

TargetZ

Instruction Manual

Original Instructions



CE

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1 About this manual

Instruction Manuals

Struers equipment must only be used in connection with and as described in the instruction manual supplied with the equipment.

**Note**

Read the instruction manual carefully before use.

**Note**

If you wish to view specific information in detail, see the online version of this manual.

2 Safety

2.1 Intended use

TargetZ is a setup station intended to be used in combination with TargetMaster.

The machine is for use in a professional working environment (e.g. a materialographic laboratory).

The equipment is designed to be used only with Struers consumables specifically designed for this purpose and this type of machine.

The device is designed to detect and measure the distance to targets. TargetZ comes with an optical vision system and a monitor.

The machine must be operated only by skilled/trained personnel.

Model

TargetZ

2.1.1 TargetZ safety precautions

**Read carefully before use**

1. Ignoring this information and mishandling of the equipment can lead to severe bodily injuries and material damage.
2. The operator must read the safety precautions and Instruction Manual, as well as relevant sections of the manuals for any connected equipment and accessories.
3. Struers equipment must only be used in connection with and as described in the instruction manual supplied with the equipment.

4. If the equipment is subjected to misuse, incorrect installation, alteration, neglect, accident or incorrect repair, Struers will accept no responsibility for damage to the user or the equipment.
5. Dismantling of any part of the equipment, during service or repair, should always be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).

2.2 Safety messages

Signs used in safety messages

Struers uses the following signs to indicate potential hazards.



ELECTRICAL HAZARD

This sign indicates an electrical hazard which, if not avoided, will result in death or serious injury.



DANGER

This sign indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.



WARNING

This sign indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



CAUTION

This sign indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



CRUSHING HAZARD

This sign indicates a crushing hazard which, if not avoided, could result in minor, moderate or serious injury.

General messages



Note

This sign indicates that there is a risk of damage to property, or a need to proceed with special care.



Hint

This sign indicates that additional information and hints are available.

2.3 Safety messages in this manual



CAUTION

Struers equipment must only be used in connection with and as described in the instruction manual supplied with the equipment.

**ELECTRICAL HAZARD**

The machine must be earthed (grounded).
Make sure that the actual electrical power supply voltage corresponds to the voltage stated on the type plate of the machine.
Incorrect voltage can damage the electrical circuit.

**CAUTION**

Do not use the machine with non-compatible accessories or consumables.

**CRUSHING HAZARD**

Take care of your fingers when handling the machine.
Wear safety shoes when handling heavy machinery.

3 Getting started

3.1 Device description

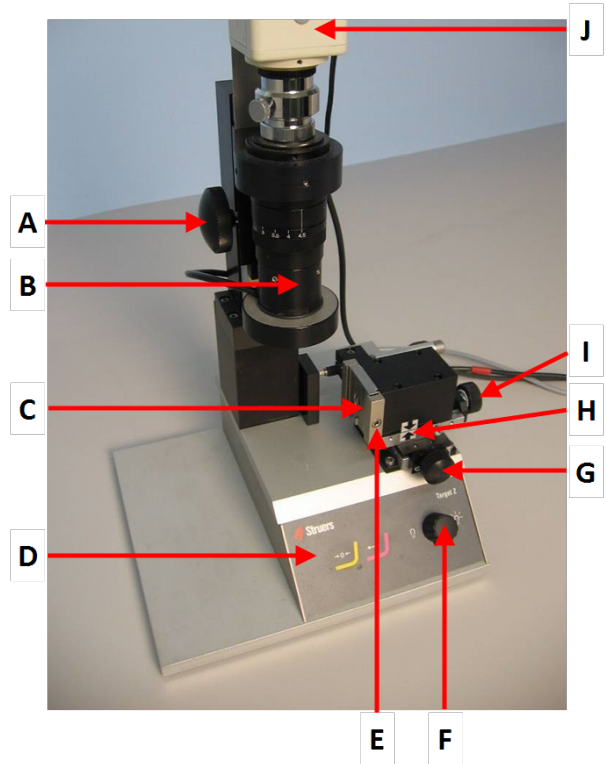
TargetZ is designed for identifying and measuring the distance to visible targets, in specimens for mechanical target preparation.

TargetZ combines a optical vision system, a monitor, an alignment station for TargetGrip and a control unit to enable the operator to measure the distance to visible targets.

When the target is identified on the monitor the value is transferred to the connected TargetMaster by pressing the enter key.

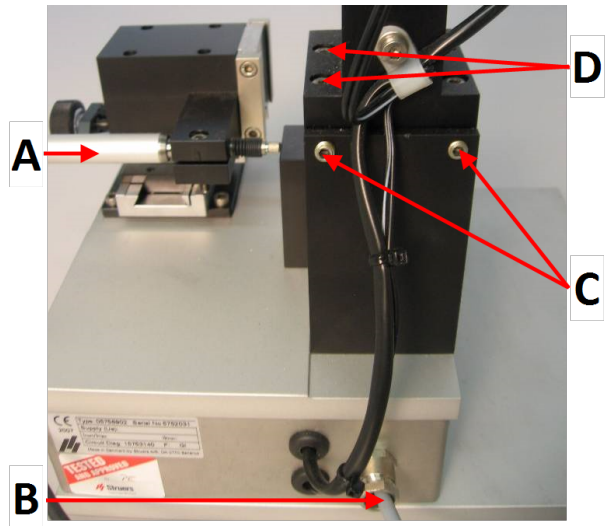
3.2 TargetZ - Front view

- A Z-axis adjustment
- B Zoom adjustment barrel on camera lens
- C Dovetail connector
- D Control panel
- E Screw for securing TargetGrip
- F Light intensity adjustment
- G Y-axis adjustment
- H Arrows for x-alignment
- I X-axis adjustment
- J Video camera



3.3 TargetZ - Rear view

- A Data communication between TargetZ and TargetMaster
- B Power supply from TargetMaster
- C Camera alignment screws
- D Locking screws for camera stand



3.4 Accessories and consumables

Accessories

For information about the available range, see the brochure for TargetZ:

- [The Struers Website](http://www.struers.com) (http://www.struers.com)

Consumables

The equipment is designed to be used only with Struers consumables specifically designed for this purpose and this type of machine.

Other products may contain aggressive solvents, which dissolve e.g. rubber seals. The warranty may not cover damaged machine parts (e.g. seals and tubes), where the damage can be directly related to the use of consumables not supplied by Struers.

For information about the available range, see:

- [The Struers Consumables Catalogue](http://www.struers.com/Library) (http://www.struers.com/Library)

4 Transport and storage

If, at any time after the installation, you have to move the unit or place it in storage, there is a number of guidelines we recommend that you follow.

- Package the unit securely before transportation.
Insufficient packaging could cause damage to the unit and will void the warranty. Contact Struers Service.
- Struers recommends that all original packaging and fittings are kept for future use.

4.1 Transport

- Disconnect the unit from the electrical power supply.
- Lift the machine onto a stable surface.

4.2 Long-term storage or shipping

**Note**

Struers recommends that all original packaging and fittings are kept for future use.

- Remove any other accessories.
- Clean and dry the unit before storage.
- Disconnect the unit from the electrical power supply.
- Place the machine and accessories in their original packaging.

5 Installation



WARNING

Struers equipment must only be used in connection with and as described in the instruction manual supplied with the equipment.

5.1 Unpacking



Note

Struers recommends that all original packaging and fittings are kept for future use.

1. Cut the packing tape on the top of the box.
2. Remove the loose parts.
3. Remove the unit from the box.

5.2 Checking the packing list

The packing box contains the following items:

Pcs.	Description
1	TargetZ
1	Camera
1	Monitor (15") with 5 µm division crosshairs
1	Set of cables for the camera (power supply and monitor cable)
1	User guide for TargetZ video camera

5.3 Lifting



CRUSHING HAZARD

Take care of your fingers when handling the machine.
Wear safety shoes when handling heavy machinery.

Weight	
TargetZ	19 kg (41.9 lbs)

5.4 Location

Operating environment

System accuracy is dependent on an environment with a stable temperature.

- Ambient conditions
See , [Technical data - TargetZ ▶ 17](#) Operating environment.

Location**CRUSHING HAZARD**

Take care of your fingers when handling the machine.
Wear safety shoes when handling heavy machinery.

- To facilitate easy access for service technicians, allow sufficient space around the machine.
- Place the machine on a rigid, stable workbench with a horizontal surface and an adequate height.

TargetZ

- Place the monitor so that you always can view the screen while you operate the controls on TargetZ.
- If needed, make sure that there is enough space to position TargetZ to the right of TargetMaster: 0.75 m (2'46").

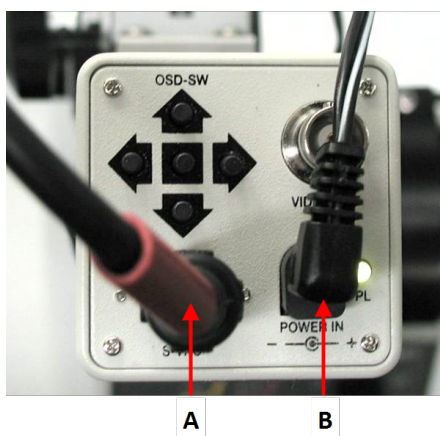
5.5 Power supply

5.5.1 Electrical connections

1. Switch off TargetZ and TargetMaster.
2. Connect the power cable on the rear of the TargetZ to the connector on the rear of the TargetMaster.
3. Connect the data communication cable from the rear of the TargetZ to the 15-pin connector on the rear of TargetMaster.

For more information on how to connect TargetZ to TargetMaster: See the Instruction Manual for TargetMaster.

5.5.2 Connecting the camera and monitor



- A** S-VHS cable to monitor
- B** Camera power cable from TargetZ

1. Connect the S-VHS cable from the monitor to the connector on the top of the video camera.
2. Connect the camera power cable attached to the rear of the TargetZ to the power connector on the top of the video camera.
3. Connect the DC cable from the power supply adapter for the monitor to the monitor.

4. Connect the power cable to the IEC socket on the rear of TargetMaster.

5.6 Noise

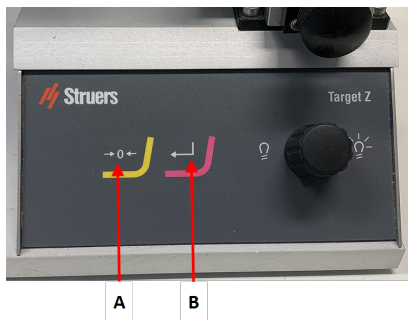
For information on the sound pressure level value, see this section: [Noise and vibration levels ▶ 18](#)

5.7 Vibration



For information on the total vibration exposure to hand and arm, see this section: [- TargetX ▶ 1](#)

6 Preparing the device

6.1 Control panel functions - TargetZ



- A "Zero"-setting button
- B Enter

Button	Function
	"Zero"-setting button. Sets the reference (zero) point for measurements.
	Enter Transfers the measurements to TargetMaster.

6.2 Calibrating TargetZ

You must calibrate TargetZ before you start using it, or if it has been relocated or moved accidentally. You must also calibrate the machine if there is a consistent target error in preparations made with TargetMaster.

The Z-axis (camera axis) of TargetZ should be at a 90° angle to the X-axis.

Measuring a black plastic part on TargetZ is very difficult. To facilitate this process, mount a bright sample in the sample chair before you planarize it. You can use any bright sample. Keep this sample for future calibration.

Preparing the sample chair

You must prepare the sample chair to make sure that the surface is completely plane.

1. Set the tilt angle to zero.
2. Lock the tilt screw.
3. Mount a sample in the sample chair. Use a bright sample for the largest possible contrast.
4. Mount the sample chair in TargetGrip.
5. Transfer a suitable **Time** method from TargetDoser.
6. Plane grind the sample for 2 minutes on #800 SiC Paper.
7. Polish the sample for 2 minutes on MD-Sat with DiaPro/Allegro/Largo suspensions.

During calibration, the distance between the target plane and the reference plane is measured in TargetMaster, and then, manually in TargetZ.

Any small difference between the two measurements is used as a reference by TargetMaster to compensate for any deviation in the Z-axis of TargetZ.

8. Repeat the TargetZ calibration to verify the value.

**Note**

Keep the polished sample chair for future calibrations.
Handle the sample chair with care to avoid damaging the surface.

6.3 Target mode

Use **Target mode** to determine the distance from the reference edge on TargetGrip to the target area you need to inspect.

Removal mode

Use **Removal mode** to determine the distance from the edge of the sample chair (the reference edge) to the target area you need to inspect.

6.4 The video camera

To adjust the video camera, see the user guide supplied with it.

7 Operating the device

7.1 Locating the target plane

1. Use the Z-axis adjustment knob to move the camera to the top position (marked **Ref**).
2. Insert TargetGrip in the dovetail connector and secure it using the screwdriver supplied.
3. Use the Z-axis knob to move the camera down until the plane is in focus (marked **Target**).
4. Turn the camera lens barrel counterclockwise to set it to the lowest magnification.
5. Use the X-axis knob to bring the target into view.
6. Adjust the focus with the Z-axis knob.
7. If the target is not centered on the Y-axis, use the Y-axis knob to center it.
8. Unlock the TargetGrip tilt mechanism and use the 3 mm screwdriver to tilt it until the target is aligned parallel to the vertical crosshair on the monitor.
9. Lock the tilt mechanism on TargetGrip.
10. Increase the camera magnification to the maximum by turning the lens barrel clockwise. Adjust the light intensity as needed.
11. Adjust the focus with the Z-axis knob.
12. Slowly turn the Z-axis knob, moving the camera upward until the image becomes less sharp.
13. Turn the Z-axis knob very slowly in the opposite direction until the target is in focus.
14. Turn the X-axis knob clockwise to bring the target to the right of the center line on the monitor.
15. Slowly turn the X-axis knob counterclockwise to align the target with the center line on the monitor.
16. Press the **Zero setting** button to transfer the zero setting to TargetMaster.



Note

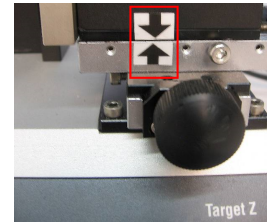
Do not adjust the Y-axis or the camera barrel between this step and the step where the reference edge is entered in the TargetZ control panel. See also [Locating the reference edge ▶ 15](#)



For more information on how to use TargetGrip: See the TargetMaster instruction manual.

7.2 Locating the reference edge

1. Turn the X-axis knob counterclockwise until the two arrows are aligned.
2. Move the camera upwards by turning the Z-axis knob until the reference plane (marked **Ref**) is in focus.
3. Move the camera upwards by slowly turning the Z-axis knob until the reference plane becomes less sharp.
4. Turn the Z-axis knob very slowly in the opposite direction until the reference plane is in focus again.
5. Slowly turn the X-axis knob counterclockwise to move the reference edge towards the crosshair (from the right hand side) and align the reference edge in the center of the screen.
6. Press **Select** to transfer the target distance to TargetMaster.



Note

The camera must be set at maximum magnification before pushing the **Select** and the **Zero setting** buttons.

7. Raise the camera to its top position.
8. Unlock and remove TargetGrip.



Note

If you need to mount the sample in resin in a sample chair using resin barrier tape, you can it at this stage. See the TargetMaster instruction manual for more information.

7.3 Using TargetZ as a measuring station

1. Mount the sample in a sample chair.
2. Use the X-axis knob to place one measuring point at the vertical crosshair on the monitor.
3. Press the **Zero setting** button on TargetZ. "0" is shown in TargetMaster.
4. Use the X-axis knob to place the other measuring points at the vertical crosshair on the monitor. You can now see the distance between points on the TargetMaster.
5. If you are using TargetMaster in **Target mode**, it will automatically pick the lower Target value. However, if you are using the measurement for **Removal mode**, use the **Distance to target** value and enter it manually in TargetMaster.

8 Maintenance and service - TargetZ

Proper maintenance is required to achieve the maximum up-time and operating lifetime of the machine. Maintenance is important in ensuring continued safe operation of your machine.

The maintenance procedures described in this section must be carried out by skilled or trained personnel.

Safety Related Parts of the Control System (SRP/CS)

For specific safety related parts, see the section "Safety Related Parts of the Control System (SRP/CS)" in the section "Technical data" in this manual.

Technical questions and spare parts

If you have technical questions or when you order spare parts, state serial number and voltage/frequency. The serial number and the voltage are stated on the type plate of the machine.

You can also find this information in the Duramin software by selecting **Tester > Info**.

8.1 General cleaning

To ensure a longer lifetime for your machine, Struers strongly recommends regular cleaning.



Note

Do not use a dry cloth as the surfaces are not scratch resistant.



Note

Do not use acetone, benzol or similar solvents.

If the machine is not to be used for a longer period of time

- Clean the machine and all accessories thoroughly.

8.2 Daily

- Clean all accessible surfaces with a soft, damp cloth.

8.3 Weekly

- Calibrate TargetZ weekly or after every 10-20 samples.

8.4 Annually

8.4.1 Testing safety devices

The safety devices must be tested at least once a year.



WARNING

Do not use the machine with defective safety devices.
Contact Struers Service.



Note

Testing should always be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).

8.5 Spare parts

Technical questions and spare parts

If you have technical questions or when you order spare parts, state serial number and voltage/frequency. The serial number and the voltage are stated on the type plate of the machine.

For further information, or to check the availability of spare parts, contact Struers Service. Contact information is available on Struers.com.

8.6 Disposal



Equipment marked with a WEEE symbol contains electrical and electronic components and must not be disposed of as general waste.

Contact your local authorities for information on the correct method of disposal in accordance with national legislation.



For disposal of consumables and recirculation fluid, follow local regulations.

9 Technical data

9.1 Technical data - TargetZ

Subject	Specifications	
Safety standards	See the Declaration of Conformity	
Software and electronics	Controls	Touch pad
	Video display	15" Monitor

Subject	Specifications	
Operating environment	Surrounding temperature	20 °C (68 °F) ± 2 °C (4 °F)
	Humidity	35-50 % RH non-condensing
Storage and transport conditions	Surrounding temperature	-20 – 60°C (-4 – 140°F)
	Humidity	35 - 50 % RH non-condensing
Power supply	Voltage/frequency	24 V DC supplied from TargetMaster
	Monitor	200-240 V/50-60 Hz The electrical installation must comply with "Installation Category II".
Dimensions and weight	Width	235 mm (9.3")
	Depth	315 mm (12.4")
	Height	205 mm (8.1")
	Weight	15 kg (33 lbs)

9.2 Noise and vibration levels

Noise level	A-weighted sound emission pressure level at workstations	$L_{pA} = 0$ dB(A) (measured value) 4 dB
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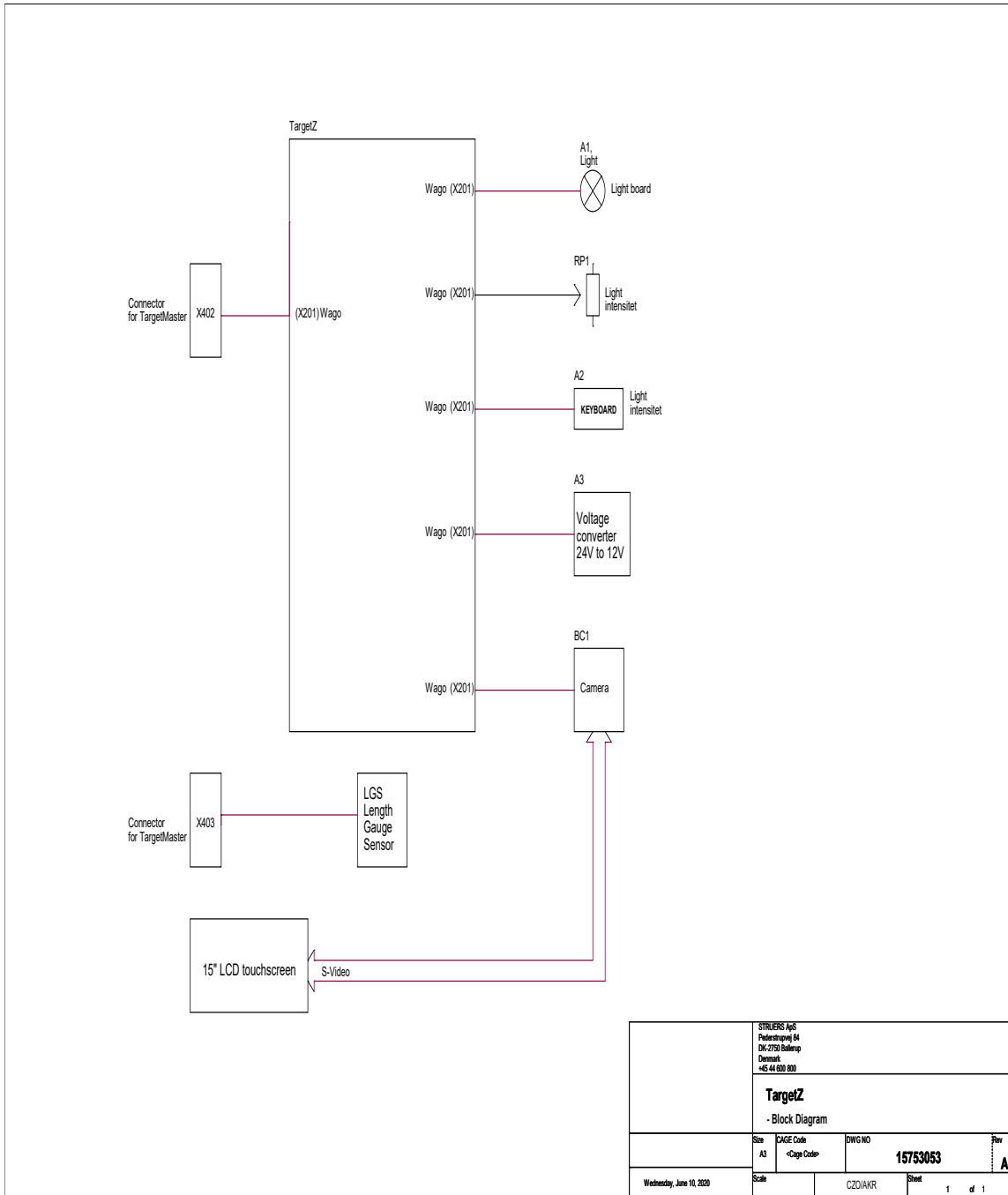
9.3 Diagrams

If you wish to view specific information in detail, see the online version of this manual.

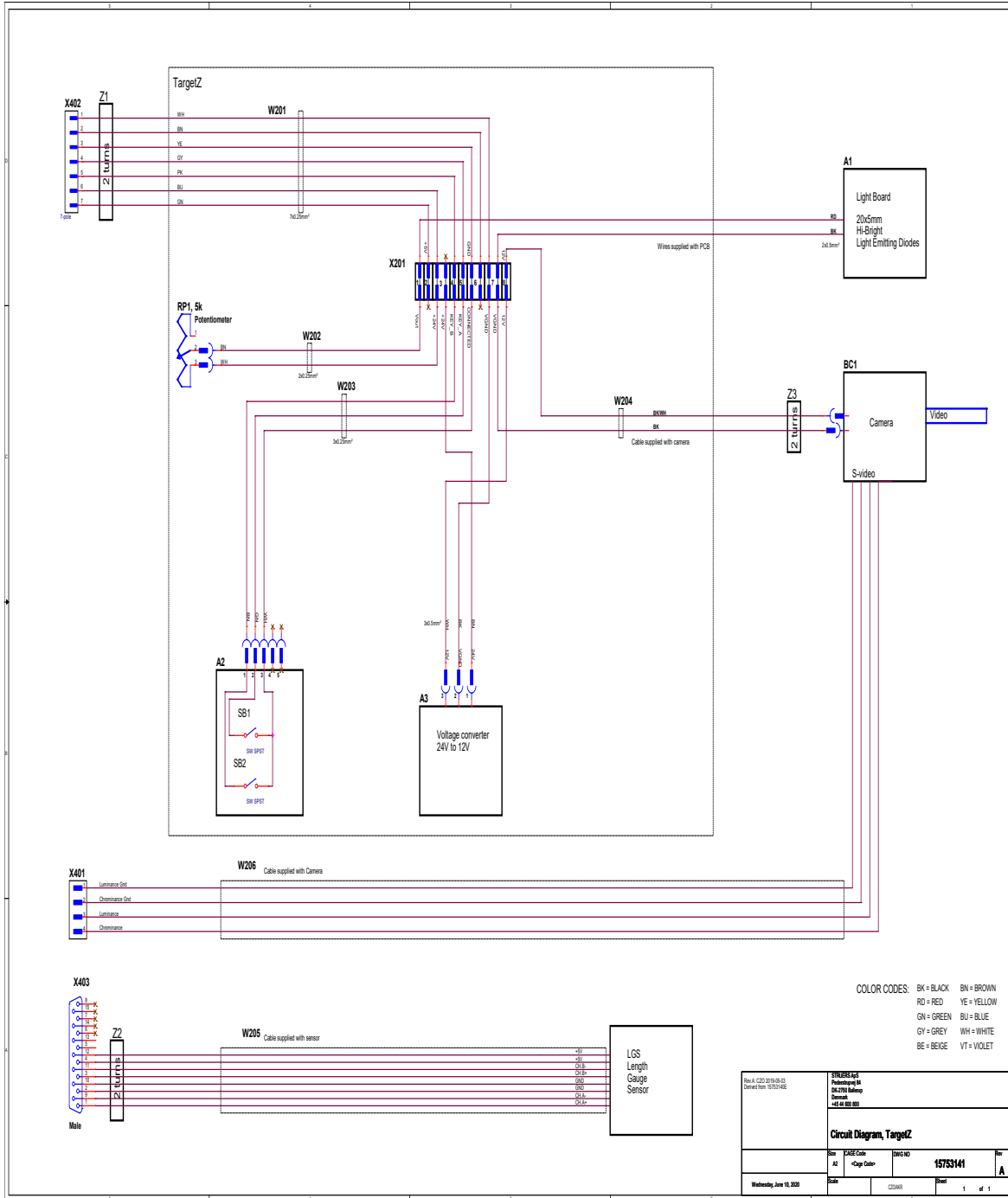
9.3.1 Diagrams - TargetZ

Title	No.
TargetZ, Block diagram	17753053 A
TargetZ, Circuit diagram	15753141 A

17753053 A



15753141 A



9.4 Legal and regulatory information

FCC notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

10 Manufacturer

Struers ApS
Pederstrupvej 84
DK-2750 Ballerup, Denmark
Telephone: +45 44 600 800
Fax: +45 44 600 801
www.struers.com

Responsibility of the manufacturer

The following restrictions should be observed, as violation of the restrictions may cause cancellation of Struers legal obligations.

The manufacturer assumes no responsibility for errors in the text and/or illustrations in this manual. The information in this manual is subject to change without notice. The manual may mention accessories or parts not included in the supplied version of the equipment.

The manufacturer is to be considered responsible for effects on safety, reliability, and performance of the equipment only if the equipment is used, serviced, and maintained in accordance with the instructions for use.

Struers ApS
Pederstrupvej 84
DK-2750 Ballerup, Denmark


Declaration of Conformity

EU / UE / EL / EC / EE / ES / EÜ / AB

Manufacturer / Производител / Výrobce / Producent / Hersteller / Κατασκευαστής / Fabricante / Tootja / Valmistaja / Fabricant / Proizvođač / Gyártó / Fabbicante / Gamintojas / Ražotājs / Fabrikant / Producent / Fabricante / Producătorul / Výrobca / Proizvajalec / Tillverkare / 販売元 / 제조사 / Produsent / Изготовитель / Imalatçı / 制造商

Декларация за съответствие Prohlášení o shodě Overensstemmelseserklæring Konformitátserklárung Δήλωση συμμόρφωσης Declaración de conformidad Vastavusdeklaratsioon	Vaatimustenmukaisuusvakuutus Déclaration de conformité Izjava o skladnosti Megfelelőségi nyilatkozat Dichiarazione di conformità Atitikties deklaracija Atbilstības deklarācija	Verklaring van overeenstemming Deklaracja zgodności Declaração de conformidade Declarație de conformitate Vyhlásenie o zhode Izjava o skladnosti Intyg om överensstämmelse	適合宣言書 적합성 선언서 Samsvarserklæring Заявление о соответствии Uygunluk Beyanı 符合性声明
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Name / Име / Název / Navn / Name / Όνομα / Nombre / Nimetus / Nimi / Nom / Naziv / Név / Nome / Pavadinimas / Nosaukums / Naam / Nazwa / Nome / Denumirea / Názov / Ime / Namn / 名前 / 제품명 / Наименование / Adı / 名称	TargetZ
Model / Модел / Model / Model / Modell / Μοντέλο / Modelo / Mudel / Malli / Modèle / Model / Modell / Modello / Modelis / Modelis / Model / Model / Modelo / Modelul / Model / Model / Modell / モデル / 모델 / Modell / Модель / Model / 型号	TargetZ
Function / Функция / Functie / Funktion / Funktion / Λειτουργία / Función / Funktsioon / Toiminto / Fönction / Funkcija / Funkció / Funzione / Funkcija / Funkcija / Functie / Funkcja / Função / Funcția / Funkcia / Funkcija / Funktion / 機能 / 기능 / Funksjon / Назначение / Fonksiyon / 功能	Vision system op to 680x with 15" monitor for measuring specimens. Only intended for Struers TargetMaster. The machine includes a setup station with vision system, console and monitor. The setup station is for placing the specimen for mapping. The mapping results are transferred to the TargetMaster.
Type / Тип / Typ / Type / Typ / Τύπος / Tipo / Tüüp / Tuuppi / Type / Tip / Típus / Tipo / Tipas / Tips / Type / Typ / Tipo / Tipul / Typ / Tip / Typ / 種類 / 유형 / Type / Тип / Tür / 类型	05756922
Serial no. / Серийн номер / Výrobní číslo / Seriennummer / Seriennummer / Σειριακός αριθμός / N.º de serie / Seerianumber / Sarjanro / No de série / Serijski broj / Sorozatszám / N. serie / Serijos Nr. / Sērijas Nr. / Serien. / Numer serijny / N.º de série / Nr. serie / Výrobné č. / Serijska št. / Seriennummer / シリアル番号 / 일련번호 / Serienr. / Серийный номер / Seri no. / 序列号	


Module H, according to global approach

en We declare that the product mentioned is in conformity with the following directives and standards:	es Declaramos que el producto mencionado cumple con las siguientes directivas y normativas:	hu Kijelentjük, hogy jelen termék megfelel a következő irányelveknek és szabványoknak:	ro Declarăm că produsul menționat este în conformitate cu următoarele directive și standarde:	ko 해당 선언서 상의 제품은 다음 지침 및 기준에 적합함을 선언합니다.
bg Декларираме, че посоченият продукт е в съответствие със следните директиви и стандарти:	et Kinnitame, et nimetatud toode vastab järgmistele direktiividele ja standarditele:	it Dichiariamo che il prodotto citato è conforme ai seguenti standard e direttive:	sk Vyhlasujeme, že uvedený výrobok je v súlade s týmito smernicami a normami:	no Vi erklærer at produktene som er nevnt er i samsvar med følgende direktiver og standarder:
cs Tímto prohlašujeme, že uvedený výrobek je v souladu s následujícími směrnici a normami:	fi Vakuutamme, että mainittu tuote on seuraavien direktiivien ja standardien mukainen:	lt Pareiškiami, kad nurodytas gaminyis atitinka šias direktyvas ir standartus:	sl Potrjujemo, da je omenjeni izdelek v skladu z naslednjimi direktivami in standardi:	ru Настоящим заявляем, что указанная продукция отвечает требованиям перечисленных далее директив и стандартов:
da Vi erklærer herved, at det nævnte produkt er i overensstemmelse med følgende direktiver og standarder:	fr Nous déclarons que le produit mentionné est conforme aux directives et normes suivantes :	lv Mēs apstiprinām, ka minētais produkts atbilst šādām direktīvām un standartiem:	sv Vi intygar att den angivna produkten överensstämmer med följande direktiv och standarder:	tr Belirtilen ürünün aşağıdaki direktiflere ve standartlara uygun olduğunu beyan ederiz:
de Wir erklären, dass das genannte Produkt den folgenden Richtlinien und Normen entspricht:	hr Izjavljujemo da je spomenuti proizvod sukladan sljedećim direktivama i standardima:	pt Declaramos que o produto mencionado está em conformidade com as seguintes normas e diretivas:	ja 弊社はこの指定製品が以下の指令および基準に適合することを宣言します。	zh 我们特此声明上述产品符合以下指令和标准:
el Δηλώνουμε ότι το εν λόγω προϊόν είναι σύμφωνο με τις ακόλουθες οδηγίες και πρότυπα:				

2006/42/EC	EN ISO 12100:2010, EN 50581:2012, EN 60204-1:2006, EN 60204-1-A1:2009, EN 60204-1/Corr.:2010,
2011/65/EU	EN 50581:2012
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