

```
arm_status arm_cfft_radix4_init_q31 ( arm_cfft_radix4_instance_q31 * S,
                                     uint16_t          fftLen,
                                     uint8_t          ifftFlag,
                                     uint8_t          bitReverseFlag
                                   )
```

**Deprecated:**  
Do not use this function. It has been superseded by `arm_cfft_q31` and will be removed in the future.

- Parameters**
- [in,out] **S** points to an instance of the Q31 CFFT/CIFFT structure.
  - [in] **fftLen** length of the FFT.
  - [in] **ifftFlag** flag that selects transform direction
    - value = 0: forward transform
    - value = 1: inverse transform
  - [in] **bitReverseFlag** flag that enables / disables bit reversal of output
    - value = 0: disables bit reversal of output
    - value = 1: enables bit reversal of output

- Returns**  
execution status
- **ARM\_MATH\_SUCCESS** : Operation successful
  - **ARM\_MATH\_ARGUMENT\_ERROR** : fftLen is not a supported length

**Details**

The parameter `ifftFlag` controls whether a forward or inverse transform is computed. Set(=1) `ifftFlag` for calculation of CIFFT otherwise CFFT is calculated

The parameter `bitReverseFlag` controls whether output is in normal order or bit reversed order. Set(=1) `bitReverseFlag` for output to be in normal order otherwise output is in bit reversed order.

The parameter `fftLen` Specifies length of CFFT/CIFFT process. Supported FFT Lengths are 16, 64, 256, 1024.

This Function also initializes Twiddle factor table pointer and Bit reversal table pointer.

```
void arm_cfft_radix4_q15 ( const arm_cfft_radix4_instance_q15 * S,
                          q15_t * pSrc
                        )
```

**Deprecated:**  
Do not use this function. It has been superseded by `arm_cfft_q15` and will be removed in the future.

- Parameters**
- [in] **S** points to an instance of the Q15 CFFT/CIFFT structure.
  - [in,out] **pSrc** points to the complex data buffer. Processing occurs in-place.

**Returns**  
none

**Input and output formats:**  
Internally input is downscaled by 2 for every stage to avoid saturations inside CFFT/CIFFT process. Hence the output format is different for different FFT sizes. The input and output formats for different FFT sizes and number of bits to upscale are mentioned in the tables below for CFFT and CIFFT:

CFFT Size	Input format	Output Format	Number of bits to upscale
16	1.15	5.11	4
64	1.15	7.9	6
256	1.15	9.7	8
1024	1.15	11.5	10

**Input and Output Formats for Q15 CFFT**

CIFFT Size	Input format	Output Format	Number of bits to upscale
16	1.15	5.11	0
64	1.15	7.9	0
256	1.15	9.7	0
1024	1.15	11.5	0

**Input and Output Formats for Q15 CIFFT**

```
void arm_cfft_radix4_q31 ( const arm_cfft_radix4_instance_q31 * S,
                           q31_t * pSrc
                         )
```

**Deprecated:**  
Do not use this function. It has been superseded by `arm_cfft_q31` and will be removed in the future.

- Parameters**
- [in] **S** points to an instance of the Q31 CFFT/CIFFT structure
  - [in,out] **pSrc** points to the complex data buffer of size  $2 \times \text{fftLen}$ . Processing occurs in-place

**Returns**  
none

**Input and output formats:**  
Internally input is downscaled by 2 for every stage to avoid saturations inside CFFT/CIFFT process. Hence the output format is different for different FFT sizes. The input and output formats for different FFT sizes and number of bits to upscale are mentioned in the tables below for CFFT and CIFFT:

CFFT Size	Input format	Output Format	Number of bits to upscale
16	1.31	5.27	4
64	1.31	7.25	6
256	1.31	9.23	8
1024	1.31	11.21	10

**Input and Output Formats for Q31 CFFT**

CIFFT Size	Input format	Output Format	Number of bits to upscale
16	1.31	5.27	0
64	1.31	7.25	0
256	1.31	9.23	0
1024	1.31	11.21	0

**Input and Output Formats for Q31 CIFFT**