

XFCNS	Extended functions					
g-shift	X↔XFN				XRDP	XRSD
f-shift	XCHS	XMOD	XMOD ₄	XXRTY	X10^X	Xe^X
unshifted	XSQR	XSQRT	X1/X	XPOWER	XLOG	XLN
Page 2	F1	F2	F3	F4	F5	F6

Prev menu https://47calc.com/doc/R47/Menus/R47v0_Menu_XFCNS_page_1.pdf

Next menu https://47calc.com/doc/R47/Menus/R47v0_Menu_XFCNS_page_3.pdf

Ref 1 https://47calc.com/doc/R47/Reference/R47v0_Datatypes.pdf

Ref 2 https://47calc.com/doc/Application%20Notes/AN0016_C47_R47_The_1000_digit_issue.pdf

Level	Label	Type	FullName	Extended description	Category	Flag	Catalog	Default
Menu p2	XFCNS	MENU	Extended functions	Extended accuracy functions for compounded input from three or six consecutive registers, effectively to 1000 digits for new models and simulator, but function not available on DM42 hardware ; when working from the stack, the compound result overwrites X, Y, Z, but when working from other registers, the compound result is pushed onto the stack ; Y will contain Long integer ; when menu XFCNS is open, setting HIDE is ignored ; Split screen : Displaying $X \times Y + Z = \langle \text{value} \rangle$ and $T \times A + B = \langle \text{value} \rangle$ (or "Invalid register type/angle") when menu XFCNS is open (on new stack input, using ALL notation ; Info : extended accuracy functions are defined for (compound) real input and output only, or will result in NaN (Not a Number) or Error 31 -- Input data types do not match ; when menu XFCNS is open, if XYZ contains result in Virtual compound data type, SHOW displays X : $XY + Z = \langle \text{value} \rangle$ and ditto for T : $TA + B$ and for the dedicated triple register storage, e.g. R90 : FMA: (fused multiply-add) ; Ref : https://47calc.com/doc/R47/Reference/R47v0_Datatypes.pdf	Extended accuracy		XFCNS	
F1	XSQR	Function (monadic, XFN)	XFN : Square	Extended accuracy function : Square, for compound input from three consecutive stack registers : $(X \times Y + Z)^2$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XSQR to $[x^2]$ in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XSQR	
F2	XSQRT	Function (monadic, XFN)	XFN : Square root	Extended accuracy function : Square root, for compound input from three consecutive stack registers : $\sqrt{(X \times Y + Z)}$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XSQRT to $[\sqrt{x}]$ in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XSQRT	
F3	X1/X	Function (monadic, XFN)	XFN : Reciprocal	Extended accuracy function : Reciprocal, for compound input from three consecutive stack registers : $1 / (X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign X1/X to $[1/x]$ in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		X1/X	
F4	XPOWER	Function (dyadic, XFN)	XFN : y to the power x	Extended accuracy function : y to the power x, for compound input from six consecutive stack registers : $(T \times A + B)^{X \times Y + Z}$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XPOWER to $[y^x]$ in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XPOWER	
F5	XLOG	Function (monadic, XFN)	XFN : Common logarithm	Extended accuracy function : Common logarithm, for compound input from three consecutive stack registers : $\text{LOG}(X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XLOG to $[\text{LOG}]$ in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XLOG	
F6	XLN	Function (monadic, XFN)	XFN : Natural logarithm	Extended accuracy function : Natural logarithm, for compound input from three consecutive stack registers : $\text{LN}(X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XLN to $[\text{LN}]$ in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XLN	

Level	Label	Type	FullName	Extended description	Category	Flag	Catalog	Default
fF1	XCHS	Function (monadic, XFN)	XFN : Change sign	Extended accuracy function : Change sign, for compound input from three consecutive stack registers : $-(X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) and sign of X and Z is changed ; load state file STATE/xfnToR47user.s47 to assign XCHS to [CHS] in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XCHS	
fF2	XMOD	Function (dyadic, XFN)	XFN : Modulo	Extended accuracy function : Modulo, for compound input from six consecutive stack registers : $\text{MOD}\{(T \times A + B), (X \times Y + Z)\}$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XMOD	
fF3	XMOD ₄	Function (dyadic, XFN)	XFN : Modulo (angle)	Extended accuracy function : Modulo (angle), for compound input from three consecutive stack registers : $\text{MOD}\{(X \times Y + Z), \langle \text{full circle} \rangle\}$, where $\langle \text{full circle} \rangle$ value is derived from angle tag or Angular Display Mode ; returns compound result in X, Y, Z, where Y contains Long integer (0) ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XMOD ₄	
fF4	XXRTY	Function (dyadic, XFN)	XFN : xth root	Extended accuracy function : xth root, for compound input from six consecutive stack registers : $\sqrt[x]{Y \times Z} / (T \times A + B)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign XXRTY to f[y*] ($\sqrt[y]{}$) in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		XXRTY	
fF5	X10 ^x X	Function (monadic, XFN)	XFN : 10 to the power x	Extended accuracy function : 10 to the power x, for compound input from three consecutive stack registers : $10^{X \times Y + Z}$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign X10 ^x X to f[LOG] (10 ^x) in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		X10 ^x X	
fF6	Xe ^x X	Function (monadic, XFN)	XFN : e to the power x	Extended accuracy function : e to the power x, for compound input from three consecutive stack registers : $e^{X \times Y + Z}$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; load state file STATE/xfnToR47user.s47 to assign Xe ^x X to f[LN] (e ^x) in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		Xe ^x X	
gF1	X→XFN	Command (XFN)	XFN : Convert X to compound	Extended accuracy functionVirtual compound data type (0/1.0-1.5 ; 0/1.0 ; 0/1.0) : Convert X to Virtual compound data type (1.0-1.5 ; 0 ; 1.0) triplet in X, Y, Z ; load state file STATE/xfnToR47user.s47 to assign X→XFN to g[R↓] (R _{rt}) in USER mode ; Info : Error 31 -- Input data types do not match -- is raised when input contains Complex number (2.0-2.5) ; SBI Σ is displayed during calculation ; function not available on DM42 hardware	Extended accuracy		X→XFN	
gF2								
gF3								
gF4								
gF5	XRDP	Function (monadic, XFN)	XFN : Round to decimal places	Extended accuracy function : Round real number to number of decimal places, subject to rounding mode (RMODE), for compound input from three consecutive stack registers : $\text{RDP}(X \times Y + Z)$; returns compound result in X, Y, Z, where Y contains Long integer (0) ; TAM : XRDP ____ TamNonReg menu ; Range is [0, 1034] ; Info : function not available on DM42 hardware	Extended accuracy		XRDP	

Level	Label	Type	FullName	Extended description	Category	Flag	Catalog	Default
gF6	XRSD	Function (monadic, XFN)	XFN : Round to significant digits	Extended accuracy function : Round real number to number of significant digits, subject to rounding mode (RM0DE), for compound input from three consecutive stack registers : RSD($X \times Y + Z$) ; returns compound result in X, Y, Z, where Y contains Long integer (0) ; TAM : XRSD ____ TamNonReg menu ; Range is [0, 1034] ; Info : function not available on DM42 hardware	Extended accuracy		XRSD	