

Overview

Names for RAYLASE deflection units and subsystems are built by following scheme:

Primary name	contains product group, type, aperture, wavelength, variations
Detailed description	contains substrate material, mechanical design, tuning, electrical connectors, customer number

2-Axis Deflection Units

Structure and coding of primary name (max. 40 digits)

GG-TTTT-AA [WWWWWWWW] VV Pxx/D

GG Article **G**roup name (2 digits)

MS	MINISCAN
SS	SUPERSCAN
TS	TURBOSCAN
RL	RL DEFLECTION UNIT

TTTT **T**ype (optional 0-5 digits)

I / II / III / IV / V	Series
E	Enhanced
K	Kit
HD	HighDyn
HL	High Load

AA **A**pture (2 digits)
07 ... 70 Apertur diameter [mm]

[WWWWWW] **W**ave length (3-13 digits)

[xxxx]	Wave length xxxx [nm]
[xxxx+zz]	Wave length xxxx [nm] + coating with zz
[xxxx-yyy]	Wave length range from xxxx to yyyy [nm]
[xxxx+yyyy]	Wave length combination xxxx and yyyy [nm]
[xxxx-yyy+zz+...]	Wave length range from xxxx to yyyy [nm] + coating with zz
[AG]	Silver/Argentum, 400 nm – 1064 nm
[AL]	Aluminium
[AU]	Gold/Aurum
[C]	10600 nm
[C*]	9000 nm – 11000 nm
[DY]	532 nm
[DY+Y]	532 nm + 1064 nm
[TY]	355 nm
[Y]	1064 nm
[YIL]	1064 nm + illumination (850 - 870 nm camera inspection)

Naming of deflection Units



VV	Variations	(optional 2 digits)
	V1..V9	Differentiation of production variations For example from standard deviating mirror deflection
	Specific for MS-II-10:	
	VA1	DSB 2 + 8320 + 9 mm + $\pm 22,5^\circ$
	VA2	DSB 3 + 8320 + 9 mm + $\pm 22,5^\circ$
	VA4	DSB 3 + 8320 + 9 mm + $\pm 22,5^\circ$ + Connector 90°
	VB1	DSB 2 + 8320 + 10 mm + $\pm 22,5^\circ$
	VB2	DSB 3 + 8320 + 10 mm + $\pm 22,5^\circ$
	VC1	DSB 2 + 8320 + 9 mm + $\pm 22,5^\circ$ + Neck
	VC2	DSB 3 + 8320 + 9 mm + $\pm 22,5^\circ$ + Neck
	VC3	DSB 3 + 8320 + 9 mm + $\pm 22,5^\circ$ + Neck + Connector 180°
	VD1	DSB 2 + 8320 + 10 mm + $\pm 22,5^\circ$ + Neck
	VD2	DSB 3 + 8320 + 10 mm + $\pm 22,5^\circ$ + Neck
	VE1	DSB 2 + 8320 + 9 mm + $\pm 23,5^\circ$
	VE2	DSB 3 + 8320 + 9 mm + $\pm 23,5^\circ$
	VF1	DSB 2 + 8320 + 10 mm + $\pm 23,5^\circ$
	VF2	DSB 3 + 8320 + 10 mm + $\pm 23,5^\circ$
	VG1	DSB 2 + 8320 + 10 mm + $X \pm 23,4^\circ$ $Y \pm 23,8^\circ$ opt.
	VG2	DSB 3 + 8320 + 10 mm + $X \pm 23,4^\circ$ $Y \pm 23,8^\circ$ opt.
	VH1	DSB 2 + 8320 + 10 mm + $X \pm 23,4^\circ$ $Y \pm 23,8^\circ$ opt. + Neck
	VH2	DSB 3 + 8320 + 10 mm + $X \pm 23,4^\circ$ $Y \pm 23,8^\circ$ opt. + Neck
P	Prototype version	(optional 3 digits)
	Pxx	Differentiation of prototype version xx (00 ... 99)
D	Customer specific product	(optional 1 digit)
	D	customer specific product

Naming of deflection Units



Structure and coding detailed description

(max. 40 digits)

SS-[MMM]-TT-CC /xxxxx

SS

S Mirror / lens material

(2 digits)

BE	Beryllium
BA	Beryllium / Aluminium
OG	Optical glass
QU	Quartz
SI	Silicium
SC	Silicium carbid

[MMM]

Mechanical type

(3-13 digits)

Cooling – mandatory field

[N]	No cooling
[W]	Water cooling
[W2]	Water cooling with 90° angle
[W3]	Water cooling with connection to incoming of laser
[W4]	Water cooling with stainless steel connectors
[A]	Air cooling

other mech. types – optional – in order to this list

[L]	Head with bigger incoming aperture for LTM
[F]	Head combined with FS (color Housing Cover)
[P]	Head with pyrometer
[T]	Head with mirror tilt function
[S]	Head in stainless steel
[U]	Drill pattern for fastening from below
[G]	Standard drift
[K]	Galvo temperature measurement

TT

Tuning

(2 digits)

C	Optimized tuning for long vectors at highest speeds
FV	the best combination of high dynamic performance and high speed
H	high precision beam deflection and fastest beam direction change during hatching
H1	very frequent fast jumps
LN	long vectors with low dither and high speed
LS	long lines at very high speeds
M	high precision beam deflection with sharp corners and minimized tracking error
MA	marking applications
PL	long vectors with high marking speed and very precise beam deflection
RA	small vectors with low dither, and high dynamic performance for sharp corners
ST	jumps or long vectors at highest speeds (minimal step response time)
VC	a wide range of applications with emphasis on processing speed
W	long vectors at highest speeds and precise beam deflection

Naming of deflection Units	
	

CC	C Connector	(2 digits)
	D1	25-pol D-Sub-plug
	D2	25-pol D-Sub-plug + 9-pol D-Sub-plug
	X2	25-pol D-Sub-plug + 3W3 D-Sub-plug
	S1	25-pol D-Sub-plug (SL2-100 + Power)
	S2	9-pol D-Sub-plug + 3W3 D-Sub-plug
	SA	25-pol D-Sub-plug (analog) + 9-pol D-Sub-plug (SL2-100) + 3W3 D-Sub-plug (Power)
	SX	25-pol D-Sub-plug + 9-pol D-Sub-plug + 3W3 D-Sub-plug
	A1	25-pol D-Sub-plug (analog)
	A2	25-pol D-Sub-plug + 9-pol D-Sub-plug (analog)
	RX	25-pol D-Sub-plug + 9-pol D-Sub-plug + 3W3 D-Sub-plug (RL3-100 + XY2-100 + Power)
/xxxxx	D Customer number	(optional 6 digits)
	5-digit ERP customer number xxxxx	

Naming of deflection Units



Focusing Deflection Units, Focus Shifter

Structure and coding of primary name (max. 40 digits)

GG-TTTT-AA [WWWWWWW] VV Pxx/D

GG	Article	Group name	(2 digits)
	AS	AXIALSCAN	
	FS	FOCUSSHIFTER	
	LT	LTM Modul	
TTTT	Typ		(optional 0-7 digits)
	F	LTM Type FOCUSSHIFTER	
	FC	LTM Type FOCUSSHIFTER Compact Size	
	1.5 / 2 / 3	amplification factor of FOCUSSHIFTER – named F/FC	
	K	Kit	
	II	Digital 3 axis deflection unit with PWM	
	Fxxx	AS-Fiber, focal length xxx [mm]	
	FTPN	AS-Fiber, coupling of Laser TruePulse nano	
	FINF	AS-Fiber, coupling of collimated Beam	
	-RD	RAYVOLUTION DRIVE	
	HP	AS-Fiber: high power design	
AA	Aperture		(2 digits)
	03 ... 70	Aperture diameter [mm]	
[WWWWW]	Wave length		(3-13 digits)
	[xxxx]	Wave length xxxx [nm]	
	[xxxx+zz]	Wave length xxxx [nm] + coating with zz	
	[xxxx-yyy]	Wave length range from xxxx to yyyy [nm]	
	[xxxx+yyy]	Wave length combination xxxx and yyyy [nm]	
	[xxxx-yyy+zz+...]	Wave length range from xxxx to yyyy [nm] + coating with zz	
	[AG]	Silver/Argentum, 400 nm – 1064 nm	
	[AL]	Aluminium	
	[AU]	Gold/Aurum	
	[C]	10600 nm	
	[C*]	9000 nm – 11000 nm	
	[DY]	532 nm	
	[DY+Y]	532 nm + 1064 nm	
	[TY]	355 nm	
	[Y]	1064 nm	
	[YIL]	1064 nm + illumination (850 - 870 nm camera inspection)	
VV	Variation		
	V1..V9	Differentiation of production variations For example from standard deviating mirror deflection	
	VR	Connector rear side	
	VT	Connector top side	
P	Prototype version		(optional 3 digits)
	Pxx	Differentiation of prototype version xx (00 ... 99)	
D	Customer specific product		(optional 1 digits)
	D	customer specific product	

Naming of deflection Units



Structure and coding detailed description

(max. 40 digits)

SS-[MMM]-TT-CC /xxxxx

SS

S Mirror / lens material

(2 digits)

BE	Beryllium
BA	Beryllium / Aluminium
OG	Optical glass
QU	Quartz
SI	Silicium
SC	Silicium carbid
ZS	Zinc selenide
ZF	Zinc sulfide

[MMM]

Mechanical type

(3-13 digits)

Cooling – mandatory field

[N]	No cooling
[W]	Water cooling
[W2]	Water cooling with 90° angle
[W4]	Water cooling with stainless steel connectors

Other mech. types – optional – in order to this list

[10]	AS: minimal field size [cm]
[M]	Motorisation at LTM
[MV]	Preparation for motorisation
[P]	Laser pointer
[A]	AS-Fiber: Air cooling
[B]	Process light broad band output
[S]	AS-Fiber: preparation for RAYDIME sensor technology
[C]	AS-Fiber: Process light broad band output with RAYSPECTOR
[H]	High performance scanner (fully digital galvo)
[K]	Galvo temperature measurement
[T]	AS-Fiber: fiber coupling top side
[R]	AS-Fiber: fiber coupling rear side
[F]	AS-Fiber: fiber coupling front side
[Q]	AS-Fiber: fiber plug QBH / RQB
[D]	AS-Fiber: fiber plug QD / LLK-D
[L]	AS-Fiber: fiber plug Q5 / LLK-B
[xxxx]	AS-Fiber: working distance [mm]
[O1]	AS-Fiber: RAYDIME METER (OCT1)
[T1]	AS-Fiber: coupling top side + RAYSPECTOR with mirror
[T2]	AS-Fiber: coupling top side + RAYSPECTOR with dichroit
[T3]	AS-Fiber: coupling top side + RAYSPECTOR with 850 nm mirror for collimated beam and use with OCT
[R1]	AS-Fiber: coupling rear side + RAYSPECTOR with mirror
[R2]	AS-Fiber: coupling rear side + RAYSPECTOR with dichroit
[G]	Standard drift
[K]	Galvo temperature measurement
[V]	AS-Fiber: Particle trap

Naming of deflection Units



TT	T uning	(2 digits)
	C	Optimized tuning for
	FV	long vectors at highest speeds
	H	best combination of high dynamic performance and high speed
		high precision beam deflection and fastest beam direction change during hatching
	H1	very frequent fast jumps
	LN	long vectors with low dither and high speed
	LS	long lines at very high speeds
	M	high precision beam deflection with sharp corners and minimized tracking error
	PL	long vectors with high marking speed and very precise beam deflection
	RA	small vectors with low dither, and high dynamic performance for sharp corners
	ST	jumps or long vectors at highest speeds
	VC	wide range of applications with emphasis on processing speed
	W	long vectors at highest speeds (minimal step response time)
CC	C onnecter	(2 digits)
	D1	25-pol D-Sub-plug
	D2	25-pol D-Sub-plug + 9-pol D-Sub-plug
	X2	25-pol D-Sub-plug + 3W3 D-Sub-plug
	S1	25-pol D-Sub-plug (SL2-100 + Power)
	S2	9-pol D-Sub-plug + 3W3 D-Sub-plug
	S3	2x 9-pol D-Sub-plug + 3W3 D-Sub-plug (2x SL2-100 + Power)
	S4	2x 9-pol D-Sub-plug + 3W3 D-Sub-plug (2x SL2-100 + Power for 2x SL2 + RL3)
	SX	25-pol D-Sub-plug + 9-pol D-Sub-plug + 3W3 D-Sub-plug
	RX	25-pol D-Sub-plug + 9-pol D-Sub-plug + 3W3 D-Sub-plug (XY2-100 + RL3-100 + Power)
	E2	6-pol Epic-plug + 17-pol Epic-plug
	E3	6-pol Epic-plug + 17-pol Epic-plug + M12 plug
	E4	6-pol Epic-plug + 17-pol Epic-plug + M8 plug
	E5	6-pol Epic-plug + 17-pol Epic-plug + M8 plug + M12 plug
	H1	26-pol DSub-plug high density + 3W3 D-Sub-plug
/xxxxx	D Customer number	(optional 6 digits)
	5-digit ERP customer number xxxxx	

AM Deflection Units

Structure and coding of primary name			(max. 40 digits)
GG-TTTT-AA [WWWWWWW] VV Pxx/D			
GG	Article G roup name		(2 digits)
	AM	Additive Manufacturing Module	
TTTT	T ype		(optional 0-11 digits)
	III-	Series/Generation	
	F063	63 mm focus length (10 µm fiber single mode)	
	F085	85 mm focus length (14 µm fiber single mode)	
	F075	75 mm focus length (50..200 µm fiber multi mode)	
	F050	50 mm focus length (fiber ring mode)	
	-RD	RAYVOLUTION DRIVE	
	HP	High Power	
AA	A pertur		(2 digits)
	07 ... 70	Apertur diameter [mm]	
[WWWWW]	W ave length		(3-13 digits)
	[xxxx-yyy+AL]	Wave length range from xxxx to yyyy [nm] + coating with Aluminium	
	[xxxx-yyy+zz+...]	Wave length range from xxxx to yyyy [nm] + coating with zz	
VV	V ariations (for future use)		
P	P rototype version		(optional 3 digits)
	Pxx	Differentiation of prototype version xx (00 ... 99)	
D	D Customer specific product		(optional 1 digit)
	D	Customer specific product	

Naming of deflection Units	
	

Structure and coding detailed description (max. 40 digits)

SS-[MMM]-TT-CC /xxxxx

SS **S** Mirror-/lens material

SC	Silicium Carbid
QU	Quartz

[MMM] **M**echanical type (3-13 digits)

[W]	Water cooling
[B]	Process light broad band output
[O1]	RAYDIME METER (OCT1)
[C]	Process light broad band output with RAYSPECTOR
[S]	Preparation for RAYDIME sensoric
[A]	Air cooling
[H]	High performance scanner (fully digital galvo)
[Q]	Fiber plug QBH / RQB
[D]	Fiber plug QD / LLK-D
[L]	Fiber plug Q5 / LLK-B
[xxxx]	Working distance [mm]
[R1]	Fiber coupling rear side + RAYSPECTOR with mirror
[R2]	Fiber coupling rear side + RAYSPECTOR with dichroit
[K]	Galvo temperature measurement
[V]	Particle trap

TT **T**uning (2 digits)

H	Optimized tuning for high precision beam deflection and fastest beam direction change during hatching
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CC **C**onnecter (2 digits)

R2	9-pol D-Sub-plug (RL3-100) + 3W3 D-Sub plug
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/xxxxx **D** Customer Number (optional 6 digits)

5-digit ERP customer number xxxxx