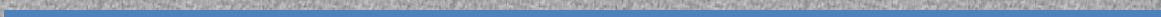


# *CODESYS and iR Resources*

cMT CODESYS and iR Remote IO Resources

2021/8/9



## Table of Contents

1. Overview .....	1
2. Product Introduction .....	1
3. cMT3000+CODESYS Product Features.....	3
4. iR Series Product Features .....	3
5. cMT+CODESYS .....	4
HMI.....	4
1. Check and Update HMI OS.....	4
2. Activate CODESYS.....	4
3. Update CODESYS Firmware .....	4
EB Pro.....	5
CODESYS.....	5
6. cMT-CTRL01 .....	6
7. iR Remote I/O .....	6
iR Remote IO DataSheet .....	6
UserManual.....	6
Installation Instruction.....	6
Certificate.....	7
EasyRemoteIO.....	7
IO_Runtime_Updater.....	8
iR-ECAT ESI .....	8
iR-COP EDS .....	8
8. Project.....	9
9. Tutorials .....	10
Appendix A CODESYS Libraries .....	12

Other company names, product names, or trademarks in this document are the trademarks or registered trademarks of their respective companies.

This document is subject to change without notice.

Copyright© 2018 Weintek Labs., INC. All rights reserved.

## 1. Overview

This document integrates relevant information about cMT HMI CODESYS and iR Remote IO.

## 2. Product Introduction

cMT3000 with built-in CODESYS is a high-performance HMI in compliance with IEC 61131-3 Programmable Logic Controller (PLC) standard. Combining cMT3000+CODESYS with iR Series I/O Modules delivers a new generation solution that achieves a more compact and flexible architecture.

cMT3000+CODESYS is a product that integrates high-performance cMT Series HMI with CODESYS PLC controller system, which is built upon an innovative architecture where a duo-core CPU runs 2 independent operating systems. With the multi-core processor, cMT3000+CODESYS is able to not only provide data visualization with an operable user interface but also runs controller logic. The two systems run independently without mutual interference. On the one hand, the HMI boasts delicate graphical UI and advanced integration features (direct database access, OPC UA, and MQTT); on the other hand, CODESYS controller system in compliance with IEC61131-3 supports multiple languages such as FBD/LD/IL/ST/SFC/CFC, thus optimizing development flexibility.

cMT3000+CODESYS utilizes a unique internal communication channel, to allow the display unit to obtain control information from CODESYS very quickly, while at the same time aiding CODESYS controller system in connecting with other systems like database and 3rd party controllers. In addition, cMT3000+CODESYS is equipped with dedicated Ethernet and CAN bus interfaces which allow for stable and highly efficient data transmission to satisfy diverse automation demands.

iR Series I/O module is a brand new series Weintek product. By using couplers that support different bus systems: CANopen or MODBUS TCP/IP, this modularized system is compatible with most existing control systems. Patented fixture clip makes it easy to connect many I/O modules and effectively prevents modules from falling off due to shock. Flexible module assembly can avoid unnecessary nodes and reduce overall costs. Additionally, iR Series patented iBus technology is strong in noise resistance and efficient in communication that ensures correct and timely update of I/O status.

cMT3000+CODESYS can be used with CANopen or MODBUS TCP/IP I/O modules

from other manufacturers other than iR series I/O modules.



### 3. cMT3000+CODESYS Product Features

#### ■ **Reduced Complexity**

No extra PLC hardware needed for cMT3090+CODESYS.

#### ■ **Real-time Operating System**

Innovative design makes two operating systems run on one HMI independently. Built-in CODESYS operating system ensures that running controller logic will not be interrupted due to the complexity of the screen.

#### ■ **Dedicated Ethernet and CAN bus**

CODESYS has full control of Ethernet (LAN1) and CAN bus. This ensures the real-time performance of control system.

#### ■ **High Performance**

Bit operations take only 10 nanoseconds (10<sup>-9</sup>). A medium-to-high level control system performance.

#### ■ **Fast Internal Communication (cMT and CODESYS)**

Dedicated data channel between the two systems allows the display unit to obtain control information from control system very quickly and ensure efficient data exchange. CODESYS configuration and project management can be done from display side, including PLC status, network information, real-time data/tags.

#### ■ **cMT Rich Features**

Include rich and vivid picture libraries, over 300 protocols, MQTT, OPC UA client/server, and EasyAccess 2.0 remote access service.

### 4. iR Series Product Features

#### ■ **Modular Design**

Couplers can be paired with different combination of I/O modules. Choose the exact number of I/O you need.

#### ■ **Compact Size**

More number of I/O in a small and delicate form factor. Reduce the size of your system and reduce the wiring complexity.

#### ■ **Support CANopen and MODBUS (TCP/IP)**

Well-known CANopen and MODBUS (TCP/IP) helps integrate to most control system.

### ■ **iBus Internal Bus**

With strong in noise resistance and efficient in communication, you can get timely update of I/O status within milliseconds even if over 10 modules are used.

### ■ **Plug-in I/O Installation**

Screw-less design decreases installation time and the possibility of loose wire from traditional screwing.

## **5. cMT+CODESYS**

cMT CODESYS Datasheet

[cMT CODESYS Datasheet ENG.pdf](#)

Users can purchase a cMT3071, cMT3072, cMT3090, or cMT3151, and a CODESYS activation card to activate CODESYS. A CODESYS license sticker is attached to the activation card, and this sticker can be moved to the back of the HMI unit by the user.

## **HMI**

### **1. Check and Update HMI OS**

cMT3071/3072/3090/3151: update to OS 20181211 or later.

### **2. Activate CODESYS**

Please refer to the manual :

[UM018005E Activate CODESYS Feature on cMT UserManual eng.pdf](#)

### **3. Update CODESYS Firmware**

If CODESYS Firmware contained in the OS package is an earlier one, please upgrade it so that it can work with Weintek\_CODESYS\_and\_RemoteIO\_package.

Download: [codesys\\_20200731.446.bin](#)

How to upgrade the CODESYS firmware :

<http://www.evernote.com//ARInuCZt8N1A9LXAyy0E0jFCIZ-SXxjKT18/>

## EB Pro

HMI with built-in CODESYS are supported in V6.00.02 and later. The driver name is “Weintek Built-in CODESYS”, which is able to directly read CODESYS tags. Please visit Weintek official website to download the latest EasyBuilder Pro version. EasyBuilder Pro V6.01.02.166 Build 2018.09.22 or later is recommended.

## CODESYS

CODESYS V3.5 SP10 Patch3, please download using the following link in CODESYS website:

<https://www.codesys.com/>

- CODESYS V3 PLC Runtime (3.5.10) is the currently used version.
- CODESYS V2.3 is not compatible.
- CODESYS V3.5 SP10 Patch3 is recommended. When using a version later than V3.5 SP10 Patch3, please make sure that the Library used is 3.5.10.

After installing CODESYS, please also install:

Weintek\_CODESYS\_and\_RemoteIO\_package:

[Weintek CODESYS and RemoteIO 1.0.0.280.package](#)

include:

- \* Weintek-Cortex-embedded.devdesc.xml
- \* iR-COP.devdesc.xml
- \* Weintek iR-ECAT devdesc.xml
- \* Weintek-library
  - \* PID Function Block.
  - \* iR-PU01-P Motion Control Function Block.

Double clicking on the file can start installation. If an earlier version is installed, please directly install the new version.

For more information on CODESYS version, see the following FAQ:

[https://dl.weintek.com/public/Document/FAQ/FAQ\\_112\\_CODESYS\\_Version\\_eng.pdf](https://dl.weintek.com/public/Document/FAQ/FAQ_112_CODESYS_Version_eng.pdf)

## 6. cMT-CTRL01

DataSheet [cMT-CTRL01 Datasheet ENG.pdf](#)

UserManual [UM019006E cMT-CTRL01 UserManual eng.pdf](#)

Installation [GMECTR100 cMT-CTRL01 Installation.pdf](#)

CE Certificate [CE Certificate cMT CTRL01.pdf](#)

cMT-CTRL01 CODESYS runtime: same as cMT CODESYS runtime

iR Slave: [iR Slave v1010 20191217.bin](#)

## 7. iR Remote I/O

### iR Remote IO DataSheet

[iR Datasheet ENG.pdf](#)

### UserManual

cMT+CODESYS and Remote I/O Quick Start Guide(English)

[UM018003E cMT Codesys Install UserManual eng.pdf](#)

iR-COP UserManual

[UM018001E iR-COP UserManual eng.pdf](#)

iR-ECAT User Manual(English)

[UM019001E iR-ECAT UserManual eng.pdf](#)

iR-ETN User Manual(English)

[UM018002E iR-ETN UserManual eng.pdf](#)

iR-ETN EtherNetIP Connection Guide

[UM020006E iR-ETN EtherNetIP Connection Guide eng.pdf](#)

iR-AI04-VI,iR-AM06-VI,iR-AQ04-VI User Manual(English):

[UM018013E iR-Axxx-VI UserManual eng.pdf](#)

iR-AI04-TR User Manual(English):

[UM018014E iR-Axxx-TR UserManual eng.pdf](#)

iR-PU01-P UserManual:

[UM019004E iR-PU01-P UserManual eng.pdf](#)

Weintek CODESYS Library User Manual:

[UM018017E CODESYS Weintek Library UserManual eng.pdf](#)

### Installation Instruction

iR-COP Installation [GMEIRCP00 iR-COP Installation.pdf](#)

iR-ECAT Installation [GMERECT00 iR-ECAT Installation.pdf](#)



iR-ETN Installation [GMERETN00 iR-ETN Installation.pdf](#)

iR-Dxx Installation [GMERDXM00 iR-Dxxx Installation.pdf](#)

iR-Analog Installation [GMERAXX00 iR-Axxx Installation.pdf](#)

iR-AI04-TR Installation [GMERI4T00 iR-AI04-TR Installation.pdf](#)

iR-PU01-P Installation [GMERU1P00 iR-PU01-P Installation.pdf](#)

## Certificate

[iR-COP Certificate.pdf](#)

Model Name: iR-COP, iR-DI16-K, iR-DM16-P, iR-DM16-N, iR-DQ16-P, iR-DQ16-N, iR-DQ8-R

[iR-ECAT Certificate.pdf](#)

Model Name: iR-ECAT

[iR-ETN Certificate.pdf](#)

Model Name: iR-ETN, iR-DI16-K, iR-DM16-P, iR-DM16-N, iR-DQ16-P, iR-DQ16-N, iR-DQ8-R

[iR-AI04-TR Certificate.pdf](#)

Model Name: iR-AI04-TR

[iR-AM06-VI AI04-VI Certificate.pdf](#)

Model Name: iR-AI04-VI, iR-AM06-VI

[iR-AQ04-VI Certificate.pdf](#)

Model Name: iR-AQ04-VI

[iR-PU01-P Certificate.pdf](#)

Model Name: iR-PU01-P

## EasyRemotelIO

EasyRemotelIO is a tool for users to set up Weintek iR-ETN. In EasyRemotelIO, users can set iR-ETN's IP address, configure parameters, monitor or modify values.

Download: [EasyRemotelIO V1.3.2.0.zip](#)

1. Supports exporting the corresponding EtherNet/IP EDS file for the module.
2. Supports scanning for iR-ETN devices on different networks.
3. Changed translation for some texts.
4. Changed description for some PU parameters.

EasyRemotelIO UserManual:

[UM018004E EasyRemotelIO UserManual\\_eng.pdf](#)

## IO\_Runtime\_Updater

<a href="#">IO_Runtime_Updater_20190925.zip</a>	
iR-COP Version: 1.0.0.3	Supports iR-PU01-P module.
iR-ECAT V2	Supports iR-PU01-P module.
iR-ETN Version: 1.0.1.0	

<a href="#">IO_Runtime_Updater(ECAT)_1.0.3.2.zip</a>	
iR-ECAT Version: 1.0.3.2	<ol style="list-style-type: none"> <li>1. Bug Fix: Entering only the module cannot update input value.</li> <li>2. Added CAM objects in association with PU.</li> <li>3. Added Object 0x5FF0 : MCU ID</li> <li>4. Added Object 0x5FF1 : flash checksum</li> </ol>

<a href="#">IO_Runtime_Updater(ETN)_1.4.0.1.zip</a>	
iR-ETN Version: 1.0.3.0	Supports EtherNet/IP.
iR-PU01-P firmware V1.0.1.0	1. Added CAM features.
iR-AM06-VI firmware V1.0.0.1	Bug Fix: output channel 1 is closed, it will cause channel 2 not to output.

iR Series Coupler & Module Update Guide

[UM019005E iR Series Firmware Update UserManual eng.pdf](#)

### iR-ECAT ESI

[Download](#)

### iR-COP EDS

[Download](#)

## 8. Project

- [DEM18002 iR-DM16, iR-COP, iR-ETN Demo](#)
- [DEM19001 iR Application Oven Demo](#)
- [DEM19004 iR Application JOG Demo](#)
- [DEM19005 iR Application Positioning Demo](#)
- [DEM20005 EtherCAT Master Demo](#)
- [DEM20006 iR Application PU PWM Inverter Demo](#)
- [DEM20007 CODESYS Library SysTimeRtc Demo](#)
- [DEM20008 CODESYS Library SysFile SysDir Demo](#)
- [DEM20010 CODESYS SDcarc Access Demo](#)
- [DEM21001 CODESYS RawValue to EngineeringValue Demo](#)
- [DEM21002 iR-PU01-P CAM](#)
- [DEM21004 iR ETN PU Configuration Demo](#)
- [DEM21006 iR Application PU SimpleCounter Demo](#)

Please visit Weintek’s official website to download the demo projects of CODESYS and iR Series modules:

<https://www.weintek.com/globalw/Download/Download.aspx>

## 9. Tutorials

L28 – iR-COP <https://forum.weintek.com/l28-ir-cop/>

In this topic, you will learn:

1. Communication setting of iR-COP
2. Weintek Remote I/O (CANOpen)
3. PDO and SDO setting

L29 – iR-ETN <https://forum.weintek.com/l29-ir-etn/>

In this topic, you will learn:

1. What is iR-ETN?
2. Use EasyRemote IO to set iR-ETN parameter
3. EasyBuilder Pro Build-in driver support

Weintek Remote I/O Solutions - EASYREMOTEO <https://youtu.be/Gu10v4msH1Q>

Weintek Webinar 2019-03-06: Integrated Control Solution\_HMI, Codesys & iR series feat <https://youtu.be/fLIRC-yha3c>

During this webinar, you'll learn:

- HMI with Codesys
- Remote I/O (iR Series):
  - Coupler
  - Digital I/O
- Remote I/O (iR Series):
  - Analog I/O
  - Analog Temperature Input
- Weintek Library (Codesys)

Weintek Webinar 2019-05-29: Weintek Control Solution – iR Basics & iR-ECAT <https://youtu.be/navmyXmmxUM>

During this webinar, we will cover:

- iR Basics
  - Wiring
  - Limit Calculation
  - Parameter/Data Access
  - Coupler Life Guarding
- iR-ECAT Introduction

YouTube “Weintek Labs., Inc.”

Weintek EasyBuilder Pro tutorial – 50. Motion Control – CANopen

Motion Control – CANopen settings

<https://youtu.be/WBpkIKPlhpQ>

## Appendix A CODESYS Libraries

The libraries in the table below require OS support. Libraries that do not require OS support can be used directly; e.g. OSCAT Basic, Util library...etc.

Sys Library	Cmp Library	CAA Library
SysTimeRtc	CmpTraceMgr	CAAType
SysTimer	CmpSrv	CAATick
SysTime	CmpSettings	CAATickUtil
SysTask	CmpSchedule	CAASTorage
SysTarget	CmpRouter	
SysSocket	CmpPlcShell	
SysMem	CmpLog	
SysFile	CmpIoMgr	
SysExcept	CmpIoDrvC	
SysEvent	CmplecVarAccess	
SysEthernet	CmplecTask	
SysDir	CmpEventMgr	
SysCpuHandling	CmpDynamicText	
SysCom	CmpCheckSum	
	CmpChannelServer	
	CmpBinTagUtillec	
	CmpAsyncMgr	
	CmpAppBP	

Please note that after adding a library that requires OS support but is not in the list, an unparseable message may be displayed during login.

Example:

A CAA File contains multiple libraries, and among these libraries, only CAA Tick, CAA TickUtil, and CAA Types are supported. In this case, CAA File library cannot be used.

