

**Partner Product**

EBG 239-EN

**RT Leaders**

Where Computer Science Meets Robotics

[www.rtleaders.com](http://www.rtleaders.com)

**MITSUBISHI  
ELECTRIC**

FACTORY AUTOMATION

# C Automation SDK

## Lua Development Kit for C Controllers

**Easy and Simple programming of Automation applications  
within plant floor controllers**



**e-Factory**  
Partner Product

INTELLIGENT  
DESIGN



As simple as BASIC

IMPROVED  
COMMUNICATION



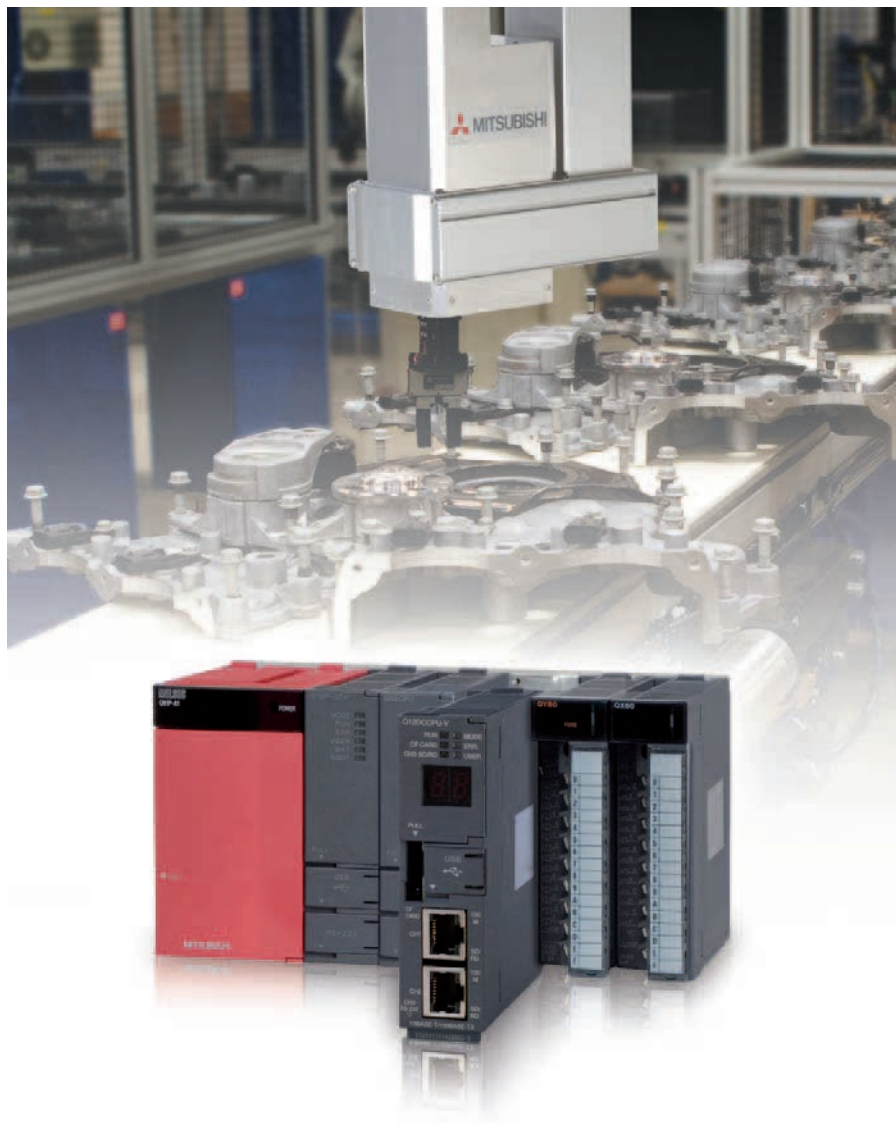
Direct access to all Mitsubishi Automation components

MORE  
FLEXIBILITY



Exchange of user applications during runtime

# An automation programming toolkit that's as simple as ABC



Easy control of complex application using Lua scripting language

A possible solution to overcome this would be an embedded controller, which involves hardware development and also special drivers have to be written. Another solution could be a PC with all its issues regarding maintenance or security in the operating system.

## A better solution

Based on the C Controller, an industry proven hardware from the Mitsubishi Electric iQ platform, e-F@ctory alliance partner RT Leaders has created a software development kit, the C Automation SDK, which removes all the issues regarding special hardware, OS problems, compilers or communication drivers.

The C Controller has direct access to all Mitsubishi Electric automation components such as motion controllers, robot controllers, inverters etc. Whilst the PLC executes the program sequence, the C Controller calculates all necessary variables in Real Time.

## C Automation SDK

The C Automation SDK is a script interpreter tool for the C Controller using the recognised and freely available Lua language to write automation programs. Up to 16 different, simultaneous running tasks can run on a single C Controller which can be controlled via external tools or by bits in the PLC.

## Lua is fast and portable



Lua has a deserved reputation for performance. To claim to be "as fast as Lua" is an aspiration of other scripting languages. Several benchmarks show Lua as the fastest language in the realm of interpreted scripting languages. Lua is fast not only in fine-tuned benchmark programs, but in real life too. A substantial number of large applications have been written in Lua.

Lua is a fast language engine with a small footprint that you can embed easily into your application. It has a simple and well documented API that allows strong integration with code written in other languages. It is easy to extend Lua with libraries written in other languages. It has been used to extend programs written not only in C and C++, but also in Java, C#, Smalltalk, Fortran, Ada, Erlang, and even in other scripting languages, such as Perl and Ruby.

Lua is distributed in a small package and builds out-of-the-box in all platforms that have a standard C compiler. Lua runs on all formats of Unix, Windows, mobile devices (running Android, iOS, BREW, Symbian, Windows Phone), embedded microprocessors (such as ARM and Rabbit, for applications like Lego MindStorms), IBM mainframes, etc.

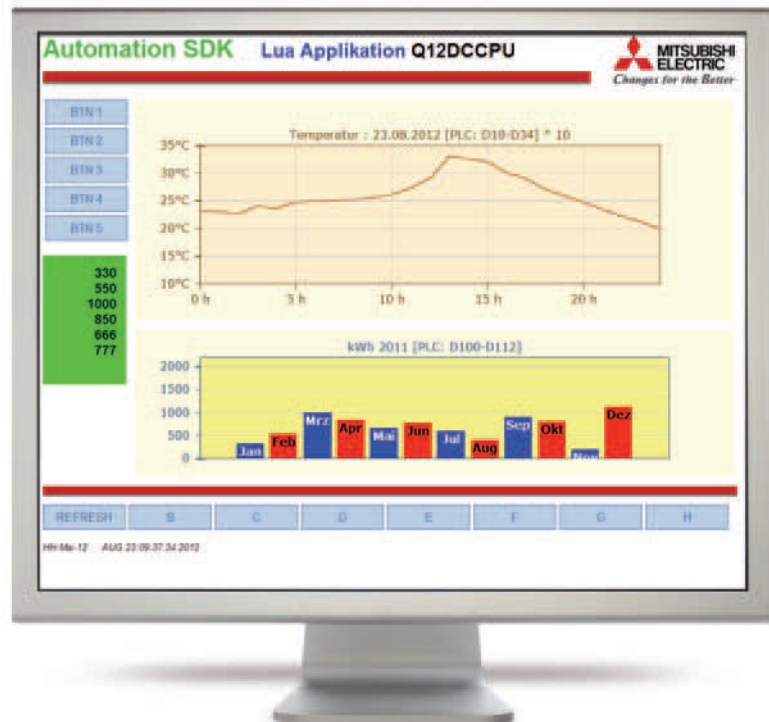
## Development Tools

The Mitsubishi C Controller comes pre-installed with all ordered C Automation SDK modules and the dedicated licenses. This means you can start writing your own automation applications using a standard text editor straight away, such as Notepad or something similar, and transfer your Lua script file directly into the memory of the C Controller using a FTP Client tool.

All the Software you need to start writing, debugging or running your own applications are available without any further costs.

## Security

By translating the scriptfile into a binary coded file with the integrated conversion function your knowledge will be protected. Also, developed code can be password protected and bound to specific C Controller modules.



User Webscreen combining HTML, Java script and Lua script

## Modular options

In it's basic configuration standard functions such as interpreter for the Lua scripting language and communication to Mitsubishi System Q hardware are implemented.

A growing number of "AddOn" functions already exist, such as Webserver, FTP Client, integrated database, XML parser, ready made PID loops, advanced Robot control, fuzzy logic modules and 2D/3D vision interfaces.

## Webserver

With the webserver "AddOn" dynamic webpages can be created. HTML, Java and Lua code can be mixed with the possibility to easily display and change PLC values in real time on a self created webpage.

## Features and Benefits

- Easy to use
- Support of common XML schemes
- Easy implementation of various protocols like MODBUS TCP (already available), Ethercat etc.
- High flexibility in complex controls (PID, Fuzzy Logic)

# Configuration ///



**Lua**  
Lua program  
source file

Transfer via FTP

## EUROPEAN BRANCHES

MITSUBISHI ELECTRIC EUROPE B.V. Gothaer Straße 8 <b>D-40880 Ratingen</b> Phone: +49 (0)2102 / 486-0	<b>GERMANY</b>
MITSUBISHI ELECTRIC EUROPE B.V.-org.sl. Radlická 714/113a <b>CZ-158 00 Praha 5</b> Phone: +420 - 251 551 470	<b>CZECH REP.</b>
MITSUBISHI ELECTRIC EUROPE B.V. 25, Boulevard des Bouvets <b>F-92741 Nanterre Cedex</b> Phone: +33 (0)1 / 55 68 55 68	<b>FRANCE</b>
MITSUBISHI ELECTRIC EUROPE B.V. Viale Colleoni 7 <b>I-20041 Agrate Brianza (MB)</b> Phone: +39 039 / 60 53 1	<b>ITALY</b>
MITSUBISHI ELECTRIC EUROPE B.V. Krakowska 50 <b>PL-32-083 Balice</b> Phone: +48 (0)12 / 630 47 00	<b>POLAND</b>
MITSUBISHI ELECTRIC EUROPE B.V. 52, bld. 3 Kosmodamianskaya nab 8 floor <b>RU-115054 Moscow</b> Phone: +7 495 721-2070	<b>RUSSIA</b>
MITSUBISHI ELECTRIC EUROPE B.V. Carrera de Rubi 76-80 <b>E-08190 Sant Cugat del Vallés (Barcelona)</b> Phone: 902 131121 // +34 935653131	<b>SPAIN</b>
MITSUBISHI ELECTRIC EUROPE B.V. Travellers Lane <b>UK-Hatfield, Herts. AL10 8XB</b> Phone: +44 (0)1707 / 27 61 00	<b>UK</b>

## EUROPEAN REPRESENTATIVES

GEVA Wiener Straße 89 <b>AT-2500 Baden</b> Phone: +43 (0)2252 / 85 55 20	<b>AUSTRIA</b>	Beijer Electronics A/S Lykkegårdsvej 17 <b>DK-4000 Roskilde</b> Phone: +45 (0)46 / 75 76 66	<b>DENMARK</b>	ALFATRADE Ltd. 99, Paola Hill <b>Malta- Paola PLA 1702</b> Phone: +356 (0)21 / 697 816	<b>MALTA</b>	Sirius Trading & Services Aleea Lacul Morii Nr. 3 <b>RO-060841 Bucuresti, Sector 6</b> Phone: +40 (0)21 / 430 40 06	<b>ROMANIA</b>	Beijer Electronics AB Box 426 <b>SE-20124 Malmö</b> Phone: +46 (0)40 / 35 86 00	<b>SWEDEN</b>	I.C. SYSTEMS LTD. 23 Al-Saad-Al-Alee St. <b>EG- Sarayat, Maadi, Cairo</b> Phone: +20 (0) 2 / 235 98 548	<b>EGYPT</b>
TECHNIKON Oktyabrskaya 19, Off. 705 <b>BY-220030 Minsk</b> Phone: +375 (0)17 / 210 46 26	<b>BELARUS</b>	Beijer Electronics Eesti OÜ Pärnu mnt.160i <b>EE-11317 Tallinn</b> Phone: +372 (0)6 / 51 81 40	<b>ESTONIA</b>	INTEHSIS srl bld. Traian 23/1 <b>MD-2060 Kishinev</b> Phone: +373 (0)22 / 66 4242	<b>MOLDOVA</b>	INEA RBT d.o.o. Izletnicka 10 <b>SER-113000 Smederevo</b> Phone: +381 (0)26 / 615 401	<b>SERBIA</b>	Omni Ray AG Im Schörl 5 <b>CH-8600 Dübendorf</b> Phone: +41 (0)44 / 802 28 80	<b>SWITZERLAND</b>	ILAN & GAVISH Ltd. 24 Shenkar St., Kiryat Arie <b>IL-49001 Petah-Tiqva</b> Phone: +972 (0)3 / 922 18 24	<b>ISRAEL</b>
ESCO D & A Culliganlaan 3 <b>BE-1831 Diegem</b> Phone: +32 (0)2 / 717 64 30	<b>BELGIUM</b>	Beijer Electronics OY Peltioie 37 <b>FIN-28400 Ulvila</b> Phone: +358 (0)207 / 463 540	<b>FINLAND</b>	HIFLEX AUTOM. B.V. Wolweverstraat 22 <b>NL-2984 CD Ridderkerk</b> Phone: +31 (0)180 - 46 60 04	<b>NETHERLANDS</b>	SIMAP s.r.o. Jána Derku 1671 <b>SK-911 01 Trenčín</b> Phone: +421 (0)32 743 04 72	<b>SLOVAKIA</b>	GTS Bayraktar Bulvarı Nutuk Sok. No:5 <b>TR-34775 Yukarı İSTANBUL</b> Phone: +90 (0)216 526 39 90	<b>TURKEY</b>	GIRIT CELADON LTD 12 Haomanut Street <b>IL-42505 Netanya</b> Phone: +972 (0)9 / 863 39 80	<b>ISRAEL</b>
Koning & Hartman b.v. Woluwelaan 31 <b>BE-1800 Vilvoorde</b> Phone: +32 (0)33 / 921 164	<b>BELGIUM</b>	UTECO 5, Mavrogenous Str. <b>GR-18542 Piraeus</b> Phone: +30 211 / 1206 900	<b>GREECE</b>	Koning & Hartman b.v. Haarlerbergweg 21-23 <b>NL-1101 CH Amsterdam</b> Phone: +31 (0)20 / 587 76 00	<b>NETHERLANDS</b>	PROCONT, spol. s r.o. Prešov Küpeľná 1/A <b>SK-080 01 Prešov</b> Phone: +421 (0)51 7580 611	<b>SLOVAKIA</b>	CSC Automation Ltd. 4-B, M. Raskovoyi St. <b>UA-02660 Kiev</b> Phone: +380 (0)44 / 494 33 55	<b>UKRAINE</b>	CEG INTERNATIONAL Cebaco Center/Block A Autostrade DORA <b>Lebanon - Beirut</b> Phone: +961 (0)1 / 240 430	<b>LEBANON</b>
INEA RBT d.o.o. Aleja Lipa 56 <b>BA-71000 Sarajevo</b> Phone: +387 (0)33 / 921 164	<b>BOSNIA AND HERZEG.</b>	MELTRADE Kft. Fertő utca 14. <b>HU-1107 Budapest</b> Phone: +36 (0)1 / 431-9726	<b>HUNGARY</b>	Beijer Electronics AS Postboks 487 <b>NO-3002 Drammen</b> Phone: +47 (0)32 / 24 30 00	<b>NORWAY</b>	INEA RBT d.o.o. Küpeľná 1/A <b>SI-1000 Ljubljana</b> Phone: +386 (0)1 / 513 8116	<b>SLOVENIA</b>	Systemgroup 2.M. Krivonosa St. <b>UA-03680 Kiev</b> Phone: +380 (0)44 / 490 92 29	<b>UKRAINE</b>	CBI Ltd. Private Bag 2016 <b>ZA-1600 Isando</b> Phone: +27 (0)11 / 977 0770	<b>SOUTH AFRICA</b>
AKHNATON 4, Andrei Ljapchev Blvd., PO Box 21 <b>BG-1756 Sofia</b> Phone: +359 (0)2 / 817 6000	<b>BULGARIA</b>	100 Kazpromavtomatika Ul. Zhambyla 28 <b>KAZ-100017 Karaganda</b> Phone: +7 7212 / 50 10 00	<b>KAZAKHSTAN</b>	Fonseca S.A. R. João Francisco do Casal 87/89 <b>PT- 3801-997 Aveiro, Esigueira</b> Phone: +351 (0)234 / 303 900	<b>PORTUGAL</b>						
INEA RBT d.o.o. Losinjka 4 a <b>HR-10000 Zagreb</b> Phone: +385 (0)1/36940-01/-02/-03	<b>CROATIA</b>	Beijer Electronics SIA Ritausmas iela 23 <b>LV-1058 Riga</b> Phone: +371 (0)784 / 2280	<b>LATVIA</b>								
AutoCont C.S. s.r.o. Technologická 374/6 <b>CZ-708 00 Ostrava-Pustkovec</b> Phone: +420 595 691 150	<b>CZECH REPUBLIC</b>	Beijer Electronics UAB Savanoriu Pr. 187 <b>LT-02300 Vilnius</b> Phone: +370 (0)5 / 232 3101	<b>LITHUANIA</b>								



Version check



Mitsubishi Electric Europe B.V. /// FA - European Business Group /// Gothaer Straße 8 /// D-40880 Ratingen /// Germany  
Tel.: +49(0)2102-4860 /// Fax: +49(0)2102-4861120 /// info@mitsubishi-automation.com /// www.mitsubishi-automation.com

Specifications subject to change /// 10.2012  
All trademarks and copyrights acknowledged.