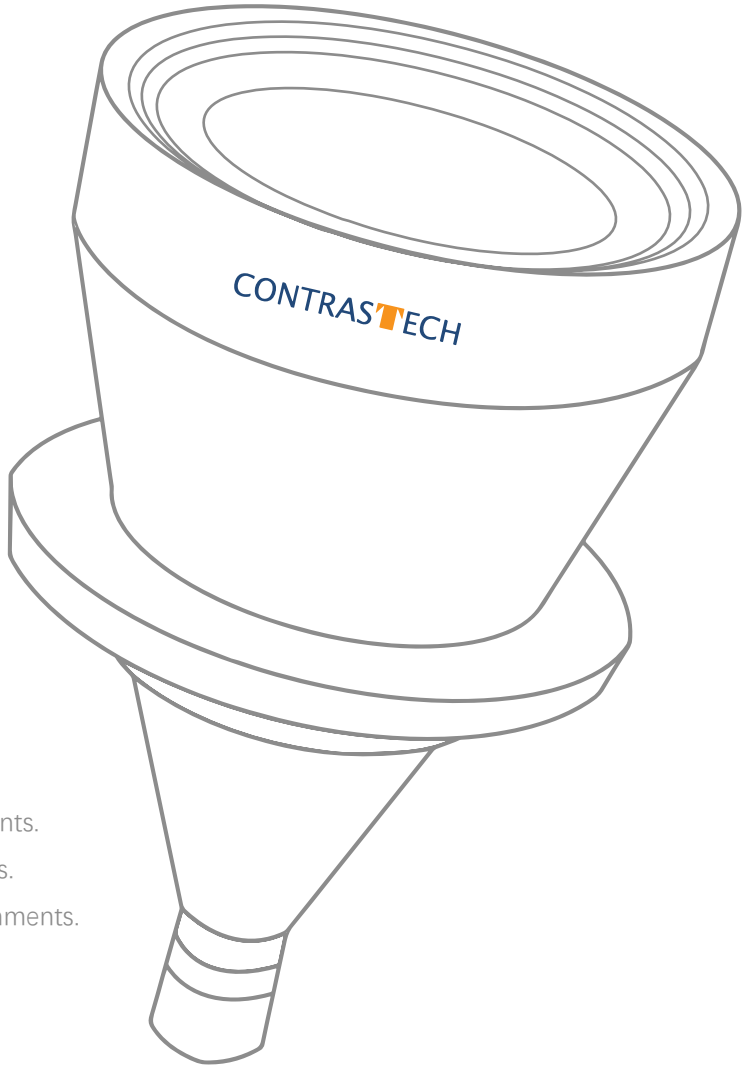
BTL-175 SERIES



MAIN FEATURES

- **High telecentricity** for thick object imaging.
- **Nearly zero distortion** for accurate measurements.
- **Excellent resolution** for high resolution cameras.
- **Simple and robust design** for industrial environments.

ABOUT US

Hangzhou Contrastech Co., Ltd. is a leading imaging technology company with 20+ years of expertise in machine vision, optical imaging, and intelligent data processing.

Our flagship telecentric lenses, together with 360° telecentric lenses and telecentric light sources, deliver distortion-free imaging and precise measurement, with stable illumination for advanced automation and inspection.

Beyond standard products, we provide customized optical solutions—including infrared, ultraviolet, and multispectral designs—to tackle the most demanding applications.

Today, Contrastech telecentric technology powers leading-edge AI vision systems worldwide, enabling high-precision inspection, intelligent recognition, and reliable data acquisition. By combining world-class performance with optimized cost control, we help customers cut costs by 30–50% while achieving top-tier performance and efficiency.

BTL-175 SERIES

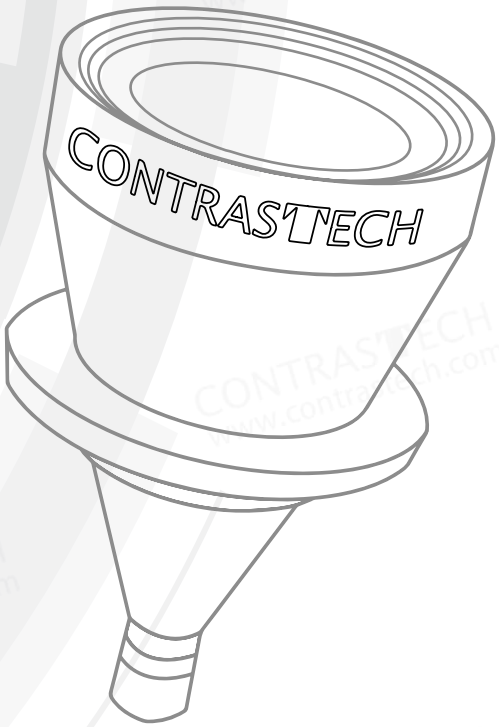
1.75"

Model No.	Click to view details/drawings												
	FOV (Φmm)	Mag. (x)	WD (mm)	Max. Sesnor Size (Φmm)	F/#	MTF30 (lp/mm)	DOF (mm)	Distortion (% max)	Telecentricity (° max)	I/O (mm)	Length (mm)	Mount	Weight (kg)
BTL-1.115XH-73-175(LM)	26	1.115	73±1	29(1.75")	15	>50	±0.6@F20	<0.1	<0.1	274±1	189.2	M42/M58	0.8
BTL-0.806XH-110-175(LM)	36	0.806	110±2	29(1.75")	13.5	>60	±1.2@F20	<0.1	<0.1	331±2	209.3	M42/M58	1.0
BTL-0.69XH-118-175(LM)	42	0.69	118±3	29(1.75")	11.4	>70	±1.6@F20	<0.1	<0.1	325±3	194.8	M42/M58	0.9
BTL-0.604XH-128-175(LM)	48	0.604	128±3	29(1.75")	11.3	>70	±2.2@F20	<0.1	<0.1	348±3	208.3	M42/M58	1.0
BTL-0.604X-138-175(LM)	48	0.604	138±3	29(1.75")	17.1	>50	±2.2@F20	<0.1	<0.1	343±3	158.8	F / Other	0.9
BTL-0.518XH-138-175(LM)	56	0.518	138±3	29(1.75")	9.7	>85	±3.0@F20	<0.1	<0.1	381±3	230.8	M42/M58	1.2
BTL-0.453X-158-175(LM)	64	0.453	158±3	29(1.75")	8.5	>100	±3.1@F16	<0.1	<0.1	413±3	243.3	M42/M58	1.3
BTL-0.403XH-178-175(LM)	72	0.403	178±3	29(1.75")	8.5	>105	±3.9@F16	<0.1	<0.1	453±3	263.3	M42/M58	1.6
BTL-0.363XH-228-175(LM)	80	0.363	228±4	29(1.75")	6.8	>130	±4.9@F16	<0.1	<0.1	493±4	253.3	M42/M58	2.4
BTL-0.322XH-208-175(LM)	90	0.322	208±3	29(1.75")	8.5	>100	±6.1@F16	<0.1	<0.1	508±3	288.3	M42/M58	2.2
BTL-0.29XH-238-175(LM)	100	0.29	238±4	29(1.75")	6.8	>132	±7.6@F16	<0.1	<0.1	581±4	331	M42/M58	3.6
BTL-0.264X-263-175(LM)	110	0.264	263±4	29(1.75")	6.8	>120	±9.2@F16	<0.1	<0.1	616±4	340.9	M42/M58	3.2
BTL-0.242X-273-175(LM)	120	0.242	273±5	29(1.75")	6.8	>130	±11.0@F16	<0.1	<0.1	638±5	352.6	M42/M58	4.7
BTL-0.213X-288-175(LM)	136	0.213	288±5	29(1.75")	6.8	>125	±14.1@F16	<0.1	<0.1	726±5	425.8	M42/M58	4.7
BTL-0.193XH-300-175(LM)	150	0.193	300±5	29(1.75")	9.7	>90	±21.5@F20	<0.1	<0.1	707±5	395.2	M42/M58	6.2
BTL-0.171X-318-175(LM)	170	0.171	318±5	29(1.75")	6.8	>125	±21.9@F16	<0.1	<0.1	787±5	457.2	M42/M58	7.0
BTL-0.153XH-330-175(LM)	190	0.153	330±5	29(1.75")	6.8	>135	±27.3@F16	<0.1	<0.1	827±5	484.5	M42/M58	10.1
BTL-0.134X-372-175(LM)	216	0.134	372±5	29(1.75")	6.8	>125	±35.6@F16	<0.1	<0.1	964±5	579.9	M42/M58	14.3
BTL-0.121XH-410-175(LM)	240	0.121	410±6	29(1.75")	6.8	>125	±43.7@F16	<0.1	<0.1	1048±6	625.8	M42/M58	19.6
BTL-0.112X-338-175(LM)	258	0.112	338±5	29(1.75")	6.8	>130	±50.7@F16	<0.1	<0.1	851±5	501.2	M42/M58	24.7
BTL-0.097XH-465-175(LM)	300	0.097	465±6	29(1.75")	8.5	>105	±68@F16	<0.1	<0.1	1181±6	704.3	M42/M58	47.1

1. The back focal length of model with (LM) is adjustable.

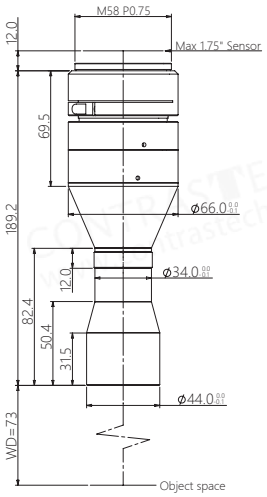
2. Warm tips: The above DOF is just theoretical value at the ideal aperture (eg. ±763@F11). Actual DOF or the DOF what you need, please check with our sales engineer before order cfm.

LENS PARAMETER DIAGRAM



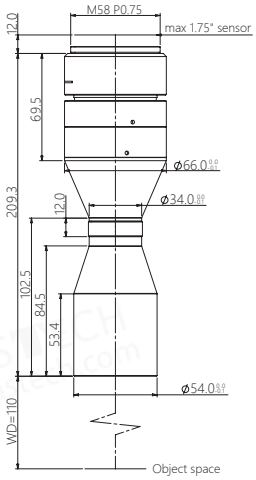
BTL-175 Series

BTL-1.115XH-73-175(LM)



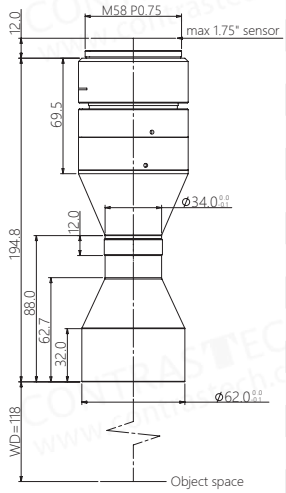
FOV(Φmm)	26
Mag.(x)	1.115
WD(mm)	73±1
Max Sensor Size(Φmm)	29(1.75")
F/#	15.0
MTF30(lp/mm)	>50
DoF(mm)	±0.6@F20
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	274±1
Length(mm)	189.2
Mount	M42/M58
Weight(kg)	0.8
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	20.2x15.2
1.75"PYTHON16k(18.43x18.43)	16.5x16.5
1.75"LineScan-2k/4k/8k(28.8)	25.8

BTL-0.806XH-110-175(LM)



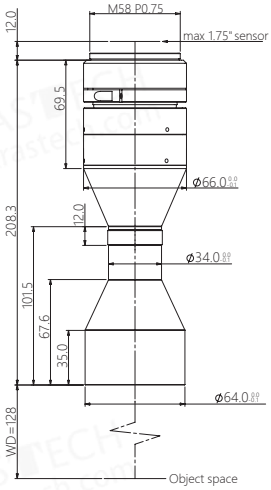
FOV(Φmm)	36
Mag.(x)	0.806
WD(mm)	110±2
Max Sensor Size(Φmm)	29(1.75")
F/#	13.5
MTF30(lp/mm)	>60
DoF(mm)	±1.2@F20
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	331±2
Length(mm)	209.3
Mount	M42/M58
Weight(kg)	1.0
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	28.0x21.0
1.75"PYTHON16k(18.43x18.43)	22.9x22.9
1.75"LineScan-2k/4k/8k(28.8)	35.7

BTL-0.69XH-118-175(LM)



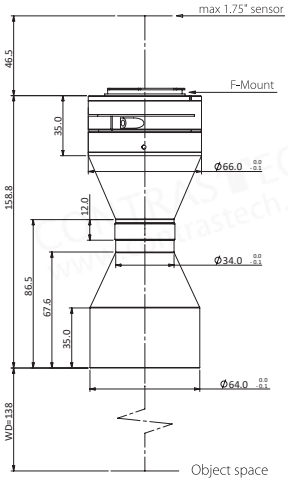
FOV(Φmm)	42
Mag.(x)	0.690
WD(mm)	118±3
Max Sensor Size(Φmm)	29(1.75")
F/#	11.4
MTF30(lp/mm)	>70
DoF(mm)	±1.6@F20
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	325±3
Length(mm)	194.8
Mount	M42/M58
Weight(kg)	0.9
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	32.7x24.5
1.75"PYTHON16k(18.43x18.43)	26.7x26.7
1.75"LineScan-2k/4k/8k(28.8)	41.7

BTL-0.604XH-128-175(LM)



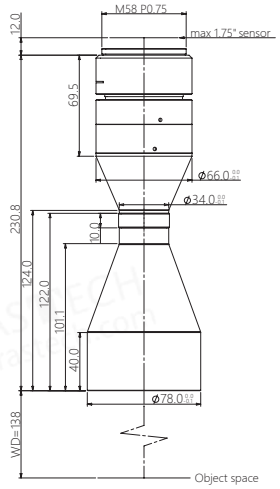
FOV(Φmm)	48
Mag.(x)	0.604
WD(mm)	128±3
Max Sensor Size(Φmm)	29(1.75")
F/#	11.3
MTF30(lp/mm)	>70
DoF(mm)	±2.2@F20
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	348±3
Length(mm)	208.3
Mount	M42/M58
Weight(kg)	1.0
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	37.3x28.0
1.75"PYTHON16k(18.43x18.43)	30.5x30.5
1.75"LineScan-2k/4k/8k(28.8)	47.7

BTL-0.604X-138-175(LM)



FOV(Φmm)	48
Mag.(x)	0.604
WD(mm)	138±3
Max Sensor Size(Φmm)	29(1.75")
F/#	17.1
MTF30(lp/mm)	>50
DoF(mm)	±2.2@F20
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	343±3
Length(mm)	158.8
Mount	F / Other
Weight(kg)	0.9
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	37.3x28.0
1.75"PYTHON16k(18.43x18.43)	30.5x30.5
1.75"LineScan-2k/4k/8k(28.8)	47.7

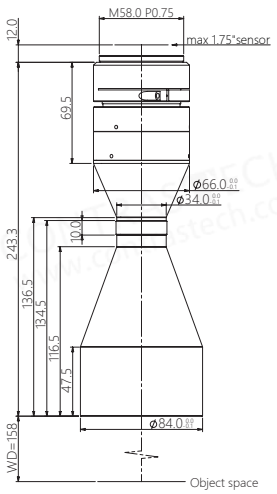
BTL-0.518XH-138-175(LM)



FOV(Φmm)	56
Mag.(x)	0.518
WD(mm)	138±3
Max Sensor Size(Φmm)	29(1.75")
F/#	9.7
MTF30(lp/mm)	>85
DoF(mm)	±3.0@F20
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	381±3
Length(mm)	230.8
Mount	M42/M58
Weight(kg)	1.2
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	43.5x32.6
1.75"PYTHON16k(18.43x18.43)	35.6x35.6
1.75"LineScan-2k/4k/8k(28.8)	55.6

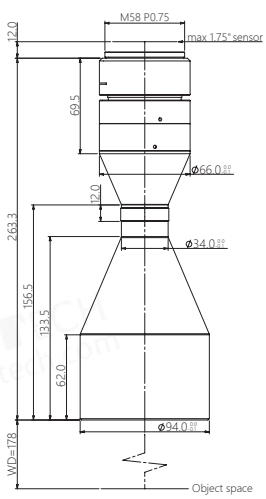
BTL-175 Series

BTL-0.453X-158-175(LM)



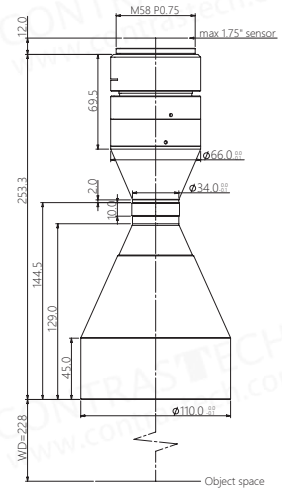
FOV(Φmm)	64
Mag.(x)	0.453
WD(mm)	158±3
Max Sensor Size(Φmm)	29(1.75")
F/#	8.5
MTF30(lp/mm)	>100
DoF(mm)	±3.1@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	413±3
Length(mm)	243.3
Mount	M42/M58
Weight(kg)	1.3
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	49.7x37.3
1.75"PYTHON16k(18.43x18.43)	40.7x40.7
1.75"LineScan-2k/4k/8k(28.8)	63.6

BTL-0.403XH-178-175(LM)



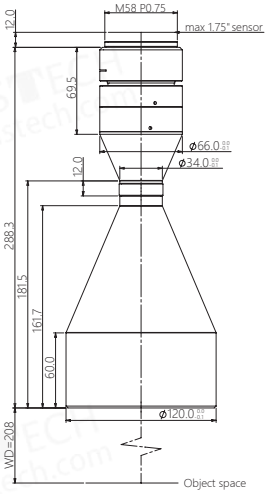
FOV(Φmm)	72
Mag.(x)	0.403
WD(mm)	178±3
Max Sensor Size(Φmm)	29(1.75")
F/#	8.5
MTF30(lp/mm)	>105
DoF(mm)	±3.9@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	453±3
Length(mm)	263.3
Mount	M42/M58
Weight(kg)	1.6
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	55.9x41.9
1.75"PYTHON16k(18.43x18.43)	45.7x45.7
1.75"LineScan-2k/4k/8k(28.8)	71.5

BTL-0.363XH-228-175(LM)



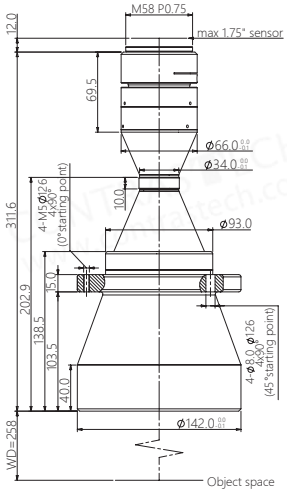
FOV(Φmm)	80
Mag.(x)	0.363
WD(mm)	228±4
Max Sensor Size(Φmm)	29(1.75")
F/#	6.8
MTF30(lp/mm)	>130
DoF(mm)	±4.9@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	493±4
Length(mm)	253.3
Mount	M42/M58
Weight(kg)	2.4
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	62.1x46.6
1.75"PYTHON16k(18.43x18.43)	50.8x50.8
1.75"LineScan-2k/4k/8k(28.8)	79.3

BTL-0.322XH-208-175(LM)



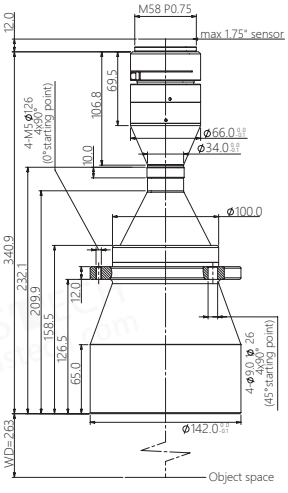
FOV(Φmm)	90
Mag.(x)	0.322
WD(mm)	208±3
Max Sensor Size(Φmm)	29(1.75")
F/#	8.5
MTF30(lp/mm)	>100
DoF(mm)	±6.1@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	508±3
Length(mm)	288.3
Mount	M42/M58
Weight(kg)	2.2
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	70.0x52.5
1.75"PYTHON16k(18.43x18.43)	57.2x57.2
1.75"LineScan-2k/4k/8k(28.8)	89.4

BTL-0.29XH-238-175(LM)



FOV(Φmm)	100
Mag.(x)	0.290
WD(mm)	238±4
Max Sensor Size(Φmm)	29(1.75")
F/#	6.8
MTF30(lp/mm)	>132
DoF(mm)	±7.6@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	581±4
Length(mm)	331
Mount	M42/M58
Weight(kg)	3.6
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	77.7x58.3
1.75"PYTHON16k(18.43x18.43)	63.6x63.6
1.75"LineScan-2k/4k/8k(28.8)	99.3

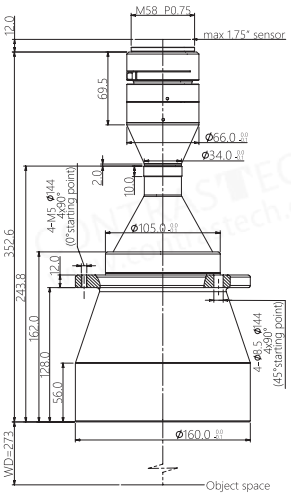
BTL-0.264X-263-175(LM)



FOV(Φmm)	110
Mag.(x)	0.264
WD(mm)	263±4
Max Sensor Size(Φmm)	29(1.75")
F/#	6.8
MTF30(lp/mm)	>120
DoF(mm)	±9.2@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	616±4
Length(mm)	340.9
Mount	M42/M58
Weight(kg)	3.2
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	85.3x64.0
1.75"PYTHON16k(18.43x18.43)	69.8x69.8
1.75"LineScan-2k/4k/8k(28.8)	109.1

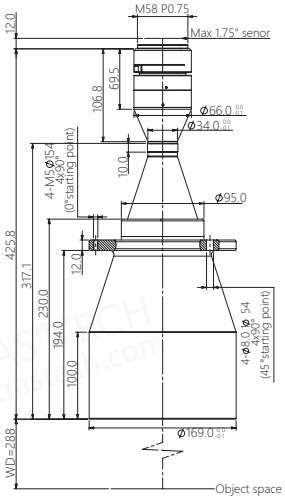
BTL-175 Series

BTL-0.242XH-273-175(LM)



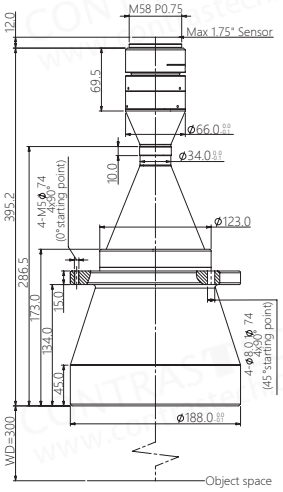
FOV(Φmm)	120
Mag.(x)	0.242
WD(mm)	273±5
Max Sensor Size(Φmm)	29(1.75")
F/#	6.8
MTF30(lp/mm)	>130
DoF(mm)	±11.0@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	638±5
Length(mm)	352.6
Mount	M42/M58
Weight(kg)	4.7
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	93.1x69.8
1.75"PYTHON16k(18.43x18.43)	76.2x76.2
1.75"LineScan-2k/4k/8k(28.8)	119.0

BTL-0.213X-288-175(LM)



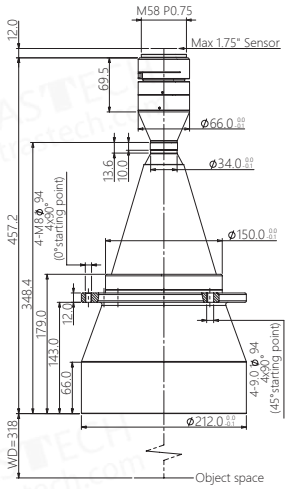
FOV(Φmm)	136
Mag.(x)	0.213
WD(mm)	288±5
Max Sensor Size(Φmm)	29(1.75")
F/#	6.8
MTF30(lp/mm)	>125
DoF(mm)	±14.1@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	726±5
Length(mm)	425.8
Mount	M42/M58
Weight(kg)	4.7
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	105.8x79.3
1.75"PYTHON16k(18.43x18.43)	86.5x86.5
1.75"LineScan-2k/4k/8k(28.8)	135.2

BTL-0.193XH-300-175(LM)



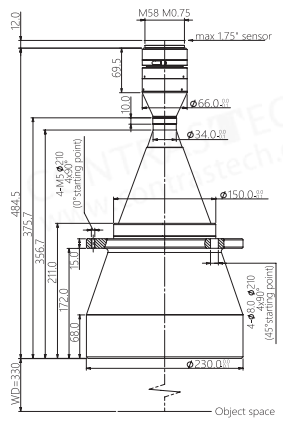
FOV(Φmm)	150
Mag.(x)	0.193
WD(mm)	300±5
Max Sensor Size(Φmm)	29(1.75")
F/#	9.7
MTF30(lp/mm)	>90
DoF(mm)	±21.5@F20
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	707±5
Length(mm)	395.2
Mount	M42/M58
Weight(kg)	6.2
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	116.7x87.6
1.75"PYTHON16k(18.43x18.43)	95.5x95.5
1.75"LineScan-2k/4k/8k(28.8)	149.2

BTL-0.171X-318-175(LM)



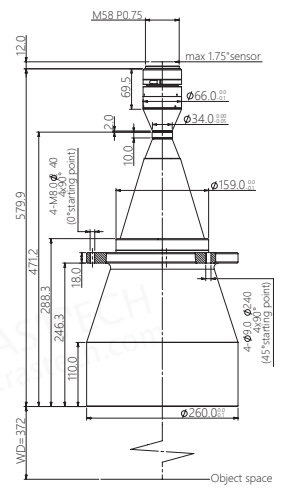
FOV(Φmm)	170
Mag.(x)	0.171
WD(mm)	318±5
Max Sensor Size(Φmm)	29(1.75")
F/#	6.8
MTF30(lp/mm)	>125
DoF(mm)	±21.9@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	787±5
Length(mm)	457.2
Mount	M42/M58
Weight(kg)	7.0
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	131.8x98.8
1.75"PYTHON16k(18.43x18.43)	107.8x107.8
1.75"LineScan-2k/4k/8k(28.8)	168.4

BTL-0.153XH-330-175(LM)



FOV(Φmm)	190
Mag.(x)	0.153
WD(mm)	330±5
Max Sensor Size(Φmm)	29(1.75")
F/#	6.8
MTF30(lp/mm)	>135
DoF(mm)	±27.3@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	827±5
Length(mm)	484.5
Mount	M42/M58
Weight(kg)	10.1
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	147.3x110.5
1.75"PYTHON16k(18.43x18.43)	120.5x120.5
1.75"LineScan-2k/4k/8k(28.8)	188.2

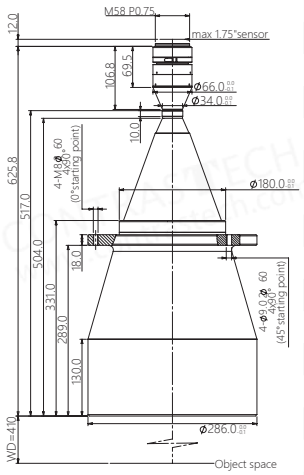
BTL-0.134X-372-175(LM)



FOV(Φmm)	216
Mag.(x)	0.134
WD(mm)	372±5
Max Sensor Size(Φmm)	29(1.75")
F/#	6.8
MTF30(lp/mm)	>125
DoF(mm)	±35.6@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	964±5
Length(mm)	579.9
Mount	M42/M58
Weight(kg)	14.3
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	168.1x126.1
1.75"PYTHON16k(18.43x18.43)	137.5x137.5
1.75"LineScan-2k/4k/8k(28.8)	214.9

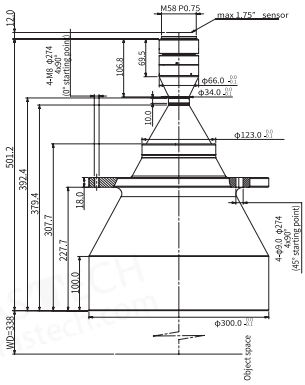
BTL-175 Series

BTL-0.121XH-410-175(LM)



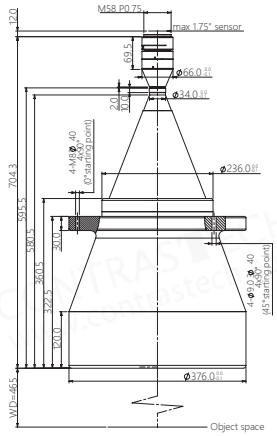
FOV(Φmm)	240
Mag.(x)	0.121
WD(mm)	410±6
Max Sensor Size(Φmm)	29(1.75")
F/#	6.8
MTF30(lp/mm)	>125
DoF(mm)	±43.7@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	1048±6
Length(mm)	625.8
Mount	M42/M58
Weight(kg)	19.6
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	186.2x139.7
1.75"PYTHON16k(18.43x18.43)	152.3x152.3
1.75"LineScan-2k/4k/8k(28.8)	238.0

BTL-0.112X-338-175(LM)



FOV(Φmm)	258
Mag.(x)	0.112
WD(mm)	338±5
Max Sensor Size(Φmm)	29(1.75")
F/#	6.8
MTF30(lp/mm)	>130
DoF(mm)	±50.7@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	851±5
Length(mm)	501.2
Mount	M42/M58
Weight(kg)	24.7
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	201.2x150.9
1.75"PYTHON16k(18.43x18.43)	164.6x164.6
1.75"LineScan-2k/4k/8k(28.8)	257.1

BTL-0.097XH-465-175(LM)



FOV(Φmm)	300
Mag.(x)	0.097
WD(mm)	465±6
Max Sensor Size(Φmm)	29(1.75")
F/#	8.5
MTF30(lp/mm)	>105
DoF(mm)	±68@F16
Distortion(% max)	<0.1
Telecentricity(° max)	<0.1
I/O(mm)	1181±6
Length(mm)	704.3
Mount	M42/M58
Weight(kg)	47.1
Field of View(mmxmm)	
1.75"CMV12000(22.53x16.90)	232.3x174.2
1.75"PYTHON16k(18.43x18.43)	190.0x190.0
1.75"LineScan-2k/4k/8k(28.8)	296.9

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