技术咨询与报价
电话：18823303057 QQ:2104028976

TQC CURVEX 3 STANDARD 炉温跟踪仪

CX3015

| **IMPORTANT!** |
| Before taking this instrument in use we strongly advise you to read this manual carefully. |

User Guide

V1.2 0816

Warranty

TQC will grant a warranty for a period of 12 months for TQC CurveX 3 Standard and 12 months for all related equipment from the date of delivery in respect of any evidence of faulty workmanship and materials. TQC will extend the warranty for TQC CurveX 3 Standard to a period of 24 months from the date of delivery if TQC CurveX 3 Standard is licensed via the TQC Ideal Finish Analysis software. Should a delivered consignment prove to be contrary to contract upon inspection, the customer shall grant TQC the opportunity hereunder of removing the fault, or else the customer may demand a replacement. Should the supply or delivery of any improvement or replacement not prove possible, the customer may choose between having the purchase price reduced or in demanding the contract of sale to be rescinded (conversion). Damage resulting from natural wear and tear, mechanical or chemical damage, an act of God or non-compliance with the ope-rating instructions shall be excluded from the warranty as well as mechanical interference by the customer or by third parties with TQC CurveX 3 Standard and related equipment without TQC's written permission. No liability will be accepted for defects, damage or injury caused due to use not carried out in accordance with the manufacturer's user instructions.

To claim warranty, the rejected product has to be sent to TQC together with the original invoice, any exchange before the product has been returned to TQC is not possible. TQC reserve the right to repair, exchange or supply an equivalent substitute. TQC is not liable for handling or transport costs. Warranty on the purchase price is limited, all liability for consequential damages or chan-ges in technology is expelled.

This product complies to
- Low Voltage Directive 2006/95 / EC
- EMC Directive 2004/108 / EC

This product is RoHS 2 compliant (2011/65/EU)

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CONTENT

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1 GENERAL

1.1 Importance of operating manual
This manual is written in order to become familiar with all the functions and possible applications of the instrument. It contains important instructions about how to use the instrument safely and economically; according to the purpose designated. Following these instructions is not only essential to avoid risks. It also reduces repair costs and down-time and increases the products reliability and service-life.
Anyone who works with the instrument should follow the instructions in this manual, particularly the safety related instructions. Additionally local rules and regulations relating to environmental safety and accident prevention should be observed.

1.2 User-responsibility
The user should;
• only allow persons to work with the instrument who are familiar with the general instructions on how to work safely and to prevent accidents. The use of the instrument should have been instructed duly The safety chapter and the warnings in this manual should have been read and understood; acknowledged as evidenced by their signature.
• regularly check the safety-awareness of personnel at work.

1.3 Responsibility of personnel
Before commencing work anyone appointed to work with the instrument should pay attention to the general regulations relating to working safety and accident prevention. The safety chapter and the warnings in this manual should have been read and understood; acknowledged as evidenced by their signature.

1.3.1 Dangers
This instrument has been designed and constructed in accordance with state-of-the-art technology and the acknowledged safety regulations. Nevertheless, working with the instrument may cause danger to the life and health of the operator or to others, or damage to the instrument or other property. Therefore the instrument should only be used for its designated purpose, and in a perfect technical condition. Any defect that could have a negative effect on safety should be repaired immediately.

1.4 Designated purpose
The Curve X 3 Standard is a temperature data logging system especially designed to control curing processes in the coatings industry.
Other applications constitute improper use. TQC will not be held liable for damage resulting from improper use. Designated purpose also includes properly observing all instructions in the operation manual, and adherence to inspection and maintenance schedules.

1.5 Copyright
The copyright of this operating manual remains with TQC.
This operating manual is intended solely for the user and his personnel. Its instructions and guidelines may not be duplicated, circulated or otherwise passed on to others, neither fully, nor partly. Infringement of these restrictions may lead to legal action may be taken if this restrictions are infringed upon.

1.6 Manufacturer's/Supplier's address
TQC   The Netherlands,
 Molenbaan 19   T +31(0)10-7900100,
2908 LL Capelle aan den IJssel   F +31 (0)10-7900129

2. CURVEX 3 STANDARD

2.1 Introduction
The CurveX 3 Standard is a user-friendly instrument. It only takes a couple of minutes to understand the operation of the entire system. For instructions on how to use the Ideal Finish Analysis Software we refer to the separately supplied Ideal Finish Analysis Quick start guide.

2.2 Overview
The CurveX 3 Standard is an intelligent temperature data logging system, especially designed to control curing processes in the coatings industry. This manual describes the use of the CurveX 3 Standard logger.
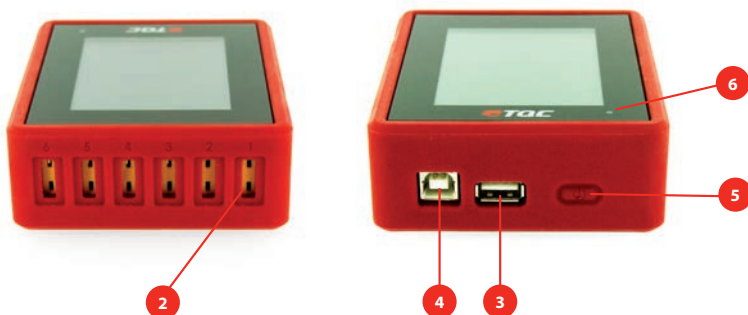
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Figure 1

1. Touch screen
2. Thermocouple connectors
3. USB-A Port
4. USB-B Port
5. Power button
6. Multicolored LED

USB-A	Data transfer to memory stick
USB-B	Battery charging
	Data transfer to TQC Ideal Finish Analysis

2.3 Using the Touch Screen

The screen of the CurveX 3 Standard is a capacitive touch screen display that allows menu controlled operation of the instrument. To save battery power the display fades away when the instrument is not in use for more than 20 seconds, after another 10 seconds the display is turned off automatically. Once the instrument is switched on, to activate the touchscreen press the power button for more than one second until the menu appears. Swipe the touchscreen up/down to scroll through a page. When an editable item is touched a pop-up appears in which the value / description can be entered. Press the icon in the top left corner to go back in the menu.

2.4 Connecting the thermocouple sensors

The CurveX 3 Standard is equipped with six thermocouple connectors (K-type). For proper measurements only use the K-type probes (+: NiCr / -: NiAl). The connectors are numbered channel 1 to 6 at the top side of the instrument. The instrument automatically detects the connected probes.

N.B.: The pins of the thermocouple plug are different in width and can only be plugged-in in one way, see Figure 2.

If no probe is connected, the CurveX 3 Standard will not start recording. An error message will appear on the display. The probe position on the object can be stored with the Ideal Finish program, or has to be remembered while placing the probes on the object. If stored with the Ideal Finish program the probe position can be selected to appear in the printed reports.
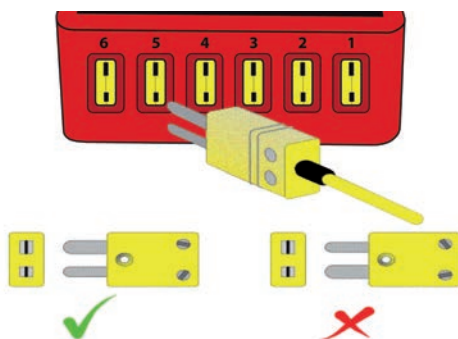
Figure 2

2.5 Power ON / OFF / Standby
To switch on the CurveX 3 Standard, hold the power button down for one second until the multi-colored LED lights up. It takes a while for the instrument to boot and show the dashboard. To switch off the CurveX 3 Standard, hold the power button down until the multi-colored LED is off, note this may take more than seven seconds. To wake up the CurveX 3 Standard from Standby hold the power button until the display lights up.

2.6 USB-B Port
The USB-B port is used to charge the battery and communicate with the TQC Ideal Finish Analysis software. Battery charging starts as soon as the instrument is connected to a host USB port. Communication with the TQC Ideal Finish Analysis software can begin after the instrument got recognized by Windows, this occurs as soon as the instrument is connected to the PC with the display on.

Note: The support for CurveX 3 Standard has been added to the TQC Ideal Finish Analysis soft-ware version 6.0.112 and higher.

2.7 USB-A Port
The USB-A port is used to offload measured profile data from the instrument onto a memory stick. When the CurveX 3 Standard has its display on insert a memory stick into USB-A. The multicolored LED will start flashing quicker while it is copying data. Copying has finished once the LED pulses at heartbeat rhythm again. All recordings are copied to the memory stick as *.csv files, which can be imported with the TQC Ideal Finish Analysis software.

2.8 Power Management

The CurveX 3 Standard will automatically shut down if it has not detected any user interaction within a period of 5 minutes. Shut down is postponed if the system is recording or when a time or temperature trigger is enabled on the instrument. Automatic shutdown prevents draining the battery when the instrument is stored away.

2.9 Multicolored LED

GREEN - Standard operation
RED – Recording temperature
BLUE – Charging battery

The LED pulse in a heartbeat rhythm at normal operation
The LED blinks at high speed when copying from or to the USB-A port

3. OPERATING INSTRUCTIONS

The CurveX 3 Standard data-logger is designed to measure temperatures and store these during a given time. The instrument measures continuously but only stores readings at certain intervals (set by the operator). The maximum recording period depends on the number of probes that are used and the recording interval that is set.

Furthermore, the data logger can be pre-set with paint types, which are a set of cure specifications (cure-specs). If a paint type is selected the cure results of a test can be evaluated immediately after the run. The paint type and the log interval time can be programmed using the CurveX 3 software program Ideal Finish Analysis or entered directly on the CurveX 3 Standard.
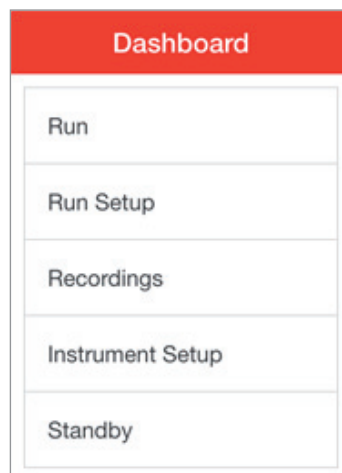
3.1 Dashboard

Figure 3.

The CurveX standard starts in the dashboard screen.
All dashboard items are described separately in chapter 4 to 8.

4 DASHBOARD-RUN

Select Run from the dashboard to open the Run
menu, from the Run menu, several measurement
options are available. Recording, real-time measuring,
temperature triggered recording, and time triggered
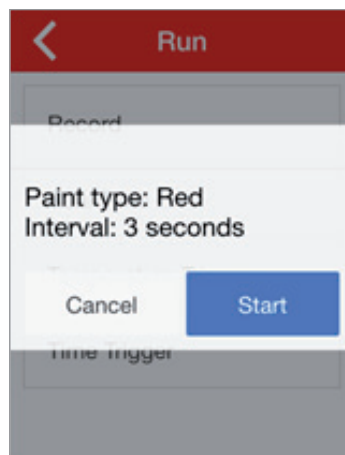recording.

4.1 Dashboard-Run-Record
Select Record to start recording without changing
settings.
The other options in this menu are described in
§4.2 to §4.4

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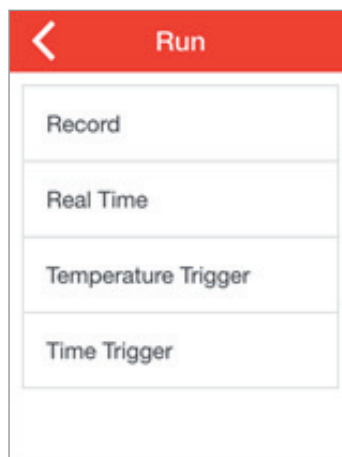
4.1.1 Dashboard-Run-Record-Confirm

Before the CurveX 3 Standard starts recording, a window with the current settings will appear. Press Start to start recording. If you want to change the settings press Cancel and edit the settings in the Run Setup menu.

4.1.2 Recording

The display shows the recording indicator (||||||) cure index, current temperature, and current maximum temperature of each probe.

To stop recording, press the red Stop button at the bottom of the display. A confirmation window will appear.

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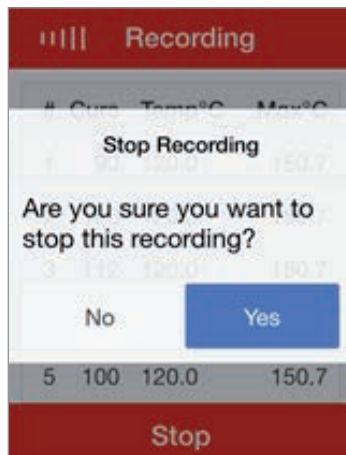Swipe down to view the current recording information.

Paint type	:	Identification of the paint type
Records	:	Number of stored measurements
Interval	:	Seconds between each measurement
Duration	:	The length of the recording
Start Date/Time	:	Date/Time the recording is started
Stop Date/Time	:	Date/Time the recording is stopped
Cure	:	Click to open the cure information and to view the cure graph.

4.1.3 Stop recording
Press stop if you want to stop recording. Confirm to stop recording by pressing Yes.
The recording session will be stored and you will be forwarded to the results.

Pressing No will resume the recording process.

http://www.testeb.com/yiqi/tqc/luwenyi.html   18823303057 QQ 2104028

4.1.4 Recording result

Paint type	:	Identification of the paint type
Records	:	Number of stored measurements
Interval	:	Seconds between each measurement
Duration	:	The length of the recording
Start Date/Time	:	Date/Time the recording is started
Stop Date/Time	:	Date/Time the recording is stopped
Cure	:	Click to open the cure information and to view the cure graph.

A green button indicates a full cure.
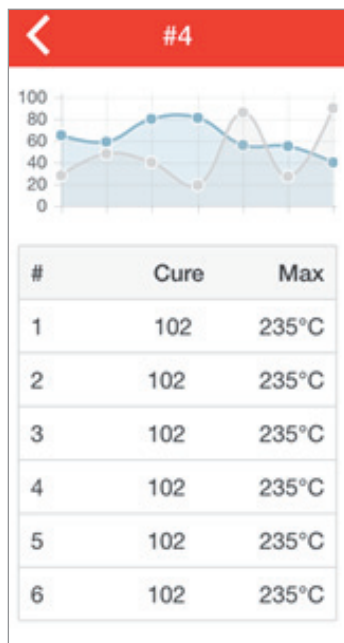A yellow button indicates an under-cure.
Recordings can be retrieved in the dashboard under Recordings (See chapter 6)

4.1.5 Recorded Cure

Pressing Cure will show the graph. The graph shows the temperature progression during the recording. Each probe has a different color.

Below the graph is a table showing the Cure-Index for each probe.

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4.2 Real-Time
Allows making measurements without storing them. The actual temperature measurements are displayed real-time, as are cure index and maximum temperature of the current session.

4.3 Temperature Trigger
Recording will start when the temperature rises over the set starting temperature and will stop when the temperature falls under the set stop temperature. The recording process is the same as standard recording. Temperature Trigger setup can be edited in the Run Setup menu.

4.4 Time trigger
Recording will start at the set starting date/time and will stop at the set stopping date/time. The recording process is the same as standard recording. Time Trigger setup can be edited in the Run Setup menu.

5 DASHBOARD-RUN SETUP

All recording related settings can be found in the Run Setup. This menu is accessible from the Dashboard.
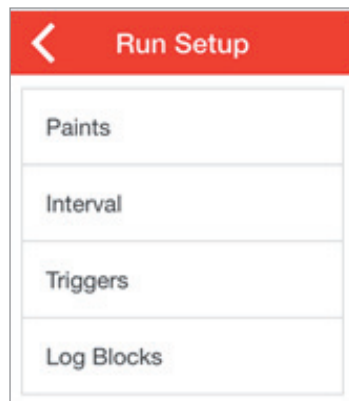
5.1 Dashboard- Run Setup-Paints
All saved paint types are listed in this menu.

The check indicates the default paint type that is used to calculate the cure index. The default can be set when editing a paint type.

To create a new paint type, press the ➕ in the top right corner.
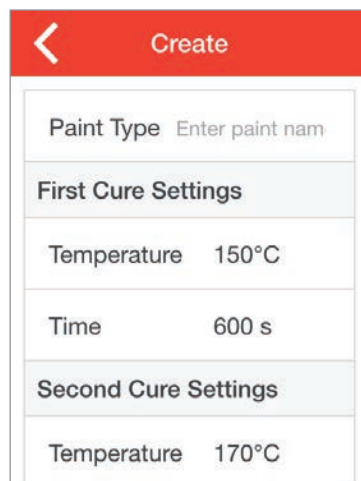
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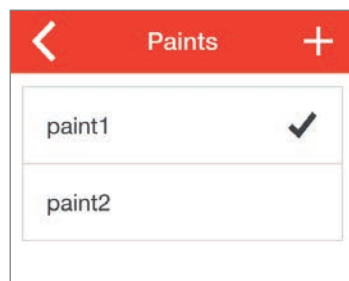
5.1.1 Create Paint type
This form allows you to create a new paint type.
A paint type can be named in the paint type edit box.
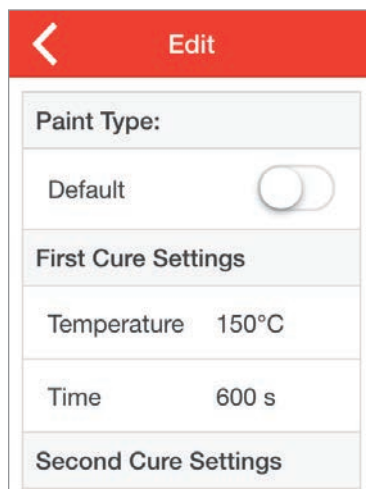Temperature and time for three cure specifications
can be set.

Press ⟨ to confirm your new paint type.

5.1.2 Edit Paint type
To edit a paint type, press relevant item.
All saved paint types are editable any time.

Toggling the Default option activates the default paint
type for cure calculation while recording.

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5.2 Dashboard- Run Setup-Interval
The interval is the number of seconds between each recording. Options are preset.

Below is the estimated max runtime.
∑ probes indicate the max recording time at the interval set.

5.3 Dashboard- Run Setup-Triggers
The start and stop of a run can be triggered by either a preset temperature or a preset time.

5.3.1 Temperature
Recording will start when measured temperature rises over the set starting temperature and will stop when the measured temperature falls below the set stop temperature. The recording process is the same as standard recording.
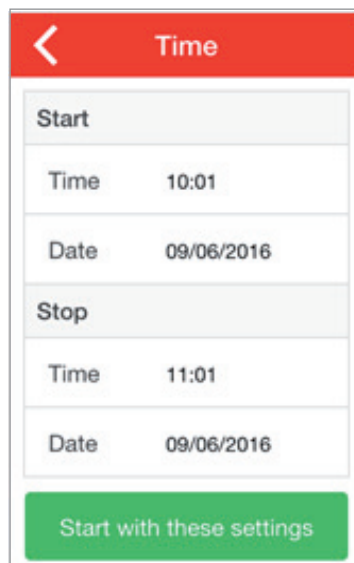
Choose "Start with these settings" to set the trigger and start recording at the trigger condition that has been set. A temperature triggered run can also be started directly from the Run menu (see §4.3)

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5.3.2 Time
Recording will start at the set starting date/time and will stop at the set stopping date/time. The recording process is the same as standard recording. If the time trigger is started and the start time hasn't been reached yet, a countdown to the start time will be shown.
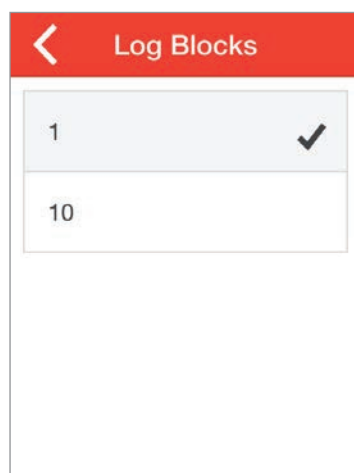
Choose "Start with these settings" to set the trigger and start recording at the trigger condition that has been set. A time triggered run can also be started directly from the Run menu (see §4.4)

5.4 Dashboard- Run Setup-Log Blocks
Check the number of blocks in which the recordings will be saved. Options are 1 or 10. **1** will merge 10 blocks into one memory block. **10** will split the memory into 10 memory blocks. Each recording will start in the next memory block and overwrites the recorded data in that block. Once block 10 is used, the next recording will start at block 1.

NOTE: Switching memory block will delete all recordings on the instrument resulting in all measured data to be lost.

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6 DASHBOARD-RECORDINGS

The recordings menu is accessible from the dashboard. This menu lists all saved recordings, sorted top down from the newest to oldest recording.

Select a single item to view the recording specific information (as described in §4.1.4 and 4.1.5)

‹	Recordings
#	**Date Time**
4	02/06/2016 20:58
3	01/06/2016 17:10
2	22/05/2016 15:28
1	15/05/2016 08:10

7 DASHBOARD-INSTRUMENT SETUP

In this menu you can edit the instrument specific settings.

7.1 Dashboard-Instrument Setup-Language
The system available languages are: English, German, Spanish, Italian, Korean, Japanese and Dutch. New languages will be added in time. Check the preferred language.

7.2 Dashboard-Instrument Setup-Units
Set the temperature unit to either Celsius (°C) or Fahrenheit (°F).

7.3 Dashboard-Instrument Setup-Date
Set the date and choose the date format.

7.4 Dashboard-Instrument Setup-Time
Set the time and choose the time format.

7.5 Dashboard-Instrument Setup-Display Timeout
Set the time (in seconds) after which the display automatically turns off when it's not touched..

‹	Instrument Setup
Language	
Units	
Date	
Time	
Display Timeout	
System	

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7.6 Dashboard-Instrument Setup-System
Information about the instrument.
The battery status can be found in this menu.

8 DASHBOARD-STANDBY

Pressing Standby on the Dashboard allows you to put the
instrument in standby mode. Standby reduces power
consumption considerably, but does not shut down the
instrument. Hence a quick startup is guaranteed when the
instrument detects this user activity within 5 minutes.

Dashboard

Run

Run Setup

Recordings

Instrument Setup

Standby
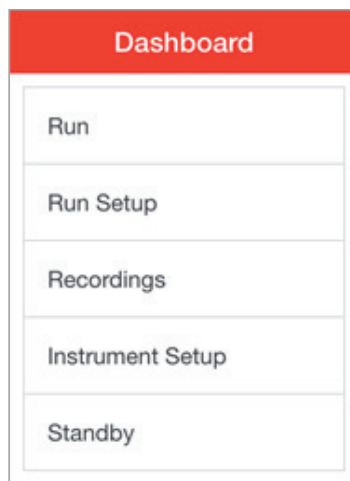
10 BATTERIES IN CARRY-ON BAGGAGE (aircraft cabin)

The battery employed in our CurveX 3 Standard is a generic single cell Lithium-Ion battery, 3.7V 2700 mAh. The battery employed in the CurveX 3 Standard has a capacity of 9.99 Watt-hours, and is rated for low-power use only. A protection circuitry has been applied to the CurveX 3 Standard mainboard as per best practice.

Based on US DOT regulations (49 CFR, Sec. 175.10), the CurveX 3 Standard battery satisfies all demands, most notably:
- The battery is non-replaceable for the end user and therefore does not classify as 'spare'
- The battery is rated below 100 Watt-hours per battery
- The battery is protected from damage and short circuit

The battery is assembled into an end product and classified to be freely transported on aircraft both in carry-on and check-in luggage. When carried-on, please keep the provided product documentation with the device in order to be able to provide regulatory agencies relevant information about your device when requested.

11 DISCLAIMER

The right of technical modifications is reserved.

The information given in this manual is not intended to be exhaustive and any person using the product for any purpose other than that specifically recommended in this manual without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at his own risk. Whilst we endeavour to ensure that all advice we give about the product (whether in this manual or otherwise) is correct we have no control over either the quality or condition of the product or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability whatsoever or howsoever arising for the performance of the product or for any loss or damage (other than death or personal injury resulting from our negligence) arising out of the use of the product. The information contained in this manual is liable to modification from time to time in the light of experience and our policy of continuous product development.

TQC B.V.

Molenbaan 19
2908 LL Capelle aan den IJssel
The Netherlands

📞 +31(0)10 - 79 00 100
🖨 +31(0)10 - 79 00 129
@ info@tqc.eu
🌐 www.tqc.eu

TQC UK

Po Box 977A
Surbiton, KT1 9XL - England

📞 +44 208 255 0143
@ janet@tqc.eu
🌐 www.tqc.eu

TQC GmbH

Nikolaus-Otto-Strasse 2
D-40721 Hilden - Germany

📞 +49 (0)2103-25326-0
🖨 +49 (0)2103-25326-29
@ info.de@tqc.eu
🌐 www.tqc.eu

TQC-USA Inc.

4053 S. Lapeer Road - Suite
Metamora, MI. 48455 - USA

📞 +1 810 678 2400
🖨 +1 810 678 2422
@ joel@tqc-usa.com
🌐 www.tqc-usa.com

TQC ITALIA S.R.L.

Via Cesare Cantu', 26
20831 Seregno (MB) - ITALY

📞 +39 0362 1822230
🖨 +39 0362 1822234
@ info@tqcitaly.it
🌐 www.tqc.eu

TQC Norge AS

Øvre Langgate 26
3110 Tønsberg - Norway

📞 +47 33310220
🖨 +47 33310221
@ info@tqc.eu
🌐 www.tqc.eu

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