



## ITRON Wrapper for T-Kernel

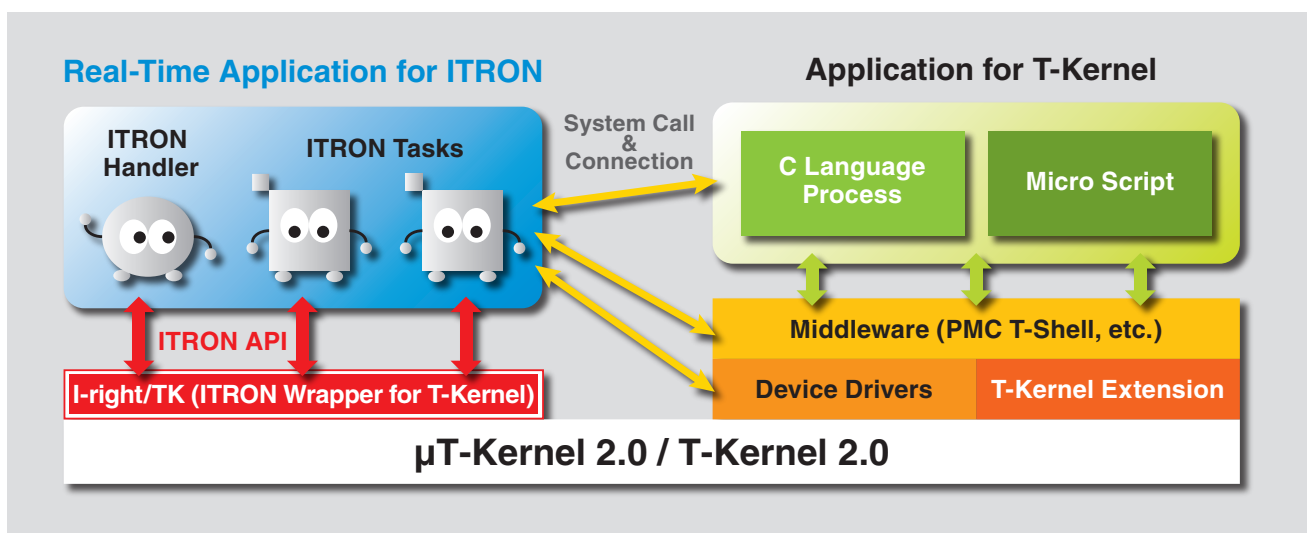
# I-right®/TK

## Wrapper for ITRON Programs Running on T-Kernel

"I-right/TK"(ITRON Wrapper for T-Kernel) enables a lot of your developed ITRON programs for embedded systems to work with the device drivers and middleware for T-Kernel.

Replacing the API(Application Programming Interface)( 1) of ITRON with the counterpart of T-Kernel, "I-right/TK" enables to use the ITRON API on T-Kernel, which API is almost compatible with the full set of µITRON 4.0.

By "I-right/TK", application tasks on ITRON can work together with application tasks, device drivers and middleware(including File System, TCP/IP) on T-Kernel. For example, you can enhance the ITRON-side functions with the use of the device drivers and middleware for T-Kernel. You can also enhance the T-Kernel-side functions by using the programs for ITRON.



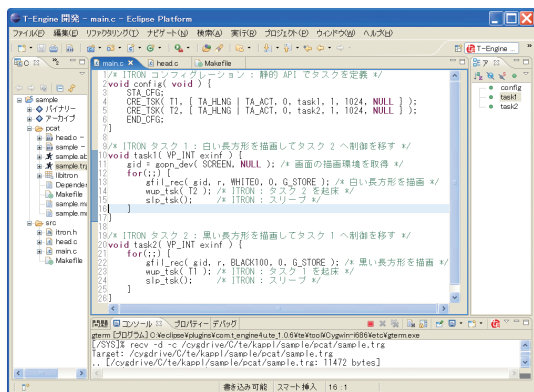
Functions and Software Diagram of "I-right/TK"

Standard Price **20,000**yen (Tax not included)

(1) API, a specification of interface describes how an application program calls and uses OS-provided functions. T-Kernel API and µITRON 4.0 API are nearly equal on a conceptual level. But, the formats and details of each APIs are different.  
(2) There are some restrictions and differences in specifications. For details, please refer to (3) of the back side of this brochure.

## Features of "I-right®/TK"

- You can execute the programs for ITRON-based embedded systems on the next generation standard RTOS "T-Kernel" with minimum modifications. If you are an engineer who is accustomed to ITRON, "I-right/TK" can be also used for developing new programs on T-Kernel.
  - To keep the real time performance of ITRON and T-Kernel, "I-right/TK" is implemented as a wrapper, not an emulator by a virtualization software. The light API wrapper runs on T-Kernel.
  - T-Kernel supports a lot of commercially available 32-bit CPUs. Thanks to the results of T-Kernel, you can execute the programs for ITRON on many CPUs.
  - You can develop the programs by Eclipse, an open-source GUI-based integrated development environment. With "Eclipse for PMC T-Kernel", you can also develop the programs for ITRON.
  - On T-Kernel, you can use the API, almost compatible with the full set of  $\mu$ ITRON 4.0 (3). You can also use the characteristic functions of  $\mu$ ITRON 4.0 like Static API.
  - Your ITRON programs can collaborate with many device drivers and middleware for T-Kernel. For example, you can easily develop the system by the combination of your ITRON programs and TCP/IP, File system, Graphic function for T-Kernel.
  - "I-right Engine" ("I-right/TK" + Hardware) is also available. Three kinds of hardware ( $\mu$ Teaboard, Teacontroller or TKx86) are available, according to the purpose, performance and scale of your device.
- (3) Service call management functions are not supported. As for Task exception handling functions, Interrupt management functions, System configuration management functions and Data queues, some functions are not supported. Regarding the supported functions and API, there are some restrictions and differences in specifications.



Screenshot of Eclipse-based Development Environment for ITRON Programs

## Supported Models

T-Kernel 2/x86 Evaluation Kit, Teacontroller, T2 &  $\mu$ T2 Reference Kit,  $\mu$ Teaboard 2.0, Teamacaron, Teaboard2/ARM920-MX1, each model of T-Engine Development Kit

## Related Product

### I-right® Engine

I-right Engine /  $\mu$ Teaboard

Standard Price (Tax not included) **37,000yen**

I-right Engine / Teacontroller

Standard Price (Tax not included) **95,000yen**

I-right Engine / TKx86

Please contact PMC Sales Division

The best embedded board for real-time control & replacement of industrial equipment. The best way to utilize legacy programs for ITRON.

Function	Static API	General Operation	Dynamic Generation, Deletion	State Reference	
Task Management Functions	CRE_TSK	act_tsk/iact_tsk sta_tsk can_act ext_tsk ter_tsk chg_pri get_pri	cre_tsk acre_tsk del_tsk exd_tsk	ref_tsk ref_tst	
Task Dependent Synchronization Functions		slp_tsk tslp_tsk wup_tsk/iwup_tsk can_wup rel_wai/irel_wai sus_tsk rsm_tsk frsm_tsk dly_tsk			
Task Exception Handling Functions	DEF_TEX	ras_tex dis_tex ena_tex sns_tex	def_tex	ref_tex	
Synchronization and Communication Functions	Semaphore	CRE_SEM	sig_sem/isig_sem wai_sem pol_sem twai_sem	cre_sem acre_sem del_sem	ref_sem
	Event Flag	CRE_FLG	set_flg/iset_flg clr_flg wai_flg pol_flg twai_flg	cre_flg acre_flg del_flg	ref_flg
	Data Queue	CRE_DTQ	snd_dtq psnd_dtq/ipsnd_dtq tsnd_dtq rcv_dtq prcv_dtq trcv_dtq	cre_dtq acre_dtq del_dtq	ref_dtq
	Mailbox	CRE_MBX	snd_mbx rcv_mbx prcv_mbx trcv_mbx	cre_mbx acre_mbx del_mbx	ref_mbx
Extended Synchronization and Communication Functions	Mutex	CRE_MTX	loc_mtx ploc_mtx tloc_mtx unl_mtx	cre_mtx acre_mtx del_mtx	ref_mtx
	Message Buffer	CRE_MBF	snd_mbf psnd_mbf tsnd_mbf rcv_mbf prcv_mbf trcv_mbf	cre_mbf acre_mbf del_mbf	ref_mbf
	Rendezvous	CRE_POR	cal_por tcal_por acp_por pacp_por tacp_por fwd_por rpl_rdv	cre_por acre_por del_por	ref_por ref_rdv
Memory Pool Management Functions	Fixed-Sized Memory Pool	CRE_MPF	get_mpf pget_mpf tget_mpf rel_mpf	cre_mpf acre_mpf del_mpf	ref_mpf
	Variable-Sized Memory Pool	CRE_MPL	get_mpl pget_mpl tget_mpl rel_mpl	cre_mpl acre_mpl del_mpl	ref_mpl
Time Management Functions	System Time Management		set_tim get_tim		
	Cyclic Handler	CRE_CYC	sta_cyc stp_cyc	cre_cyc acre_cyc del_cyc	ref_cyc
	Alarm Handlers	CRE_ALM	sta_alm stp_alm	cre_alm acre_alm del_alm	ref_alm
	Overrun Handlers	DEF_OVR	sta_ovr stp_ovr	def_ovr	ref_ovr
System State Management Functions		rot_rdq/rot_rdq get_tid/get_tid loc_cpu/ioc_cpu unl_cpu/iunl_cpu dis_dsp ena_dsp sns_ctx sns_loc sns_dsp sns_dpn		ref_sys	
Interrupt Management Functions	DEF_INH ATT_ISR	dis_int ena_int	def_inh cre_isr acre_isr del_isr	ref_isr	
System Configuration Management Functions	ATT_INI			ref_cfg ref_ver	

Available Service Calls of  $\mu$ ITRON 4.0 on "I-right/TK"

## Personal Media Corporation

Koizumi Bldg. 1-29-1 Nishi-Gotanda, Shinagawa-ku, Tokyo 141-0031 Japan  
E-mail: te-sales@personal-media.co.jp  
http://www.personal-media.co.jp/  
Tel: +81-3-5759-8305  
Fax: +81-3-5759-8306

- ITRON is an abbreviation of "The Real-time Operating System Nucleus".
- ITRON, T-Engine, T-Monitor, T-Kernel and  $\mu$ T-Kernel are specified terms for computers, and are not product names.
- "I-right" is a registered trademark of Personal Media Corporation.
- All product names are trademarks or registered trademarks of their respective owners.
- Due to continued product upgrade or enhancement, the information in this document is subject to change without notice.