-TX's group A is enabled.
• The Test group is not the same as the Rx Group, or the Firing Group which controls ratios and levels.	• The C-TX does not have a Test Group. It tests those groups that have not been set to "Off".
• To select a Test group, hold down [Test] and repeatedly press [GP SET] to cycle through the seven testing groups. To test all flashes, select All (A+B+C).	
• When the desired Test group is shown, release [Test]. The flashes in the selected group will fire a test flash.	• Press and release [Test]. Flashes in "On" groups will fire a test flash. The Test can be triggered by a hand-held 622C.
• The PC-sync port on a 622C is OUT only – there is no light-metering facility.	• A light meter with a PC-sync trigger facility can be connected to the C-TX PC-sync-In port.

12. First Shots

- Half-shutter to focus, and the flash's LCD displays aperture and effective range etc.

622C Transmitter	C-TX Controller
• The 622C transmitter's Status indicator will flash yellow and its CH and GP indicators will flash green to indicate transmitting.	• The C-TX Status indicator will light Green to indicate transmitting.

- The remote 622C Receiver will flash red and its CH and GP indicators will flash green. They will stay in a live state until the shutter is fully pressed or released. The same indications occur during a camera menu session.
- The AF-assist beam of the transmitter may assist focusing.
- Ensure that the subject is in the effective flash range, and fully press shutter button..

CANON EXTERNAL FLASH MENUS

The camera's External Flash menus are the main interface for using the 622Cs. The menus change interactively as selections are made. The 622C controls or disables some menu items.

- The 2007 style menus are described first.
- The 2012 style menus with the new Quick Flash Control panel (6D, 5D III, 650D/T4i and other new models) are then described.
- Select the optical pulse transmission menu on RT-capable cameras.

Confirmation of Setting

When a change to the camera menu is successfully applied to a remote flash, the AF-Assist Beam of its 622C receiver will flash twice when the [Set] button is pressed, to indicate that the change was successful.

- Press [SET] after making a menu value change. Don't have to redo the setting!
- The confirmation light will be emitted only if the remote 622C has C.Fn 8 enabled.

Starting menu item

- Flash Control (or External Speedlite Control)

First menu

- Flash Firing — Enable or disable the 622C transmitter.
- External flash func. setting — 622C is identified as an external flash.
- External flash C.Fn setting — FEB auto cancel – locked Enabled.
  FEB sequence – locked.
  AF-assist beam firing – Enabled or Disabled.
- Clear ext. flash C.Fn set.

External flash function menu

- Flash mode — E-TTL II, Manual, MULTI. (TTL, Auto external, Manual external disabled.)
- Shutter sync — 1st Curtain, 2nd Curtain (if Wireless Disabled), Hi-speed
- FEB — Max. -3 to 0 to +3 f/stops where the centre point (0) is set by the FEC setting.
- FEC — Flash FEC -2 to +2 (later cameras -3 to +3). Interacts with on-flash settings.
- E-TTL II — Evaluative, Average
- Zoom — Auto, 24 28 35 50 70 80 105mm (later cameras 200mm)
- Wireless — Enable, Disable
- [INFO] — Clear Speedlite settings.

Wireless Settings

- Wireless Function Enable, Disable.
- Master flash Enable, Disable. On-TX flash will emit preflash and focus-assist, but not exposure flash.
- Channel 1 to 4.

Firing Group, in E-TTL II flash mode

- A+B+C All E-TTL capable flashes will pre-fire for a combined exposure evaluation.
- A:B Set lighting ratio from 8:1 to 1:8, using E-TTL, C is not settable and not fired.
- A:B C Lighting ratio 8:1 to 1:8, plus C with exposure comp. -3 to + 3 f/stops.

Firing Group, in Manual flash mode

- A+B+C All remotely-controllable flashes use Group A, 1/1 to 1/128 in 1/3 f/stops.
- A:B Group A output 1/1 to 1/128
  Group B output 1/1 to 1/128
  Group C not set or fired
- A:B C Group A output 1/1 to 1/128
  Group B output 1/1 to 1/128
  Group C output 1/1 to 1/128
- Setting for group A will also mirror Flash Output in previous menu page.

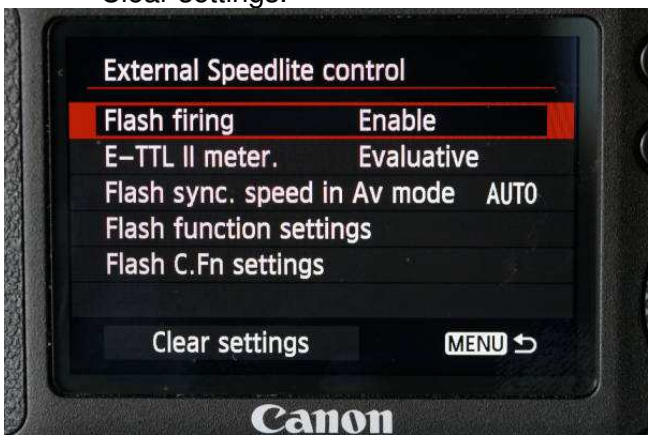
Flash mode Multi

- Flash Output 1/4 to 1/128. 1/1 and 1/2 are not available.
- Frequency 1 to 100 Hz.
- Flash Count - - Firing until shutter closes, or battery or lamp fails.
  1 to 100 Max determined by Output and Frequency.

Quick Flash Control Panel

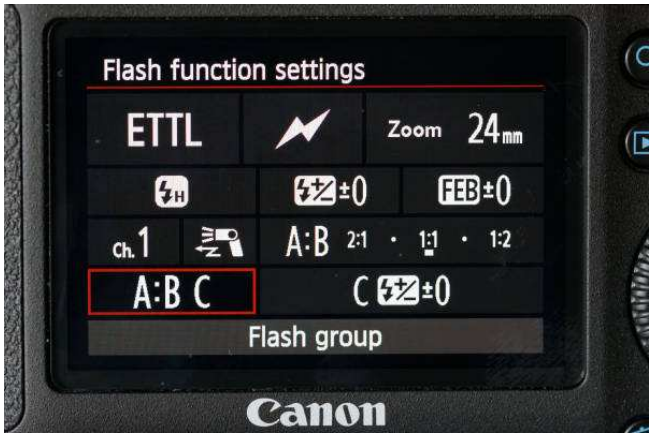
Starting Menu – cameras 6D, 5D III, 650D/T4i and later
Select Camera 2 menu, External Speedlite control item.

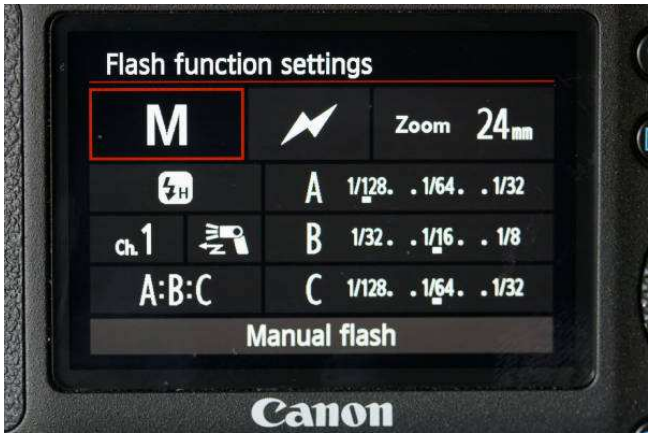
- Flash Firing Enable or disable the 622C transmitter.
- E-TTL II metering Evaluative or Average.
- Flash sync speed in AV mode
- Flash Function settings Opens Quick Flash Control panel, as below.
- Flash C.Fn setting.
- Clear settings.

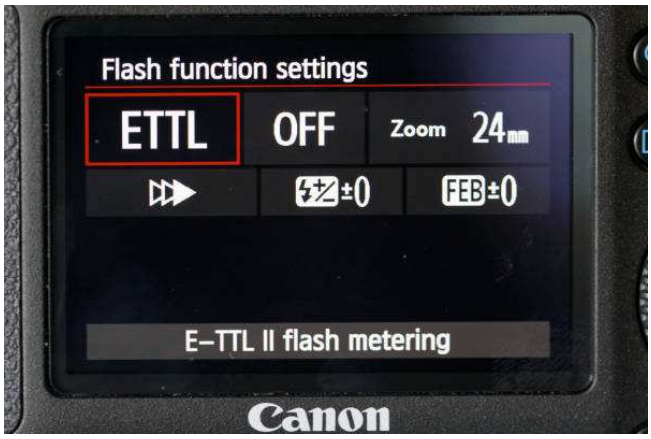


Quick Flash Control panel
Displays current settings, and permits changes. The display changes inter-actively.

- Add “External Speedlite Control” to “* My Menu”, and move to top.
- Enable “Display from My Menu” to start with this menu when [MENU] is pressed.







Chapter 2
YN622C II TRANSCEIVER

The Mark II version of the 622C was released in August 2015, 3 years after the original transceiver. Most functions and specifications are the same as for the original 622C, but with improvements in hardware, firmware, compatibility and performance.

Significant new features:
USB port for firmware upgrades
Compatibility with ALL YN and Canon EXII flashes
Built-in 560 system Receiver
Near-instant responsiveness to changes.

2-1 ● The Device

622C II FUNCTIONS

Setups

- The minimum setup is two (2x) 622C II, one on camera as a transmitter, and one under a flash as remote receiver. Any number of 622C II (or 622C original) remotes can be added.
- An on-Tx flash can use E-TTL, M and Multi (but **not** a “Master” mode)
- Flashes may be at any angle to the camera, but walls may reduce range.
- Will also sync most studio flash lighting.

Transmitter Modes

- **Auto-selects 622 Transmitter Mode** while mounted on a camera. (In stand-by, it is in Receiver mode and an on-Tx flash may be fired by another camera!).
- **Full Remote** uses Canon 5-pin hot-shoe and camera's built-in External Flash (Optical transmission) menu.
- **Mixed E-TTL and On-Flash Manual** – uses Manual settings on each flash, and the camera’s remote E-TTL, FEC, FEB, etc.
- **Simple Trigger** issues “Fire!” command using a single-pin hot-shoe (non-Canon cameras).

Receiver Modes

- **622 Mode** enables a 622C II to receive commands from a 622C II (tx) or a 622C-TX.
- **560-RX mode** enables a remote 622C II to receive commands directly from a YN560-TX, RF605 (in 603 mode), RF603 II. Includes up to 6 Rx Groups.

Flash Exposure Modes

- **E-TTL II,** including Flash Exposure Compensation (FEC), Flash Exposure Bracketing (FEB), Flash Exposure Lock (FEL), ALL (no ratio), Ratio A:B, and A:B with C in FEC.
- **Manual** output levels, including ALL, Group outputs A:B and A:B C.
- **Multi** stroboscopic (multiple flashes in one frame).

Sync Modes

- **1st Curtain Sync** (1CS); shutter speed up to 1/8000s, limited by camera’s x-sync.
- **2nd Curtain Sync** (2CS), including using HSS (with camera’s Wireless mode disabled).
- **High Speed Sync** (“HSS”, “FP”). Max. Sync: 1/8000s, depending on camera and flash.
- **Supersync** (SS) for some non-HSS flashes. The timing of the advanced sync is not adjustable using the 622C II as Tx. Max. Sync Speed: 1/8000s, depending on camera.
- **PC-sync** can output 1CS, 2CS or SS to trigger a studio flash.
- **High Speed Continuous Shooting** (multiple frames, each with flashes firing).
- **Single-contact** camera and single-contact flash sync at max. 1/250s.

Groups

- **622 Mode**: Three Rx Groups (A to C)
- **560-RX** Mode: Six Rx Groups (A to F)

Extras

- **Flash-awakening** function, with capable flashes.
- **Flash Zoom –** remote Auto and Manual; zoom lock; individual on-flash Auto and Manual.
- **Focus Assist Beam.**
- **LCD Live View** triggering.
- **Modelling Flash.**
- **Reset to Factory defaults** [CH+GP].
- **Settings auto-saved**
- **Test-firing** of flashes by selected groups (A, B, C, AB, AC, BC, ABC).
- **USB port** for upgrading firmware.

622C II SPECIFICATIONS

Standard Pack

- 2 x Transceivers. (Some resellers may offer single or multiple units.)
- User Manual, Quick Start Guide.

Measurements

- 91 x 54 x 42 mm (including hot-foot).
- 93gm without batteries.

Electrical

- 2x AA batteries (= LR6, MN1500), 1.5v Alkaline or 1.2v NiMH – not supplied.
- Standby time: 60 hours.
- 6 volts maximum safe trigger voltage on hot-shoe centre pin.
- 300 volts maximum safe trigger voltage on PC-sync port.

Optical

- The 622C II does not work with optical transmissions or optical triggering.

Radio

- Digital FSK 2.4GHz radio transceiver.
- The remote-controlled range can reach 100M (330ft). It is subject to gaps caused by reflection/phase conflict common to Bluetooth / Wi-Fi networks.
- Channels: 7 (in either 622 or 560-TX mode

Connectors

- Quick-lock lever hot-foot and weather/dust seal for mounting on camera as a transmitter.
- Canon-compatible hot-shoe for mounting a hot-shoe flash.
- Micro USB port for firmware upgrades. (Cable not supplied.)
- PC-Sync screwlock socket, sync out only (1CS, 2CS, Supersync).

Indicators

- Status LED.
- 3x Channel LEDs.
- 3x Group LEDs.

Controls

- [Off / 560-RX / 622] power/mode switch.
- [CH Set] button selects one of 7 channels. Also switches Remote/Mix mode.
- [GP Set] button selects one of 3 groups (622 mode) or 6 groups (560-RX mode)
- [Test] button awakens flash and tests communications. Also sets Testing Groups.
- [CH + GP] clears most settings and restores Factory defaults.

Other fittings

- Red AF-Assist beam (with a non-adjustable angle), enabled only on Transmitter, effective to about 4m / 13 ft. Also acts as Settings Confirmation.

Provide-your-own extras

- 2x AA Batteries – 1.2v NiMH or 1.5v Alkaline
- Micro-B USB cable for firmware updates
- PC-sync cord for studio flashes
- Mini-stand or stand adaptor for receiver with hot-shoe flash

FIRMWARE UPDATE

When first received, and from time to time, ensure that your firmware is up-to-date. Apart from major improvements, there often are small fixes built in but not listed in the notes.

Find the currently installed 622C II version

- Follow procedures 1 and 3 to 5 below.
- Read version from the Upgrade window on your computer. (e.g. YN622C-TRX-II, v1.05.)

Version History

1.05 August 2015 First commercial release.

Requirements for Updating

- A computer-to-USB 3.0 Micro-B cable.
- A Windows computer (an emulator may not work).

Updating Procedure

1. Computer - Download and instal the Trigger Updater software
The Updater itself may be updated. Download the current Updater just to be sure.

- Go to product page http://www.hkyongnuo.com/e-detaily.php?ID=364
- Download **YN_Trigger_Updater.zip.** (Turn off your malware filter if necessary.)
- Unzip YN_Trigger_Updater_Setup.exe.
- Run **YN_Trigger_Updater_Setup.exe** to install the driver and updater in your computer.

2. Computer - Download and Unzip Firmware Update files

- Go to same product page as above http://www.hkyongnuo.com/e-detaily.php?ID=364
- Download and expand the latest firmware **e.g. YN-622C-II_FW_V 1.05.zip**
- The expanded files include e.g. YN622C-TX_FW_V1.05.dfu, Changelog_CN.txt and Changelog_EN.txt (showing changes included in the update).

3. Computer - Run YN Triggers Updater

- Find it in your Start Menu or use a desktop icon. Run “YongNuo Trigger Updater:. It will ask for a language to use.
- The Yongnuo Triggers Updater window appears. (“About” shows e.g. Updater V1.03.)

4. 622C II - Connect Trigger to Computer

- Turn off 622C-II.
- Connect the 622C II to your Windows PC via a USB Micro-B cable (not supplied)
- Hold down [CH SET] and turn the 622C II on again.
- All CH, GP and Status Indicators should light Green. (Christmas Tree mode!)
- Device information should appear in the Updater window, e.g. YN622C-TRX-II, v1.05

5. Computer - Instal the Firmware in the 622C II

- Use "Browse..." to navigate to the required “.dfu” version, and open.
- Check that firmware version is as expected, then click "Update".
- The Updater will show e.g. “YN-622C II, Version 1.05 updated successfully”, and re-start the 622C II automatically, using the new version.
- Turn off 622C II and disconnect. Close updater window.

COMMUNICATION MODES

There are two communication modes, selectable using the power switch.

622 Mode
This is the “standard” mode using Canon protocols, with some extensions.

- Provides both Tx and Rx capabilities.
- Status LED = red
- Channels = 7
- Rx Groups = 3
- Control modes = Remote, Mix
- Firing Groups = 7 combinations

560-RX Mode
The unit will act as Rx for transmissions from 560-TX, RF605 (603 mode) and RF603 II

- Provides RX capability only. If placed on a camera, it will switch to 622 Tx mode.
- Status LED = Orange
- Channels = 7
- Groups = 6

CONTROL MODES (REMOTE / MIX)

The 622C II (in 622 mode) by default uses the camera’s menu settings to control remote flash. A wider range of configurations is possible by switching the 622 to “Mix” control mode, where the individual flash settings take priority and are not changed by the transmitter.

- **Remote Mode** settings are made by camera menu. It implements standard Canon wireless protocols.
- **Mix Control Mode** settings are partly by camera menus, but mainly by on-flash settings on each individual flash. It enables mixed flash modes (E-TTL, Manual, Multi), mixed FEC and mixed Zooms, but loses the ability to manage Manual levels from the camera.
- Remote/Mix mode is set or unset only on the transmitter 622C II.
- The last-used setting is remembered by the Transmitter unit during power-down.
- Warning: If a different 622C is later used as the Transmitter, it may have remembered different settings! The camera settings will conform to the current 622C parameters.
- A Factory Reset will cancel Mix Mode.
- Any flash set to E-TTL will emit a preflash. If its mode is Manual or Multi, it won't.

CHANNELS

- Select one of channels 1 to 7 on each Tx or Rx using [CH SET}. Press repeatedly to cycle through the channels.
- Alternatively, for the Tx only, channels 1 to 4 can be selected using the camera flash control menus, when Wireless = Enabled. (For 5DIII, 650D and later, use the optical transmission menu.).
- If a transmission problem is suspected (such as a conflicting transmission), try changing the Tx and all Rx units to another channel.

CH Indicator	Radio Channel No						
	Ch 1	Ch 2	Ch 3	Ch 4	Ch 5	Ch 6	Ch 7
C1	Green			Green	Green		Green
C2		Green		Green		Green	Green
C3			Green		Green	Green	Green

GROUPS

Tx Firing Groups

- Indication shows on half-shutter, and when Flash Control menu is open.
- The Tx Firing Group is set using the camera's External Flash Control menu settings.
- Canon does not provide for just A or B or C; A and B are always enabled. (See 622C-TX)

GP Indicator	Single Group (A+B+C)	Two Groups (A, B)	Three Groups (A, B, C)
(None)	(Wireless Off)		
A	Green		
B		Green	
C			Green

Rx Groups – 622 Mode

- Each 622C can belong to only one selectable Rx Group: A (default), B or C.
- The Rx Group is set using the 622C's [GP SET] button.
- The Lighting Group is displayed briefly at start-up, when [GP] is pressed.
- An on-TX flash has no group. It is deemed to be in Group A, and uses Group A's settings.

GP Indicator	Rx Group		
	Rx A	Rx B	Rx C
A	Green		
B		Green	
C			Green

Rx Groups – 560 Mode

- Each 622C can belong to only one selectable Rx Group: A (default), B or C.
- The Rx Group is set using the 622C's [GP SET] button.
- The Rx Group is displayed briefly at start-up, when [GP] is pressed.

GP Indicator	Rx Group					
	Rx A	Rx B	Rx C	Rx D	Rx E	Rx F
A	Green			Green	Green	Green
B		Green		Green		Green
C			Green		Green	Green

Testing Groups

When [TEST] is pressed, flashes are awakened; and when released a test flash is fired.

- The default test group is All (A&B&C).
- Select a Testing Group set by holding [TEST] and pressing [GP] repeatedly.
- Testing includes connection through the PC-sync port.
- An on-TX flash will be included in the transmitter 622C's Rx Group.

GP Indicator	Test Groups						
	A	B	C	A & B	A & C	B & C	A&B&C
A	Green			Green	Green		Green
B		Green		Green		Green	Green
C			Green		Green	Green	Green

OPERATING INDICATORS

Standby – 622 Mode

- The currently active channel and Tx or Rx group are lit.

Action	C1,C2,C3	A,B,C	Status
On the transmitter 622C II	Off	Off	Off
Switch on 622 mode (Initialise)	Green 3 sec	Green 3 sec	Red
Tx Stand-by, 622 mode, Remote mode	Off	Off	Red
Tx Stand-by, 622 mode, Mix mode	Green	Off	Red
Tx and Rx Refresh, every 32 seconds	Green wink	Green wink	Off

Standby – 560 Mode

- The currently active channel and Rx Rx Group are lit.

Action	C1,C2,C3	A,B,C	Status
On the transmitter 622C II	Off	Off	Off
Switch on 560-TX mode (Initialise)	Green 3 sec	Green 3 sec	Orange
Stand-by, 560-TX mode	Off	Off	Orange
Tx and Rx Refresh, every 32 seconds	Green wink	Green wink	Off

Communicating

Action	C1,C2,C3	A,B,C	Status
Tx: Half shutter, or External flash control menu open	Green winks	Green winks (Tx Firing Group)	Green wink
Tx: Full shutter	Off	Off	Off
Rx: Response	Green winks	Green winks (Rx group)	Red wink

Low Battery

Action	C1,C2,C3	A,B,C	Status
Switch on 622 mode			Red winking
Switch on 560-TX mode			Orange winking
Battery fully depleted – automatic shutdown	Off	Off	Off

2-2 ● 622–Remote Mode

Remote Mode is the default mode and implements standard Canon wireless protocols through the camera's external flash control menus. (On 2012+ camera bodies, select "Optical transmission".).

- Type A camera External Flash menus take priority over *most* on-flash settings.
- Class 1 flashes are controlled by the camera's menus.
- Class 2 to 5 flashes are controlled by the on-flash settings.
- Flash Mode is set in-camera and may be E-TTL or Manual or Multi.
- The CH indicator is off when in standby to indicate Remote mode.

Flash Exposure

E-TTL FLASH MODE

Type A cameras

Camera menus or buttons

- All (global), A:B (ratio), A:B C (ratio + FEC).
- FEC +/- 2 or +/- 3 f/stops depending on camera, with on-flash FEC adding to the result.
- E-TTL modes Evaluative or Average.
- Camera Metering Mode must be P, Av, Tv or M
- E-TTL Flashes emit a pre-flash.

Type B cameras

Camera buttons

- All (global), no Canon ratio.
- FEC +/- 2 or +/- 3 f/stops depending on camera, with on-flash FEC adding to the result.
- E-TTL modes Evaluative or Average.
- E-TTL Flashes emit a pre-flash.

Ratios

Canon's lighting ratio becomes available through the Firing Group settings, when Wireless mode is enabled. This is true multi-preflash "effective reflected light" ratio, not an approximation.

- Ensure that the light output requirements are within the capability of the flashes, possibly by increasing ISO, changing distance to subject, etc.
- Flashes with different maximum outputs can be mixed.

A:B Firing Group

- Set the lighting ratio from 8:1 to 1:8 (in 1/2 f/stop increments).
- A "normal" subject exposure will be calculated.
- This total exposure can be adjusted by the over-all FEC setting.
- The effective reflected light from group A flashes (including on-TX flash) and group B flashes will be evaluated by the camera and transmitted to the flashes by the 622C.
- Group C does not fire.

A:B C Firing Group

- Set A:B ratio as above.
- Set an FEC (-, 0 or +) for flashes in Group C.

Flash Exposure Compensation (FEC)

The over-all automatic flash exposure can be adjusted using the camera button or External Flash menu, combined with the on-flash setting. (This improves on Canon procedures.)

- Camera FEC can be set in 1/3 f/stop increments within ±2 or ±3, depending on camera.
- Each flash has its on-flash FEC **added** to the camera-calculated output level. E.g. if the camera is set to -2, and the flash is set to +1, then total FEC for that flash will be -1.
- Set all on-flash FEC settings to zero, and use only camera FEC, to avoid unexpected results.
- Using a Firing Group of All (A+B+C), E-TTL can produce uneven lighting with multiple flashes due to differences in ambient light, flash power, distance, angle, etc. One flash can have a small FEC of, say, +1/3 FEC to balance more ambient hitting the other side of the subject.
- Using an A:B ratio, the ratio effect will be modified by the individual flash FEC.
  Under A:B C, C flash can be set to a value, and trimmed by the Group C FEC menu.
  Or, Camera -2 FEC plus C flash -2 FEC produces -4 FEC – greater than expected.

Flash Exposure Lock (FEL)

- The camera must be in a creative mode.
- Live View mode must be disabled.
- Flash mode must be E-TTL.
- First focus on subject.
- Then press the camera's [*] or [FEL] or [M-Fn] button, or as custom re-configured.
- Flash metering temporarily changes to Spot metering. The ambient and flash exposures are locked into the camera for 16 seconds, or while [half-shutter] remains pressed.
- "FEL" appears momentarily, and the <Flash> icon and "*" are lit in the viewfinder. The values are discarded when the shot is taken, or a hi-speed burst ends.
- If the subject is too far away and underexposure may result, the <Flash> icon will blink in the viewfinder. Move closer to the subject and try the FE lock again.

Flash Exposure Bracketing (FEB)

- Set FEB in 1/3 f/stop increments up to -2 to +2 f/stops (-3 to +3 f/stops on 2012 and later cameras).
- The zero point for FEB is adjusted by the global FEC setting.
- The sequence of FEB is fixed at 0→ minus→ plus, even when the on-flash setting is different.
- The FEB function will be automatically cancelled after the three shots are taken.
- An E-TTL flash which does not support FEB can also be used.

MANUAL FLASH MODE User-set Output Levels; No Metering

Remote Manual Levels

Type A camera menus can remotely control Mk II Speedlites and YN flashes.

- All (global), groups A and B, or A, B and C.
- Output levels 1/1 to 1/128 in 1/3 stop increments, by Group
- E-TTL Flashes do not emit a pre-flash in Manual mode

All Flashes (Global setting)

- Set Flash Mode to Manual.
- Set Flash Output level as required, 1/1 to 1/128 (in 1/2 or 1/3 f/stop increments).
- Either set Wireless function to Disable, or Enable Wireless with Firing Group A+B+C.

Two and three Tx Firing Groups

- Set Flash Mode to Manual.
- Ignore Flash Output: it will repeat group A setting.
- Set Wireless function to Enable.
- Set Tx Firing Group to A:B (C will not fire) or A:B C.
- Set each Group Output as required, 1/1 to 1/128 output level, in 1/3-f/stop increments.
- On-TX flash will fire at group A level, if Master Flash is enabled.

On-Flash Manual Levels

Type A, B or C cameras can trigger flashes where the output level has been set on-flash.

- Flash connected by PC-sync cable.
- Output levels set on individual flash.
- E-TTL Flashes will not emit a pre-flash

MULTI (STROBOSCOPIC) FLASH MODE

Usage is an extension to to Remote Manual and On-flash Manual. Stroboscopic mode is particularly effective with a highly-reflective subject against a dark background. Consider using a tripod, remote shutter release and external battery pack.

- Set Flash Mode to Multi.
- Set Flash Output - max.1/4.
- Set Frequency per second (Hz) - 1 to 199.
- Set Flash count – 1 to 100
- Frequency multiplied by Flash Count = minimum shutter duration.
- Limit rapid use and allow at least 15 minutes rest between frequent bursts.
- E-TTL Flashes do not emit a pre-flash

HIGH SPEED CONTINUOUS

High-speed Continuous Shooting

- Trigger keeps up with camera. (Tested at 6.5 fps.)
- An external flash battery pack is recommended for maintaining flash output consistency.

Shutter Sync

FIRST CURTAIN (FRONT CURTAIN)

- The “normal” flash sync.
- ETTL, Manual and Multi Flash modes.

SECOND CURTAIN (REAR CURTAIN)

The flash fires just before the shutter closes, instead of immediately after opening, to produce the appearance of forward motion with ambient light trails behind the moving object.

- The 622C provides 2nd Curtain sync (2CS) in either ETTL or Manual Flash modes, including with off-camera flashes.
- Note that in E-TTL mode, a pre-flash is also emitted by each E-TTL flash.
- Not available in Multi (stroboscopic) flash mode.
- Not available when camera is set to Wireless mode (and therefore no group functions are available).
- Shutter of around 1/30th sec (see your camera guide) through to Bulb.
- Camera must be in a Creative mode.

FAST-SHUTTER SYNC

High-Speed Sync (HSS or FP)

- ETTL and Manual Flash modes, syncs with all shutter speeds up to 1/8000s
- The camera must support HSS.
- If the hot-shoe flash does not support HSS, the max sync speed is 1/250s or less.

Supersync (Flash Burn)

- Connection only through the PC-sync port. A PC-sync cord is required.
- Works with many hot-shoe and studio flashes, up to 1/8000s.
- Canon’s HSS is not available through a PC-sync connection.
- Withstands a max. 300v trigger voltage from the flash.
- Set camera’s shutter sync as Hi-speed sync.
- Use manual exposure or shutter-priority mode.
- For Type C cameras, the max PC-sync speed is 1/250s or less.
- A flash on the Hot-shoe and another connected to the PC-sync port can be used at the same time.

SIMPLE TRIGGER

- Single-contact cameras can trigger remote flashes (max sync speed is 1/250s).
- Single-contact flashes can be triggered by the 622C.
- Non-Canon flashes with multiple contacts can also be used, but may require either a single-contact adapter or a PC-sync cable, e.g. Nikon, Sony/Minolta.

Flash Head Zoom

Flash Zoom (Range and Coverage)

Canon provided a flash head zoom for lighting just wide enough to cover the lens's field of view. When the flash is off-camera, the lens zoom is irrelevant. Consider the zoom as a light modifier, for efficiency or artistic reasons. The 622C II provides more flexibility than Canon's implementation. This may be affected by Canon's rules –

Wide panel extended: 14mm
Head in Bounce on Auto: --mm (= 50mm)
Head in Bounce on Manual: as set
Auto-adjust for sensor size enabled.

Zoom Lock

An individual flash under remote control can have its zoom setting locked so that it is not controlled by the camera's zoom menu setting.

- Hold down [CH SET] on a 622C II Receiver for several seconds until the channel indicator stays lit. (This is the same as setting mix control on a transmitter.)
- Adjust the flash zoom setting with the External Flash panel (automatic or manual).
- Hold down [CH SET] for several seconds to cancel. The channel indicator will go out.

Zoom and Remote Control

- Remote Control – camera zoom settings apply. Auto; Manual 24 to 105mm.
- With automatic setting, focal length of the flash may change with lens focal length.
- With manual setting, focal length of the flash supports manual setting (24-105mm).

Zoom and On-Tx Flash

- The camera menu does not control Zoom on the on-Tx Flash.
- Set Auto or a Manual zoom on-flash.

Other Features

AF-Assist Beam

Autofocus Assist

When using Autofocus under low-light, the AF-assist beam can be emitted automatically to make it easier for the camera to auto-focus.

- Each 622C II carries its own setting for the C.Fn 8 (or similar) enable/disable setting for "AF-assist beam firing".
- Set the value by placing a 622C on the camera's hot-shoe, and use the camera's "External flash C.Fn settings" menu to make the setting.
- The user must also enable the AF-assist beam in the camera, Set camera's Custom Function / Autofocus assist beam to "Enable" or "Only ext. flash").
- This setting controls both the focus-assist and the confirmation indicator.
- The camera reads the setting from the 622C II transmitter when a 622C is mounted.
- The 622C II transmitter will emit the beam when required by the camera.
- An on-TX flash which has an AF-assist beam function can also emit at the same time.
- Neither a remote 622C II nor a remote flash will emit the A/F beam.
- The beam will not be emitted when Live mode or Face detection mode is used.
- The LED laser provides a bright pattern effective up to 4 metres. There is no health risk.

Menu Setting Confirmation

When a change in the camera's flash control menu is successfully applied to a remote Class 1 flash, the remote 622C II AF-Assist Beam will flash twice when the [Set] button is pressed

- The confirmation light will be emitted only if the remote 622C II has C.Fn 8 enabled.

Flash LCD Display

- Flash zoom, focal length, ISO, shutter speed, FE Lock, HSS change with settings.

Flash Pilot Indicator

- A test flash can be fired on any individual flash by pressing that flash's Pilot Indicator.

LCD Live View

- Silent Mode must not be enabled, as Canon then prevents flash from firing.
- In Live Mode with Autofocus or Face Detection, the AF-assist beam will not be emitted.
- If AF-assist is not enabled, use the AF-ON camera button during Live View.

Modelling Light

The modelling/modeling flash enables shadow effects and lighting balance to be seen.

- It is triggered by a camera button, and all (HSS) flashes fire, including an on-TX flash.
- The light lasts for one second. Beware of heat build-up from over-use.
- If a flash's Modelling C.Fn is set to "Disabled", the setting will be ignored.

Sleep Wakeup

- Flash must have wake-up ability, and mounted on a 622C hot-shoe, not by a PC-sync cord.
- Issued on half shutter or [Test].

Settings Auto-save and Re-set

- Only 622 (tx) Mode settings are saved; the 560 (rx) mode settings are controlled remotely.
- Most External Flash Menu settings are saved automatically in the Transmitter 622C II.
- Each individual 622C II holds its own Master values, and can change the camera's menu settings unexpectedly when mounted on the camera.
- Not stored are FEB, A:B Fire ratio and Group C's FEC. These revert to default values on power-up.

Setting	Default value	Saved on power-down	Reverts to default	622 Resets to defaults
Channel	1	Y		Y
Rx Group	A	Y		Y
Testing Group	ABC	Y		Y
Flash Mode	E-TTL	Y		Y
Remote/Mix Mode	Remote	Y		Y
Shutter Sync	HSS	Y		Y
FEB range	0	N	Y	N
FEC	0	Y		N
E-TTL II Mode	Evaluative	Y		N
Zoom	24mm	Y		Y
Wireless Mode	Enabled	Y		Y
Master Flash	Enabled	Y		Y
Firing Group	A+B+C	Y		Y
A:B Fire Ratio	1:1	N	Y	N
Group C FEC	0	N	Y	N
Manual Flash Output	1/64	Y		Y
Manual Group Outputs	1/64	Y		N
C.Fn 3 FEB auto-cancel	Enabled	N	Locked	N
C.Fn 4 FEB sequence	0 - +	N	Locked	N
C.Fn 8 AF Beam	Enabled	N	Locked	N

2-3 ● 622-Mix Mode

About Mix Mode

Mix Control Mode works with E-TTL and manual modes together, but loses the ability to manage manual levels from the camera. It is available only in 622 Mode.

- Change to Mix Mode by holding down the [CH] button for several seconds.
- The on-flash settings take priority. E-TTL and Manual can be mixed.
- Types A and B cameras may be used.
- A Type B camera defaults to hi-speed sync.
- All Classes of flash may be used. Each flash (including an on-TX flash) can be set on-flash to E-TTL, Manual or Multi depending on the flash's capabilities.
- The camera's Flash Mode is fixed as E-TTL.
- A remote flash set to Manual cannot have its level set from the camera menus.
- FEC, FEB, Ratio and Shutter sync can be set in-camera.
- Use the camera menu to set the shutter sync mode. The on-flash setting is ignored.

Zoom and Mix Control

- The camera's zoom menu setting is disabled.
- Set each flash's zoom setting on-flash – Auto or Manual 24 to 105mm.

Setting Mix Control Mode

Action	C1,C2,C3	A,B,C	Status
From Stand-by	Off	Off	Red
Hold down [CH SET] until channel indicator winks.	Gr/Gr/Gr	Green	Red
Release [CH SET]. – Mix mode set	Green	Off	Red

Return to Remote Mode

Action	C1,C2,C3	A,B,C	Status
From Stand-by	Green	Off	Red
Hold down [CH SET] until channel indicator winks.	Gr/Gr/Gr	Green	Red
Release [CH SET].- Remote Mode set	Off	Off	Red

2-4 ● 560-RX Mode

560-RX mode is a great solution for those who use Manual-only settings in the studio, and who already have some 622C devices, or who want to be able at times to use E-TTL, perhaps for events. The vertical display of the 560-TX makes it very simple to change settings during a session.

- Transmitter: YN560-TX on the camera.
- Receivers: One or more YN622C IIs.

Functions

- Receives signals from YN560-TX (in RF603 mode).
- Accepts flash mode (M/Multi) commands.
- Accepts flash output commands (1/1 to 1/128).
- Accepts Zoom.
- Works with grouping from 560-TX, RF605.
- Can also be triggered from RF603 II, RF605 (RF603 mode).
- If a 622C II in 560-TX mode is mounted on a camera, it will switch from 622 mode.
- In 560-RX mode, 622 transmissions will not be received.

Set-up

560-TX

- Long press [Hz/Fn], and select “01 60 3” for RF603 mode.

Flash

- Flash must be set on-flash to M, and a power level set.

622C II

1. Move power switch to 560-RX mode.
2. Set a channel matching the 560-TX channel (1 to 7).
3. Set an Rx Group using the [GP SET] button.

GP Indicator	Rx Group					
	Rx A	Rx B	Rx C	Rx D	Rx E	Rx F
A	Green			Green	Green	Green
B		Green		Green		Green
C			Green		Green	Green

Chapter 3
YN622C TRANSCEIVER

The original version of the 622C was released in August 2012, and the firmware and hardware have been upgraded several times.

This chapter contains only a summary of this legacy device, with points of difference from the 622C II version as described in the previous chapter marked in red. For usage, see the notes in the previous chapter – no differences have been found.

622C FUNCTIONS

Setups

- The minimum setup is two (2x) 622C, one on camera as a transmitter, and one under a flash as remote receiver. Any number of 622C (original) remotes can be added.
- An on-Tx flash can use E-TTL, M and Multi (but **not** a "Master" mode)
- Flashes may be at any angle to the camera, but walls may reduce range.
- Will also sync most studio flash lighting.

Transmitter Modes

- 622 Transmitter Mode is used when mounted on a camera. (In stand-by, it is in Receiver mode and an on-Tx flash may fire!).
- **Full Remote** uses Canon 5-pin hot-shoe and camera's built-in External Flash (Optical transmission) menu.
- **Mixed E-TTL and On-Flash Manual** – uses Manual settings on each flash, and the camera's remote E-TTL, FEC, FEB, etc.
- **Simple Trigger** issues "Fire!" command using a single-pin hot-shoe (non-Canon cameras).

Receiver Modes

- **622 Mode** enables a 622C to receive commands from a 622C II (tx) or a 622C-TX.
- **YN560 mode** (622C QC date from 01/2015) – Enables a remote 622C to receive commands direct from YN560-TX.
- Earlier 622Cs can also be used by using a 622C-TX in 560/Proxy mode as a "relay".

Flash Exposure Modes

- **E-TTL II,** including Flash Exposure Compensation (FEC), Flash Exposure Bracketing (FEB), Flash Exposure Lock (FEL), ALL (no ratio), Ratio A:B, and A:B with C in FEC.
- **Manual** output levels, including ALL, Group outputs A:B and A:B C.
- **Multi** stroboscopic (multiple flashes in one frame).

Sync Modes

- **1st Curtain Sync** (1CS); shutter speed up to 1/8000s, limited by camera's x-sync.
- **2nd Curtain Sync** (2CS), including using HSS (with camera's Wireless mode disabled).
- **High Speed Sync** ("HSS", "FP"). Max. Sync: 1/8000s, depending on camera and flash.
- **Supersync** (SS) for some non-HSS flashes. The timing of the advanced sync is not adjustable using the 622C as Tx. Max. Sync Speed: 1/8000s, depending on camera.
- **PC-sync** can output 1CS, 2CS or SS to trigger a studio flash.
- **High Speed Continuous Shooting** (multiple frames, each with flashes firing).
- **Single-contact** camera and single-contact flash sync at max. 1/250s.

Groups

- **622 Mode**: Three Rx Groups (A to C) in either Remote or Mix Modes.
- **560 Mode**: Same as 622 Mode.

Extras

- **Flash-awakening** function, with capable flashes.
- **Flash Zoom –** remote Auto and Manual; zoom lock; individual on-flash Auto and Manual.
- **Focus Assist Beam.**
- **LCD Live View** triggering.
- **Modelling Flash.**
- **Reset to Factory defaults** [CH+GP].
- **Settings auto-saved**.
- **Test-firing** of flashes by selected groups (A, B, C, AB, AC, BC, ABC).
- **No USB port** for upgrading firmware.

622C SPECIFICATIONS

Standard Pack

- 2 x Transceivers. (Some resellers may offer single or multiple units.)
- User Manual, Quick Start Guide.

Measurements

- 91 x 53 x 38 mm (including hot-foot).
- 78gm without batteries.

Electrical

- 2x AA batteries (= LR6, MN1500), 1.5v Alkaline or 1.2v NiMH – not supplied.
- Standby time: 60 hours.
- 6 volts maximum safe trigger voltage on hot-shoe centre pin.
- 300 volts maximum safe trigger voltage on PC-sync port.

Optical

- The 622C does not work with optical transmissions.

Radio

- Digital FSK 2.4GHz radio transceiver.
- The remote-controlled range can reach 100M (330ft). It is subject to reflection/phase conflict gaps common to Bluetooth / Wi-Fi technology.
- Channels: 7

Connectors

- Canon-compatible hot-foot with locking ring for mounting on camera as a transmitter.
- Canon-compatible hot-shoe for mounting a hot-shoe flash.
- No Micro USB port for firmware upgrades. (Cable not supplied.)
- PC-Sync screwlock socket, sync out only (1CS, 2CS, Supersync).

Indicators

- Status LED.
- 3x Channel LEDs.
- 3x Group LEDs.

Controls

- [Off / On] power switch.
- [CH Set] button selects one of 7 channels. Also switches Remote/Mix mode.
- [GP Set] button selects one of 3 groups (622 mode).
- [Test] button awakens flash and tests communications. Also sets Testing Groups.
- [CH + GP] clears most settings and restores Factory defaults.

Other fittings

- Red AF-Assist beam (non-adjustable angle), enabled only on Transmitter, effective to about 4m / 13 ft. Also acts as Settings Confirmation.

Provide-your-own extras

- 2x AA Batteries – 1.2v NiMH or 1.5v Alkaline
- PC-sync cord for studio flashes
- Mini-stand / stand adaptor for remote receiver with hot-shoe flash

YN560 “560” MODE

This mode will enable 560 code to be received direct from the YN560-TX.

- The 622C must have a build date (QC sticker in the battery compartment) of 12/2014 or later to have a YN560 Mode.
- Enable or disable “560” Mode on a remote 622C by turning off the 622C, holding down <CH> and then turning on the 622C.
- The Status indicator will be orange when the 622C is in “560” mode.

LOW BATTERY INDICATOR

On startup or half-shutter, if the two batteries are at 2.2 volts or less, the 622C will indicate by winking several times then turn itself off.

- Batteries can be too low on startup to trigger this action.

TX/RX	Status	Channel	Group	Duration	Notes
Either	Red~Grn	(Green)	(Green)	Fast wink Dim, fast wink	

Chapter 4

YN622C-TX CONTROLLER

622C-TX Functions

Simple or Complex setups

- The controller's LCD menu provides an alternative to the camera's External Flash menus, and enables extensions not provided by Canon.
- The minimum is one C-TX controller on camera, and one remote 622C under flash. Or, add more remote 622Cs and various flashes.
- Lights can be at any angle to the camera, but walls may reduce range.
- Will also sync most studio flash lighting, including by time-adjusted Supersync.

Control/Trigger Modes

- Full Remote – Uses Canon 5-pin hot-shoe signals.
- Basic hot-shoe – Uses single-pin hot-shoe (Non-Canon cameras).
- Basic without hot-shoe – Uses camera's PC-Sync out connection to C-TX's PC-sync In.

Flash Modes

- Independent Groups (E-TTL + FEC / Manual Levels / Supersync / Off) mode
- E-TTL global (FEC / Ratio + Backlight / FEB)

Multi (multiple flashes on one exposure)

Independent Group Settings

E-TTL

- E-TTL II with global FEC.
- FEC by each group in E-TTL.

Manual

- Manual flash output levels, 1/1 to 1/128.

Supersync

- Supersync – for studio flashes (monolights and pack-and-heads).

Group Off

- Previous setting for group is not remembered.
- The Free Mask feature temporarily sets Groups A and B to off, and uses Group C only to produce a cutout mask, then returns to the previous main settings.

Flash Zoom

- Remote Zoom by Group, including Auto, 24mm – 105mm.
- On-flash Zoom Lock can over-ride C-TX setting.

Sync Modes

- 1st Curtain Sync; shutter speed up to camera's x-sync.
- 2nd Curtain Sync up to 1/8000s, including with HSS.
- High Speed Sync (HSS or FP); Max. Sync Speed: 1/8000s, depending on camera and flash.
- Supersync for non-HSS flashes. The timing of the advanced sync is adjustable from 0.0 to 2.0. Max. Sync Speed: 1/8000s, depending on camera. PC-sync port can output 1CS / 2CS / HSS / Supersync signal to trigger studio flash.
- Single-contact camera and single-contact flash sync at max. 1/250s.

Extras

Shutter release, using a supplied cable from C-TX to camera, and triggered by a 622C.
Remote Manual control of Pre-2007 Speedlites (e.g. 370EX, 550EX, 580EX).
FEL E-TTL Flash Exposure Lock.
Firmware updates user-installable.
Reset to Factory defaults.
Auto-Focus Beam.
Test firing.
Flash-awaking with capable flashes**.**
Remote Zooming (Auto, Manual, on-flash Zoom lock)
Free Mask auto cutout image
Modelling Flash
Live View triggering
High-speed continuous shooting triggering, depending on limits of flash.
Common AA Alkaline or NIMH batteries, but NOT Lithium**.**
LCD backlight which lights for a few seconds when any button is pressed**.**

622C-TX Specifications

Standard Pack

- 1 x YN-622C-TX Controller. (Also offered as C-TX with single or multiple 622C Remotes.)
- User Manual with Warranty Card
- Shutter release cables LS-2.5/C1 (= Canon E3) and LS-2.5/C3 (= Canon N3).

Transceiver Measurements

- 90 x 53 x 39mm including the hot-foot.
- 82gm without batteries.

Electrical

- The C-TX requires 2x AA batteries (1.5v Alkaline or 1.2v NiMH) – not supplied.
- Standby time: 120 hours.
- Digital FSK 2.4GHz radio transceiver.
- The remote-controlled range can reach 100M (330ft). It is subject to reflection/phase conflict gaps common to Bluetooth / Wi-Fi technology.

LCD Display

- Displays settings of the controller on the LCD screen.
- Battery Level and low-battery warning.

Connectors

- Canon-compatible Hot-foot with locking ring and locating pin, for mounting on camera as a "Master" Controller.
- PC-Sync screwlock socket for sync-IN only – for triggering the C-TX, e.g. by a light meter, or a camera with no hot-shoe. It will NOT trigger a flash.
- Two 2.5mm connectors for Shutter Release cables supplied:
  LS-2.5/C1 for 60D, 70D and series 400D, 500D, 600D, 1000D
  LS-2.5/C3 for 40D, 50D, 7D and series 1D, 5D.
- USB Mini-B socket for user to instal Firmware upgrades.

Indicators

- Status LED: indicates when communicating, when triggering and on remote shutter release.

Controls

- [On/Off] power switch.
- "Setting" buttons – multi-purpose selection of values. They have no labels, so in this Guide are called [Up], [Down], [Left], [Right] and [Set]. [Left] and [Right] change values in whole steps, and [Up] and [Down] change in 1/3 steps. [Set] completes some operations.
- [GR/*] button – Group/row selection, and enabling of Free Mask cutout feature.
- [Mode/E-M] button – Flash mode selection, and setting of E-TTL and M parameters.
- [Sync/Fn] button – Sync mode selection, and setting of at least 5 functions.
- [Zoom/CH] button – Setting of Zoom factor by Group, and Radio Channel selection.
- [Test] button - Awakens flash, and tests communications.
- [Clear] - Clears all settings and restores Factory defaults.

Other fittings

- Red AF-Assist beam.
- Two 2.5mm shutter release cables, N3 and E3.(Canon equivalents)

Provide-your-own extras

- Batteries
- PC-sync cord for non-hot-shoe camera, etc.
- USB cable for updating firmware (e.g. the Canon camera USB cable).

FIRMWARE UPDATE

Find the currently installed 622C-TX version

- Turn off C-TX, then hold down [Mode] and turn the C-TX on again. Turn off C-TX to exit.

Version History

1.01 01/07/14 First commercial release.
1.02 11/07/14 Added YN560-TX "560" proxy mode. Improved stability.
1.03 12/07/14 Made backlight/setting time longer. Changed Updater display to UP.
1.04 18/08/14 Improved stability and transmission range.
1.05 Fixed 7D HSS problem, and fixed 7D II E-TTL compatibility.
1.06 03/12/14 Improved power supply on some circuit boards. Corrected display errors.
1.07 20/01/15 Fixed a 7D II FEL problem.
1.08 20/07/15 Fixed: compatibility issues with YN622C/YN622C II.
1.10 11/07/16 Added YN685C proxy features

Requirements for Updating

- A computer-to-USB 2.0 Mini-B cable (e.g.Canon USB cable).
- A Windows computer (not an emulator).

1. Download and instal the Updater software into computer
The Updater itself may be updated. Download the current Updater just to be sure.

- Go to product page http://www.hkyongnuo.com/e-detaily.php?ID=348
- Download **YN_Trigger_Updater.zip.** Turn off your malware filter if necessary.)
- Unzip YN_Trigger_Updater_Setup.exe.
- Run **YN_Trigger_Updater_Setup.exe** to install the driver and Updater in your computer

2. Download and Unzip Firmware Update into computer

- Go to same product page as above http://www.hkyongnuo.com/e-detaily.php?ID=348
- Download and expand the latest firmware **e.g. YN_622C-TX_FW_V 1.10.zip**
- The expanded files include e.g. YN622C-TX_FW_V1.10.dfu.
  Changelog_CN.txt; Changelog_EN.txt (showing changes included in the update).

3. Run YN Triggers Updater

- Find it in your Start Menu or use a desktop icon. Run "YongNuo Trigger Updater: It will ask for a language to use.
- The Yongnuo Triggers Updater window should appear. ("About" shows Updater V1.03.)

4. Connect 622C-TX to computer

- Turn off 622C-TX
- Connect the 622C-TX to your Windows PC via a USB miniB cable (not supplied)
- Hold down [Mode] and turn the 622C-TX on again.
- The C-TX will show e.g. **YN | 622 | 1.05 U P,** the version currently in the C-TX.
- The Computer Updater window will show "Connected".

5. Instal the Firmware in the 622C-TX

- Use "Browse…" to navigate to the required ".dfu" version, and open.
- The Updater will show Firmware Information, e.g. "YN622C-TX. V.1.10"
- Check that firmware version is as expected, then click "Update".
- The Updater will show e.g. "updated successfully", and the C-TX will reset automatically using the new version.
- Turn off 622C-TX and disconnect. Close Updater window.

YN685 Flash Firmware Upgrade Proxy

The YN622C-TX can be used to upgrade the firmware in the YN685 flash.

- The C-TX must have firmware version 1.10 or later.
- Hold down [GR] and turn on the 622C-TX.
- The C-TX will show **YN** | **685** | **up,** indicating that it is in YN685 Firmware Upgrade Proxy mode.
- See page 70 for further upgrade procedure.

622C-TX CONTROL MODES

There are three control modes available.

Remote Control

This is the primary control method. Groups, flash modes, sync modes, FEC or M output can be set remotely.

On-Flash Control

Settings for Flash Mode and its parameters are made on each flash, which then over-rides the remote settings.

Basic Trigger

The C-TX can be used as a sync-only radio trigger. The settings for a Manual output level are made on flash. The highest-speed shutter sync is 1/250s or lower, depending on the camera.

- The C-TX can be mounted on a single-contact hot-shoe camera
- The C-TX can be mounted on a multi-contact hot-shoe camera, using a multi-pin to single-pin adapter. (I use a Pixel TF321 with the 4 auxiliary pins removed as an adapter.)
- The C-TX can be connected to a camera's PC-sync-out port using an appropriate cable.
- The highest sync speed is 1/250S or less; HSS is not available.
- Configure Groups and Output levels in Manual mode to create desired lighting.

C-TX INTERFACE

The Buttons

The C-TX provides a set of buttons for changing its settings.

- The camera's External Flash menus can set some values, but these are limited to only those that are appropriate for the C-TX.
- Each of the buttons in the top row has a short-press function and a long-press function, and their labels show these two functions.

In this chapter, they will be referred to by their short-press label, or long-press label:

Short press	Long press	2-key press
[Gr]	[*]	
[Mode]	[E/M]	[Clear]
[Sync]	[Fn]	[Clear]
[Zoom]	[Ch]	
	[Test]	

The "navigation" buttons have no labels so will be referred to as follows:

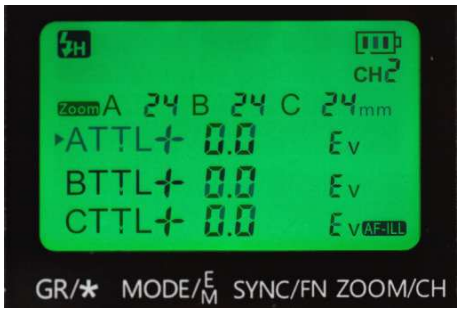
Short Press	Functions
[Up]	More - plus 1/3 step
[Down]	Less - minus 1/3 step
[Left]	Less - minus Full step
[Right]	More - plus Full step
[Set/OK]	Setting complete.

Restore Factory Defaults [Clear]

- Press and hold [Clear] (i.e. Mode + Sync together) to reset values to Factory defaults.
- Main screen disappears and the page shows only a steady "CLR".
- When completed, "CLR" will wink slowly.
- Release the [Clear] button.
- Main screen will re-appear, showing all the groups in TTL.

The LCD Display

Groups screen



- The default Groups screen is shown in the image.
- The last-used screen appears at power-on.
- Various operations terminate and return to Groups
  by Timeout,
  by pressing [Set/OK],
  by cycling through from a selection operation.
- Pressing any button will light the backlight briefly. Use [Set/OK] to avoid accidentally changing a setting.
- Most procedures assume starting from Groups.
- There are six lines.
  Line 1: Current sync mode, and battery level,
  Line 2: Operation labels and icons, and current channel.
  Line 3: Zoom setting for each group.
  Lines 4 - 6: Group flash mode and user adjustment.
  Line 6 will also show on the right the AF-beam icon, if it is enabled.
- Lines 4 to 6 are interactive rows. The active row is selected with [Gr], and is indicated by the triangle on the left of that row.
- Other icons may appear in the top or right areas.

Indicators

Status Indicator (LED)

- In stand-by, the Status light is off.
- When communicating it is green.
- It turns red briefly when the shutter is released.

Battery charge Indicator

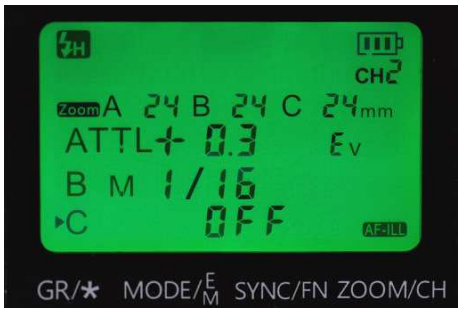
- The three bars (top right icon) will show when fully charged.
- As the stored voltage drops, the bars will disappear, starting from the right.
- When the icon winks, the battery is exhausted and must be replaced,

Access and Visibility

In a studio situation, and especially when the camera is on a tripod, a good-quality full Canon E-TTL cord can be used to move the C-TX off-camera to a more accessible position.

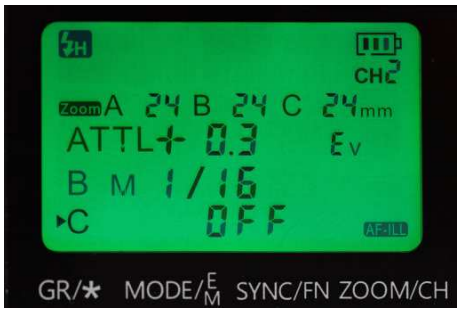
EXPOSURE MODES

Selecting a Group's Settings [Gr]



- [GR] cycles through the three lines – Group s A, Group B and Group C.
- The arrow head on the left indicates which row is active.
- Changes in Groups will time out to end the operation.
- [Gr] also cycles through the three lines in some other screens.

Set Group Exposure Mode [Mode]



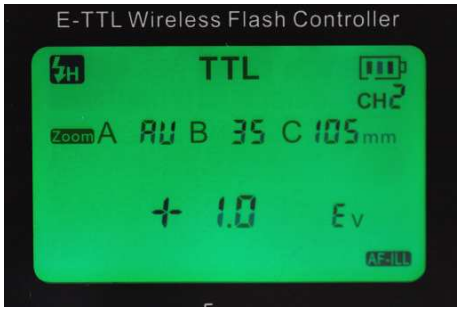
- Default is TTL. ("TTL" means either E-TTL or E-TTL II, depending on camera body. It does *not* mean Canon's TTL for film cameras.)
- Select the required Group (has the left-hand arrow).
- Press [Mode] repeatedly to cycle through that group's exposure modes - TTL (E-TTL), M (Manual), SS (Supersync), and Off.
- The setting mode will quickly time-out.
- Ensure that the value for TTL or M is appropriate.

E-TTL Mode

Set Group FEC [Left] [Right] [Up] [Down]

- Ensure that the required Group is active and in TTL mode.
- Default is 0.0 FEC.
- Use [Left], [Right], [Up], [Down] to change FEC value between -3 f/stops to +3 f/stops in 0.3 or 1.0 steps.
- The setting mode will quickly time-out.

Set Global FEC [E/M]



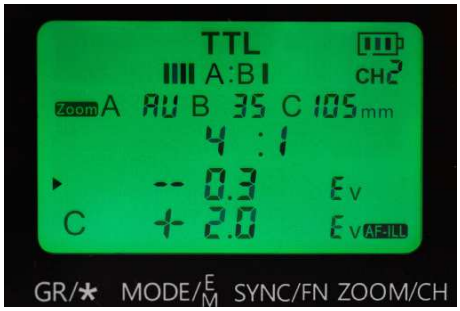
An over-all FEC can be set either on-camera, or by pressing [E/M].
Use this feature for flash exposure bracketing (manual FEB), or to compensate for overall subject tonality or inconsistent camera under-exposure.

- Default is 0.0 Ev.
- Long-press [E/M]. The screen will show "TTL", and a global FEC value.
- Use [Left], [Right], [Up], [Down] to change FEC value between -3 f/stops and +3 f/stops (Ev), in 0.3 and 1.0 steps..
- Leave the screen open to take a manual bracket of shots at different exposures.
- Return to Groups screen by pressing [Mode E/M] twice.
- The Group FEC value remains in effect, providing differential lighting within the global FEC.
- Any FEC set on the C-TX will over-ride FEC set on the camera. The camera's Quick Control Panel will have an icon showing that the FEC is derived from an external device.
- The C-TX will not display the effect of camera-set FEC, when it is in effect.

Using Flash Exposure Lock FEL

- FEL is processed entirely in-camera.
- The C-TX works fully with FEL.
- Both Global FEC and Group FEC as set on the C-TX will be applied.

Enable Ratio and Back Lighting [E/M] or External Flash menus



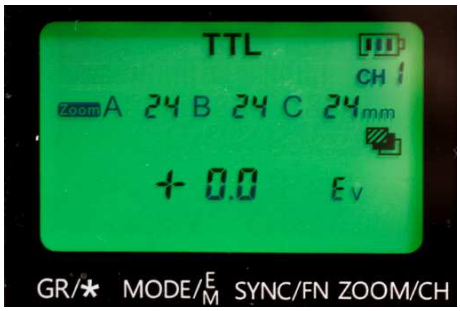
Either the C-TX can set an E-TTL Ratio:

- Long- press [E/M] until TTL and Global FEC shows
- Long press [*] until the Ratio screen shows.
- **Line 2** shows ratio graphically e.g. |||| A:B ||. It provides a quick check on the setting, but is not precise. There can be up to 8 bars on one side (left or right) to 1 bar on the other side.
- **Line 4** shows ratio in steps and half-steps, e.g. 4:1.
  Range: 8:1 ● 4:1 ● 2:1 ● 1:1 ● 1:2 ● 1:4 ● 1:8
  Line 5 shows Global FEC.
- Press [Gr] to move between lines 4 and 5.
  Press [Up], [Down]. [Left], [Right] to change a value.
- Long press [*] until C (background) shows.
- **Line 6** shows Group C's FEC.
  Use [Gr], etc to select and change a value.
- Long press [E/M] twice to return to Groups screen and cancel the operation.

Or the camera can set an E-TTL Ratio:

- In the camera's External Flash / Wireless Firing Group
  Set A:B or A:B C as the Firing Group.
  Set an A;B ratio, and an FEC for C if required.
- The C-TX will open the Ratio screen with the camera's values.

Enable FEB [E/M] plus External Flash menus



Flash Exposure Bracketing is controlled from the camera's External Flash menus.

- FEB Auto Cancel: In External Flash Custom Fn / FEB Auto Cancel, set to Disable if multiple bracket sets are wanted.
- FEB Sequence: In External Flash Custom Fn / FEB Sequence, set to 0 - +, or - 0 +.
- FEB Range: In External Flash functions / FEB, set an FEB range.
- The C-TX will display the TTL screen, with a 3-image icon on the right.
- Press Shutter 3 times to complete the bracket.
- If External Flash C.Fn / FEB Auto Cancel is set to Enable:
  FEB mode will be cancelled
  the icon will disappear
  the FEB range will be zero.
- Repeat the FEB range setting to take another set.
- Long press [E/M] twice to return to Groups screen.
- Warning: If External Flash C.Fn / FEB Auto Cancel is set to Disable, the function will remain in force. To cancel the mode, return to the External Flash menu and set FEB range to zero.

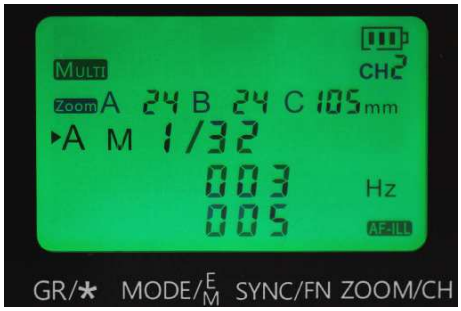
MANUAL Mode

Set Group Manual Output [Left] [Right] [Up] [Down]

- Ensure that the required Group is active and in M mode.
- Default is 1/16 output
- Then use [Left], [Right], [Up], [Down] to change Manual output from 1/1 to 1/128.
- Setting mode will time-out.

MULTI / Stroboscopic Mode

Enable *Multi* [E/M], [E/M]

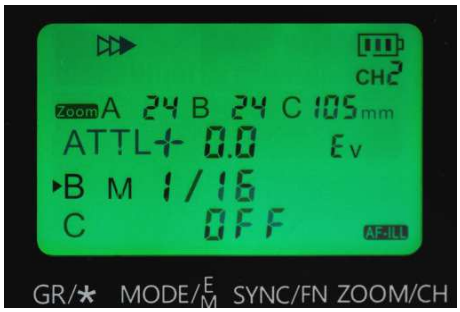


Set up the camera for Multi as described in its owner manual. The flashes should have Manual levels and not be E-TTL-only.

- Long press [E/M] twice. The “Multi” screen will show:
  - Group A’s output level in row 1
  - Frequency per second (Hz) in row 2
  - Firing count in row 3.
- The default value is:
  - Group A Output 1/16
  - Frequency 1
  - Count “---“ (= “until shutter closes”).
- Press [Left], [Right], [Up] or [Down] to change the value.
- Press [Gr] to move to the 2nd row to change the global frequency per second.
- Press [Gr] to move to the 3rd row to change the global count.
- Use the camera’s Flash Control menus to set Manual outputs for groups B and C.
- While the Multi screen is open, the function is active.
- Long press [E/M] to cancel Multi and return to Groups.

SHUTTER SYNC MODES

Set Sync mode [Sync]



- Default is Hi-Speed (HSS).
- Press [Sync] repeatedly to cycle through
  - Hi-speed sync (HSS)
  - 1st Curtain sync (1CS) - (no icon)
  - 2nd Curtain sync (2CS)
- The setting mode will quickly time-out.

Supersync requires HSS to be enabled. It is discussed in the C-Fn 01 section on page 61.

CAMERA FEATURES

Camera External Flash Menus

The camera's menus are controlled by the C-TX.

Settings controlled by Menus only

- E-TTL II mode – Evaluative or Average can be set.
- FEB – a bracket range can be set.
- Multi – Groups B and C output levels.
- Flash Firing – locked on Enabled.
- Flash mode – locked on E-TTL.
- Custom Functions for FEB and AF-Assist Beam.

Settings controlled by C-TX only:

- Shutter sync – 2nd Curtain and Supersync.
- If 2nd Curtain sync is enabled, set Group parameters through the C-TX.
- Zoom – Groups B and C.
- Supersync timing.

Settings controlled by either C-TX or Menus

- Channel – Selectable within the range permitted.
- Shutter sync – 1st Curtain or Hi-speed can be set.
- FEC – a global FEC can be set It will be ignored if a global FEC is also set on the C-TX.
- Firing Group – selectable when TTL and Multi screens are open. Default A+B+C.
- Multi can be selected when the [E/M] "TTL" screen is open, and the values can be set.
- Zoom – Group A only.

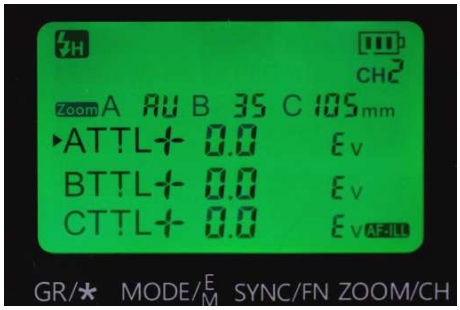
With cameras from 2012, the C-TX uses the RT menu and most functions can be set by camera menu, including Grouping settings but excluding 2CS and Supersync.

Enable remote Shutter Release [Fn] 02 Shutter Release

- Use an LS-2.5 cable (supplied) to connect the on-camera C-TX to the camera's shutter release port. Cameras released from 2012 do not need a cable.
- Long press [Fn], then [Up] or [Down] for Fn 02 - Shu.
- Default value is Off. Turn On only when required.
- Press [Left] or [Right] to toggle between Off and On.
- Press [Set] to return to Groups.
- Press and release [Test] on a remote 622C:
  The flash will fire a test flash.
  If the camera is set to AF it will autofocus
  The shutter will open and fire the flash again.
- Single shot only - no Continuous, Bulb or Timer.

FLASH FEATURES

Set Group Zoom [Zoom]



- Default is 24mm Press [Zoom] repeatedly to cycle through the Zoom Groups to select the one to be changed. The selected group's value will blink.
- Press [Up] or [Right] repeatedly to select from 24mm to 105mm, then AU (automatic).
- Press [Down] or [Left] to step in reverse direction (AU, 105mm to 24mm).
- The setting mode will quickly time-out.

622C-TX FEATURES

Set Channel [Ch]

There are 7 radio channels which can be used to avoid interference from other photographers, or from sources like wireless network hubs.

- Default value is 1.
- Long press [Ch] to activate channel selection. The current value will wink.
- Quickly press [Up] or [Right] to step cyclically up through 1 to 7. Use [Down] or [Left] to step down.
- The setting mode will quickly time-out.
- Ensure that the remote 622Cs are re-assigned the same channel.

Test Communication and Flash Readiness [Test]

- Press and hold [Test] to awaken the flashes. The Status Indicator will light green.
- The 622Cs and their flashes will awaken, and their indicators show ready. Ensure flash pilot lights are showing fully charged.
- Release [Test] to fire a test firing. The Status Indicator will turn red.

Set Supersync timing [Fn] 01 Supersync Timing

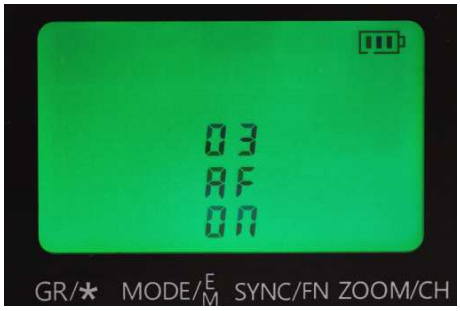
- Default value is 0.0.
- The setting is global and applies to all groups in SS.
- Long press [Fn] then [Up] or [Down] to select Fn 01 - SS.
- Press [Left] or [Right] to step between 0.0 and 2.0 in 0.1 timing increments.
- Press [Set] to return to Groups.

Using Supersync (Flash Burn)

Supersync is designed to allow studio flashes to be used at fast shutter speeds up to 1/8000s.

- Connect the studio flash to a remote 622C using a PC-sync cord.
- Set C-TX shutter sync to Hi-speed sync (HSS).
- Flash output of 1/1 may be needed for this technique.
- Take a test shot and check image for a shutter shadow. Adjust the timing between 0.0 and 2.0 until the optimum lighting is achieved.
- There may be a gradient in the image which will need correcting in post-processing.

Enable AF-Assist Beam [Fn] 03 AF Beam



The red AF Beam on the C-TX can be either On or Off.

- Default value is On.
- Long-press [Fn] to show function screen.
- Press [Up] or [Down] repeatedly to show Fn 03 - AF.
- Press [Right] or [Left] to toggle between On and Off.
- Press [Set/OK] to apply and return to Groups.

When the Beam is enabled, it will still fire only when the camera calls for it.

Enable use on non-Canon cameras [Fn] 04 Legacy Flash Trigger

Only Canon cameras talk the Canon code that the C-TX works with. Some other brands, like Fuji, falsely make the C-TX think it is on a Canon camera. Function 04 prevents the false detection, and the C-TX then works as a simple trigger.

- Default value is Off. Turn On only when required.
- Only Manual operation is available, not E-TTL.
- Long press [Fn], then [Up] or [Down] for Fn 04 - Leg.
- Use [Left] or [Right] to toggle between Off and On.
- Press [Set/OK] to set and return to Groups.
- On 2007+ flashes, Manual outputs are remotely controllable in Groups. Other flashes need their outputs to be set on-flash,
- Warning: Leaving Fn 04 set to On disables all control when the C-TX is on a Canon.

Enable remote Manual control on pre-2007 flashes [Fn] 05 EX Compatibility

Function 05 provides remote control in Manual mode for early E-TTL-capable Speedlites 380EX, 430EX, 550EX and 580EX. It also works for the Sigma EF 530 DG Super.

On remote 622C

- Set to the desired group.
- Set the flash itself to E-TTL.
- The flash's screen will not display the flash output.

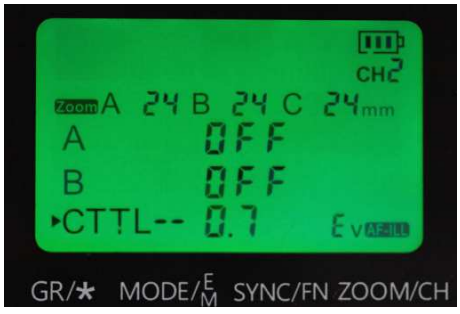
On C-TX

- Long-press [Fn] then [UP] repeatedly until Fn 05 - ECO is displayed.
- Default is Off. Turn On only when required.
- Press [Left] or [Right] to toggle Off to On.
- Press [Set/OK].
- In Groups screen, set the flash's group to M mode. (The camera will adopt the Group A flash mode.)
- Set a test output level for the group.
- Take a shot.
- Adjust the group's output level using [Left], [Right], [Up] or [Down].

Mixed flashes

- Early and late models flashes (e.g. 550EX and 580EX II) can be included in the same group, or in different groups.

Enable Free Mask cutout image [*]



Free Mask provides a silhouette cutout image of a dark subject and a fully-lit background for post-processing.

- Default is "not enabled".
- Take a fully-lit image of the subject.
- Long-press [*]. The screen will show a special case of Groups, with both A and B groups set to Off, leaving C still enabled.
- Take one or more mask images of the subject.
- Return to previous settings in use by long-pressing [*].

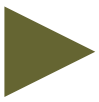
Enable Relay "560" Mode [Fn] 06 "560"

Use 622C (pre-2015) with YN560-TX Manual-only transmitter
560 mode allows the C-TX to be slaved to a YN560-TX Manual-only Controller. The C-TX then converts it to 622 code, and forwards them to flashes on remote 622Cs.

- "560" proxy mode is available in a C-TX with firmware v.1.02 or later.
- The channel on the YN560-TX, YN622C-TX and YN622C remotes must be the same.
- The flashes on the 622Cs must be in Manual mode.

Procedure

- Mount the YN560-TX on the camera, to control remote YN560 III and IV Manual flashes
- Place the YN622C-TX anywhere within the transmission range of YN560-TX.
- Long press [FN] and set Custom Function 06 (560) to On. Status will stay on, red. Leave that screen on display until the end of the session.
- Use YN560-TX to control Manual output/zoom of the ettl flashes on YN-622C remotes.
- To close, turn C.Fn 06 to Off, and press [Set/OK].



Chapter 5

YN685
ON-CAMERA & RADIO SLAVE SPEEDLITE

YN685 INTRODUCTION

This chapter describes usage as a 622 radio slave rather than the normal stand-alone mode.

The YN685 Speedlite

- A top-of-the-line, full-featured, stand-alone hotshoe Flash, with E-TTL and Manual.
- An on-tx Flash when using 622C/622C II transmitter.
- A combined Flash and 622 Receiver for YN622C, YN622C-TX and YN622C II transmitters.
- A combined Flash and 560/603 Receiver for YN560IV Flash, YN560-TX and RF605 using 603 mode, plus RF603 II and RF-603 triggers.
- Shipping commenced September 2015, at an on-line price of around US$115.

As of early February 2016, a disturbing number of battery cover failures are being reported.

Benefits

- Remote set-up is swift.
- Responsiveness is excellent.
- The number of devices to store, carry and manipulate is halved.
- Batteries are reduced from 6 to 4 per flash/receiver pair.
- The number of switches to turn off at end of a session is halved.

Limitations

- Cannot act as a Radio Master.
- Cannot send or receive Canon RT protocol code.
- Cannot send or receive Canon “Wireless” Optical Pulse code.
- Cannot react to other flashes firing (S1 or S2).
- Cannot receive RF602 commands.

Compatibility with YN Transmitters

	Transmitter:	622C 622C II 622C-TX	560-TX 560 IV	RF605	RF603 RF603II
Flash Modes	E-TTL, Ratio, FEC, FEB, FEL	●			
	Manual Output	●	●		
	Multi Fire in Single Frame	●	●		
Shutter Sync Modes	First Curtain Sync (1CS)	●	●	●	●
	Second Curtain Sync (2CS)	●			
	High Speed Sync (HSS)	●			
	Super Sync	●			
	Basic (centre-pin only)	●	●	●	●
Group Control	Group Assignment	● A-C	● A-F	● A-F	
	Exposure by Group	● Ettl/M/Multi	● M/Multi		
	Flash Output by Group	● Ettl/M/Multi	● M/Multi		
	Zoom by Group	● Auto/M/Multi	● M/Multi		
	Sync Mode by Group		● M/Multi		
	Group Off	● 622C-TX	●	●	
Control Modes	Remote mode	●	●	●	
	Mix mode (622C, 622C II only)	●			
	On-Flash	●	●	●	●

YN685 FUNCTIONS

Flash

- Maximum light output: GN 60 at ISO 100 and 200mm zoom. At 105mm it outputs GN58. The gain is achieved by reducing the area illuminated by tightening the Zoom.
- Automatic or Manual zooming between 20mm and 200mm
- Compatible with 622 and 560/603 radio systems.

Receiver Modes

The 685 has a "Normal" stand-alone mode for use as a non-wireless flash. It also has three radio modes.

- 622 Remote Slave
- 622 Remote Mix
- RF603 Slave (includes RF605 and YN560 protocols)

"RF603" mode includes the 603 protocol for a simple trigger and wakeup, the 605 extension to include groups, and the 560 extensions to handle Manual levels, Zoom coverage/intensity and group sync modes. The transmitting controllers should be set to "560" mode.

Flash Exposure Modes

- E-TTL, with FEC, FEL and FEB to ±3 stops in 1/3rd stops
- Manual 1/1 to 1/128 output in 1/3rd stops
- Multi (multiple flashes in one frame/exposure)

Sync Modes

- 1st Curtain Sync (On-camera / 622 mode / 603 mode)
- 2nd Curtain Sync if camera and transmitter support. (On-camera / 622 mode)
- High Speed Sync (HSS) up to 1/8000s if camera and transmitter support. (On-camera / 622 mode)

Channels and Receiver Groups

- 622 mode – 7 channels and 3 groups A to C
- 603 mode – 16 channels and 6 groups A to F

Other Features

- **Auto-Focus Assist** beam
- **Auto-Save of current settings** on power-down
- **External high voltage power supply** capability
- **Flash Zoom** remotely controllable, Auto, Manual, 20 – 200mm; Auto-zoom for sensor size
- **High Speed Continuous Shooting** (Rapid multiple flash-assisted frames)
- **Live View triggering**
- **Modelling Light**
- **Protection - over-heating, moisture and dust**
- **Recharging –** 3 seconds with fresh batteries; faster with external supply
- **Sound Prompt** provides audible alerts
- **Firmware** – upgradable using the YN622C-TX's "685 Firmware Upgrade Proxy" mode – see page 54.

YN685 SPECIFICATIONS

Standard Pack

- YN685-C Speedlite
- Protecting bag
- Mini-stand with ¼ in. light stand adaptor
- User Manual

Case

- Weight without batteries: 425gm
- Dimensions 67 x 77 x 210 mm (extended)
- Head rotation -180° to +180° swivel, 7° below level, 90° above level

Electrical

- Output Guide Number (GN) 60, at ISO 100 and zoom 200mm
- IGBT control, switching 1/200s to 1/20,000s.
- Recycle time approximately 3 s
- Colour temperature 5600K
- Batteries required: 4x AA / LR6 / MB1500. Alkaline or NiMH (**Not** Lithium / LiFePO4 / Li-ion)

Communications

- Built-in YN622C II / RF603 2.4GHz transceiver
- The remote-controlled range can reach 100M (330ft). It is subject to reflection/phase conflict gaps common to Bluetooth / Wi-Fi technology.
- Receiver Channels 1 to 7 (622) or 1 to 16 (603)
- Rx Groups A to C (622) or A to F (603)

Trigger Modes

- On-camera (stand-alone) hot-foot
- Built-in radio receiver with 622 and 560/603 protocols
- PC-sync input (Fire! signal only)

Connectors

- Fast-clamping metal hot-foot with Canon pin format. (The foot is very loose in a Canon hot-shoe, unfortunately.)
- High Voltage (HV) port for external battery pack
- PC-sync connection (input only)

Indicators

- Large dot-matrix LCD panel with backlight
- Link confirmation LED
- Flash ready LED

Controls

- Multi-function buttons 1 to 4 (bottom row of the LCD panel shows current function of each)
- Mode button (ETTL / M / Multi and Normal / 622 Slave / RF603 Slave)
- Ready Indicator / Test button
- “Select” Dial and “Sel/Set” (OK) button
- Power switch Off / Lock settings / On

Other Fittings

- Front red lens, covering radio trigger sensor, remote slave indicator and AF-assist light.
- Lift-up wide angle diffuser (forces zoom to 14mm.)
- Canon-style screw socket for camera bracket (M6/0.5)

Provide-your-own Extras

- 4x 1.2v rechargeable NiMH or 1.5v single-use Alkaline AA batteries.

CONFIGURATION EXAMPLES

Master	On-Top Flash	Remote Flashes
	● 685 (normal mode)	
622C / 622C II		● 685 (622 Remote Slave) ● 622C II (622 mode) + 580EXII
622C / 622C II	● 685 (normal mode)	● 685 (622 Remote Slave)
622C-TX		● 685 (622 Remote Slave)
Nissin SC-01 TTL cable (Ext) + 622C-TX on off-camera shoe	● 685 (622 Remote Slave) on on-camera shoe (inactive)	● 685 (622 Remote Slave)
560-TX (Not controllable by camera menus)		● 685 (RF603 Slave) ● 622C II (560 mode) + 580EXII
560-TX	Off-camera 622C-TX (C.Fn 06 560 relay mode On)	● 685 (RF603 Slave) ● 622C (Remote mode) + 430EXII
560-TX	Off-camera 622C-TX (C.Fn 05 EX Comp. On, and C.Fn 06 560 relay mode On)	● 685 (RF603 Slave) ● 622C (Remote mode) + original 430EX (provides full Manual from 560-TX)

CONTROL MODES

622 Remote mode
Used with 622C-TX, 622C or 622C II – remote setting of flash mode, output, sync mode, set by Master. Zoom set by either Master or flash.

622 Mix mode
Used with 622C / 622c II Master only – “622 Mix” displays on 685 when 622C is in Mix mode and has been activated.

FLASH FIRMWARE UPDATES
YN685C Flash for Canon – product ID 366

The YN685C uses a “wireless upgrade mode”, where the YN622C-TX is used as a “proxy / agent / relay” between computer and flash.

Which Model YN685 do I have?

There are two models of the YN685 Speedlite flash, each with its own distinct upgrade procedures.

One is for Canon (E-TTL). It has white lettering on the body, and a Canon pin-out in the hot-foot. The following notes are for this model. Its YongNuo product page with description and software links is
http://www.hkyongnuo.com/e-detaily.php?ID=366

The other is for Nikon (i-TTL). It has gold lettering on the body, and a Nikon pin-out in the hot-foot.. Its YongNuo product page with description and software links is at
http://www.hkyongnuo.com/e-detaily.php?ID=377

Is a Firmware Update required?

Compare the YN685 Speedlite flash version with the current version listed on the product page.

- On the YN685 Speedlite, select Custom Function 28 to display the current flash version.

Version History

1.0.0 August 2015 First factory-installed release.
1.2.2 November 2015 factory-installed version.

Requirements for Updating

Hardware

- Windows computer (an emulator may not work).
- YN622C-TX trigger with firmware version 1.10 or later.
- USB Cable (computer to USB 3.0 Micro-B) between computer and the YN622C-TX.
- YN685C Speedlite flash (product ID 366).

Computer Software

- **For YN622C-TX**

> Trigger firmware upgrade installer. Ensure that the latest is installed in the computer.
> Trigger firmware upgrade file (dfu). Ensure that the latest is stored in the computer.

- **For YN685C**

> Flash firmware upgrade installer.
To ensure that the latest installer version is installed in the computer:
Download Updater e.g. http://yongnuo.com.cn/app/YNFlash_Updater_Install_V1.1.rar
Unzip YNFlash_Updater_Install.rar
Run YNFlash_Updater_Setup.exe to install the driver and updater in your computer.
> Flash firmware upgrade file (dfu).
To ensure that the latest version is stored in the computer:
Go to page http://www.hkyongnuo.com, (e.g. “Firmware v1.3.3 | http: v1.3.3.zip”)
Download and unzip the latest firmware e.g. ***.
The expanded files include e.g. ***.

Run YNFlash Updater

Find and run **C:\Program Files\YNFlash Updater\YNFlash Updater_EN.exe**"
(Use Start Menu or desktop icon.) It will ask for a language to use. The Installer dialog appears:
"Device Infor: disconnect"
"Firmware Infor: (empty)"
"Firmware: [ ] Browse"
The YongNuo firmware updater instructions are also displayed.
Click [About] button to see the YNFlash Update version (e.g. version 1.1.)

Connect YN622C-TX

Connect using a USB cable between computer and YN622C-TX.
On the trigger, hold down [GR/*] and turn [On]. Trigger display shows "YN | 685 | UP"
The YNFlash Updater dialog changes to "Device Infor: connect"

Turn on YN685C

On the flash, hold down [Mode] and turn [On] (not "Lock")
Flash shows normal LCD display.

Instal update (not available as at 11 October 2016)

On computer, click [Browse] button, and locate the .dfu YN685C firmware update file.
Click [Start] button. Updating starts. Indicator lights?
When the upgrade has completed, the updated YN685C will automatically restart.
The Updater dialog shows … updated successfully".
Disconnect YN622C-TX.
Check the new YN685C flash version.

COMMUNICATION MODES

To cycle through the three main modes, long press the [MODE] button repeatedly - On-camera / 622 Remote RX / 603 Rx. The fourth mode – 622 Mix RX – will appear when the 622C / 622C II transmitter is in Mix mode.

On-Camera
The 685 will automatically switch to Normal (stand-alone) mode when it is mounted directly onto the camera's hotshoe, and half-shutter is pressed. It will adopt the camera's menu settings for All (A+B+C)

On-Tx
The 685 will automatically switch to On-camera mode when it is mounted on a 622C / 622C II transmitter. It will adopt the camera's menu settings for Group A.

622 Rx
Set mode to "622 Remote Rx" to work with a 622C / 622C II / 622C-TX transmitter. If the transmitter is in Mix mode, the 685 will automatically change to "622 Mix Rx" mode.

560 Rx (603 mode)
The 685 can respond to the 603 mode from RF603 / RF605 transmitters and 560 mode from YN560-TX / YN560IV transmitter. In either case, set the mode to "560 Rx". Exposure modes Manual, Multi and Off can be used.

CHANNELS

- Remember to keep the channels aligned on all devices.
- If interference is suspected of causing erratic behaviour on a shoot, try changing the channel on all devices, even if access is inconvenient at the time.
- 622 Slave and RF603 Slave can each have their own channel. Both are stored.

622 Channels

- In 622 Slave mode, press button 2 [CH] to highlight the current channel.
- Then use the dial to select the desired channel (1 to 7).
- Press [Sel/Set] button, or wait a second for time-out, to set the channel.
- Changing the 622 channel does not affect the 603 channel.

560/603 Channels

- In RF603 Slave mode, press button 4 [CH] to highlight the current channel.
- Then use the dial to select the desired channel (1 to 16).
- Press button 4 (Enter) to complete the action.
- Changing the 603 channel does not affect the 622 channel.

LIGHTING GROUPS

- The 685 may be assigned to a single Rx Group.
- 622 Slave mode and RF603 Slave mode share the same group assignment.

622 Groups

- Press button 3 [Gr] repeatedly to cycle through groups A to C.
- If the 685 was previously in RF603 mode with group D, E or F, it will default to group A when the mode is changed to 622 Slave.

560/603 Groups

- Press button 3 [Gr] repeatedly to cycle through groups A to F.

OPERATING INDICATORS

Action	Ready/Charge	Link
Switch on and charge (or wakeup)	Blue	
Over 30s to charge – battery low - shutdown	Blue wink	
Flash Ready	Red	
Overheating	Red wink	
Overheat protection activated (10 min's or more)	Red/Blue wink	
Sleep mode	Off	
Communicating with Master		Blue
Triggering / Flash firing		Red

MANAGING SETTINGS

Main Settings

Operating mode Long [Mode]	Flash Mode Short [Mode]	Button 1	Button 2	Button 3	Button 4
Normal	E-TTL	Zm/C.Fn	+/-	FEB	Sync
	Manual	Zm/C.Fn	+/-	-	Sync
	Multi	Zm/C.Fn	+/-	Mult	Hz
622 Remote Master sets Sync FEC FEB	E-TTL	Zm/C.Fn	CH	Gr	-
	Manual	Zm/C.Fn	CH	Gr	-
	Multi	Zm/C.Fn	CH	Gr	-
622 Mix On-flash settings	E-TTL	Zm/C.Fn	+/-	-	Menu1
		CH	-	Gr	Menu2
	Manual	Zm/C.Fn	+/-	Gr	CH
	Multi	Zm/C.Fn	+/-	Gr	Menu1
		CH	Mult	Hz	Menu2
603 Master sets Sync Output	Manual	Zm/C.Fn	+/-	Gr	CH
	Multi	Zm/C.Fn	+/-	Gr	Menu1
		CH	Mult	Hz	Menu2

Using Buttons 1 TO 4, etc

+/- (Normal: FEC or Output / Mix: FEC or Output / 603: Output)
FEB, CH, HZ, Mult, Zm
Dial to required value in highlighted display. Press [Sel/Set] or timeout.

Gr Step through value in highlighted display. Press [Sel/Set] or timeout.

Sync Step through 1CS (no symbol), HSS, 2CS in display panel.

C.Fn Long press [btn1]. Dial to function (highlighted with black background).
Press [Sel/Set] to show submenu. Dial to option.
Press [Sel/Set]. Press [Return].

Menu Short press [btn4] to toggle between menu1 and menu2.

Backlight Long press [btn4] to change C.Fn 22 setting to Off, If it has been set to continuously On. A further Long [btn40] will turn it On for 12 sec's.

Wakeup [Ready/Test]

Custom Function Settings

01 Auto power off After 90s - On / Off
03 FEB auto-cancel After 3 shots - On / Off
04 FEB sequence 0-low-high / low-0-high. (With 622C, setting is low-0-high)
08 AF-assist beam On / Off
09 Auto-zoom for sensor size When Zoom=Auto: On / Off
10 Power-off After inactivity of 60 mins / 10 mins
11 Master wake-up Allow within 8 hrs / 1 hr
20 Beep Off / On
22 LCD panel backlight Duration 12 secs / Off / On
24 Radio protocols Selectable default 622C / RF603 / 622C+RF603
25 Slave indicator (2 red front lights) On / Off
26 LCD contrast Bar graph (medium)
27 LCD background brightness Bar graph (medium-low)
28 Firmware version e.g. v1.2.2, plus other data..

(00 Distance metres/feet not provided)
(12 Flash recycle with ext. power – not provided)

Clear Custom Function settings

Restores factory default values (underlined in Custom Function Settings above).

- Long press button 1 [C.Fn] to enter C.Fn settings.
- Press button 2 [CLEAR]
- Press button 1 [OK]

Settings auto-save

The last applied main and C.Fn settings, whether set on-flash or by transmitter, are automatically saved when the 685 is switched off.

Clear Main settings

Restores factory default values, but not C.Fn defaults.

- Simultaneously press buttons 2 and 3 for 2 seconds.

560/603 MODE AND YN560-TX

Should I use E-TTL or Manual? Either may be the best for a particular shoot! Each has its place in a photographer's skill-set. The 622 and 685 can handle both.

By adding a YN560-TX transmitter to your kit, up to 6 zones can be controlled in Manual output mode. Coupled with the YN685 and other flashes, the YN560-TX makes working with Manual fast and easy.

For example, I use 4 flashes to light quilts to show the quilting contours by producing shadows. I can now rapidly control each individual remote light to adjust for ambient gradients, flash fall-off, and variations in flash model, age and batteries.

The YN560-TX plus multiple YN685 flashes mixed with other flashes on YN622C II receivers would be great for interior architectural shoots.

Method

685

- Long press [Mode] to switch to RF603 Slave mode.
- Assign each flash (or remote 622C II to an Rx Group (A to F).

560-TX

Set required power level settings of for each group.

- Flash mode = Manual. (Turn to "—" Off any unused groups.).
- Flash output = 1/1 to 1/128.
- 560-TX Zoom = 24 - 105mm depending on desired range/coverage.
- Shutter sync = 1CS.
- (Note: the 560-TX is not controllable from flash menus.).

MOUNTING A YN685 ON TOP

With a 622C or 622C II, simply mount the 685 on the transmitter's hot-shoe to automatically switch to Normal mode. It will be automatically assigned to E-TTL and Group A, but various settings can be made on-flash as required.

However, the 622C-TX has no hot-shoe for a flash. (Nor does the 560-TX.) Also, the 622C-TX lays flat on top of the camera, and the camera must be lowered and tilted back to see the buttons and LCD panel. (I suspect that this racking of the transmitter and flash when hand-held is often the cause of poor contact problems.)

If the camera is on a high tripod, this tilting to see the LCD panel is not even possible. The 560-TX at least has a vertical display, but high up.

My solution was to assemble a side-mount bracket to display the 622C-TX (or the 560-TX) to the left of the camera's eyepiece and display. This removes the worst gyrations of the chimping action, and provides fast changing of flash settings.

- An RSS Arca-style tripod-mount L-bracket is permanently attached to my camera.
- Bought a light-weight Arca-style clamp ((US$8). (Many other mounting tricks can be used, of course.)
- Made a small aluminium bracket with 2 captive 1/4in-20 tripod screws (from spares).
- Bought the perfect-for-the job **Nissin SC-01 TTL cable**. Pricey, but excellent design and quality. There must be NO connection between camera and the top hot-shoe – I could find no other cable that worked correctly.

The SC-01 cable has a TOP / EXT switch. In EXT position the 622C-TX or the 560-TX (with bracket swung 90 degrees) can be mounted on the side, and a YN685 in 622 or 560 mode can be mounted on top of the camera end. There, the flash is completely insulated from the wired signals and acts as an on-axis radio slave remote flash. The flash's built-in receiver means no separate receiver to add to the "leaning tower". (The YN685 fits in the SC-01 hot-shoe with no movement!)


YONGNUO
DIGITAL
YN622C-TX
E-TTL Wireless Flash Controller
GR/✱
MODE/M
SYNC/FN
ZOOM/CH
CLEAR
TEST
ON
Nissin
SC-01
TOP
EXT


GR/i
MODE
ZOOM/CH
Hz/FN
CLEAR
ACT
TEST
ON
OFF
Nissin
SC-01
TOP
EXT

Chapter 6
SOLUTIONS

LIGHTING SET-UPS

This section has not yet been fully updated to include the 2015 products.

E-TTL Main with On-camera Fill

- On shutter release, the camera will call for pre-flashes, evaluate power levels required, and produce a normal exposure from the group B flashes, with reduced fill from the on-camera flash.
- Adjust FEC and Ratio using camera's menus or buttons/dials, or from the C-TX's LCD.

Using 622C Transmitter	
Type A Camera	Flash Mode = E-TTL FEC = e.g. 0 Zoom = e.g. 24mm Firing Group = A:B Firing Ratio = e.g. 1:3
622C Transmitter	Remote Mode (CH indicator not lit continuously)
On-TX Flash (Fill)	Flash Mode set by camera (Class 2, 3 Flash Mode set on-flash = E-TTL) Automatically in Rx Group A
Remote 622C(s) on a light stand	Rx Group = B
Remote Flashes (Main)	Flash Mode set by camera (Class 2, 3 Flash Mode set on-flash = E-TTL)

Using C-TX Controller	
Type A Camera	(Flash menus are coupled to C-TX)
C-TX Controller	Group A Zoom = e.g. 80mm Group B Zoom = e.g. 24mm Groups A and B = E-TTL and FEC 0 Group C = Off Long press [E/M] for TTL screen, then long press [*] for Ratio screen Set ratio, then press [GP] and set global FEC = e.g. 0 Leave screen open for trimming.
622C on camera flash bracket	Rx Group = A
	Flash Mode set by C-TX (Class 2, 3 Flash Mode set on-flash = E-TTL)
Remote 622Cs	Rx Group = B
Remote Flashes (Main)	Flash Mode set by C-TX (Class 2, 3 Flash Mode set on-flash = E-TTL)

Manual Main and Background, with On-camera Fill

Using 622C Transmitter	
Type A Camera	Flash Mode = Manual Firing Group = A:B C Group A Output = e.g. 1/32 Group B Output = e.g. 1/8 Group C Output = e.g. 1/4
622C Transmitter	Remote Mode (CH indicator not lit continuously)
On-TX Flash (Fill)	Flash Mode set by camera Rx Group enforced by camera as Group A
Remote 622C (Main)	Rx Group = B
Remote 622Cs (Backlight/Rim)	Rx Group = C
Remote Flashes	Flash Mode and output set by camera

Using C-TX Controller	
Type A Camera	(Flash menus are coupled to C-TX)
C-TX Controller	Group A = Manual at e.g. 1/32 Group B = Manual at e.g. 1/8 Group C = Manual at e.g. 1/4
622C on camera flash bracket	Rx Group = A
	Flash Mode and output set by C-TX
Remote 622Cs (Main)	Rx Group = B
Remote 622Cs (Background/Rim)	Rx Group = C
Remote Flashes	Flash Mode and output set by C-TX

- Adjust each group output using the camera's menus, or the C-TX's LCD

Hybrid Mode – Optical Master and Slave with 622Cs

Use two 622Cs to bridge the distance from camera, and Canon Wireless to fire 2 or more flashes.

- Only Manual mode can be used. Set camera to Manual flash mode, 1CS or HSS.
- Place a 622C on-camera.
- Use a non-controllable Master flash (e.g. 580EX) directly on the other 622C, or a controllable Master flash (e.g. 580EXII) connected by i) an adapter which has only two wires between hot-foot and hot-shoe, or ii) a PC-sync cord to an adapter foot.
- Set the Master flash on-flash as Master, Manual mode and power level, 1CS or HSS. Groups are probably not available (untested).
- Set the other flash (e.g. 430EX) to Slave and E-TTL. Ensure the slave's wireless sensor can see the master's flash head.

Test fire. The 622Cs should communicate, and the remote 622C will fire the Master. In turn, the slave should change to a manual power level and fire. Try with a different Manual level on the Master.

Class 5 Studio flashes with Cybersync and Other Triggers

Other radio trigger systems can be piggy-backed on a 622C receiver.

- Either a 622C Transmitter or a C-TX Controller can be used on-camera.
- The 622C or C-TX provides full control of any 622C-mounted hot-shoe flashes.
- Triggers like the Cybersync provides easy remote control of studio flashes for adjusting power.

Augmented Ambient Lighting

Indoor event photographers sometimes augment house lighting. Flashes high on light-stands bounce light off the ceiling to improve background detail, or provide hair- or rim-light. An on-camera flash provides the main light. Battery packs are recommended! We term this “augmenting” light.

On-Camera E-TTL Main and Two Manual Augmenting/Rim

Using 622C Transmitter	
Type A Camera	Flash Mode enforced by 622C as E-TTL Wireless = Disabled FEC = e.g. 0
622C Transmitter	Control Mode = Mix. (Press [CH] for 3 seconds. Release when CH indicator winks. The CH indicator stays lit.) Channel = 1
On-TX Flash (Main)	Flash Mode = E-TTL Rx Group enforced by camera as Group A
Remote 622Cs	Channel = 1 Rx Group = B or C
Remote Flashes (Augmenting)	Flash Mode = Manual Output = e.g.1/4 (Class 4 flashes can be used - set Manual Output on-flash.)
Remotely Adjust	
622C Transmitter	Control mode = Remote. (Press [CH] for 3 seconds. Release when indicator winks. The CH indicator turns off.)
On Camera	Flash Mode = Manual Using Flash menu, adjust outputs for Groups B and/or C (The On-TX flash will also change to Manual. Fix later.)
622C Transmitter	Reset Control mode = Mix (Press [CH] for 3 seconds. CH indicator is lit.)
On-TX Flash (Main)	Reset Flash Mode = E-TTL
Remotely Turn Off	
622C Transmitter	Channel = 1 to use augmenting lights. On-TX flash still fires Channel = 2 to use only On-TX Flash

Using C-TX Controller	
Type A Camera	(Flash menus are coupled to C-TX)
C-TX Controller	Group A = TTL; FEC = 0 Group B = Manual; Output = e.g. 1/4 Group C = Manual; Output = e.g. 1/4
622C on camera flash bracket	Rx Group = A
	Flash Mode and output set by C-TX
Remote 622Cs	Rx Group = B or C
Remote Flashes (Augmenting)	Flash Mode and output set by C-TX. (Class 4 flashes can be used - set a Manual Output on-flash)
Remotely Adjust or Turn Off	
C-TX Controller	Select Group B or C to be changed Change Output, or set to OFF

Two-Shooters with One Set of Augmenting Lights

A second shooter can share the augmenting flashes. But, there is a problem – preventing the zooming and firing of the other camera's On-TX flash.

Using 622C Transmitter (E-TTL)	
Both Cameras (Type A)	Flash Mode = E-TTL Firing Group = A:B Ratio = e.g. 1:3
Both 622C Transmitters	Control mode = Remote (CH indicator not lit continuously) Rx Group = C (important: set while off-camera)
On-TX Flash (Main)	Flash Mode set by camera to E-TTL Rx Group enforced by camera to A
Remote 622Cs	Rx Group = B
Remote Flashes (Augmenting)	Flash Mode set by camera to E-TTL

- When either camera takes a shot, its own on-TX flash is treated as group A and fires. The augmenting flashes are treated as group B. The other shooter's On-TX flash is treated as group C. As group C is not enabled in Firing Group A:B, it does not fire.

Using 622C Transmitter and C-TX Controller (Remote Manual)	
Both Cameras (Type A)	Flash Mode = E-TTL Wireless = Disable (i.e. no Firing Group or ratio)
Both 622C Transmitters	Control mode = Mix (CH indicator stays on) Rx Group = C (important - set while off-camera)
On-TX Flash (Main)	Flash Mode = E-TTL set on-flash
Remote 622Cs	Rx Group = A or B
Remote Flashes (Augmenting)	Flash Mode and Output set by C-TX
C-TX Controller, hand-held	Rx Group = A; Flash Mode = Manual; Output = e.g. 1/4 Rx Group = B; Flash Mode = Manual; Output = e.g. 1/4 Rx Group = C; Flash Mode = TTL (not Off)

On-TX E-TTL and 3 Manual Groups

The simplest 2-controller setup is with one 622C and one C-TX. This provides for an on-camera E-TTL flash and 3 independently controllable Manual flashes.

- Control the On-TX flash by camera FEC button, and the others from the C-TX.
- The 622C can also use E-TTL ratios and Group C, together with the C-TX's 3 Manual Groups.

Using 622C Transmitter and C-TX Controller	
Type A Camera	Flash Mode = E-TTL Wireless = Enabled Master Flash = Enabled
622C Transmitter	Remote Mode (CH indicator not lit continuously) Channel = 2 Rx Group = A
On-TX Flash	Flash Mode set by camera Rx Group is enforced by camera as A
C-TX Controller	Connect a PC-sync cable from 622C Transmitter's PC-sync output to C-TX input. Channel = 1 Group A Output = e.g. 1/32 or Off Group B Output = e.g. 1/8 or Off Group C Output = e.g. 1/4 or Off
Remote 622Cs	Rx Group = A or B or C
Remote Flashes	Flash Mode and output set by C-TX

All-Manual On-TX and Four Remote Groups

This scenario provides four corner flashes on stands, each remotely controllable (Rx Groups 1A, 1B, 1C and 2B), with an on-camera flash as Main/Fill. Uses five 622C and one C-TX.

Using 622C Transmitter and C-TX Controller	
Type A Camera	Flash Mode = Manual Wireless = Enabled Master Flash = Enabled Channel = 2 Firing Group = A:B Rx Group A = Manual Output for On-TX flash Rx Group B = Manual Output for 2B flash
622C Transmitter	Remote Mode (CH indicator not lit continuously) Channel = 2 (set from camera) Rx Group = A
On-TX Flash (2A)	Flash Mode set by camera Rx Group enforced by camera as A
C-TX Controller	Connect a PC-sync cable from 622C Transmitter's PC-sync output to C-TX input. Channel = 1 Group A Output (1A) = e.g. 1/32 or Off Group B Output (1B) = e.g. 1/8 or Off Group C Output (1C) = e.g. 1/4 or Off
Remote 622C (2B)	Channel = 2 Rx Group = B
Remote 622Cs (1A, 1B, 1C)	Channel = 1 Rx Group = A or B or C
Remote Flashes	Flash Mode and output set by 622C and C-TX

- Control the On-TX flash and 2B by camera menu, and 1A, 1B and 1C from C-TX.
- Elv (FlashHavoc) suggests that instead of the cable, stack the C-TX on top of the 622C transmitter, with a shim between the shoe and foot shaped to allow only the centre (sync) pin to make contact. (1CS, 2CS and Supersync).
- Or, instead of a shim use a single-pin hot-shoe to PC-sync adapter, e.g. Nisha hot-shoe adapter with clamp. It can also be used to provide an extra PC-sync port. I use a Pixel TF-321 modified to have only two wires connected to the top hot-shoe.

6 (or 9) Remote Manual Groups

This may be useful for architectural shots, etc. It requires two C-TXs, and one PC-sync cable. There is no hot-shoe for an On-TX flash.

Using Two C-TX Controllers	
Type A Camera	Set by On-top C-TX
C-TX Controller #1	Channel = 1 Rx Groups = A, B and C set to M and Output
C-TX Controller #2	Connect a PC-sync cable from camera PC-sync output (1CS only) to #2 C-TX input Channel = 2 Rx Groups = A, B and C set to M and Output
Remote Flashes	Flash Mode and output set by C-TXs

- You want 9? Really? I used a Pixel Componor VM801 on-camera as a sync-signal splitter, with 3 Ethernet straight-through cables to 3 VS801 hot-shoes (set TTL switch to B). Add 3 C-TXs and you have 9 fully-controllable Manual groups (1CS, 2CS and Supersync).

Four or more Remote-controlled Zones

A 622C transmitter or C-TX controller can be extended by adding further C-TXs.

- Each group can have more than one remote 622C and flash.
- A Type A camera is usually required with a 622C transmitter or C-TX controller, plus an extra one or two C-TX controllers. Also required are Class 1 flashes on 622C remotes.
- A PC-sync cable (preferably screwlock) may be required.
- The 622C port provides 1CS, 2CS and Supersync but not E-TTL or HSS. The camera port provides 1CS only.
- PC-sync cables are notoriously unreliable – buy a high-quality one! Or two.

OPERATIONAL

Batteries

The 622C is designed primarily as a 3v (2x 1.5v) unit using Alkaline cells, but can be used with lower-output batteries e.g. NiMH 2.4v (2x 1.2v). However, these require more constant attention by the user to battery condition.

- Alkaline batteries start at 1.5 volts and slowly drop voltage during use. Their “shelf life” performance is good, holding their charge well while not in use.
- Well-maintained NiMH rechargeables in good condition start at around 1.2 volts, (under load) and hold their voltage until almost exhausted.
- Alkalines lose little voltage when not in use, but NiMH rapidly lose substantial voltage.
- The 622Cs are programmed to cut out at about 2.2 volts for the pair. A good pair of Alkalines give a starting overhead of 0.8 volts, while even the best NiMH pair have an overhead of only 0.2 volts above cut-out.
- Alkaline characteristics are well suited for use in the 622C, and testing the triggers with a quality new set can help rule out batteries as a source of a problem.
- NiMH Rechargeables are great as flash batteries, being capable of a rapid discharge into the flash’s capacitor.

Battery Orientation

Flashes are often used in low light. It can be hard to read the embossed polarity markers at the bottom of the battery case. Use a silver marker pen to highlight the two [+] markers.

Device IDs

Record the serial number and date of purchase. It is found on the printed label inside the battery case (622C) or stamped into the bar between the batteries. I use the end digits on a label attached to the end to identify the unit – it helps to keep track of problems

Cold temperature results in failure

- Batteries can have their output reduced to below operating voltage in cold conditions. This is less likely to arise with Alkaline cells.

Camera’s Custom Menu / My Menu / Quick Flash Control Panel for Flash

Set up the Flash Control/Function menu as the first My Menu item. Then set the My Menu to appear first when Menu is called.

Disabling an unwanted pre-flash

- Use Manual or Multi mode.
- If the flash's mode is E-TTL, it will emit a preflash.

Disabling Firing Groups

- With Canon cameras, you can only disable group C by selecting Firing Group = A:B.
- Groups A and B are always fired no matter whether you select "ALL", "A:B", "A:B:C" or disable the Wireless function.
- The YN622C-TX provides independent on/off control of each group.

E-TTL Automatic Exposure Adjustments – AFR and NEVEC

Canon has two technologies which can produce exposures which may not be as expected. AFR (Automatic Flash Reduction) assumes fill-flash is required, and NEVEC (Negative Evaluative Exposure Compensation) provides automatic ambient reduction for fully flash-lit scenes.

- The EOS 1D professional bodies do not have these features.
- With **AFR**, camera modes TV, AV and M default to fill flash mode and AFR is applied: under 10 EV: AFR is not applied, and exposure is for a flash-lit scene; 10 EV to 13 EV: AFR is applied increasingly; Over 13 EV: AFR of 1.5 to 2.0 f/stops gives a fill-flash exposure.
- **NEVEC** is applied in AV or TV mode but not in M. It reduces background exposure so the foreground flash makes it "pop". Ambient may need to be reduced to allow room for flash. E-TTL determines the Flash output required on top of the reduced ambient.
- This chart shows the effect of the two together. It can be quite substantial.

EV	AFR (FEC)	NEVEC (EC) ISO400	Effective ambient:flash ratio
7	0	-1	1:2
8	0	-1	1:2
9	0	-1	1:2
10	-0.5	-0.5	1:1
11	-1	0	2:1
12	-1.5	0	3:1
13	-2	0	4:1

Half Shutter Activation

The shutter half-press is **critical** for the 622C to awaken remotes and their flashes, and to update remotes with current settings. When the camera shutter says Fire! this command over-rides everything else, and misfires are likely.

Light Meter Technique using 622Cs

- Set Manual levels, either by External Flash menus or by on-flash settings.
- The test fire will be at the level as it is displayed on the LCD of the flash.
- The test button will not change the setting of the flash.
- If Remote control is being used, first press half-shutter to ensure that settings are applied
- E-TTL will produce a pre-flash, which may confuse the light meter.
- Trigger with any 622C on the same channel. It may be a hand-held one.
- With the C-TX controller, connect a suitable Light Meter to the PC-sync IN port.

Setting channels 5, 6, 7

- The camera can only select channels 1 to 4. Select other channels using [CH SET].

Taking a No-Flash shot (ambient-only)

- Turn transmitter off. 622C settings are remembered when powered up again.
- Or, use type A camera menu Flash Firing – Disable.

Transmission Range

The remote-control range of the 622 is claimed to be "at least:: or "can reach" 100 metres / 330 feet". However, users sometimes report significant reduction, as low as 20 metres / 66 feet. This can be due to a known behaviour in Bluetooth / Wi-Fi networks and similar uses of the technology. It has been reported not only with the YN622 series, but also with Canon and YongNuo RT systems.

Radiocomms (Australia) writes "multipath fading can give unexpected drops in signal quality in indoors or urban environments or even loss of communications even at very short distances … 10m". Phase conflict from direct and reflected signals prevent the circuitry from discriminating correctly. For the technically-minded, see:
http://www.radiocomms.com.au/content/research/article/multipath-fading-effects-on-short-range-links-26059810

After several hundred tests performed outdoors at up to 80 m, it was found that::

- The original YN622C used as both transmitter and receiver worked well over the full range.
- The YN622C-TX (firmware v1.06) showed a gap around 30m / 99 ft. The most recent YN622C-TX tested had a design modification and showed a reduced gap.
- All the YN622Cs used as remotes to the YN622C-TX were reliable up to 15 – 25m. Communication usually resumed.several metres further on.
- The gap appeared to correspond with a reflected signal from a parallel wall 10 metres away that prevented proper signal discrimination. This is beyond YongNuo's control, especially in a small, low-cost unit.

Most photographic requirements will be met by a 20m range. If greater range is required, optimize power by using high-quality Alkaline batteries and chargers, and the latest 622 devices.

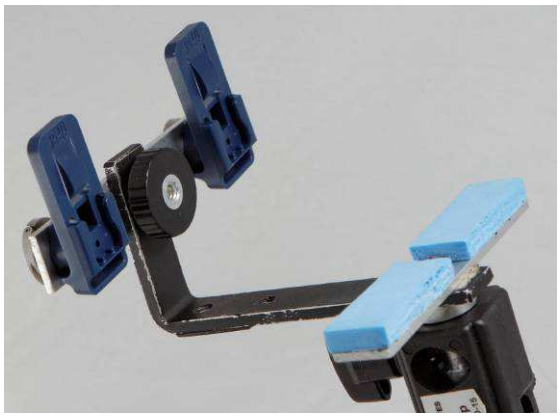
Wireless Mode Setting

For the 622C transmitter, keep this setting at Enabled, and disable it only when 2nd Curtain sync is required. (5D II and III, and possibly others, change the sync timing if Wireless is Disabled.) The 622C-TX controls the setting automatically.

Mounting 622Cs

I recommend a lie-flat bracket for safety, stability and on-axis light beam, especially for a softbox or umbrella. To secure the flash, use a Frio Cold Shoe, an American product. (See the blue mounting clip in the images below.)

A home-made mount for one or two flashes using a cheap ball swivel, some aluminium bar and a Frio cold shoe. For better security, add a Velcro strap around the head.



A two-flash adaptation of the single bracket.
It has two cross-bars added and uses a standard umbrella swivel.

An example of a commercial mount is the Godox swivel bracket with Bowens S mount, using a flash-head clamp.

TROUBLE SHOOTING

Aperture, distance are not displayed on flash when half pressing the shutter

- With the flash on the transmitter, use the menus to set the flash mode or shutter sync.

Erratic Behaviour

- Reset the 622Cs to factory default settings. (Hold [CH SET] and [GP Set] until the Status indicator flashes red/green three times, then release.)
- Un-mount all equipment, then re-mount ensuring each hot-foot is pressed fully in. Check that camera's External Flash Control menus are functioning correctly to confirm that camera is communicating with the 622 device.
- Replace the batteries in the 622Cs, preferably with Alkaline ones. Make no assumptions.
- Reset your Speedlite. Instal the Speedlite directly on a type A camera, and reset the flash using the menus *"Flash Control / Ext Flash Function settings / Clear Speedlites Settings"* and *"Flash Control / Clear External Flash C.Fn settings"*, which re-sets most settings.
- Reset the camera to its factory default settings.

E-TTL underexposure or overexposure:

- Suggest enabling wireless flash function when using E-TTL flash mode, and adjust the position of the flash, use FEC/FEL function, check flash's effective range.
- It may overexpose when E-TTL and manual flash are used at the same time; the manual flash suits being used as a backlight.

External flash function menu not available

- Reset the 622Cs to factory default settings. (Hold [CH SET] and [GP Set] until the Status indicator flashes red/green three times, then release.)
- The transmitter is not installed correctly. Ensure that it is re-seated fully.
- The contacts of the hot-shoe are dirty. Clean both sets of contacts, including under the rails
- One or both batteries are exhausted. Replace BOTH.
- Device lock-up can cause this symptom. Re-set the then 622C.

Failure to power on, or automatic shut-down

- The batteries are installed incorrectly or are exhausted. The device will power down automatically before the battery is fully depleted to avoid being over-discharged.
- Install fully charged batteries according to the battery compartment indicators.
- Battery low – on startup or half-shutter; Status will rapidly wink Red/Green, and the CH and GP indicators will dimly wink also. If the voltage becomes low (total 2.2 volts), the 622C will turn off automatically. Batteries can be too low on startup to trigger this action.

Flash does not fire

- Ensure the batteries of all devices are fully charged, and flash has fully recycled.
- Check the connection between the 622C and camera, and 622C and flash.
- Ensure that the indicators show matching channels and Rx Groups.
- Check that flash is not disabled by its overheating protection, is not in continuous zoom adjustment, or in sleep status.
- Use the Pilot button to test the flash.

Flash zoom cannot be set via camera menu

- Mix Control mode has been set in the transmitter.
- Zoom locking has been set in the receiver
- An on-top flash must have the Zoom set directly on the flash.

Full-power flash

- This can happen if the shutter release is fully pressed before the system has aligned every component. The Fire! command can over-ride any setting up in progress.
- On startup or on any major adjustment to remote flashes, press half-shutter and release to force system updating.

Gap between E-TTL Pre-flash and Main Flash

- This can be due to using only Group A flashes, but with all three Firing Groups (A:B C) set. The camera takes time to issue instructions to non-existent Group B and Group C flashes.

6D - Intermittent Access to Camera Menus; On-Transmitter flash doesn't fire

- Enable the Master Flash firing in the wireless menu setting.

SERVICING

If a malfunction of a 622C is suspected, first check through this guide, and photographic forums. If the problem remains, contact your supplier – they are responsible to YongNuo for providing support. Or, email service@hkyongnuo.com.

AF-Assist Beam

The AF-Assist Beam sometimes needs re-alignment, and some have fixed the LED and cradle. The vertical angle depends on how close to the subject the camera and 622C will be.

Case repair

Cases that break apart can be repaired by using 1.6mm x 18mm (20mm cut down) machine screws and nuts. The left case below had two broken top screw posts. I drilled right through to the other side including the hard clear top, fixed with screws and nuts. The right case below had the clamping posts broken, so four 2.0mm x 20mm screw heads clamp on top, and the screws went into the original plastic posts after thread-tapping them. The battery cover then did not fit, so two holes were recessed, giving an extra locking to the cover.

Flash Battery Cover YN685 / YN600 / YN568

On some flashes, the battery cover has latches that hold it closed against the batteries, and these latches can break, causing a break in the power supply. The flash then needs to be returned to the supplier for repair.

However, replacement doors can be bought from RayChingStore on eBay for under US$6 with free shipping. http://stores.ebay.com/raychingstore/
A current listing is:
http://www.ebay.com/itm/Battery-Door-Cover-Original-for-Yongnuo-Flash-Speedlite-YN600EX-RT-YN685-680-15-/282071112284

To change the door, open the cover, then press it lightly down to an almost-closed position. Slip a tweezer arm down from the top end of the flash into the top centre of the cover, just above the hinge pin and spring. The tweezer arm can then be pressed further until the flexing of the cover releases the shark's-tooth latching. Pull the cover off towards the foot. Slip the new cover back on until it self-latches. (The white paste is required for smooth operation of the cover latch when replacing batteries.)

Hot-Foot

The hot-foot can work loose. This repair is simple, but has a high risk of losing parts during the process.

Locking Pin Jammed

The locking pin (rear pin) that prevents the flash from falling off the hot-shoe can jam. Care should be taken when inserting or removing a hot-foot from a hot-shoe, to reduce the risk of bending. However, the pin has a plastic hook moulded on at the top which provides the lift to retract the pin. It can break, requiring replacement. (Keep old units as a source of replacement parts.)

Opening the 622C or 622C-TX case – don't.

If you want to open the C-TX case, first decide that you will throw away the remains after your play.

Opening the case voids your warranty. It may be worth risking the unit, depending on urgency, skill, tools, etc. The next page show what is involved. It's your risk.

The case can be opened by removing five #0 Philips head self-tapping screws. (One is under the QC/warranty sticker inside the battery compartment.) These screws are designed for a single insertion, and removing them can cause damage to the screw posts. Be careful to not over-tighten on re-insertion.

Production Date

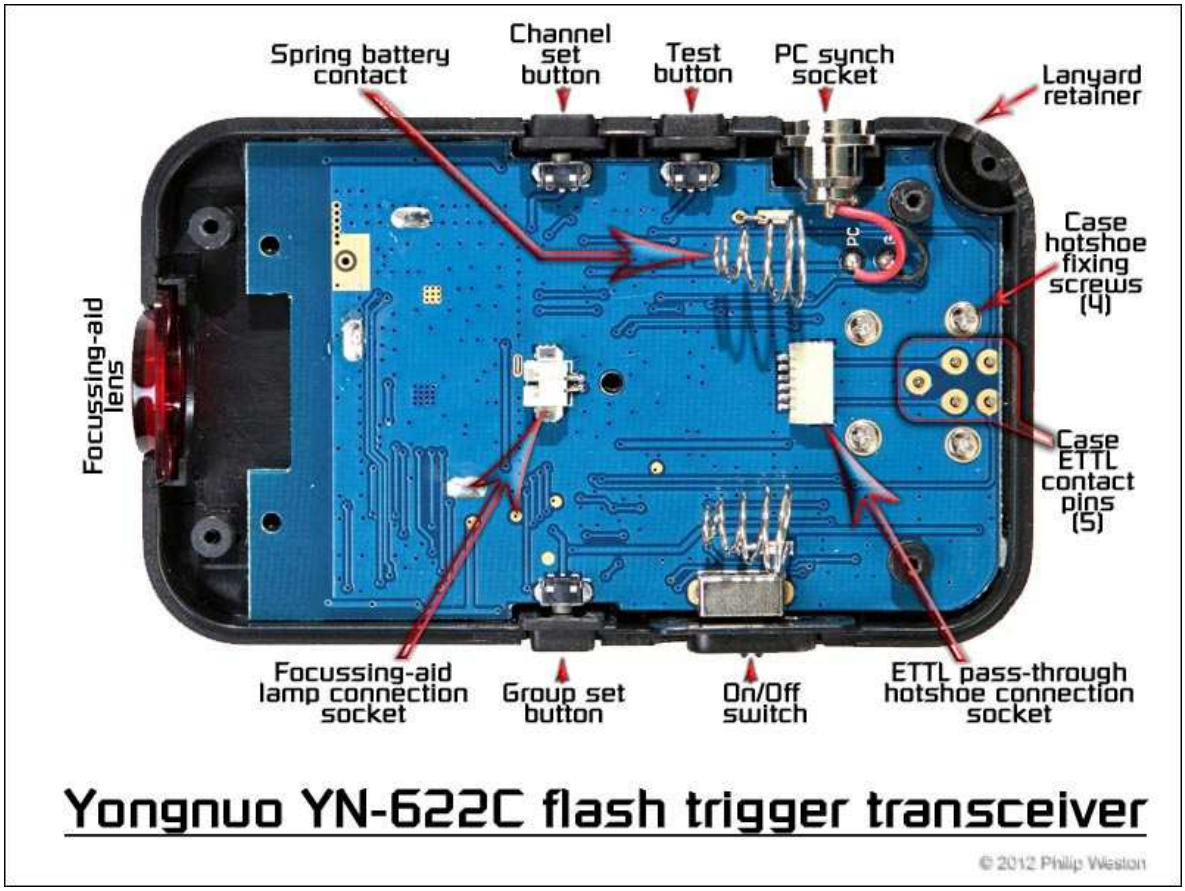
Sometimes, it is useful to identify the production date of a 622. This is usually found inside the battery compartment on the QC (quality control) circular sticker as Month and Year (e.g. 10/2015).

Solder joints

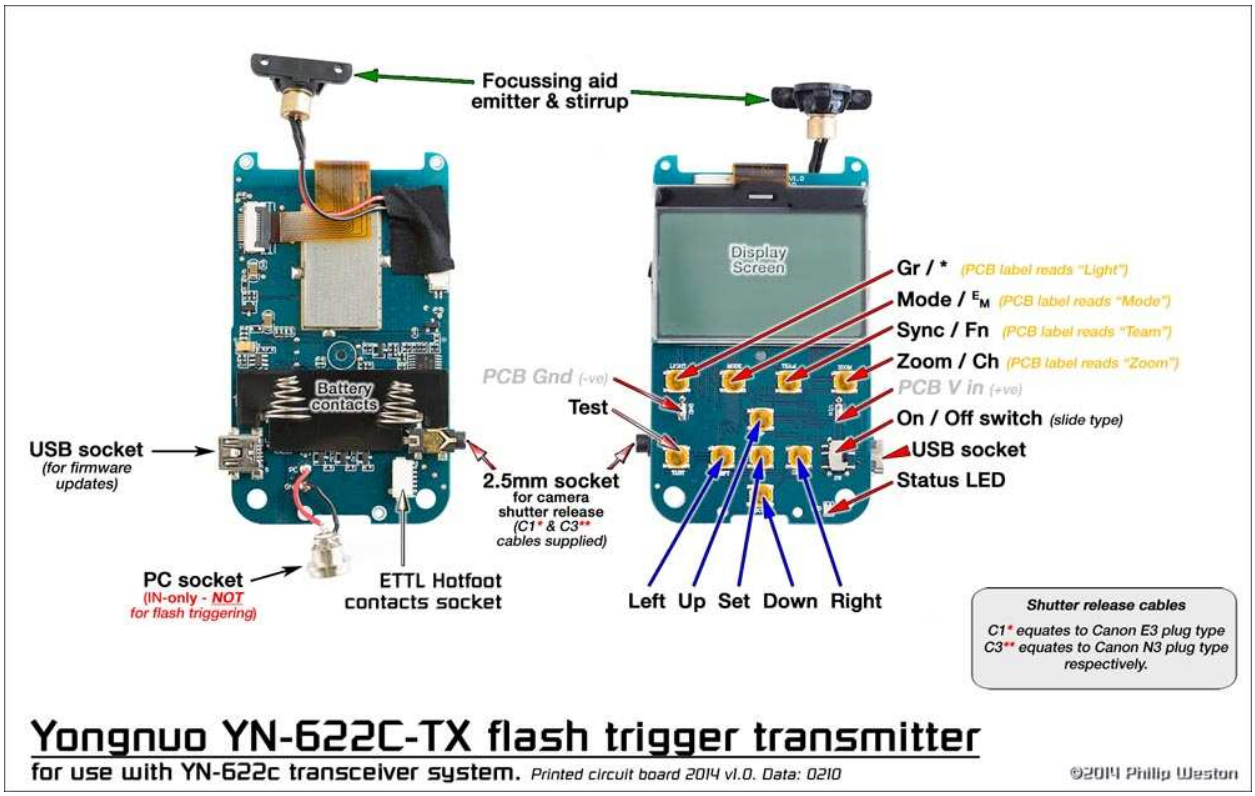
There is little on the circuit board that is serviceable by even the skilled user, but connections between it and external items like battery contacts or the pc-sync port can need re-soldering.

What's Inside the 622C Cases?

Many thanks to Phil Weston for providing the following excellent pics with notations:




YONGNUO
DIGITAL
YN-622C-TX
E-TTL Wireless Flash Controller
GR/✱ MODE/EM SYNC/FN ZOOM/CH
CLEAR
TEST
ON
Yongnuo YN-622C-TX controller
for YN-622C flash trigger system
©2014 Philip Weston


Focussing aid emitter & stirrup
Display Screen
Gr / * (PCB label reads "Light")
Mode / EM (PCB label reads "Mode")
Sync / Fn (PCB label reads "Team")
Zoom / Ch (PCB label reads "Zoom")
PCB V in (+ve)
On / Off switch (slide type)
USB socket
Status LED
PCB Gnd (-ve)
Test
Battery contacts
USB socket (for firmware updates)
2.5mm socket for camera shutter release (C1* & C3** cables supplied)
PC socket (IN-only - NOT for flash triggering)
ETTL Hotfoot contacts socket
Left Up Set Down Right
Shutter release cables
C1* equates to Canon E3 plug type
C3** equates to Canon N3 plug type respectively.
Yongnuo YN-622C-TX flash trigger transmitter
for use with YN-622c transceiver system. Printed circuit board 2014 v1.0. Data: 0210
©2014 Philip Weston

OTHER RESOURCES & LINKS

Current version of this document

Google https://drive.google.com/file/d/0B77OmmGIg0gMMzZFaDVlZ1VNTE0/view?usp=sharing
Or http://www.westonphoto.plus.com/tutorials/TOYUG_v4-12.pdf
Author Email alpha@kinect.co.nz

YongNuo on the Web

Official Web (English)	http://www.hkyongnuo.com/e-aboutus.php
622C product page	http://www.hkyongnuo.com/e-detaily.php?ID=305
622C II product page	http://www.hkyongnuo.com/e-detaily.php?ID=364
622C-TX product page	http://www.hkyongnuo.com/e-detaily.php?ID=348
YN685 product page	http://www.hkyongnuo.com/e-detaily.php?ID=366
YN eBay Sales Centre	http://stores.ebay.com/jianisi-equipment
Or	http://stores.ebay.com/hkyongnuophotoequipment
Email Product Support	service@hkyongnuo.com
Facebook	https://www.facebook.com/hkyongnuo

User Manuals

YN622C	http://www.yongnuoebay.com/sm/yn622cy.pdf
Or	https://docs.google.com/open?id=0B77OmmGIg0gMYTNTWEhIOXZNYlU
YN622C-TX	http://yongnuo.com.cn/usermanual/pdf/YN622C-TX_UserManual.pdf
Or	https://drive.google.com/file/d/0B77OmmGIg0gMSHN6SE81Y3NwZEU
YN622C II	http://yongnuo.com.cn/usermanual/pdf/YN622CII.pdf
YN685	http://yongnuo.com.cn/usermanual/pdf/YN685y.pdf

Windows Updater Software

YN622C-TX	http://yongnuo.com.cn/usermanual/pdf/YN_Trigger_Updater.zip
Or	http://www.westonphoto.plus.com/tutorials/YN_Trigger_Updater_Setup.zip

Firmware Update Files (.dfu)

Use product page to get latest file

YN622C-TX	http://yongnuo.com.cn/app/YN622C-TX_FW_V1.08.zip
YN622C II	http://www.yongnuo.com.cn/app/YN622C-TRX-II_FW_V1.05.zipl

Large 622C thread on POTN

http://photography-on-the.net/forum/showthread.php?t=1212530

Getting the Most from Speedlites

Pt 1 (10 pages), Syl Arena, Canon Europe
http://cpn.canon-europe.com/content/education/technical/getting_the_most_from_speedlites.do

About Shutters and Syncs

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