

# Zertifikat

# Certificate



Zertifikat Nr. *Certificate No.*  
R 50401496

Blatt *Sheet*  
0001

Ihr Zeichen *Client Reference*  
ML-77 TUV

Unser Zeichen *Our Reference*  
ZJL-MAS-50104268 001

Ausstellungsdatum *Date of Issue*  
08.03.2018 *(day/month/yr)*

**Genehmigungsinhaber *License Holder***

Sato Parts Co., Ltd.  
3F Sanyu Bldg. 3-42-1, Hongo  
Bunkyo-ku, Tokyo  
113-0033 Japan

**Fertigungsstätte *Manufacturing Plant***

Sato Parts Co., Ltd. Niigata Factory  
2255-2 Torigoe  
Nagaoka-shi, Niigata  
940-2316 Japan

**Prüfzeichen *Test Mark***



Type Approved  
Safety  
Regular Production  
Surveillance

www.tuv.com  
ID 141905830

**Geprüft nach *Tested acc. to***

EN 60947-7-1:2009  
IEC 60947-7-1:2009  
EN 60947-7-4:2013  
IEC 60947-7-4:2013

**Zertifiziertes Produkt (Geräteidentifikation)  
*Certified Product (Product Identification)***

**Lizenzentgelte - Einheit  
*License Fee - Unit***

**Connector Screw Terminal Block**

Type Designation:	ML-77u-vwx-yP	5
	u = A or B	1
	v = A or B	1
	w = X or Y	1
	x = F or S	1
	y = 1 - 6 (w=X) or 2 - 8 (w=Y)	

Number of Poles: 1-6 (w=X), 2-8 (w=Y)  
Rate Insulation Voltage: AC/DC 300V  
Rated Thermal Current: 15A (u=A), 25A (u=B)  
Overvoltage Category: III  
Rated Withstand Impulse Voltage: 4kV  
Pollution Degree: 3  
Protection Degree: IP00  
Rated Connecting Capacity: (see Appendix 1)  
Lower/Upper Limit Temperature: -40°C/120°C  
Ambient Temperature Range at Rated Current: -20°C - 85°C



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**ANLAGE (Appendix): 1**

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.

This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.

**Zertifizierungsstelle**

Dipl.-Ing. (FH) F. Becker

**TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg**

Tel.: +49 221 806-1371 e-mail: cert-validity@de.tuv.com  
Fax: +49 221 806-3935 http://www.tuv.com/safety

# Zertifikat

# Certificate



Zertifikat Nr. *Certificate No.*  
R 50401496

Blatt *Sheet*  
0002

Ihr Zeichen *Client Reference*  
ADD-CH

Unser Zeichen *Our Reference*  
ZJL-MAA-50104268 001

Ausstellungsdatum *Date of Issue*  
27.02.2020 (day/mo/yr)

Genehmigungsinhaber *License Holder*  
Sato Parts Co., Ltd.  
3-3-8, Sotokanda,  
Chiyoda-ku, Tokyo  
101-0021 Japan

Fertigungsstätte *Manufacturing Plant*  
Sato Parts Co., Ltd. Niigata Factory  
2255-2 Torigoe  
Nagaoka-shi, Niigata  
940-2316 Japan

## Prüfzeichen *Test Mark*



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Safety  
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www.tuv.com  
ID 1419055830

## Geprüft nach *Tested acc. to*

EN 60947-7-1:2009  
IEC 60947-7-1:2009  
EN 60947-7-4:2013  
IEC 60947-7-4:2013

Zertifiziertes Produkt (Geräteidentifikation)  
*Certified Product (Product Identification)*

Lizenzentgelte - Einheit  
*License Fee - Unit*

Connector Screw Terminal Block

Change

Address of

License Holder: 3F Sanyu Bldg. 3-42-1, Hongo  
Bunkyo-ku, Tokyo  
113-0033 Japan

changed to: (see above)



Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.

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TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg

Tel.: +49 221 806-1371 e-mail: cert-validity@de.tuv.com  
Fax: +49 221 806-3935 http://www.tuv.com/safety

Zertifizierungsstelle

Dipl.-Ing. (FH) F. Becker

**Constructional Data Form for Terminal Block**

Page 1/3

Licenseholder : Sato Parts Co., Ltd.  
 (full address) 3F Sanyu Bldg. 3-42-1 Hongo Bunkyo-ku Tokyo 113-0033 Japan  
 Factory : Sato Parts Co., Ltd. Niigata Factory  
 (full address) 2255-2 Torigoe Nagaoka-shi, Niigata 940-2316 Japan  
 Type or Model Number : ML-77u-vwx-yP (u, v, w, x and y are variables, see the type nomenclature in the last page for details.)  
 Kind of device: Terminal Block

General specifications	
Type designation	ML-77u-vwx-yP
Type of clamping units	<input checked="" type="checkbox"/> screw-type ( M3(u=A), M4(u=B) ) <input type="checkbox"/> screwless-type
Number of poles	1-6(w=X), 2-8(w=Y)
Rated insulation voltage (Ui)	AC/DC300V
Rated Thermal Current (Ith, if applicable)	15A(u=A), 25A(u=B)
Short-time withstand current	240A(u=A), 420A(u=B)
Rated Frequency (if applicable)	50/60Hz
Upper limit temperature (if applicable)	120°C
Lower limit temperature (if applicable)	-40°C
Max. ambient temp. / range (at rated current)	-20°C~85°C
Overvoltage category / Uimp	III / 4kV
Pollution degree	3
IP code	IP00
Shock condition (if applicable)	N/A
Vibration condition (if applicable)	N/A

Method of fixing the terminal block to the support	With mounting hole for screw fixing on panel (w=X), PCB(w=Y)	
Rated cross-section	Flexible : 2.0 mm <sup>2</sup> or AWG14(u=A), 3.5 mm <sup>2</sup> or AWG12(u=B) Rigid : ø1.6 mm or AWG14(u=A), ø2.0mm or AWG12(u=B)	
Rated Connecting Capacity	u=A	Un-prepared conductor(x =F): Flexible : 0.3mm <sup>2</sup> – 2.0mm <sup>2</sup> or AWG22 – AWG14 Rigid : ø0.65 mm – ø1.6 mm or AWG22 – AWG14 Prepared conductor(x =F or S) : Flexible : 0.3mm <sup>2</sup> – 2.0mm <sup>2</sup> or AWG22 – AWG14 Rigid : ø 0.65 mm – ø 1.6 mm or AWG22 – AWG14

TÜV Rheinland

6 March 2018

(Date)



(Signature)

Hongo(Tokyo)

(Place)

Hiroyuki Kinoshita

6 March 2018

(Date)



(Stamp and Signature of Applicant)



**Construational Data Form for Terminal Block**

	u=B	Un-prepared conductor (x=F): Rigid : $\varnothing 0.65 \text{ mm} - \varnothing 2.0 \text{ mm}$ , AWG22 – AWG12 Prepared conductor (x=F or S) : Flexible : $0.3 \text{ mm}^2 - 3.5 \text{ mm}^2$ , AWG22 – AWG12 Rigid : $\varnothing 0.65 \text{ mm} - \varnothing 2.0 \text{ mm}$ , AWG22 – AWG12
Kind of conductor	<input checked="" type="checkbox"/> Pre-prepared conductor: rigid or flexible <input checked="" type="checkbox"/> Un-prepared conductor <input checked="" type="checkbox"/> rigid <input type="checkbox"/> stranded <input checked="" type="checkbox"/> flexible(for u=A only)	
Max. Stripping length	6.0mm(u=A), 7.7mm(u=B) Un-prepared	
Max. Number of conductors per clamping unit	2	
Clamping units	u=A	M3 Pressure wire connector-Screw with square washer(x=F) M3 Pressure screw-Screw with a round washer(x=S)
	u=B	M4 Pressure wire connector-Screw with square washer(x=F) M4 Pressure screw-Screw with a round washer(x=S)
Size of screws / Specified tightening torque	M3/0.5 N·m(u=A), M4/1.2 N·m(u=B)	
Material of clamping units	<input checked="" type="checkbox"/> Fixed part: Copper alloy ( i.e. 64-68 %Cu), Tin plated(u=A) Copper alloy ( i.e. $\geq 98.05 \%$ Cu), Tin plated(u=B) <input checked="" type="checkbox"/> Screw: Steel with Nickel plated <input checked="" type="checkbox"/> Clamping plate: Copper-alloy, Nickel plated or Steel , Nickel plated <input checked="" type="checkbox"/> Locking means (spring washer): Steel, Nickel plated	

Insulation system		
Insulation Construction	<i>pole-pole</i> :	<input checked="" type="checkbox"/> basic <input type="checkbox"/> reinforced
	<i>live parts - mounting support</i> :	<input checked="" type="checkbox"/> basic <input type="checkbox"/> reinforced
Dielectric Strength Withstand Voltages	<i>pole-pole</i> :	2400Vr.m.s / 4.0kVpeak (impulse)
	<i>live parts - mounting support</i> :	2400Vr.m.s / 4.0kVpeak (impulse)
Minimum creepage distances	<i>pole-pole</i> :	$\geq 5.5 \text{ mm}(u=A)$ , $\geq 7.5 \text{ mm}(u=B)$
	<i>live parts - mounting support</i> :	$\geq 5.5 \text{ mm}(u=A)$ , $\geq 7.5 \text{ mm}(u=B)$
Minimum clearances	<i>pole-pole</i> :	$\geq 4.0 \text{ mm}(u=A)$ , $\geq 5.5 \text{ mm}(u=B)$
	<i>live parts - mounting support</i> :	$\geq 4.0 \text{ mm}(u=A)$ , $\geq 5.5 \text{ mm}(u=B)$

Additional information for attachment of terminal block on its support	
Accessories & Attachment:	Terminal Cover, Jumper
Material of attachment for fixing:	See appended table for insulation materials
Fixing screw, stud or nut:	M3 screw and nut(u=A), M4 screw and nut(u=B)

TÜV Rheinland  
*In Masuda*  
6 March 2018  
(Date) (Signature)

Hongo(Tokyo) (Place)  
6 March 2018 (Date)  
Hiroyuki Kinoshita  
*H Kinoshita*  
(Stamp and Signature of Applicant)



**Constructional Data Form for Terminal Block**

Specified tightening torque:	M3/0.5 N·m(u=A), M4/1.2 N·m(u=B)
Other information:	Optional: cover and jumper

Insulation / Plastic Materials					
Part	Material	Type designation/ Manufacturer	RTI	Flammability	Material group
Base	PBT	5010GN1-15AM MITSUBISHI ENGINEERING- PLASTICS CORP (UL File No.E53664)	120°C	V-0 (0.71mm)	III a
	PBT	CN7015 WINTech POLYMER LTD (UL File No.E213445)	120°C	V-0 (0.66mm)	III a
Cover (Optional)	Polycarbonate	E-2000VUR MITSUBISHI ENGINEERING- PLASTICS CORP (UL File No.E41179)	80°C	V-2 (0.38mm)	III a

**TYPE NOMENCLATURE:**

**ML-77 u – v w x – yP**

u- Pitch between poles

- A : 7.62mm(M3 screw)
- B : 10.16mm(M4 screw)

v- Type of soldering post

- A : Quick-connect tab and Soldering tab combination
- B : Soldering post(for PCB mount)

w- Mounting holes - .

- X : with mounting holes
- Y : None(without mounting holes)

x- Type of screws


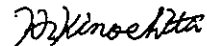
- F : Pressure wire connector-Screw with square washer
- S : Pressure screw-Screw with a round washer

y- number of poles

- 1 to 6 for w=X
- 2 to 8 for w=Y

Note : Dashes are optional.

End of the documentation.

TÜV Rheinland  6 March 2018 (Date)	(Signature)	Hongo(Tokyo) (Place)	6 March 2018 (Date)
		Hiroyuki Kinoshita  (Stamp and Signature of Applicant)	